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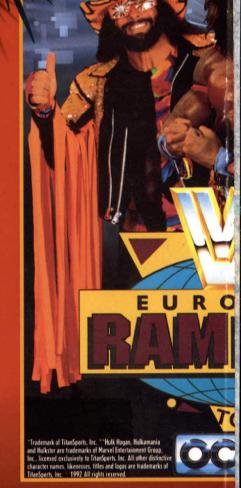
Whilst publishing his underground comic Jack Deebs has unwittingly created a parallel universe inhabited by cartoon characters known as DOODLES. You are transported into COOL WORLD and seduced, through engaging messages, by the Doodle vamp... HOLLI. Visual jokes and gags punctuate your adventure as you hop to and fro between reality and COOL WORLD.

But Holli's dream is to shed her Doodle indentity... to become a real woman with a real interest in Jack! Her dream could destroy both worlds.

Kiss goodbye to Jack... and hello to oblivion!

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WF\* Superstars unite for the grand European pin your favourites, Hulk Hogan\*\*, Ultimate Warrior\* they travel across Europe to square off in the ring like the Natural Disasters\* and the Nasty Boys\*. squared circle. Follow them to the Grand Finale Square Garden in New York City. Test your strength by your team-mate to achieve the ultimate goal page\* Tag Team Title.



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#### SHELL WORKBENCH

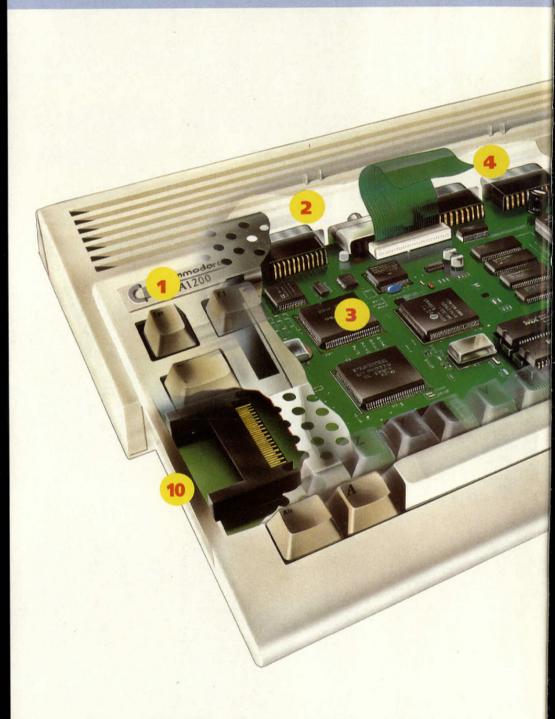
Can't understand your machine? Find out how to communicate with your Amiga pages 19-31

#### PRINTERS MONITORS

Essential hardware. Find out pages 134-37 why on...

#### RAM EXPANSIONS, **GRAPHICS CARDS, ACCELERATORS CO-PROCESSORS**

Sounds complicated? We'll explain all about these wonders that add speed and bite to your Amiga pages 122-127



#### **DISKS DRIVES**

Possibly the most important add-ons for your Amiga. Disks, floppy and hard, and drives, internal and external are well worth taking your time over. Read these pages for advice on maintenance and getting the most from yours pages 16-17

#### **GLOSSARY**

Confused by some of the terms in your manual. You'll find them explained here pages 151-154

#### COMPANY CONTACTS

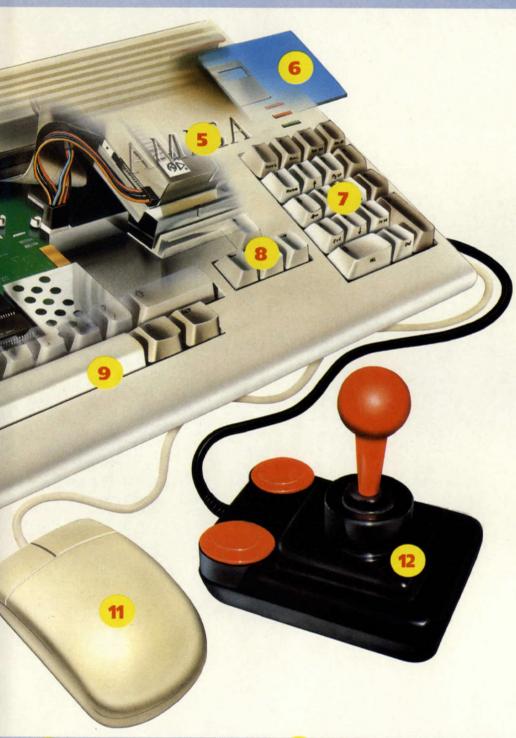
Find that phone number and address here pages 158-159

#### 4 GRAPHICS INPUT

Once you've started to use your Amiga for more than just games playing, you will want to get your graphics on to the Amiga quickly and colourfully. But what happens if you can't draw? Don't worry, our guide has the answers pages 141

#### GET STARTED

You've made the right decision, you've bought the right home computer, and now you've got it home. Now what are you going to do with it? Don't worry, we'll show you how to get up and running with the A600 and A1200 pages 10-15



#### VIDEO HARDWARE

Title and edit videos with your Amiga turn to pages 144-145

#### CDs CDTV

Look at the future of your

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Compact Disc storage pages 33-34

#### 11 GAMES HARDWARE

Blasting aliens, leaping platforms, you'll need the right equipment. Turn to... pages 33-34

#### 12 MICE!

Make the right inputs with these all-important add-ons pages 138-139

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Tim Smith: Editor of the Amiga Format Specials

Hello and welcome to the third of the **Amiga Format** Specials.

The Complete Beginner's Guide came about following a number (a very great number) of letters to Amiga Format from Amiga users.

The majority of these readers are genuine beginners to the Amiga, having only bought one in the past few months primarily for games but also for music and graphics and who now want to explore other areas – boy is there a lot of good stuff in this **Amiga Format** Special for you!

However, some of the letters came in from people who have owned their Amigas for quite a few months or even years, but who still consider themselves to be newcomers to the wider aspects of the UK's most popular home computer.

Much as we would greatly have loved to cover the entire Amiga range, and there are now ten Amigas if you include the A500-based CDTV, we felt that we had to restrict *The Complete Beginner's Guide* to the A500Plus, A600 and the all-new, rather fabulous A1200.

But fear not, if you have an A500, or even an A3000/4000, you will still find elements of this Special that will open your eyes to new areas for with which to test the capabilities of your powerful Amigas with.

The Complete Beginner's Guide is designed and written to be easily accessible. If you turn to page 151 you

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#### Contents

will see that we have included a comprehensive glossary to many of the general computing and Amiga-related terms that you will come across while reading this and other magazines. So, if you find yourself stumped to understand a word or phrase, simply flip-up to these pages for the explanation.

In the unlikely event that you don't find an explanation, then please write and tell me – we will try to include your entry in the next **Amiga Format** Special: The Illustrated Encyclopaedia

of the Amiga.

Back to the present though... this Special contains introductions to many, many areas of Amiga-computing that you might not have experienced yet. We have covered subjects as diverse as games and the Amiga's history, programming and comms, hard disks and getting started with the A1200 and A600.

As for the subjects you have told us are the most popular, such as graphics and music, we have commissioned experts to write walk-thru' tutorials to

give you a head-start.

Although you will find many product recommendations, you should not approach this Special as a buyer's guide – the first **Amiga Format** Special (The Complete Software Guide) covers that.

Rather, it is a broad overview of the massive territory that you can cover with the help of your Amiga.

I have drawn on the resources of our colleagues on *Amiga Format* (the World's best-selling Amiga magazine and the UK's best-selling computer magazine) and this means that you can be guaranteed of the same high quality editorial, easy-to-read design, and the same all-round attention to Amiga-detail that means that *Amiga Format* is bought and read 1,935,072 times a year.

Having already made the wise decision to buy an Amiga, you now have a vast world opening up in front of you. I sincerely hope that this Special helps you to explore the many options and areas of interest that your Amiga gives you. Read, and enjoy...

#### 1 WPs

Some of the most useful Amiga software ever is just about producing words. Read our guide to word processing... Page 91

#### PD&COMMs

Free software? Yes we're not joking, that's PD. If you want to access this, and a much wider world, skip to Page 99

#### DPAINT

If you bought your Amiga in one of the special bundles, then you've got Deluxe Paint – find out how to use it here Page 62

#### 4 MUSIC

Gone are the days of paying £1,000s for a recording studio, you can use your Amiga and the right set-up instead Page 79

#### 5 DTP

Publish now! Your Amiga, the correct software, and a quick glance at our elegant guide will get you started Page 68

#### <sup>6</sup> GAMES

Relax, have some fun, enjoy yourself with our tour through the various kinds of games you can play on your Amiga Page 42

#### VIDEO

Create your own motion-picture masterpieces with an Amiga and a little bit of good advice on the software to choose Page 74



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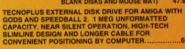


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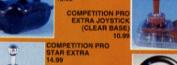


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Right, you've bought your Amiga, or if you were well-behaved all year you got it for Christmas, and you're about to open the box. Andy Hutchinson explains what to do next...

## IN THE BEGINNING

ell done, you've successfully manoeuvred yourself around the first potential pitfall of computer ownership, you've bought an Amiga and not something less, well, less impressive. You see, that Amiga nestling proudly on its desk or portion of carpet or kitchen table is part of the most popular range of home computers in this country. So while other people were silly enough to part with obscene amounts of cash for puffed up calculators, you've had the common sense to get a

Commodore. You've made a good choice because the Amiga range has a huge software base (that's the stuff you get on disks such as games or serious programs) and an awesome array of hardware addons (printers, scanners and the suchlike).

#### The A600s

What's more, all of the major software companies are committed to support the Amigas and that's more than you can say for other formats. If you've bought the A600 then the odds are that you're a

games fan. You're not going to be disappointed, the A600 is a brilliant compact games machine. But to call it just that would be to underrate its massive capabilities tremendously. Unlike other computers in its price-range, the Amiga was built with the wider world of computing very much in mind (see our piece on the history of the Amiga on page 38).

The Amiga has some incredible hardware nestling on its main circuit board. It has the kind of custom computer chips that give it the computing power make games look and sound fantastic. It also

## "The new A600 is a totally brilliant, games machine that you can also use for graphics, making music and much more"

makes carrying out the more intensive computing tasks such as programming, spreadsheeting, and word processing much quicker (don't worry, we'll be looking at all these areas later in this magazine).

The A600 is an extremely easy computer for programmers to create slick, good-looking games on. Its custom chips make the programmers lives easier, and games faster, and more impressive in sound and graphics.

With titles such as Zool, Putty, Lemmings 2, and Pinball Fantasies recently appearing on the Amiga, and with older titles including the incredible Rainbow Islands or F-19 Stealth Fighter you certainly are not going to be stuck for choice when it comes to spending your leisure hours.

#### 'Serious' business

But all play and no work makes Jack and Jaquie two seriously inane people. This is where the Amiga beats the games-only consoles hands, feet, ears and nose-down.

With some superb 'serious' software available too, you'll be able to create incredible pictures and great music or, if you should so desire, knock up leaflets with your own Amiga graphics. The Amiga is a whizz at desktop publishing, graphics, sound, maths; you name it, and there's probably an Amiga program that will do it for you.

The A600 has a slightly bigger brother in the form of the A600HD. This is exactly the same as the A600 except that Commodore has squeezed a hard drive into that rather fetching case.

This means that you can store most forms of data instantly (letters, songs or pictures for instance) without mucking around with floppy disks. In some cases you'll also be able to store games on your hard drive too. All of which means that you can enjoy blisteringly quick data access times and save yourself a fortune on those naff plastic disk boxes that cost about 20 quid and last about a fortnight.

## cost about 20 quid and last about a fortnight. Comparers in the World (near), world and no two ways about a fortnight.

The A1200 is a true 32-bit machine – and at under £500 it is probably the most powerful machine in its price range. So make your friends green with envy...

#### Got An A600HD? Then Read This...

If you've bought the *Epic* Amiga bundle (which includes the Language Lab) then you've got a slightly different kind of A600 to the standard.

Not only do you have different software to the The Wild, The Weird And The Wicked bundle, you've got a hard drive inside your computer and a price tag with more numbers on it. With a hard drive inside your A600 you won't need to insert the Workbench disk in order to perform computery house-keeping tasks. This is because Workbench has been installed on the drive and all you need to do is switch on your Amiga. Should you wish to play a game then simply insert the disk before switching on.



Epic gives its name to the A600 Epic bundle, but the additional £50 over the Wild, Weird and Wicked bundle comes from the inclusion of a hard disk, not Ocean's space game.



The A600 was launched earlier this year as an upgrade for the A500 Plus. It comes in two forms – with or without a hard drive. It's an extremely quick computer and games look and sound excellent on it. But the A600 is much more than just a games machine – it's one of the best home computers available. With the right software you can use it as a word processor, a desktop publisher, a sound sampler, a video titler and much more.

But the chances are that you'll start using your A600 for games. You won't be disappointed, the selection of games available for the Amiga is vast and many of them are excellent. See the games section on page 42 for a complete rundown on the sort of games available for your Amiga.

#### The A1200

As you would expect from one of the best home computers in the world (hell, it is the best in the world and no two ways about it), the Amiga family

is constantly expanding and being improved on.

' The latest in the range is the A1200. This represents a change of direction for Commodore because the A1200 is a 32-bit computer whereas the A500 and A600s are both 16-bit machines. What this means is that the A1200 is a far quicker, far more powerful computer than its predecessors (and than any other machine available at its price).

It has an incredible 16.7 million-colour palette (this means that you can have a game running on-screen with an incredible 256 colours in action at once), a vastly improved operating system which will make your life so much easier, and 2Mb (megabytes) of RAM (Random Access Memory) as standard – this is a meg' more than is available on previous Amigas. With games already being developed for it, the A1200 is assured of a great future. You can look forward to the very best video and graphic applications making use of the Amiga's proven sound chips and some funky graphic programs. To own an A1200 is to own just about the most advanced home computer on the market.

Put it this way, the day the A1200 came out, two members of the **Amiga Format** staff bought one each, with their own money! That's how impressed we were by the power of Commodore's latest addition to world computing.

Over the course of the next four pages you'll find a more in-depth analysis of the A600 and the A1200. We explain about the nuts and bolts of your new Amiga, how to get started and what to do if things should start going wrong.

#### Trouble-Shooting Your Amiga: A Guide

Right, so it's not all going too well, have a look at this table and see if your problem is included, if it isn't then check the setting up procedure again.

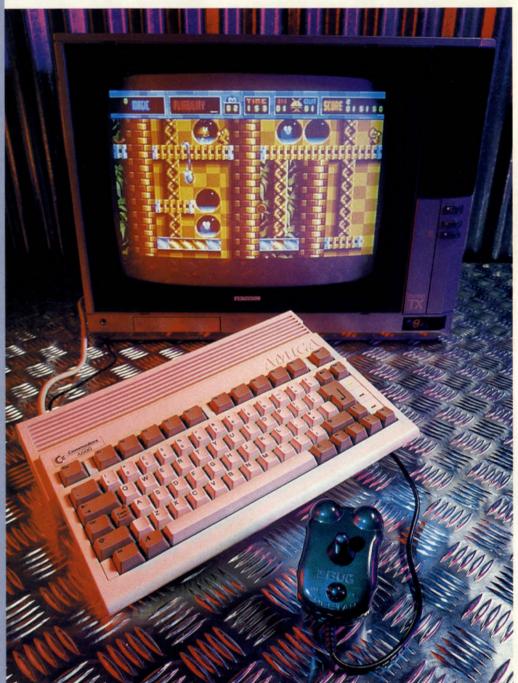
- There's no picture on the television.
  Have you switched on both the Amiga (the switch is on the power supply) and the television? Are you sure that the black RF lead is plugged into both the television (aerial socket) and the A600 (RF Modulator socket)? And have you tuned in the television channel properly and then selected that channel?
- There's no sound coming from the TV
  Make sure that the volume is turned up. If
  the volume is fine then check that the
  channel is tuned in properly. Sometimes
  the sound is lost when the television is not
  tuned in properly.



This is the inside of an Amiga. We're showing you what it looks like so you won't be tempted to prise yours open with a Swiss Army knife. If you do you'll probably regret it.

- No sound coming from the monitor. Is your monitor capable of playing sound? To check this, see if there are two sockets on the back of the monitor, one red and one white. If these sockets aren't present then you'll need to plug your Amiga into a hi-fi to hear anything.
- The mouse pointer won't move.

  Make sure that you've removed the strip of spongy film from inside the mouse. To do this, just turn the mouse over and click the middle panel down with your thumbs, then pull the sponge out and replace the panel. If it still doesn't work make sure that you've plugged the trailing end into the socket on the right hand side of the Amiga labelled 1 Mouse.
- There's no drive light.
  Are you sure that you've put a games disk or the Workbench disk into the disk drive?
- The game won't load
  Is the disk pushed properly into the drive?
  Make sure you've inserted it label side up.
  If it still won't load you've got a duff disk.
  Take it back to the shop that you bought your computer from.



You can use your television set as a screen, but if that leads to arguments about whether it's going to be Lemmings or Coronation Street, you may want to invest in a monitor (See page 136).

#### Getting started with your A600

Okay, the time has come to get your Amiga up and running. It's not a difficult job, you just need to take your time and make sure you read the the instructions carefully Now, at times like these it's probably advisable to get some peace and quiet. Setting up your Amiga is an easy job, but if you've got distractions you're likely to miss something and end up staring blankly at the TV screen waiting for something miraculously to happen.

No, you should treat setting up your Amiga just like putting together those self-assembly hi-fi units. Follow these instructions carefully and we'll soon have your Amiga up and running with most of your hair still intact, though we can't guarantee that we'll get your hi-fi unit assembled as well, you should have bought a decent one.

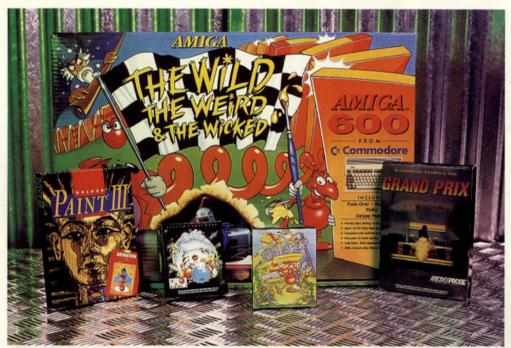
#### **Check your bits**

Open up the box containing your Amiga. If everything's there you should have the following items:

- One Amiga. Within that lovingly crafted polystyrene, underneath the bit of cardboard at the bottom right of the box is the bit of the bundle which costs all the money. Go,on, have a peek now. Good isn't it.
- One celophaned pack of software. Obviously this depends on which pack you've bought. If you've got The Wild, The Weird, and The Wicked pack then that software will be Push-Over, Microprose Grand Prix, Putty and Deluxe Paint III.

If you've got the *Epic* pack then the software will be *Epic*, *Rome*, *Myth*, and *DPaint III*. If you've got the Language Lab pack then you should have *Trivial Pursuit* and *AmigaText*.

• One power supply. This is the large and heavy



The Wild The Weird and The Wicked bundle that you may have got packaged with your Amiga. It includes Push-Over, Microprose Grand Prix, Putty, and Deluxe Paint III.

oblong object in the cardboard box at the top right of the box. It should have a 3 pin electric plug on the

- One mouse. This is in the same box as the power supply - it's also essential.
- One black TV lead. More popularly known as the RF (Radio Frequency) lead.
- Lots and lots and lots of decidedly ecologically unsound packaging.

Now if there's anything in our list which is missing, then you've been done. What you should do now is retrieve your receipt, get down to the shop where you bought your Amiga and demand the missing bits. Unless of course it's Sunday in which case you'll have to wait until tomorrow.

#### **Get connected**

Right, if all your bits are present and correct we can get started on connecting everything up. Pick up your Amiga and have a look along the back of it. All those lovely sockets enable it to talk to monitors, printers, hard drives and all manner of exotic addon boxes. Right now though, we're only interested in the two on the far right hand side, labelled RF Modulator and Power.

Take out the power-supply unit and plug the socket into the mains. Have a look on the main unit and make sure that the black power switch is off. Now connect the trailing end of that unit (it has five prongs on it) to the power socket (on the far right) on the A600. So far so good. We now have power to the Amiga. The next step is to get some kind of picture on the television. Get the black lead and plug the end with the longer prong into the socket labelled RF Modulator, it's the second on the right. Now take the other end and plug it into the aerial socket on your television. The next bit gets slightly technical I'm afraid, because you've got to tune in your television set.

You may have one of those ancient steam-powered televisions with real knobs and a dusty emblem like Marconi or Roberts or something. The good news is that these TVs are a damned sight easier to tune in than newer electronic ones with remote controls and fetching black cases. So, if you do have an elderly television, flick the switch on the power supply unit to the On position, pick a spare channel on the television and simply twist the knob or swivel the tuner until a picture appears. If all's well then you should have a picture of a disk sliding happily into a disk drive on your TV.

For you lot with flashy newer televisions, I'm going to have to refer you to your TV manual. You'll have to pick a free channel and follow the instructions for getting a signal. One thing to remember on newer TVs is that once you do get a picture, lock it into memory or you'll have to go through the same procedure every time you fancy a play on your A600.

#### "The original Amigas were famed for their graphics, so anything that improves on that must be special"

If you're really flash, then you'll have a monitor (for an explanation of what these are see page 136). Connecting one of these up is very easy because there's no tuning in involved. You should have a lead to connect the monitor to A600 (if you haven't then get down to the shop and find out why not).

Now, depending on whether or not you've got speakers in your monitor (the popular Philips CM8833 does) you'll have three leads to connect up, two for the sound and one for the video signal. Plug the yellow lead into the socket labelled Comp on the back of the A600 (it's the third one on the right) and take this to the same socket on the back of your monitor. If you have sound on your monitor simply connect the red and white sockets on the back of the A600 (labelled L Audio and R Audio) to the same

#### "You should put disks into your Amiga with the metal bit first and the disk label facing upwards"

sockets on the back of the monitor. Right, that's the image sorted. Now, if you fancy listening in beefed up stereo then you can connect your Amiga to your hi-fi. You can do this quite simply by getting a standard stereo phono lead. Plug one end of this into the left and right sockets on the back of the A600 (the red and white ones) and take these to a spare connector on the hi-fi, such as Auxiliary or Tape 2. Now you can turn the hi-fi on and listen to your games in ear-impressing stereo.

One of the easiest tasks for you to do is connecting up the mouse and joystick. The mouse lead simply plugs into the socket on the righthand side of the machine in front of the disk drive. It's clearly labelled, so simply push the trailing end of the lead firmly home.

Do the same with your joystick. At some point you're going to encounter games where you need two joysticks, if you do simply remove the mouse lead and plug the second joystick into its place.

Using the Amiga
Right, that's all the tedious connecting business out of the way. You can now actually see what you spent all that money for. As good a place as anywhere to start is with a game. Take one of the games from the box and put Disk A into the disk drive on the right hand side of the machine. It should go in with the metal bit first and with the disk label face up. Slide the disk slowly home until the little button clicks. Your game should now start to load. All you have to do is follow the on-screen prompts. When the game asks for another disk simply press the button on the right hand side of the Amiga, remove the disk and insert the next one.

#### Using Workbench

You can't have failed to notice that there are three other disks in your box which come in their own delightful plastic sachet. These are your Workbench disks, and by using these you can get up to all sorts of jiggery-pokery, this is gone into in greater depth on page 19.

#### Maintenance

- Don't leave your Amiga switched on all the time.
- Do use a mouse mat. You'll find that endless amounts of fluff and gunk will foul up its mechanism unless you use a decent surface.
- Don't leave disks on the television, the magnetism can harm them.
- Keep liquids well away from the Amiga, a cup of tea may well be refreshing to you, but your Amiga is unlikely to thank you.
- Don't wipe the Amiga with a wet cloth. If it gets dusty just use a duster, don't spray Mister Sheen into the grills. This is very bad.
- Don't bash the keyboard. All right so games can get a bit frustrating, but the A600's keyboard wasn't designed to be beaten up.
- Try to avoid repeated unplugging and plugging of your Amiga, and of the mouse.

## "Keep liquids away from the Amiga, you may find a cup of tea refreshing, but your Amiga won't"

#### The A1200

Welcome to the world of 32-bit computing. You've obviously got great sense because you've bought one of the most advanced home computers on the market. The A1200 is part of a new generation of machines that take advantage of developments in computer chips that offer more power and greater speed.

At the heart of your Amiga is a 68020 central processing unit (CPU). This rather excellent chip is one of the quickest around which means that you can look forward to some incredible software packages. You see, the quicker the chip can process then the more data it can handle, the more data the better the software.

Basically, the machine which you've got is twice as powerful as an A500. The older Amigas use a 68000 chip that was a 16-bit unit making it capable of moving 16 bits of data around inside the computer for every instruction cycle. The 32-bit chips can move 32 bits of data around every instruction cycle. Hence it's a lot, lot quicker.

However, the A1200 also has much, much better graphics. The original Amigas were famed for their graphics and so any machine that manages to improve on that legacy has got to be something special. The A1200 does this by boosting the colour palette from 4096 different colours to 16.7 million. Phew, eh? What's more, those lovely chaps in clean white lab coats down at Commodore had the foresight to include the option for displaying 256 colour VGA (Video Graphics Array) style screens, which means, dear reader, that you'll get to see some radical PC style games.

The A1200 comes with 2Mb (megabytes) of RAM (Random Access Memory) as standard which means that software houses can create bigger, better programs. Games can be twice as large and productivity packages can be twice as good. The chip set inside the machine has been redesigned to reflect all these external and internal changes and it means that it can now display and move around graphic and sound data much quicker than before.

Software houses are notoriously slow in coming up with original software on new computer formats. They don't enjoy taking risks on new computers because they might be stuck with 50,000 games they can't shift. The situation is exacerbated by the fact that there are very few small software houses in existence these days, the software industry is big business ruled by about ten large companies and if these chaps decide that a computer platform looks a bit dodgy then you could end up with a four hundred quid door stop. All of which is bad news for people who've bought other machines but if you've got an A1200 you needn't worry because the industry has already come out in support of the new Amiga

Right now software houses are making sure that the new titles they release for the Amiga are fully compatible with the A1200 and there are also games being produced specifically for it. Within the



This tasteful packaging contains an A1200 – one of the most advanced home computers on the market. It boasts amazing graphics capabilities and is twice as fast as the previous Amigas.

next few months you can look forward to games such as Zool, Putty, Wing Commander 2, WWF2, Civilisation, Lethal Weapon and Cool World. All of these games will make use of the extended colour palette and improved chip set. One of the most exciting packages which will be appearing is Dpaint IV this will enable everyone to get at those wild screen modes.

#### Getting started with your A1200

We have made sure to tell you that the A1200 is the world's finest home computer, that it's got 32-bit processing, that it can show millions of colours on screen, that it's incredibly fast and so on. What we haven't told you is that the A1200 is also dead easy to get up and running. Despite all the hi-tech goings on, Commodore has made sure that you don't have to go through a nightmarishly complex process in order to begin your Amiga'ing.

Even though we know that you will be more than eager to rip open the red, white and blue box containing your A1200, now is the time to be calm and collected (the fun comes later).

As with the A600, the first thing you should do is to open up the box and carry out an inventory of its precious contents.

The majority of the box contents are exactly the same as those you will find in the A600 (turn to page 12 for details) with one major difference. Instead of getting a bunch of games with the A1200, you get five disks. These are your operating system and are essential to your future Amiga use.

With this in mind, the first task you should carry out with your Amiga is not to sit down for a good long session of 32-bit Zool, no you should make back-up copies of all of these disks and then use the back-ups not the originals (turn to the

Workbench guide that begins on page 19 for guidelines to carrying out this procedure).

If everything is not present and correct, you should re-box everything and return it to the shop from whence it came. In fact the best thing to do is to check the contents of the box while you are still in the shop. Once you're happy that everything is as it should be, you are ready to go. Basically all you need to do is find a dry, flat area, which will not be in direct sunlight for great periods, and set up your A1200. The power-supply box (or Power-brick as it is known) should go under the desk, but away from your feet. Fortunately, Commodore has seen fit to mark all the ports clearly with the A1200, so all you need do is plug in and go. Remember to only use the back-up copies of your disks too!

#### **Your Warranty:**

Within the snug confines of the case for either your Amiga 1200 or your Amiga 600 you'll find a blue and white envelope with the word 'Important' on it. Commodore wasn't mucking around when it chose that particular word, it's important that you take a few minutes to fill in all the details within that envelope.

You see, while a lot of time is spent making sure that computers run correctly, they can still go wrong. It's one of those things, Rolls Royce cars break down, Marks and Spencer's underwear occasionally rips in an embarrassing place, and computers occasionally decide that life's not worth living and pop their silicon clogs.

At moments like these you should shrug your shoulders and pat yourself on the back for having the foresight to send

The Amiga 1200 is one of the most advanced home computers available to anyone in the world at the moment. It uses a 32-bit processor which makes it twice as fast as the 16-bit A500 and A600.

# Or What To Do If it All Goes Wrong...

off your warranty card. You did send off your card to Wang (Commodore's appointed Amiga mechanics) didn't you?

Well make sure you do. All you have to do is send Wang the warranty card and you'll be able to receive a spot of in-home help from a very, very nice man (or woman). If you've mislaid the card then write to Commodore Customer Care, Wang (UK) Ltd, 1000 Great West Road, Brentford, Middlesex, TW8 9HL and they'll help you cut

help you out.

Of course you can save yourself all that considerable grief by sending the card off as soon as



Don't get in a tizzy if something goes wrong with your Amiga. Check the warranty before getting scared.



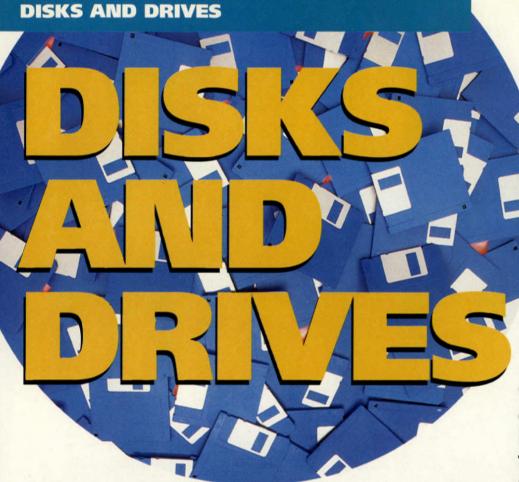
Commodore has realised that many people do need to use standard TVs as monitors for their Amiga, so the company has built in a TV modulator in the back of the Amiga.

1 5



All you need to do is to take the RF le will look very much like a television a in fact it does look like one!), find the on the back of your Amiga and plug it





You probably already know that all the data that makes your Amiga programs work is stored on disk. But what is a floppy disk, and what is a hard disk? Andy Hutchinson reveals all....

computer is largely useless unless you can get data on and off it easily. In the sad old days this process was performed by using tapes, a process that meant you'd sit for hours waiting for a game to load into the computer's memory. In fact, it is widely believed that it was during these idle hours that

people started writing mindless rambling tomes and cack stories about long lost star systems. So the next time you're reading one of those insipid stories about Trantorooblie and his dying galaxy, just thank the inventor of tape units.

Things starting changing with the advent of computers such as the Amiga. Thanks to the ever-

so-wonderful development of the floppy disk drive, fortnight-long accessing times became a thing of the 80s and we only had to put up with a couple of minutes of warbly music written by some tone deaf 'computer musician' before we could actually play the game. All of which is quite ironic when you consider that the technology inside a floppy drive isn't that different to a tape.

#### **Drive to distraction**

Floppy drives were invented in order to cope with larger amounts of data. They work in a manner similar to those grabbing machines you see at the seaside (you know, the ones that have watches wrapped around fag packets) in that they enable you to go straight to a bit of data (or packet of Marlboro); the problem with tape was always finding the correct bit of data.

The best way to imagine a floppy disk is as a pie with a series of about 85 concentric circles from the outer edge to the middle and with about ten slices cutting across those rings. Each of the blocks those intersections make is called a sector and 1024 single

## "Using a floppy disk is easy. You just insert it label side up, metal bit first into the righthand slot on your Amiga"

pieces of information (a number or a letter) can be stored in each sector, thus on each disk you get about 880,000 bytes of usable space.

All the data is written to the disk by a moveable magnetic head. This operates in much the same way as a tape in that it affects a magnetic strip by charging bits of it with electricity. The head itself can only move left or right over the disk and thus the disk spins in order to let the head get to the right bit of information at the right moment. When you insert a disk, a couple of little spindles flip up into the holes in that metal disk on its underside, a little lever flips

#### The Nature Of A Floppy Disk

Although Amiga Format is worldrenowned for giving away packed Coverdisks with every issue, don't be fooled into thinking that the slices of blue plastic on the cover are simple throw-away articles. Floppy disks are so-called because the actual data-storing media is as foldable as a piece of paper. The stiff plastic casing that surrounds the disk itself is really only its armour plating and is there to protect it from the day-to-day battering it will take at the hands of your Amiga's disk drive.

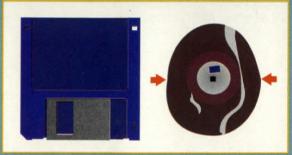
You can see from the picture on the bottom right, the magnetic media which holds the data is indeed floppy. Once the casing is removed (see the illustration on the left) you can see the protection sheet of gauze that protects the media from the outside world. You will also be able to see the Read/Write hole on the top right. If you

want to be sure of not over-writing any important data, you should pull the tab which normally covers this hole up so that you can see through the disk casing – this enables the Write-Protect mechanism. One final tip: if you ever tip coffee all over your disk, you can (if you're lucky) open the casing, and wipe the floppy with a moist rag before re-enclosing the floppy media, but only do this in extreme circumstances!





Floppy disks are not the simple lumps of plastic that they might at first appear. In fact they are fairly complex pieces of machinery. As such they are liable to go wrong at the critical moment, so it is a good idea to keep back-ups of all your really important data on floppies that you store away from your Amiga.





External disk drives: can be useful if you're starting to get fed up with swapping disks when you are loading multi-disk games or saving data.

back the metal flap at the top and the read/write head descends on to the disk's surface.

Using a floppy disk is extremely simple. You insert it label side up and metal bit first into the right hand slot on your Amiga. If a game is on that disk then the computer will proceed to load the program. You can tell it's loading by the fact that the drive light is on and the disk drive is making an odd clunky sound. In fact disk drives make some supremely weird noises which sound like someone whacking the back of a sofa with a table tennis bat. Most of the noises your disk drive will make are completely normal; you should only start worrying when it learns Handel's Messiah.

You can also purchase external floppy drive units. The usefulness of these devices will only become apparent to you after you've tried copying some files with just the internal drive. What's more, lots of games use external floppy drive units. They are good because they cut down on disk swapping. If you're bored with disk swapping then liberate yourself with either the Cumana external drive or the Roctec 382; both are sturdy units.

## "Don't leave your disks in direct sunlight or near a magnet. Remember there's a magnet in TV sets"

#### Of disks and men

The floppy disk drive on the side of your Amiga is known as a three and a half inch version due to the proportions of the disks it uses. The floppy bit of the title differentiates these small portable disks from the larger stationary hard drive variety. While floppy disks are in their nice case they aren't that flexible, in fact they're not in the least bit floppy. But

## "The usefulness of an external disk drive will become apparent when you get bored with swapping disks"

beneath the hard exterior casing they can flex with the best of them. There are other varieties of floppy disk. The most common after 3.5 inch units is the five inch variety which you don't see very often these days and was primarily used on the older PC compatible machines.

#### **Important data**

One of the latest innovations is the Floptical Drive that combines normal floppy disks with CD-like

technology. Anyway, when you wander into a shop to purchase yourself some floppy disks all you need to say is: "Could I please have a box of three and a half inch disks please Mr/Ms Computer counter operative." They will then attempt to convince you that the most expensive ones they sell are definitely the ones to go for; ignore them, floppy disks are almost entirely manufactured by the same company.

If your data is hugely important then it might be worth getting guaranteed disks, but

#### **Floppy Disk Care**

- Don't spend hours idly flipping the metal cover back and forth as it only has a small spring inside it which can't stand excessive force.
- Don't prod the disk surface with your finger or some other object as this could render the disk absolutely useless.
- Don't leave the disk near any large magnets. You'll find large magnets in television, monitors, and speakers, so it's not advisable to leave disks on top of the TV
- Do use all those disk labels you get in the box or they'll sit in the top drawer of your desk for years, just like all those audio and video tape labels.
- Do write out the label before you stick it on to the disk, not only is it a bloody sight easier, but you'll also avoid corrupting data.
- Don't try to take the disk out of the disk drive while it's accessing, this could damage both disk and disk drive.
- Don't leave disks on window sills in direct sunlight or subject the disk to great amounts of heat, you'll have trouble inserting a spherical disk into the disk drive.
- Don't expect your Amiga to be able to read anything other than Amiga disks and the odd PC disk.

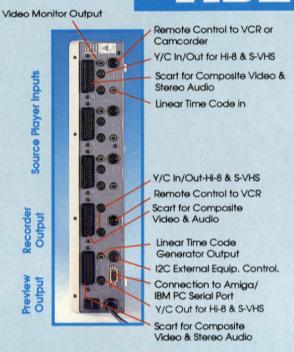
I've been using the crappiest models on the market for about six years now and I've only ever had one disk corrupt on me.

When a disk corrupts (can't read data) there's usually very little you can do. If you're an experienced computer user you may be able to salvage something, but by and large if a disk corrupts (and it doesn't happen that often) the only thing you can do is mutilate the disk with a pair of scissors in order to vent some of your anger. This achieves nothing, but can make you feel better.



When you put your disk into the drive on the righthand side of your Amiga, make sure it goes in metal bit first, label side up.

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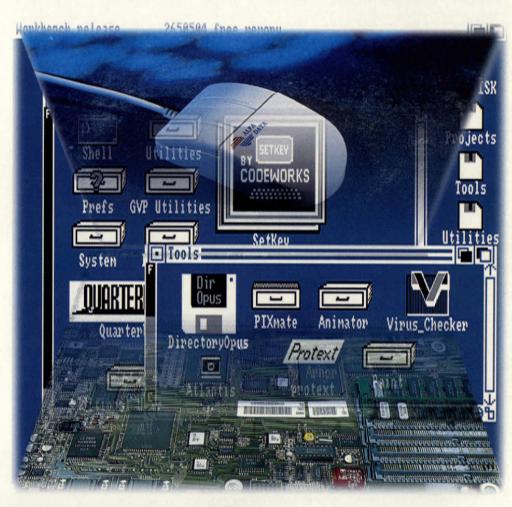
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### WORKBENCH WONDERLA

To use the Amiga's massive processing power you've got to be able to tell it what to do. That's what Workbench is for, so get ready to take control...

he Amiga, like all computers, is actually pretty dumb. Without a human to operate it, it's about as much use as a car with no wheels. In fact any computer is only as good as the person who is using it, and the key to getting the most out of your Amiga is communication. Back in the days when the Amiga was nothing more than a twinkle in its designer's eyes, computers were controlled by entering complex commands via the computer keyboard. To communicate with your computer you had to become fluent in this strange mathematical language. This led to the evolution of a strange sub-culture of seemingly super-intelligent humans who were capable of grasping this technology.

Obviously this sort of elitism couldn't last. After all, computers were designed to benefit everyone, not just spotty bespectacled back-room boys and corporate brain-boxes. Then, one day back in the late Seventies, some bright spark at Xerox's Palo Alto Research Laboratories had the idea of the WIMP (Window Icon Menu Pointer) system, a thennew method of controlling a computer. The idea was that if you didn't understand computer language you could still communicate with the machine by pointing. Obvious really. I mean, if you



#### The Mouse Pointer

The mouse-pointer is an on-screen arrow that follows the movement of your mouse controller around the Amiga's screen. If you move your mouse to the left, the mouse pointer obediently moves to the left and so on.

The mouse-pointer works by interpreting the movement of the mouse controller and acting accordingly - if you move the mouse to the left, the pointer moves to the left, move the mouse to the right and the pointer goes to the right and so on. The mouse pointer is used to select icons and pull down menu items. To select an icon or menu item you point at it with the mouse pointer to 'pick it up'. When the mouse pointer is directly above the object that you wish to select, you just press the left mouse button to click on the object and select it.



A mouse: it's called a mouse because it allegedly looks like a small rodent.

#### "To communicate with a computer you had to be fluent in a weird mathematical language\*

were in a cake shop in Albania but did not know the Albanian for "I would like one of those large cream cakes smothered in cherries.", you could try the following lines of communication: (a) say something that sounded Albanian (b) scream at the shop assistant in English (c) point at the desired cake. I hope that we would all agree that the third option is likely to be the most successful.

So the theory behind the WIMP system is that instead of typing in complex computer language commands, computer users could control their machines by moving an on-screen pointer (using a mouse) so that it pointed at small on-screen pictures

called icons. By clicking the mouse button when the pointer was directly over a particular icon, the computer would perform the operation that was associated with that icon.

The Amiga's Workbench is simply a more advanced incarnation of the WIMP system developed by the software engineers at Xerox, and is known as a GUI (Graphical User Interface) system. The Workbench provides the average computer user with a quick and easy-to-learn method of controlling the Amiga. Simply by learning the principles behind the Workbench, will enable you to perform all sorts of common computer operations such as running a program on a disk and copying files from one disk to another. The Amiga's Workbench isn't built into the machine though. Because the Workbench is effectively a program itself, it's held on the Workbench disk bundled with your Amiga. To load Workbench, all you need to do is to put this disk into the disk drive and then turn on your machine. After a couple of seconds, the Amiga will recognise the disk and then load and run the Workbench program for you. Once the Amiga has finished accessing the disk (the drive light will go out), Workbench will have loaded.

#### **Workbench Pull Down Menus**

About Drop Down

Menus

#### File Management

The Workbench can be used to manage disks and their contents. That means it enables you to organise the contents of the disk by setting it up in a way that you find easy to use, and it also enables you to quickly check the contents of a disk.

You can also use Workbench to copy files from one place to another, delete files you no longer want, give a file a new name and (most useful of all) run programs on your Amiga by using nothing more than the mouse.

As we have already seen, many operations can be carried out by clicking on icons and Gadgets, but this is not the only way to get your Amiga to do things. To stop the Workbench screen from becoming too cluttered, many more common operations can be found in the Workbench pull down menus (menus for short).

Menus are simply lists of commands that drop down from the bar that runs along the top of the screen (this bar is called the Workbench title bar). Each entry within a menu is called a menu Item. The Workbench contains four of these, each of which is grouped under a menu heading. The four Workbench menus are called Workbench, Window, Icons and Tools. Unless you know how to access these menus, they're invisible.

To view them, all you have to do is to press and then hold down the right mouse button. The text within the Workbench title bar will then change and the four menu headings will be displayed. Note that the menus themselves are not displayed at this point.

To get a menu to drop down, simply move the mouse-pointer over the appropriate menu heading. Then move the mouse-pointer down through the list of menu items and each will be highlighted in turn as the mouse-pointer moves over it. To select a particular menu item, simply click the left mouse button and then let go of the right mouse button.

It's not always possible to access all menu items. Some menu items can only be selected once you've done something else first and so the Amiga makes this clear by ghosting that entry. A ghosted entry appears sort of fuzzy. When an entry is ghosted, it cannot be selected.

#### **Icons**

Icons are little images that represent a particular operation in a pictorial form. They are designed in such a way that their appearance gives you an idea of what they do – a paint package will have an icon that looks like something you would quickly associate with painting (an artist's easel, for example). Each and every icon that appears on the Amiga's screen will do something when you click the mousepointer on it - a program icon will load the program it is associated with and a disk icon will display the contents of a disk.

Icons have three states - unselected, highlighted and selected. All icons are uns-elected until you click on them with the mouse-pointer. When you click on them, they become highlighted and the icon image will be reversed (black becomes white). Highlighting an icon won't actually cause anything to happen though - to



An icon is considered selected when it changes shade. On the left is an unselected icon and on the right is the selected model.

make the icon perform the operation that is associated with it, it is necessary to immediately click on it again. This is called double-clicking on an icon.

When you double-click on an icon, the operation that is associated with that icon will be performed. For example, doubleclicking on a program icon will cause that program to be loaded and run. Unless of course the program corrupt, in which case your Amiga will refuse to do anything except flash its drive light.

#### Disk Management

The Workbench provides a quick and easy method of performing common disk operations such as formatting a disk (making it useable for storing data) and copying disks (transferring the entire contents of one disk to another).

Formatting a Disk

Formatting a disk is a process you'll find yourself doing a lot. If you try saving a file on to a brand new disk bought separately from your Amiga, the Amiga will reject it. In order to use a disk it must first be converted into a format that your Amiga can understand. To format a disk, remove your Workbench disk and then insert the blank disk that you wish to format. Then just follow the instructions underneath the pictures to the right.



If the disk hasn't been formatted (if it's brand new or is in another computer type), the Amiga will call it 'DF0:????'. Click once on the disk icon, press the left mouse button and select (click the left mouse button on) the Format Disk option from the Workbench icons pull down menu



Once the 'INSERT DISK TO BE FORMATTED request box appears on the screen, remove the Workbench disk from the disk drive and insert the disk that you wish to format.
Once you've done this, click on the continue

gadget within this requester

#### WORKBENCH 2.0 COPY ABOUT TITLE BAR??

Close – Not surprisingly, the close gadget is used to close the window, effectively removing it from view. Once a window has been closed, it can once be opened again by double-clicking on the disk or drawer icon that you used to open it in the first place.

**Using Windows** 

Windows are another important part of the Workbench. They are basically frames that are used to organise groups of icons contained on a disk. The files contained inside each and every drawer on a disk (a drawer is like a pigeon hole on a disk that is used to split the contents into groups) have their own window that keeps those files separate from files within other drawers and disks.

Windows have their own set of gadgets that perform certain operations on the window that they are attached to when you click on them. Gadgets are simply another form of icon. The only difference between an icon and a gadget is that gadgets only have two states - unselected and selected. Programs have gadgets too - the DPaint tools strip, for example, contains lots of tiny gadgets, each of which is tied to a particular drawing operation (one for freehand drawing, another for circles, for example). Here's a quick rundown of what each funky Window gadget does.

Title - The Title Bar (also known as the Drag Bar) is used to move the window around the Workbench screen. All you do is move the mouse-pointer over the title bar, click and then hold the left mouse button down and then move the mouse-pointer where you want the window to be positioned. Note that when you move a window, the Amiga draws an outline of the window that follows the mouse-pointer around the screen until you let go of the left mouse button. When this happens, the window is redrawn at that position.

The Title Bar also contains useful information about the contents of the drawer or disk that the window is displaying. If the window is showing the contents of a drawer, then only the name of the drawer is shown. If the window is displaying the contents of a disk though, the title bar also displays the amount of disk space that is used (as both a percentage and kilobytes) and the amount of free space left on the disk (in kilobytes).

Size – If the window is too big or too small, then you can resize it using the Size gadget. Sizing a window is simple. All you do is click and then hold down the left mouse button while the mouse-pointer is over the size gadget and then move the mouse point to the position where the bottom right hand corner of the window is to be appear. Because a Workbench window is a perfect rectangle, the position of both the top right and bottom left hand corners will be adjusted too, therefore effectively resizing the window.

Shrink – The Shrink gadget reduces the size of the window to a minimum size, allowing quick and easy arrangement of windows. To restore the window to its original size, simply click on the shrink gadget again.

Depth – When more than one window is displayed on the Workbench, chances are that they will overlap – that is, one window is displayed in front of the other (either partially or in full). If the front window obscures another window, the Depth Arrangement gadget can be used to send the front window behind the window that it is hiding. If you click on the Depth gadget of a window that is being partially obscured by another window, the window will be brought to the front.

Vertical/Horizontal Sliders – If a particular disk or drawer contains a large number of files, it may not be possible for the entire contents to be displayed within the window all at once. You can therefore display those hidden files simply by using these two Slider gadgets to display any icons that are hidden from view. When there are files hidden from view, the slider-bar (the white bit that you actually drag with the mouse-pointer) will shrink and reposition itself to give an indication of where the hidden icons can be found. If the bar shrinks and moves to the left hand side of the slider, then there are files hidden away to the right. To view these files, you would therefore drag the bar across to the right.

Vertical/Horizontal Scroll – The Vertical and Horizontal Scroll gadgets do pretty much the same job as the Slider gadgets covered above. Instead of moving a slider-bar though, you click one of four Arrow gadgets (and there's one for each direction).

Please insert disk to be formatted in drive DF0:

Continue

System Request

Cancel

The Amiga will then check to make sure that you're absolutely sure about formatting this disk by displaying the requester again. At this point, check to make sure that you've inserted the correct disk. If you're absolutely sure that you want to format the disk, click on the Continue Gadget.

Format Disk

Formatting cyl 10, 69 to go

After the display has counted down from 80 (this is the number of tracks on the disk), your blank disk has been formatted and can now be used to store information. If you now double-click on the disk's icon, a window will be displayed containing a Trashcan icon.



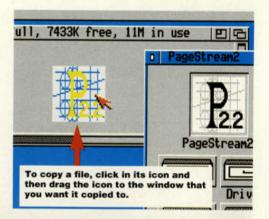
Don't worry about the Trashcan – it's simply a drawer that the Amiga automatically creates for storing files that you no longer want. The Trashcan is a bit of a waste of time on the Amiga, simply because placing files into the trashcan doesn't actually remove them from the disk.

#### **Copying Files**

A file can be copied on to another disk very quickly. If you're copying a file between two disks, start by inserting the disk that contains the file that you wish to copy. Double click on the disk's icon and then enter the drawer that holds the file (if the file isn't already visible). Once the icon is visible, remove the 'Source' disk, and insert the disk on to which you wish the copy of the file to be placed. Double-click on the disk's icon and then enter the drawer where the file is to be copied. Then move the mousepointer over the icon for the file that you want to copy. Click and then hold down the left mouse button on this icon and move the mouse-pointer to the destination window. Note that a reversed image of

the icon follows your mouse-pointer. Once it's in place, let go of the mouse button and the copying process will take place. If you're using a single drive Amiga, you will have to swap disks - just follow the on-screen requesters and you won't go far wrong.

It's worth pointing out that you can't copy most game disks in this manner. These disks are formatted in a special way which is designed to stop people pirating games by copying them. The game programmers spend many happy hours coming up with inventive disk formats to thwart the pirates. These include missing sectors, information written backwards and deliberate file errors. However, there isn't a format that the pirates haven't beaten within a week or two. Dammit!



#### **Icon Types**

To get the most from Workbench, it's important to understand what each icon enables you to do. An icon is a pictorial screen representation of a particular Workbench function

#### Disk

Disk icons are perhaps the most basic form of icon available. These icons are automatically displayed when a disk is inserted into a disk-drive. If the disk doesn't have its own disk icon (the disk icon image is held on the disk in a file called disk.info), the Amiga Workbench will use a default icon image (a picture of a disk). Double-clicking on a disk icon tells Workbench that you'd like to view the contents of the disk that

the icon is attached to. When you double-click on a disk icon, Workbench will then open the relevant window, read the contents of the disk and then display any drawers, programs or data file icons contained on that disk.



Disk icon: double-click on it to reveal the contents of the disk

#### Drawer

A Drawer icon is used to enable you to move into sub directories (drawers) on a disk. Unlike disk icons, drawer icons are not automatically attached to drawers unless you use the Workbench New Drawer option in the window pull down menu (read the section on pull down menus to find out how to access this option). If the drawer is created using the Shell, an icon will not be attached. Drawers are used to enable you

to organise the contents of a disk into 'pigeon holes' Unless you doubleclick on a drawer icon, the files that are contained within that drawer will not be displayed. When you want to display those files doubleclicking on the drawer icon tells



click will display the contents of the drawer.

Workbench that you want to display the contents of that drawer. Workbench will then open a window and display whatever is in the drawer inside that window.

#### Tool

Tool icons are the ones that look like hammers and they represent programs that don't have their own icons.

Effectively all programs, such as word processors and paint packages, are tools. When you double-click on a Tool icon, the program that is attached to it will be loaded and run.

#### Project

A Project icon is an icon that is attached to a data file, and a data file is a file that has been created by a program (such as a text file from a word processor). Double clicking on a data file can cause the program that created that data file to be loaded and the data file to be loaded in. as well.

But it's worth pointing out that this is not always the case. That's because Project icons have a parameter attached to them called default tool that tells the Workbench which program created them and where it can be found. That's fine, but unfortunately not all programs make use of this so don't be put off if double-clicking on a data file has absolutely no effect at all.

#### **Copying Disks**

The Amiga's floppy disks provide a pretty reliable method of storing all your programs and data, but it's always worth having a back up of a disk that contains important files just in case something goes wrong. If this happens, you'll lose all the data on that disk unless you've backed up the disk beforehand (it's a curious fact of computer life that the one disk that you don't back up is the one that develops a fault ) Backing up (copying) a disk is simply a process whereby you transfer the entire contents of one disk (the source disk) to another disk (the destination disk).

The first thing to do is to remove your Workbench disk and then insert the disk you wish to copy. Once the disk's icon appears, click on it once and then select copy from the Workbench icons pull down menu. Read the captions to the right for a step by step guide to copying a disk.



After you've inserted the disk you want to copy, your Amiga may ask you to re-insert your Workbench disk. Just follow the on-screen requesters until a requester similar to the one shown in the picture above appears. This requester asks you to insert the source disk (the disk that you wish to copy.) Do as the requester asks and click on the Continue Gadget.



Wait for a couple of seconds until the Amiga starts reading the contents of the disk that you want to copy into its memory. The disk will be copied on a fast track-by-track basis.

When your Amiga has finished reading all the tracks to memory, a requester will then appear asking you to insert the destination disk (the one to which you want to copy the data.

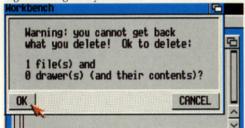
#### **Deleting Files**

Once a disk starts to get full, you may want to free up some disk space by deleting files you no longer want. To delete a file, click once on its icon and then select delete from the Workbench icons menu.



If disk space is a little tight, then use the delete option to remove files you no longer want.

Unless you're deleting a file from the Workbench, the Amiga will prompt you to re-insert your Workbench disk. After a few seconds, you'll be prompted to re-insert the disk containing the file that you wish to delete and a requester will appear similar to the one shown in the illustration. This requester checks to make sure that you're not deleting the wrong file by accident.



Wise words indeed. Think once, think twice and then, ermm, commit yourself.

At this point, make sure that you've selected the right file - if you haven't, click on Cancel. If you have, click on Continue. The Amiga will then delete the file and the file's icon will disappear. Note that once a file has been deleted, it is gone forever.

#### Renaming Files

When you start using your Amiga for things other than games such as word processing and programming, you may want to change the name of a file at

#### **Multiple Selection**

If you want to carry out an operation (file deletion, for example) on several files, Workbench provides a very handy facility that enables you to select more than one file at a time. This is called multiple icon selection. There are several ways of using multiple icon selection, the easiest of which is to use Workbench's rubber banding selection method. Rubber banding enables you to select several files by drawing a rectangle around the files you want to select.

To do this, move the mouse-pointer to the top lefthand corner of the rectangle (making sure that there are no icons under the mouse-pointer), click and hold the mouse button and then move the mouse-pointer to the bottom righthand corner. As you move the mouse-pointer, you'll notice that Workbench draws a dotted rectangle starting from the point at which you first clicked the mouse button and ending at the position of the mouse-pointer. Once all the file icons that you wish to select are surrounded, let go of the mouse button and they will be selected. You can now select the file operation that you want from the pull down menus. Say you wanted to copy all these files, all you would do is press and



More than one icon can be selected at once using the multiple selection technique. hold down the <Shift> key and then click on any one of the selected icons. You can now move the icons around the screen en masse. The <Shift> key can also be used to individually select a group of icons. This can be handy when the icons that you wish to select can't neatly grouped into a rectangular area. Simply hold down the <Shift> key and then click on each icon. Once you've selected all the icons you want, you can let go of the <Shift> key and select the menu option that you want.



