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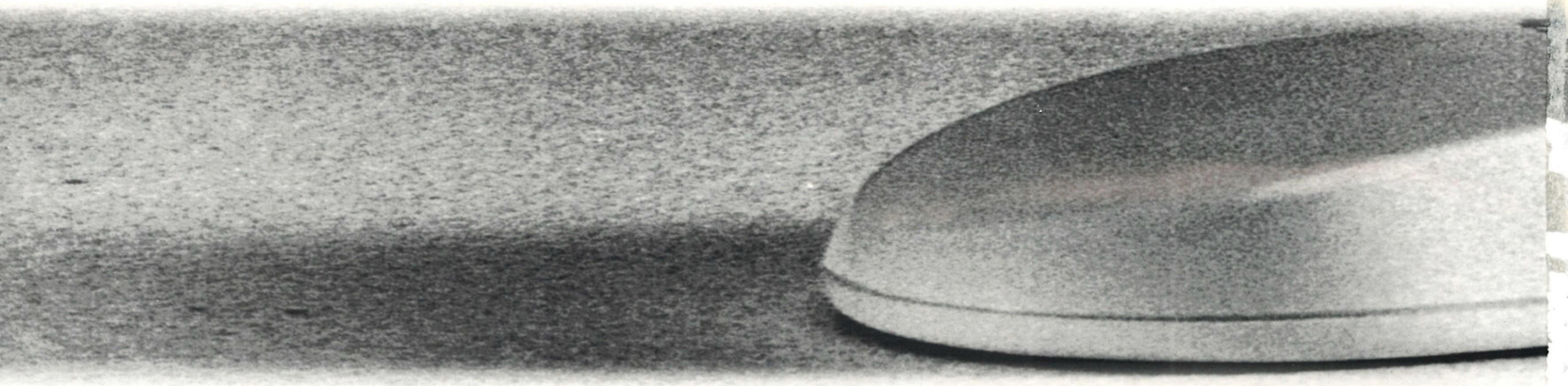
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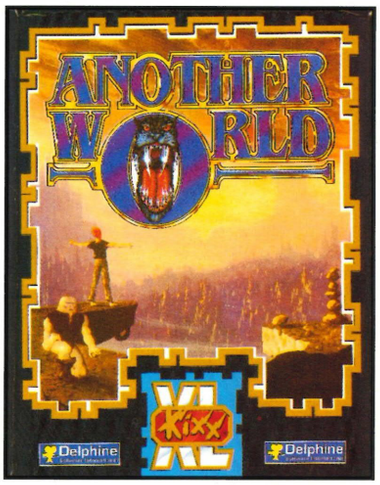
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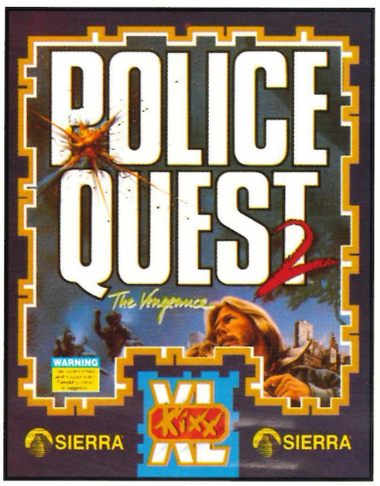


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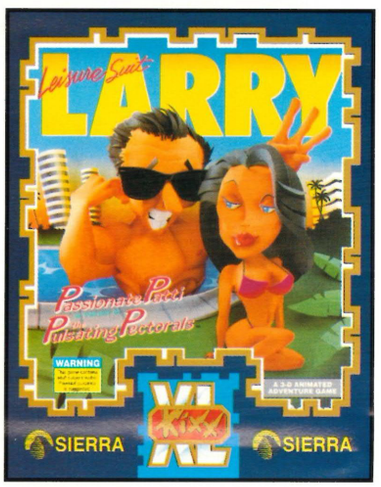
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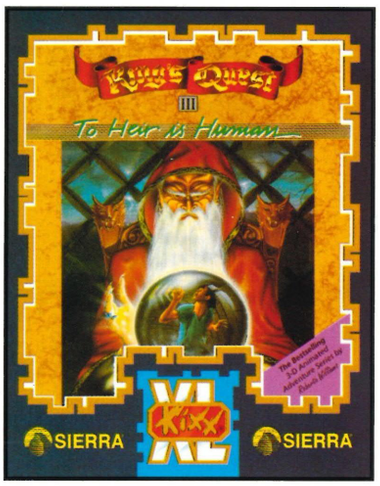
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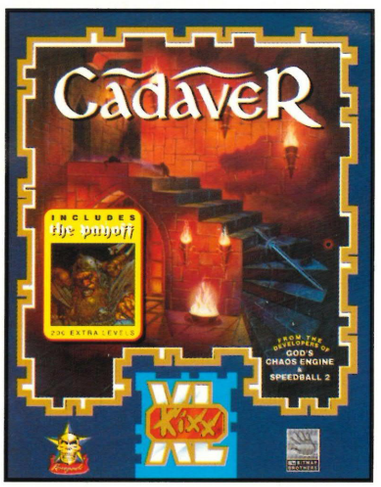


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