Follow these simple steps to learn how to rename

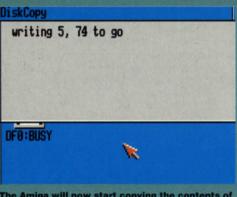
some point. To rename a file all that you have to do is click on the file's icon and then select Rename from the Workbench icons menu. A requester will then pop up containing a string gadget (a gadget in which you can edit text) with the current name of that file. To change the name of the file simply move the mouse-pointer over the string gadget and click anywhere inside it.

A cursor (a rectangular block that marks where text editing will begin) will then appear. Using the keyboard, simply write a new name for your file. When you are happy with the new file name, just click on continue and the file will be renamed.Hurrah!



Remove your source disk and insert the destination disk. Once you've done this, click on the Continue Gadget.

It's worth noting that the destination disk doesn't have to be formatted first, because the Amiga is transferring the source disk in its entirety, the destination disk will automatically be formatted.



The Amiga will now start copying the contents of your source disk to the disk in the internal drive. Once all the tracks have been copied, the Amiga then checks that the data has been copied correctly. This is called verifying. It does this because occasionally disks have faults on them which can corrupt data stored on them, which would leave you without a copy of the disk.



The disk has now been copied. Note how the name of the disk is the same as the source disk apart from the extra 'copy of' bit, which is there just to remind you that it's not the original disk. If you wish to remove the 'copy of' bit you can do so by using the rename option to give the disk a completely new name To do this refer to Renaming Files (above).



If your icons are scattered untidily around the screen, tidy them up with the Clean-Up facility.

#### **Icon operations**

The Amiga's Workbench doesn't just enable you to work on the files that the icons are attached to, you can also work on the icons themselves. You can edit their appearance using the Workbench icon editor (this is in the tools directory on your Workbench disk), permanently rearrange icons and even view hidden files as icons. To find out how to do this, read on:

Clean Up

The Workbench Clean-Up facility can be very useful when you display the contents of a disk or drawer only to find that the window is cluttered with icons spread randomly across the window. When you select Clean-Up, the Workbench attempts to automatically tidy the icons into the best possible order. To use Clean-Up simply click the mouse-pointer inside the window you wish to clean up (making sure not to click on an icon in the process) and then select Clean-Up from the Workbench window pull down menu. Depending upon the shape and size of the window, the icons will then be moved around into a more suitable arrangement.

#### **Show All Files**

Not all files have icons attached to them when you view the contents of a drawer or disk from the Workbench. This is done on purpose to allow you to make certain files invisible, therefore not distracting you from other more important files such as programs. Many programs have extra data files that they need to run, but it's not necessary for you to see them every time you open a drawer or disk. If you want to copy these files to another disk it's handy to attach a temporarily icon to them.

To do this, click the mouse-pointer inside the window that you wish to view and then move the



If icons annoy you, then your Amiga gives you the option of having them displayed by name instead.



Just because a drawer contains no icons, doesn't necessarily mean that its empty...

mouse-pointer to the Show option in the Workbench window menu. When you do this, you'll notice that another menu appears directly to the right of the Show menu option.

This is called a sub menu. Simply move the pointer across so that it is directly within this sub menu and then click the left mouse button on the All Files option. When you do this, the Amiga will start reading from the disk again. Don't worry about this – this is simply your Amiga re-reading the contents of that particular drawer or disk to try and find any files that don't already have icons attached. If a hidden file or drawer is found, an icon is displayed. Note that many of these new icons will look the same – this happens because the file doesn't already have its own icon image, so the Amiga uses a default icon image.

#### View By

Another very handy feature that can help your disks become more readable is the View By option which replaces the icons shown within a particular window with a list of files displayed as text. This option can be quite useful when you want to find out more about a particular file. Once again, all you have to do is to click the mouse inside the window that you wish to view and then select View By from the Workbench window menu.

Like the Show All Files option, a sub menu will appear directly to the right of the view by menu item containing four options – Icon, Name, Date, Size. The Icon option displays the contents of the disk or drawer as icons (the default setting). The Name option displays the window contents as a text-based list sorted on file name. The Date option displays the creation date (the date the file was last updated) and the Size option tells you the size of the document in kilobytes.



If you choose to view files by name, then the information will be presented on screen like this.



The Show All Files operation does just that – it displays file icons that would otherwise be hidden

#### **Snapshot**

No, snapshotting has nothing to do with taking a picture of your Auntie Hilda. Instead, it's a very useful facility that enables you to reposition icons and then permanently fix their new position so that they'll appear in that position every time you use your Amiga.

The first thing to do before snapshotting the icon is to move it to the position on the screen where you want it to appear. Once the icons have been positioned, select the Snapshot menu item from the Workbench icons menu. You'll notice that the Amiga will then start accessing the disk that the files and the icons are attached to. Don't worry – this is simply the Amiga updating the icon files held on the disk so that the icon positions become permanent. Once this is done, try closing the window that contains the icons and then reopening it again.

You'll notice that the icons are redrawn in their new position. You can also snapshot the size and position of the window itself using the Snapshot window option in the Workbench window pull down menu. This does more or less the same job as the Amiga's Snapshot option, but it works on the Window that holds the icons instead of the icons themselves. Good innit?

If you want to reposition more than one icon, don't forget that you can use the multi-selection technique. Note that although Workbench enables you to move icons freely around the Workbench screen, they're permanently tied to the window that contains them, so they'll only be displayed if that window is open. Having said that, Workbench does provide a way of getting around this limitation, but We'll leave that option for you to discover for yourself. Hint – it's got something to do with the Leave Out menu item in the Workbench icons menu.



The Workbench Snapshot facility enables you to permanently fix the position of an icon on screen.



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# THE COMPLETE BEGINNER'S GUIDE

## BE SURE OF S



#### Jason Holborn unravels the deep mysteries of Shell – the key to harnessing the power of the Amiga's disk operating system.

he Amiga's Workbench may provide a quick and easy method of carrying out those general disk maintenance chores such as formatting disks, copying files and so on, but it does have its limitations. As your skills with the Amiga develop, these limita-

tions will start to surface. Although Commodore has done much to rectify this problem in versions 2.04 upwards of Workbench (all A600s and A1200s have this enhanced version of the operating system, but some older A500s may still have an earlier release), it still doesn't provide the sort of raw

power that is on offer when you start using the Shell, the doorway to the Amiga's Disk Operating System (AmigaDOS).

A disk operating system is a complex program built into the Amiga's ROM (Read Only Memory) chips that carefully manages the operations of disk drives and hard drives. It is not, as some will tell you, the Amiga's operating system – this is a far more complex program at the core of the machine that handles very 'low level' operations such as managing the Amiga's powerful multitasking ability (multitasking enables you to run more than one program at a time). AmigaDOS is responsible for handling disk accesses, making sure that programs, or indeed the user, don't do anything that will trash the delicate format of floppy and hard drives.

**Core Blimey!** 

Built on top of AmigaDOS is the Shell, also known as the CLI (Command Line Interface, pronounced 'See Elle Eye'), a program that acts as a sort of mediator between AmigaDOS and the user. The Shell enables you to enter commands via the keyboard that provide direct access to AmigaDOS's many facilities. These commands (which are essentially programs themselves) are not actually built into your Amiga though. Instead they live on your Workbench disk in a drawer called C (C for Commands, geddit?). OK, you can't actually see this drawer from Workbench, but once you enter the Shell, you've got full access to it. The number of commands on offer is vast. Many of them enable you to perform the same functions that you could easily perform from the Workbench (copy a file from one disk to another, for example), but there are many others that provide unequalled access to the core of AmigaDOS.

So why use AmigaDOS? Obviously those extra commands are one good reason, but there's another

#### The Structure Of A Disk

Before you start getting to grips with Shell it's important that you understand how to load and read disks. It's pretty easy from Workbench – all you've got to do is to click on disk and drawer icons – but it's more involved when you're using Shell and AmigaDOS. Before we start getting too technical then, let's take a look at how a typical disk is structured.

All disks can hold basically two elements – files and drawers (or directories, as they are called under AmigaDOS). When you first format a disk it contains no files or drawers whatsoever – with one important exception. Every disk contains at least one drawer – the disk itself. OK, it's rather confusing to call a disk a drawer, but if you think about it, that's exactly what a disk is; it's simply somewhere to

store data. This directory has a special name which you should learn. It's called the root directory. So if someone hands you a disk and tells you that a particular file can be found in the root directory, you now know where to look.

Because there are no icons to click on, you need to specifically tell AmigaDOS where it can find a particular file. The first thing to do is to tell it on which disk the file is stored. This can be done in one of two ways – either by telling it the name of the disk (such as TextFiles) or by telling it into which disk drive the disk has been inserted. Disk drives have names too, although – unlike disks – you can't give them a name yourself. The Amiga's internal disk drive is called DFO: (which stands for Drive Floppy Unit Zero). Note the colon

after the drive name – this is used as a separator between the disk or device name and the filename that follows it. For example, the filename DFO:MyPicture tells AmigaDOS that you want to access a file called MyPicture that is held on the internal drive (DFO:). By telling AmigaDOS both the filename and where it can be found, you've effectively provided AmigaDOS with a path (a route, if you like) that it can follow to find the file. This path information has a special name – the pathname. So, by providing both the pathname and the filename, AmigaDOS knows exactly where to look for your file.

Life gets more complicated when a file that you're trying to access lives in a directory (a drawer). You already know how to access a file held within a disk's

equally important reason why you should consider learning the intricacies of AmigaDOS. As you've possibly already noticed, Workbench can be a slow way of doing things. AmigaDOS provides a much more direct method of carrying out common disk operations such as formatting disks and copying files. Although it can be rather daunting at first – learning AmigaDOS is a little like learning a programming language – once you've mastered it, you'll never look back.

#### Accessing Shell

Both AmigaDOS, the Shell and the commands that it uses are on your Workbench disk. Although you cannot see the Shell commands from the Workbench, the Shell program does have its own Workbench icon. To run it, turn on your machine with the Workbench disk in your internal drive and

## "Although it can be daunting at first, once you have mastered the Shell you will never look back"

then wait for Workbench to appear. Once all disk activity has ceased (the drive light will go out), move the mouse pointer over the Workbench disk icon and rapidly double-click with the left mouse button to display its contents. After a couple of seconds, a window full of icons should appear. Sitting in the top lefthand corner of this window should be an icon labelled Shell – double-click the mouse pointer on this icon and a window should appear containing the following: 1.SYS>



Unlock the door to the Amiga's powerful disk operating system with the Workbench Shell.

This is what is known as the Shell prompt and it's basically the Shell's way of saying 'OK, what do you want me to do?'. You'll also notice the appearance of a square directly to the right – this is called the cursor. The cursor is a marker that tells you where characters will appear if you type something into the Amiga. Just as an experiment, try tapping the [RETURN] key. You should now see a second Shell prompt appear directly beneath the first and the cursor will have moved down so that it is on the same line as the new prompt.

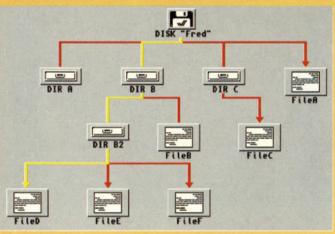
What's basically happening here is that the Shell is expecting to be fed a command – an AmigaDOS command, to be precise. Each time you press the [RETURN] key, any characters that you typed beforehand will be processed by the Amiga. If you type something in but don't press the [RETURN] key, what you typed will be ignored. Now try typing in your full name (first name and surname separated by a space). If all goes well, a line reading something like this should appear on the screen: Jason: Unknown Command (obviously your first name will be displayed in place of mine) closely followed by another Shell prompt. This is AmigaDOS's way of telling you that it didn't

understand what you entered. We can learn a couple of things from this error message. Firstly, you may have noticed that directly after you pressed the [RETURN] key, the Amiga accessed the Workbench disk. The reason for this is because all of the commands that it understands are held on disk. If the Shell is unable to access the Workbench disk, it's pretty much useless, and the Shell will try to bring this fact to your attention by displaying a requester (a message box) asking you to re-insert your Workbench disk.

#### **Voyage of Disk-overy**

If you then insert the Workbench disk, the Shell will carry on as normal. If you don't insert the disk the Shell won't be able to find the commands that it understands, so even legal commands that it would normally understand will produce the same 'Unknown command' error message that we got earlier. You're probably wondering why your surname wasn't displayed in the error message. After all, you entered both a first name and a surname, but only the first name has been recognised. The reason for this is simple. The commands that you enter at the Shell prompt have a very strict format that must be

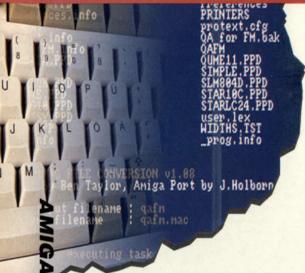
root directory, but how do you access a drawer? Well it's just as easy. As you already know, all directories have names (the Workbench disk, for example, has directories called system, utilities and tools). We can therefore access the contents of directories simply by adding their name to the pathname. For example, if your file MyPicture was held within a directory called Piccies, you can tell AmigaDOS how to find it by using the command DF0:Piccies/MyPicture. The backslash symbol is used to separate directory names and filenames. Note also that there are no spaces between the pathname (DF0:Piccies/) and the filename (MyPicture). Once you've



The disk family tree: all the drawers (or directories) on a disk branch off from the main root directory. Each directory then contains files.

got this sussed, it's pretty easy to work out the pathname for any file. Take the illustration on the left. Say you wanted to access the file called FileD in the bottom left hand corner. The file is held within a directory called DirB2 which itself is held within a directory called DirB that lives in the root directory. To access this file, type Fred:DirB/DirB2/FileD. Note how we've referred to the disk by its name (Fred) rather than the drive that holds it. Whenever a disk is inserted into a disk drive, the Amiga attempts to identify it by reading its name. Once it's got this information, it remembers it until the disk is removed.

#### **SHELL MADE EASY**



followed. The first complete 'string' of characters (the first word, if you like) is treated as the filename of the command that you're trying to issue to the machine. If you then press the space bar and enter more characters at the end of this first string, these are treated as parameters (also known as arguments). The Shell isn't one bit interested in parameters though. Its job is simply to load the command that you entered and it then passes on any parameters that follow that command. The parameters that you enter must therefore be suitable for that command – if you type in something that it doesn't recognise, the command itself will display an error message.

Right, now we've got all that theory out of the way, let's get stuck in to some AmigaDOS commands. The first command that we'll be taking a look at is Dir, a command that you'll find yourself using a great deal. Dir (which stands for Directory) is used to view the contents of a given

directory. It's a bit like double-clicking on a disk or drawer icon, but instead of seeing a window full of icons, the Dir command displays a list of files and directories. With the Workbench in your internal drive, try entering the following (minus the 1.SYS> bit of course!) and then press [RETURN]:

1.SYS> Dir DF0:

What we've done here is to instruct the Amiga to display the contents of the 'root directory' of a disk in the internal drive. If all goes well, you should see something very similar to the screen in the picture directly to the right. In this particular case, the directory listing has been read from a Workbench 2.0 disk – if you're using Workbench 3.0 or even an earlier version of Workbench, the listing may vary slightly, so don't worry if yours doesn't exactly match the one on the right.

## "Running programs from the Shell is easy and fast, and can therefore save you a lot of valuable time"

#### **Rooting Tooting**

Before we go any further, let's take a look at exactly what has been displayed. As you can see, the listing consists of two sets of information – one single column listing with all entries ending in (dir) and a second two-column listing. The first part of the listing is displaying all the directories that are within the disk's root directory. You can tell that they're directories because each is marked with a (dir)

## AmigaDOS Shell Release 2.04 AmigaDOS Shell version 2.84 Copyright @ Commodore-Amiga 1992 SHELL Dir DF0: Fonts (dir) Prefs (dir) HBStartup (dir) Libs (dir) Expansion (dir) Rexxe (dir) Monitors (dir) Trashcan (dir) System (dir) Utilities (dir) L (dir) S (dir) Devs (dir) C (dir) disk.info Honitors.info Shell.info Trashcan.info HBStartup.info SHELL

Directory listings arrange the contents of a given directory into two groups – directories and files.

postfix. Next we have a listing of all the files that are on offer. In this particular case, there aren't any real files in the directory listing – all the files that you can see end in .info which means that they are icon files (all icon files end with an .info extension). Let's go one step further. Let's try displaying the contents of one of these directories using the Dir command. Try typing the following (not forgetting to press [RETURN] at the end of the line): 1.SYS> Dir DFO:Devs

This time you should get a listing of the contents of a directory called Devs which was listed in the first directory listing. If you're running Workbench 2.0, it should look something like the following. Once again, the listing that you get may vary if you're using a different (older or newer) version of Workbench.

Keymaps (dir)
Printers (dir)
clipboard.device
MountList
narrator.device
parallel.device
printer.device
serial.device
system-configuration

#### LET'S GO WILD!

Imagine the drudgery of having to delete a thousand files from a directory one by one! Thankfully the Shell provides a very handy facility that enables you to perform operations on multiple files using what is known as pattern matching or wildcards. Pattern matching simply means that you

AmigaShell

AmigaDOS Shell version 2.04

Copyright © Commodore-Amiga

SHELL Dir S:T#?

TableImport.pprx

tools

SHELL Copy S:T#? DH0:Temp

S:TileSelection.pdrx..co

S:tools..copied

S:TableImport.pprx..cop:

SHELL Dir DH0:Temp

Wildcards come in very handy when you wish to perform a Shell operation on more than one file.

can specify a group of files based around a selection criteria – all files that start with a P and end with a .IFF extension, for example. Pattern matching is very powerful indeed and can save you a lot of time when you need to delete or copy a large selection of files.

Pattern matching uses two special characters – ? and #?. You should therefore never attempt to use these characters in your filenames. The ? character is used to mean 'any single character' and the #? means 'any number of characters'. For example, the pattern 'AM??A' would tell AmigaDOS to perform a given operation on any file that was exactly five characters long, started with the characters AM and ended with an A. Possible filenames that fulfilled this criteria could be AMIGA, AMEGA, AMIDA or even AM33A.

The #? wildcard does pretty much the same job as the ? command but for one major difference – instead of being limited to a single character, the #? symbol specifies any number of characters. If you specify the pattern as simply #?, all files will be selected.

#### **Take Command**

By default, unless you specifically tell Dir which directory or disk you want it to display a directory listing of, Dir will always list the contents of the disk that you booted up your machine with. This happens because the Shell automatically assumes that the Workbench root directory is the current directory, until you decide to make another one current. The current directory is simply the directory where the Shell performs all its operations when no pathname is given. For example, try typing just Dir followed by the [RETURN] key. You should see exactly the same directory listing that you got when you entered the line Dir DFO: To confirm this, enter the following command: 1.5YS> CD

If you entered the command correctly, the line Workbench2.0: should have appeared on the next line. The CD command, which stands for Current Directory, has displayed the pathname of (not surprisingly) the current directory. The CD command can also be used to change the current directory, allowing you to move around a disk and perform operations on files and directories hidden away within other directories without having to type the full pathname every time. To demonstrate this, try

#### **SHELL ON A SINGLE DRIVE MACHINE**

Because Shell commands are held on the Workbench disk, it's not possible to remove the Workbench disk, insert a different disk and then start entering Shell commands. If you do, you'll find that the Shell keeps asking you to re-insert the Workbench disk. In some cases, certain operations could end up being performed on the wrong disk.

There is a way of getting around this limitation. As you may have already noticed while using the Workbench, the Amiga offers what is known as a RAM (Random Access Memory) Disk. Although it's not a real disk (the RAM disk is simply an area of memory that is used to store files), the RAM Disk acts just like a real disk. In this respect, it's possible to use it as a temporary storage area for Shell commands. All you have to do is to copy the Shell commands that you use commonly to the RAM disk and then tell the Shell that it should look on the RAM disk for Shell commands when a command is entered. Try typing in the following lines:

1.SYS> CD C:

1.SYS> Copy Dir CD To RAM:

1.SYS> Path RAM: Add

You have now been introduced to two new commands – Copy and Path. The Copy command is pretty self explanatory – it's used to copy files from one place to another. In this particular case, the Copy command is being used to copy the Shell commands Dir and CD from the current directory (which we set with the CD c: command) to a device called RAM: (this is the RAM disk).

The Path command is not quite as obvious. What it does is to tell the Shell that whenever it tries to load a Shell command, it should also look in the RAM disk for the command programs. By default, the Shell looks in two places for its Shell commands – the Workbench C directory and the current directory. By issuing the Path command you are telling Shell to add (hence the Add bit on the end of the command) to the two existing search paths.

When you've successfully entered all three of the above commands, try removing the Workbench disk and then insert a different disk into the internal drive. Now enter CD DFO: followed by Dir. The directory listing of the disk that you have just inserted should be displayed. If you tried doing this without first copying the Shell

commands to the RAM disk, the Amiga would have asked you to re-insert your Workbench disk. Because the RAM disk doesn't retain its contents when you reset or switch off your Amiga you must copy the commands to the RAM disk every time you reboot or switch on your machine.



If you attempt to perform a Shell operation on a disk when the Workbench disk is not available, you'll be presented with this infamous requester.

entering the following two lines (remember to press the <Return> key at the end of each line).

1.SYS> CD DF0: Devs

1.SYS> CD

The second CD command should have displayed something like Workbench2.0:Devs on the next line. What we've done is to tell the Shell that we wish to change the current directory to a directory called Devs that is on the disk in the internal drive. Just to check, try entering the Dir command again. Instead of displaying the contents of the Workbench's root directory, you should now be

## "By using the Shell wildcards it's possible for you to copy more than one file at the same time"

looking at exactly the same directory listing that you got when you entered the command <code>Dir</code> <code>DFO:Devs</code>. Good innit! Just like the Workbench, you can also run programs directly from the Shell. This may seem pretty pointless, because the Workbench will do the same job. But you may encounter a situation where a program doesn't have an icon or it requires parameters (extra pieces of information) to be passed to it. You could use the Workbench Show All Files option to give the program an icon, but there's no way you can pass it parameters using the mouse. This is where the Shell comes in handy.

Running programs from the Shell is very easy indeed. In one respect, you already know how to do this. As we discussed earlier, the Shell commands are effectively programs themselves, so by issuing a command such as Dir, you're asking the Shell to

run a program called Dir that is held on the Workbench disk. Running real programs is slightly more involved, though. Before you can run the program, you need to set the Shell's current directory so that it is the same as the directory that holds the program. Say, for example, you wanted to run a program called *Demo* that was held on a disk called Programs. You would therefore start by setting the current directory to this disk by entering the command CD Programs: Once this is done, you can run the program just by typing its filename – in this case, you'd type Demo and press [RETURN]. The program would then be loaded and run.

Now you've got the theory firmly in place, you can start using all those lovely Shell commands. Don't worry if some of the commands look rather daunting. Using Shell commands is like driving a car – the same theory applies no matter what sort of car you're driving. In the case of Shell commands, the only thing that changes are the parameters that

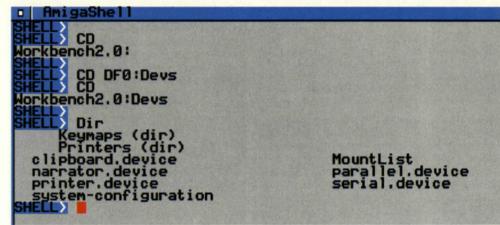
you pass to the commands and what the command does with those parameters. So without further ado, let's get stuck in with a look at some of the more common Shell commands.

The Format command is almost exactly the same as the Format Disk option available from Workbench. It is used to initialise a blank disk so that it can store information. Enter the Format command by typing:

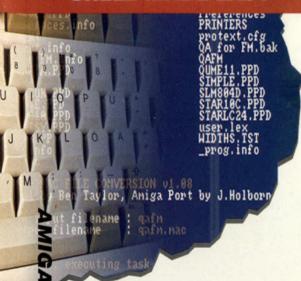
FORMAT DRIVE <Disk> NAME <Name>

#### Formatting is Fun

The Format command has two parameters which MUST be passed to it for the command to work – <Disk> and <Name>. The Disk parameter is simply the name of the device that holds the disk that you wish to format (DF0: for the internal disk drive, DF1: for the first external drive). Secondly, the name that you wish to assign to the disk must also be passed. This parameter can be anything you like



The 'CD' Shell command enables you to move around the directory structure of a disk or even to move to a different disk altogether. All in all it's a jolly useful command.



providing the total length of the name does not exceed 30 characters and has no spaces in.

When you issue the Format command, a message will be displayed requesting you to insert the disk you wish to format into the drive you specified with the <Disk> parameter. Once the disk has been inserted just press the [RETURN] key to start formatting the disk. For example: 1.SYS> Format Drive DFO: Name "MyFiles" will format a disk in the internal drive and give it the name MyFiles. Another common command you will need to be familiar with is DISKCOPY <SourceDrive> TO <DestinationDrive>

#### "Getting to know Shell is like learning to drive a car - once you've had plenty of practice, it's easy"

#### Pass the Source

The Diskcopy command is used to copy the entire contents of one disk to another. It requires two parameters – the name of the drive containing the source disk (the disk to copy from) and the name of the drive which you wish to copy the source disk to. If you only have a single-drive machine, specifying the same source and destination drives will cause the Diskcopy command to prompt you whenever it requires you to swap between the source and destination disks.

Note that the destination disk does not have to be formatted first – because the Diskcopy command copies on a track by track basis, both the contents and the format of the source disk are copied across in their entirety. For example: 1.SYS> Diskcopy DF0: To DF1: would copy the entire contents of the disk in the internal disk drive to a disk held in the external disk drive.

You also use the Dir command to display the files and directories on a specified disk. To do this you enter the disk name in the pathname parameter. For example DIR <Pathname>. If the Dir command is issued with no pathname, the command displays the contents of the current directory (by default, the current directory is set to the root directory of the disk from which you booted your machine). By specifying a pathname the contents of other disks and drawers can also be displayed.

## "Shell enables you to enter commands that provide direct access to the many functions of AmigaDOS"

For example if you enter the command: 1.SYS> Dir DF0:Devs/Printers the Amiga will display all files and directories within a directory called Printers that itself is within a directory called Devs on a disk in the internal drive.

Another common command is the one to change your curent directory. To do this enter: CD <Pathname> and you will change directory to the one named in the pathname parameter. If you issue the CD command with no pathname, the command displays the full pathname of the current directory. For example: 1.SYS> CD DF1: Fred would change the current directory to a directory called Fred on a disk in the external drive.

The MakeDir command is the Shell equivalent of Workbench's New Drawer option. To issue this command simply type: MAKEDIR

<DirectoryName>. Like its Workbench equivalent, the MakeDir command simply creates a new directory and gives it the name specified by the <DirectoryName> parameter. Unlike the Workbench version, though, it doesn't automatically create a Drawer icon, so the directory will be invisible from Workbench unless you manually copy a drawer icon across and do some pretty complex things to it. Under AmigaDOS version 2.0 onwards, it's possible to create several directories simultaneously simply by specifying more than one name parameter. For example: 1.SYS> MakeDin DFO: MyFiles DF1: Files/MyOtherFiles would create two new directories - one called MyFiles on the root directory of a disk in the internal drive and another called MyOtherFiles within a directory called Files on a disk in the second drive.

Formatting a disk initialises it (prepares it for the Amiga) so that it can be used to store files.

O | AnigaShell

AnigaDOS Shell version 2.04

Copyright @ Commodore-Aniga 1992

SMELL) Diskcopy DF1: To DF0:
Place SOURCE disk ( FROM disk ) in drive DF1:
Place DESTINATION disk ( TO disk ) in drive DF0:
Press (RETURN) to continue
ver'ing 79, 0 to go
DiskCopy finished.

Disks aren't perfect, so the Diskcopy command should be used to make backups of all those important disks you don't want to lose.

As its name suggests, the Delete command deletes files and drawers from a disk or drawer. To carry out this function all you have to do is enter: DELETE <Filename>. The file specified by the <Filename> parameter will then be deleted. If you wish to delete more than one file, you can use wildcards to delete files that follow a certain wildcard pattern (all files that end in '.bak', for example). Deleting a file removes it from the disk, so be very careful with this command.

Using the optional All parameter, it's possible to delete the entire contents of a directory (including the directory itself and any sub-directories within that directory) in one go. Be very careful though – typing Delete DF0:#? ALL would delete everything on a disk. Once files and directories have been deleted, there's no getting them back. For example, entering: 1.SYS> Delete DF0:MyFiles ALL would delete all files and any sub-directories held within a directory called MyFiles on a disk in the internal drive. If the ALL parameter was omitted, and #? used instead, only the files within that directory would be deleted.

Copying files using Shell is also an easy exercise. All you have to do is to type in: COPY <SourceFilename> <DestinationFilename> and enter the name of the file you want to copy in the first parameter and the destination to which you wish to copy it in the second. Using wildcards, it's possible to copy multiple files en masse. The copy command requires a minimum of two parameters to

## "Shell is a sure-fire way to make getting to grips with your Amiga operating system a lot easier"

do its stuff – the filename (or wildcard pattern) or the source file (including its full pathname, if necessary) and the destination file and pathname.

#### File-driver

If only a pathname is specified for the destination parameter, then the file (or files) that you're trying to copy will be copied across under the same filename. If you specify both a pathname and a filename for the destination, it's possible to copy the file to another location under a different filename (this only works when copying single files though). If you wish to copy files from one directory to the current directory without changing its filename, specify the destination filename as simply "" (a pair of double quotes).

For example entering: 1.SYS> Copy
DF0:MyFile "" would copy a file called MyFile
which is held on the disk in the internal drive to the
current directory, retaining its original filename.

After executing this command, you would find a file called MyFile in the current directory. If you changed the destination parameter to read MyOtherfile, the file would be copied to the current directory disk under the name MyOtherfile.

The Rename command simply changes the name of the file specified in the <SourceFile> parameter to that specified in the <NewFilename> parameter, so the command you should enter is: RENAME <SourceFilename> TO <NewFilename>. The Rename command also has another use, it can be used as an alternative to the Copy command to move a file to another location simply by specifying both a filename and a full pathname in the <NewFilename> parameter. For example: 1.SYS> Rename MyFile To MyDataFile would change the name of a file called MyFile held in the current directory to MyDataFile without changing its position on the disk.

#### It takes all types

Unlike Workbench, the Rename command can't be used to rename disks. For this task, you need the Relabel command. To use the Relabel command just enter the name of the disk drive that holds the disk that you wish to rename, and type in the name you wish to give the disk. For example: 1.SYS> Relabel Drive DF0: Name "Fred" would rename a disk held in the internal drive as Fred.

The Type command is used to display any text file in the Shell window. It can be very useful for displaying script files (read the text below for more info on scripts) without having to load a text editor

## "You now have the ability to make many Amiga functions a lot easier and much less time-consuming"

each time. It can also be used to display program and other data files in hexidecimal mode (base 16) by adding Opt H onto the end of the command. If you try to display a text file longer than the total number of lines that the Shell window can display, the text display can be paused and then restarted by pressing the space bar and backspace keys respectively. So if you enter 1.SYS> Type DF0:Letter.DOC the Amiga will display the text file called Letter.DOC stored on a disk in the internal drive.

#### Start-up City

Have you ever wondered why different disks load in different ways? Why does the Workbench seem to take an eternity to load while some disks can load a Workbench up in a matter of seconds? The answer lies in what is known as the StartUp-Sequence. Put simply, the StartUp-Sequence is a file on a disk which tells the disk that it's on how it should boot up. (Booting up is a technical term that is used to describe the process of loading a disk when the Amiga is first switched on or reset).

When you insert a disk into your Amiga, the first thing that will happen is that the Amiga's operating system automatically tries to find the StartUp-Sequence file in a directory called S. The StartUp-Sequence is what the techies call a Script File. Put as

The StartUp-Sequence file tells your Workbench disk how it should 'boot up'. In other words how it should go about loading a disk when it is first switched on.

simply as possible, a Script File is very similar to a program file like those used by languages such as BASIC, but for one major difference – instead of containing BASIC commands, a Script File contains Shell commands.

The Shell enables you to create Script Files that contain more than one Shell command and then execute them (run them) as you would a program in a language such as BASIC. By grouping together Shell commands into a Script File, complex operations can be carried out from the Shell simply by executing the Script with a single command.

#### **Boot-iful**

The StartUp-Sequence file is simply a complex script file that carries out various Shell operations automatically before either loading the program on the disk or loading Workbench. As we discussed before, the Workbench itself is nothing more than a program that is held on the Workbench disk and it is the StartUp-Sequence that loads the Workbench program when you boot up your Amiga from your Workbench disk. Tinkering around with the StartUp-Sequence is not something that I would normally recommend to the faint-hearted, simply because the average StartUp-Sequence is a complex beast indeed.

Take the Workbench 2.0 StartUp-Sequence file for example. It contains no fewer than 46 different lines of Shell commands. Although the StartUp-

Sequence file may look very simple, removing the wrong lines could have a disastrous effect on the disk that contains it, and all manner of terible things could happen to your Amiga, so be very careful.

## "Once you've got to grips with the Shell, you'll wonder how you ever managed to get by without it"

#### Ed Case

Shell Script Files (including the StartUp-Sequence) can be edited using any standard text editor (a text editor is a bit like a word processor). If you don't already own a text editor, then you'll be pleased to learn that Commodore very kindly supplies one on every Workbench disk – it's called Ed and is accessible from the Shell. For example, if you wished to edit the StartUp-Sequence, all you would have to do is type Ed S:StartUp-Sequence. After a few seconds' disk access, Ed would be loaded and the StartUp-Sequence file pulled in. Once loaded, you can scroll the onscreen cursor (text position marker) up and down through the StartUp-Sequence file using the up and down arrow keys.

#### AMIGADOS FROM WORKBENCH

New to version 2.0 onwards of Workbench is the Execute Command option which is a very handy facility that enables you to run Shell commands from the Workbench, therefore removing the need to open a Shell window every time you wish to perform an AmigaDOS operation. If the Shell command needs an output window (a window into which the text output from the command is displayed), the Execute Command opens this automatically.

The Execute Command option is available from the Workbench pull-down menu. When Workbench is running, press and hold the right mouse button and then move the mouse pointer up to the Workbench menu heading and the

Workbench menu will drop down. Move the mouse pointer over the Execute Command option and then click the left mouse button and release the right button. A window will appear containing a string gadget (a string gadget is a rectangular area into which you can type text).

If you click the mouse pointer inside the gadget a cursor will appear marking where text editing will start. Just enter the AmigaDOS command that you wish to run and then click the left mouse button on the OK box. If you run a Shell command that requires an output window, this will be opened automatically for you. Once the command has done its stuff, you can close this window by clicking on the Close gadget in the top lefthand corner of the output window.

## Now AMOS has turned Professional!

AMOS The Creator has brought programming within the reach of over 50,000 Amiga users. Now it has been given a complete overhaul and the result is a vastly enhanced product – AMOS Professional – designed for all experienced Amiga programmers.

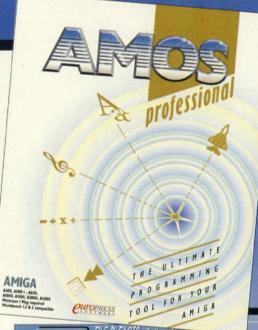
AMOS Professional has 200 new commands, taking the total to over 700. Included in the package is a 650-page manual written by Mel Croucher who wrote the highly-praised Easy AMOS manual, and Stephen Hill who wrote the original AMOS manual. Programs written using earlier versions of AMOS and Easy AMOS can be loaded into AMOS Professional for amendment or enhancement.



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The CDTV may look more like a video recorder, but it's actually just an Amiga 500 in a silly box with a CD drive added. And it's the CD drive that's the important bit, for all of us...

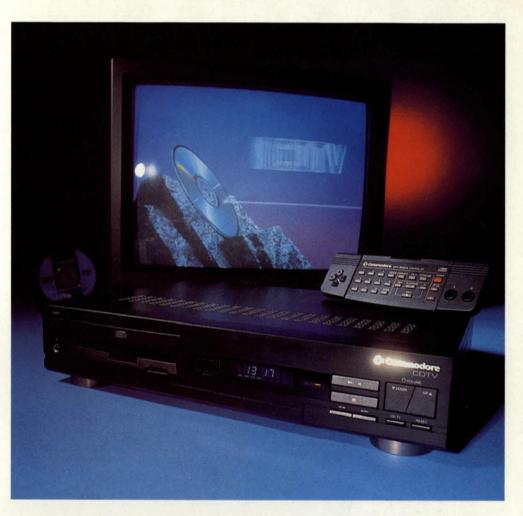
ack in 1983, pan-global electronics giant Philips launched a new range of hi-fi equipment and a new way of listening to music, called compact disc or just CD for short. At the time it seemed strange that music could be played by a laser bouncing off the surface of a shiny five-inch disc, but now it's familiar to us all and has become the leading format for music sales. Vinyl LPs have all but disappeared, tape cassettes are fading in popularity.

So it's safe to assume you know what a CD is. Nine years on, everybody does. What you might not, perhaps, realise is that the music on a CD is stored digitally, in exactly the same binary form as computer data. Which means, if you think about it, that they could put computer software on CDs

instead of on floppy disks.

Indeed, there's a number of good reasons why they should put software on CDs rather than floppy disks. CDs are less easily damaged - spill a cup of coffee on a CD and you can just wipe it off, send a CD through the post and it's much more likely to arrive in one piece. The magnetic material that stores data on a floppy is exactly like the stuff used on tape cassettes, so it wears out after a while luckily, CDs don't.

But there's more to it than that. Another advantage of the CD is that it costs round about the same to make as a floppy disk, but it can hold many times as much data. An Amiga floppy holds 880K - less



CD? CDTV? CD-ROM? A570? What do these strange and mysterious letters and numbers signify? Well, actually just the future of the Amiga, that's what. Damien Noonan explains why software stored on a compact disc will make the world a better place...

## THE STRANGE TA OF THE AMIGA A

than 1Mb - of data, whereas a CD can hold a massive 550Mb of data. That's 640 floppy disks' worth.

So why can't you buy software for your Amiga on CD? Well, the fact of the matter is, you can. And have been able to for more than a year now. The Amiga CDTV (it actually stands for Commodore Dynamic Total Vision) first went on sale in early 1991, without the 'Amiga' bit on its name. CDTV was - and, indeed, still is - basically an Amiga 500 with 1Mb of RAM, with a CD drive instead of a floppy disk drive. Quite a prospect.

But there was one problem. An A500 with 1Mb and a CD drive might have sold like hot cakes at

£499; the improved software on CD would have made it worth the extra £100. But CDTV cost £599 and, what's more, it didn't look at all like an Amiga and it didn't have a keyboard, a mouse or a joystick - it was operated with an infra-red remote control.

#### Ancient history

Commodore had decided that the CDTV was their big chance to bring computer power into the home without people knowing it was a computer, so they dressed the Amiga CDTV up to look like a video recorder and claimed it was some kind of 'interactive television'. Which, in a sense, the Amiga is.

Incidentally, Philips are now trying to do exactly the same with their CDTV-like CD-i system.

That would have been all well and good, except that the public didn't take to it. One problem was that the software - and around 50 specially-written CDTV discs were on sale a couple of months after the machine's release - was disappointing. A few games ported over from the Amiga (which made no use of all the extra disc space), a bunch of clumsy reference works (encyclopaedias, cookery books and dictionaries) and the odd educational title was about your lot.

**Continued over page** 



CDTV has never really taken off, despite the fact that the price has been reduced twice, first to £499 and then to £399, and there's still barely any decent software for it. Yet Commodore seemed to stick behind the concept and probably its most eagerly-awaited release ever was an add-on drive for the A500 that would enable Amiga owners to play

CDTV discs. The A570 CD-ROM drive was finally released this June, many months after it was expected. CD-ROM, incidentally, stands for Compact Disc Read-Only Memory: it's memory because data is stored on the CD and it's read-only because, unlike a floppy disk, you can't write new data to it.

The Case of the Cautious Condor is, to date, the only CD-only game to make an impact on Amiga CDTV. Screen after screen of cartoon graphics almost make up for minimal gameplay.

Trouble with the A570 is that it needs an A500 with 1Mb of chip RAM to work. As this means only A500 Pluses and converted recent A500s, it limited the market drastically. On top of all that, it costs an astonishing £349.

Would we recommend that you buy an A570 or a CDTV? Frankly, no. If you have an A500 and £400 to spend, you're better off upgrading to an A1200 than getting an A570. The CDTV is now sold at £499 in a pack called the Home Multimedia Pack which includes a keyboard and a floppy disk drive, so you can boot it and use it as an Amiga. But the CDTV needs to be updated before it becomes a real option: a newer version of Workbench (it currently has 1.3) and the new AA chip set would be essential in a CDTV2. It may yet happen.

So, if we're dismissing the CDTV and the A570, how is it that we still believe that CD is the future for the Amiga? Well, it's like this...

#### CD is the future

You have to look at Commodore's plans within the context of the games industry generally, and this means it's games that lead the way. Over the last couple of years, there's been a massive explosion in sales of Sega and Nintendo games consoles, while all computers except the Amiga have faded. As a result, more and more games-publishing companies (software houses) have started producing games on cartridge for the games consoles.

#### What's the best CD-based software to date...

Before too long, all software will be released on CD, although that time is more than a year away. For a while, during the changeover period from floppy to CD, new games will come out on floppy and CD at

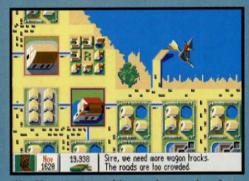


Lemmings - a top-class game on any format though control with infra-red remote is tricky.

the same time – a concept called 'dual formatting'. As CD slowly catches on, more and more 'enhanced' and CD-only titles will be released, pointing out the disadvantages of the floppy, in very much the same way that music CDs often featured bonus tracks as an incentive to buyers to switch from other formats.

For the time being, however, there's a severely limited range of stuff available on CD and, what's worse, it's all been specifically developed with CDTV in mind, which means it can tend towards the worthy aspirations of the living-room 'home

entertainment system' that Commodore once believed CDTV to be. On top of this, many CD titles are just Amiga ones modified: the games, in particular, tend to be old Amiga games with slight alterations. One



Sim City – strategy with a comic appeal, and one of the most intelligent games ever created.

of the most popular enhancements is the addition of a hi-fi soundtrack.

That's because the A570 and the CDTV can both play normal hi-fi CDs as well as Amiga CDs. One interesting thing is that the two can be combined: a hi-fi stereo sound-track can be incorporated on to the CD, and can be played in the background while a game is running. Very tasty.

Anyway, let's take a look at the best of

Anyway, let's take a look at the best of the CD-based software released to date. On the games side, the best so far are a couple of Amiga games. One is *Lemmings* (Psygnosis £34.99), which is exactly the same as the Amiga disk version. The other is Sim City (Infogrames £29.99), which has a number of changes made to the actual game and also features a full hi-fi sound-track of music recorded in the studio by



Cautious Condor - immense quantities of classy graphics which only CD can provide space for.

professional musicians. It's better than the Amiga version.

Recent news is that the 1993 updated version of the hugely popular footy game Sensible Soccer is also about to be released on CD. More interesting still is the news that its publishers, Renegade, have committed themselves to a £19.99 price for CD releases. This first release is an experiment and at this early stage they don'y expect it to sell in large quantities, but it's the first evidence of a publisher working towards the £20 standard price that many people believe CD will make possible.

The A570 CD-ROM drive attaches to an A500 and can run CDTV software from compact disc. Some day every Amiga should have one, but not if it costs as much as £349...

Because cartridges are tricky to copy, casually at least, the software houses have discovered that without piracy, they can make a pretty healthy profit from games. For this reason, they are keen to get away from the Amiga's floppy disks.

But cartridges for the Amiga have ceased to be an option. Though piracy is prevented by carts, the software houses have discovered that cartridges have all manner of drawbacks, too. They're very expensive to make, costing up to £10 for an average cart. And, worse yet, they take an age to make – up to six months.

The cost and the time factor mean software houses have to be very good at predicting how many copies of a game will be sold. If they order too few, there's no chance to make more and they lose potential profit. If they order too many, they're left with useless, expensive hardware on their hands. Getting an order wrong by ten per cent can make all the difference between profit and loss.

CD as a storage medium solves most of these problems. It's less easy to pirate, if only because the programs are too big to fit easily on to floppies. It's very cheap to make – around £1.70 per disc, including the packaging. And it's very quick to get made, taking only a day or two to get discs duplicated.

As a consequence, the pressure is on to move to CD. Even Sega and Nintendo know it, and they both have CD-driven machines on the way. Commodore still has a few tricks up its sleeve for



the Amiga. Indeed, it seems more than possible that 1993 will see the release of a new model of Amiga with a CD drive instead of a floppy drive, and a CD-ROM drive for the A1200. This could mean world domination for the Amiga. But less ambitiously, it should mean much-improved games at a price of around £20.

More good news: Commodore and Psygnosis have got together to work on creating a game so jaw-droppingly wonderful that people will say 'Wow!' and demand to buy a CD Amiga instantly. It's called *Microcosm* and it's expected to be ready soon. It's only one title, but it could be a pioneer blazing a trail that others will be bound to follow.

#### ...or 'is there any good reason for getting a CD drive yet?'

So there are a few good games around, if not as many as you might like. One last game worth a mention is *The Case of the Cautious Condor* (Tiger Media £34.99), which was specially developed for CD.

CDPD - hundreds of PD programs on one disk, over 500Mb of data, all for only £19.99.

It features stacks and stacks of gorgeous cartoon graphics – the animated intro is about 20 minutes long – and really shows the way forward for CD games, but it's let down a bit by hit-and-miss gameplay.

Getting away from games, probably the

Getting away from games, probably the most impressive discs to date are Almathera's collections of Public Domain software. CDPD and The Demo Collection (both £19.99) each use the massive storage space of CD to offer hundreds of freely-distributable programs on one disc.

Of the educational discs available, two stand out. The cleverest is Microdeal's

Asterix series of discs (£34.99 each), which are very simple in concept – just digitised versions of the cartoon books with sound-tracks added, as digitised voices. The text and speech is in a foreign language – French

Japan and its Neighbours
USSR USSR Kuril
Mongolia Islands
Korea Japan
China Ryūkyū Islands
Taiwan Okinawa

Japan World - a fascinating journey of exploration into an alien culture and language.

or Spanish - the idea being that you learn as you read.

The clever part, however, comes when you add Microdeal's VoiceMaster hardware (£24.99), which is a microphone and a sound sampler. This means you can listen to the sentences spoken by the Asterix characters, then speak them into the microphone and the CDTV will record them. You can then play back both the original and your version, and it's quite astonishing what a good way of learning pronunciation it is.

The other notable educational program

The other notable educational program is A Bun for Barney (£29.99), from the BBC's

own multimedia department. It's what you might call an 'interactive storybook' and though it lacks depth, delightful graphics as well as excellent narration by actor Tom Baker make it rather appealing.



Learn French with Asterix - a unique idea, when used with Voicemaster to record your attempts.

Last but not least, let's mention the best two reference works to date, and neither is a dictionary or encyclopaedia. Insight: Technology (CDTV Publishing £29.99) is a 'how it works' book filled with high-quality Amiga-designed animations and illustrations to show how 250 of the most common modern machines work. Japan World (Global Learning Systems £49.99) was designed to teach schoolchildren all about Japanese life and culture and a little about their language, and is a fascinating introduction for anyone who's interested in the ways of that distant nation.



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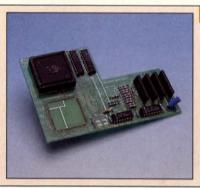
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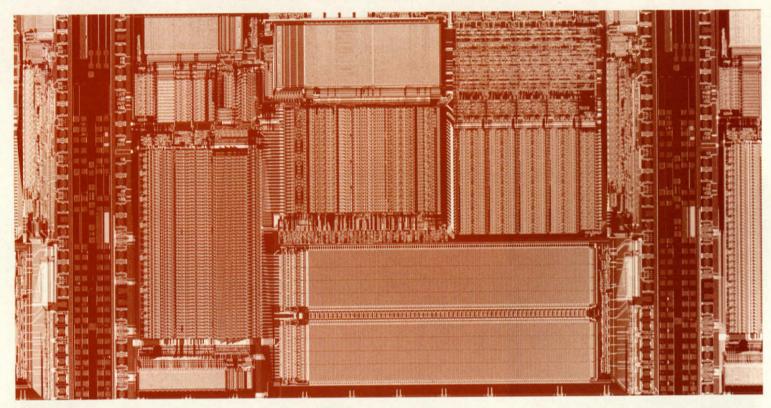
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Tim Smith explores how the machine on your desk came to be the machine on your desk via a very strange route with a bunch of vaguely related historical figures

# THE AMIGA'S ANCESTORS



ithout 60s hippies, IBM, warfare, paper-cards, Debbie Harry, Andy Warhol, meditation, Hitler, the B52s, the Pentagon, the US census bureau, Apple Computer, Atari and the fact that people didn't want to put their prized 10ps, dimes or small Yen into machines, there might never have been an Amiga.

Basically, the Amiga has some history. In fact, the Amiga has a hell of a lot of history. And at a very reductionist level it goes something like this...

International Business Machines (IBM to you and me) had the business world tied up.

But the world was changing around the company. People wanted more than cash tills. They wanted ways to keep track of stock, to monitor profit and loss, and the military (a very, very, very important player in the development of computing worldwide) they needed to keep track of the personnel units they were deploying to maintain the minimum collateral damage (who was getting killed, how much it was costing to kill them, and so on). And, of crucial importance, was the US Census

Bureau which required a quick and cheap way of working out just how many poor, hungry and needy people had got to the Land of the Free.

The 1890s had seen the world change with the invention of the Hollerith punchcard. Sure, there had been other punchcards or similar systems, but the Hollerith was the one that took off.

IBM had picked up on the punchcard system because it was more versatile, faster, and provided a more efficient information storage and retrieval system than anything which had come before.

In fact old Big Blue, as IBM is known, became so happy with punchcards that it became complacent. This first form of mass storage seemed to be enough to deal with all the requirements anyone could ever have. Keep this point in mind for the next of IBM's great leaps forward.

So IBM, slowly but surely began to change with the times. And with a quick leap of history, social and technological development by-passing the work done by Hitler to try and destroy everything, and Alan Turing who was trying to stop Hitler while at the same time developing modern computing as we now know it; bypassing advances in theoretical physics, mathematics and even philosophy and literature (did you know for example, that the term Cyber was coined in 1948 by Norbert Weiner in his book *Cybernetics* – later re-issued in a shorter more popularist form as *The Human Use of Human Beings* in 1950?) we eventually move on.

The first machine of any real impact came about as a result of military research and requirements – not the last time this will happen – and from work carried out by John Mauchly and J P Eckery. The machine was called UNIVAC and it was to cause one hell of a stir during the 1952 US presidential elections by out-predicting the pundits to come up with an Eisenhower victory (it was only four votes adrift). It was huge and it used vacuum tubes, but crucially it also used the revolutionary new magnetic tape information storage system – the first real step towards the magnetic media which is fast becoming obsolete today – the floppy disk.

Now, let's leap on a few years. IBM and its punchcards, realised that it was losing out on the new technology, it took up the idea of the new mag-



Steve Jobs, once of Apple Computer, was one of the people who made computing mainstream.

netic media, it began to develop huge, vast, massive mainframe computers.

Once again Big Blue was in the ascendancy. But once again, the company that should have been calling the shots for the future, preferred to rest on its laurels. IBM missed out on the idea that small could also be profitable. Although IBM itself had developed small computers that could run independently of mainframes, it didn't see these as having a viable market. It made the decision not to travel up this route any longer. But other people had different ideas. And these other people were young, ambitious and most of all, they were not shackled by any corporate policy.

### A star is born

So it was then that the first recognisable ancestor of the Amiga saw the light of day in 1977 at the Homebrew Computer Club near Stanford University in California. The machine was called the Apple II, and it was the start of a revolution that lead to the Amiga. The Apple stable was run back then by Steve Wozniak and Steve Jobs. Although it was the Apple II microcomputer that made the company, it was the disk drive inside the Apple II that changed the world. This small chunk of computerelectronics genius basically changed forever the way in which computers were perceived. Prior to the development of a floppy drive, people had been tied to the mainframe (and tied to IBM) for their computing. What the Apple II and its new drive did was to free people to carry out their own computing where and when they wanted to. The floppy disk drive also meant that software could be widely distributed (the birth of Public Domain and Shareware occurred just days after the birth of the Apple



The Amiga Batman Pack. A simple idea; an Amiga 500, a copy of Batman, a huge, huge hit.

floppy) and so could reach a wider audience.

With the software support growing, and with more and more people grabbing hold of the opportunities offered by personal computers, the world changed radically. The knock-on effects of this change in computer culture were twofold:

# Getting personal First off, IBM finally kicked into gear with its

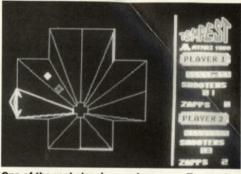
First off, IBM finally kicked into gear with its Personal Computer (it copyrighted and trademarked it PC). Secondly, and more importantly, the spirit of development had returned to computing. Not since the genius of Alan Turing with his overwhelming need and desire to defeat the Nazi code-makers, and his fascination for computing and for the potential of computing, had the crusading spirit been as full-blooded as it was in the late 1970s and early 80s.

And this is when the Amiga starts to become a twinkle in the eyes of three very bright, and very Californian lads. But before all that, we need to look at another side of the computing coin – games.

Until now, we have avoided mentioning games, much in the same way as the geniuses the early developers had avoided them. All of them thought that the computer was great for furthering human progress, a wonderful machine for making money, but not essentially a leisure tool.

Although developers and programmers would write small games for themselves and friends, the idea that you could set up a company or develop a machine specifically concerned with games had not really entered the minds of most of them.

It was not really until a chap called Nolan Bushnell came on to the scene in 1971 with a mad idea that every bar in his part of California should



One of the real classic arcade games, Tempest was a precursor of many Amiga games too.

have a machine in it that would enable people to play a game called *Pong*.

This, incredibly simple, game simulated ping pong, and made Nolan Bushnell a vast amount of money. So much so in fact that a company called Atari was formed on the proceeds.

Pong gave rise to other games such as Space Invaders, Tempest, Galaxians, and PacMan. And with this development in arcade games came a growth in the number of programmers who were concentrating on games. It was inevitable that, before too long, home games machines' would arise. This they did in the form of Atari's 400 and 800 consoles. These little gems put computer gaming into the living room. More importantly, they provided fertile ground in which software houses could flourish.

This meant that computers moved out of the dusty grey offices of business people, out of the plush expensive studios of artists, and into the homes of every-day people, especially young everyday people. Computers gained youth and exuberance. So now now we have the two strands that lead to the development of the Amiga as we know it today. On the one hand we have personal computers; machines that could sit on your desk in your home, with floppy disks on which to store your programs. On the other hand we have the acceptance of leisure as a viable area for computer development and trade, with thus we have the breakaway from business and the move into hobbies. All we need now is a computer that can link the establishment (applications software-lead) side of computing, with the periphery (games, graphics, music, programming).

The machine that was to combine the two dis-

Continued overleaf...

# **Invaders Ate My Chips!**

The history of computers, and computer games, is littered with myths, rumours and theories. No one agrees on how things really got to where they are today. Although your Amiga is a recent addition to this wide and rich history, it (like most of us) has some pretty strange ancestors.

And just to give you an image of the rich tapestry that wraps your Amiga, here is an apocryphal story (what us be — because if it isn't then the world really is a weird and twisted place) concerning early gaming, the Cold War and millions of \$s. The story has it that the first Space Invaders game came about as a result of developments carried out by the US armed forces, specifically the missile defence section.

The story goes that the military boffins spent years and years (and billions of dollars) developing a missile guidance system to deal with incoming Soviet attacks. Frustratingly, the (then) Soviets were also working on new missiles which would outwit anything the Americans could be developing.

The years passed and the US missile guidance chip was ready. Millions of copies of the chip were cut from the billion-dollar master. The systems were set-up and ready to go. Then an intelligence operative wandered into a meeting, slapped a report on the table, and it was back to square one. But what to do with the now useless chips?

Enter Mr Taito (or somesuch name) the head of a major Japanese corporation that had previously only specialised in slot machines and one-armed bandits or someuch thing. He saw his chance, saw the future opening up in front of him to the sound of 'Beeps' and 'Whizzes'. He snapped up the chips for a pittance, and put them into machines that went bleep, bleep and disrupted every pub in the UK. They also went into arcades, railway stations, airports... in short, the computer gaming revolution that has culminated in your Amiga began with this piece of opportunism.

Well, it does if you feel that you can believe in computer myths and stories...

parate strands of the modern-day computing had to wait until 1985 before it was launched at the world during the Summer Consumer Electronics Show in Chicago Illinois. The Amiga 1000 cost £1,500, came with a mere 256K of RAM, and absolutely no sense of direction. It was a machine that could do everything and so Commodore was unsure exactly who to target it at.

### A thousand daze

The first Amiga (you'll have a great deal of trouble finding one nowadays) had been developed by three rather eccentric guys in California. These Godfathers of modern home computer development were: RJ Mical (who previously worked for Williams as an arcade game developer - see how the strands intertwine), Jay Miner (a chip designer), and Dave Morse who worked in marketing for Tonka. These three, together with Karl Sassenrath who worked in the Workbench system, toiled away for years using their own money at first. They wanted to develop a machine that had the same ease of use as Apple's Macintosh computers but with far more processing ability. The main processor used in the Amiga, the Motorola 68000, was exactly the same as that used in the Mac. What our three heroes had to do was to get more out of it.

The way in which they solved the problem of more processing without vastly more price, was to develop what came to be known as the custom chips. These three chips (first called Agnus, Daphne, and Portia) enabled the 68000 to get on with the mundane number crunching while they did the more complex work. The Amiga 1000 was launched amidst much media attention with both Andy Warhol and Debbie Harry (then of Blondie fame) demonstrating the machines graphics and sound capabilities. But still there was the confusion as to which direction the Amiga was going to take. For many people, this lack of direction remains with the machine even today and is more of a blessing than a bane - people will buy and use Amigas for anything they can think of, from spreadsheeting to gamesplaying, from graphics to music.

But how did Commodore get into the game? As I said, the early years of Amiga development took place in a small office in Silicon Valley, California. Back then in the early 1980s drop-in guests included Steves Jobs and Wozniak. The three Amiga (the word Amiga means girlfriend in Spanish, and was used as codename for the machine while it was in development) Amigos were actually working away to develop a games console not a full-blown computer. They started with a mere \$7million (small change in this kind of game), but the more they developed, the more they came up with, and soon they were moving away from a simple games machine concept.

After a few years work, they came up with a prototype board called the Zorro (a name still used today for Amiga expansions). However, the board they were left with had disk drive connectors, keyboard connectors, printer connectors – so bye-bye console, hello state-of-the-art computer, but bye-bye money.

The boys had to look for funding. At first they turned to the, then mighty, Atari Corp. Atari

# "So it was that the first ancestor of the Amiga saw the light of day in 1977 at the Homebrew Computer Club in California"

chucked in a little bit of cash and then got cold feet. Next they turned to Commodore. The company had made its money with the C64 and was used to marketing small, versatile home computers. It bought up the Amiga name along with the electronics. What a good move.

The first Amiga (the 1000) was received with interest but no great take-up. It was not until 1986 that the machine which is the true parent of the A600 and A1200 hit the streets. The A500 was launched with 512K of RAM, 4,096 colours, 32 colours for games, and a 16-bit processor. It also had a different set of custom chips (Agnus, Paula and Denise). It was also priced at a very tasty £399.



Andy Warhol thought that the Amgia looked and worked a dream at the launch. He was right.

At the time it faced stiff competition from Atari's ST but this was to die out. The arrival of the Batman Pack in 1989 really thrust the Amiga into the big league. Until then the machine had been taken up in some numbers by enthusiasts and C64 owners who were upgrading. By this time the Mac was too expensive for the home user, and the IBM PC was stolidly business. Packaging a 512K Amiga with a copy of Ocean's Batman – The Movie, made sure that the machine was picked up by youngsters as well as the more mature user. For a while back then, the Amiga was looked on as a games machine. It was only when you bought one, that you realised that it could do a great deal more.

The A500 really laid the foundations for the Amiga's incredible success – although there were still the higher-end, more IBM PC-looking A2000 and A3000 working away in the background.

But the A500 couldn't last forever. Times moved on with frightening speed since 1989. In1991 the A500 was mugged and replaced for a very short time by the A500 Plus with a full 1Mb of RAM, an upgraded operating system, and a new enhanced chipset (ECS) with upgraded Agnus and Denise chips. But the Plus was only to have a short reign before it too was superseded in 1992 by the smaller, more gamsey A600 machines (the A600HD was the first entry level Amiga to come with a hard disk by the way). And finally, last year we had the A1200. The next step in the history of home computing: 32-bit (not 16-bit like the A500s and A600s), more colours, a better set of custom chips, and 2Mb of RAM as standard.

And so the Amiga marches on as the link between different computing strands, the carrier of the rebellious spirit that fuelled the rise of the home computer, and a damned fine all-round machine. There are more details to fill in along the way, but now you are part of the Amiga club, you'll pick up the lore as you go along. Right now, it's time to explore the future of you and your machine...

Back to the future. The Amiga 600, and the A1200 are the result of over 70 years worth of research, development and thought. Welcome to history.

# 10 Things You Never Knew About the Amiga

- 1) The first three custom chips that came with the Amiga were called: Agnus, Daphne and Portia.
- Agnus remains in a different form. It is the chip that houses the Blitter (Bit Image Manipulator). The A1000's Blitter could move a million pixels per second.
- AmigaDOS, the Amiga's operating system, was developed not in the USA but in Bristol by Dr Tim King.
- 4) When launched, there were eight software packages available for the Amiga.
- 5) The Amiga 1000 first appeared in 1985.
- 6) The Amiga 500 first appeared in 1986 at a price of £399. The Atari ST, then the Amiga's nearest competitor, had been on sale since 1985, priced at £750.
- 7) The Amiga uses two type of sprites: Vsprites and Bobs. The Vsprite is taken

- care of by the Amiga's hardware. Bobs (BlitterOBjects) on the other hand, are taken from the software.
- 8) With its 68000 chip, custom chips, and low price, the Amiga was seen as a competitor to both the IBM PC and the Apple Macintosh. The trouble was that Commodore had no idea whether to market the new wonder machine as a serious computer or a games machine!
- 9) According to Commodore UK's MD, Kelly Sumner, the company intends to get the name Amiga on to Chelsea FC's shirts next season.
- 10) Since its inception in 1985, there have been nine Amigas in the family. They are: The Amiga 1000, the Amiga 1500, the Amiga 2000, the Amiga 3000, the Amiga 4000, the A500, the A500 Plus, the A600/600HD, and the A1200. Commodore's CDTV also has the heart of an A500.



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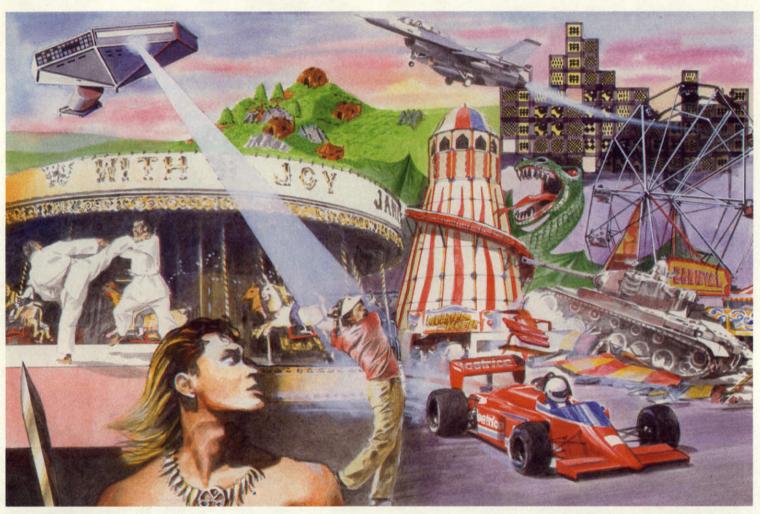
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You can do lots of terribly sensible things with your Amiga – or you can play games. James Leach. takes a rollercoaster ride through a fairground world packed with fun for everyone.....

# FAIR GAME FOR YOU!

here's a chance that you bought your
Commodore Amiga for a most levelheaded, practical reason: for doing the
company's accounts, maybe. Or for
word processing. Or to use with some database software. Fine. The Amiga is more than capable of
handling these sorts of tasks with ease. But now
you've got it, why not start to use your imagination? Think about the power of the machine. Think
about the games you can play on it. Not sure what
games you CAN play on your Amiga? Well there

are thousands and thousands of them, ranging from unbelievably impressive and engrossing ones to total and utter wastes of time. Here we'll show you the general categories of games you can buy, as well as recommending the best in each category.

But first, let's consider the Amiga itself. The Amiga is one of the most advanced home computers you could hope to lay your hands on: stereo sound, millions and millions of colours (the A1200 really is stunning in this respect with over 16 million to chose from). Its custom chips make it the

ultiamte games machine (and unlike the consoles, you can also do your important stuff too).

All this means that, no matter if you have a five year old A500 or a brand new A600HD, most of the types of game that are made today will be treated beautifully by your Amiga. The question is, which type of game will suit *you* the best?

This is what we're going to look at over the next few pages. Relax and read as we show you all the fun there is to be had with your Amiga with some patience, some skill and the right choice of game... This genre covers the type of game that requires good hand-to-eye coordination. Taken as pure entertainment, some of them have become classics. The category is broad

enough to have three sub-categories:



SHOOT-EM-UPS: traditionally, you control a space vehicle that travels from left to right along the screen, firing laser-death at aliens, or you command a ship which you must steer up the vertically scrolling screen. Try Super Space Invaders (Domark, £25.99), an updated version of the famous Taito coin-op, or Apidya (Playbyte, £25.99), an unusual wasp-related horizontal scroller worthy of a 90 per cent (Format Gold) rating in Amiga Format.

award. And now it's even out on budget price.

PLATFORM GAMES: here you control a character rather than a vessel, and you must use your reactions, split-second



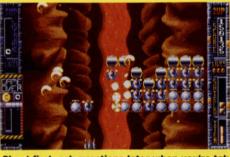
Zool is regarded by our team of experts as one of the classic Amiga platform games ever.

timing and your instinct to jump over objects from platform to platform, usually in a left-to-right direction. Examples includeone of the all-time classics, *Rainbow Islands* (Hit Squad, £7.99), which casts you as a cutesy character whose primary offensive weapon is a series of pretty rainbows.

You must guide this cheerful chap, called Bub, through a great many levels, jumping on the platforms, avoiding the baddies, and generally trying to collect huge bonuses.

The platform genre is classic, and there are 100s available, But what is the best one? Well, Zool (£25.99, Gremlin Graphics), is very impressive on an A500 or A600, but on the A1200 it really is breath-taking.

BEAT-EM-UPS: As I write, the most fashionable example of this genre is the arcade game called *Streetfighter II* ( for the Amiga by US Gold). The premise of these sorts of games is to use unarmed combat to defeat (or generally give a hard time) to your opponents. Punches and kicks are the stocks-in-trade of beat-em-ups. But depending on which game you are playing you



Shoot first, ask questions later when you're taking on alien hordes in Super Space Invaders.



The highly-rated Streetfighter II. Nine out of ten arcade players reckon you can't beat it.

might end up slashing, burning or otherwise perturbing your enemy. What makes this carnage all such harmless fun is the fact that they can do exactly the same to you – if you let them, that is. Pure beat-emups (as opposed to platform games with fighting in them) are relatively uncommon on the Amiga because they are difficult to make convincing, there isn't a lot of demand for them and they only work really well as two-player affairs, with you and a friend competing on the same screen. Oh, and if anyone moans about the graphic depiction of violence, tell them it's merely a catharsis. That'll shut them up.

ntures

The general idea of Adventures and Role Playing Games (RPGs) is that the Amiga presents you with a series of puzzles or tricky situations using text and graphics. You could find yourself in medieval Japan, Middle Earth, anywhere! Wherever you are, you'll have to think your way from location to location, ultimately trying to solve the entire game by deduction and logical thought.



The Secret Of Monkey Island 2: adventure, fun and a chap by the name of Guy Threepwood.

Most adventures require you to click on various options (for example, Open, Use, Look) with the mouse. The best example of this sort of game is very big, very attractive and very funny *Secret of Monkey Island 2* (LucasArts/US Gold, £37.99).

You play a character called Guybrush Threepwood, who you see interacting with his often bizarre surroundings in an effort to solve the puzzles that confront him. The style is such that you must think laterally, working out which collected objects combine with which to produce the results hinted at in the game.

Lateral thinking is also seen in RPGs. Role-playing games differ from adventures in that you get to define your character (or party of characters) at the beginning of the game. You can also name your characters (be they dwarves, fighters, wizards, whoever) and you tend to see the proceedings through the eyes of your character or party

Éye of the Beholder 2 (SSI/US Gold, £35.99) is certainly the game to go for in this category. It's probably one of the finest examples of an Advanced Dungeons & Dragons (AD&D) games available on the Amiga.

It gives you a team of four characters, each with their own skills, such as magic, sword-fighting, healing, and you must guide them around a multilevel dungeon and a forest slaying nasties, working out traps and puzzling through tricks in your quest



The classic *Eye Of The Beholder 2*: probably the best dungeon exploration-em-up on the Amiga.

to find the source of some great evil. The dungeon is seen in 3D, and the light of the torches you carry gives out after a few yards, leaving the corridors as black as pitch beyond that. Actually, it's worth checking out the original Eye Of The Beholder, to get in the mood because that's a great role playing game as well. You use the mouse to move around, use weapons, turn and, in fact, do everything else in the game. Such prolonged clicking (which must be mastered in real time, because the enemies loom up and attack without warning) does take practice, but you'll be a mouse-user extraordinaire once you've got into Eye of the Beholder 2. It's got a great creepy atmosphere, too, and it's a game to keep you up all night, both through its addictiveness, and through the fear of the thing under your bed.

# Puzzle Games

Puzzles are a possibly the most addictive games on the Amiga. They have that 'just one more go' feel that keeps you playing for hours. Possibly the most famous of all is Super Tetris (MicroProse, £24.99). slightly differing versions of which are available in the **Public Domain (where software can cost** little more than the price of a disk). The idea of the game is to swivel and shift a series of misshapen blocks which fall from the top of the screen so that they fit together at the bottom. If you're successful, you will produce lines which, although made up of lots of different blocks, stretch unbroken across the bottom of the screen. These lines then vanish leaving more room for more blocks. The blocks tumble endlessly and the game only ends when you fill the screen inadvertently with blocks which you have been unable to fit into lines. It's maddening, it's annoying and it's absolutely addictive. A decent version of Tetris, is a treasured addition to anyone's software collection.



Super Tetris: a simple, fascinating game that can be both frustraing and totally addictive

Push Over (Ocean, £29.99), available with the Epic bundle A600 pack is another puzzler that involves speed as well as thought. The idea is to knock over dominoes, having first placed them correctly so that when you start pushing them, you'll get them all to fall. Some of the dominoes have weird characteristics which means you must position them just right. For example, some fall upwards. It's weird, it involves ants for some reason, and it's totally brilliant.

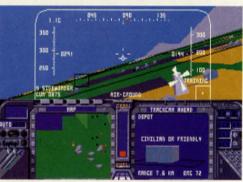


Pushover: painstakingly you set up all those dominoes and then.... knock them all down.



Your Amiga is the ideal computer for the production of gorgeous, detailed, 3D landscapes. Entire countries can be laid out beneath you, fashioned by an eye for natural beauty and detail. Your aircraft will be equally well constructed, and can be anything from an F-19 to an Me109.

So in all this fabulous, computer-constucted detail, you look out and see a representation of this world, and following a comment about how nice it all looks, you fire missiles at it and try to destroy it.



Strategy is the name of the game when you're behind the controls of F19 Stealth Fighter.

Fine. Anyway, the Amiga has got a wealth of flight simulations.

Many seem to come from just one company – MicroProse. If you're looking for a fast, game with plenty of nice views, loads of enemies but not too much technical stuff to master, it has got just the thing – F15 Strike Eagle II (£34.99).

The game gives you a simple mission to start with. You must destroy both ground and air targets, and obviously survive yourself. The 3D views from the cockpit are great, as are the outside views looking back at you in the plane. And of course, being an F15, you've got a fair turn of speed and some rather nice weaponry to play with.

A little more advanced and technical is F19 Stealth Fighter (MicroProse, £29.99). This uses the same basic program as F15, but has far more complex flight systems and weapons controls. You're flying a stealth plane, so the idea is not generally to



Impressive graphics and plenty of action makes F15 Strike Eagle II one of the best flight sims



The excellent MiG29 Super Fulcrum is a Soviet variation on the flight simulation theme.

destroy every aircraft that comes near you. Ideally you should fly with such precision and skill that you get to the targets and back without anyone knowing you were even there.

MiG 29 Super Fulcrum (Domark, £39.99) is a bit different, in that you get to fly a Russian aircraft. This means you can wave goodbye to the hi-tech cameras and sophisticated navigation gear and moving maps Here you get an authentic reproduction of a MiG 29, complete with stupid Russian dials instead of smart Western data readouts, and rubbish waypoint beacons.

But this notwithstanding, *MiG* 29 is a great game. The plane flies so well that you really get the feel of it. It even handles better than any of the MicroProse aircraft, that's for sure. You have the standard sort of missions to choose from. Blowing up convoys, destroying other fighter patrols and flying low over heavily-guarded secret things are just three of the possibilities.

There is also the option to connect your Amiga to a friend's via a null-modem link. This is simply a lead that plugs into the comms port on the back of each Amiga. You select the correct head to head option, having loaded the game into both computers, of course, and away you go, actually flying against another human in a MiG 29.

If you're not interested in military hardware, you could always give A320 Airbus (Thalion, £25.99) a try. This very realistic sim was co-written by a Lufthansa pilot, so should be pretty accurate.

You have to deal with various navigation aides as well as radio frequencies and other details which, although not as immediate as firing Sidewinders, do make the game atmospheric.

So if you've got an interest in aviation, you've got to get a flight sim. They combine skill, thought and raw instinct with fun and big, big explosions.



Yes, there is a flight sim that doesn't involve blasting and bombing – A320 Airbus

# War games

If war games are what you're after, you'll find a great many on the Amiga. They range from battlefield situations where you've just got to keep yourself alive right up to global confrontations where one wrong word from you will have the entire planet immolated by nuclear weapons.

M1 Tank Platoon is by MicroProse (£34.99) and it gives you a platoon of very expensive tanks to drive round the countryside looking for Russians.

It's similar to play as a flight-sim, but confined to the ground, in that there are loads of 3D views, and you can even view outside the tanks and planes, just to find out what's going on.

Depending on the scenario you've chosen, you must either command your troops to get into positions from which they can ambush the enemy, or you tell them to run towards the baddies at full tilt. As well as ordering folk around, you can assume the position of any one of 12 men under your direct command.

There are four tanks, each with a commander, driver, loader and gunner. You can't be the loader, so that makes 12 people to play. Gunner,



M1 Tank Platoon puts you in the hot seat when you take your forces into battle

obviously, is one of the most satisfying roles to play, if you can stay.

For more of a strategic element with a little more brain power needed, Battle Isle (Blue Byte, £25.99) is a great choice. Move your ships, tanks, troops, aircraft and even hovercraft around a series of maps, spread over 16 levels, waging war on the enemy (either the Amiga or another player).

The game has lots of well animated sequences, it's challenging and (as far as I can tell) realistic, it's set in the future, and it's packed with atmosphere. It deservedly got a 90 per cent rating in *Amiga Format*, because once you start playing, you can't stop. Highly recommended.

War at sea is taken care of by 688
Attack Sub (Empire, on Combat Classics, £30.99). Here you sail a very advanced vessel around under the ocean, looking for

nasty enemies to torpedo. You must use all the data provided by the rest of your crew in order to suss out what the 3D underwater situation is. It's a game involving a great deal of spatial awareness on behalf of your good self, but slow to play and tough to get into.

Finally, Pacific Islands (Empire, £29.99) is another tank game. It's rather more arcade-like than M1 Tank Platoon. It's a lot quicker for a start, and if you don't physically do all the shooting, your men won't do it for you (unlike M1). You have 16 vehicles under your command and Itimately, it's down to who's fastest and most accurate when everybody starts firing at once. If it's you, you've won. Congratulations. Next mission...



One of the best war games Battle Isle got a 90 per cent Gold award from Amiga Format team.



It's curious that there should be so many sports games available for the Amiga. You'd have thought that sport is one of the few things that it's pointless to simulate sitting down at a computer, but there is a host of sports games, and many are excellent. If you're a fan of Formula One, there's a game called Formula One Grand Prix (MicroProse, £34.99), which you must buy. It puts you in the cockpit of any one of 26 cars, all of which are painted the correct F1 colours, have the right drivers in them (if you've been patient enough to type them in, that is), and accurately reproduces versions of real tracks. The game is astonishingly accurate. It's got fast 3D graphics, it's got pit-stops, accidents, in fact everything you see



Try (oh dear James) your hand at the international Rugby Union with a copy of World Class Rugby.



Sensible Soccer and Sensible Soccer 1992/93 cheered many people up with its playability.

when the F1 season is on TV on Sunday afternoons. All that's missing is Murray Walker and James Hunt. Formula One Grand Prix is fully compatible with the A1200, and runs at approximately twice the speed as it does on the A600. It's an incredibly smooth game, and looks absolutely brilliant, particularly on an A1200.

Football is pretty well catered for on the Amiga scene; Sensible Soccer version 1.1 (Sensible Software, £25.99) is the best footy game, and darned good it is too. There is a huge choice of teams and all the rules are accurate, even down to the pass-back law that came into effect quite recently. It's marvellous.

American Football is supported by John Madden's American Football (Electronic Arts, £25.99). Make all the plays, watch the guys rush around, jump when you bomb out and get a touchdown. It's just like Sunday evening TV, only without the advert breaks. Highly recommended.

Rugby gets a look-in, too, with Audiogenic's World Class Rugby (£24.99). All the world's major teams are here (except South Africa, which wasn't



Jimmy White's Whirlwind Snooker: realistic, and great graphics. One of the best sport games

playing internationally then), and the game's complexities and set-pieces have been faithfully reproduced, with a, flowing style of play you don't often get to see in real life.

Finally there's Jimmy White's Whirlwind Snooker (Virgin, £29.99), a brilliant snooker adaptation and a lot of fun.



Rushes first downs, snaps with all the rest of the jargon in John Madden's American Football.

# Strategy & God Games

Strategy games are a natural for your Amiga. It's got the processing power to handle all the complex equations that must be taken into account whether you're commanding a tank division or simply working out whether that pawn should take the bishop.

Lemmings (Psygnosis, £10.99) was a novel style of game that also involved strategy. You have to guide approximately 100 tiny creatures to an exit on each level. Objects have to be scaled, tunnels dug, bridges built and walls, destroyed to let the little critters through. It requires a fair bit of thought, and there are lots of blind alleys and false moves which puts solving the whole level in jeopardy. It's a brilliant game, and immensely addictive.

But if you like your strategy more rarefied, there are umpteen different chess programs around. One of the most novel, though, is *Battle Chess Il* (Electronic Arts, £25.99).

This borrowed an idea first seen in the Star Wars movie, in which the chess pieces actually battled each other when they met. In *Battle Chess II*, you see back-stabbing, firebolts and all manner of slayings whenever a piece must be removed from the board. It's a lot of fun.

God games are reltive newcomers to the Amiga scene. Why do they have this grand title? Basically because you got the play a god. Briefly, these games give you total control over a closed environment such as a planet, an island or a city. You must build up your subjects, making sure they not only survive, but prosper and multiply. In these games, you've always got a great many factors to consider, and the skill is in juggling these in such a way that you make all the people you control happy.



Dictate your own terms and satisfy your craving for absolute power with Mega-lo-Mania



Populous: one of the early God games that many have imitated but very few have bettered

The thing with these games is, something will go wrong. In *Mega-lo-Mania* (Image Works, £25.99), you must beat the other tribes on your island to technological supremacy in an arms race. It culminates with one tribe (ideally yours) wiping out the others. *Populous* (Bullfrog, £7.99) and *PowerMonger* (Bullfrog £25.99) both have similar aims – the rapid growth of a force until it has the power to become dominant and wipes out all opposition.

Sim City (Maxis, £7.99) differs in that you aren't trying to wipe out anyone. Instead, you build a village, providing it with power, roads, industry, housing and commerce. Then let it grow into a town, add a few parks, build some freeways, perhaps a nuclear power station or an airport, then watch as it becomes a city. You can tax the citizens, spend the money on the police and laugh as martial law is imposed. In fact the destiny of the people rests entirely on your ability to control their society. It's fascinating, absorbing and informative. Don't let that put you off; it's also great fun, especially when Godzilla wanders through your downtown business district and wipes out half of it in ten minutes.

Maxis also makes SimAnt (£25.99), which is similar, except it reproduces the community structure of an ants nest.

So, as you can see from this brief glance through the more cerebral games you can find on the Amiga, there is plenty to keep you interested and on your toes. The other great thing about this kind of game is that you can never really finish them, you can play and play and play.



Sim City: would you be a wise and caring leader, or would you turn it into Sin City?



Original, frustrating and completely addictive, Lemmings is a classic strategy game



If you've got a healthy curiosity about the social structure of an ant colony, SimAnt is for you



Playing a Queen's gambit is easy when you've got a fire bolt to spare, as in *Battle Chess II* 

# **And The Future Looks Bright**

The two most recent changes to the Amiga line-up are the A600HD and the A1200. Both of these machines are capabale of using built-in hard disks (HDs). These enable you to store programs and data inside the Amiga, even when it's switched off. It's a fast and efficient way of handling data, and many of the games available today are installable to hard drive. For example, Formula One Grand Prix (MicroProse, £34,99) comes on four floppy disks, which means you must keep swapping between them as you play. However, you can install the game on to a hard disk and cut the loading time to only a couple of seconds, and do away with disk-swapping entirely.

The A1200 is Commodore's newest

The A1200 is Commodore's newest baby. Put simply, it's the most powerful low-cost computer you can buy anywhere. It comes with two megabytes of RAM as standard, and has a processing chip capable of making twice as many calculations per second as previous Amigas.

The A1200 can display 256 colours in a game, and up to 26million on a static screen. It's a 32-bit machine, whereas nearly all other home computers are 16-bit. So it's loads faster and more powerful.

Because the A1200 is such a quantum leap forward in computer hardware, it can only run 60 per cent of existing software. But this isn't a big problem because every major software company producing for the Amiga is keen to develop games for the A1200. Gremlin Graphics has already written a version of the best-selling *Zool* specifically for the A1200. Within a few months, incompatibility will cease to be a big problem.

hen you buy a brand shiny new Amiga you may be tempted by the deal that includes a software bundle. Commodore recently introduced two new packages for the A600 and A600HD. They are The Wild The Weird and The Wicked bundle for the A600, containing a copy of Pushover, Putty, DeluxePaint Ill and Formula One Grand Prix, and the Epic pack for the A600HD with Rome, Myth, and DeluxePaint Ill. Here's everything you need to know to get off to a flying start with your new games.

# Formula One Grand Prix (MicroProse)

There's no doubt about it: Formula One Grand Prix is one of the best games ever on the Amiga. It's got the entire F1 circus contained on four disks, and the sense of realism and atmosphere is amazing.

The first thing to do when you load it up is go to the game options menu and change the names of the drivers and teams to what they are in reality. This gives you 'famous' folk to race against, and makes the whole thing that bit more fun. The first tip is to try out all the control systems. You might assume that a joystick would be the best way to control the game, but have a go with the keyboard. The consensus in the *Amiga Format* office is that keyboard is the best control method (especially if you've chosen to drive a car with automatic gears).

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You don't just get sat in any old automobile, oh no, you can set up your own car if you fancy.

#### FORMULA ONE GRAND PRIX TIPS

If you're going to beat this game, the first thing you'll have to do is put it on indestructible car mode. This means you can smash into other competitors without your car being reduced to a pile of scrap metal. When driving down a straight (with a slow-ish corner at the end of it), try and hit any cars just as they start turning. It's a matter of luck whether they'll be there or not, but if you see one in the distance, keep your foot down and hit it right up the backside, going flat out. This will smash it off the track, and will reduce your speed by about a half (easily enough to go round most corners).

Smashing people off the circuit is obviously a good move, but try shunting them at the beginning of the race, just as the pack is coming to the first corner. The concertina effect will bash in many people's front and back wings, forcing them to waste ages of time getting their cars fixed in the pit. Another trick is to completely ignore the yellow danger flags. You can actually whizz past loads of other cars when they're all going slowly because there's been an

Continued over page...

Pssst, wanna know some short cuts for the games bundled with the new Amigas? James Leach reveals how to get the maximum enjoyment from the starter games with the minimum frustration

# TIP TIP HORAY

# **Push Over**

A strange game, this one. It's a cross between domino-toppling and a standard platform game. You must guide a little character called GI Ant through screen after screen of dominoes. The idea is to pick them up and carry them into positions where, when you're ready, just one push will get them all to topple into each other.

It's not really possible to give tips for the game, because it's simply a matter of learning which blocks do what, and where to put

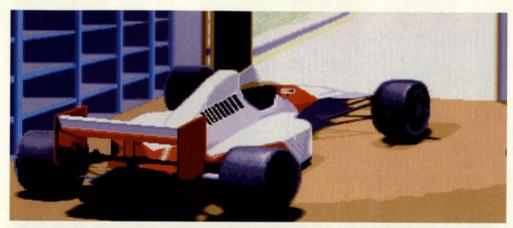


Personally, I feel that the only good ant is a dead ant, covered in chocolate from the sweet counter at Harrods.

them. Knowledge like this only comes from experience. But it is possible to list the codes for each level in *Push Over*. So without further ado, here they are:

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And there are the codes for the whole thing. The only other thing that remains to be said is to practise getting GI Ant around the screen quickly. There are some extremely tough time limits on a few of the levels, so you've got to think and move very quickly.



Formula One Grand Prix had the driving freaks in the Amiga Format offic ranting around the place like veritable Sennas. It has also managed to make them cheer up following the tedium of Mansell-antics.

accident. You just have to be very, very careful and make absolutely sure that you don't get caught up in it along with all the rest.

On many of the circuits, such as Imola or

Hockenheim, you can skip across the grass on certain corners. If there's a chicane ahead, such as the Acque Minerale (thought I'd chuck that one in there for you racing buffs), just let off the accelerator,

steer straight and glide across, tweaking the steering if you feel the car's rear wheels start to slip. If you want to streak ahead at the beginning of the game, on some circuits (Mexico for example), you can race up the pit-lane, where it rejoins the track. None of the other drivers use it much, so you should have a clear run past the rest of the cars.

Also, do use the tow. This is when, on a straight, you head directly for the back of the car ahead, then watch the speed whizz up when you get close. Then, at the last second, slip out next to the guy and storm past. Speeds of up to 212 mph are possible. Maybe more.

Finally, a good driving tip (as opposed to a dangerous manoeuvre). Don't brake on the corners. Brake when you see the 100 metre boards, then release the brakes and accelerator when you go into the corner. Hug the apex (the white line, if you're using it), and accelerate just as you go past the apex. You'll find that you can do the whole thing rather rapidly indeed.

# **Epic** (Ocean)

Your eight-mission brief is to travel around the universe, destroying all the evil Rexxons you find. To be honest it's not a tough game to complete, but here are the codes and some words of advice:

Mission 1 Minefield: the mines can be shot by flying up to them while using your lasers. You need to get 100 per cent while making your way to the planet. If you get through the minefield before getting a reading of 100 per cent, turn back and get your full quota. Destroy one Rexxon ship, then, when you've achieved 100 per cent, turn round and head once more for the planet.

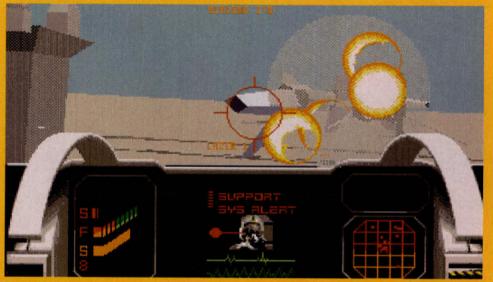
Mission 1 Tracking Station (Code AURIGA): fly to the purple target dot at the top right. This is the all-important generator. Shoot and destroy both parts of it, then head towards the station (the purple dot at the centre of the map).

Mission 2 CPU/Space Ports (Code CEPHEUS): find the road system by flying towards the centre of the map, then follow the road away from the hub (where they all meet) out towards the end. When you get there, destroy one of the large buildings you find. Fly back along the road and take the next road to the left. Repeat until you've achieved 100 per cent. There are five spokes but you won't need to use all of them.

Mission 2 Mining Complexes (Code APUS):



Lovely, lovely graphics. Each one lovingly drawn. Gorgeous. But what about the gameplay?



Epic, a game that was eagerly awaited, much publicised (hyped) yet still strangely unsatisfying in the gameplay department. Still, beginners to the Amiga and to Amiga games could benefit here.

destroy the three tall octagonal buildings. They'll turn black when you've hit them enough. Make sure you hit the top bits as well. To navigate to them, follow the double road that runs around the complex (not the monorail). You can also destroy the low octagonal buildings with white flames above them for extra points.

Mission 3 Glory (Code MUSCA): this is the first space battle. You simply have to shoot down enough fighters to gain your 100 per cent. It's not a bad idea to go for the larger vessels with necks, as they are worth more points. The idea is to get as close in as possible. Pressing HELP tends to direct you towards the larger ships anyway, which does help. Attack waves of enemies rather than individuals, and look for their afterburners (orange dots).

Mission 4 Magma Cannon (Code PYXIS): aim for the two black dots near the top of the map, then get a bearing by pressing HELP. It'll be approximately 210 degrees. Follow this heading at low altitude and destroy the cannon. Don't mistake the steely mountain tops for the gun, and ignore enemy fighters, as time is precious.

Mission 5 Galactic Storm (Code CETUS): this is the next big battle. Once more 100 per cent is the target, so get shooting at those space ships. It's still a good policy to go for the biggies, because you haven't got quite so much time.

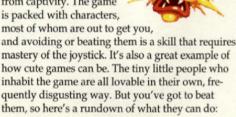
Mission 6 Command Centre (Code FOR-NAX): the target is almost straight up the map. Hit HELP to get an accurate bearing, then go straight in. It's the purple dot.

Mission 7 Mother of all Battles (Code CAELUM): there's plenty of time for this one, and the tactics are just the same as for all the other battles. You can go for the larger craft, but it's really up to you. Have fun and blast away at will.

Mission 8 Command Ship (Code CORVUS):
fly to the big purple target on the map. Using
HELP for this. When you get there, use the Photon
1 self-targeting missiles to shoot the ion vent above
the afterburners. It looks like a small yellow box.
When you hit it, a message appears, telling you to
use the cobalt weapon. Fly away from the mothership to get some distance between you, fire the
cobalt thing and run.

# Putty (System 3)

Forget realism for a moment, and step into a world of totally made-up weird things. In Putty, you play a blue blob whose only mission in life is to rescue a crowd of little creatures called the Bots from captivity. The game is packed with characters,



The evil Dweezil,

's a mean cat.

#### Level One - Putty Moon

Terminator Carrot: based on the famous Schwarzenegger character, this psychotic loony will try and pump you full of lead with his Uzi-9cm. Use your melt mode to dodge his bullets, and wait for the recoil of his gun to bounce him off the platform.

Septic Snail: like most snails, he's not very fast, so don't worry too much about him. But don't casually touch him, as he's poisonous. Punch him, absorb him or squash him to get rid of the blighter.

Space Kid: he's armed with a nasty sword, this chap. He also appears to have a major grudge

against poor old Putty (and the whole of the Putty clan going back a few thousand years or so), so be careful around him. Best thing to do is punch him when he's in range. It sends

Putty, he's well hard (done by). him packing, that's for sure.

#### Level Two - Dazzledaze Villas

Scouse Sausage: although he's a violently pugilistic foodstuff, this chap won't attack unless you touch him. He can only be eaten if you've got hold of the false teeth power-up. If you try punching him, he'll shout at you in a broad Liverpudlian accent.

Gun Powder Monkey: deadly, largely on account of the big cannon he totes around. This cute-looking chap must be avoided whenever he appears to be going for his cannon. Get close if you can and punch double hard in order to kill him.

The Snot Goblin: a bit gross, yes, but you're going to have to eat him to get rid of him. This



Brightly coloured and brilliantly put together lev-Putty a sure-fire winner

Continued over page...

# Rome (Millenium)

For a bunch of guys who lived 2,000 years ago, the Romans certainly got it together in terms of civilisation - tons of sports, politics and foreign travel, and even the odd toga party. Rome sets out to emulate these times, with you as a citizen who has his eyes on becoming an Emperor. To reach this exalted position you'll have to lie, cheat and steal. So prepare yourself for the sneak's version of what really made the Holy Roman Empire great...

First Level - Herculaneum: the first thing you've got to do in the game is deliver a message to Consul Segamus Megadrivus. To get there, head towards the left side of the screen, where you'll find the consul relaxing at his villa. Use the fountain as a weird sort of signpost. Now visit the baths, where you can steal a toga. It's then time to leave Herculaneum. Passage on a boat will cost three cisterti, which can be gained by buying a dagger from the armourer near the boatyard. Once you've got it, threaten passers-by to get the dosh.
Ideally you should have about

10 cisterti before you leave.

Second level - Rome: head off to the tavern and start a bit of gambling (you should have got some loaded dice at the tavern). You have to collect 80 cisterti before you can finish the level.

fork or I will be forced

to remove your nappy!

To borrow money, find the wandering money-lender, who can be identified if you ask everybody you meet who they are. He'll give you between 10 and 30 cisterti, but make a note of how much he does give you, because you'll need to repay him later. To get more cash, go to the slave



you in, and warn the big man of an imminent threat to his life. Third level - Britain: march your army

over the bridge to the north of you. Get close to the enemy camp and wait. The Celts will rush out and you can

> chop them into little pieces. Easy. Once you're victorious, raid the encampment for more dosh then move over to the left side of the map to do the same there. If your men aren't noticed by the barbarians, send Hector to get their attention. Another battle will see you as wealthy victor, and away from Briton. Fourth level - Rome: vou

have to get yourself elected as a consul. Bribe someone to nominate you, then sponsor any satirists or playwrights to be nice to you.

Oh, and repay the money-lender's loan. Very important, this. Give the other Consul, Nintendus, a slave girl to keep him occupied, then bribe the populace to vote for you. You should be successful, and can then move on to Egypt.

Fifth level – Egypt: more indigenous population control much along the lines of

Briton-bashing. But remember to guard the gorgeous queen, Cleopatra. Don't leave her alone, or you will be heaped upon with amounts of bad luck. To defeat the Egyptians, pick them off in small numbers, which should make the fighting much easier.

Sixth level - Rome: the idea is to become Emperor. But the incumbent Emperor has to, er meet with an accident. This can be done with a dagger, or you can hire a hit man to kill him, and thus not get your hands dirty. Er, then you'll have won.



know that you want to get in there, but those chaps in skirts t seem to want to let you. Does this call for guile or violence!

requires the false teeth. Make sure you keep out of the way of his unpleasant green bogies while you do it.

Level Three – Technofear. The enemies keep coming and so does the weirdness. Check this...

Pig on a Space Hopper: more annoying than deadly, a quick punch will get him out of your life for a while. Killing him is quite tough though, to achieve it you've really got to push him on to an electrified platform.

Red Shiny Gut Bucket: this is a remarkably horrible baddie who will kill you incredibly easily. They eat white rabbits, so find a rabbit and absorb it, then re-mould. The Gut Bucket will think you're a bunny-wunny and not a homocidal blob, he'll eat you and burst as you expand inside him. Disgusting but necessary (and fun).

Flying Saucer Bots: don't kill them because they're trying to assist you by crashing on to the baddies' heads or skidding along the platforms, destroying everything there.

#### Level Four - Oriental Rooms

Holy Man: he doesn't do a lot, but watch out for the burp-bubbles he emits. They're poisonous. He can also create a damaging forcefield. A carefully timed punch should see him off.

Chinese Vampire: these are big and dangerous and drop fireworks on you. Avoid both the fireworks and the Vampires, unless you've got those vital false teeth, in which case you can eat the cheeky chaps.

Samurai Catapults: avoid the missiles that they shoot, and try to use the inflate command to get them to die. They're dangerous, though, so be very cautious around them.

#### Level Five - Toytown

Clockwork Orange: as well as being quite remarkable visual joke at the expense of Anthony Burgess' over-rated novel, this baby spits poisonous pips at you. Absorb him, then change into him using your mould mode. It's the only way.

Teddy Bear: ahh! He looks cute and cuddly, but watch out – he doesn't like noise, and if you make any he'll charge at you and explode on impact. So much for all those

childhood comforts.
Bugsy: he's nasty,
and will shoot you on
sight. Avoid both him
and his bullets, which
amusingly have your name
on them. Eat him using
those oh-so-important
false teeth.

#### Level Six - Twilight Zone

Dweezil in a Flying Saucer: the big evil, nasty one himself follows you around, dropping mini-flying saucers on your head. You must re-mould into the Black Hole character and absorb him, sending him spiralling into the fourth dimension and out of harm's way.

Flying Gits: everybody's been plagued by these at some time in their lives. Just punch the old folk to knock them out of the sky and bring an end to their swooping antics. Fatty Amal: er, it's best if you avoid this one, and don't bother trying to find ways to kill him. His bubbles will cause you no end of misery, and there are apparently no ways to despatch him. Run away.



When the going gets weird, the weird get going (as the immortal Dr H S Thompson would lead us to believe). *Putty* refuses to stop the terminal surreal overdrive, no matter how much you crave reality.

# Myth (System 3)



Remember Kirk Douglas as the Viking? Well now's your chance to impress the gods...

You've done the racing, had a splat at the amorphous blobby-type Putty playing, and even gone for the ant-ics, it's not time for some heroics, now, as you decide to be a legendary figure battling against infeasibly crazy odds and some of the most dangerous figures in history, fable and (of course, Myth).

You must play against some of the hardest legends around: those of the Egyptians and the Norse people. And it's not going to be easy. But to make it a little much easier, here are a few hints:

# NORSE ZONE - FOREST SECTION Forget the biggest weapons,

although they look nice, and use daggers against the trolls. A few inches of cold steel will soon impress upon them the need to leave you alone.

Once you've chopped and slashed as many trolls as have been bothering you, it's time to confront Nidhog. It gets unpleasant from here, so hang on to your last meal.

Use the magic sword to slash Nidhog's throat. Once you've done this, pop a few daggers into the open wound. This will teach him a severe highly valuable lesson, and he won't be annoying you again.

#### **NORSE ZONE - VALHALLA**

First get into Odin's castle. Not easy, but it's pretty obvious that you'll need to. Once you've managed to kill the two guards, you've got a bit of a puzzle on your hands. The guards' skulls eye sockets are ideal resting places for your daggers. Just a little clue, there.

#### **EGYPTIAN ZONE**

Anubis, the jackal-headed god, and possibly the coolest of all the Egyptian gods, is the target you've got to go for here. In order to progress, you've got to kill him (which, considering he's immortal, should tax you somewhat). The Eye of Atum, which you might have discovered prior to meeting Mr Anubis, is a very useful object when it comes to offing him. You must stand to the right of the ankh symbol. select the Eye and press fire. Edge forward slowly until you make contact with the fellow, and remember to recharge yourself using the ankh. Job done, immortal killed and so on. What's next? Well get yourself along to Tut's tomb. In order to achieve this, you have to place the jars in the correct order.

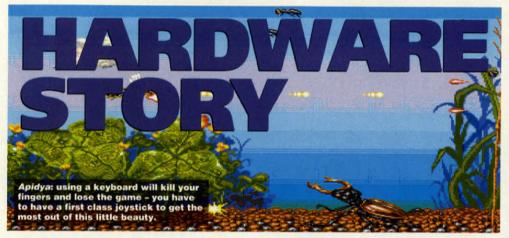
Keep an eye on the flame and you'll see jars appearing. This signal tells you which jar to place next. It's not difficult once you know how.



"I'll give you three of these, erm... large green grapelike thingies, if you'll get rid of the three layers of undercoat on the bedroom wall. Deal?"

# A FOX IS FOR LIFE NEW! BUDGET SUPER CAULDRON CRAZY CARS 2 NEW! WILD STREETS CRAZY CARS 3 EIRE AND THE BLUES ORGET **BROTHERS** OFF SHORE WARRIOR TITUS THE FOX AVAILABLE ON AMIGA. ATARI,PC 3'1/2 AVAILABLE ON ALL FORMATS OT JUST FOR TITUS LTD., UNITED HOUSE, NORTH ROAD LONDON N79DP, TEL:071.700.2119, FAX:071.700.2220.

Your Amiga comes with a mouse, obviously, because it needs one. But not all games work with the mouse. You're going to need a joystick as well, to get the most out of your machine. And maybe a track-ball, too, and some pedals, and a steering wheel...



Once upon a time, the only way you could get information into a computer was with the humble old keyboard.

This was fine for the odd bit of word processing, the occasional fun couple of hours with a spreadsheet, or even a scintillating session with one of many programming languages, but...

when it came to some serious relaxtion, you were a little limited. Sure you could use

> joystick for your Amiga plugs in next to the mouse. It uses a 9-pin connector, which means that any joystick with the same connector will work.

The idea is simply to emulate the control system used in arcades for quicker and more satisfying gameplay. Although the basic innards of every joystick are the same, they come in all sorts of weird and wonderful shapes and sizes.

As long as they're easy to hold and comfortable to use, there's no limit to what they can look like. The disadvantage of using a joystick is that it only has eight directions built into it.

So if you were to use one with a drawing package, you'd find a picture made up solely of straight lines at 45 or 90 degrees to each other.

The other criticism is that they impart no 'feel' to the user, especially if you're piloting a flight sim. Their digital nature doesn't allow for small, delicate

your keyboard in order to type in commands such as 'Go West/Pick up spoon/Kill Thragon of Zing with Spoon'. You might even be able to make your way around a race-track or simple shoot-em-up with the [O],[P], [A] and [S] keys, but in order to get the very most from games what you needed, and what you still need is a games-specific input-device. Different games call for different touches, so let's have a look at just a few...

movements. But there are such things as analogue joysticks. These must be calibrated at the start of a game, and they enable much more stick movement, so depending on how gently you move the stick, the plane (or whatever) will follow suit equally as gently. Formula One Grand Prix (MicroProse) and MiG 29 Super Fulcrum (Domark) are two major games that support analogue sticks.

Driving games have their own steering wheel, too. Called the Freewheel (£39.95 from RC Simulations 0272 550900), it works a little like a joystick, but you hold it in both hands and rotate it left or right.

Unlike a car steering wheel, it isn't connected at the centre to anything, so you twist it in mid-air. According to *Amiga Format*, the Freewheel makes driving games such as *Nigel Mansell's World Championship* much more fun, but it also takes a bit of getting used to.



Mig-29 Super Fulcrum: ideal territory for joystick jockying. Beware though, MiG is quite a simple game, more complex sims require keyboard work.



Formula One Grand Prix: Mouse? Keyboard? Joystick? What to choose? Maybe a full-blown steering wheel for your Championship dreams.

## **AUTOFIRE JOYSTICK**

Joysticks such as the Competition Pro and the Bug come with autofire. This is to take some of the misery away from games where you must repeatedly hammer the fire button in order to get a decent amount of firepower.

They work by rapidly interrupting the signal from the held-down fire button to the computer. This, to the computer, looks like the player is twitching his thumb on and off the button, and gives the required response. Some games slow down when an autofire is switched on because the rate at which the interrupt is occurring doesn't give the computer much time to smoothly get on with the rest of the game. Luckily there's always an on/off autofire switch on the joystick, so you can play normally.



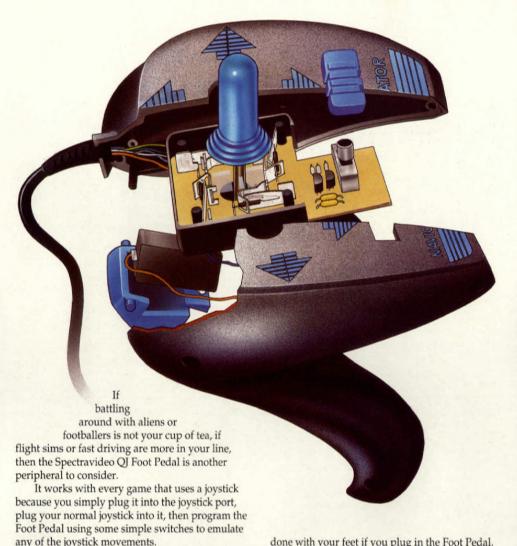
The Bug might look a bit gimmicky but we think it's one of the best 'sticks around.

### JOYPAD ALERT

Consoles? Pah! But maybe not. You can use one of the many Sega MegaDrive joy-'Pads' with your Amiga. But, because the Amiga is expecting a set of instructions from a joystick rather than a pad, you are limited to the number of games you can use. Gremlin Graphics have got two games that can be played with both a joystick and a Sega joypad: Zool and Nigel Mansell's World Championship. We hope that more and more games will have this option, especially as MegaDrive joypads can be bought in most branches of Dixons or Boots for an inexpensive £14.99.



the many low-cost MegaDrive joypads that are now becoming available for the Amiga. At long last we've found that there's some use for those damned consoles!



done with your feet if you plug in the Foot Pedal. So there are loads of relatively inexpensive add-ons to make your gaming life more fun. But to make a start into the worlds that are waiting for you, all you really need is a good mouse and a decent joystick. Oh, and your imagination.

# **HOW DOES A** JOYSTICK WORK?

A joystick is built around a strong steel shaft, the top half of which is coated in plastic. This is the part that you grip. The shaft is pivoted in the middle,

can be moved in eight directions (Up, Down, Left, Right, and four diagonals). There are four microswitches anchored to the base of the joystick.

Moving the joystick left makes the bottom of the shaft swing to the right, closing the switch on that side. This creates a circuit that sends a signal to the Amiga via a nine-pin plug.

Each switch is given a numerical value. For example, pressing the stick to the right might give a reading of 15, which the Amiga will interpret as a move to the right. If the joystick is

moved diagonally, two microswitches are closed. This creates a different signal, the sum of the two microswitch values. For example up and to the right could be 15 (right) plus 10 (up), giving a value of 25. Thus four switches can give you eight directions, and eight different number

The fire button(s) are microswitches which are closed by pressure on the but-ton, rather than joystick movement. The fire button microswitch will have a number assigned to it as well, so if it's pressed on its own, with no movement of the joystick, it might read three. But combined with a movement to the right, the value would be 18 (15 plus 3).

This means that the Amiga can work out when the fire-button is being pressed, even when the joystick is sending all sorts of directional information at the same time.

So, next time you blast your way out of trouble, you'll know how you did it!

# Golden Image Mouse

flight simulation.

Ladbroke Computing 0772 203166

Most obviously, it could be used for controlling

Even shooting at goal in a sports game could be

gears, brake and accelerator in a driving game, but

you could just as easily use it as the rudder in a

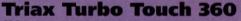
OK, so there are some games, such as Sim City, Mega-lo-Mania or Killing Cloud which work best with a mouse. And there are some excellent mice around should you want a new or better one than Commodore's.

This one is rated as a Format Gold - it's smooth, responsive and you can whizz it around quickly without it losing track of where it's supposed to be. Oh, and it also feels nice in your hand.

# QJ Foot Pedal

£24.99

Spectravideo 081-900 0024 This is aimed at those of you who are seriously into driving games, you can program joystick commands into it in order to make it act as the accelerator, brakes, gears or, even the steering. It works with any game that uses a standard joystick. Great with games such as F1Grand Prix.



Hornby Hobbie 0843 225555

A console-style joypad that has caused much mixed opinion amongst reviewers and gamesplayers. It is not strictly a joystick at all (it has no 'stick' to speak of) it is firmly based on the console design. Instead of slamming a steel rod backwards and forwards, up and down, you move your finger or thumb over a pad on the left of the palm-sized device. There are three fire-buttons, all of which are very responsive. The problem is that, after a prolonged

game, you find that your fingertips have been worn down as if you were using sandpaper.

# The Bug

£14.99

Cheetah 0222 867777

It might look strange, but this small control stick with its handy buttons and autofire make it a seriously useful addon, especially when you need speed and accuracy. It's perfect for Sensible Soccer or, with the Bug's easy autofire action, you can beat Apidya.



The QJ FootPedal from Spectravideo is absolutely spoton for you driving simulation freaks.

















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If you're looking for an Amiga magazine which offers games-only coverage, then there're no two ways about it.

AMIGA POWER is the dedicated Amiga games magazine for the dedicated Amiga games player.

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Each month in our Things To Come section we bring you in-depth analysis of future hits and talk to the people behind the games.

# POLICY OF TRUTH

- We won't review unfinished games just to claim an exclusive.
- We don't pander to games publishers we say what we really think.
- We only use experienced, professional reviewers.
- We won't bore you with mountains of technical-jargonhardware tedium.
- We take games seriously, because you do too.



# OF THE MATTER

One of the Amiga's most remarkable functions is the power it gives you to vent your artistic urges by creating graphics. If you want to discover how to harness this amazing capability, read on

ost people buy an Amiga because it's such a good games machine, others use it as a powerful home computer that is easily capable of storing the sort of database information you need to run a business. But one of the Amiga's strongest features is its graphics capability. Whether you want to use the Amiga to create illustrations for book covers, paint your own pictures, or just fiddle around to satisfy your creative urges, there is an unrivalled supply of software to choose from that looks great on the screen and works fast.

But before you rush into the world of graphics, take some time to make sure you choose the program that best suits your needs, and beware that many programs make big claims about what they can do, but only deliver the goods if your Amiga has been expanded with lots of memory and/or faster processors.

If a package has a minimum memory requirement it's no good thinking you'll get away with having less, the program just won't work and you'll have wasted your money. If a program states that it will work in 1Mb but 2Mb is recommended, this is the same as saying you need 2Mb. In 1Mb the program will run but have limited functions. Obviously if you intend to make money from graphics, a faster processor and lots of memory isn't just convenient, it's essential. Graphics are very memory intensive as you will discover when you venture forth into a brave new world of Amiga drawing and animation.

Anyway, there are basically two ways to make pictures – drawing or rendering. Drawing on the screen and saving the pictures is generally called painting and the programs are called paint packages. Rendering falls into two groups: 3D or fractals. Let's start by taking a look at drawing...

# DRAWING

# **Bitmapped graphics**

Producing Amiga graphics may seem a bit bewildering at first, but in actual fact it's all very simple. Computer images on the screen are called 'bitmaps'. Each coloured dot on the screen is defined, as far as the Amiga is concerned anyway, as a series of bits, which are digital locations inside its memory. These bits can store the location of a point on the screen, its colour, and the shade of that colour. The image on the screen is created by the bits forming a map or pattern – it's like a tapestry or knitted picture where little dots of colour make up the complete image.

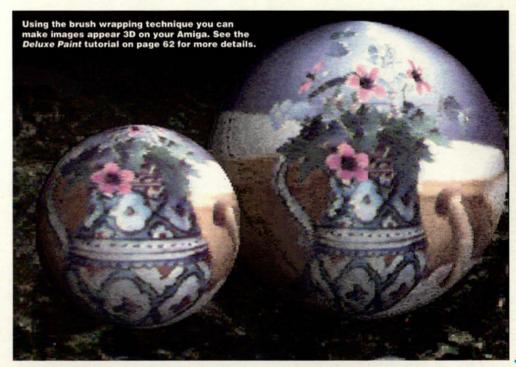
Perhaps the greatest advantage of Amiga art over traditional methods is the ease of editing. If you make a mistake with oils or watercolours, you're up the creek without any turpentine. But with the Amiga you can alter, arrange and delete the pixels you activate on screen endlessly, without turning the screen into a grey mess of colour. What's more, with the advent of 24-bit graphics (close to photographic quality) you can nearly emulate all the subtleties of real artwork.

So, bitmapped graphics offer a real alternative to conventional art materials, and are more cost effective too, the only resource you need for endless amounts of computer 'paint' is the electricity to power your Amiga.

Painting programs enable you to use computerised versions of paint brushes, stencils, rubbers, rulers and ink pots. By replacing the paint brush with the mouse you can create extremely attractive graphics quickly and simply with the added advan-

# "All that you need for endless amounts of computer 'paint' is the electricity to power your Amiga"





tage that because its all digital you can rectify mistakes without having to start all over again.

So what can you do with your graphics once you've created them? This depends largely on whether you're creating graphics for business or pleasure. If you're a professional designer you can paste them into a desktop publishing program (see page 68) for use in a programme, fanzine, book or pamphlet which would then be printed by a professional printing company on its expensive printing press. If you're a budding, or professional, artist you can print out your paintings on a black and white or colour printer, frame them and put them on your wall. If you are really serious about this and want very high quality printouts it's worth using a top-of-the-range printer at a bureau - it needn't cost the earth. Then again you can just play around with the Amiga's amazing graphic capabilities purely for fun - you'll be amazed at what you can do.

If you got a copy of Electronic Art's *Deluxe Paint Ill* program bundled with your Amiga, then the first type of Amiga art you'll encounter will probably be painting. Using this program is enjoyable for anyone, and many people find it's the most fun they have when they first use their Amiga.

Deluxe Paint is one of the best graphics programs available on any computer, and although there is a DPaint IV available, there really is nothing wrong with DPaint III in the special boxes of Amigas that you may have bought for Christmas. The thing about DPaint is that it arrived on the scene early enough to become something of a standard by which other programs are measured. This manifests itself in little things such the fact that other programs use the same keyboard short cuts as DPaint, and features are borrowed from DPaint's system to make newer programs look as if they can compete. With the exception of OpalPaint almost none of the opposition is worth considering for serious work, and, if you've got DPaint in your arsenal, having anything else is really superfluous. Once you've mastered DPaint you will be at home with almost any graphics program on the Amiga.

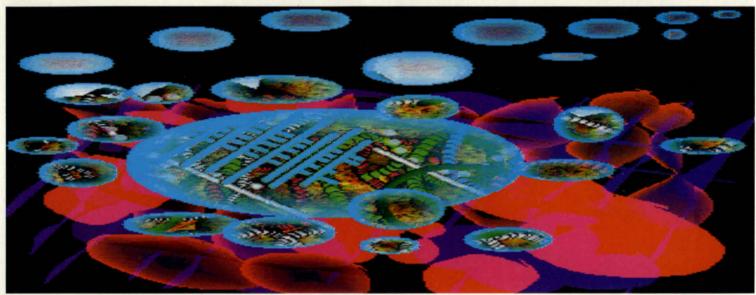
And speaking of mastering your program, you can buy special video tutorials for some programs (including *DPaint*), that can be very useful. It's also worth having a good read of the manual before getting started – I know, reading manuals is boring and you want to get to grips with the thing right away, but there are tutorial sections in most Electronic Art manuals that take you through the major parts of the program step by painful step until you've seen everything. Once you know everything a program can do, you can create your artwork that much more easily, using all the tools rather than just one or two.

# **Deluxe Paint III**

(Electronic Arts £79.99 or free)

You may have got this program included free in your Amiga package. DPaint Ill was the first version of DPaint to feature animation. (See Animation). The interface is simple to understand, with big buttons down the righthand side of the screen which tell you what the various tools (paint brushes etc) do. Clicking on the dotted line gives you simple drawing tools, and the little picture of the airbrush sprays colour on the screen in little dots.

The one limitation is that *DPaint Ill* doesn't handle HAM (Hold And Modify, a device that vastly



The range of colours at your disposal is quite remarkable. This example was made using Spectracolor and HAM-E (Hold And Modify Extended) which vastly increases your palette.

increases your colour palette.) Without HAM you will have a limit of 32 colours – 64 if you count shades. This is still a lot of colours, so don't think that it makes the program inferior to HAM programs. In most cases we'd back *DPaint* against any of the young pretenders. Most other programs couldn't paint their way out of a wet paper bag.

# **Deluxe Paint IV**

(Electronic Arts £89.99)

The best made better. This is the latest version of *DPaint*, and it handles HAM. All the same tools are there, albeit with enhanced functions. Using antialiasing, dithering and HAM means that you can approach the kind of graphics normally reserved for 24-bit cards and high-end graphics workstations.

The Palette Requesters (the bit where you change colours) are a tad more complex than with *DPaint III*, but a quick flick through the manual sorts out any problems. You can even do HAM animation, which means you could render up a 3D animation (see Rendering) and touch it up in *DPaint IV* ready for playing on your Amiga screen. Using the various painting tools you can achieve very subtle effects, even on digitised pictures.

### **DeluxePaint IV AA**

(Electronic Arts, price to be announced)
A version of *DPaint IV* which is virtually identical to the original version except that it uses the new AA chipset resolutions on the Amiga.



Deluxe Paint iV: one of the very best drawing programs available for the Amiga.

# **Spectracolor**

(Oxxi £77.54)

A HAM painting and animation program that has been somewhat overshadowed by the arrival of *DPaint IV*. It used to be called *Photon Paint 2*. The company produced a version of the program to function with the Black Belt Systems HAM-E device, so it's possible that a version for the Amiga's new AA chipset will turn up at some point.

# **DigiPaint 3**

(NewTek £54.50)

An old program, but it still has something to recommend it. It's HAM based, but all its work internally is done in 24-bit, so the results are very smooth. It's particularly good at treating digitised pictures, which is not surprising because DigiView, also by NewTek, is one of the world's favourite digitisers. DigiPaint 3 also made an appearance as ToasterPaint in NewTek's Video Toaster, a 'complete video solution' marketed in the USA. The 3D rendering program from the Video Toaster, called Lightwave, is soon to be released on its own, so it's just possible that a version of ToasterPaint will be marketed separately too.

# ANIMATION

One thing the Amiga has done for years that few other computers can really match is animation. Other machines do animation, but not as easily or as quickly. And few other computers have as many graphics and animation programs to run.

The Amiga has its own animation format, called ANIM, which is common to all programs on the Amiga that use animation. There are other formats such as RIFF, but none of them are as widely used.

# **Animagic**

(Oxxi £93.99)

A digital video effects program that takes IFF (Interchange File Format) pictures and breaks them apart in interesting ways.

It's best described as an animation sequencer, creating ANIM files which make interesting transitions between IFF files for presentations or video. For professional video work these could be stripped on to video frame by frame.

# "One of the things that the Amiga has been capable of for years that few other computers can really match, is animation"

# **Deluxe Paint III & IV**

(Electronic Arts see above for prices)

Both the most recent versions of *DPaint* handle animation. The interfaces are very simple, and to step between frames you use the 1 and 2 keys on the top row of the keyboard. This means you can draw with your right hand on the mouse and flip the pages back and forth with your left.

DPaint IV also includes a lightbox facility, so you can see the previous frames in a sequence and can match what you draw for subsequent frames very closely with what has gone before.

# Disney Animation Studio

(Disney Software £99.99)

Although not as good an animation program as *DPaint* in many ways, it does have the ability to teach you a lot about professional animation techniques. The program includes a lot of demonstration files and line drawn animations by Disney animators. As a course in how to get the best in animation out of your Amiga, there is no equal.

### Moviesetter

(Gold Disk £49.95)

This is not commercially available any more, but if you can find a copy get hold of it and hold on tight. This is one of the Amiga's finest animation programs, and many Public Domain animation demos are made with it. It's not much of a graphics program, but it is very good at sequencing animated brushes and backgrounds together with sound effects to make great animations. The beauty of it is that the animations are not stored in the same way ANIMs, taking up loads of room. Each phase of the

animation is stored on disk and then pre-loaded before the action takes place. You can therefore have a huge amount of action on the screen and still only use a relatively small amount of memory.

# **Real Things**

(RGB Studios £29.95)

The *Real Things* program is made up of animals and humans all collected in various poses as ANIM brushes (animated *DPaint* brushes) that can be animated over backgrounds. The range of subjects is growing so soon you'll have a range of animated clip art to cover all eventualities. Need a shark swimming across the title of your holiday video?

# **Director 2.0**

(Right Answers Group £102.12)

This is another animation program pressed regularly into service as a demo maker, although that's far from all it is. The program is in fact compiled BASIC (See Programming) which is specially created for loading and showing ANIMs and ILBM (InterLeafed BitMap) files. This is another graphics sequencer program really, and although it doesn't create graphics, it certainly displays them well.

# **Morph Plus**

(ASDG/HB Marketing £199.99)

A new kind of animation program for creating morphs – not the Tony Hart variety, but the process

Color Controls	Save	ANIH		
Balancing Palette	Load	IFF		
Palette	Port	Replc		
Image Operators Ripple	About Exit			
	Screen Controls Low Res StdSz			
Execute Op				
Image Information No Image W: 0 H: 0	PAL N	onL StdSz		
	Dither: Floyd (1)			
	Colors	нам		
ReDisplay	Exe	Execute		

You can't beat a good morph. MorphPlus enables you to transform one image into another.

of metamorphosing one picture or animation into another, like the ad on TV where the car turns into a horse, or the Michael Jackson *Black Or White* video when the faces change into different ones. Basically what you do is load one image, then load another, and tell the program which bits of the first you want to relate to the second. So, if you were morphing two heads together, you'd tell the program to relate the ears, nose, mouth, and eyes together. You have to relate parts of the first picture directly to parts of the second or the effect will simply be a fade from one to another – and simply fading images is not the same as morphing. The program loads and saves in 24-bit too, so it's possible to achieve morph effects of very high quality.

The program works on its own, or as an add-on to ASDG's popular *Art Department Professional*. Be warned that unless you have a lot of memory *Morph Plus* will not function adequately.

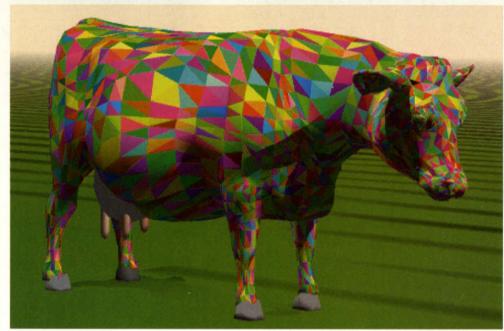
# **CineMorph**

(GVP Price TBA)

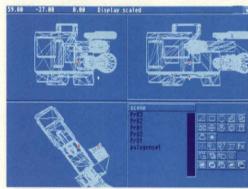
Another 24-bit morphing program. Similar to *Morph Plus* but requires less memory to get you going. The program can run on its own or as part of the *ImageFX* program.

# RENDERING

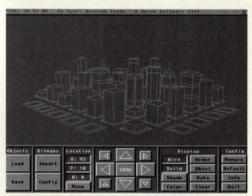
Rendered graphics are created from calculations and not are drawn freehand on the Amiga. The images are created on rules or objects which you set up beforehand. For example, if you were creating a rendered image of a house, you'd give your Amiga the basic information (such as dimensions of doors, windows and the like) in a simple wire frame (just lines) format. Once you've done that, you can tell the Amiga to work out all the missing information and it will slowly calculate all the other graphic data such as shade, colour and the like. It might seem as if you're not really creating the picture, but because you set up all the initial information you are still ultimately responsible for how it looks.



Using the Imagine 2 you can produce unusual pictures like this that almost look like photographs.



Real 3D: both the Beginners and the Pro versions are easy to use and effective



Pixel 3D: an impressive performer that enables you to turn 2D objects into 3D.

Within the general area of graphic rendering there are two types of program: 3D and fractal: 3D Graphics programs, create pictures from 3D objects (using programs called modellers) which are then processed by the rendering programs and displayed on the screen in whatever format you want, from 16-colour hi-res to HAM to 24-bit.

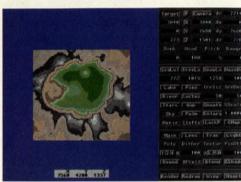
# **Imagine 2**

(Impulse £270)

This program enables you to create exceptionally high quality 3D graphics of a similar standard to the ones you see used on television. In fact, a lot of TV graphics are created on Amigas using *Imagine* and a 24-bit card. The objects can be created in the program, and moved around in 3D, creating a series of pictures on your hard disk that can then either be combined on U-Matic videotape a frame at a time using a single frame transport controller, or saved as a HAM animation.

This is an outstanding program and earned a 93 per cent rating and a Gold award when it was reviewed in *Amiga Format*. However, as the price would suggest, *Imagine* 2, is geared towards the professional, so unless you intend to spend months learning the program from beginning to end, it would be wise to wait until you're competent on a more elementary program like *Real 3D Beginner*.

"If a program states that it has a minimum memory requirement, it's no good thinking you'll get away with using it with less"



Vista: give your Amiga a few simple instructions and watch a landscape unfold in front of you

# Real 3D

(Activa) (Beginners £115) (Pro £280)

The Beginners version of *Real 3D* is perfect for the person starting out in 3D animation, while the Pro version of the program has almost all the features of *Imagine*, but lacks its flexibility. *Real 3D* is simple to use, just bang the buttons and off you go.

A minor criticism is that the program gives you the impression that you are stuck within certain parameters all the time. Real power freaks should consider pumping their Amiga up with an 68030 expansion card and getting into *Imagine 2*.

When Amiga Format reviewed the Beginner's and Professional Real 3D programs the team of graphics experts was so impressed that they gave them a coveted Gold award and a 95 per cent rating

# Pixel 3D

(Axiom Software £99.99)

If you're serious about 3D then this is a must. It enables you to convert almost any object from another 3D program into any other file format. The objects might come out the wrong size and some of the colours and textures will be lost, but the basic shape will be there and, as any 3D buff will tell you, it's the shape that's important. Pixel 3D got an Amiga Format Gold and a whopping great 95 per cent rating from our team of graphics experts. Its flexible approach enables you to create 3D objects quickly and easily. Pixel 3D also uses a data compression system to reduce the size of its 3D object files, and save on memory.

# Rend24

(Shareware)

A unique program that loads a series of 24-bit, JPEG (Joint Photographic Experts Group) or GIF (General Interchange Format) pictures and combines them into a HAM animation. A good way to preview a 3D animation created with either a 3D program or a fractal scene simulator like *Vista Pro*. Once you have a HAM animation you can use this program in an animation sequencer.

# FRACTALS

Fractals are shapes formed by running data through a couple of specific formulae. These programs emerged from research into Chaos theory which suggests (amongst other ideas) that the flutter of a butterfly's wing will (through a chain of events) cause a thunderstorm in Africa. Programs which harness these formulae have many uses, one of which is to imitate real life objects with surprising accuracy. Many of the fractal programs available imitate trees and plants, and also mountain ranges and other naturally occurring phenomena. Fractal pictures grow like crystals before your eyes on the screen, and all you do is set up the basic circumstances for the creation to begin.

# **Vista**

(Virtual Reality Labs. Coverdisk with issue 33 of Amiga Format)

The premier 3D fractal landscape generator. Tell the Amiga where the light is coming from, load a file of a landscape digitised from the real landscape and click the button. All the hills and valleys are simulated with jaggy fractal curves, making a cold digital map into a living breathing landscape. You can practically feel the wind in your hair.

# "Fractal pictures grow like crystals before your eyes on the Amiga screen"

The original version of *Vista* was a great program, but it had its limitations. For starters it couldn't save in 24-bit format, it only had one size landscape and it could only load specially created DEM files. DEM files are Digital Elevation Maps, special electronic digitised versions of the world's geography used by scientists to map the world. That all changed with *Vista Pro* and *Vista Pro* 2, so sadly, poor old *Vista* was a bit out in the cold. Good job that *Amiga* 

Format rescued it and put on the cover of issue 33 then. You can get a copy of this issue with the *Vista* coverdisk by ordering a back issue.

# VistaPro 2

(Virtual Reality Labs £69.95)

From the ashes of Vista came the 3D fractal landscaper to end them all. Not only can you save 24-bit pictures, you can also create landscapes from any normal Amiga picture. Load it in and tell Vista Pro to look at it as if the light bits are high bits of land and the dark bits are low bits of land, and you're away: instant landscape. You can create very cool animations flying around the landscape of your choice using script commands. These can be created in a word processor or text editor, but the safest way is to create them using the program itself, setting up each frame and then running the script to save off HAM or 24-bit pictures for each frame of the animation. The program includes a whole host of new land objects such as trees, buildings, roads and sunsets for inclusion in your landscape.

### FracGen

(Public Domain. Free!)

A fractal pattern generator that builds complex pictures from simple two or three line shapes. FracGen comes with a lot of examples for you to try before you start creating your own. There are a lot of manmade and natural phenomena available in the program. But the best fun is to be had experimenting with your own shapes.

### **MandelVroom**

(Public Domain. Free!)

This fractal generator enables you to create fabulous abstract art based on maths rather than painting. This is one of the most user-friendly and powerful programs of its type, although there are loads of other versions in the PD.



VistaPro 2: enables you to create instant landscapes complete with rivers, trees and hillsides.

# THE HIGH END

# 24-BIT GRAPHICS

Most graphics on the Amiga are 5-bit, sometimes 6 or 12-bit. The bits refer to the number of bitplanes the graphics use, and the more bitplanes the more colours. It's all maths: 1-bitplane images are black and white, 2-bit images have four colours, 3-bit have eight, 4-bit have 16, 5-bit have 32, 6-bit have 64, 12-bit images (rendered by a trick called HAM on the Amiga) have 4,096 colours, and 24-bit have 16.8 million. Not all these types of graphics have all the colours on screen, after all there are not 16 million dots on a TV screen, but you can choose your colours from a palette of 16 million. In recent years the price of 24-bit graphics has come down drastically, from about £2,000 to £200-£600.

# **Opalvision**

(Opal Technology £800)

This is one of the most recent innovations in 24-bit technology, a board that fits into an Amiga 2000, 3000 or 4000 and displays 24-bit graphics on a standard Amiga monitor without the need for a separate display device. The board is soon to be put into a unit for use with the A500 and even the 600/1200. As well as 24-bit graphics, *Opalvision* is soon to be upgraded to include Digital Video Effects, a frame grabber and genlock to make it the perfect Amiga video solution. The price is right, and so are the facilities. This unit is all set to be the ultimate Amiga peripheral for graphics users of all abilities.

## **DCTV**

(Digital Creations £499 – provisional)

This is the perfect low-end solution to 24-bit, the 256-colour DCTV has a built-in frame grabber and paint program. Although users of the A1200 and 4000 will have little need for the services of DCTV, (these Amigas come with much of what it has to offer) other Amiga users will be very happy with the results, giving access to the upper reaches of Amiga graphics for very little outlay.

# Harlequin

(Amiga Centre Scotland. Price depends on specs)
The Harlequin was one of the first display boards to handle 24-bit, and it's still top of some people's shopping lists. Although it is sill quite expensive, it



DCTV: great graphics for surrealist Amiga artists who like their eggs sunny side up.



Art Department Pro V2.0: an excellent all round image processor with oodles of extra features.

does offer very high quality and is ideal for professional users. The price actually varies according to your specifications, so get in touch with Amiga Centre Scotland for more details (See company contacts on page 158). This board is currently the best supported by graphics software, although we suspect Opalvision will soon catch up.

# **Image Processing**

Apart from creating graphics on your Amiga, you can also treat graphics that already exist. To do this you need to use an image processing program. These programs convert pictures from other computers, or from different IFF (Interchange File Format) resolutions to the one you need. Most don't just convert pictures, but also feature some exotic means of transforming them. For instance, with an image processor you could treat a picture so that it looked 3D and embossed on stone, and then recolour it and scale it up and down in size.

# Art Department Pro V2.0

(ASDG £211.50)

The king of Image Processors. This one has a host of additional features. As well as carrying out complex image processing it also enables you to drive scanners and other graphic input devices. It is simply the best at what it does, and for that reason it earned an *Amiga Format* Gold and a 92 per cent rating.

# Rasterlink

(Amiga Centre Scotland £179)

A very good image converter for taking a variety of screens from other sources like the Apple Mac and PC and converting them into something the Amiga can understand. It needs some memory to work but not a huge amount, as it writes to disk, not RAM.

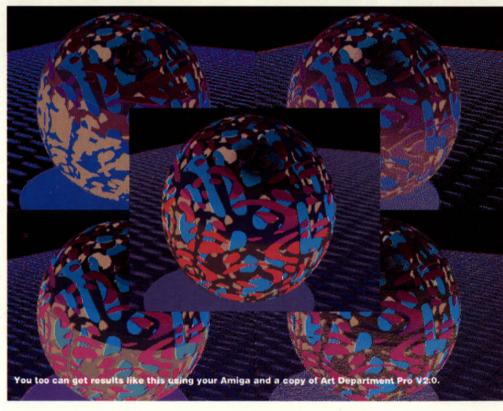
# **Image Master**

(Amiga Centre Scotland £175)

A great program, if a little flakey at times. Converts formats, does image processing. Even does morphing. But needs a lot of memory, and an accelerator card is an absolute must.



Rasterlink: enables you to take screens from other sources and convert them for the Amiga.







So you've got a copy of *Deluxe Paint III* in your Amiga box, eh? Brilliant isn't it? But just how do you get the most from this great graphics program? Phil South gives us the lowdown

eluxe Paint is a tremendous leap forward in graphics technology. It's all very well for me to sit here saying that, I've been using the program for something like five years, but the potential for the program is largely hidden from your gaze. You can't simply start the DPaint and see everything it's capable of in one glance. Before we embark on this tutorial, let me first say that nothing replaces hours.

put in at the keyboard. Unless you practise you'll never get quality graphics out of your machine, so spend some time fooling about with the program before you start learning the ways to use it. Get all the silly squiggles and filling the screen with colour out of your system.

In this tutorial I'll be looking at ways to make Deluxe Paint do some neat tricks, but I won't be going through a step-by-step guide about how to

# Take Some Handy Tips

#### **KEYBOARD SHORTCUTS**

Keyboard shortcuts enable you to avoid using a number of menu commands, and speed up your work. For example the [P] key brings up the Colour Palette. The [M] key magnifies the screen at the place the pointer is pointing at. The function keys ([F1], [F2] etc) select the various drawing modes available to you.

#### YOU WANT IT, SCAN IT!

What happens if you can draw with a pencil but not with a mouse? Scanning in own line drawings with a hand-scanner can give you a good starting point for your graphics, if you're not adept at drawing freehand with a mouse.

#### **ANTI-ALIASING**

How do you get rid of the jagged edges in computer graphics? Easy, you use a technique called anti-aliasing. This involves putting a colour on all the pointy bits of a shape to bridge the gap between the foreground colour and the background. *Deluxe Paint III* enables you to do this automatically.

But, in case you have a previous version, there's also a way of doing it by hand. For example, if the shape is red and the screen is black, you just place a dot of darker red on the edge of the shape, inside the steps made by the edge.

#### CLIP IT

Convert a black and white drawing from Deluxe Paint III into a structured drawing using the Trace program with *Professional Draw 3*. This gives you a smooth piece of clip art you could use with a DTP program at any size.

use the program, as the excellent manual does that better than I could. If there's a anything about the program you don't understand, read the manual.

# **Creative Palette Making**

The palettes (the range of colours used in the program) you use are crucial to getting good pictures. Drawing pictures with the default palette is the sure mark of the beginner, and will give you a limited range of effects to play with. So here are a few useful techniques that will help you get the best out of your graphics.

1. Pictures with the most natural palettes are 'digitised' pictures. You can get these from most PD libraries and BBSs (see page 99 for details). Load the pictures into Deluxe Paint. Clear the picture and the palette is still there. Make a block of each colour by making a square brush, turning on the Grid, and stamping an example of each colour on the screen (first pressing [F2] (Colour mode) to ensure that the brush has the colour selected.) Save the screen to disk with a suitable name, such as

PastelShades1. This file can now be loaded whenever you want to get these colours.

2. You can use the Spread button on the Palette Requester to create a series of colours between two that you've mixed or chosen. But why not place a number of colours in the palette and Spread between each stage, such as black to blue, then blue to red, then red to green, then green to yellow? Bear in mind that to make a colour lighter you must add values to the other two requesters. The reverse is true too – to make a darker green, try subtracting from the red and the blue.

3. By far the best colour palettes are mixed by experts, so why not steal them? Pictures on demos and games are easy to get at with an Action Replay cartridge, which freezes the program while you save off a

screen of graphics. See 1 for details on how to save the palettes. (If you have *Deluxe Paint IV*, you will be able to save your palettes to disk using the very useful Load/Save Palette command.)



Playing with palettes is one of the most useful things you can do, to get started with *DPaint*.

# A Subtle Blend - For Strong Results

The Blend and Smooth commands are two of the most interesting in the *Deluxe Paint* toolbox, and this is because they allow image treatment to take itself off into the realms of fantasy.

This is mainly true of images gleaned from other sources such as digitised pictures which you've either grabbed yourself or that have been digitised by someone else and placed into the Public Domain.

The band, Anonymous Bosch, features two members who wanted a record cover with a main image being a picture of the chaps' heads merged together. Surely you'd need a £200,000 graphics workstation to do this? Nope, all you need is your Amiga and Deluxe Paint.



These chaps want an LP cover with impact. They also want their faces on it. Oh well...

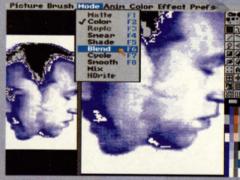
First two source pictures are needed.
We need to grab the two heads of the band members and use these pictures to make the composite. This was made using VIDI Amiga digitiser from Rombo.



Once you've got the mugshots (in this case using a digitiser) you have to join them up.

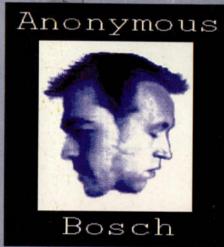
- The pictures are cropped to size, and put on the same screen. Notice all the edges and corners.
- Next the pictures have to be cleaned up and composited together. Cut them out and put them together.

The backgrounds are mostly white, so just paint out any stray pixels with a big white brush.



Joining the images is only the start. Now it's time for some heavy-duty clean up work.

- The gaps between the two heads have now to be joined up. The Blend tool pushes pixels (PIX ELements the tiny dots on the screen that make up the bigger picture) around like they were thick paint, and this puts a nice fold into the flesh, making it seem as though the two heads are joined at the neck (lovely!)
- Finally the shape is cut out as a square, and is positioned in the centre of the screen with lettering around it adding the lettering is just a case of typing it in from the keyboard. (Had the cover been produced using DTP, then the lettering could be left out and put on later using *Professional Page* 3. This would produce a smoother result.)
- As well as smooth transitions, these tools can be used to pull the features out by repeatedly stretching and brushing with the Blend tool. Caricature can be done like this, taking a digitised image of the person you want to ridicule, and pulling their features around to distort them.



The result, this fab record cover, bound to sell millions. At least you've learnt about *DPaint*.



Once all the 'real' work is done, you can have some real, real fun as you proceed to create a few gratuitously nasty and OTT caricatures.



With Deluxe Paint and an Amiga, you can do all sorts of wonderful things to any Image you like.

# The Music of the Spheres

# 3D from 2D

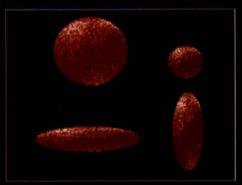
Now we've got your confidence up, let's have a go at some more complex graphics. We will start with a neat trick. You can create the effect of a 3D sphere by making a square and using the Shade command to airbrush highlights onto the top.

When this is wrapped onto a sphere it looks like a 3D object. This sprayed shading looks in *Deluxe Paint* looks as if it was produced by a high-end,

high-price 3D rendering program. But it wasn't!



Let's wrap! Moving from a dull grey square to a beautiful sphere with the Shade function is easy.



More interestingly, once the 3D effect is applied, it remains, no matter what you do.

# Rotating Worlds - You Can Animate with DPaint

This is an animation tutorial, so first change the amount of frames in your Frames/Set num-

ber to 12 or 24 depending on how much memory you have. In this lesson we'll be creating a world which rotates about its poles, just like the planet we're all standing on. Well, similar, because we're going to invent our own geography.

First we have to create the map. Make a palette that has browns, reds and blues. Create a range of colours with the spread button. How you create the map is up to you, but using the Shade function is favourite because that gives you a nice smooth shaded range of colours to create your map with. You could also pull in an IFF map of Earth from a program like the PD package DrawMap (on the Fish Disks) which will create a flat projection of the world map. Either way, you need to end up with a rectangular map.

The only thing you have to make sure of is that the left and right sides of the map match up. If you don't

do this there will be a gap on the finished globe.

of the map to the other. Make a note of the width of the map from the x co-ordinate at the top of the screen. Bring up the Move requester from the Animation menu and insert the width of the map in the Distance box under x.

Now guit out of the Move requester for a bit, and grab the map as a big rectanglar brush, ensuring you grab the map and no bits of background. Clear the screen (all frames) and stamp the map in the middle of the screen. (This wakes up the Move requester, and it will now know which brush we are moving.) The sneaky bit is that we now Undo the image, leaving us

with a blank screen.

Get the Move requester back, and preview the animation. You should see the preview box slide gracefully across the screen. Hit the Draw button and the program will render the animation.

The map slides off the screen, and now we must do a second pass to enable

the Move requester to put a second to remove the image. Use the same Move settings in the Move requester and push the Draw button again. The second map will follow the first one across the screen giving you a long strip, double the length of the original map, part of which is off the screen, which scrolls to the right.

Now for the clever bit. Grab a square animbrush from the right hand side of the screen, making sure you don't go beyond the halfway marker.

When you come to grab the brush make sure you don't go so much as a single pixel over the outline, or the whole effect will

The animbrush will save everything that happens at that point on the screen through all the frames, so when you run the animbrush, the picture will appear to slide across the frame. Now all we have to do is map this onto a ball.

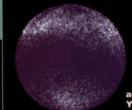
Clear the screen (after saving the animbrush to disk for safety!) and choose

the filled circle tool. On the first frame create a circle the size of the planet on your screen. Copy this frame to all the other frames. Get the Fill requester up and select Warp.

Hold down the left [A]miga key (Note: The Left-[A]miga+Left-mouse key combination is used for other system purposes in Amigas with Workbench 2 – with version 4 of Deluxe Paint you

will need to press the [Alt]) key and fill the circle before the **Deluxe Paint will** fill each circle with a wrapped version of the animated sliding map. Then voila! you have instant

planet. You can enhance your picture by setting the biggest airbrush size and spraying tiny white dots all over the screen. Stars, of course!



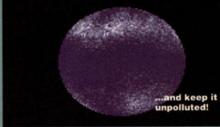
and round we go. Yes, you too can...

Round and round and round

Find the middle of the map by picking up a thin strip of the top of the map and pressing the [h] key to halve the size of it. This brush is now exactly half the width of the map. Stamp it down above the map and mark a short line where the middle of the map is. Next, turn on the coordinates and stretch a line from one side

copy of the map behind the first, so we don't run out of map. (This is why the two edges of the map have to match up in the first place!)

Now use the same Map brush. Move the handle on the brush to the righthand edge. Then position the brush against the lefthand edge of the one that's already on the screen. Use Undo command



create your

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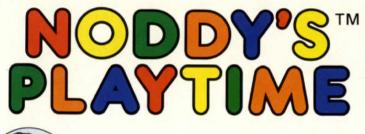
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Along with all the news, reviews, previews, celebrity challenges, giant competitions and a particularly diabolical quiz, each issue will sport a truly awesome tips section hosted by the oracle of all gaming knowledge, the GamesMaster himself.

ON PAPER

Inside the first issue



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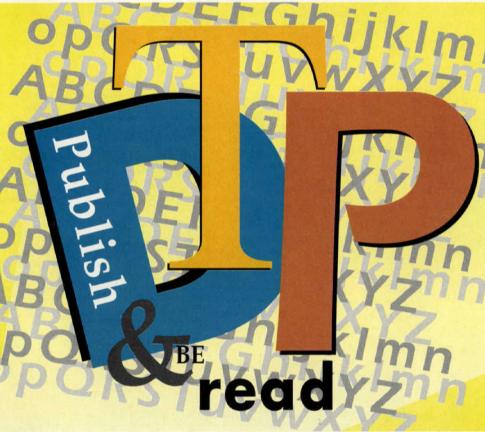
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Desktop publishing means that the Amiga user can produce newsletters, books or magazines from home. Marcus Dyson explains how to get started in desktop publishing....

# THE ABC OF DTP



esktop publishing, you may have heard the term, but do you know what it means? The chances are, if you've been reading Amiga Format for a while, that you do. But this is the beginner's special, so we'll explain for those who don't. As the name implies, desktop publishing (or DTP) is publishing from the top of your desk, which is fine if you work in an office, but it can just as easily be done from the table in your bedroom. Publishing sounds like a grand and frightening concept, but DTP needn't be about putting out 250,000 magazines a month, or printing copies of the latest Thomas Pynchon novel. It's just as much about making a newsletter for your local fishing club, or a poster for your brother's band's first gig at the local community centre.

Giving it a big name like desktop publishing

doesn't change the fact that what DTP is really all about is putting words and pictures together on the computer screen and then printing them out. You probably know by now that your Amiga is better than most other computers when it comes to graphics. So all you have to do is get a program that lets you combine those pictures with type and you're a desktop publisher.

# Better by design

Fortunately there are many such programs for the Amiga, and they range from the cheap and cheerful to the very expensive and professional. We'll take a look at the programs in just a short while, but first we'll consider the things you'll need to know to design some things with a DTP package, and how to go about creating a document.

When DTP was invented there was a lot of consternation in the design world, this was mainly for the three following reasons:

1. Lots of designers didn't know how to work a computer, and they didn't want to learn.

2. Lots of designers thought they would lose their jobs.

3. Lots of designers thought that once anyone could try their hands at DTP there would be a lot of crap design around.

Numbers 2 and 3 happened to be right, but the designers who lost their jobs were mostly the ones to whom number one applied.

It is true, though, that design is not a simple thing, and that many designers have studied at college for a long time to learn their trade. But there are a few simple rules which, if you follow them, will help you to design perfectly good pages, posters, letterheads, or whatever else you may want

# Choosing and using type

Printed words are made up of letters, much like any other words, but If you look at any magazine or even advert, you will notice that not all of the letters are the same shape. Each different shape of letter is called a typeface, and each different typeface has a name. The name of the typeface you are now reading is Palatino. There are many thousands of typefaces, here are just a few: Eras, Times, Helvetica, and, of course, Palatino

Each typeface has a variety of styles known as fonts, you may also see the word spelt founts. For example: Eras – **Eras Ultra**, **Eras Demi**; Times – *Times Italic*, **Times Bold**; Helvetica – **Helvetica Bold**, *Helvetica Italic*; Palatino – *Palatino Bold Italic*. These styles are used for creating emphasis in a piece of writing. If, for instance, there was a word in a sentence that you thought was more important than the others you could embolden it, or italicise it, to draw attention to it.

The study of the shapes of letters is called typography, and it is quite an advanced science, but for our purposes we only need to know a few details. One important thing about typefaces though, is that they can be classified in one of two groups: serif or sans serif faces. Sans serif faces include: Helvetica, Futuro, and Eras Some of the serif faces are: Times, Palatino, and Courier

Can you spot the difference? Serif faces have little cross strokes at the end of the lines which make up the letters. The reason for these being there goes right back to ancient times, when letters used to be carved in stone. To keep the letters looking good the stonemason would put a cross stroke at the ends to prevent them being ragged. These cross strokes, or serifs as they were called stayed with us for hundreds of years, and it was only earlier this century that typographers invented typefaces without them.

Sans serif faces are seen as intrinsically more modern, while serif faces are often used to give a more classic or elegant look to a layout. Serif faces though, are more readable than sans serif faces. This has been proved by a series of tests in which lots of university students are rounded up and put in a room. They are given then a number of pieces of writing which are printed in a variety of typefaces, and then timed as to how long it takes them to read the text. These test repeatedly show that the students read the serif faces much more quickly than the sans serif face.

# Size does count

Before you begin to fear that typography might be too complex an artform for you to master (it is complex, but there are some straightforward rules to follow), Try considering this: the size of printed letters is another obvious way of giving them prominence on the page. OK so this sounds obvious, but if you are designing in black and white, you can't use colour to attract attention to the headline, or most important piece of your message. The simplest way to make someone look at your headline is to make it the biggest thing on the page.

The size of type is measured in points, there are 72 points to an inch. Type can also be measured metrically in millimetres, but the point system is so well established that it looks unlikely to be replaced. Two different typefaces may have the same point

# Letters are complex creatures, especially if you are the person who has to design them. This diagram shows you the basics of jus a few letters in a serifed face. Ascender height Caps height x-height Serif Baseline Serif

# **A Desktop Publishing System**

## **Word Processor**

You can enter text directly into most DTP programs, either directly on to the page or into an integral text editor. But if you are dealing with large amounts of text you'll find these methods cumbersome, to say the least. To get the maximum power for editing and formatting text you will need a word processor. These programs vary widely in cost and performance, but if you turn to page 91 you'll find a full explanation of the subject.

# Paint Package/Bitmap Editor

If you are scanning pictures for use in your DTP program you will probably find that you need to edit or touch them up. There are dedicated touch up programs for mono scans, and these are generally included in the software package that accompanies the scanner. But for most purposes you may find that a standard Amiga paint package, like DPaint II or DPaint III or The Graphics Workshop (given away on the cover of AF30) is ideal. The added advantage of editing mono images in a paint package is that you can add colour to them. You can also create pictures from scratch using a paint package.

DeluxeFaint Color

The color of the color of

DTP is the art of taking striking images, such as this, created with *DPaint IV* and combining them with words.

For colour images the options are more limited, a true colour paint package and 24 bit display card would be necessary to display and handle the number of colours in the image. Undoubtably the best value in this area is the *OpalVision* card from Centaur software. The *OpalPaint* software is excellent for the retouching and manipulation of colour scans.

However, the A1200 and 4000 have the benefit of the AA chipset giving the new HAM8 mode, and within the next few months we can expect to see at least one paint package that supports that mode. This will enable you to work with 262,144 colours on screen. The first of these packages will be the updated version of Electronic Arts Deluxe Paint, called, predictably, DPaintIV-AA.

Structured Drawing Package

Structured or vector drawing packages work differently to standard paint packages. They create pictures from objects. Objects are defined by the points at their corners and tangent points, by the thickness and colour of their borders and by the colour of the 'fill' inside the borders. There are three main advantages to this method.

Firstly since the images are defined mathematically, they do not increase in file size in proportion to their physical size. So a big picture only takes up the same amount of memory as a small picture of the same thing.

Secondly the images can be saved then re-opened and edited at a later date. All the objects that make up the image are separate on the page, so they can be deleted, re-coloured or re-sized without affecting the other picyure elements

Thirdly, and most importantly, because of the way structured images are described to the printer, they do not lose detail, if they are magnified at the printing stage, they are always rendered at the highest

resolution the printer is capable of. The Amiga has two main structured drawing packages, *Professional Draw* from Gold Disk and *Expert Draw* from HB Marketing. See the reviews.

### **A Scanner**

You may sometimes wish to include photographs or other pictures in your document, and for this you will need a piece of hardware called a scanner. These devices pass a light across the surface of the picture and digitise the reflection from its surface.

Small handheld scanners are plentiful for the Amiga. They start at around £100 for the Power Hand Scanner, which as well as being one of the cheapest is also one of the best. Colour scanners are less common, but Power has recently announced a colour version of its hand scanner, priced around £239, and if the quality is comparable it will be a bargain. The next cheapest colour scanner is the Sharp JX-100, a peculiar looking device with a limited scan area. The results it gives are good, but at over £500 it cannot really be recommended. One scanner that gets our full praise is the Epson GT-6000, a full blown full colour flat bed scanner. But this kind of quality doesn't come cheap, if you get this deep into DTP expect to part with around £1000.

# Image Processing Software

If you do make the step into using scanned or digitised images (read about digitising on page 144 of this issue), you will need an image processing package. As good as modern scanners are, they cannot get the colour balance of every image right every time. With software like Art Department Professional from ASDG, or the new Image FX software from Gold Disk, you can colour correct your scans, false colourise them, or even change them to black and white. And the image manipulation power doesn't stop there, you can crop, stretch, warp, flip, and do any other number of bizarre effects to them.

THE COMPLETE BEGINNERS' GUIDE

size but actually vary considerably in physical size. This is because, way, way back in the days when type was made out of metal blocks (as in hot metal), it was the size of the block that was measured, not the actual letters themselves.

# Getting the measure of columns

Once you start to put in the main piece of the writing, or body copy as it is known, you have to make a decision about how long the lines of text are. This may not seem very important, but it is. You see, if you just put great long lines all the way across your page, the reader will lose their way while reading, and jump from one line to the next mid way across the page. If the lines go all the way across the page it is also difficult to scan back from the end of one line to the beginning of the next.

If, on the other hand, your lines are too short, the reader will be forced to scan back too frequently, causing unnatural breaks in the flow of the copy, thus making it harder to read.

A good rule of thumb for the length of a line of text is to make it between one and a half and two and a half lower case alphabets long. This means between 39 and 65 characters long. Obviously the actual physical length of the line of text will vary with the point size of the letters.

Space is big

If you wish to have longer lines of text, you can help them stay readable by increasing the space between the lines. On most modern DTP programs this will be referred to, quite logically as linespacing, but some packages will call it leading. The two things are exactly the same, but the term leading dates back once again to the days of metal type, when thin strips of metal were placed between the lines of text to create more space. And guess which metal was used... Lead.

# "You seen them in Viz where the start of one paragraph carries the legend 'Cheap' and the next 'Fish' and so on"

Linespacing can be used creatively, keep an eye out for very wide leading in adverts and on promotional material. Sometimes one message in one typeface and size is placed between the lines of another message in another font. These ideas are useful, but they don't work in every design, they tend to be more decorative than informative.

### Less is more

This is an old design school cliche, but it can be true. If you want someone to get the most from the information you are trying to convey to them, it has to be presented in an intelligible fashion. Having lots of headlines, straps, different styles of text and lots of different colours can draw attention to your design. But it can also make it very difficult to tell where to start and what to read.

Take a look at some of the typography from posters for raves, it is certainly eyecatching, and clever, but it is rarely legible. Not that it needs to be,

because all it needs to do is grab your attention, then tell you where the rave is, and when. If you were doing a text book you would probably need to be a little more restrained in your design.

### **Make it flow**

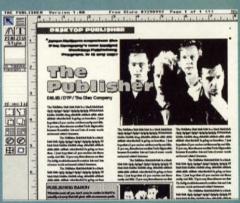
Even if the typeface you have chosen for you text is very readable, and your design is very easy on the eye, you must still take care to to be sure that you are presenting the information in a way that does not confuse the reader. If you have a page of text, rather like this one, try not to make the copy read from short paragraphs at the bottom of the page to short paragraphs at the top, particularly if the flow of copy is punctuated by pictures. This is because the pictures tend to arrest the eye as it scans the page thus stopping the reader following the text and making it difficult to read the page.

**Just justification** 

In addition to what we said above about short line lengths being difficult to read because of the way the readers eyes have to scan back and forth so frequently, short lines can also lead to ugly spaces between the words if you try to justify the copy on a small measure. Justifying means making the lines of text stretch to fit the full width of the columns, like this paragraph you are reading. This is done by adjusting the space between the words, but because the average line has about nine spaces on it, the difference between spaces on different lines isn't usually obvious.

If using a short measure is unavoidable, one way to help readability is to left range the text like this paragraph. Ranging left means that the text butts up to the left side of the column, but the space

# These Are the Desktop Publishing Programs



The Publisher: a bargain price for a program that has more features than many more costly ones

development, and it is somewhat the standard in the Amiga DTP world.

Full colour postscript support, a wide range of text and picture file format compatabilities, Agfa CompuGraphic fonts and incredible power are the upside. The down and there is only one problem with *Professional Page 3*, is that you absolutely have to have a hard drive to use this program. But this is not a major problem because if you are at all serious about DTP you'll find you need one anyway.

It's soon to be released in an A1200/4000 version which will put paid to the age old complaint that Amiga DTP programs only show colour images in mono on screen. The AA version may be a tad slow on a 1200 though.

# The Publisher

package make it a bargain.

The Disk Company £49.95
A rock bottom price for a program with a far from rock bottom specification. This offering is new, but looks like it's going to completely shake up the low end of the market. It lacks any kind of colour support, but that is not unusual in programs under £100. But it does have a host of features that were previously unheard of in programs costing twice the price. Text and picture box rotation, automatic drop shadow and outline text and the inclusion of ten typefaces with the

So how come this program is so good? Support for high quality Adobe Type 1 fonts and postscript printer support give the game away a bit, this is actually a cut down version of a full-blown professional DTP program called Saxon Publisher. This never quite cut the mustard as a full price package, but in this form it wipes the floor with the opposition.

# **Professional Page 3**

Gold Disk £249

The original Amiga high end DTP package, and, many would say, the best. A wide user base ensures its continued support and



Professional Page 3: still regarded by many as the best DTP package available for the Amiga.

# Pagestream 2.2

(Soft Logik £199)

PageStream and ProPage have fought a running battle for the crown of top Amiga DTP program for around four years now. Only with the latest release has PageStream managed to wrest the crown from Gold Disk's old stager. Although both are top notch programs, PageStream has a more intuitive interface and better menu organisation without any sacrifice in power. All

between the words isn't adjusted, so the right side of the text is ragged. This effect makes a page look a bit messy, if it is used throughout a publication.

The opposite of left ranging is, of course, right ranging. This paragraph is right ranged, so I won't insult your intelligence by explaining it in detail. But do be aware that you can use justification to associate caption text to pictures, or to format lists, credits etc.

# I'm eager to format

If you have a lot of text to put in your document, starting at the top of the first column and ploughing through to the end of the last is very boring for the reader. So you, the designer, has to think of a way of making it less tedious. There are several accepted ways of doing this, the first, and most obvious of which, is by paragraphing the text.

Imagine that the writer is a speaker, and instead of you reading his text, you are listening to him or her speaking. When the speaker pauses to change the tack of their oration, or for dramatic effect, this is where the writing will have a paragraph break.

There are many ways to show a paragraph, at *Amiga Format* we use an indent so that the first line of each paragraph starts a small distance into the column. Other methods can include a hanging indent, where the first line sticks out of the side of the column, into the space between columns, called the gutter, or the emboldening of the first three or so words of each paragraph. This is completely down to personal preference.

Let's imagine our orator once again, every now and again he or she may reach down to sip from his glass of water before continuing. This is a good point to put in a line break, kind of a chapter break for magazines. These 'chapters' can be separated by a sentence or word that introduces them, these are called crossheads. The line immediately below this paragraph that says Picture this is a crosshead, and I'm sure you have seen them in Viz magazine, where the start of one paragraph will carry the legend 'Cheap' and the next 'Fish' and so on.

# **Picture this**

You've probably heard the phrase "a picture says a thousand words," which may or may not be true. But one thing is for sure, a picture can convey more information in a single glance than any number of words. And a picture can attract attention, and add decorative value to any layout. Pictures can be hand drawn in a paint or drawing package, or captured electronically by a scanner or digitiser. But however they are created, once you have them on your page experiment to make best use of them. Try using circular picture boxes, instead of the more common rectangular ones. Try skewing or rotating your rectangular picture boxes.

Key the colours of your headlines and other design elements to reflect or compliment the colours in your pictures, or even to clash with them. Pictures in DTP demand a lot of memory, and if you are working in colour, they require a more expensive printer, so make the most of them.

# Use colour.

If you have a colour printer, make use of it. Most DTP software can use colour. Try emphasising text by 'boxing it out'. Boxouts, like the one you are reading now, help to draw attention to a piece of copy, and can also separate it out from the rest of the text.

Whiting out of text from a dark coloured box gives even more emphasis. But if you are using white outs remember, they are not as easy to read as black text on a light background, so embolden the text to aid legibility. And use them with care, because they have a lot of 'weight' on the page, meaning that they stand out a lot, and can disrupt the overall look of the document.

# That You Should Be Keeping An Eye Out For



Desktop publishing gives you the power to combine words and pictures to stunning effect.

the features of *ProPage* are there plus some new ones and it costs less. Should you be the kind of masochist who likes trying to run powerful programs on a scientific calculator, you can manageably squeeze *PageStream* into a standard A500 Plus and run it on one floppy drive and one Mbyte of RAM. All in all the most powerful page layout program on the Amiga.

# **Professional Draw 3**

(Gold Disk £99.99)

Created by gold disk as a logical companion to *ProPage, ProDraw* is as capable a structured drawing package as you'll find on any home computer. The latest version



Professional Draw 3: you'll need a hard drive, but it's worth it if you're serious about DTP.

suffers the same hard drive only problem as *ProPage 3*, and you'll need 2Mb of RAM as well. All the shape drawing and manipulation tools that you could ever want are there. But new features include a graduated fill mode and the ability to view the open document in a selective wire frame mode to speed redraw times.

Like ProPage, ProDraw3 has ARexx genies, which are basically macros that allow you to consign repetitive or complicated tasks to a single keystroke. This facility is only open to owners of the ARexx language though, which was not given with Amigas before Workbench 2.

# **Expert Draw**

(HB Marketing £69.95)

All the power of *ProDraw2* (not the latest version) but for less money. If you are looking at structured drawing on a that doesn't demand a hard drive system this is the only real option for you. A powerful package, but it does need an ancilliary program to convert Compugraphic fonts into its own proprietary format. *Expert Draw* has the ability to transform shapes, which is a simple kind of outline morphing. It can also graduate through a user designated range to give impressive effects. The price is less competitive against *ProDraw 3* than it was against *ProDraw2*.



Expert Draw: a reasonable price for a program with many features to recommend it.

# Camcorder Plus is a brand-new magazine, packed with value for

every camcorder owner. It's on sale now... don't miss it



# Solid buying advice

You need to know all the latest developments in the market for equipment, accessories and consumables. For the first time, you can glean all you need to know from one magazine - including advice on how to get the best deal. Every month, the CAMCORDER Answers sections of Camcorder Plus will carry the most detailed, the most definitive listings in any magazine.

What's more, we don't just list the specifications of kit, we help you make an informed choice, according to your needs.

And the CAMCORDER PLUS equipment tests are clear, thorough and unbiased. Products under test are put into context, and we explain how they can improve your video making.

Right: apart from the definitive product listings in CAMCORDER PLUS, you'll find a wealth of useful background information on what it is you're about to buy - and how to buy wisely.



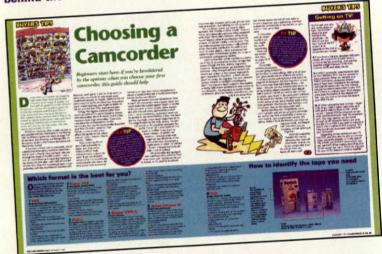
# Pages of techniques

Every month, CAMCORDER PLUS will bring you expert advice and guidance. If you own a camcorder, we'll help you make better videos - the pages in CAMCORDER Plus are easy to read, easy to understand and packed with practical help.

Where technical terms are used, they are explained in a separate panel, giving the beginner an insight into the more complex side of the hobby, while allowing the more experienced reader to pass smoothly through an article.

Every month, we'll be asking the real experts to pass on their secrets for success - professional camera operators, editors who work for broadcast TV, directors - and animators like Peter Lord.

Left: issue one includes a feature on how to make animations with your camcorder. Peter Lord of Aardman Animations — the people behind the 'Creature Comforts' TV ads – shows you how.



# Packed with tips

To complement the in-depth 'how to' features, CAMCORDER PLUS is peppered with practical tips and handy hints that will help you get more out of the equipment you currently own.

Our panel of experts - which includes pro video producers, camera operators and technical experts - will be answering your questions. What to use, where to get it, and how to do it!

Every feature contains clearly-flagged tip panels that help you get straight to the nuggets of information that will help you learn how to produce better results. And we don't just tell you how to shoot better videos - we provide plenty of inspiration on

Left: issue one contains a fact-packed, eight-page feature that sets out 50 tips for making better videos, including how to cope with adverse weather conditions.

### NTER NOW AND **OVER 70 PRIZE** ON OFFER IN **ISSUE ONE**

### Issue One: packed

### Lively, up to First Tests of new kit and new products

### Group Test If you've got to splash out, which is the best new you? We test

### You've heard of the new anti-shake systems that feature on some new camcorders but are they worth the money? We contenders and name the

### Editing Just where do you start? And what kit do overview shows you all

### SPOT-THE-DIFFERENCE WITH

### On

e have no fewer than eight Dixons prizes to give away to the winners of this spot-the-difference competition.

The first winner will be sent a CamLink System 2 worth £99.99. This picture and sound processing unit is the ideal editing tool. It enables you to enhance pictures, fade soundtracks and pictures in and out, and add new soundtracks or commentaries. The CamLink System 2 comes complete with a mains adaptor, microphone, leads and an instructional video.

Two second prizes of a CamLink System 1 sound mixer worth £39.99 are also on offer. Using this versatile tool, you can record new soundtracks and commentaries on to your videos. The CamLink System 1 includes the mixer, microphone, leads and an instructional video.

And finally, five runners-up will each receive a four-pack of Scotch E180 Extra Grade Plus VHS videotapes, each one worth £9.99

# pages

### News date; includes giveaways of

### less than £600 camcorder for eight, head-tohead

## Road Test evaluate three best one

### you need? Our the options



First prize: a CamLink System 2

picture and sound processing package worth £99.99.



### How to enter

Study pictures A and B. There are eight differences between them. If you can spot them all, circle them clearly on picture B on the cut-out coupon provided and send it to:

Spot-the-difference Competition, CAMCORDER PLUS. **Future Publishing Ltd,** 29 Monmouth Street, Bath, Avon BA1 2DL, by January 27, 1993.

The first eight allcorrect entries out of the Editor's kit bag win the prizes. The standard CAMCORDER **PLUS competition** rules apply.



Second prizes: two CamLink System 1 sound mixers worth £39.99 each.

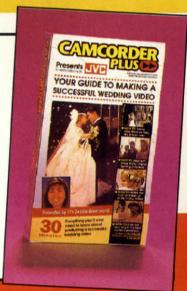
Spot-the-difference	competition
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NAME
ADDRESS
POGTOODE
POSTCODE

Cut out this coupon or photocopy it and send to: Spot-the-difference Competition, CAMCORDER PLUS, Future Publishing Ltd, 29 Monmouth Street, Bath, Avon BA1 2DL.

### **Bonus with issue one! Worth £19.95**

Every copy of the first issue of CAMCORDER PLUS is accompanied by a 30-minute VHS video programme, produced in association with JVC. Previously sold for £19.95, this instructional video tells you all you need to know about planning and shooting a wedding video. Techniques you can apply to almost any family function. What's more, there's an example animation that reveals how easy it is to put Peter Lord's animation workshop into practice!



With millions of Amigas, videos and camcorders out there it's no big shock that people are linking them together to add a little more professional gloss to their home movies. Phil South puts you in the picture with Desktop-video

# VIDEO NICIES

ight from its launch in 1985 the Amiga was pitched as a video machine, a claim which later seemed to ebb and flow with the whims of Commodore's marketing strategy.

With its advanced specification, a selection of screen sizes, animation capabilities, loads of colours, RGB (Red Green and Blue) output, and the promise of a bright future ahead, video studios and post-production houses slowly latched on to the great potential of the original Amiga 1000s. Its titling and graphics abilities, even at a cost of over £1,000 for a 256K base machine were seen as particularly cost-effective for the time.

Time passed, the Amiga 500 was launched and became a huge success. Almost overnight (and wrongly, in my opinion) the Amiga became dubbed solely as a games machine, with its advanced 16-bit architecture making all other computers look like

jumped up abacuses. But video wasn't left by the wayside. Genlocks (a means of linking an Amiga to a video source) were appearing in ever increasing forms and numbers, and at a wide range of prices. Bigger and better software was developed which required bigger and better machines, so the creative types sadly put aside their beloved A1000s for the more flexible, but far uglier, Amiga 2000 – a machine that was later to be replaced by the Amiga 1500 and then put out of production in late 1992.

### **TV Time**

In the late 1980s TV programmes like Channel Four's Network 7 and The Chart Show used Amigas extensively as they carved out new 'yoof culture' slots, spawning the bold and brash graphics styles which are so common today across the networks.

Amigas became the video graphics tools of creative spirits in colleges, video workshops and

DELUXERING IN THE PARTY OF THE

The Rendale 8802 is one of the best low-cost, no-frills genlocks available for the Amiga, and was recently upgraded with the arrival of the Rendale 8802 FMC.

hi-tech cottage industries across the UK, giving rise to the great and the good, as well as the naff and the cack. Amiga 500s and 500 Pluses became staple tools for small-scale video outfits, titling a thousand weddings between wobbly shots of churches, slurred speeches from the mother-in-law, and the happy couple grimacing down the aisle.

With the advent of the Amiga 600 the circle was completed and a colour video output was once again built-in, restoring a feature that had been absent from all models after the A1000. An RF (Radio Frequency) output was also added, so it was again possible to record directly to video, this time with a standard, straight-out-of-the-box, computer that would cost you less than £400.

### Cartoon time

To be honest, the prime reason for the RF output was undoubtedly that it could be plugged straight into an ordinary telly, and baddy blasting could commence without the hassle, or the extra cost, of buying a monitor or an external modulator. Home graphics were again well within the scope of the



The RocGen: a popular genlock, especially as it is one of the cheaper ones on offer at £80

domestic user. Add a genlock, dad's camcorder and a paint program and putting the titles on the holiday video or captioning Baby's First Birthday became a piece of cake. It wasn't broadcast quality, but it was fun.

It was personal and it was DIY. It made you believe that you could make your own TV programmes even if you couldn't quite match the quality. Such was the sense of euphoria when the graphics capabilities were discovered that even Rolf's Cartoon Time was plugging the Amiga.

### That's a take

Now the next generation of Amigas has emerged, with brand new capabilities. The new mass-market machine, the Amiga 1200, has features that the designers of the Amiga 1000 could only dream of.

With almost photographic quality output and the possibility of some stunning animations and graphics – as well as playing some brilliant new games – there's no doubt that the A1200 is destined to ship in huge quantities, something which became immediately obvious to anyone who saw them being enthusiastically spirited away at the recent Future Entertainment Show.

With these capabilities why wait any longer before getting in on the video scene? Even if you have an ancient (well, relatively) A500 or A1000, there's no reason why shouldn't you join in. So drop that joystick and listen up.

### **Hardware**

### Genlocks

There is a wide range of genlocks available to Amiga users. The main aspects to look out for here are build quality and number of features. It's also worth bearing in mind that the more expensive genlocks are not always the best. Probably the cheapest genlock available is the ProGen (£65 from Gordon Harwoods 0773 836781). The only down point about it is that it has no RGB pass through, which means you can only see the finished results, not the undoctored original signal.

One of the best, low-cost, no-frills genlocks has been around for a long time – the Rendale 8802 (£139 from Marcam Ltd 0604 790466). The good news is that an upgrade has recently been made and (for an extra £40 or so) the 8802 FMC can now fade between the Amiga and video signals. Both 8802 models feature RGB pass through, so you can use an RGB monitor (if you have one) which gives far crisper pictures than composite or RF video. Hong Kong-based RocTec makes a popular pair of genlocks that are widely available. Although they are cheaper (RocGen £80 and RocGen Plus £130) they just don't match up to the quality of the Rendale genlocks, both in performance and quality.

If you want Super-VHS capability you'll have to pay more for the privilege. However, a German company called Electronic Design produces a well-featured, good-quality genlock (the ED PAL Genlock) with both S-VHS and composite inputs for £449.99 for the Y/C model and £349.99 for the composite version – available from Micro-PACE (0753 551888) or Genlock Ltd (0257 472866).

Obviously, there are plenty more genlocks to choose from – check out the ads in *Amiga Format*, – but the prices really can start to go through the roof, and the quality may not be substantially better than those genlocks listed above.



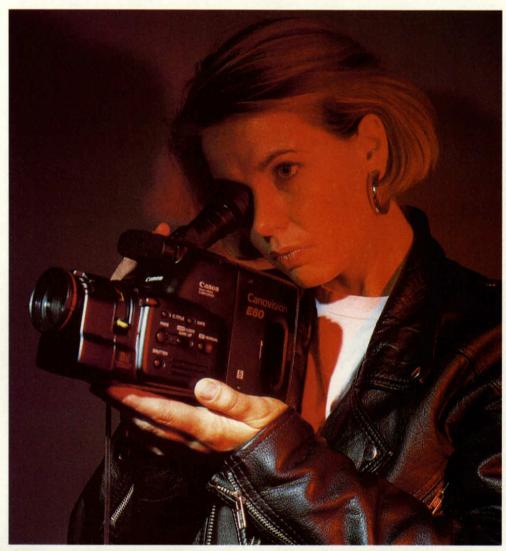
It's not cheap, but it's good quality: the Electronic Design PAL genlock. It starts at £350

### Modulators

A modulator is a device built in to the new A600s and A1200s, but was not standard in some of the early Amigas. It enables you to transmit Amiga graphics to a television set using an RF (Radio Frequency) lead.

Unlike a genlock, a modulator does not enable you to transfer Amiga graphics to video, but only to a television screen.

If you've got a new Amiga you won't need a modulator, and if you've got an older one you would probably be better off getting a genlock. But modulators can be useful, and if you want one, it should should cost you about £30 from BCS Ltd (0273 506269).



If you've got a video camera, an Amiga and the necessary hardware the world of video is there just waiting to be filmed, titled, captioned and shown to relatives every Christmas until the end of time

### **Software**

There is loads of great software available for Amiga graphics and video applications. It's definitely worth checking out the Public Domain first, and if you can't find a suitable program there, you're sure to find what you want at your local computer store.

### **Graphics**

Deluxe Paint is without doubt the most popular starting point for any aspiring artist. Electronic Arts' Deluxe Paint IV (£65) is the best paint package you can get – though DPIII will do nicely if you don't need features like HAM (Hold And Modify) painting and want to save a few bob. It's still THE classic Amiga paint software and it's great for doing animation as well as creating graphics masterpieces and video titles. Highly recommended.

### Titling

The Big Alternative Scroller which costs £40 is from Alternative Image. This scrolling title generator can get you on the road to good-looking text displays pretty sharpish, though it's getting a little long in the tooth. It has a range of text styles and quite a bit of flexibility on even the most basic Amiga.

TV\*Text is quite an old program, but it certainly rates a mention if only because of the fact that it was given away on a coverdisk with issue 40 of Amiga Format. It's also worth noting that for £49.95 it can

be upgraded to the much more serious TV\*Text Professional (normally worth £80).

The Scala suite is a range of titling and presentation products which kicks off with Scala Home Video Titler 100 (previously called Scala 500) at around £80, and goes all the way up to Scala MultiMedia 200 at £464. Even in its most basic form, Scala HT100 has a range of typefaces, graphics wipes, neat brushes and text effects that make putting together a greatlooking title sequence or graphics presentation easy. It also has smooth scrolling and can present up to 10 pages at a time.

### PD Software

On the PD side there are several programs that won't cost you an arm or a leg and which will at least give you a low-cost taster before you finally decide to take the plunge. *VideoLab* is one titler that I particularly liked. It's Licenceware – which means it costs a bit more than normal PD at £3.50 There are one or two other programs, such as *Video Tools* On Tap (VTOT) that provides some handy tools and *SVideo* – a rather nice scroller – both of which are worth checking your favourite PD library for.

### **Getting started**

We'll work on the assumption that you have an Amiga 600 or 1200 that you wish to use for video work. If you have an Amiga 500 or 500 Plus everything still applies, except that where composite and RF video can be taken directly from the A600 or A1200 a modulator, or perhaps a genlock, is needed to get the same output from the A500s.

First, let's look at some basic hardware set-ups and their limitations. The easiest configuration of all is to simply take the Amiga's output directly to a VCR (Video Cassette Recorder). There are two ways to do this: either by using the RF or composite video inputs. The RF input (commonly known as the aerial socket) is the easier of the two, especially if your VCR has SCART connectors (a 21-pin connector used by many modern VCRs and TVs). For this you'll need an aerial-type cable to connect to the video and another to connect between the video and the TV (or SCART connector if necessary) so that you can see what's going on.

### In the can

The second basic method is to connect separate video and audio from the Amiga to the VCR. The problem here is knowing what leads are required, especially if your VCR uses SCART connectors. Although it is easy to see how to connect video and audio on VCRs with dedicated inputs, SCART connectors can be much more trying. You still use the regular output from the VCR to the TV, but you'll probably need to flip a switch to tell the VCR that it should use the external or camera inputs, before you can see anything .

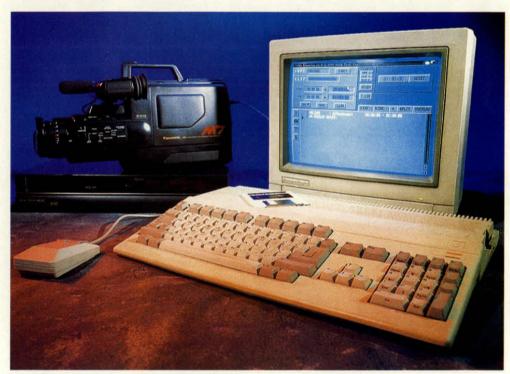


Deluxe Paint IV: one of the best video editing programs available for the Amiga.

Once you've experimented with such basic arrangements for a while you'll realise that there's not much they can really do. Beyond recording the Amiga's output there is no mixing with video available, so it's a case of graphics or video only. This is fine if you just want to tape an animation to show your friends, but not much use if you want to put titles over a video.

### **Advanced effects**

For added effects, such as overlaying graphics on to video, a device called a genlock is required. This, like an external modulator, plugs into the Amiga's RGB port and enables you to superimpose graphics over live video. The RGB port is used because it produces the purest output. Generally speaking a genlock adds graphics over video by removing the first colour in the graphics palette (known as Colour 0) and replacing it with the video images, though some genlocks enable you to select this key colour, v some even offer additional facilities, such as controls for fading the video and Amiga signals up and down, or even doing simple wipes. Genlocking requires more equipment. A video source is needed to supply the incoming visuals over which the



There's a whole world of exciting possibilities waiting to be explored with an Amiga and a video camera. Many people think of the Amiga only as a games machine its video capabilities are astonishing.

Amiga stuff will be genlocked. In case you're wondering, genlock stands for GENerate LOCK – a term coined in the video industry for synchronising cameras and other equipment used for vision mixing Because poor locking can cause stability problems in the final recording you should avoid using cheap or badly recorded tapes as they will produce inferior output signals. With devices such Gold Disk's Video Director it is possible to use your Amiga to do simple editing tasks between two suitable video decks, so quite accurate control can be achieved.

### We've only just begun

Genlocking is by no means the end of the video trail, although it is certainly sufficient for most people's needs. If you're really serious about video, or intend to use your Amiga to produce work up to broadcast standard you will need correspondingly

better video equipment, as well as more powerfully equipped Amigas.

In video studios, where vision mixing is used to blend many different video inputs into a final programme, genlocks are seldom used. Instead, the professionals will probably use a vision mixer or chroma-keyer, that give a much wider range of options. Often a high quality (and high cost) genlock is used to supply a suitable input to the vision mixer, but sometimes the professionals will use a device called an Encoder, that converts the Amiga RGB signal to the required video output while simultaneously synching the Amiga to the video studio's SPG (Sync Pulse Generator), a device that keeps all the video equipment in electronic harmony. It's even possible to have complete control over an edit by controlling all the video equipment from the Amiga. Will wonders never cease?

### Six Of The Best Video Tips

If you have an A500 with only 0.5MB of chip memory you'll find making videos a lot easier and less time consuming if you upgrade upgrade to 1MB of chip memory as soon as possible.

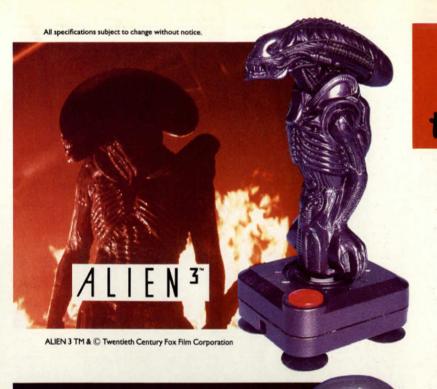
2 If graphics, animations or titles have to cover the entire TV screen use an overscan resolution when you produce them to get rid of the border around the image

It's best to avoid using very pure colours, especially bright reds and blues, as these often look smeary when shown on video. Y/C (the video format used by Super-VHS and Video 8 systems) will cope better with this than composite (combined black and white and colour signals) or RF (Radio Frequency) video, but it's still best to avoid bright colours

You can use any screen resolution to produce your video, but you'll find that some genlocks, particularly RocTec ones, don't always handle hi-resolution screens too well.

5 Choosing the right typeface and font (style of typeface) can make all the difference to your video captions and titles. Avoid light typefaces as they tend to flicker, or even partially disappear. Try using bold or black fonts of Helvetica, Futura, or Universe

6 Experiment with your system to find out just how far you can push its graphics capabilities. In many instances you'll probably find that you need to add more RAM before you can do big animations with *Deluxe Paint*, for instance.

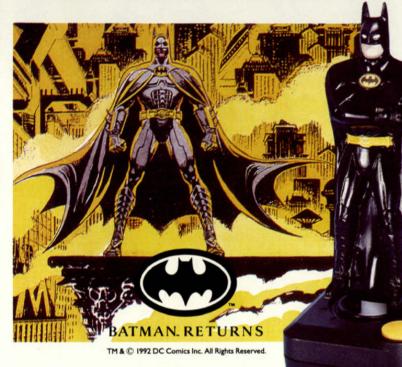


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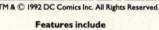
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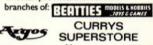
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hatever reason it was that prompted you to buy an Amiga, you'll probably be aware of the quality of sounds that it is capable of making. Listening to some of the music demos that are available in the Public Domain or even just playing a game brings home the power of the sound chip inside the machine.

At the time of its release, the Amiga only had one real competitor – the Atari ST. The ST quickly became popular with musicians, due to the fact that it had a built-in set of MIDI (Musical Instrument Digital Interface) ports, so that it could be connected up to synthesizers, drum machines and so on without having to buy any add-on gadgets. However, the sound capabilities of the machine itself left something to be desired, and the price of ST music software was pretty extortionate (starting at around £200). This is fine if you're a professional musician,

### "Those who wanted to produce music at home could do it all from one machine – their Amiga"

since you could probably afford the expensive software and a room full of lovely synthesizers and drum machines, but what do you do if you haven't got the money for all these wonderful extras? Buy an Amiga, that's what.

Although the Amiga didn't have the luxury of built-in MIDI ports, interface boxes soon became available (for only about £30 – hardly breaking the bank) and the Amiga could actually be used to control a music set-up. This wasn't the main point in its favour though, that honour lay with the fact that you could play back high-quality, digitally recorded sounds (samples) from the Amiga itself – without any other instruments. This ability meant that those who wanted to start producing music at home with a limited amount of money could do it all from one machine – their Amiga.

If you're reading this, then you are probably in exactly that situation. You want to use your Amiga as a musical machine, right? Well let's take a run through the various elements of creating music with this wonderful computer.

Sampling

More often than not, sampling is the starting point for creating any music with the Amiga. Before we start describing how to go about this, let's have a look at what sampling is actually about.

Real sounds exist as 'waves' in the air, creating changes in air-pressure that make your eardrum vibrate, causing you to hear a sound. The Amiga can take recordings of real sounds from a number of sources (such as a CD player or microphone) and turn it into numbers. This is done by repeatedly measuring the volume of a sound and turning it into a number. This enables the machine to build up a 'model' of the original sound-wave. Your Amiga can then use these numbers to reproduce the sound almost exactly as it was recorded.

This recorded data is referred to as a 'sample', although in reality thousands of samples are taken of a sound-wave to produce the recording.



# MAKING MUSIC

With its ability to play sampled sounds and run a wide range of music programs, the Amiga is undoubtedly a very powerful music machine. Getting started with Amiga music-making is easier than you think as Maff Evans discovers

### What kit you'll need

To record samples into the Amiga, you will need three things: a bit of dosh, a sampling cartridge and a piece of sampling software. These vary in price quite drastically (but then don't most things?) usually depending on the features included in both hardware and software. Smaller systems such as Sound Trap start at around 20 quid, but you can pay anything up to £200 for a fancy system like Audio Engineer Plus (which is a very complex and powerful system for those who really know what they're doing).

For a beginner something fairly cheap and simple to operate is best. *Technosound Turbo* from New Dimensions is probably a good bet, since it is pretty

cheap and offers all the basic editing functions. Don't worry about outgrowing the system though, since you can upgrade the software to something like Aegis' *Audiomaster IV*, which is arguably the best sampling program available on the Amiga. For our example, we'll try to keep things as general as possible, so that you can use the guide whatever package you may have.

### MIDI sequencing

This is the really exciting part of creating music on your computer. MIDI (Musical Instrument Digital Interface) is a system whereby your computer (running a sequencer) can 'talk' to electronic musical instruments, getting them to play sounds. MIDI messages are sent to instruments over 16 channels,

each of which can be used to play a different sound (even on different pieces of equipment).

To get started in producing music using MIDI, you need three things: a MIDI interface to plug into your Amiga (Datel make s a sturdy, reliable model for about £25) a MIDI sequencing program and a multi-timbral MIDI synthesizer. Multi-timbral simply means that the synth is capable of playing a different sound on each MIDI channel. You don't necessarily have to have a full synth for this, since you can use a tone module which is basically a multi-timbral synth without a keyboard. However, it is useful to have a keyboard, since you can play notes into a sequencer via MIDI using the keys.

Some synths and modules now have what is called General MIDL which is a standard that

### The Gentle Art of Sample Sequencing

Most people's first efforts with Amiga music are usually with sample tracking. This involves placing sounds sampled with an Amiga into a musical sequence. There are a couple of commercial sample tracking programs available, but there are also much cheaper systems in the Public Domain that do the same, if not better, job.

same, if not better, job. Pretty much the standard sample tracking program (well, the one that most people use) is **MED** from Amiganuts United. This enables you to load IFF (Interchange File Format) samples and produce four-track tunes on a grid-based system, with sections of the tune being programmed individually as Blocks. However, the favoured version of the program is OctaMED, which works on the same principal as MED, but due to some clever programming, it also enables you to create eight-channel tunes rather than the usual four.

This next tutorial should help you to grasp the concept of using a tracker program. For the purposes of the lesson, we've used OctaMED, which is available on the coverdisk of Amiga Format issue 29, so check out those back issues if you don't already have a copy.

SPECIAL NOTE FOR 500 PLUS, 600 AND 1200 USERS: OctaMED was designed some time ago, and works best on standard A500 machines. However, 500 Plus owners can get it to work



Sequencers are really just very sophisticated tape recorders.

on their machines by editing the start-up Sequence (using the Shell) to remove the lines that read NEW and VEC (see the Shell section).

For those of you lucky enough to own an A600 or A1200, unfortunately OctaMED doesn't work on these... yet! Amiganuts promises that a fix is on the way to correct this, so contact Amiganuts United for more information.

### How to do it

Load up OctaMED as per the instructions (see issue 29 if you've got the coverdisk program), then select DF0: from the panel at the top left. Click on DEMOS and 8ChannelDemo to select the file, then click on LOAD: SONG to load it.



	Sequence: Untitled	EVENT EDITOR	Table C
11888	0001.03.000 10 NOIE key 071( 13) vel 06	4,864 dur=8888.88.847	04/04
88814 88815	83.185	4,864 dur=8888.88.895 1,864 dur=8888.88.895 1,864 dur=8888.88.895	Remov
88817 88818	93:128 95 NOTE REV 985() E5) VEL 18 94:954 18 NOTE REV 987( G3) VEL 96 96:94:954 18 NOTE REV 977( G3) VEL 96	1:864 dur 8888:88:893 4:864 dur 8888:88:143	(Innan)
86826	84.868 85 NOTE REV 898 (ES) VEL 86	4:864 dur=8888:88:143 4:864 dur=8888:88:847	Scrol
88824	8882.81.842 85 NOTE REVERST REST VELLER	4.864 dur=8888.88.143 5.858 dur=8888.88.847	Grid Paran
» 66686	81:868 85 NOTE Rev=887(b85) vel=86	4,864 dur=8888;88;847	Repea

Click on MISC on the panel to the right, then select CLEAR SONG ONLY and CONFIRM to get rid of the notes but keep the samples. Click on BLOCK in the panel to the right, then click on 8 next to the TRKS: label. You're ready to start.



Move the pointer to the two-figure number next to the name Strings8. Select 04 (Bassdrum2) by clicking on the right hand digit with the left button (you always click on the actual digit to change it, left button adds one, right decreases by one). Click on EDIT, click on the number next to SPC: Delete the number, press 4 and hit RETURN. Click on SPC: and the EDIT button.



Press [p] four times to enter four bass drum beats. Use the cursor keys to move to the top of the next track and hit [p] another four times. Select instrument 05 (Popsnare2) using the same method as before. Move to the top of the next track with the cursor keys and click on SPC: to turn it off. Go to beat 004 and press [p]. Move cursor down and press [p] at beats 007, 009, 012.



Select instrument 02
(Monobass) and move to
the top of the next track using
the cursor keys. Now press
these keys in order: [v] down
[b] down down [b] down down
[c]. Move to the top of the next
track and press these keys: [r]
down [t] down down [t] down
down [t] down [w] down down
down [w].



6 Move to the top of the block with the cursors and move the mouse pointer to the top of the first track.

Press and hold the right mouse button and drag the pointer across in order that tracks 0 to 4 are highlighted. Drag down to highlight up to beat 015.

Release the right mouse button and click on RANGE. Click on COPY to make a copy of those highlighted notes.



means the drums are always on channel ten and the drum and instrument sounds are always in the same place (so you don't end up playing your bassline on a trumpet or a French horn when you use another machine). There are a number of sequencer programs available for the Amiga, covering various stages of ability. Programs such as Sequencer One from Gajits, Rave or Music-X Junior (both from Software Business) are good for beginners, but something like Dr T's KCS from Zone Distribution or the full-blown Music-X (which is used for these examples) may be better for more proficient musicians. As a result they are, unfortunately, rather more expensive.

Although Music-X is currently the favoured Amiga sequencer, it only works on older Amigas (pre-Kickstart 2). However, a new version (*Music-X* 2) is scheduled for release at any time now, and that will work on all the new machines.

### **MIDI MUSIC**

Recording

Most (if not all) MIDI sequencer programs have recording controls that are like the controls found on tape recorders. The difference is that MIDI sequencers only record data rather than sound, so it can be edited later (or you can even change the speed or sounds used).

All you have to do is select a MIDI channel to record (which corresponds to the sound you want to use), hit RECORD and play along with the pro-

gram's metronome. On most programs there is generally a two-bar count-in before the actual recording proper gets underway to enable you to get in time with the recording.



Select a MIDI channel to record, hit record and play along with the program's metronome.

### Or How to Make Sweet Music with the Minimum of Equipment

Move the cursor (using the cursor keys) down to beat 016 and click on PASTE to drop in the copied range. Move to beat 032 and PASTE a copy in there, then move to beat 048 to paste a copy there as well. Select instrument 07 (the Cordpiano) and move to the top of track 5 using the cursor keys. Now press these keys in order: [t] down [o] [t] down [o] [t] down [o] down [r] down [o] [t] down [o] [t] down [o] [t] down [o] [t] down [o] (t] down [w] down [w] down [w].



Move to the top of the block with the cursor keys and move the mouse pointer to the top of track five. Hold down the right mouse button and drag down to highlight up to beat 030 on track five. Release the right button and click on COPY. Move with the cursor keys down to beat 032 and click on PASTE.



Move to the top of track six with the cursor keys and select instrument 01 (Strings8). Click on EDIT (in the panel to the right), click on the 4 next to SPC:, enter 16 and hit RETURN. Click on SPC: to turn it on. Now press these keys in order: [t] [r] [y] [w]. Hit Space to stop the

sound playing, then move to the top of track seven with the cursor keys and press these keys: [b] [v] [n] [x]. Again, press Space to stop the sound.



10 Click on BLOCK, then click on COPY (next to BLOCK: rather than TRACK:). Click on NEW BLOCK five times you should see the 000 in the middle strip change through to 005. Click on the right-most digit of the 000 next to the 005 in the middle strip to change it to 001. Click on PASTE next to BLOCK: to make a copy of the first block. Repeat the process to paste into blocks 002, 003 and 004.



11 Use the right mouse button on the 4 in 004 to get back to 000, then move up to



make sure that the top of the block is on screen. Click anywhere on track zero with the right button, then click on CUT next to TRACK: to delete the track from the block. Repeat the process for tracks one, two, three, four, six and seven (leave track five alone).

12 Go to block 001 and use the same process (that is click on a track with the right button, then select CUT next to TRACK:) to remove tracks zero, one, two, three and four. Go to block 002 and cut tracks two, three and four. Go to block 003 and cut tracks zero, one, two, five, six and seven. Go to block 004, cut tracks six and seven.



13 Use the right button to go back to block 003, then click on EDIT to get to the edit panel. Click on SPC: to turn it off, then use the cursor keys to move to beat 054 on track two (third from the left). Select instrument 05 (Popsnare2) and press [p] ten times for a snare drum fill at the end of the track.

14 Select instrument 09 (OrchHit) and move the cursor to the top of track six. Press the right square bracket, move to the top of track seven and press right square bracket again. Go to block 005 and go to the top of track six. Press the right square bracket, move to the top of track seven, press the right square bracket for orchestra strike and to kill the strings

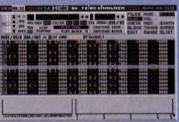
**15** Arrange the blocks into order to form a final song. Click on PLAY and click on



INS nine times. Click on the down arrow and click on + to change the 00 to 01. Repeat this moving down the column so that the other numbers read 02, 03, 04, 04, 04, 04, 01, 05.



16 Use the arrows to the right of the right-hand black bar (with a white line across it) to change the speed reading to 34/05. Now click on PLAY SONG to hear your finished masterpiece. Now you can start experimenting for yourself. Oh, and don't be afraid to fiddle around with things to see what kind of results you get.



The next part of this tuorial is the simplest of them all: once you have got to grips with the basics, and have worked up some confidence regarding your Amiga, MIDI and Music, you should play around and enjoy yourself.



Quantising corrects errors in terms of timing, but perfect timing can sound unnatural.

### Quantising

Quantising is used to correct errors in timing. You set the rigidity of the corrections (so that the program corrects to exactly quarter, eighth, sixteenths or whatever) so that you can keep some element of variation if you want. If you want your recordings to have a human feel, it's a good idea not to use too much heavy quantising, since if every note is in perfect, the tune tends to sound rather mechanical. There is certainly a skill in achieving the right blend of getting the most out of the program, without making it sound as though the music has been made on a computer.

It may be a better idea to slow down the tempo to record rather than slap a tight quantise on things, in order to keep some sense of groove.

### **Editing**

There are usually two ways of editing sequence data on sequencer programs. These are Event Editing and Graphic Editing. Event Editing displays a list of 'events', mostly as numeric codes, which you can alter with the keyboard, typing in new values that you want to use. Events are the name given to recorded MIDI messages, that are used to control notes, how hard a note was hit and how hard it was pressed afterwards along with pitch-bending information and other control messages. One point worth remembering is that to play a note, there have to be two events: a Note On to determine when to start a note and control its pitch and a Note Off to tell it to stop playing.

Graphic Editing is usually shown in the form of a grid-based screen with bars showing the notes played (much like a piano-roll from an old player-piano). Notes are changed by clicking on them with the mouse and dragging them to where they are supposed to be. Some sequencers also enable you to create notes on the grid edit page by clicking where you want the note to appear.

### Arranging

All sequencers have the capability for taking recorded sections and arranging them into a song, but the method for doing this varies. Sequencer One has a Bar Edit page, on which you take a copy of

certain bars and paste them into the position you want them to play. This is simple to use, but hardly the most flexible method on offer. KCS is a little more forgiving, having what is called Open Mode.

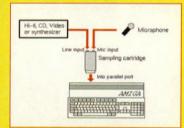
This enables you to set up a series of trigger sequences, and this means that you label certain tracks and sections and then call them up using a control sequence.

However, the friendliest and most flexible method is the Play Sequence mode on *Music-X*. This enables you to choose any track you have created and place it in the right position in the same way as you would a normal note. Sequences can be played in any location, either alone or layered with other sequences. You can even play sequences within sequences, so you can put your drum track, bassline and chords into a sequence called Verse and call it up in another sequence to arrange the whole song. Couldn't be simpler!

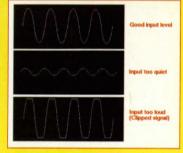
One point to make here is about Voice arrangements. Because MIDI sequencers only record data, you can change the sound they use by selecting a new one on the synth or sending what is called a program change message. This calls up the specified sound on the synth in the right place. It's worth remembering though, that not all synths have the same sounds, unless you are using general MIDI. Even if you're not, it's worth bearing in mind that many instruments expect you to have the drums on MIDI channel ten.

### Simple Samples: the Art of Making Amiga Music

First of all, set up your sampler as detailed in the instructions. Connect the leads to your sound source (or microphone) and get the recording monitor section of the sampling program up and running (Technosound Turbo has these on screen as standard).

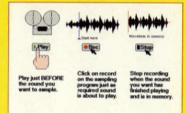


Play the sound you want to sample into the machine and look at the monitor display. For optimum recording, the monitor display should show the sound reaching almost to



maximum, but never hitting the top of the scale. This causes what is called Clipping (the loudest parts of a sound are clipped off or lost) which makes everything sound very fuzzy. Adjust the input level until you've got a decent (but not too loud) input.

Get your sound source ready (if you're recording from hi-fi or video, roll back to just before the section you want to record), hit record on the sampling program then play the sound (or recording) you wish to sample i



nto the sampler. Hit Stop to stop recording. The soundwave you just recorded should appear on screen ready for editing.

Play the sound a couple of times to see if you're happy with the recording, then move the start and end points



The red section is the required section of the sample. Use the markers to CUT the sections in blue.

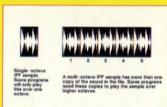
around to find the area of the sample you want to keep. Once you've found it, move the start and end pointers to surround the area before the section you want to keep and select the Cut option to get rid of it. Repeat the process for the area of the sample after the sound you want to keep. A little more pruning may be needed.

You should now be left with your required sample. However, you may want to loop it (play it again and again in a continuous cycle) to create a long, sustained sound or a rhythm loop. For drum loops



this is best done by ear, listening for when the loop sounds right. However, for sustained sounds, you have to make sure that the sound level at the start of the loop is as close as possible to the level at the end of the loop, otherwise you will hear a nasty click every time the loop is played.

All that remains now is to save the sound. Most samplers and music programs save in IFF (Interchange File Format), which is a fairly standard format for sounds and pictures on the Amiga. However, many music programs need the sound to be saved in a certain way before they can be used. This is because they need the sound file to contain a separate sample for every octave which it can play. Most sampler programs have an option to save multi-octave sound files, so make sure you choose the right one for whichever program you want to use.



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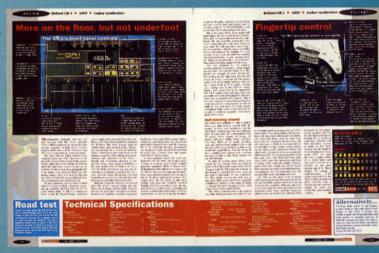
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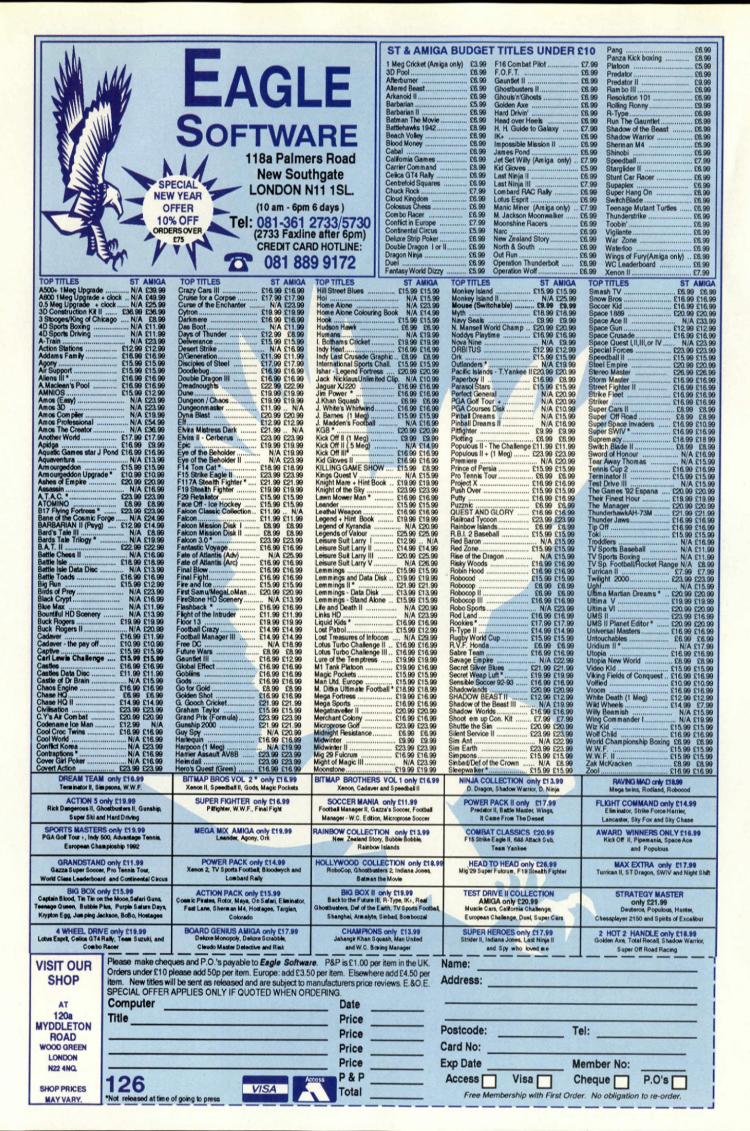


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Mound & Advance.

You know you keep meaning to 'get organised', you just need some help. Wait no more, let Jason Holborn explain one of the best Amiga tools to get the job done. Welcome to databases...

veryone needs to keep track of information in one form or another. Whether you're trying to keep customers informed about the services your business provides, organise your address book, or keep track of your record collection, you can make life easier for yourself by organising that information in some sort of filing system.

Filing systems traditionally come in one of two forms – the steel filing cabinets that are still a feature of many offices or card index boxes. Computers too can be used for maintaining filing systems using programs called a databases.

A database is simply a program that takes the theory behind the traditional filing cabinets and card box files and transfers it to your Amiga screen. But instead of holding the information in a bulky filing cabinet the database stores its information on a floppy disk, or a hard disk for quicker access.

The information within the database filing system is separated into 'records'. Each record contains all the information referring to an individual item within the filing system. For example, if you needed to keep track of 100 customers, then each customer would have their own record containing their name, address and other relevant details.

The best way to grasp the structure of a record is to imagine it as a job application form. Because the form needs to contain many different items of information such as name, address, age and so on, each piece of information is allocated its own box. In database terms the form is the record and the boxes containing one specific piece of information is a subdivision called a 'field'.

To make the task of extracting the record that you want as easy as possible, all the records within

Helios' Gallery is a big, bold and beautiful database that allows you to include both pictures and sampled sounds.

## BASE-IC INSTINCT

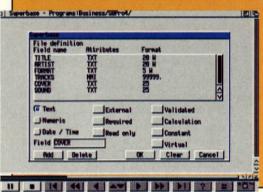


### **Choosing a Database**

Here is a list of questions that you should ask yourself (or the salesperson) when selecting a database. Use these as the basis for your buying decision and you won't go far wrong.

### IS IT EASY TO USE?

There are a couple of database packages available for the Amiga that can handle virtually every databasing task you care to throw at them, but all that power will be



wasted unless you can gain access to it. You should always test a database before you buy. If there's something that you don't quite understand, ask for clarification. If you're still you're not happy with the explanation, then think again.

CAN I CONTROL THE FORMAT OF RECORDS? Some databases have a fixed format for creating records that make them easy to use, but also limit your options. Always go for a program that enables you to define how many fields you can have within a record and, more importantly, the format of those fields.

CAN I CONTROL THE LAYOUT OF A RECORD? Being able to control the placement of fields on the screen will make your database file far more readable than just a simple list of information. Some databases even allow you to draw boxes and place

Databases should be very easy to set up and use. If the program seems long-winded and over-complicated, then steer clear. text anywhere on the screen. This sort of thing should earn the program major brownie points.

HOW EASY IS IT TO EXTRACT RECORDS?

A database is not a lot of use unless you can pull out the information you want within seconds. You should therefore check that the program enables you to get easy access without having to faff around with endless options. Better database programs also enable you to select records based around a search criteria, such as finding all customers over the age of 25 who live in Somerset. A feature such as this may seem like a luxury, but if you haven't got it you'll regret it.

CAN I USE PICS AND DIGITISED SOUNDS?
Graphics and music add greatly to the information that a database can hold, so you may well find this feature useful, depending what you want to use the database for.

### **Database Choices**

Thanks to the Amiga's fast central processor, huge amounts of RAM (Random Access Memory) and large capacity floppy drives, plus the addition with the A600HD and the availability of hard drives for the A1200 and A500 for more storage and faster access, there's an absolute wealth of databases available to suit every requirement and budget. Whether you want to keep track of your stamp collection or maintain a list of customers, suppliers, and stock lists for a multinational conglomerate, the Amiga has the program to suit your needs. Here's a rundown of the pick of the packages.

### HOMEBASE

£29.95 Helios Software

HomeBase is a very simple database that provides only four fields per record of a fixed format. Although it's very limited indeed, the use of big and colourful icons makes it ideal for young children. Unfortunately, this is the only type of application that it is good for. Very easy to use, but very limited.

### GALLERY

£59.95 Helios Software

An enhanced version of *HomeBase*, *Gallery* offers far more control over the format of records and also enables both pictures and digitised sounds to be included in your data records. Features include the same colourful and easy-to-use frontend as homebase, but its search facilities are rather limited. Worth considering for basic database applications.

### PRODATA

£99.95 Arnor Ltd

ProData is Arnor's companion product to its highly successful word processor,

Protext. Employing the same rather PC-like front end, ProData certainly doesn't look like an Amiga database, but despite this it performs faultlessly. It offers powerful database searching facilities and is definitely worth considering.

### SUPERBASE PERSONAL

£61.27 Precision Software

Very similar to *ProData* in terms of features, *SuperBase Personal* leaves *ProData* standing when it comes to ease of use because it makes extensive use of the Amiga's windows system. Form design is rather limited, but *SuperBase*'s searching facilities are second to none. If your needs are fairly basic, then this is the one to buy.

### **SUPERBASE PRO 4**

£411.19 Precision Software

Professionals who can afford its high price, look no further. SuperBase Pro 4 is a very powerful program with its own programming language that enables you to produce custom database programs of your own. SuperBase Pro is the best Amiga database on the market.

MINI OFFICE £69.95 Europress Software Mini Office isn't just a database, you also get a word processor and a spreadsheet program. The database is a very simple affair that

Not only does Mini Office boast a very good database program, there's a word processor and spreadsheet in there too. does have the benefit of being highly flexible and very easy to use. Although there's no comparison with the top of the range databases, most people will find Mini Office's database more than adequate.

ORDER 2.2

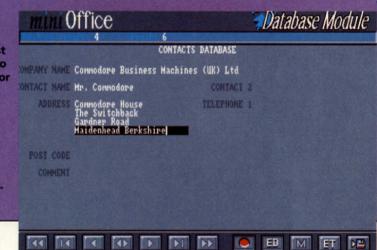
£24.95 South Hams Software
A home-grown package rather than one
that comes from a professional software
house, Order is a powerful database program that rivals SuperBase Pro in terms of

raw databasing power.

Although it is not programmable, Order does enable you to set up relational databases (a relational database is a database that comprises of two or more cross-referenced files, each of which is a database in its own right).

database in its own right).

The only really bad aspect of Order is its user interface (the part of the program that you interact with). It's so dire that Order is made virtually unusable. Order doesn't work too well from floppy disk either, the constant disk swapping and boring disk accesses make Order very frustrating to use.



# "The best way to grasp the structure of a record is to imagine it as a job application form"

the filing system are sorted into a given order using one of the fields as a key or index field, which than acts as a reference point for that record.

For example, you could arrange a filing system containing customer names and addresses by using the customer's surname as the 'key-field' and sorting the list into alphabetical order.

If you then wanted to find the record for a Mr George Humphries, you would simply look under the letter H for Humphries, just as you would in a traditional filing cabinet or card index system. The big difference is that a good quality Amiga database is very, very much quicker and more efficient at sorting and finding files.

Databases are also far more powerful and therefore considerably more useful. Finding a

record based around a single key field such as a surname is easy. But the database also enables you to select records based on a more complex set of keyfields. For example, say you wanted to extract all the records for customers living in a certain area and of a certain age who have a basic income of more than £10,000 a year. Trying to do this sort of thing with a traditional filing system would take hours, or perhaps even days. With a database you would have the information at your fingertips in a matter of seconds.

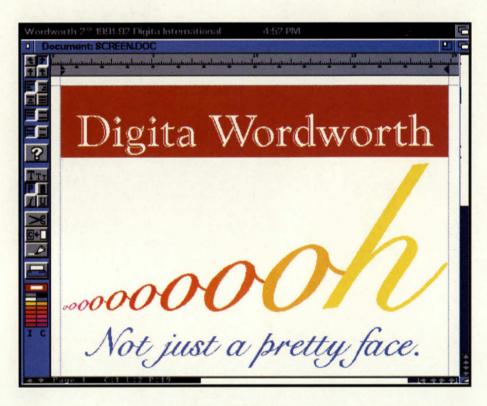
Setting up a file within a database is simplicity itself. All you have to do is to create the database by giving it a suitable name (MyRecordCollection for example) and then define the format of the records that will be held within the file. You also need to define the number of fields within each record, the type of information that each field holds, and the length and format of each field. Once all of this is done (the setting up is the most tedious process of

databasing but it is soon over with), you tell the database program which field (or fields) is to be used as the key field.

More capable databases usually enable you to define more than one key field, making it possible to extract records by using a search facility. Once you're happy with the format of your file you can start adding the records.

Modern databases aren't just restricted to storing text. They can also handle digitised sounds, pictures and even animations. The uses of a database that can store this sort of information are fascinating. If you're using a database for an address book you could store a picture, or animation, of the person next to their details. If you're using it as an index of your record collection you could include full text details of tracks, and date of issue alongside a digitised picture of the album cover and even a short digitised sample of the first track. Try doing that with a card index box!

### Actual screen. Not simulated.



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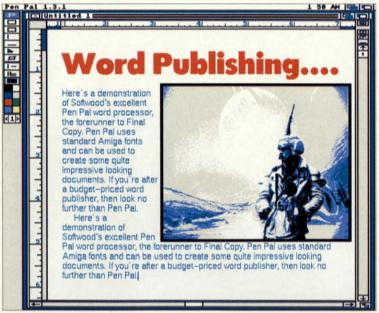
So, if you want to print the sharpest possible letters around, trade up now from any Amiga word processor for just £59. But hurry, this is for a limited period only.

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You couldn't do this on your typewriter, could you. Word processing programs are not only practical and productive, they can also be fun to play with.

ing them against a huge list of correctly spelt words held within the word processing equivalent of a dictionary. If the spelling checker fails to find a certain word, then it assumes that the word is spelt incor-

names they will also give you the option to skip

minimum of effort\*

rectly. Because spell checkers won't recognise them or add them to the dictionary. "The great advantage is that you can easily correct and amend documents with the

> Word processors really come into their own when you want to edit a document. You can move the cursor back through a segment of text and either add new characters or delete existing text simply by tapping the backspace key or the delete [Del] key. If you make a mistake when you're using a word processor, you don't have to start all over again. Word processors also enable you to work on blocks of text.

For example, if you wanted to remove a whole paragraph from a document, you could simply remove the text by tapping the backspace key until every character was deleted, but this takes time. Word processors make the task of working on large amounts of text easy. First you have to identify the text you want to edit by defining it in a block. This usually entails nothing more than telling the word processor where the block should start and where it should end. The word processor then highlights (selects) all text within these two markers. Once a block has been defined, you can remove the text from the document, make a copy of it, or move it around within the document.

Are you fed up with the smell of correction

you want to get a letter just right? Jason

fluid and ending up knee-deep in paper when

Holborn reckons you need a word processor

Another very useful facility is search and replace. This enables you to search for a particular word or phrase and delete or amend it. You can also vastly improve the quality of your finished document by using a word processor by using different type styles, such as bold, italic, underlined or even shadowed and outlined text styles. And let's face it, presentation can make all the difference to your CV or to an important letter. If you want more than a text word processor, then consider getting a word publisher, that can also handle images.

verybody needs to write letters some time, and even if that's all you use a word processor for, it will still probably be one of your most useful programs.

That's because a word processor makes the task of putting words on to paper as painless as possible whether you're writing a letter or a novel. Before you know it you'll have saved several gallons of correction fluid and the paper equivalent of a couple of dozen acres of forest.

The great advantage of a word processor over traditional pen and paper or a typewriter is flexibility. You can correct or amend documents in next to no time with the minimum of fuss because once you've typed in the text you're not stuck with it. You simply change it on screen. What's more, you're not restricted to a single copy. Unlike a handwritten or typed document, a word processed document can be printed over and over again without having to rush down to the local library to

photocopy the original.

You are also likely to make fewer spelling mistakes with a word processor - if you use the spell checker. Spell checkers work by taking each and every word within the document and then compar-

### Choosing a Word Processor

Buying a word processor can be a chore unless you know exactly what you're looking for. Here's a survival guide to help you through the word processing minefield.

What type of word processor do I need? Do you need to use graphics? If so, then you need a word publisher such as Final Copy or Wordworth. If are just dealing with words, then all you need is a text processor, something like Protext.

Does it have all the basic editing functions? Fancy features are all very well, but always check that the program enables you to carry out basic operations such as inserting and deleting text, blocking copy, delete and paste, and search and replace.

Does it have a British dictionary? Make sure that the spell check dictionary files offer British spellings. Many American word processors use American spellings.

Can I work on two documents at once? It's often useful to be able to transfer blocks of text from one document to another, or to combine several documents into one. Some programs also enable you to view both documents simultaneously (TransWrite, for example), you'll find this ability to be a real plus.

Does it have a thesaurus?

A thesaurus can be very useful, but it's not essential. Once again, check that the thesaurus uses a British dictionary.



A thesaurus suggests thousands of smashing words to impress your friends

Open up four documents to check that the program doesn't slow down to a crawl when using several different fonts and pictures within the same document.

### The Pick of the Crop

### PROTEXT 5.5 £80 Arnor Ltd



Arnor's Protext is without doubt the most powerful text processing program available for the Amiga.

Protext is generally regarded as the best word processor available for the Amiga. Many journalists and professional writers use Protext to bang out their words simply because of its raw text processing speed and because it is easy to use with no-nonsense commands. Indeed, the article you're reading now was written on an Amiga running Protext.

It's no wonder that the professionals choose Protext.

Although it lacks the multifont handling and picture import facilities of word publishers such as Final Copy, Protext is unrivalled in terms of text editing facilities.

Even on an unaccelerated Amiga, Protext chops its way through text faster than many word publishers running on an accelerated machine. The latest release (Protext 5.5) offers both a full Collins-Proximity spelling checker and thesaurus.

Perhaps the only real disadvantage with Protext is that it can be a relatively difficult program to master simply because of the large number of keystrokes you have to learn. But it's worth taking the time to sit down and get to grips with the comprehensive manual. Once you start using Protext you'll soon come to realise why 9 out 10 Amiga journos prefer it. One of the best features of the 5.5 version is the spell check, which quickly sorts the entire document for you and then lists only the suspect words, rather than going through them one at a time like most programs. This means that you can leave the word processor to get on with the sometimes tedious business of spell checking documents while you toddle off to do something far more interesting.

### SCRIBBLE! PLATINUM EDITION £39.95 HB Marketing



Scribble! may not look as pretty as some of the other programs but is still a good performer.

Regular readers of Amiga Format will already have this program (minus the dictionary files) because it was given away on the cover disk of issue 41. Scribble! was the first word processor to be launched for the Amiga, but MicroSystems Software has tried its best to keep the program current. As a result, Scribble! includes both a thesaurus and a spell checker, with full English dictionaries. The screen image doesn't look too good, but Scribble! can handle multiple documents within different windows.

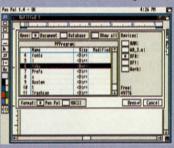
### PROWRITE 3.3 £143 New Horizons



New Horizons' *ProWrite* looks good on paper, but can slow down when using pictures within documents.

New Horizons' ProWrite has been around for several years and has been upgraded manytimes. Unfortunately, it still fails to deliver anything more than basic word processing facilities, although version 3.0 onwards comes with a thesaurus as well as the existing spell checker. Version 3.3 of ProWrite supports the new AA chip set found in the A1200 and A4000 machines, enabling you to import images and see them on screen in true colour. Unfortunately, ProWrite's picture handling facilities are disappointing and the whole thing is on the slow side.

### PEN PAL 1.4 £49.99 Gordon Harwood Computers



Pen Pal 1.4: a budget price for a good word publisher, but only an average word processor.

At under £50 Pen Pal offers all the basics at a budget price. It can import pictures and flow text around them, which makes Pen Pal worth seriously considering if you want to produce programmes or a fanzine quickly, professionally and cheaply – even though the choice of fonts is limited

It's a clever program, but unfortunately Pen Pal is less impressive in terms of straightforward word processing. The dictionary is a bit limited and Pen Pal misses out by not having a thesaurus.

### TRANSWRITE £39.95 Gold Disk UK



Transwrite is a good choice but beware the spell check based on the American dictionary

Transwrite is a no-frills text processor that has recently been upgraded as part of Gold Disk's new Office 2 compilation and is an excellent choice if your budget can't quite stretch to Protext. Transwrite enables you to edit several documents at the same time - text can be marked within one document and then copied across into another. There's no thesaurus and beware the American dictionary. Although Transwrite can be slow with large documents, you should seriously consider it if your needs are fairly basic and you don't need on-screen fonts and pictures.

### FINAL COPY 2 £99.95 Gordon Harwood Computers



So good it could almost be a desktop publishing program, Final Copy 2 is the pick of the word publishers.

The specifications for Final Copy 2 read more like a desktop pub lishing program than a word processor. It includes outline fonts, giving laser-like output even on a dot matrix printer, but adding extra fonts can be expensive. It also offers page magnification between 25 per cent and 400 per cent, type sizes of up to 300 point, text leading (line spacing) and tracking (character spacing) control, comprehensive picture import facilities and it will also process documents. The best word publishing program, of its type.

### WORDWORTH 2 £59 Digita International



If you want more than an ordinary word processor, then consider the outstanding *Wordworth 2* package.

The excellent Wordworth 2, is capable of handling type sizes of up to 300 points and comes complete with 17 genuine compugraphic fonts, so it's unlikely that your documents will look boring. There are a few new word processing functions in there too that enable you to create multi-column documents, indexes, tables of content, and bookmarks.

Text update speed is very good and Wordworth 2 can also import pictures. The only real competition to Final Copy, this is a powerful and impressive program, but the lack of a thesaurus is a real bind.

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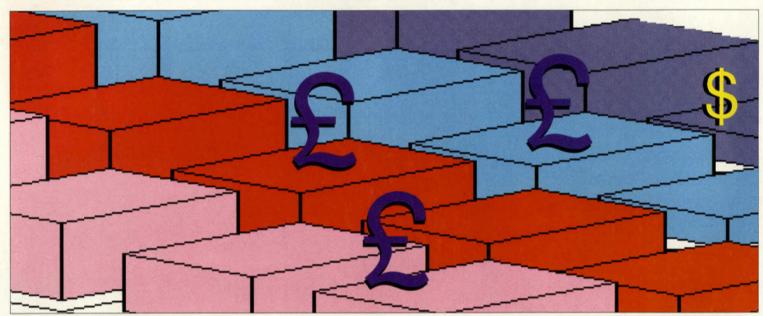
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With the recession still biting hard, a spreadsheet could help you to look after your finances. Jason Holborn tots up his loot and finds a few gems lurking in the mess...

### IT FIGURES FOR YOU

sk the average user what the Amiga does best and you'll get a fair old selection of answers ranging from desktop-video and animation to music, desktop publishing and, of course, games. Who is right? Well, to be honest, none of them. Fact is, the Amiga, like all computers, relishes in just one thing – number crunching. While you're painting away in DPaint or sampling from your latest CD, behind the scenes your Amiga is doing nothing more than messing around with numbers. Many of us struggle to recite our seven times table, but your Amiga has no problem at all wading through tens of thousands of complex calculations every second.

With all this high speed calculating power on tap, it's not surprising that software has been written to take advantage of the Amiga's natural talent with numbers. One such program is the spreadsheet, a program that is generally regarded as one of the main reasons for the success of the personal computer. Spreadsheets consist of a huge number of digital pigeon holes arranged in a grid pattern. Within these digital pigeon holes you can store numbers, formulae or textual data. Then, with values and formulae in place you can perfrom

| Fair | Company | Company

Gold Disk's *ProCalc* is without doubt the best Amiga spreadsheet.

calculations such as adding the values of certain boxes together or adding VAT. The real strength of these programs is that you can perform 'what if' calculations. So for instance, if you'd stored all your weekly outgoings (pub money, games, council tax bills etc) in a series of pigeon holes and then told the program to add them all up, you could try changing the values to see what would bring down your costs. The spreadsheet sounds like nothing more than a glorified calculator, and really that's exactly what it is. You feed it numbers, tell it what to do with those numbers and hey presto! You get a result, hopefully one that works in your favour.

Like most software packages, the spreadsheet is only a tool – it will only do what you ask it to do. The more you ask the spreadsheet to do, the more useful it becomes. Spreadsheets can be used for a wide range of tasks ranging from simple home finance to the kind of complex financial planning that would reduce even the sturdiest of accountants to a quivering wreck. Despite all this latent power, getting started with a spreadsheet is surprisingly simple. If you know how to write a formula to add, subtract, divide or multiply numbers, then you can use a spreadsheet.

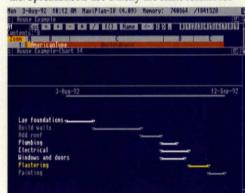
| Comparison | Calc | C

Spreadsheets simplify tiresome financial chores both in the office and at home

All spreadsheets are based around pretty much the same theory. Like a school maths book, the spreadsheet presents you with an empty page divided into a grid which is built up from horizontal and vertical lines. The junctions produced by the crossing of these lines form blank areas that are called cells. Obviously it would be very difficult indeed to accurately pin-point a single cell within such a grid, so spreadsheets refer to the position of the cells in terms of rows and columns.

We mentioned earlier that every one of the cells is capable of holding basically one of three things – strings of text, numbers or formulae. The text is used as a label, so if you were drawing up an Income and Expenses sheet, before you even started putting in values, you'd draw up the basic outline of the sheet by adding a title such as Income and Expenses for Period Ending March 30, 1992, followed by 12 columns labelled for each month.

If you enter nothing more than a stream of numbers into a sheet, it will do nothing more than display those numbers. To use the spreadsheet to carry out calculations, it is necessary to tell it how to act upon those numbers using mathematical formulae. Spreadsheets use exactly the same format for



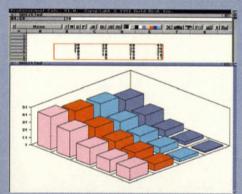
Maxiplan 4 was written specifically for the Amiga and therefore performs as well as you'd expect.

### **Getting Graphical**

When presented with pages and pages of financial information, the first reaction of most people is to switch off completely. Money may rule our lives, but that doesn't stop most of us glazing over at the first whiff of anything even slightly mathematical. Spreadsheets can make the task of presenting complex numeric information considerably easier by using those old school day favourites, graphs and charts.

Most modern spreadsheets offer at least a minimal amount of graphing support, enabling you to transform numeric information from a spreadsheet into a beautiful graph automatically. The most common form of graph that you'll find in a spreadsheet is the classic bar graph, where each item of numeric information is drawn as a block representing the value of that information.

More sophisticated spreadsheets such as Gold Disk's brilliant Professional Calc offer not just one, but many different types of graphs and charts. These range



Most spreadsheets enable you to present com-plex numeric information in graph form.

from the usual pie, bar, line and stack charts, to lesser known types such as Ghantt and scatter charts. Even if you don't need to present numeric information to others on a professional basis you'll find spreadsheet graphing functions very useful for your own reference.

formulae as is used in schools worldwide, so providing you know how to express a calculation in terms of a formula (a=(b+c)-d, for example), then you can use a spreadsheet. Adding a formula to a spreadsheet is as easy as entering a number. All you do is select the cell that should hold the formula and then enter it in traditional format. To tell the formula which numbers to use, you simply enter the co-ordinates of the cells in question. If you wanted to add two cells together, one of which was at A1 and the other at A2. You would therefore simply express this formula as A1+A2. Instead of displaying the formula within the cell, the spreadsheet

The Advantage, V1.1. By Michal Todorovic. § 1989 Gold Disk Inc =C12\*C18\*R34 Projected Gas Billing Jan 91 - Jan 92 \$128.88

Easy to use and powerful, Advantage was the first truely professional Amiga spreadsheet program.

would then automatically perform the calculation and display the result. If you had a long list of numbers to add together, instead of entering the formula manually you'd can click on the first and last numbers in the range rather than enter each one. For more complex calculations, spreadsheets provide what are known as functions. These enable you to carry out complex mathematical operations without having to define the formulae yourself. And if you make a mistake, instead of starting from scratch, all you do is amend the appropriate cells and the spreadsheet is recalculated automatically. in seconds. Try doing that on a calculator!



Although it's powerful, K-Spread 4 has limited graphing and other functions

### **Lotus Power**

No, spreadsheets can't challenge you to a game of Gremlin's excellent Lotus Turbo Esprit, but you can transport sheets between different spreadsheet programs on the Amiga and even other machines using the industry standard Lotus 1-2-3 file format. The 1-2-3 standard has been accepted across a wide range of personal computers including the PC, ST, Mac and of course the Amiga. Although not a native Amiga file format, Lotus compatibility is worth looking for in an Amiga spreadsheet if you use a PC-based spreadsheet program at work. Using a file transfer utility such as Consultron's excellent CrossDOS (which is built into Workbench 3.0 and also on the Coverdisk of Amiga Format issue 40), you can bring PC sheets home from work and port them straight into your Amiga spreadsheet for further work. Most Amiga spreadsheets offer Lotus compatibility. If the spreadsheet that you're considering doesn't, then steer well clear - chances are that it's not worth bothering with. All the programs featured here offer Lotus compatibility, so they are all are a safe bet.

### **Market Choice**

### Advantage £102.12 Gold Disk UK

When Gold Disk launched Advantage on the Amiga market, it heralded the arrival of the Amiga's first truely professional spreadsheet program. Advantage is easy to use and has the sort of spreadsheet power that is usually associated with PC-based spreadsheet programs, When it was first launched Advantage was so good that it cleaned up. Its extensive range of functions and brilliant graphing make the process of building up and using a spreadsheet almost fun. OK, no one could possibly claim that spreadsheets are particularly entertaining, but Advantage is about as close as you'll ever get.

### **Professional Calc**

£152.80 Gold Disk UK

Many spreadsheet buffs believed that Advantage couldn't be improved upon, but Gold Disk proved them all wrong with the launch of Professional Calc. Like Advantage this is an easy program to use. Pro Calc not only performs superbly, but it looks good too. It offers an extensive set of spreadsheet functions, powerful macro facilities and far more control over graphs than most other systems. Some of the graphs are a little weak, but Pro Calc is still miles better than the competition. Although it is high-priced, Pro Calc is a star among spreadsheets, so if you want the best, then look no further than Pro Calc.

K-Spread 4

£99.95 Kuma Computers Kuma's latest release, K-Spread 4, is a far cry from the sophistication of Pro Calc. but gripes aside K-Spread has a lot of power. But it also has its problems Even in its fourth incarnation, K-Spread is let down by a poor selection of chart types and limited graphing functions. It also still seems to be rather bugged. Loosing a picture in your favourite paint package may be annoying, but loosing financial information when your spreadsheet crashes could result in an embarrassed silence the next time you ask the bank for some loot.

### **MaxiPlan 4**

£129.95 The Disc Company The only real competitor to Gold Disk's Professional Calc is MaxiPlan 4, the latest version of the MaxiPlan series of spreadsheets. Written on the Amiga for the Amiga, MaxiPlan 4 performs how an Amiga product really should. Although not as extensive as ProCalc in terms of raw calculating power, its graphing functions are slightly better. If presentation of numeric information is all important, then MaxiPlan may be the one for you. Its many features include 12 different chart types and more than 70 functions.



### **CUT, TICK & POST**



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SAME DAY

Use your Amiga to get in contact with other people? Nah! But yes you can. Enter the world of Comms and not only will you be able to access information and help from all all over the world, there might even be some cheap software in it too! Phil South and Tim Smith open the door...

sing an Amiga for playing games is a lot of fun, and using it for writing, accounting or creating graphics can be darned useful. But your Amiga can also open up a whole new world if you get involved in something called Comms – and for a change, it needn't cost you a packet.

Comms is short for Communications – the process of linking up with other computers (not just Amigas) by using a normal domestic telephone line.

To do this you need an extra piece of hardware called a Modem (this stands for MOdulator DEModulator) which you connect via a cable to the Serial port on the back of your Amiga. There is another lead that comes from the modem and fits into a standard BT socket.

Once you have set up your Amiga and the modem with these two simple connections, you need a special piece of software called a Terminal Program to make them communicate with each other. Once these three components are working together, you are ready to contact the rest of the world by using a Bulletin Board Service (BBS).

A BBS is a computer that is set up so that it can use a modem to answer incoming calls from people like yourself. Once you are 'online' (connected) a program called a Host enables incoming users to talk to each other, post messages, send electronic mail and send or receive files.

Bulletin Board Services are usually run by enthusiasts who scour the world for the best in

# "To get started you need an Amiga, a modem, some software, a cable and a phone line"

# COMM & GET IT



This is the initial screen of a bulletin board. This details activity on the board such as how many people have been on-line and how many files have been sent or received. The Sysop is obviously married.

### Where or what is the Public Domain?

Despite its name, the Public Domain is not a physical place. Instead, it is a method by which the law treats some software.

To understand this, you have to realise that commercial software (the programs, applications and games you buy in the shops) is affected by the laws of copyright in the same way books and records are.

This means that when you buy a program, you are only entitled to make a back-up copy (in case something goes wrong with the original). You are not entitled to copy the software and give or sell it to other people. If you do carry out any of these actions, you are breaking the law.

Public Domain software differs radically from commerical software on two major counts: firstly, the authors of PD software waive any copyright to their work. Secondly, there are no publishing deals and no publishers.

| Comment file Brea; 81 - 51 Utils | Comment file B

The file area of bulletin boards contain hundreds of useful PD programs and utilities.

Public Domain software can be freely circulated (as long as you don't try and make a profit out of doing this). In fact there are usually two places where you could expect to find PD: on a Bulletin Board Service (BBS), via a mail order PD

company. We'll talk more about BBSs in the main body of this piece.

One name that you will see cropping up again and again is that of Fred Fish. Fred is an American who has made a life's work of collecting all the best PD for a wide range of machines, and storing it for easy access. If you want to get started in PD, going for an Amiga Fish disk is a very safe bet for quality.

There is one other area you should be aware of, and that's Shareware. This is a grey-area between commerical and PD software. In the case of Shareware, the authors retain their copyright but allow anyone to use cut-down versions of their programs on a try-before-you-buy basis. If you like it, and want to use the full version, you are asked to pay a registration fee within a set number of days, otherwise you should destroy the program.

Public Domain software. Basically, the Host computer will have a large hard disk on which is stored sometimes thousands of useful utilities, programs and even a few games and demos.

The ability to download software from a host machine to your own means that you can get the latest PD software for the Amiga instantly and for the price of a phone call. Once the software is on your disks, you can use it as if you had sent off for it through the post and received the disks. The difference is that using comms you can get what you want faster, and you can even ask other users ques-



Some bulletin boards have inventive front-ends. This is one of the better ones.

tions about the software. Community spirit, that's what it's all about.

### **Getting set up**

All you need to get into comms is your Amiga, a phone, a serial cable, a piece of terminal software, and a modem. The serial cable should be one designed for modem use, and not a null-modem cable. (null-modem cables are for connecting two computers in the same room directly via the serial port, for machine-to-machine direct transfers.)

Deciding which sort of modem to buy is a knotty problem, but, you'll be delighted to hear, is easily solved. Modems come in different speeds, measured in something called Baud, which is comms-speak for bits per second (BPS). The speeds you will probably see mentioned are 1200, 2400, 4800, 9600 or even HST (High Speed Technology). Get the fastest modem you can afford, but if you're a bit strapped for cash go for a 2400 or 4800 model. The reason for getting the fastest modem you can afford is that the more time you spend on the line, the higher your phone bill, and the more expensive the hobby becomes. Faster transfer rates mean less time on the line and more money in your pocket.

Supra makes a range of very good modems for the Amiga, and its products would be a good place to start. Some feature MNP 5 (Miracom Networking Protocol 5) data compression. This is a function that filters out any line interference and enables you to double the effective speed of your comms. On a 2400 modem this means that you can download files at close to 480 characters per second. If you have a modem with MNP 5, set your terminal software to twice the speed it should be to enable the fastest possible transfers. The best modems we've found are the Supra 2400 MNP (£79.99) and the Supra 2400 Plus (£99.99) while the Supra Fax Modem (£259.99) is the very best with 14400 Baud and the ability to send and receive faxes.

Terminal software is easy to come by, and almost all the best programs are in the public domain. You can download them from BBS, but you'll need a terminal program, which you can get mail order. (See the list of suppliers and prices).

### **Your first time**

Once you have the phone plugged into your modem, modem plugged into the phone socket, software loaded, serial cable attached to modem and computer, and a good strong cup of tea, you're ready to make your first trip into comms-land.

The terminal program will have a phone book facility, where you can store a list of your favourite numbers for instant dialling by the modem. Type the numbers in our Good BBS guide into the phone book and save them. Then dial one by selecting it from the dial menu. The first thing you will hear is the modem dialling the BBS number. The BBS will

answer the phone and the two computers will link up with a burst of data noise. In case you're wondering what the screeching noise is, it's the modem turning the binary data coming from your computer into high and low audible notes, very fast. Yes, the screeching noise is just the sound of computer data being turned into sound.

Anyway, the next thing you'll hear is a beep. Then the terminal program tells you that you're connected with the words: CONNECT 2400 or something of that order, and you're in. Now either the screen will fill with the hello message from the board you've called, or there'll be the words: Press Esc twice to start NobbyAmigaBBS. Hit the [Escape] key twice and the BBS will continue. You will then be

presented with a menu, usually telling you what to select and what the result will be. If you need help, the system will probably prompt you to press [?] or [H] or [Help]. If you do this the system will tell you what the next prompt is.

The next thing you'll see are file areas from which you can download software to your machine, there will also be message areas, sometimes called message bases, where you can leave messages on a range of subjects, and perhaps even a few online games. You may be tempted to log on to all the message bases and, in your excitement, start typing madly saying anything that comes into your head. Resist the temptation at first. People will be glad to help you out if you're stuck, but a certain amount of humility goes down a treat.

For example, typing: "Hi guys, Gus here. What's all this about ARC and ZOO, is it some sort of boat or what? And how do I fit a giraffe in my Amiga anyway, HA HA HA HA HA HA HA HA', would go down less well from a stranger on the system than a more discrete: "Hello everyone. My name is Gus, and I'm pretty new to comms. I've heard a lot about ARC and ZOO and I wonder if

### File Compression

Many Bulletin Board Services now have thousands of programs on file waiting to be downloaded (copied) by people such as yourself. But all this bounty causes a major problem to the SysOps (systems operators) and users alike. This problem is one of storage space.

There is another bugbear of confirmed comms-users, and this is the amount of time it takes to download a file from the BBS – you don't want to waste valuable time (and money) as your Amiga accepts a 2Mb file from the nearest BBS.

Luckily there is one simple solution to these two problems: this is called file compression or archiving.

All you need is an archiving program which can be obtained from the Public Domain for next to no money. The best idea is to talk to the person running the BBS (he or she is called the SysOp) and find out which archiving system they use. This means that you can get a compatible un-archiver/archiver so that you only have to download small files – archiving can turn a 1Mb file into 500K (halving it).

You can tell which archiving methods have been used by looking at the three letters that make up the suffix of the filename (for example, in SPECIAL.DOC the three letters DOC are the suffix).

Compressed files will have three-letter suffixes such as ARC, ZOO, LZH, LHA or ZIP. Other types exist, such as DMS which contains a whole disk, but primarily the aforementioned types will be the ones you'll encounter. In order to unpack these files you'll need a file compression program. These are available on the same BBS

LhBrch - LZH archiver for the Commodore-Miniga
Version 1.82 (15-Jan-92) - © 1998, 91, 92 by Stefan Boberg

LhBrch is now FRELHRE. If you use and like it, chances are that you will
want to get the new archiver 'Lbl' by me. It is a completely new archiver
that primarily handles LZH and LHR compressed archives, but can be used as a
versatile file manipulation utility as well. This archiver util be available
spring 1992. The CLI/Shell version of the archiver called 'LhB', handling
both LHR and LZH compression has a lerady been released. Please refer to the
documentation for that program for more information.

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Delete Test Arc File info Ummark all

File compression with a program like this is a useful way of cutting down your on-line time.

from which you got your files. Here's what some of those suxxixes indicate.

ARC: an old format. Some faster unpackers exist like TARC which handles the same format.

ZOO: another old format. As well as the ZOO program you can unpack these files with an unpacker like BOOZ.

LZH: the program to unpack these files is *Lharc*, although *LHA* will also unpack LZH files.

LHA: a newer version of *Lharc* that uses the same format but is much faster and more user-friendly. Almost all new stuff on BBS is in LHA format these days.

LharcA: an intuition-based LHA that works from the Workbench. Much easier than the straight Shell-based version.

LhaSFX: another version of LHA that creates self-extracting archives. All you do is run the file and it unpacks itself.

### **Good Software Guide**

### NCOMM 2.0

(Shareware £35 registration fee)
The most commonly used piece of comms software in the Amiga community, especially in the UK. Accepts ANSI (American National Standards Institute) graphics as well as normal text based stuff, so if a BBS asks you if you can read ANSI say yes. All protocols are supported, including ZModem, YModem, XModem, and even protocols for CIS and Kermit. (No not the frog, the transfer protocol.)

### SUPERVIEW (PD)

There are a number of Viewdata BBSs out there. Viewdata systems are fun to use because they are so colourful and can do more in the way of graphics than even the most complex ANSI-based board. The software is a little bit flaky, having a few

identity problems when you save your IDs to disk. In other words it seems to be unable to remember who you are and what BBS you want to log on to. In any event this is really the only Viewdata (Teletext-style graphics) software on the Amiga.

### **TERM 2.2 (PD)**

A big and meaty monster of a program, which even if the archived file is split in two comes on two disks, and covers more like 3-4 un-archived. All the source code is in the archive and it's not incredibly stable as yet. It is ,however, very powerful and utilises ARexx and even has a call cost calculator built into it. It makes a difference to the amount of time you stay online if you can see the pence racking up. Rumours are flying of a new version 2.4 which is more stable and much easier to use.

### RAPPORT

(Big Bang Enterprises £50 inc P&P) Setting up your own BBS need not be expensive, and just think how much money you'll save having people dial up your BBS rather than you calling theirs? If you've got a bit of hard drive space, access to a phone line and a bit of patience you can become a Sysop. The Big Bang Burger Bar BBS is great fun, and this is due in no small part to the slick and colourful software that the system runs on. The software comes on a single disk and is easy to install on your system. (Be warned if you want to set up a BBS of your own you will need a hard disk.) The software is a snip at £50, and upgrades are in the offing like the facility to take feeds for Internet, Usenet and Fidonet. Log on to the Big Bang Burger Bar for more information and a live demo.



The message section of a BBS has its resident experts and helpers.

anyone could explain what they are and how I can use them?"

See the difference? The existing users on a board are like members of a club, and you are a new member. You wouldn't burst into a house where you'd never been before and shout: "Oi oi, what's going on here then? Any beer is there?" Trying to be all buddy buddy will get you nowhere fast, you have to make friends gradually and try not to throw your weight around. As in real social situations, listen for a while before you talk. Once you've looked around the system and want to leave, remember to log off properly. You can cause all sorts of problems if you just turn off





Fidonet is a world-wide network of linked up bulletin boards. It is large and scary.

One last point of etiquette, don't just nip on to BBS to download piles of software and then bog off again. The practice of taking software but not contributing anything is called troughing or leeching, and it's not appreciated by the BBS community at large. If you find a nice file somewhere in your travels that you'd like to share, check if it's on the system first and then upload it. If you at least upload one file for every one or two that you download then that's something.

### Hacking and viruses

You may well have heard the term hacking (or sneaking as the Americans have decided to call it). Hacking is an illegal activity that entails breaking into a computer or computer system without the permission of the owner. To be frank, hacking is for the most part confined to large corporations being broken into, rather than individuals being hacked.

The nearest that you or I would ever get to being hacked would be if we had decided to open up a mailbox on an electronic mail system (it's also called EMail). A mailbox is an area kept on the host

computer where other people can leave messages or even programs for you to pick up at your leisure. It is possible (though not probable) that such a mailbox could be hacked into – Prince Philip's was hacked in the 1980s!

Besides hacking, what you might need to worry about are computer viruses. Before continuing, and walking into a storm of righteous fury from all the BBS operators (known as SysOps) in the country, let me first say that 99.999 per cent of BBS in the UK are virus-free and virus-protected.

But what is a virus? Well, it's just a piece of computer code that has been deliberately planted into a program. A virus is so called because it can spread. It is also so called because it can do damage such as erasing your own files. Viruses are written by two kinds of people: fools, and malicious fools.

We recommend that you lay hands on a good virus checker such as *VirusX* by Steve Tibbet (a shareware program), or *Kill Da Virus 3* (another shareware program).

The best thing to do is always to check new disks, or even new files if you are downloading them from a BBS, before you use them. Never ever use pirated software – software that has been illegally copied.

The chance of you getting a virus from any of the better known BBSs is very slim – the people who run the systems will normally check their systems every day, but it pays to be careful. We recommend that you make virus checks, write-protect your most valued disks, and Don't Panic!

There are a great many BBSs all over the country, some are good, some bad and some indifferent, but all are free to anyone who wants to use them. Actually, there are some services that are not free, but can still be a lot of fun. You have to pay to join certain conferencing systems like CIX or Compuserve (a massive US service). You'll be charged every month for using the service and for the amount of time you are on it. Although it can burn a hole in your pocket the information and contact you get by belonging to one of these systems is of very high quality indeed.

It is possible to enjoy your comms hobby without ringing up an enormous phone bill. As with anything else it's best to experiment.

Good luck, and watch your phone bill!

### **Amiga Format Special Good BBS Guide**

We've talked quite a lot about Bulletin Board Service(s) (BBSs) and your appetite may well have been whetted, but how do you get in contact with these places? Easy, get yourself a modem, some Comms software, some free time on your home telephone, and use the following addresses and numbers of a few of the best BBSs for the Amiga in this country. You'll find that once you start getting on-line regularly other people will recommend other boards you might like to check out. Bulletin boards often have a section full of recommended BBS numbers.

01 For Amiga

BBS 071-377-1358 (24 hours)

One of the best Amiga links in the civilised world, it contains some very good files for download (including a CD-ROM of Fred Fish disks – see the Public Domain box for more about Fish) and lots of online advice. You can leave EMail (electronic mail) here, and lots of very top notch Amiga types visit it. It's a well laid out board and SysOp (systems operator) Tony Miller deserves all credit for creating a popular and usable board. All the Fish disks are available here, as well as a huge mound of other current stuff. You get an even better service if you pay a subscription.

Big Bang Burger Bar BBS 081-909-2064 (24 hours)

A new board, and the home of the Rapport BBS program. Users of this BBS have been unwittingly beta testing (computer industry jargon for pre-production testing) the software ever since it's been online, and very good software it is too. (See Good Software Guide, previous page, for more on Rapport.)

The Big Bang Burger Bar name comes from the Hitchhiker's Guide To The Galaxy, in case you hadn't guessed, and the sysops are Slartibartfast ("I told you my name's not important...") and Gargravarr ("I am the custodian of the Total Perspective Vortex..."). The board is peppered with references to the radio and TV series, books, napkins etc, and there is even The Guide, an online magazine for travellers in time and space to get their bearings.

**Cheam Amiga** 

BBS 081-644-8714 (24 hours)

The Cheam based Amiga board hasn't been around for as long as many others, but is still very nicely laid out. Fidonet mail echoes are one of the main events, but there are file areas too. The system runs using *DLG Pro* software which means it's fast and user-friendly.



Sysops get as many people as possible on-line at once by restricting on-line time. 45 mins, here.

CIX

BBS 081-399-1244 (24 hours)

**Enquiries 081-390-8446** 

Compulink Information Exchange has been running for years, gets bigger by the day, and is used by many famous Amiga types. It's primarily a conferencing service, which means that you log on and read a stream of text that other users have left while you were away. The text is arranged into topics, and you choose which ones you read. There is a feed from Usenet, giving you similar topics from the Internet, plus interactive access to the Internet itself. CIX is very good value and all enquiries should be made to the above phone number, or you could dial them up by modem.

Cliffblot

BBS (0642) 467324 (24 hours)

Another very nicely put together BBS, with plenty of Fidonet mail areas where you can share your views with people around the world, and find online games, like *Drag Racing*, *BlackJack* and *Scrabble*™.

Compuserve

Enquiries (0800) 289 378

One of the biggest systems in the world, and although expensive it is the best thing since sliced bread. The system has thousands of topics to discuss and about a zillion files to download. If you intend using CIS we suggest you re-mortgage your house. Offline readers are not just a nice idea, they are essential when accessing services which charge you for the privilege.

**End Zone** 

BBS (0524) 752245 (24 hours)

Another Fidonet system, which means it's a stand-alone BBS but it is connected to other systems on Fidonet giving it a mail echo from those systems. A user-friendly board, and full of great files and chat.

**Essex Amiga** 

BBS (0277) 23354 (24 hours)

Another lively Amiga board, with lots of messages and files to look at. Once again this board is connected to Fidonet echo mail, and a lot of topics from around the globe. The board is run using *TransAmiga* BBS software.

On-line

**Enquiries 081-558-6114** 

Some BBS systems feature online games, but On-Line is the online games BBS. Featuring local nodes for you to log on to all over the country, and a number of Multi-User games for you to play against other humans. The best example of this is Air Warrior, a flight sim in which all the other pilots are controlled by real people rather than by the computer. For details about joining call the above number and ask to be sent membership details. This is cyberspace for real.

**Test Drive** 

BBS 081-395-5096 (24 hours)

Another lively Amiga board. New, but full of enthusiasm and lots to look at. Fidonet mail echoes are here, plus online games like Ansi Warriors, Never Ending Story, Space Empire, ParaWorld, plus many more. Files on all subjects, as well as some special files on the TransAmiga software itself.

### Sources:

All the software mentioned apart from Rapport is available from your friendly neighbourhood PD software house. Here are some reputable disk shifters to try first:

Blitterchips Cliffe House Primrose Street Keighley BD21 4NN Tel: 0535 667469 Crazy Joe's 145 Effingham Street Rotherham South Yorks S65 1BL Tel: 0709 829286

EdLib 7 Sampford Brett Lane Williton Somerset TA4 4JT Tel: 0984 32320 George Thompson Services Cucumber Hall Farm Cucumber Lane Essendon Herts AL9 6JB Tel: 0707 664654

Telescan Computer Services Handsworth Road Blackpool FY5 1SB Tel: 0253 22296 Seventeen Bit PO Box 97 Wakefield West Yorks WF1 1XX Tel: 0924 366982

Softville Unit 5, Stratfield Park Elettra Avenue Waterlooville Hants PO7 7XN Tel: 0705 266509 The software that allows you to create your own BBS, Rapport, is available from:

Big Bang Enterprises 188 Kenmore Avenue Kenton Harrow Middlesex HA3 8PR

Laser Scoop

200000000

Ricoh UK Ltd is part of the worldwide Ricoh Group of companies, originally established in Japan, in 1936. With a turnover of over \$5 billion and \$7,000 employees, Ricoh have been producing computers and peripherals since 1971 and are the world's second largest manufacturer of Laser Printer engines. Ricoh have employed their expertise to produce a 'first' in laser printers for the world market, the LP1200 with FLASH ROM. Fully HP Laser Jet III To compatible, the LP1200 employs industry proven laser technology. Unlike LED page printers, which use light emitting diodes, the LP1200's laser lightsource, focused by high quality lenses, is able to produce the most accurate and intense printed images. Its fast, efficient processor and engine, together with a straight paper path design, allows printing at a full 6 pages per minute. Unlike its competitors, the LP1200 can print an A4 page of graphics at 300dpi with its standard memory. Also, Ricoh's advanced laser engine enables the LP1200 to address a range of print resolutions up to 400dpi. The standard 2Mb of RAM installed allows the LP1200 to print a full A4 page of text using standard internal resident fonts, or an A5 page of graphics, both at 400dpi. A FREE Windows driver supplied enables the Ricoh LP1200 to print a typical page of text at 400dpi from Windows 3 using the controller firmware currently installed on the printer and standard internal resident fonts. A 2Mb RAM upgrade (total 4Mb RAM) is required to print an A4 page of graphics.

4Mb HAM) is required to print an A4 page of graphics.

Again, unlike the competition, the LP1200 includes a powerful document description language as standard. This language, "LAYOUT", offers unique opportunities to develop custom-made printing systems. Forms and document templates can be

designed and stored electronically in the LP1200's FLASH ROM, alleviating the need for pre-printed

SHOWN WITH UNIVERSAL FEEDER TOP TRAY (OPTIONAL EXTRA)

The Ricoh LP1200 is a genuine laser printer and not an LED printer. Make sure you check out the competition!

CORPORATE SALES TEAM
Tel: 081-308 0888 Fax: 081-308 0608 See how the Ricoh LP1200 compares

to its Laser Printer Competitors	EPSON	HP L/JET	M'MAN TALLY	IBM 4029	RICOH
FEATURES	EPL4100	IIIP	MT904+	Model 010	LP1200
Average Street Price (excl. VAT) (*expected)	£569	£699	£699°	£750	£699
Official RRP (excl. VAT)	£945	£1,179	£1,099	£1,099	£1,195
Maximum resolution in dots per inch	300 x 300	300 x 300	300 x 300	300 x 300	400 x 400
Windows 3 Driver @ 400 dpi					YES
Print Speed	6ppm	4ppm	4ppm	5ppm	6ppm
Straight Paper Path	YES				YES
PCL 5 Printer Command Language	2	YES	YES		YES
HP-GL/2 Vector Graphics included	-	YES	YES	YES	YES
Resolution Improvement/Enhancement	YES	YES	YES	YES	YES
Standard RAM	0.5Mb	1Mb	1Mb	1Mb	2Mb
Full A4/300 dpi graphics with standard RAM		-	*		YES
Warm Up Time	<45 secs	<60 secs	60 secs	33 secs	45 secs
First Page of Text Output	<20 secs	<40 secs	34 secs	20 secs	<15 secs
Document Description Language included					YES
Flash ROM			1000		YES
Upgradable Firmware				DES EN	YES
IC Card Slot	YES		Part Line	YES	YES
Scalable Resident Fonts - in HP LJ III Emulation	100	8	8	0	8
Resident Bit-Mapped Fonts	11	14	14	16	14
AGFA Intellifont Scalable Font Technology		YES	No. of Street, or other party of the last		YES
HP LaserJet III Emulation Included		YES	YES		YES
EPSON FX Emulation Included	YES		YES		YES
IBM ProPrinter Emulation Included			YES		YES
Standard Tray Capacity	100	70	100	200	100
Protective cover on standard tray	YES		YES	YES	YES
Cost per copy**	1.65p	2.00p	1.71p	1.64p	1.65p
Min-Max Paper Weight in gsm	60-157	60-105	60-120	60-131	60-157
Able to print on OHP Film	YES	YES	YES	YES	YES
Able to print on card (157gsm - Manual Feed)	YES				YES
Observation Market Laurel	-404D	04 740	-0540	00.40	-004B

A4 TEXT/A5 GRAPHICS @ 400dpi • A4 GRAPHICS @ 300dpi A 2M5 RAM UPGRADE IS REQUIRED TO PRINT AN A4 PAGE OF GRAPHICS AT 400dpi

FLASH ROM UPGRADEABLE!



WINDOWS





### RICOH LP1200

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PCL5 - INC HP-GL/2 With scalable fonts and vector tor graphics

- SHARP EDGED PRINTING Ricoh FIAL (Fine Image ALgorithm) enhances
- 400dpi RESOLUTION dress 200, 240 & 400dpi.)
- 2Mb RAM AS STANDARD
- UNIQUE FLASH ROM
- IC CARD SLOT nmable FLASH ROM cards

EXPANSION BOARD SLOT
 For improved connectivity eg. Coax/Twinax, PC-LAN etc.

- LAYOUT Document Description Language
- SERIAL + PARALLEL PORTS
- 1 YEAR ON-SITE WARRANTY Next working day response

Silica Systems are pleased to introduce the revolutionary Ricoh LP1200. It has all of the specifications that you would expect to see in today's most technically advanced laser printers, plus a unique additional feature which places it far ahead of the competition -FLASH ROM. This 'Future Proof' technology protects the investment you make when you buy a Ricoh LP1200, as it enables you to keep up to date with new laser firmware developments. FLASH ROM is an area of memory inside the LP1200 which holds the printer's controller instruction firmware. If new firmware is developed, eg an update to the printer's command language, it can be downloaded into this memory. Other manufacturers would require you to buy a new printer! Fonts, macros, graphics and additional emulations can also be stored in FLASH ROM, or on removable, industry standard FLASH ROM IC cards. The new Ricoh LP1200 is the only laser printer to offer this FLASH ROM facility. The LP1200 comes with a 100 sheet A4 paper tray (letter and legal trays also available as extras) and the facility to feed single sheets of paper and card up to 157 gsm. An optional extra universal feeder provides the facility to automatically feed up to 150 sheets, from sizes of 98mm x148mm to 216mm x356mm in size at weights of up to 158gsm. The universal feeder also feeds up to 15 envelopes, overhead transparencies and labels automatically.

### Consumables + Accessories

CODE	PRODUCT PRICE	Exc VAT
CAB 7500	Cable for PC/ST/Amiga	£8.47
KIT 5200	Laser Starter Kit inc Cable	£12.50
LAA 5238	Universal Feeder (2nd Tray)	£100.00
LAA 5262	2Mb RAM Module	£149.00
LAA 5210	Developer/Toner Cartridge	£65.00
LAA 5225	OPC Cartridge (Drum)	£89.00
LAA 5334	Letter Paper Tray (100 Sheets)	£35.00
LAA 5323	Legal Paper Tray (100 Sheets)	£35.00
LAA 5312	A4 Paper Tray (100 Sheets)	£35.00
CA	II FOR A FULL PRICE LIC	-

A4 paper tray is already included in the £699 price. More A4

Tel (Home):

LP1200 WITH SINGLE BIN & 2Mb RAM SILICA PRICE +VAT= £821.33 Ref: LAS 5200

PCMCIA FLASHCARDS ARE AVAILABLE FROM SILICA. THESE ALLOW ADDITIONAL SOFTWARE FONTS TO BE DOWNLOADED VIA A PC.

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- FREE OVERNIGHT DELIVERY: On all hardware orders shipped in the UK mainland.

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Before you decide when to buy your new laser 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 consumables, or help and advice with your new purchase. 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. We have been established for almost 14 years and, 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 and begin to experience the "Silica Systems Service".





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LONDON SHOP: Selfridges (1st Floor), Oxford Street, London, W1A 1AB Opening Hours: Mon-Fri 9.30am-7.00pm (Sat close 6.30pm) Late Night: Thursday - 8pm	Tel: 071-629 1234 Extension: 3914
SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday - 7pm	Tel: 081-302 8811 Fax No: 081-309 0017
ESSEX SHOP: Keddies (2nd Floor), High Street, Southend-on-Sea, Essex, SS1 1LA Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm) No Late Night Opening	Tel: 0702 462426 Fax No: 0702 462363
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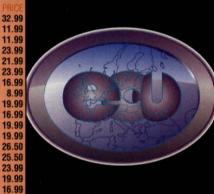
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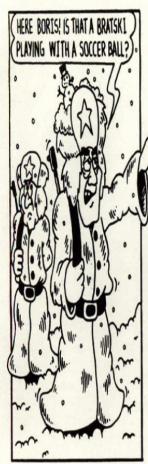
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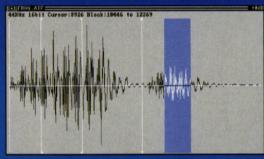
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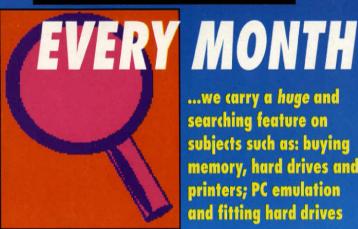
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> Paul Skippings Norfolk

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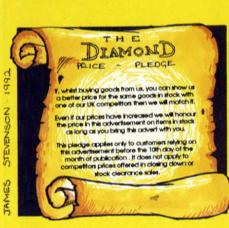
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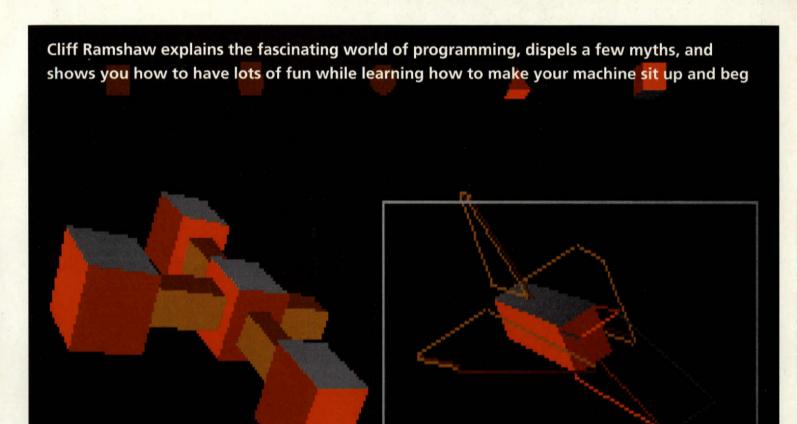
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## LEARN TO DO IT YOURSELF

popular belief held by the average computer user is that programming computers requires the brains of an Einstein and the patience of a saint. But learning to knock out a few lines of code isn't difficult, and you can get a lot of fun out of it.

It's a bit like being a footballer – you have to be very good to play in the Premier League, but thousands of people get plenty of pleasure from kicking a ball around in a park. In the same way you have to have a lot of skill to be a professional programmer, but you can still get a lot of satisfaction from playing around with programming – and if you do have some talent, then you may well be able to turn your labours into profit.

Before we go on, perhaps it would be best to clarify exactly what is this crazy little thing called programming. Put simply, a program is a collection of instructions given to the Amiga. The instructions are stored together as a file on disk. When the program comes to be used (the technical term is run, sometimes executed) it is loaded from disk into the Amiga's memory. After that, each instruction constituting the program is executed in turn.

Clearly, you can't instruct the computer to do

absolutely anything. For one thing, the Amiga can't do absolutely everything. For another, it can't understand English (or French or German for that matter) and so you're liable to run into a few problems when giving it instructions.

Languages such as English are far too complicated for the Amiga to comprehend. Not even a super computer can understand more than a tiny subset of English. So an alternative language, known as a programming language, needs to be used.

There are in fact many different programming languages. Each is designed to make life easy for the programmer, but some are specialised towards writing programs to perform one particular type of job, some for another. Which language you choose depends very much on the sort of programs you want to write, but it's a choice that should probably be delayed until you have at least some programming experience. The language called Basic is probably the best one to begin with.

Basic, which stands for Beginners' All-purpose Symbolic Instructional Code, was developed to teach people how to program, and an excellent job it's done too. Basic is almost certainly the most popular language on computers and just because it's designed for beginners don't assume that it's a bit feeble. It has evolved a long way from its early days, becoming both a powerful and clear language. It's now used quite extensively in the commercial world, and AMOS, a particularly good version that gives you control over all the Amiga's clever features, is used an awful lot for public domain and shareware programs.

#### Basic - the basics

Before you can begin there are a few things you need to know. Every language, and Basic is no exception, consists of a defined vocabulary of permissible words. You'll find a full list of these in the manual of whichever Basic package you use. Because Basic has evolved so much, both to take account of different machines' abilities and according to different language designers' ideas of what makes a good language, you will find that different versions of Basic can vary widely. Nevertheless, all retain a core vocabulary that deals with most circumstances. A program is a sequence of instructions, and as such each instruction is conventionally written on its own line. An instruction may

be, and usually is, made up of several words from the language's vocabulary. There's a limited number of ways in which these words can be mixed, just as there are in English. The collection of rules that govern this are referred to as a language's 'syntax'.

Here's possibly the simplest Basic program you'll find:

Print "Hello"

It tells the computer to print the word enclosed in quotes to the screen. The Print instruction is so fundamental that this program will work with most any version of Basic.

Print can be used in this way to put any sort of text on to the screen –just put whatever you want printing between the quotes. Now try the following program:

Print "Hello" Print "What's your name?"

You'll find that the two pieces of text are printed on separate lines. That's fine for the example above, but what if you wanted all the text on one line. The simplest solution is to put it all in one Print instruction, but you could also do the following:

Print "Hello"; Print "What's your name?"

The semi-colon tells the computer that the next thing to be printed is to immediately follow whatever has already been printed. Notice that an extra space has to be included between 'Hello' and 'What' to make sure the two words don't run together.

The value of the semi-colon isn't really apparent here, since the two Print instructions could so easily be made into one, but if you imagine several other instructions between the two, then you can see that it would come in handy.

Printing to the screen is all very well, but you must be wondering if there's more to programming than all that. And indeed there is. All programs can be broken down into three fundamental stages – input, processing and output. Input is the information, or data, that the user gives to the program

while it is running. Note the distinction between user and programmer: a user is someone for whom the program is intended to be useful, as opposed to the creator of the program itself.

Once the program has gained the information, it will process it in some manner. A compiler will translate its input into another form, a word processor will format its input ready for printing, a spreadsheet will perform numerical calculations on its input, and so forth. The results of the processing become the program's output. This output can be sent to the screen, to a printer, to the Amiga's sound hardware or to a disk drive.

The Print statement is one of Basic's means of giving the user output. Now let's look at how a program gets hold of its input. Funnily enough, the most common way is via an instruction called Input. But the story doesn't end there, because the program needs somewhere to store this input while it processes it.

Obviously the program stores its input in memory. The physical location in memory is not important, but the program must have a way of getting to the information. It does so by giving each piece of information a name. Then, whenever the program uses the name, the machine substitutes the actual information that the name references.

These names and their corresponding information are referred to as variables. This is because the information may change while the program is running. Take a look at this example:

Print "What's your name?" Input NAME\$ Print "Hello";NAME\$

The meaning of the first Print instruction should be clear. When the Amiga reaches the Input statement, it will put up a cursor on the screen and wait until the user has typed in some text and typed [Return]. The text will then be stored in memory, and given the name NAMES.

The final Print statement first of all prints out the text 'Hello', and then it prints out the information contained in the variable NAME\$, that is, whatever the user entered.

If NAMES had been included in the Print state-

ment's quotes, then that word would have been printed out literally. Because it wasn't, Basic understood the instruction to mean 'print out the piece of text which has been called NAME\$'.

It's up to you as a programmer to choose names for your variables (the variable NAME\$ could equally have been called XYZ\$), but you must obey certain restrictions. All variable names must begin with a letter, but after that they may contain either letters or numbers. Most importantly, though, they cannot be the same as words used by the language's vocabulary. You can't have a variable called Print, for instance. Also, in AMOS all variable names must be in capitals, but this varies among different versions of Basic.

The variable in the above example has a dollar sign on the end. This tells Basic that you want the variable to hold text information. There are different types of variables for holding different types of information. The technical term for the above kind of variable is a string variable. The text information it holds is known as a string (because its a collection of characters strung together, if you must know).

Well, that's input and output introduced. I expect you now want to know something about the middle bit, processing. Typically, processing constitutes the largest part of a program. But in these days of flashy graphics, windows, buttons and so on, a good portion of a program may be devoted to producing attractive output. In the Amiga version of Street Fighter II, for instance, the central portion of the game, the bit that does the processing, is only 16K long; the rest of it is all graphics and sound information – output.

One of the easiest to grasp examples of processing is that of arithmetic. Suppose you wanted to write a program to add two numbers together. The problem breaks down into three distinct parts: get the two numbers from the user, add them together and print out the result. As you can see, it corresponds perfectly to the model of input; processing; output.

As you can imagine, the input statement will be used to get the two numbers from the user and put them into variables. Unlike variables designed to hold text, numerical variables have names without the '\$' character. It's only polite of the program to

#### **How To Talk To Computers**

All programming languages are designed under compromise, a compromise between what the machine understands and what the programmer understands. The only language that is truly understood by a computer is called machine language. Different varieties exist for different computers, depending on the central processor that acts as its brains.

In the case of the Amiga, its brain is a chip called the Motorola 68000 and the language which it understands is 68000 machine code. Programs written in this language consist of nothing but a series of 1s and 0s. Now, if you cast your mind back to school days (if you're an oldie) or forward (if you're a psychic sprog) then you'll realise that this is a binary code.

All those little 1s and 0s relate to minuscule switches in that main chip which can be either on or off, with a 1 meaning the switch is on and a 0 meaning the switch is off. From this we can ascertain that the main chip is nothing but a series of switches and thus not as mystical as the young men in Dixons would have you believe.

Although it is possible to write programs like this (and indeed we did when I were a lad), it soon becomes something of a headache, especially if the program is of a reasonable length. Hence the invention of programming languages – the compromise between the numbers of the machine and the English of the programmer.

Program languages, such as Basic, consist of a very limited vocabulary and have a very limited number of ways in which the words of this vocabulary can be mixed. The result is something that can be translated to machine language fairly easily, and at the same time be reasonably easy to read. Basic's vocabulary consists of many English-like words, such as 'Print'. The meanings of such words are similar to their English counterparts, but their meanings are at the same time very much narrower. Computers aren't really very good at ambiguities and subtleties.

If you take the word 'print' as we understand it then it can mean things like: an impression, a copy of an original piece of artwork a printed state or to write in imitation of type and many other things as well  $\neq$  such is the complexity of language. In its Basic language form the word 'print' means just one thing, it tells the computer to put some letters up on the screen.

If the programming language isn't machine language, and the only language the Amiga understands is machine language, then clearly some sort of translation process must take place. The thing

tell the user that some form of input is required, otherwise he or she is going to be confronted by a flashing cursor and not know what to do. An arrangement similar to the following is needed:

Print "Please enter the two numbers to be added"

Input FIRST Input SECOND

The above can be shortened in two ways. The first is to merge both Input statements into one:

Input FIRST, SECOND

But it's also possible to use the Input statement to output a piece of text before asking for its input:

Input "Please enter the two numbers to be added"; FIRST, SECOND

Notice how the semi-colon is used to separate the text to be output from the two variables that are used to store the input. This method provides a convenient shorthand, but it does tend to confuse the issue since we now have an instruction designed to retrieve input that is also producing output.

Well, once the program has got hold of its input it then needs to process it. In Basic arithmetic is performed by use of 'numerical expressions'. A numerical expression usually (but not always!) consists of two variables or numbers separated by an arithmetic operator. The most common operators are: +, which stands for 'add'; -, for subtract; \*, for multiply; and /, which stands for divide. The following are all examples of valid expressions:

FIRST+SECOND FIRST-5 12\*FIRST SECOND/FIRST

If a variable appears in an expression before it has been given a value (via an input statement or means to be discussed later) then it is assumed by the computer to have a value of zero. Similarly, text or string variables are assumed to contain no text. A numerical expression produces a result, which must be 'assigned' to another variable. This variable may, if you choose, be one of those that appears in the expression itself. It's old value is used within the expression, then the result of the expression becomes its new value. Assignment in Basic is done with the equals sign:

ANSWER=FIRST+SECOND

This not only provides us with the key line for our adding program, but also shows us how variables can be created with a value other than zero without recourse to the input statement:

FRED=12

for example. But on with the calculator. Here's the full listing:

Input "Please enter the two numbers to be added"; FIRST, SECOND ANSWER=FIRST+SECOND Print "The answer is"; ANSWER

The program can easily be modified to perform other types of arithmetic, just substituting the other operators given above for the '+' sign.

If you try it with division, you'll encounter some strange results. For example, inputting the numbers 7 and 2 will give you the result 3. The real result is 3.5, so where has the computer made a mistake?

Remember that there are different types of variables? So far we've had text and number variables, but there are actually several different types of number variables. The ones we've looked at so far are known as 'integers'. An integer is nothing more or less than a whole number. An integer variable cannot hold a fractional value, so when a division is performed that results in a non-whole number result, only the integer part is stored in the integer variable.

The solution is to use what are known as 'floating point' variables. Without going into boring technical details, floating point variables can hold numbers that include decimal points in them. They are differentiated from integer variables in *AMOS* be ending their names with the # character, but different Basics use different conventions on this point. The completed division calculator looks like this:

Input "Please enter the two numbers to be divided";FIRST#,SECOND#
ANSWER#=FIRST#/SECOND#
Print "The answer is";ANSWER#

Needless to say, I've only managed to give you an introduction to the ideas behind programming. There's lots more to learn, but on the other hand there's plenty of information here for you to be going on with.

#### **Alternative languages**

Although Basic is the best language to begin with, there are plenty of alternatives that you could try once you've got your programming legs.

AMOS is a rather specialised version of Basic, in that it's so much better than most. Corresponding in principle to Basic, it surpasses it in terms of its commands for handling graphics and sound. Because these features vary from machine to machine, there have never been a standardised set of Basic instructions for dealing with them. What vague standards there are tend to be clumsy and slow.

AMOS, being designed specifically for the Amiga, goes its own way and provides an enormous set of instructions for dealing with just about every conceivable aspect of sound and graphics.



AMOS is an excellent programming language, we gave it away on the cover of Amiga Format issue 42.

#### In A Language They Can Understand

that does all this translating is itself a program, written in machine language.

Two types of translation

The programs that translate other programs into the computer's binary machine language come in two main flavours: those which convert as they go and those which convert everything at once.

Really, it's not too diferent from translating in the real world. Sometimes you get a running commentary (like at the European Parliament) and sometimes you get a whole wodge of speech or document translated and presented to you in one lot.

The first is known as an interpreter. Most versions of Basic, including Amiga Basic and AMOS, are interpreted. An interpreter works by going through each instruction in turn in your program and translating into the 1s and 0s as necessary.

As soon as the translation is complete, the instruction is executed (one Basic instruction will in fact translate to several machine language instructions, because Basic is a more powerful and succinct language).

As soon as the interpreter moves on to the next instruction in the sequence, it forgets about the previous one. This means that if the instruction has to be executed again (a common occurrence in real life programs, for reasons discussed later), then it has to be re-translated. This incurs a speed penalty.

A further disadvantage is that the whole translation process has to be repeated every single time the program is run.

The main advantage of an interpreter is its ease of use. You can type a program into an interpreter and immediately see the results of your work. It's invaluable for the testing stage, where you're most likely to make and to find numerous errors. Programs known as compilers represent the second great translation strategy. A typical compiled language is C, though there are many more examples.

#### **Compilers**

Compilers are so-called because they take a program as a complete unit and compile it into a translated chunk of machine code. The advantage is that once translated the program stays translated and thus becomes a machine code program.

It can be run as many times as you like without any further need of the compiler. And because no translation is required when the program is running, it tends to be a lot Continued overleaf...

Normally graphics-orientated games are unfeasible with Basic. With AMOS they become a distinct possibility. A beginner's version of AMOS has recently been released. Called Easy AMOS, it retains most of the power of its bigger brother but provides much more help for the novice programmer.

The latest version, AMOS Professional, offers even more enhancements over the original, including yet more instructions and an excellent utility to help in the correcting of program errors.

Programs written in Basic tend to run much faster than their equivalents in other Basics. Putting them through the separate *AMOS* compiler will further increase their speed. Even so, sometimes even more speed is required.

If you intend to write something really speed intensive, such as a full blown arcade quality game, then AMOS just isn't up to it. In fact the only language that is is something called assembly language.

In some ways an assembler is like a compiler, in that it takes a source file and translates it into a program ready for running. The difference is that each word translated in a compiler is translated into many machine language instructions. In assembly language, each instruction corresponds to a single machine language instruction – it's just that words (and shorthand words at that) are used instead of the numbers of machine language. Assembly language programs look terribly complicated, and it's a bit difficult to get a hang of it all.

But when you have got the hang of it, you'll

DevPac was the first programming language used by Lemmings programmer, Dave Jones. He started out with an A500 and this.

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Intellegation Process College

Struct View. See Select

Struct View. See

Service Service

Service
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Lattice C: C has been one of the most popular languages on any computer for quite a few years now. But I wouldn't suggest it as a beginner's language.

find that programming in assembly language isn't really any more difficult than programming in any other language. And the results are definitely worth it – you get the best possible from the machine in terms of speed and conservation of memory. The assembler of my choice on the Amiga is HiSoft's DevPac.

A favourite language on the Amiga is C. C was used to write the Amiga's operating system, and is used by most programmers to write serious software applications, such as word processors, paint programs and so forth. It's a sort of a cross between assembly language and Basic. In some ways it isn't as powerful as Basic – you'll have to use several instructions to do some of the things you could do in Basic with a single instruction – but it's much faster. C is a compiled language, and the Amiga's most popular C compiler is SAS/Lattice C.

If you are ever taught computing at college, then you'll almost certainly run into a language called Pascal. Like Basic it was designed to teach people how to program, but it was designed according to much more stringent criteria of what constitutes good programming. Pascal, like C, is a compiled language, and is very similar to C in terms of facilities and speed. Unlike C, which uses short, difficult to read words and symbols for its instructions, Pascal has a vocabulary of English-like instructions, making it easier for the novice to guess at a program's meaning. Pascal also imposes certain restrictions on the programmer, both preventing common mistakes possible in both C and Basic, and

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Pascal was named after the French mathematician of the same name. It is an ideal step up from Basic programming for the beginner.

enforcing certain academics' ideas of good programming. The only commercial Pascal package currently available for the Amiga is *HiSpeed Pascal*, by HiSoft.

A particularly interesting language, bundled as standard on all Amigas with Workbench 2 or higher (sadly without a manual, though) is ARexx.

ARexx is an interpreted language, a bit like Basic but slower. ARexx's main advantage is its ability to talk to other programs. Just about every application written for the Amiga these days comes with an 'ARexx port'.

This is a sort of 'door' whereby an ARexx program can enter the application and pretend to be a user. The ARexx program can simulate the key presses and mouse clicks of a user, thus using an application automatically.

It sounds weird, but it's very useful. Just imagine that your hard disk was full to the brim with screen shots in various Amiga-compatible file format, and that you wanted to convert them to one of the many PC files format so your (unfortunate) friend could look at them.

Traditionally you would have to load each one individually into something like *Art Department Professional*, convert it to PC format and save it back out – a rather boring task.

Instead you could write an ARexx program that loaded each picture in turn, instructed *Art*Department to convert it and save it, and then went on to load the next one. The whole process can be

Continued overleaf...

#### How To Talk To Computers In A Language They Understand

faster than its interpreted counterpart.

When writing a program with an interpreter the writing, testing and running can be done from within the interpreter's environment. Things are different with a compiler. The actual text of the program is entered using an editor – not too different from a simple word processor – and then saved out as a text file. The compiler then takes this text file (referred to as a source file) and produces a machine language program as its output (referred to as an object file).

**Programming cake** 

Many errors are picked up by the compiler at this point, preventing it from producing its output. Typically, these are spelling mistakes and combinations of words that are forbidden by the programming language in use. Assuming the compiler produces an object file, the next stage is to link it. This is usually done with a separate program (though it is integrated into the compiler with the AMOS Compiler package).

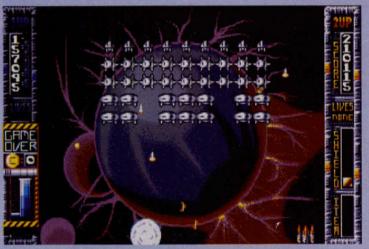
The purpose of linking is a little too technical to go into here; but in simple terms it puts the icing on your programming cake

and makes it absolutely ready to be run. Further errors are possible at this stage. If no errors were produced, then the linker will give you something called an executable file. This is the actual machine language program that will run. Just type its name in at the CLI (Command Line Interface) and watch it do its thing.

The problem is that although your program has compiled and linked fine, it's by no means certain that it will do what you expected it to. The compiler and linker check that your program is grammatically correct; but it's up to you to check its meaning (in other words, that it does what it's supposed to).

And this is where the problems can start, because if you do find errors, and you invariably will, you have to go back to the editor and make the alterations to the source file. These alterations can't be tested until you've compiled, linked and tested it. You can see why it's a good idea for beginners to start off with an interpreted language, rather than with the more complicated and difficult to use compiler. The choice needn't be quite as stark as that. Many interpreted languages also have complementary compilers. AMOS is probably the best example. With a complete AMOS system you can write and test your programs with the interpreter, and, then compile them to gain the extra speed of execution.

#### **How Do The Pros Start To Write A Program?**



Super Space Invaders: this variations on a theme came from Domark and was an elegant re-working of an old theme. Find out for now just how this old theme can be played by a programmer.

It's not long before newcomers to programming get the idea to write a computer game. And why not? Writing a game is probably one of the most creative and rewarding programming tasks around. Let's take a look at how a commercial game such as this is put together.

Space Invaders, being a classic, serves as a good example. The game consists of the following elements: invaders that move as a group left and right across the screen, reversing their direction and descending each time they reach the edge; vertically falling bombs dropped by the invaders; the player's spaceship, which moves left and right under joystick control; the player's missile, which travels vertically up the screen; and the immovable, disintegrating barricades. Secondary elements of the game are the score, and the number of lives the player has left.

On the Amiga, moving graphics are handled by something called sprites. A sprite is a multi-coloured shape that can be moved just by specifying a position on the screen where it is to appear. It will leave any background beneath it intact after it moves to another position. Sprite positions are specified with two numbers, one representing the distance across the screen and one representing the distance down. Immediately you can see that a pair of variables will therefore be needed to store the position of each moving object in the game.

The space invaders themselves are a special case, since they all retain their positions relative to each other. Only one pair of variables is needed for the whole formation. Then each space invader has a corresponding variable which denotes whether or not the invader is still alive. If it is, then its position can be calculated with reference to the variables storing the formation's position and the invader's position relative to, say, the top left hand corner of the formation. If it's already been shot, then there's no need to show it on the screen

A further variable is needed with reference to the invaders. This is used to determine which direction they are moving in. As soon as an invader reaches the edge of the screen the variable is altered, corresponding to a change in direction. A typical way to do it would be to use the values of +1 and -1. In this way, the variable could simply be added to the variable governing the invaders' position across the screen. When an invader reaches the screen's edge, the direction variable is multiplied by -1 to give the new direction and the variable governing the invaders' position down the screen is increased, thus moving the formation down.

The positions of the barricades need not be stored at all, since they don't move throughout the game. They can be drawn on the screen at the beginning of the game and then forgotten about.

So, with all of this new information floating around in your mind, let's try and show you the basic skeleton of the programmed game as it might look on the programmer's notepad before he or she starts to actually write the code.

The overall ordering of events for the game program would be as follows:

- Initialise the player's score to zero and number of lives to three
- Clear the screen and draw the barricades
- Print the player's score at the very top of the screen
- Initialise the position of the invaders to the top left of the screen, and make sure they are all alive. Set the invaders' direction to +1
- Initialise the players position to the bottom left of the screen
- Initialise all of the invaders' bombs to zero
- Initialise the player's missile to zero
- Get input from joystick

If player has moved left or right, then adjust player's horizontal position accordingly (checking that it doesn't go off the edge of the screen) and re-draw spaceship

- Check if player has fired
- If so, then go on to check that a missile isn't already airborne
- If not, then initialise missile's position to just above that of the player
- Change invaders' horizontal position
- Check if edge of screen has been reached
- If so, tell the program to change the direction and increase invaders' vertical position
- Re-draw all invaders that are still alive
- Check to see if the player's missile is non-zero
  - If so, decrease its vertical position and re-draw it.
  - Check to see if it has reached the top of the screen
  - If so, erase it and reset it to zero
  - Check to see if it has hit an invader
- If so, erase both it and the invader, set the variable that says whether or not the invader is alive to zero, set the missile to zero, increase the player's score and print it again
- Check to see if any of the invaders' bombs are zero
- If so, set a bomb's position to immediately below that of one of the invaders on the bottom row
- Go through each invaders' bomb in turn, checking to see if it is non-zero
  - If so, increase its vertical position and re-draw it.
- Check to see if it has reached the bottom of the screen
  - If so, erase it and reset it to zero
  - Check to see if it has hit the player
- If so, erase it and the player's spaceship. Decrease the player's number of lives. If this is still greater than zero than go to the part of the program that initialises the player's position, otherwise print out the message 'game over' and go back to the part that initialises the player's score
- Go back to the part of the program that gets the player's input from the joystick

The basic structure is fairly simple. You'll find that pretty much the same structure can be applied to many other arcade games. So why not have a go?



ARexx comes free with your Amiga, so if you don't fancy forking out for a full-blown language. this could be the ideal start for you.

automated. What's more, ARexx can talk to several different applications at once, so it's ideal for the busy schedule of a multitasking Amiga.

This is only a small sample of the programming languages in existence. You'll find many more in the Public Domain, including such fascinating ones as Lisp and Prolog, both used extensively in artificial intelligence research. The problem with these PD languages is that they're often difficult to set up as they usually expect you to already know all about the language in question, and they often contain errors. On the other hand, they're free and as such offer a great opportunity for experimentation. Just get hold of a PD language disk and a decent text book on the language, and you're away.

Packages and prices AMOS Professional £69.95 Easy AMOS £34.99 from Europress Software. Telephone 0625 859333 AMOS Compiler £30 SAS/Lattice C £230 HiSpeed Pascal £99.95 Devpac 3 £70 from HiSoft. Telephone 0525 718181

As with most things, the only way you're going to learn is by doing it yourself. Given the principles explained above and a Basic manual, you should find yourself churning out interesting and hopefully useful programs in no time. Of course, there's a fair

amount of blood, sweat and tears in all this. Programming involves a big learning curve. Also, no matter how good you get, you'll always make mistakes. It's a simple fact of computing that all large programs contain errors. You'll find yourself staring at the same section of code again and again, tearing your hair out in desperation because it looks fine but it just won't work as you expected. But there's nothing like the thrill of programming. It exercises both your creative and your logical faculties, and at the end you have something to show for all your hard work. Watching other people use your programs can be quite a buzz. I hope I've convinced you to give it a go.

#### **Good programming** practice

Now I've given you a rough overview of the wonders of programming, here are a few points to bear in mind to make your programming endeavours go as smoothly as possible - adhering to these from the start will pay dividends:

- Always keep back-ups
- Use comments throughout your code. Comments are ignored by the computer - they don't slow

Could you move from this - a good old version of that old favourite, Space Invaders, programmed using an Amiga and a commercial language...

down a program - but they help you to see what's happening when you come back to look at your program in the future

- Use descriptive variable names. There's no penalty for using 'Loop counter' instead of 'i' as a variable name, and it ensures you'll know what the variable is being used for when you come to look back at your program
- Make use of subroutines. A subroutine is a re-useable segment of program that can be executed several times from different parts of your program. As well as saving you having to write the same program segment several times, the use of subroutines will also help to organise your programs in a logical, structured fashion, again ensuring you can see what's going on when you come to look back to them a few months after you first created them.

There we are then, programming might not be the dull, tedious, or even frightening process that you might have thought it to be. It's one of the most creative things you can do with your Amiga - no matter what the musicians and graphics bods tell you. I hope that this all too brief overview of the subject area has given you a taste of what you could do yourself, armed with a programming language and your new Amiga. Now get on and create!



...to this, Streetfighter II, a massive piece of programming done using several machines and some in-depth machine code; oh yes you could.

#### Crackin

Let's face it, the chances are if you're keen on programming you'll want to share your efforts with your fellow Amiga owners.

There are loads of ways to distribute a program, but they boil down to two distinct approaches: giving it away and selling it. There's certainly no shame in giving away a program – it means an awful lot of people will see it, and if it's good, then you can expect a lot of feedback. In fact, unless it's very good you'll find it very difficult to sell.

The best way to give a program away is by putting it in the public domain. Doing so is easy - just send it along to a public domain library or use a modem to upload it to one of the many Amiga bulletin boards. Before you know it your program will have spread throughout the country, if not around the world. If you put out several high quality PD programs, you may well find yourself being noticed by one of the established software houses. Who knows, perhaps a full time job might be in the offing?

Selling your programs is a tad more difficult. There are lots of young hopefuls out there, and you've got to make sure that your product is better than the rest. The actual quality of the game is up to you. Compare it objectively to those currently available – if you can't say in all honesty that it is as good as, if not better than, the rest, then you're probably wasting your time trying to sell it.

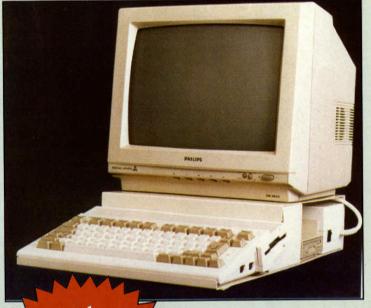
Assuming you think it's worthwhile, then make sure you do it

justice. Don't just send it off in a jiffy bag to some software pub-

lisher, enclose a covering letter, introducing yourself and your game. Give a brief outline of its plot and instructions on how to play it.

Choose the software house according to the type of game you've written. It would be pretty pointless sending a text adventure to, say, The Bitmap Brothers, for example. Also, if you can phone the company up first. Explain that you have a game for them to look at, and find out the name of the person responsible for looking at submissions. That way you'll make sure your program reaches the right person rather than be passed from department to department until it finally gets lost. It's tempting, but don't phone up as soon as your program reaches its destination. Software publishers receive loads of submissions, and it takes a while for them to look at them all. If you keep calling you're not going to do anything but annoy people.

If you don't think your program is strong enough to fight it out in the harsh world of commercial reality, but feel it deserves better than the status of public domain, then there is an alternative: shareware. A shareware program is distributed as if it were PD, but with a document enclosed asking that anyone who likes the program and uses it frequently send you a sum of money. The amount usually varies between £5 and £50. Of course, with this method you're relying on the honesty of your audience.



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If you've been wondering what on earth something called RAM has got to do with your Amiga, then sit back and let us explain why Random Access Memory is so important....

en years ago, microwave ovens were a stunning new technological development, now they're merely passé potato heaters. Ten years ago digital watches were terribly cool items with shiny silver cases and a bright purple display, now you virtually get them free with a gallon of petrol. Ten years ago, a state-of-the-art computer would have 16K (kilobytes) of on-board RAM (Random Access Memory) and a tape unit for the loading and saving of data, now such a machine would not be taken seriously. The point is that technology changes at an extremely rapid pace – 16K was a lot of RAM in 1982, but in the 90s unless you've got a couple of megabytes you can forget it.

As an Amiga owner you have a head start in the technological race. If you own an A600 then you've got 1Mb (megabyte) of memory space as standard

### "Because you are an Amiga owner you already have an excellent start in the technological race"

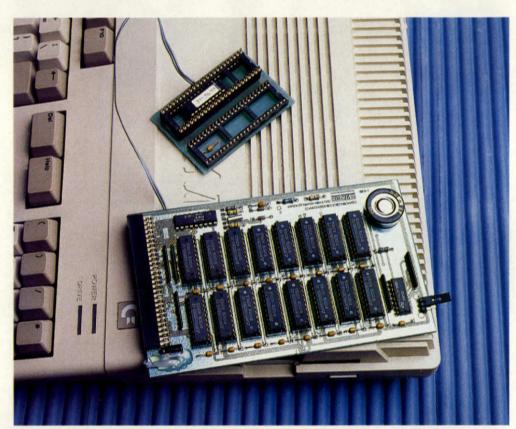
and if you've got an A1200 then you've got a commodious 2Mb. Basically this means that the more RAM your Amiga has the faster it will enable you to work on it. It also means your Amiga can store more data which means that games and other software will work faster and look better.

Now all that space is great, but even with 2Mb of RAM you're still going to find yourself running out of space if you start sampling music, creating complicated graphics or performing other memory-intensive tasks.

#### What is RAM?

Your Amiga is simply one huge storage unit. Inside that case are a lot of chips that are basically just complicated roads and switches. When you turn on your Amiga, a few trillion electrons get woken up

## MENIORY MASTER



If there is one thing that the Amiga really, really loves, then it's extra Random Access Memory – that's RAM to you and me. More RAM means faster processing, quicker screen re-draws and less hassle.

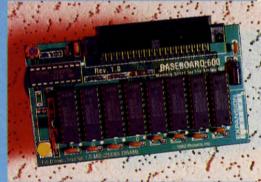
#### A600 RAM Expand

The Amiga 600 is often looked upon primarily as a games machine. This could not be further from the truth. However, in order to get the most from some of the more 'serious' software, you are going to need to bump up its memory.

This is especially true of the A600HD

This is especially true of the A600HD (hard disk). Even though the A600HD comes with 1Mb of RAM onboard, the mere fact that it has to access and control its hard disk means that a chunk of this RAM is eaten up before any of the programs you might want to run get the chance to access it it.

Fortunately, more companies are producing RAM upgrades for the A600. The Baseboard 600 (pictured right) is just such a one. More A600 RAM is essential for true productivity; £35+ is a good price to pay.



The Amiga 600 has now been on the scene long enough for manufacturers to feel it worthwhile to bring out RAM expansions for it.

and are stirred into action. They get sent around all over the shop, zipping around the circuitry and flipping switches to complete the number crunching binary calculations that make the Amiga work.

In order for your Amiga to be able to do anything at all it has to be precisely instructed. These instructions (which are either loaded off disk or off a chip) are stored in a section of the computer called memory. The memory or RAM (Random Access Memory) is just like a shelving system in miniature.

#### **Machine code**

As the data is taken off the disk, all the spaces on the shelving system are filled up with either a one or a zero. These ones and zeros are called binary code and they form a language in which your Amiga is fluent, called machine code.

The larger the program you load into memory, the more memory space you'll need to store the instructions and the results of those instructions.

#### "The larger the program you load into memory, the more space you'll need to store the data\*

#### Amazing feats of memory

Now it's entirely possible to install around 8Mb of RAM space in your Amiga, but quite frankly you're not going to need that much. If you want to make sure that you can use every program on the market for the Amiga, the maximum RAM space you'll need is about 5Mb.

Programs which use this kind of memory space are applications such as 24-bit renderers, video digitisers or sound samplers. Even in these cases, the kind of people who need that kind of space are either seriously into their hobby or are doing the whole thing professionally.

So why do these programs take up so much valuable memory space? Any program that makes approximations of the real world has got its work cut out for it. Sound samplers, for example, make a huge number of measurements in order to capture a noise. They work by testing voltages thousands of times a second. Each one of those measurements has to be stored in memory, so that if you've got a long sample it can take up your entire memory space. The trick with samplers is to record the sound at a hertz rate (that's number of thousands of measurements a second) as low as possible without loosing

With animating digitisers it's the same story as samplers. With a digitiser the frame rate at which you record the image is similar to the hertz rate of a sampler in that the higher the frame rate, the more memory space you'll require.

If you want to create long pieces of useable animation, for example, you're going to need loads and loads of memory. Graphics programs are notorious

256KB

The next step in RAM upgrades for the A600 and A1200 means not having to open up your Amiga at all. You can make use of the handy PCMCIA card slot on the side of the machine. Look out for of these in the future.

#### RAM & ROM

RAM expansions, ROM sharers (both of which you see pictured to the right of this text) are not to be confused.

You already know that RAM (Random Access Memory) can be written to by you, and is used by programs to store temporary data. ROM (Read Only Memory) on the other hand, is a quite different kettle of fish.

ROM is used by the Amiga, not you. As its name suggests, ROM cannot be written to well not by you anyway. ROM has information written on to it by the manufacturers.

Most commonly with the Amiga, you will find that a version of Kickstart is written on to it. However, because different software has been written for different version of Kickstart, you may well need to get a ROMsharer for your machine. This device enables



you to have two versions of Kickstart - the one that came with your Amiga and the one that comes on the Sharer available to you.



The SupraRAM upgrade is one of the upgrades that slots into the side of the A500. A600 and A1200 users do without this expansion port now - they have the PCMCIA slot instead. So, if you walk into your local computer shop and say: "I'd like a RAM upgrade for my Amiga" make sure to state what kind of Amiga you have, or you could be in for a disappointment.

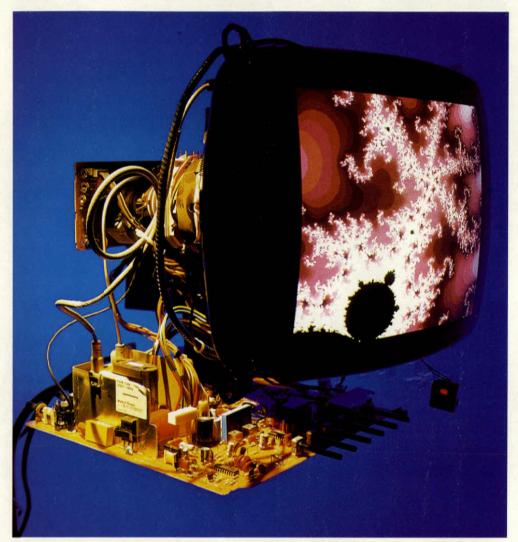
for chewing their way through acres of memory space, and 24-bit rendering programs in particular, make a huge number of calculations based on colour and shape, so not only are they slow but they're also large. Again, it's because the computer is making all sorts of approximations that vou loose so much memory space to these applications.

You'd think there would a limited market in RAM upgrades, after all it's just a few memory chips isn't it? Ermm, no. There is an absolute plethora of RAM upgrade boards available for the Amiga and the whole issue is confused by the fact that you'll need different sorts for different Amigas. If you've got an Amiga 600 or A1200 then you've got two upgrade options. Firstly you can plug memory into the trapdoor slot underneath the Amiga. The drawback to this method is that at the moment there are only 1Mb upgrades available.

#### Credit card

The second option is to use the 'credit card' PCM-CIA (Personal Computer Memory Card International Association) slot on the side of the Amiga. The drawback to this is that this 'credit card' RAM technology is very new so there's not much available yet. But cards should start appearing in the shops any time now. The best bet for the A600 is the Amitek A600 which is available from Silica. If you've got an Amiga 500 or 500 Plus then there are loads of different ways of upgrading. However, the one we recommend is the SupraRAM 500RX which is sold in this country by WTS (0582 491949). This nifty piece of kit plugs into the side of your A500 and comes with as much RAM as you want, though it starts at £198 for the 2Mb model.

Once you've got into the full flow of Amiga graphics you will be able to say: "Of course the Amiga is the best machine for graphics you know", but we can show you how to make it even better



# WHAT A CARD

Ithough it might strike you as peculiar that given the Amiga's outstanding standard graphical capabilities anyone would need, or indeed, want to upgrade them, there are, plenty of expansion cards available that can transform a humble Amiga into a mighty, throbbing graphics workstation capable of absolutely stunning effects.

It's not just the professionals who can make use of this kind of gear either. If you want to create

amazing pictures with millions of colours and amazing detail then there are plenty of options. Even if you just want a wobble free picture in the higher resolutions, there's something for you.

#### **Rainbow warriors**

Most graphics cards work by replacing parts of the Amiga's clever circuitry. This isn't to say that you have to remove parts of your beloved computer to use one, because in most cases the card will simply tell the CPU (the Central Processing Unit – the clever bit that does all the hard work) to ignore the existing graphics chip in the Amiga and instead to transfer all the graphic data requests to the much snazzier graphics card chips.

The main difficulty facing the people who create these cards is making sure that all your existing Amiga software stays compatible. This isn't as easy as it sounds, because all it can take is one misplaced

# "If you want to create amazing pictures with millions of colours, there are plenty of options"

instruction code to be sent to the wrong chip and your Amiga will do a graceful swan-dive into the land of crash. Graphics cards also need to make sure that the CPU understands any information they send back to it. It's a jolly tricky process.

There are two main types of graphic card available. The first of these simply rectify some existing problems with the Amiga's graphics, while the second variety boosts its capabilities by adding on impressive new processors. Of these, the first variety are most definitely the cheapest because they don't have expensive co-processors on them.

#### Flicker-free

The boosting variety of graphics card is a very expensive add-on. These usually cost over £700 which (as you may have noticed) is about twice as much as your Amiga. The reason they cost so much is that they use very new (and therefore expensive) processors and graphics chips. An Amiga is so much cheaper than a graphics card because Commodore can operate economies of scale where they can mass produce millions of chips in one go. If graphics cards were an Amiga mass consumer item then they'd only cost you a couple of hundred quid, but there you go, that's capitalism brother.

# "You can transform your Amiga into a mighty, throbbing workstation capable of stunning effects"

You may have noticed that in the higher resolutions, the Amiga screen display flickers a lot. The reasons for this are pretty technical, but it's basically because your Amiga tricks the screen into refreshing itself too often and at too many positions on your monitor. See, I told you it was technical. These high resolution modes are called HAM which stands for Hold-and-Modify. It's called this because while the CPU is holding one portion of the screen, it's modifying another and this produces that flicker.

Thankfully, those lovely chaps at ICD have produced a card that renders your Amiga flicker-free. This provides a rock steady image no matter what resolution you're working in. It also has an off



DCTV: a software and hardware combination that set the Amiga world alight when it made its debut. Not only does it have one of the best paint packages ever, the hardware will impress even you.

switch for when you wish to work in normal resolutions. It costs £229.95 (from Silica) so you'll only want it if you really get seriously depressed by having a flickery Amiga screen.

There are a couple of phrases being bandied about by all and sundry at the moment: multi-media. and 24-bit colour. The first of these is all about the combination of different forms of data-media to create a form that's of use to the average household (of which CDTV was a brave

attempt), 24-bit colour is a reality on the Amiga if you've got £750 or so going spare.

Basically, 24-bit graphics means that you'll have somewhere in the region of a 16.7 million colour palette. Now, given the fact that the human eye can only differentiate four million shades, this might seem a bit odd, but there you go. Anyway, with a 24-bit graphics card you'll have 16.7 million colours to play with, which is about as close to true colour as you'll get.

#### Millions of colours

This means that you could digitise a photograph and apart from the sheen on the monitor, what you see on your screen is a virtually perfect representation of the original photograph.

The 24-bit graphic cards are going to be of most use to specialist companies that could do with a few million colours for media work such as television or advertising production. This is because they can modify pictures and add bits on to make them look very peculiar. If you've ever seen a peculiar advert where a chap's got very pointy ears or three eyes or something then the odds are that the ad agency used a 24-bit photo retouching system.



Made in Australia, picked up and sold by the Americans, and given a Format Gold rating, OpalVision may be expensive but it's also impressive.

One of the best 24-bit graphics cards for the Amiga is the OpalVision. In order to get anything out of this card you'll need a least 4Mb of RAM and 1Mb of chip RAM. It's also worth noting that because the resolution of 24-bit images is so much higher, so the size of the files are larger too. Put it this way, you won't be able to save many pictures unless you've got a hard drive. The card comes with a funky art package called OpalPaint which has been designed to make the most of all those colours.

Fitting these graphics cards is a job best left to the professional. This isn't just because they cost so much loot, but because some of them involve a spot of unplugging and/or re-soldering on the Amiga's

### "You can now modify your pictures and even add on bits to make them look very peculiar indeed\*

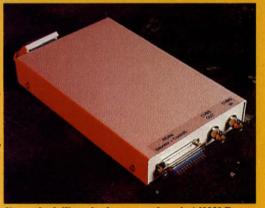
circuit board. So, unless you're a qualified electronics engineer and really know what you are doing when it comes to tinkering with Amigas, then you'd be better advised to take your Amiga to a computer shop and let them do the fitting for you.

If you'd like to avoid all that messing around inside your Amiga's case then you might like to consider Digital Creations' DCTV (Digital Composite Television). This offers what's called pseudo 24-bit colour which means that it's not real 24-bit colour but you'll be hard pushed to spot the difference. DCTV is a plug in module that enables you to display graphics and animations. At £499 it's not cheap, but given the quality of the results and the fact that it comes with a paint package as well it's worth considering.

Whichever upgrade option you plump for, the Amiga is capable of incredible effects as standard. Team it up with a snazzy graphics card and you'll be able to produce original high quality art or muck around with someone else's. The only limit is the girth of your wallet.

Black Belt Systems HAM-E, an unassuming cream coloured box brought the full power of a 17,000,000-colour palette to the Amiga500. The technology used by HAM-E is basically an an extension of the Amiga's basic Hold and Modify mode. HAM-E (HAM Extended) searches for a 'Magic Cookie' of four pixels in the top left of an image which tells the hardware give the image the HAM-E treatment. This approach means that the HAM-E system is transparent to software. A package which supports HAM-E can load and manipulate either normal IFF or HAM-E Images, and the hardware discriminates between the two. Software support was promising at

first, but then the product disappeared from view and Black Belt were unable



It may look like a boring cream box, but HAM-E can

to comment, due to contractual obligations to Commodore. The release of the A4000/1200 reveals the new SuperHAM mode, giving 262,144 colours, which bears a remarkable resemblance to HAM-E.

A basic Amiga is already a pretty swift operator but if you want real speed you'll need a processor accelerator. Jason Holborn tells you all about how to get in the fast lane....

t the heart of your Amiga is a microprocessor, a sophisticated number-crunching device that is the brain of your machine. This talented slither of silicon feverishly carries out thousands of complicated calculations every second. It's a lot more than just a glorified calculator though – like all computers, the Amiga's processor is also responsible for organising and controlling virtually every task that the Amiga undertakes.

The type of microprocessor (or CPU – Central Processing Unit) in your Amiga varies from model to model. If you own an Amiga 500, 600 or 2000, then you are the proud owner of a machine that utilises possibly the greatest personal computer processor ever produced – the Motorola MC68000.

This workhorse of a processor isn't just restricted to Amigas though – it's found its way into a whole range of different makes and models of computer ranging from the Atari ST and Apple Macintosh to games consoles and even coin-operated arcade machines. Although the 68000 is a rapid little fellow, performing complex operations still takes time.

Although you're unlikely to feel held back by the 68000 if you use your Amiga for nothing more than playing games, its performance limitations become more than evident when you start getting

# "A faster processor will increase the speed of virtually every aspect of the Amiga's operations"

into the more serious tasks such as desktop publishing and CAD (Computer Aided Design) or indeed any application that requires complex operations.

The Amiga can suddenly turn from the zippy character that we know and love to a real slow coach. We're not just talking several seconds of waiting time here either – if you're doing something particularly complicated, you can often be left waiting for hours while your Amiga struts it stuff.

#### Fit a faster processor

There is a solution though—you fit a faster processor to your Amiga. Or, to be more accurate you go to a Commodore dealer and get them to fit a faster processor to your Amiga, because this is not the sort of job you should even start thinking about attempting yourself.

AnywayMotorola, hasn't rested on its laurels. Since the day the 68000 was originally launched, Motorola has been hard at work producing leaner and meaner versions of the 68000 that run many times faster.

The first enhanced processor that it launched was the 68010 which was basically a slightly tweaked 68000. You may find some people using this chip, but to be perfectly honest, it's not really worth bothering with as it's only about 5 per cent

# SPEED KINGS



Processor accelerators make your Amiga run more quickly, but if you want to check its performance speed, try running a copy of the Public Domain program *Amiga Intuition Based Benchmarks* (AIBB).

faster than the 68000.

Next up was the 68020, which is now seeing service inside Commodore's latest baby, the A1200. Comparing a 68000 to a 68020 is a bit like comparing a 1.3L Ford Escort to an Escort Cosworth. Sporting full 32-bit technology (all 68000-based Amigas are 16-bit micros), the 68020 offers a considerable speed increase over its parent processor. Although the A1200's clockspeed is just twice that of a 68000-based Amiga, it's use of 32-bit technology accelerates its speed to well over three times that of a standard Amiga.

Once the 68020 had been unleashed, Motorola went into top gear with the launch of the 68030 which was closely followed by the latest, and undoubtedly the greatest, in the 68000-series of processors, the 68040. Commodore has proved itself to



Kickstart is just one of the programs that benefits from a much faster screen redraw speed if you run it on an accelerated Amiga. be very keen to utilise these new chips and several Amigas have been made available boasting these super-fast processors. The first was the A3000 which has recently been surpassed by undoubtedly the ultimate Amiga, the A4000. Running over 38 times faster than a standard 68000-based Amiga, the A4000 is proof enough that a faster processor can do great things to the Amiga.

Accelerating an Amiga doesn't just speed up calculations. A faster processor will increase the speed of virtually every aspect of the Amiga's operation. Workbench windows, icons and gadgets are redrawn at a remarkable rate, word processors format documents faster than a speeding bullet and spreadsheets run so fast that they seem virtually instantaneous. Even some games benefit from a faster processor – any game that utilises 3D graphics will run much faster on an accelerated Amiga. If you thought that the coin-op machines at your local arcade were fast, you should check out this baby.

#### **Clever devices**

A faster processor is only half the story though. If you want your ray tracing, image processing or desktop publishing program to really cook, then you need a floating point maths co-processor – an FPU (Floating Point Unit). Designed to run in parallel with a 68020 upwards, a maths co-processor is capable of performing complicated floating point calculations considerably faster than a conventional processor. There are two maths co-processor available for the Motorola range of processors – the 68881 (designed specifically for the 68020) and the newer and much faster 68882. The 68040 has one of

# "Now your Workbench windows, icons and gadgets can all be redrawn at a quite incredible rate"

these clever devices built in as standard, but be careful when choosing an accelerator board based around this chip, because the 68040 is still very expensive. Motorola also produces an economy version of the 68040 that doesn't have a maths co-processor.

A processor card will not automatically take advantage of a maths co-processor unless the software that you're running is suitable. If you attempt to run floating point routines on a machine that doesn't have an FPU, you'll find that the program will actually run slower.

#### **RAM and chips**

Another factor to consider when buying an accelerator card based around an 68020 or better is RAM (Random Access Memory). Because these processors are true 32-bit, running them on a machine equipped with nothing more than 16-bit RAM (the type of RAM chips inside all pre-A1200 machines), the processor will not be able to run at its full capacity because the 16-bit RAM chips form a sort of bottleneck. If you want a 32-bit processor to run at its full capacity, it therefore has to have access to full 32-bit RAM chips. The Amiga A1200 and the A4000 use 32-bit RAM chips as standard, but A500s, 600s and even 2000 series machines still use the older, and much slower, 16-bit RAM chips.

### **Recommended Buys**

MicroBotics VXL-30 f275 MicroPace (0753) 551888 MicroBotic's VXL-30 has proved itself immensely popular among Amiga users because of its low price yet high performance. Based around a 68030 processor, the VXL-30 fits internally inside both the A500 and the B2000 by replacing the machine's existing 68000.

Running at 25 MHz, the VXL-30 uses the low cost version of the 68030 – the EC68030 – that does not have a memory management unit. Both a floating point processor and 32-bit RAM must be bought as an additional extra.

**GVP A530** 

£799 Silica Systems (081) 309 1111
GVP amazed the Amiga community when it launched the A530, an external 52
Mbyte SCSI (Small Computer Systems Interface) hard drive for the A500 that also boasts a 40 MHz 68030 processor accelerator. The great thing about the A530 is not just the fact that it's a hard drive/processor accelerator combo all in one, but that it can be fitted to any A500 without voiding your machine's warranty – virtually all other processor cards need to be fitted internally which will invalidate the warrantee on an A500. A 68882 FPU chip must be bought as an additional extra.

**GVP G-Force** 

£849 Silica Systems (081) 309 1111
The A2000/1500 version of GVP's A530 is
the G-Force card, a combination hard drive
controller/processor accelerator with the
same impressive specification.

Although a SCSI hard drive is not supplied as standard, any 3.5 inch SCSI hard drive can be mounted on to the card, therefore saving valuable expansion space. One advantage of the G-Force card over the A530 is the fact that it comes as standard with a full 68882 maths co-processor giving your applications an extra spurt of speed.

A5000

£295 Solid State Leisure (0933) 650677 If you're looking for the ultimate in low cost processor accelerators, then look no further than Solid State Leisure's extensive range of B5000 processor boards.

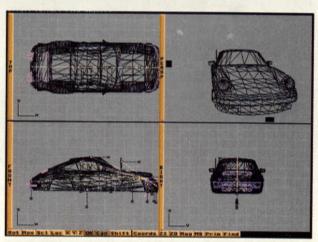
The basic unit comes with a 16 MHz 68030 processor with no FPU and 1 Mbyte of 32-bit RAM.

This can be enhanced with the addition of extra RAM and a 68882 FPU. The top of the range unit costs £1162. That's a lot of money, but this unit certainly shifts. Featuring a 40 MHz 68030 with 68882 FPU and 4 Mbytes of 32-bit RAM, this is one impressive piece of hardware.

The future is certainly very bright for Amiga users. Although Commodore claims that the 68000-based Amiga is still far from dead, you can bet that we'll never see a new Amiga based around this rather outdated processor. With the price of processors such as the 68020 and even the 68030 dropping fast, a whole new generation of accelerated Amigas is waiting in the wings.

Don't think that your A600 or A500 is out of date though – third party vendors have produced an almost bewildering range of processor cards that enable you to speed up your own Amiga.

The right card makes it possible to upgrade an A500 so that it actually runs faster than an A4000.



Ray-tracing a complex scene within a program such as *Imagine* 2 can take hours on a standard Amiga. Accelerate your machine and rendering times are cut substantially.

#### **Putting On The Brakes**

Although the full range of 68000 series processors produced by Motorola are compatible – in theory a program written for a standard 68000-based Amiga should run on an 68040-based Amiga – there are some programs, mainly games that don't like processor accelerators.

Unless you're willing to throw away those programs, you should ensure that the processor card that you buy incorpo-

rates some form of fallback mode. A fallback mode simply provides you with a quick and easy method of installing a standard 68000 on your processor card.

If a certain program falls over on your accelerated Amiga, you can switch back to the 68000. Although you'll then loose all the benefits of the faster processor, at least you'll still be able to run your favourite games.



#### SAVE THE ENTIRE PROGRAM IN MEMORY TO DISK

Special compacting techniques enable up to 3 programs to fit on one disk. Now saves directly to disk as Amiga Dos - reloads independently of the cartridge - even transfer to hard drive! Works with up to 2 Megs of Ram - even 1 Meg Chip Mem (Fatter Agnus) SUPER POWERFUL TRAINER MODE

now with DEEP trainer. Even better than before - allows you to generate more or even infinite lives, fuel, ammo. Perfect as a Trainer Mode to get you past that "impossible" level. Easy to use.

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The full Sprite Editor allows you to view/modify the whole sprite set including any "attached" sprites. PLUS A RANGE OF IMPROVED FEATURES.

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Comprehensive virus detection and removal features to protect your software investment. Works with all presently known viruses.

#### BURST NIBBLER.

Now this super disk copier program is built into Action Replay Mk III. Just imagine a superfast, efficient disk copier program at the press of a key - no more waiting.

#### SAVE PICTURES AND MUSIC TO DISK

ctures and sound samples can be saved to disk. Files are saved ptly in IFF format suitable for use with all the major graphic and ckages. Samples are displayed as screen waveform.

#### OF NISC MODES SELECTABLE . Useful for removing ugly borders when using NTSC

oftware. (Works only with newer Agnus chips).

#### SLOW MOTION MODE

Now you can slow down the action to your own pace. Easily adjustable from full speed to 20% speed. Ideal to help you through

#### MANY MORE INSTANT CLI COMMANDS

like Rename, Relabel, Copy, etc.

#### RESTART THE PROGRAM

Simply press any key and the program will continue where y

At the press of a key now you can view the Machine Status, including Fast Ram, Chip Ram, RamDisk, Drive Status, etc.

Now you can manipulate and search for screens throughout memory. Over 50 commands to edit the picture plus unique on screen status "overlay" shows all the information you could ever need to work on screens. No other product comes close to offering such dynamic screen handling of frozen programs!!

#### JOYSTICK HANDLER -

allows the user to select Joystick instead of Keypresses very useful for many keyboard programs.

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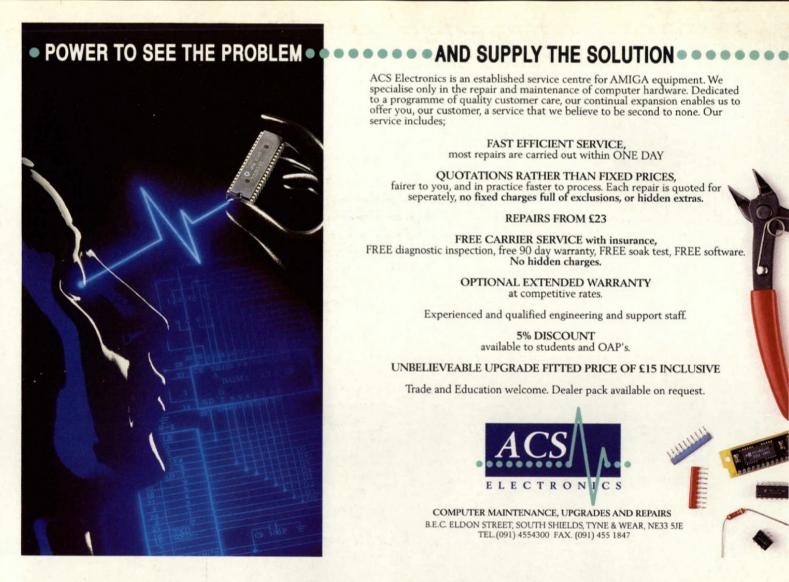
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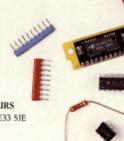
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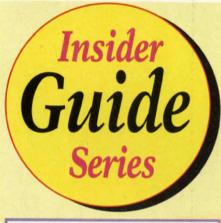
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You can use your Amiga as a word processor and you can create graphics, but how do you liberate them from your screen? What you need is a printer. Andy Hutchinson delivers the lowdown....

# PUTITION OF THE PRINT

go-kart at about the same time so there must have been a lot of silliness about. The simple fact is that there are benefits to printed material over digital information that cannot be ignored.

With a book you can flip back and forth extremely rapidly, you can scribble things in it, you can throw it at people and perhaps most importantly of all, you can read it in the bath. Simply put there's just something about real words on real paper. No doubt for the reasons detailed above, printers have continued to be one of the most popular peripherals (add-ons) you can buy. They fall into three main types, so let's have a look at them...

#### **Dot Matrix Printers**

This particular variety of printer is the most popular for home computer users because dot matrix printers are (relatively) cheap. Of course there are drawbacks to any cheap piece of hardware and the dot matrix's main problem is the quality (or rather



Dot matrix: the cheapest printer option, but its also the noisiest around.

#### **Recommended Buys**

When Amiga Format carried out an extensive survey of printers the best one s were The Citizen 240C dot matrix colour printer (£435); the Star LC24-20 dot matrix (£305); the Canon BJ20 bubblejet (£299); the Citizen ProJet inkjet (£583); the Panasonic KXP1124i dot matrix (£340); the LC200 dot matrix (£459); the Citizen Swift 9/9x dot matrix (£280) and the Seikosha SP2400 dot matrix (£235).

Obviously it pays to shop around, and remember that the most expensive printer isn't necessarily the best. Reliable makes include Panasonic, Epson, Hewlett Packard and Canon.

bout ten years ago there were lots of 'experts' wittering on about a concept called the paperless office. You see, computers were taking off big-time and because they could store and transfer data digitally, everyone thought that the end was nigh for books and other printed matter. We were all led to believe that within a decade (as in, like, now) newspapers would be digital, books would be floppified and magazines would be multi-media extravaganzas ported on to your computer via a modem (a device for linking computers via telephone lines). Then again Clive Sinclair was trying to flog his C5

#### **Getting Your Printer Printing**

- Make sure that your Amiga and printer are switched off.
- Plug the lead you bought with the printer into the parallel socket on the back of your Amiga and connect the other end to the appropriate socket on the printer. It should only fit one way
- Switch everything on.

- Load up a word processor.
- Choose the 'load printer driver' from the pull down menus in Workbench and choose the make of printer which you own. If your printer isn't in the list then plump for 'Epson compatible'.
- Load in some text.
- Print it.

lack of quality) of its printouts. Most dot matrix printers are of the nine pin variety, so called because all the printing is carried out by nine pins hitting a ribbon above a piece of paper, and producing a fair amount of noise in the process. These nine pins are arranged in a vertical fashion on a print head that whizzes backwards and forwards on a bar across the surface of the paper.

When the printer is told by the computer to print a particular letter it does so by turning each letter into a matrix or square of dots. To print a letter it starts on one side and prints about six vertical rows of dots, firing each pin one at a time. If it was printing a capital T it would start by firing just the top-most pin. It would then move a tiny bit to the right and do the same again. Then it would fire all the pins at once to print a vertical line, before finally printing the top-most pin again, twice. It then leaves a small space and moves on to the next letter.

Because these pins are spaced relatively far apart, it's very easy for the human eye to pick out each individual dot. This means that it's not the most pleasant kind of text to read and thus is only really suitable for rough copies. But recently a more sophisticated form of dot matrix printer has become popular; this is a 24-pin model. It offers a much higher quality of printout because it uses 24 pins and therefore the individual dots that make up letters are much closer together and thus a lot easier on the eye.

The price of a dot matrix printer depends largely on the number of fonts it has, and the width of the paper it can hold. Another feature you may come across is a Near Letter Quality (NLQ) facility. This is particularly useful as it produces a much higher quality of printout by spending longer printing each letter. Other useful features include form-feeding (which enables you to print on individual sheets of paper rather than a continuous roll of paper), self checking (which forces the printer to perform a check on itself by printing out all the characters it knows) and manually selectable fonts.

#### Laser printers

These are expensive. When they first emerged about five years ago, you could have bought a nice hatchback motor car for the same amount of dosh, but nowadays you'll need to part with about £700 – still

#### **Before Buying A Printer**

When buying your printer there are several things to look out for:

- Tell the assistant that you own an Amiga and ask to have the appropriate cable thrown in for free. There is a recession on, so he/she should oblige.
- Make sure that you buy a known brand because the more obscure the make the harder it is to get it running with your Amiga. A safe bet it to always make sure that the printer is 'Epson compatible'; you won't go far wrong if it is.
- While in the shop ask if they can configure it for you. You see, printers have all sorts of gubbins inside them which

enables you to change things like speed of printout and the language used. Let the chaps in the shop do all the fiddling inside and you'll save yourself a lot of grief.

- Don't buy a printer from an auction or car boot sale even if it does seem like the bargain of the century. Unless you're an extremely technical kind of person, the chances of getting it working with your Amiga are about zero.
- Don't automatically go for the most expensive printer you can afford. The odds are that a simple £150 printer will be more than adequate for your needs if you're just using it at home.

serious money. So why would you want to part with so much of the blue folding stuff?

The principle reason why people buy a laser printer is because of the quality of the printout. It's impossible (without a microscope at least) to see the individual dots that make up each letter and this means that not only do printouts look a hell of a lot more sophisticated, but they're also a hell of a lot easier to read. Contrary to popular belief, laser printers don't fire a blue flash of light in a *Star Wars* 



Laser printer: the highest quality, the highest cost and the highest maintenance costs.

manner at a piece of paper. The laser (a small, distinctly tame affair) actually fires itself at an electromagnetic drum scanning the shape of the letter to be printed. This attracts toner powder on to the drum and the sheet of paper is then passed over the top of the drum before being heated up to seal the powder on to the paper.

The cost of running a laser printer is also quite high. With a dot matrix printer you have to replace a ribbon at a cost of about ten quid after about four months of continual use. With a laser printer you can only print out about 3000 sheets of A4 and you then have to replace its toner cartridge at a cost of about £60. It's also worth noting that laser printers need a fair bit of maintenance.

#### Bubblejets

Lying somewhere between dot matrix and laser printers in terms of cost is the bubblejet printer, that has now largely taken over from the similar-ish inkjet printer. The bubblejet was developed in order to give some of the flexibility of laser printing without the cost. Initially these worked a little erratically, but of late manufacturers have sorted out most of the problems.

The bubblejet works by squirting ink through a small moveable film mounted on a print-head. The ink is squirted directly on to the page as the print head zooms backwards and forwards. These are exceptionally quiet printers with speeds to match a dot matrix, though the resolution can't match a laser printer's. One of the best we've seen in a while is the Star SJ48 printer for £299.

## Trouble-Shooting Guide

- It's printing in Greek/Arabic/anything but English: the switches inside the printer aren't set correctly. Take it back to the shop and ask them to rectify the problem. Alternatively you could consult the manual and find the switch that changes language selection.
- It's printing a spare line between each line of text: there are two main ways of solving this. Firstly, there will be a DIP (Dual Inline Pole) switch inside your printer which controls line feed. If your printer's manual tells you which switch this is, then turn it off.

Another method of solving this particular problem is to turn the line-feed off from the word processor itself. Refer to your word processor's manual to find out how to do this.

• The paper keeps getting snarled up: this is one of those mysteries in life that have no one solution. However, make sure that the little holes in the paper are perfectly lined up on each side of the paper. One method we've found to be quite successful is to only lock down the sprocket on one side of the printer, so that as the paper comes through it finds its own width.

Make sure nothing's stopping the paper moving smoothly through the printer, if it has to work too hard it'll simply rip the holes on the side of the paper.

• It's making a dreadful noise: ah, you've got a dot matrix printer. This is perfectly normal. The only solution is to go and make yourself a nice cup of tea and wait until it's finished. Keep pets clear of it while printing is taking place.



Bubblejet printer: better quality print than a dot matrix, not quite up to laser standards.



## MONITOR MAGIC

Using your Amiga with a television screen is all well and good, but the day will eventually arrive when you say to yourself 'I want a monitor'. Here's what to watch out for....

t's curious how the advent of home computing has opened up whole new subjects about which the family can have a full blown argument. These arguments start as soon as the computer arrives in the home (who gets first go) and escalate over the following months as various members of the family claim to be best at any given game. However, the greatest cause of arguments within the family unit is undoubtedly over the television set, because unless you're a multi-television family there will be times when you want to watch something on the box when someone else is using the Amiga.

The answer to this kind of grief is quite simple: get yourself a monitor. The simple fact that arguments about computer versus television would be

"Although it's an extra expense, these days the cost of a perfectly good monitor needn't break the bank"

ended was enough reason for many people to invest in a monitor but there are other equally worthy reasons. Here are some of the benefits of using a monitor with your Amiga:

- Clarity. Monitors, unlike your Television are designed specifically to display computer images and therefore produce better images.
- Sound. Many popular monitors have built-in stereo speakers which means you don't have to mess around with hi-fis or put up with duff television sound.
- Full time usage. You can't watch television on a monitor so no-one's going to need it for anything other than the computer.



You don't have to make do with a standard 14inch monitor for you Amiga work. In fact for things such as DTP and graphics, big is beautiful.

## But do I really need a monitor?

Although a television is fine for the odd games session, when you try to use a word processor program or start creating pictures with a paint package, you'll soon find that it offers too fuzzy and wobbly a picture to be of any use for detailed work. All you will end up with is a headache.

There are monitors to suit all pockets and needs. If you need to view very high resolution pictures then go for a high resolution monitor. If you're

#### "You'll soon find that TV offers too fuzzy and wobbly a picture to be of any use for detailed work"

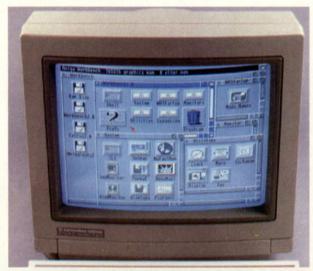
going to use it mainly for word processing, then you can get a monitor oriented towards displaying text. These days the cost of a good monitor needn't break the bank. You should be able to find something perfectly adequate for about £200.

## So how does a monitor work?

Monitors work in a very similar way to a television. The glass front on a monitor is (just like a television) is a cathode ray tube. This tube is basically a huge valve. The front end of the tube is covered in thousands of dots of a chemical called phosphor. When

### **Looking After Your Monitor**

- Don't scratch the screen as scratches reflect light and therefore make the monitor less easy on the eye.
- Don't leave the same image (like the Workbench screen) on the monitor day-in day-out as this image will eventually burn into the display and appear as a ghost-like image all the time.
- Don't fiddle too much with the sync and hold controls. These have been set-up to work well with your Amiga and you're unlikely to be able to improve a picture by toying with them.
- Don't rest your coffee cup on top of the monitor. I did this once and the explosion was something else.



The standard Amiga monitor is quite adequate for the needs of most Amiga users. It offers all the control functions you could possibly need.

# "Setting up a monitor is simplicity itself. In fact it's easier than getting a TV working with your Amiga"

electrons are fired at these dots they glow and that forms the picture you see on the screen.

The electrons are fired by three cathode rayguns, one for each of the primary colours. In the back of the monitor is a red ray-gun, a green raygun and a blue ray-gun. These rayguns are forced to hit only a certain colour of phosphor by first travelling through a mask which stops, say, a green ray hitting a blue dot.

#### **Tube talk**

This explains why monochrome monitors are so much clearer than colour monitors, when there's only one colour of phosphor dot to hit, there's less chance of anything going wrong with this process.

The different resolutions of monitors are classified according to the dot pitch of the screen, that means the distance between each of the dots. Whereas a television has a dot pitch of about 0.6mm, a decent monitor will have a measurement of about 0.4mm, with the higher end VGA (Video Graphics Array) monitors having dot pitches of about 0.3mm.

#### Jazzy case

The stability of the picture is controlled by the frequency rate of the monitor; that is, the time it takes to re-scan the whole picture. Your common or garden TV has a vertical frequency rate of 50Hz, whereas a monitor's might be as high as 70Hz, that is it re-scans the tube 70 times a second.

Like a lot of computer hardware, just because a monitor is expensive, doesn't mean that it's the best for your needs. In fact you can end up paying lots for a jazzy case. Quite often the tube inside a case is the same across any number of models. Philips produce a tube that crops up in all sorts of monitors, not least of which is Commodore's own 1084 and CM8833 models.

## How do you work one?

Setting up a monitor is simplicity itself. In fact it's a bloody sight easier than getting a television working with your Amiga for the one simple reason that you don't have to tune in a monitor. Instead of spending ages fiddling around with a manual and a remote control which has more buttons than your Amiga, you can plug it and and

# "Don't leave the same image on the monitor all day, because it will eventually burn into the display"

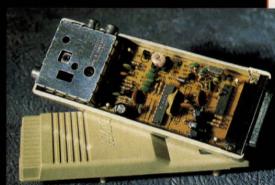
get using it.Monitors have either a composite (slipover) style plug, like on the CM8833 or a screw in type. With either version you simply plug one end of the lead into the Amiga (only one end will do this) and the other into your monitor. At the very most all this will require of you is screwing two tiny screws into the casing of your Amiga. With all the leads in place you can switch on your Amiga and monitor and enjoy some brilliant graphics.

#### Got An A 500? Then Read This

Just when you thought that we had forgotten all about the tried and trusted old Amiga family retainer, the A500 and A500Plus, it crops up again.

A500 series owners who did not spend money on additional monitors, make use of a handy device called an A520 (back in the real dark ages when the Amiga first hit the scenes, you would have had to pay around £29 for one of these devices!)

And what was the A520? It was a TV modulator. A600 and A1200 owners can now sit back and look really smug because they know that their modern machines come with TV modulators builtin, all you need to do is plug an RF cable into the right socket on the Amiga, and one into the TV's aerial socket. With the A520 however, you have to plug the unit



into the Amiga first, then take the cable and plug that into the TV. As you can see from the picture above, the A520 does rather stick out which makes deskspace a premium. Isn't progress wonderful.

#### **Recommended Monitors**



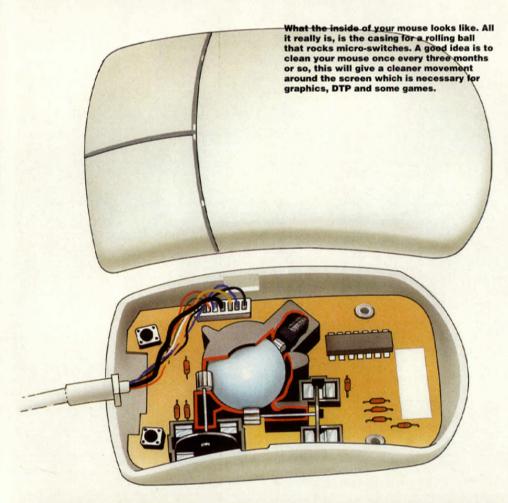
If you need a really good all-round monitor then the best one to plump for is the excellent Philips CM8833 MkII (£229.99). This monitor has been the most popular in the country for a long time because it was specifically designed to be used with home computers such as the Amiga. It also has two speakers, which means you can take a stereo lead from the Amiga to the monitor and enjoy stereo sound. With its greenscreen option it's definitely one of the best ones to get.

If you like to stick with Commodore products then try the 1084S (£299.99). This is similar to the Philips model and has a nice clear display. If you take your graphics really seriously, then the Commodore 1960 (£563) is a good bet. This has an excellent dot pitch resolution and offers a truly sumptuous display in all of the Amiga's screen modes.

The Philips CM8833 consistently comes out of round-ups rated very highly indeed. It is a good solid monitor with plenty of life in it.

Andy Hutchinson tells you all you need to know about that small lump of plastic in your hand – the very wonderful mouse....

## MOUSE PROUD



#### **Mouse Maintenance**

- Do use a mouse mat as it extends the life of the mouse by helping to stop it collecting gunk and fluff.
- Don't fiddle around with the innards as the little rollers break very easily. If you want to keep the rollers clean of gunk use a cotton bud with a bit of white spirit on it to clean them.
- Do upgrade to a decent mouse as soon as possible. There are plenty of good ones on the market but the most important thing is to get one which sits comfortably under your hand.

It's best to avoid novelty mice as they're usually pretty naff, and do make sure it's Amiga compatible. lindingly brilliant invention, the mouse. Thanks to this nifty little chap it's possible to zip a pointer around the screen with great speed, with the pointer accurately following the movements of your hand. In the dim and dark days before the arrival of the mouse we all had to make do with cursor keys, graphic tablets, and light pens.

When you actually consider all the computer applications that are possible with a mouse, you wonder how people ever managed without it. Painting packages would be practically useless, word processing would be a damn sight harder and all those little house-keeping tasks we perform every day on Workbench would be an absolute nightmare without one.

#### **High Roller**

The mouse is one big roller ball. Tucked away inside that little case is a weighted rubber ball. As you move the mouse around the table it turns three little rollers which read horizontal and vertical movement and speed.

Therefore the rollers move in different directions depending on which way you send the mouse. The Amiga then reads all this information and moves the pointer accordingly. Oh and if you're

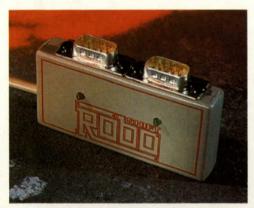


A track-ball is an upside down mouse. Instead of moving the pointer by pushing the mouse around the mouse mat, you move the ball with your hand. It sounds gimmicky, but some people prefer it.

#### "It's called a mouse because somebody, somewhere decided that it resembled a small rodent"



A child's mouse. This one actually looks like a mouse because no self-respecting child would accept the grown-up explanation that an ordinary mouse looks anything like the real thing.



This useful device saves you having to fiddle around at the back of your Amiga when you want to switch between mouse and joystick because it can automatically detect which one you're using.

wondering why it's called a mouse, it's because somebody, somewhere thought that it looked just like a mouse.

Anyway apart from the fact that it looks nothing like a small rodent, there are a couple of other drawbacks to everyday mouse usage that only become apparent after a little while. Firstly, the lead has a habit of being either too short or too long it also has a habit of getting snagged on all sorts of obstacles. The other drawback is that the ball slips around inside the case occasionally and moves the pointer erratically.

Having said all that, mice are relatively cheap to upgrade to a decent model and we advise you to do so at the earliest opportunity. Manufacturers aren't known for the quality of the mice they bundle with computers and the Amiga mouse is no exception.

#### **Mouse Variations**

There are a couple of variations on the traditional mouse, which are used mainly for graphics work. Track-balls (a sort of upside down mouse) are a gimmick, and although I know a lot of people who say they prefer them to mice, I don't. They're fiddly and not very good for graphics at all, as you need to put your elbow into it and swoosh your arm about to get good lines.

Lightpens are another gimmick of limited usefulness. Most that I have seen haven't been very accurate, and you spend more time calibrating the darn thing than you do actually doing anything with it. On the face of it, the mouse market should be a nice quiet enterprise, right? Ermm, no. You see, because the mice that manufacturers bundle with the Amiga and other computers are not of the highest quality, there's a booming market in replacement units which don't goo up so quickly or which come with a longer lead.

Mice are a lot like pens in many respects. It's best to actually try the thing out if you can, because you may not like the way it sits in your hand. These things also take on new alarming properties if you're left handed. Some manufacturers are starting to sell mice in shrink wrapped plastic. If this is the way they're doing it in your local computer shop then go somewhere else. Always try before you buy.

One of our favourite cheaper mice (£15) is the Genius Happy Mouse. This sits really well under the hand and has excellent responsive buttons. What's more it has a much higher resolution than most of its rivals. (The responsiveness of a mouse is measured in Dots Per Inch and this one is 350 DPI). This means that it's possible to carry out detailed



Mice one: of all the many varieties of mouse on the market, three of the ones we'd recommend are the Genius Happy Mouse (£15), the Naksha (£30) and the Mega Mouse (£12.95).

work accurately because the mouse reads your hand movements that much better. Two other mice deserve a mention too. The Naksha mouse is a bit more expensive than other models (£30) but it does have quite a high resolution (280 DPI)It also feels a lot heavier than most other mice which makes smooth movements with the hand far easier. The other mouse we enjoy whizzing about the desk in the **Amiga Format** office is the Mega Mouse. This doesn't look terribly innovative, but it's surprisingly comfortable to use for extended periods. It has quite a high resolution and retails at £12.95.

#### **Get The Most From Your Mouse**

Like any simple mechanical device, a mouse can go wrong any number of ways. Most of these hassles are easily avoided by looking after your mouse. Perhaps the most pertinent piece of advice we can offer is that you use a mouse mat. You see, not only do these mats give you much more responsive use, but they also stop the mouse from picking up all sorts of debris and rubbish that can easily foul up the roller and render it useless.

Avoid yanking on the lead of the mouse, because the socket into which it plugs will cease to operate properly. We know it's tempting to throw a mouse

across the room when *Lemmings* is getting the better of you, but it won't do your Amiga or mouse any good. In use, slow deliberate movements are far better than quick swipes as the computer tends to second guess the actual roller positions. Curves drawn too quickly with a mouse turn into straight lines.

Of course, as that ball is so accessible it's very tempting to slide the back off and start mucking around with the insides. This isn't the best of ideas as the rollers are made of plastic and don't take very long to malfunction. Don't mess around with the underside.



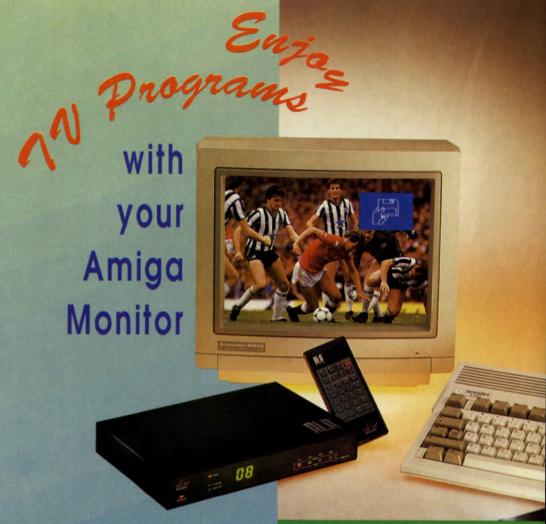
When you are playing Amiga games, you can keep an eye on what's on the TV channels in the same screen.



Never feel boring when waiting for the outputs from your Amiga programming, worksheet or database ... P.i.P. VIEW allows you to enjoy TV programs as a sub-picture in your Amiga monitor.



If your Amiga computer is broken and you have an idle monitor, just connect it with P.i.P. VIEW, then you will have a new TV with Remote.



TV channels.

All functions controlled by Remote.

Auto-scan channel by channel.

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Position sub-picture at any corner.

sources, forming a convenient AV switch center.

Sound of Sub-picture can be heard with earphones.

Easy to install and operate.



is the first product in the world for you to enjoy TV programs inside your Amiga monitor. P. P. VIEW can display any video sources through the sub-picture simultaneously with your Amiga outputs and vice versa.



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## THE RIGHT IMAGE

here's little doubt that one of the Amiga's strongest features is its graphics capability. And considerable amounts of hassle can be saved in creating those scrummy graphics if you input them using a device other your hand and a mouse. Then once they're in the Amiga you can retouch them and modify them to look just the way you want.

There are two main ways of getting images into your Amiga without having to draw them yourself – with a scanner, or a graphics tablet. Read on to find out which one is best suited to your needs.

#### **Scanners**

Scanners are add-ons that enable you to transform printed material into a digital image. They come in a huge variety of shapes, sizes and prices and vary incredibly in terms of sophistication. If you regularly need to get pictures off the printed page and into your Amiga then a scanner is your best bet.



A hand-held scanner is fairly basic, but effective, way of importing images into your Amiga.

There are two main varieties of scanner: flatbed and hand-held. The principle difference between these two is that flatbed scanners offer better results because they can scan in a sealed environment like a photocopier does. The problem with the hand-held variety is that they rely on the human hand to move the light sensitive head down the image.

They are also less sophisticated in terms of the resolution or DPI (dots per inch) than flatbed scanners. The higher the DPI, the better the image will look, but the higher the DPI the greater the memory space it will take up. You're always going to have to find a compromise between memory and resolution.

Colour scanners are much more sophisticated pieces of kit which come with a higher price tag. They work in a similar way to the monochrome unit except that there are three light-sensitive cells (red, green and blue) which bounce light off the image. Colour images also take up a hell of a lot more memory space than their grey-scaled partner.

Your choice of scanner should depend entirely on how professional you want the results to be. If you just fancy doing the odd bit of scanning for Christmas cards then a hand-held mono scanner will be perfectly satisfactory. If you're really serious about graphics, we'd recommend the Epson GT-6000 flatbed scanner which costs £1,175. If you want a good hand-held black and white scanner try the Powerscan Pro 2 which costs £99.

If you're interested in Amiga graphics, then it's only a matter of time before you'll want to start scanning. Here's what to do....



A flatbed scanner will set you back more than a few bob, but if you want to reproduce top quality images for your Amiga graphics work, then start saving.

#### **Graphics tablets**

A graphics tablet is a flat tablet connected by a lead to a pen-shaped device. With one of these you can draw images for your Amiga in exactly the same way as you'd draw images on paper.

Graphics tablets read movement alone, so it's up to you to choose the appropriate colour or line

width in exactly the same way as you do with a mouse. Graphics tablets are also extremely handy if you want to trace an image, but unless you're seriously into Amiga graphics you probably won't need anything quite as sophisticated as a graphics tablet. If you do want one, we'd recommend that you check out the Cherry Graphics Tablet which costs £646 from Silica.

#### **Graphic Input Tips**

- If you're using a mono scanner then use a mono original image.
- The sharper and more simple the original then the better the results.
- If you're using a hand-held scanner then it's very important to move the unit as smoothly as possible for best results.
- Try scanning at lots of different resolutions (dots per inch) to see which offers the best results. But remember, the highest DPI isn't necessarily the best.
- If you get a grainy effect on your scanned image (this is called a Moiré effect) then try scanning at a lower DPI.
- Avoid scanning too much of the picture.

- If you only capture those bits you need, you'll save yourself lots of valuable memory space.
- Don't bother retouching the image from within the scanning program. You get much better facilities from within a dedicated painting package.
- If you require professional-looking results (for a DTP program for instance) then a flatbed scanner is definitely going to be more use to you than a hand-held.
- If the original image is too glossy, then the scanning light will bounce off it too much and the scanned image won't look too brilliant.

# HARD AND

here comes a day in the life of every computer owner when they simply realise that floppy disks are all well and good for the odd bit of small scale data storage, but when you want to start storing huge great wodges of code, music or graphics, the humble floppy just won't cut, no matter how snazzy the formatting program.

In the old days, a computer had lots of memory if it could muster 64K (Kilobytes) and tapes or floppy disks were perfectly fine for storage as there was never that much to store in the first place. As RAM (Random Access Memory) prices fell and the internal memory of computers mushroomed, so have our storage requirements. If you're sick and tired of thumbing through acres of floppy disks (and the day comes sooner than you'd think) and you don't have a hard drive sitting happily inside your Amiga, then you should consider buying one.

#### It doesn't look very hard to me

Hard drives work on a similar principle to a floppy drive, in that they store data magnetically on a conductive surface. The major difference between the two is that hard drives aren't particularly portable (although they are getting smaller and smaller), and they're a hell of a lot quicker

The hard drive surface exists within a completely sealed environment. Within this vacuum a read/write head (the bit that sends and receives data) zooms over a drum-like surface at speeds far in excess of those of a floppy drive. Because this is a sealed environment, the storage surface can be far larger and the data can be packed far tighter, making hard drives very efficient pieces of kit.

The drive surface on which all the data is stored is divided into sectors in a similar fashion to that of floppy disks except that there are upwards of 40 times as many. Due to the fact that there is so much storage space on a hard drive, they are often subdivided into smaller units called partitions. An average sized partition is 10Mb, although it's



A new player in the Amiga hard drive game is IDE (Integrated Drive Electronics). A600 and A1200 owners take note of those initials.

One of the upgrades for your Amiga that you're likely to consider sooner rather than later is getting a hard drive. If you want to find out how a hard drive can change your life, read on....



A hard disk drive has many advantages over a floppy disk, but the main ones are that you can save programs straight to the hard drive, so you don't have to worry about disk swapping, and you've got much more storage space, which is particularly useful with memory-intensive programs such as graphics.

entirely up to the user what size these are. These partitions appear on the Workbench as separate disk icons, but they all access the same drive. Most hard drives are formatted in the shop and so you can simply take them out of the box, plug them in and use them. If it isn't formatted, it's easy enough to do the job yourself with the software supplied

#### Size and speed

Of course you may decide that the way a hard drive is partitioned isn't to your liking and again, you can reformat in any way you like.

Hard drives come in an huge variety of sizes and speeds, so it's important that you work out exactly what your needs are before committing yourself. The smallest size you should consider buying is a 40Mb model, but if you can run to it, it's well worth investing in 100Mb and upwards because once you start using hard drives you'll be amazed how rapidly you can use it all up.

#### Hard working hard drives

The A600HD, as the HD bit would suggest, already has a hard drive fitted internally. You can fit a hard drive externally, but if you want to add an internal hard drive to your Amiga – take it to a Commodore dealer and have them fit it.

Using the hard drive fitted inside an Amiga is simple: switch it on. So long as there's no auto-booting disk in the floppy disk drive, the hard drive will be accessed and Workbench should appear in a matter of seconds. To access data on the hard drive you simply double click on the icon that looks like a filing cabinet draw.

Installing software on a hard drive is also easy. But it's worth noting that not all software was designed to be placed on a hard drive. For example, the vast majority of games are designed to run from floppy alone and you won't have any joy transfer-

# FAST



If you buy a hard drive for an A500 or A500 Plus, make sure you also get a hard drive controller similar to the one in this picture. You don't need one with the A600 or A1200 as it is already built-in.

ring them to a hard drive. Basically, if it's possible to store a program on hard drive then there will be details in the manual.

This installation process will involve either simply dragging the floppy disk icon on to the hard drive icon or running a special installation program which does it all for you.

Once a program is installed on hard disk it takes a fraction of the time to load.

If you've installed a game then you should also be able to save your Saved Game files too – this means less mucking around with floppies. If you have a music sampler then you'll be able to store the vast majority of your sound files on the hard drive. Some samplers enable you to transfer this kind of data straight to hard drive irrelevant of your Amiga's RAM capacity and you'll therefore be able to save monstrous files.

#### Read This If You Have An A500

There's little doubt that if you've got an A500 or A500 Plus, then one of the most outstanding pieces of hardware is the GVP A530 hard drive with accelerator. It's not cheap – prices start at £749 and then rise



The GVP A530: an expensive piece of hardware for the A500 and A500 Plus, but, when it comes to quality, it's worth every penny.

according to specification. What makes the GVP A530 so expensive is the simple fact that it's the best hard drive by a long way for the A500 and A500 Plus on the market.

And it's more than just a hard drive, the GVP A530 is also a RAM expansion unit and it contains an accelerator. All of this means that programs such as Workbench run an awful lot faster thanks to the extra RAM even before the accelerator starts work.

ularly. If a program only makes an outing occasionally then you may as well store it on floppy. This means that you won't be left with the frustrating disk full error message when you need to save a precious file. Hard drives do require maintenance, not the

screwdriver and spanner variety, but the software sort. Data on hard drives can become what's known as 'fragmented'. What this means is that there are all sorts of miscellaneous nuggets of code scattered throughout your drive. If your drive is heavily fragmented it impedes its performance and this may lead to a hard drive crash. We strongly suggest you invest in a program such as *Quarterback Tools* that will verify your drive, squashing all the data together and lessening the chances of a crash.

You should definitely back up your hard drive to floppy disk. This process can take a long time, but it can also save you incredible amounts of grief. Use a hard drive back-up utility like *Quarterback Tools* and if the worst does happen, you can reformat the drive and simply transfer your data back onto it. The initial back-up may take a few hours, but if you do it once a week the program will only update those files that have changed, thus cutting down the back-up time considerably.

#### **Maintenance**

While hard drives are essentially quite rugged pieces of kit, they weren't designed to be treated too roughly. The actual mechanism inside the case can be upset by sharp knocks and this can lead to total and irreversible loss of all data on the drive. What happens in this instance is that the read/write head which normally hovers fractions of a millimetre above the disk surface, comes into contact with it. This is bad news and often means the drive is ruined. You can avoid this kind of mishap by treating your Amiga with respect, you don't have to sit it on cushions or anything, just be aware that violent movements or rugged treatment may screw up the hard drive. If you find that you using up all that hard drive storage space quickly, the answer is to only include programs and files which you use reg-

#### **Brave New Worlds**

Owning a hard drive opens up some brilliant new areas of computer usage that just aren't possible with a floppy disk system. Here are a few you might not have considered:

• Bulletin boards. with the right kind of communications software, a modem and a telephone line you can transfer your Amiga into a mini-network called a Bulletin Board Service (BBS). Other people with modems and a computer can then get in touch with your computer and you can send or receive files. This is a great way of making contact with other Amiga owners. For full details of the world of Bulletin boards turn to page 99.

- Sampling: with a sampler you can record sound into your Amiga and modify it with the appropriate software. Saving larger samples on floppy disk just isn't possible, so having a hard drive is a godsend. (See page 79)
- Animation: with a hard drive you can store heavy duty animations of a length that just isn't possible on floppy. You can also pull animations into memory only when needed, thus freeing up valuable memory space.
- Graphics: rendered graphics, fractal landscapes and other large, memory intensive files can be created and stored on a hard drive.



The Trumpcard hard drive: you can plug it on the edge of an A500 or stick it inside an A2000.

One of the Amiga's most remarkable functions is the ability it gives you to make play around with video – whether it's home movies or professional projects. Andy Hutchinson gets in on the action

# MAKING MOVIES

ome computers are all about taking expensive hardware out of the studio and the office and putting it into the home at a realistic price. It's in the realm of video that the Amiga has done more than any other computer to bring advanced technology down in price and into the living room. These days you can create effects very similar to the ones you see on television by adding on relatively cheap bits of hardware, but what are these odd pieces of kit, and what do they do.

#### **Digitisers**

Have you ever wanted to snap a picture of a film star off a video and leave it on your computer monitor for all day adoration? Well, the good news is that it's entirely possible to get the picture you see on a television or video film into your Amiga and then into your painting package with the help of a nifty electronic device called a digitiser.

In the world of the digitiser, what counts is the speed of capture and whether it's a full colour or a grey-scale model. If you want full colour digitising then it's going to cost more than the mono version, so you should decide how much you're going to use it and how professional you want the results to be.

Digitisers work in a similar manner to scanners in that they make an approximation of the real world and turn it into digital data. This means that the quality of the copied image depends on the quality of the original. If you've got a video recorder then you could snatch images from your favourite movies and retouch or modify them from within a painting package.

The real fun to be had with digitisers is when you attach a video camera and start grabbing

"You can create effects similar to the ones on TV by adding relatively cheap bits of hardware"

Punk video! You can make some high-class looking movies with a camcorder, an Amiga and the right piece of video hardware.

images of yourself, your family, your friends and your surroundings. Using this system you could digitise your mates, retouch the images and put them into an adventure game set around your neighbourhood. It might not sell thousands, but it's a lot fun.

In practice, using a digitiser is simple. Once the digitiser is plugged in, you insert your video source into the back of the unit. The idea then is to get as crisp an image as possible on your TV. If, for example, you were digitising a still from a video then you'd make sure that those pause lines weren't present on the screen as the digitiser would snap these too. When you're happy with the image on the television, you simply tell the digitiser to

VideoMaster is one of the best pieces of Amiga video equipment. You don't have to be a genius to use it.



The Complete Video Solution will give you and your Amiga the edge over the rest your video-making friends. Say "Bye-bye" to Beadle, your films will be far too good.



The RocKey unit enables you to superimpose images over video backgrounds, so you too could be Micheal Fish or even John Kettley!

grab the image and it will then appear on your monitor. You can then save this as an IFF (Interchange File Format) file and load it into a paint package such as *DPaint* for a bit modification.

One of the possible applications of the digitiser is to create animations. By snapping a series of frames you can run them back at sufficient speed to give an impressive feel of movement.

The only drawback to this method is that it takes up vast amounts of memory, because each frame is a picture in its own right. If this sounds like fun, then check out the *Videomaster* from Microdeal which enables you to sample both graphics and sound at once and play them back at different speeds or re-edit them.

Once you get used to your digitiser, it's possible to get impressive results quite simply. The unit we recommend is the Complete Colour Solution from Rombo which costs £150. This model enables you to store small animations and comes with a colour adaptor which gives you the ability to take an RGB (Read Green and Blue) picture of the screen. Sampling the real world has never been so easy.

### Genlocks

Have you ever wondered how television companies manage to get subtitles on the picture? Well, what they use is a clever little gizmo called a genlock which enables you to plonk a computer image over the top of a video image and record the combination on to video.

There are loads of possible applications for genlocks that are perfectly suited to home video. You can put subtitles on videos (makes that wedding video look a bit smarter), put captions on your holiday videos (you'll never confuse Great Yarmouth with Beirut again) or tart up your home-made pop videos (you can give the lead singer an Afro hair style, but you can't give the drummer rhythm).

Genlocks work by combining two signals together. In effect, it smuggles your Amiga's images on to the video image by hijacking it on the way to the display. It doesn't matter what image you wish to place over the video image – it can be absolutely anything you like. If your Amiga can display it then a genlock can overlay it on video.

Using a genlock can be as tricky or simple as you want it to be. You will need two video sources, one for playback and the other for recording. That means you'll need either a couple of video recorders or a video recorder and a camera. The first thing to do is to decide exactly what kind of effects you wish



Rendale 8802 genlock: genlocking has moved out of the techie backwaters and into the mainstream.

to employ. Let's say you want to add a caption box or two to a wedding video. The first step is to work out what you want the captions to say. When you've prepared a script (be careful not to overdo it) you connect the playback video source into the back of the genlock (which is connected to your Amiga) and then take a lead to the record video source.

Now get your caption displayed on your Amiga's screen (you can prepare these in *DPaint*) and press play on the first video and record on the second one. At the appropriate moment you can fade in your captions and the second video will

record the whole thing, caption, original image and all. Once you've tried creating a few simple genlocked effects you can get on to more complicated functions such as adding colour or flash acid-house looking graphics; there's plenty of fun to be had with a genlock.

We recommend the Rendale 8802 genlock from Marcam which costs just over £100.

### **Chroma-keys**

These wonderful devices were invented about ten years ago by the men in brown coats because they were bored with genlocks. Chroma-keys are quite similar to genlocks in that you can combine computer and video images, but they go about things differently.

With a chroma-key you can replace a colour on the video with a computer image. Thus if you filmed someone in front of a blue background, you could replace that blue with a computer image.

As with genlocks there's no limitation to the image you choose to combine with the video, but typical examples include backgrounds of cities and jazzy special effects. In fact it must be said that the children's TV department at the BBC would have gone out of business a long time ago if they'd been deprived of chroma-keying. Everything from Blue Peter to Rentaghost would be impossible if they'd not been able to film someone in front of a blue sheet and make it look like they were in Milton Keynes or Cairo or somewhere.

### Blue Peter

You too can make it look as if your mate went on holiday to Venus by whacking a chroma-key into your Amiga and combining it with two video sources. The actual procedure is exactly the same as for genlocks in that you need to place the chroma-keyed image on to your original video source and record the results on to a second video. Chroma-keys are quite pricy pieces of hardware so it's only worth investing in one if you do lots of video mixing and editing. Roctec Electronics has just brought out one of the cheapest and best chroma-keys yet, it's called the RocKey and it costs £399. You can now beat *Blue Peter* at its own game.



This is what the RocKey (pictured above right) can do with just a few simple images and a little imagination. You could do much more.



# The House That XCad Built

The above building was designed by Architect David Bishop, modelled by XCad and rendered with Imagine.

XCad SPEED - An Amiga 600 is 6 times faster on zoom and redraw than AutoCAD running on a fast '386.

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The XCad range starts from as little as £129 for XCad 2000 (1Mb RAM minimum) which includes both 2D Detailing and 3D Modelling plus automatic perspective views.

### *Imagine*

The 24 bit image above was completely originated on an Amiga computer. The drawings were designed with XCad, the 3D model was created from the 2D drawings and the 24 bit image (1280 x 1024 resolution) was rendered with Imagine - in fact this whole article was put together using Professional Page, XCad and Imagine. These Amiga products would amount to £777 (RRP), compared to AutoCAD, 3D Studio and Ventura on a PC which comes in at £5100 - and that's just for the software! Imagine 2.0 has a retail price of £269.

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DML was founded by Richard Nolan to bring the benefits of truly Open Computing to the CAD industry at a sensible price. After spending 8 years at Computervision working with CADDS 4X users in the process engineering industry he had developed a strong appreciation of the need for high performance systems tailored to the special requirements of electrical, mechanical, architectural, structural and process applications. In developing The XCad System he was putting this knowledge into practice.

XCad was launched in 1985 and is one of the few British CAD products to sell successfully in the USA, far outstripping any other in the number of American users. There is a growing number of substantial turnkey installations in the UK,

predominantly used for process engineering, architectural and facilities management applications, and frequently in networked configurations. Feedback from this professional user base has contributed decisively to the specification of The XCad System, making it the system of choice where the requirements include highly developed support for 2D engineering design, bill of materials generation, 3D modelling and visualisation. direct data transfer between multi vendor systems, or low cost local editing stations on established networks.

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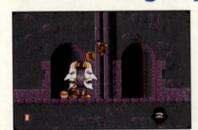
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We have tried to avoid jargon in *The Complete Beginner's Guide*. However, some of it was unavoidable. But all is not lost, because over the next four pages all is explained...

# THE COMPLETE GLOSSARY



**ACCELERATOR:** An expansion unit that speeds up your Amiga's CPU (Central Processing Unit). Often used to speed up flight and other simulation games, but of more use for serious programs such as desktop publishing.

**ADVENTURE GAMES:** style of game in which you pit your wits against the Amiga using text and graphics to solve various puzzles and thus progress through the game. The **Amiga Format** games review team is unanimous in its verdict that *The Secret Monkey Island 2* (LucasArts/US Gold, £37.99) is the best adventure game.

**AGNUS:** One of the Amiga's CUSTOM CHIPS. Agnus is mainly responsible for graphics work. There are different versions called FAT AGNUS, FATTER AGNUS and SUPER FAT AGNUS.

**AMIGA:** The name of the marvellous machine you have been discerning enough to buy. The company that produces the Amiga range is Commodore. The only other thing you need to know about the Amiga is that it's the Spanish word for girlfriend.

**AMIGADOS:** Stands for Amiga Disk Operating System. You are given control over this hidden system through CLI (Command Line Interface) and Shell, which allow you to control what's happening to things on your disk.

**ANIM:** Similar to IFF (Interchange File Format) a standard way of storing pictures and sound. ANIM is the equivalent for animated images.

**ANTI-ALIASING:** a painting term. You'll find that images often have a ragged edge, caused by the coarseness of the screen resolution. Anti-aliasing is the process of softening the edges with colours that are part way between the background and foreground colours.

**ARCHIVING:** a system whereby files are saved in compressed format using one of the many archiving programs available for the Amiga.



**BAUD:** a measure of the speed of the connection of a modem. Usually translated as bits per second (BPS), but is more literally 'level transitions per second'. Don't confuse with Throughput, the speed of the transfers you make down the phone line.

**BBS:** Bulletin Board System(s). A bulletin board is a network you can link up with by via a telephone line by using a modem. Once connected to the board you can send and receive messages and PD programs, or link up with other users to play games.

**BEAT-EM-UPS:** style of game in which the action involves pounding opponents into submission by punching, kicking, stabbing and slashing while try do the same to you. Best example is *Streetfighter II*, which should be released on the Amiga shortly.

**BEERWARE:** like shareware only the author of the program wants to be sent some beer rather than money.

**BIT BUCKET:** a theoretical receptacle into which things disappear.

**BITS:** read the piece about bytes before going any further. Right, got your head round that. Well, every byte is subdivided into eight binary units known as bits. If you use two bytes at a time you are using 16 bits. Three bytes is 24 bits and so on.

**BLITTER:** is a block image transfer device. It is used for copying large areas of memory from A to B or to combine areas of memory into a single image. It is widely used to create large graphic shapes in computer games.

**BRUSH:** Whenever you draw a line in a paint package you use a brush. The brush can be one or more pixels wide. Most programs give you a choice of brushes of different sizes and shapes. Built-in brushes are usually just one colour.

**BUBBLE JET PRINTER:** Works in a similar way to ink jet printer, but instead of electronically forcing ink through nozzles on to the page, a bubble jet uses tiny elements to heat the ink in the nozzles. At a certain temperature bubbles form and force out the ink.

**BUFFER:** Because the Amiga is capable of outputting information to a printer faster than it can print it, most printers have a buffer zone which stores the information from the Amiga until it can be printed.

**BUMP MAPPING:** painting term to describe the process of shading a 2D image to make it appear it is 3D.

**BYTES:** Bytes, kilobytes (K) and megabytes (Mb) are all to do with your Amiga's memory. Bytes are like boxes that are capable of storing a given amount of information.

You might think that 1Mb is enough memory to store all the information in the known universe, but it's not. It takes about 2K to store the contents of one page of printed text and one second of sampled

sound uses about 32K of memory. Just to complicate matters a kilobyte is not 1,000 bytes but 1,024 and a megabyte is not a million bytes but 1,048,576. This is because computers work according to binary maths (base two). If you start at the number one and keep doubling it you will eventually reach 1,048,576. Why not try it at home?



**CAD:** Computer Aided Design. Programs that are used mainly for technical drawing. They store the data about images mathematically.

**CELL:** The position at the intersection of a row and a column in a spreadsheet. Cells are like pigeon holes that hold figures, data, functions, text and so forth.

**CHIP RAM:** You know that your Amiga has three custom chips (chips that have their own specific tasks independent from the main processor). Well CHIP RAM is memory that is allocated to those chips.

CD-ROM: Compact Disc Read Only Memory.

CD: Compact Disk is likely to be the way forward for the Amiga and could eventually replace the floppy disk. The main advantage of CD over floppy disks is storage space. One CD can store the equivalent of 640 Amiga 880K floppy disks. It's also cheaper to produce and more difficult to pirate than a floppy.

**CDTV:** Sounds pretty snappy doesn't it, a combination of compact disc and television. In fact CDTV stands for Commodore Dynamic Total Vision. Basically CDTV is a computer that uses CDs instead of disks. It also represents a marketing ploy to change the image of computers and make them appeal to a wider audience by making them look like video recorders or CD players. Early versions didn't have a computer keyboard, but were operated by a user- friendly hand-held thingy similar to a TV remote control.

**CENTRAL PROCESSOR:** the brain of the Amiga. With most computers, the CENTRAL PROCESSOR does all the hard work. With the Amiga, the CENTRAL PROCESSOR (A Motorola 68000) is aided and abetted by the CUSTOM CHIP set.

**CHROMA-KEY:** remember the *Tribe Of Toffs* song John Kettley Is A Weatherman? Well they could usefully have added another verse saying: "He's also a very good example of how a chroma-key works... and so is Michael Fish." With a chroma-

key you can replace a colour on a video with a computer image. So if you filmed someone against a blue background you could then replace the blue with a computer image. In John Kettley's case the blue is replaced with the computer-generated weather map.

**CIS:** another name for Compuserve, a subscription Bulletin Board Service. (BBS).

**CLI:** Command Line Interface. A program that allows you to type commands into AmigaDOS for standard operations such as copying files or getting a directory.

**COMPOSITE VIDEO:** the combination of luminance (black and white video) and chrominance (the colour component) into one signal, hence the name. The most common video signal in use after RF.

**CPS:** Characters Per Second. A measure of printer speed. Sometimes manufacturers will give two figures, one for draft printing and one for NLQ (Near Letter Quality).

**CPU:** Central Processing Unit. The Mr Big of the chip world. This one is the decision-making chip that tells everything else what to do.

**CROSSDOS:** a program that enables you to read from and write to disks formatted by other computers, most notably IBM personal computers. It's not an emulator, but allows you to access data stored on IBM and other disks.

**CUSTOM CHIPS:** One of the attributes of the Amiga that makes it so powerful and so much more versatile than other machines is the fact that it does not rely on its CENTRAL PROCESSOR for all the hard computing work. Its designers built-in several other, smaller, processors that handle various elements of the computing process. See also AGNUS, DENISE, PAULA, GARY.



**DAISY CHAIN:** if you run four external floppy disk drives from your Amiga the way in which they are connected is known as a daisy chain. As there is only one external disk drive port on the Amiga, the first is plugged in here, the second into the back of the first and so on.

**DATABASE:** a database is simply a computer file containing records, and is fantastically useful for organising information, whether it's an address book or supermarket stock records.

**DENISE:** One of the Amiga's CUSTOM CHIPS. DENISE handles the video work (moving things around the screen and so on).

**DIGITISER:** a device used for grabbing images from a television and importing them into your Amiga. Some digitisers will only grab black and white images and must be linked to an RGB (Red Green and Blue) splitter which separates the video signal into the different red, green and blue constituent parts to create a colour image.

**DIP SWITCHES:** because most printers are designed to work with more than one sort of computer it is necessary to set up the printer for the computer. This used to be done by turning on or off a series of DIP (Dual Inline Pole) switches, but now it is more likely that a new printer can be set up using front panel displays.

**DOORWAY:** also called Gateway. A way out of the main Bulletin Board Service into a subsystem, usually a game or other online pursuit. **DOT MATRIX PRINTER:** Most common and cheapest printer. Works by forming each character from a group (or matrix) of pins that strike the paper (noisily) through an inked ribbon. Most dot matrix printers have nine pins, more sophisticated models have 24 pins and therefore a better print quality because there is less space between the dots. **DOWNLOAD:** transfer a file another machine to

DPI: Dots Per Inch. The quality of a printer's resolution is measured by the number of dots per inch it creates – the more the better. Most printers are capable of producing between 240 and 360 dpi. A professional Imagesetter (the printer we use to produce **Amiga Format**) is capable of a whopping great 2400 dpi.

**DRAFT PRINTING:** dot matrix printers offer draft printing, which sacrifices quality for speed, making it ideal for producing rough copies and first drafts of documents.



**EMAIL:** short form of Electronic Mail, a service similar to ordinary mail except the messages are delivered electronically rather than physically. **EMULATORS:** an emulator is a remarkably useful device which in effect changes your Amiga into a different computer. For example, if you use a BBC computer at work, but were discerning enough to buy an Amiga for home use, an emulator program would enable you to use the BBC software on the Amiga, rather than just transfer files between the two computers. Emulators are still very much in their infancy and are likely to raise some interesting copyright questions.

**EPSON COMPATIBLE:** a trade standard. Epson is a printer manufacturer. If a printer is Epson-compatible it should work on your Amiga. If you have any doubts check thoroughly with the manufacturer before you buythe printer.

**EPS:** Encapsulated PostScript. This is a file format used for saving pictures and other graphics. **EXTERNAL FLOPPY DISK DRIVE:** most

Amigas have one disk drive. With certain programmes, such as copying disks, this means a lot of disk swapping. A minor task, but one that can become irritating. An external disk drive means you can run two floppy disks at once. Most external floppy disk drives cost between £50 and £60. You can run up to four external floppy disk drives on your Amiga.



**FAST:** Federation Against Software Theft. Pirating (illegally copying) games and other programs costs the industry zillions of pounds in lost revenue. FAST is the body that is attempting to stamp out pirating by finding ways to make it more difficult to copy programs and by prosecuting pirates.

**FAST RAM:** This is RAM that is allocated for use by programs and the main processor.

**FIELD:** a database record is sub-divided into fields, that contain specific pieces of information. For example, a record of a customer called J Smith could

be divided into fields that would contain address, phone, number, age, and any other relevant information. A key field or index field is one which is used as a reference point for the record. For example if the surname field was the key field you would find J Smith's record by searching for the surname key field.

**FILL:** a paint package term. Mostly when you draw something it will be in outline. If you want it solid you can fill it. The fill will be the same colour as your brush. Flood fill describes a function which stops filling when it reaches the border of another colour.

**FLIGHT SIMULATIONS:** popular category of game in which the Amiga's amazing graphics are used to stunning effect to create landscapes which you fly over and blast the living daylights out of your enemy.

**FLOPPY DISK:** the disk containing games and the suchlike that you insert into your Amiga. It is called a floppy disk because, beneath the protective case, it is a little floppy, black round thing, like a mini version of those flexi-discs you used to get free with music mags.

FONTS: sometimes spelt founts. A style of type-

**FORMATTING:** before you can use a new blank disk you must format it so that the disk is correctly set up for use on the Amiga. It is a simple operation, fully explained in the Workbench section.

**FRACTAL:** fractal is short for fractional dimension and is a fiendishly complicated mathematical concept based on the principle that a fractal recognises not just one, two or three dimensions, but an infinite variety. Scenery generators such as Vista use fractals to draw landscapes.

FRAME GRABBER: device for capturing live video data and converting it into computer picture data. It does not require a still video signal.



**GADGETS:** once you've opened a window, the gadgets are the bits around the border of the window that enable you to do various things to it such as scroll up and down or from side to side, resize the window and so on.

**GARY:** One of the Amiga's CUSTOM CHIPS. Gary takes care of memory management.

**GENLOCK:** an Amiga video device that gets its name from two words: GENerating LOCK. a genlock enables you to link the Amiga with a video image and place graphics created on the Amiga on top of that video image. The combination can then be recorded to video. The most obvious application of a genlock is to use text and graphics to title or caption one of your videos, but any image you can create on your Amiga can be transferred to video using a genlock.

**GOD GAMES:** relatively new style of game in which you have total control over a closed environment, such as a city, island or planet. You must make sure the inhabitants under your control prosper and multiply by giving them the necessary skills to do this against various odds. *Mega-lo-Mania* and *Sim City* are good examples of God games.

**GRABBING:** the process of grabbing images from video and TV and storing them on a floppy disk so that they can be recreated on your Amiga.

**GUI:** Graphical User Interface. A means of communicating with your Amiga by way of a mouse and pointer as with the Workbench program. See WIMP (Window Icon Menu Pointer).



**HAM:** Hold And Modify. This is a desktop publishing and paint packaging term that gets its name because the function holds the screen and modifies it to display all the different coloured pixels available to you. HAM programs vastly increase the number of colours available to you.

**HARD DISK:** a big disk for storing all the software that you use regularly. Works much faster than a floppy disk. More and more games are now installable to hard disk.

**HOOK UP GAMES:** the name given to games which allow two or more people to play against one another using separate Amigas. Amiga Format's highly skilled team of game reviewers reckon the best hook up game is the flight simulation Air Warrior, which allows up to 40 people to play one another via a telephone modem link.

**HOST:** the computer you dial up when you connect to a Bulletin Board Service.



**ICONS:** small images on the Amiga screen that represent a specific operation. To select a particular function simply place the mouse pointer on it and click.

**IFF:** Interchange File Format. A standard way of storing pictures and sound. Almost all art programs can load and save pictures in this form.

**INK JET PRINTER:** higher quality (and a lot quieter) than a dot matrix printer. Works by spraying ink on to the page through a series of tiny nozzles. **INTERLACE:** interlacing describes the way a TV picture is divided into two fields of odd and even numbered horizontal lines which are swapped every 50th of a second in PAL systems (Phase Alternation Line – the colour TV system that has 625 lines at 25 frames per second) This results in the transient illusion of the 625 lines which make up the full TV frame every 25th of a second.



**KICKSTART:** the name of the set of programs that are run when you switch on your Amiga.



**LASER PRINTER:** The best, and most expensive, of the four types of printer – the other three are ink jet, bubble jet and dot matrix. The way in which laser printers work is complicated, but basically the laser creates the image of the characters by firing a

charge at a photosensitive drum, which then attracts the toner to it. The characters are transferred directly to the paper which runs over the drum.



MEMORY: Much confusion is caused to newcomers by the idea of Memory. In general computing terms there are two types of memory: ROM and RAM. With the Amiga however, there is the addition of CHIP RAM and FAST RAM. Memory is calibrated in BYTES and KILOBYTES. You should not confuse 512K RAM and 512K disk storage space. MIDI: Musical Instrument Digital Interface. A standard code by which MIDI- equipped devices, such as a computer and a synthesiser, can communicate with each other.

**MNP:** Miracom Networking Protocol. A device used with a modem and telephone line. Up to level 5 MNP filters out any garbage from line noise. Level 5 also uses data compression, so you can get twice as much down your phone line at once.

**MODEM GAMES:** games that you can link up through a modem and a telephone line to play against opponents anywhere in the country. There's a commercial variation on this theme whereby you dial up the main game controlling computer and use special software to link into it. Usually you need to pay a subscription to play.

**MODEM:** although it only looks like a small box, a modem is a truly wonderful device that allows you to connect your computer to others over a telephone line. You also use it to connect up with Bulletin Board System (BBS).

**MODULATOR:** a device used to convert the Amiga's RGB (Red Green and Blue) and audio signals into either RF (Radio Frequency) or television and separate audio signals. Built-in to A600 and A1200 machines.

**MORPHING:** a relatively new, but potentially brilliant, visual effects function. Michael Jackson's *Black Or White* video is probably the best-known example of morphing – the bit where the faces change from one person to another. Morphing is an effect which makes it possible to distort and superimpose images in a quite remarkable fashion.

# M's

**NEXT ISSUE:** The Illustrated Encyclopaedia of the Amiga – don't miss it!

**NLQ:** Near Letter Quality. Most modern printers offer at least one NLQ font, for printing finished documents to a high standard. Printing in NLQ mode usually slows down the printer. Top of the range printers also offer SLQ (Super Letter Quality) fonts.

**NTSC:** National Television Standards Committee – the US colour TV system prevalent in many parts of the world which has 525 lines running at 30 frames per second.

**NULL-MODEM GAMES:** games designed to be played by two players using two Amigas, that are linked by a null-modem cable. With a racing game such as Lotus 2 this allows you to race against your opponent rather than the computer.

O's

**OVERSCAN:** to ensure that a TV picture reaches the edge of the average video screen a system called overscanning is used. This is really just a picture bigger than the displayed TV area. A typical, though memory hungry, Amiga overscan resolution is 768 x 576 pixels in hi-res, but variations are very widespread.



**PAL:** Phase Alternation Line. The colour TV system used in the UK (and many other countries) which has 625 lines at 25 frames per second.

**PALETTE:** the range of colours at your disposal in a paint program.

**PAULA:** One of the Amiga's custom chips. Paula handles sound and disk management.

pcm CARD: the Personal Computer Memory card is about the same size as a credit card, but is capable of storing vast amounts of memory, and therefore all sorts of software. But what makes the card really special is that it is compatible with other computers. At the moment it costs oodles to produce, but Commodore must think it has a future because there are PCM card slots on the new A600s and A1200s, and Commodore has already said it would be easy enough to release PCM card adaptors for other models.

**PCMCIA:** stands for Personal Computer Memory Card International Association, a high powered group representing the major computer companies which is looking into and regulating the development of the PCM card (Personal Computer Memory card).

**PD:** Stands for Public Domain. When software programmers waive their copyright the software becomes public domain and can be freely copied. PD software is available from Public Domain libraries. It's much cheaper than copyright software and usually the price only covers the cost of the disk and administrative expenses. The only restriction on copying PD software is that the author should be credited on all copied versions.

**PIXEL:** The word pixel is derived from two words: PIx(for picture) ELement. A pixel is often described as a dot of colour. More accurately a pixel is like an open square on a bit of graph paper (except its on your screen). You create images by colouring in each individual square or pixel.

**PROTOCOL:** a transfer protocol a software system whereby two computers can send and receive information while involved in Comms. Common protocols are XMODEM and ZMODEM.

**PULL DOWN MENUS:** the list of functions and operations contained within the Workbench, or other program's, title bar.

To access the Workbench pull down menus just hold down the right mouse button. This will make the menu headings visible.

Then move the mouse pointer over the appropriate menu heading. You can then move down the list of menu items and select the function you want by clicking on it with the left-hand mouse button.

# R's

**RAM:** Random Access Memory. Memory that can be altered. The main use of RAM is to store programs and program data while the program is running. You can increase your Amiga's memory by installing a RAM expansion unit. Beware though, that every time you switch off the Amiga, the contents of RAM are erased.

**RAM DISK:** This is a virtual 'disk' created on your Amiga's desktop. The Amiga treats it in the same way as a standard disk. Beware though, like RAM, it is erased every time you switch off the Amiga.

**RANGE:** The spread of colours from one shade to another, say red to blue through lots of shades of purple.

**RECORD:** If you think of a database as a traditional filing system, a record is the equivalent of a card containing information on a single subject, such as a customer.

**RELATIONAL DATABASE:** a relational database program enables you to create two databases that are linked to one another. If you had a business with clients all over the world you could create one database with all the client details and another with a key field defining the country in which they live. When you type in Albania that would pull in all the information about clients in Albania from the other database.

**REMOTE:** when you connect to a Bulletin Board System you are the remote terminal to the host because you are far away, in the same way the remote control to a TV set is across the room.

**RENDERING:** producing an image by calculating. **RESOLUTION:** A normal Amiga screen is a grid of pixels 320 pixels across and 256 pixels down, which works out at a total of 81,920 pixels on the screen. The number of pixels that make up the screen is known as the resolution. The more pixels the higher the resolution and the better the image on the screen.

**RF:** Radio Frequency. The method used to transmit combined video and audio signals from broadcaster to receiver. A technical compromise which achieves its goal at the expense of marked quality loss from the original source.

**RGB:** Red, Green and Blue. The raw colours which are used to make up electronic (as opposed to printed or painted) images, such as colour TV or computer-screen images. The Amiga outputs RGB video as standard. Using an RGB monitor gives far crisper pictures than composite or RF video.

**RGB:** This is a video signal that has been split up into its three colour components – Red, Green and Blue

ROM: Read Only Memory. Memory that cannot be altered. Unlike RAM which is wiped clean every time you switch off the Amiga, ROM retains its contents. But again, unlike RAM which can be written to, you cannot alter the contents of ROM. The most obvious use of ROM for the Amiga is to store Kickstart.

**RPG:** Role Playing Game. In RPGs you can set up the attributes of a character or group of characters before embarking on your adventure. The Amiga Format games review team reckon that the best RPG is Eye Of The Beholder 2 (SSI/US Gold, £35.99) **RTF:** Rich Text Format. A text equivalent to IFF

(Interchange File Format). Whereas IFF enables a variety of picture graphics and sound data to be exchanged into different programs, RTF does the same for text.

**RUBBER BANDING:** a paint package tool for drawing curves.

S's

**SCANNER:** device for converting a still, flat image such as a photograph or newspaper cutting, into a computer image. Scanners are either hand held (you run them over the image) or flatbed (similar to a photocopier).

**SCART:** a 21-pin connector used by many modern VCRs and TVs to send video, audio, RGB and other signals in one single socket.

**SCRIPT FILE:** a set of commands saved as a text file, that you would otherwise have to type in by hand.

**SCSI:** Small Computer Systems Interface (pronounced Scuzzy) A device that enables you to connect hardware, such as a laser printer, to your Amiga. But be warned, you need a separate SCSI for every piece of hardware.

**SELF-BOOTING DISK:** a disk that starts up the Amiga of its own accord. Disks that are not self-booting have to be accessed from the Workbench program. The Workbench disk and most game disks are self-booting.

**SHAREWARE:** software that is initially free but you are meant to pay the author some money if you like the program. A sort of "try before you buy" deal

**SHEET FEEDER:** a device for automatically feeding fresh sheets of paper into a printer.

**SHELL:** an advanced version of the Command Line Interface which allows you to type commands into the Amiga Disk Operating System (AmigaDOS) for operations such as copying files or getting a directory.

**SHOOT-EM-UPS:** style of game in which the object is to fire laser death bolts at aliens or otherwise mutilate, zap, and destroy your opponents. **SOUND SAMPLER:** Hardware device that con-

verts electrical music signals into computer sound. Can also be used with a microphone to capture live sounds.

**SPLITTER:** A device for splitting a video image into red green and blue image components electronically rather than with a black and white camera and filters.

**SPORT GAMES:** obvious really. There's a huge variety of sports games from snooker to baseball, football, American football and even rugby union to name but a few.

**STENCIL:** an area of the screen in a paint package that is masked off so that you can't draw on it. Colour stencils are areas where you can't draw on a particular colour or set of colours. Area stencils describe drawing an outline around an area of the screen to protect it from being drawn over.

**STRATEGY GAMES:** style of game in which you use your skills to determine a winning strategy whether you're playing chess or commanding a tank division.

**SYSOP:** short for System Operator, the person who is in charge of setting up and running a Bulletin Board System.

T's

**TRACTOR FEED:** A mechanism for pulling a continuous line of paper through a printer.



**UPLOAD:** to send a file from your computer to another one.



**VIEWDATA:** a form of Bulletin Board Service that uses graphics similar to teletext on the TV.



**WILD CARD:** a Shell function that enables you to group files together.

**WIMP:** Windows Icon Menu Pointer. An early system for communicating with computers by using a mouse and pointer, rather than having to type in loads of computer lingo instructions. Now replaced by Graphical User Interface systems such as the Amiga Workbench.

**WINDOWS:** The name given to the frame on the screen that contains a disk's icons.

**WYSIWYG:** What You See Is What You Get (pronounced whizzie-wig). Describes a program in which the screen display matches the printed output.



**Y/C VIDEO:** By keeping the Luminance (Y) and Chrominance (C) video components separate a far better picture quality can be obtained. Y/C is the format used in Super-VHS and Video8 systems.



**ZORRO:** first coined as the name for the prototype Amiga 1000, Zorro boards are now expansion boards for the high-end Amigas.



### QUALITY AMIGA PERIPHERALS WITH A 2 YEAR WARRANTY

Silica Systems are pleased to present the GVP range of peripherals. GVP are the world's largest third party manufacturer of peripherals for the Amiga range and have a reputation for high specification, quality products. The company was founded only four years ago by a man who knows about the Amiga Commodore's ex-Vice President of Technology. He along with a team of Amiga experts including other ex Commodore staff, understand the add-on requirements of Amiga owners better than anyone. Not only do GVP provide peripherals that Amiga owners want they also offer peace of mind, with a 2 year warranty on the products they manufacture. So, if you are looking for the very best in peripherals for your Amiga computer, look no further than GVP.

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GVP's HD8+ hard drive and A530 hard drive with 40MHz accelerator, represent the highest quality Amiga 500 peripherals, at very affordable prices. Each incorporates a fast action hard drive, RAM expansion capability, custom VLSI chip and FaaaSTROM SCSI driver, for unbeatable performance. MARKETTE

The HD8+ hard drive offers up to 8Mb of standard internal Fast RAM expansion and the A530 Combo, up to 8Mb of 32-bit wide fast RAM expansion. Both feature a SCSI controller, which supports up to 6 additional devices, and an Autoboot/Game cut-off switch. Both are available in 80, 120 and 213Mb hard drive presions. hard drive versions

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TRANS

P TO 8MB OF 8 OR 9-bit FAST RAM 8 OR 9-bit WIDE SIMMS - 1200s OR 6

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HDD/ACCELERATOR 'CUT-OFF' SWITCH F 100% GAME COMPATIBILITY SCSI CONTROLLER FOR UP TO 6 ADDITIONAL DEVICES

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BUILT-IN VENTILATION FAN TO PREVENT THE UNIT FROM OVERHEATING

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DEDICATED POWER SUPPLY

REMOVABLE MEDIA SUPPORT

EASY-TO-USE SOFTWARE

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the world combines all the features found in
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AT 12.1 MIPS (FASTER THAN AN A3000!)		•	
VARE SUPPORT TO MAP KICKSTART INTO WIDE FAST RAM FOR FASTER OPERATION ACHING THE OPERATING SYSTEM)		•	HD8+
DAM BOARD			

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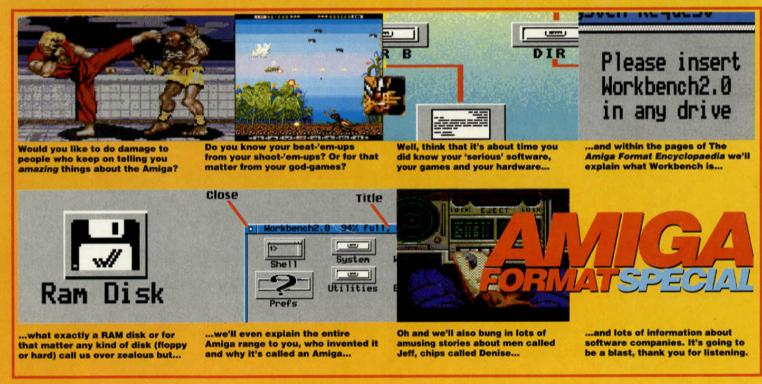
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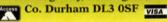
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1Mb Simm-32 Bit 60 Nanoseconds. 4Mb Simm-32 Bit 60 Nanoseconds....£182

# MULATORS 1500/2000-3000/3000T

Vortex 'GOLDEN GATE' MEN £419.5 Vortex GULDEN GATE MANUAL This emulator is the ultimate bridge between PC/AT platforms and the Amiga. If you think this is for you, cross to page three for specification details in this months 'Trail Blazers' section!

### STAR LC-100 Colour.. May £159.99 9 PIN colour printer with paper parking, eight fonts

and electronic DIP switches.
LC24-100 F189.99
24 PIN with compressed data mode, 16 K buffer and
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CANON BJ 10eX.... MEW £224.99 Upgraded version of BJ10e, the worlds biggest selling portable inkjet printer.

CANON BJ 20...... MANUE £319.99 More Features than the BJ10, includes Auto sheet feeder. Top selling-Highly Recommended

.....£499.99 **CANON BJ 330...** 136 column bubbleiet.

### CANON Bubblejet cartridges.....£17.99 PHOENIX PRINTER PACK

Supplied with ALL printers containing 1.8m std. printer cable, printer ribbons/cartridge and 250 sheets of paper absolutely FREE.

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We have a large range of high quality printer accessories for all the printers we sell including: dust covers from £2.99 • Ink cartridges from £13.99 • Mono ribbons from £3.50 • Colour ribbons from £7.99 • Printer stands from £7.99

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Kickstart 2.04 ROM. Kickstart 1.3 ROM....£27.99 Fatter Agnus 8372A..£34.99 NEW Super Denise.£29.99 CIA 8520A......£9.99

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4 Mb x 9 (-70) Simm£99.99	1 Mb x 4 (-80) Zip*£34.99
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256k x 9 (-80) Simm£12.99	1 Mb x 1 DRAM£3.45
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These chips cover practically every popular memory expansion or Hard Drive system on the market for the Amiga ie. GVP, SUPRA, MICROBOTICS, COMMODORE

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All monitors are supplied with a FREE cable for connection to your Amiga.

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14" Dust covers	£4	.99
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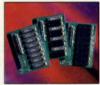
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Midi-Midi 3m£4.99 Amiga-Scart	E9	.99
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*SCSI Cable various	3	.99

Printer 1.8m.....£5.99 Printer 2.0m HQ...£7.99

\*For full details of these cables or information regarding the right cable for the job call 0532-311684. Custom built leads are no problem Phoenix.

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A PHOENIX RAM module can expand your chip RAM up to 2 Mb by using the trapdoor expansion port. Extra RAM is necessary to unleash the incredible graphics capa-

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Rombo's Vidi Amiga 12 is the replacement for their complete colour solution bringing you the world's first mass market colour digitiser for under £100.

VIDI-AMIGA 12 ...... E79.99
Outstanding features and plenty of VFMI-(Value for money!)-Highly Recommended.

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ROCKEY BY ROCTEC The new chroma key unit - used in conjunction with a Genlock - allows you to superimpose live video over graphics or video-substitute the brightness portion of a video source with a keyed image-Embed live video in graphics!

£269.99 Phoenix Price...

# TRAIL BLAZERS-WHAT'S NEW IN NOVEMBER 1992!

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Simply the Best!

£44 99

This famous super slim drive has now been upgraded to include Anti-click and virus checker - We have reluctantly had to raise the price of this product due to the variance of the dollar rate. However to soften the blow we will include a FREE disk head cleaner worth £3.99

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This powerful, unique WYSIWYG word processing package is the best value choice for your Amiga, sharing many of the features of full-blown DTP packages

Phoenix price......

Be safe in the knowledge that you are buying the official UK version of the product from Phoenix. BEWARE of dealers offering "Latest version" of Final Copy. This may be American product and should not be sold in the UK!

**OPAL VISION** 

Amazing new 24-Bit graphics card and video system for the Amiga 1500, 2000

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VORTEX 'GOLDEN GATE' Designed for the Amiga 1500/2000/3000 and 3000T this is a 25MHz 80386SX PC/AT

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PC/RAM, 4Mb for Amiga-Will use PC/AT IDE Hard Disk and floppy disk drives 2.88 Mb under

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Amiga DOS, highly recommended.

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# 570 CD ROM

This essential add-on has finally arrived, suitable for A500/A500+, A570.

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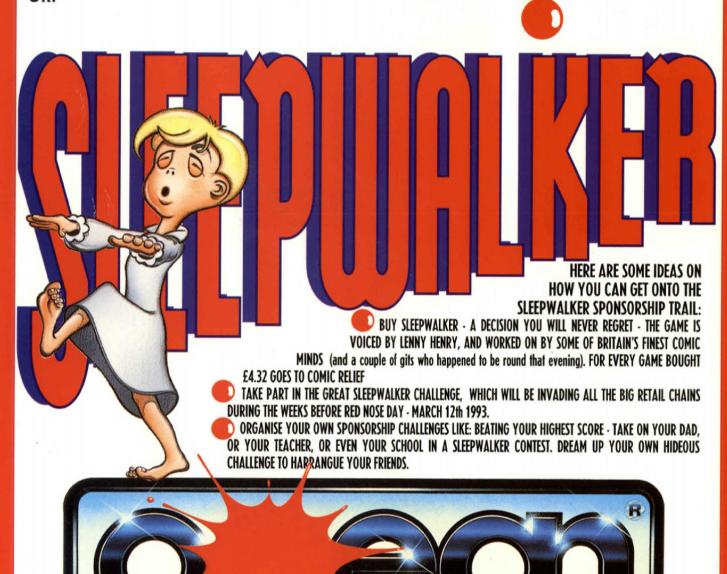
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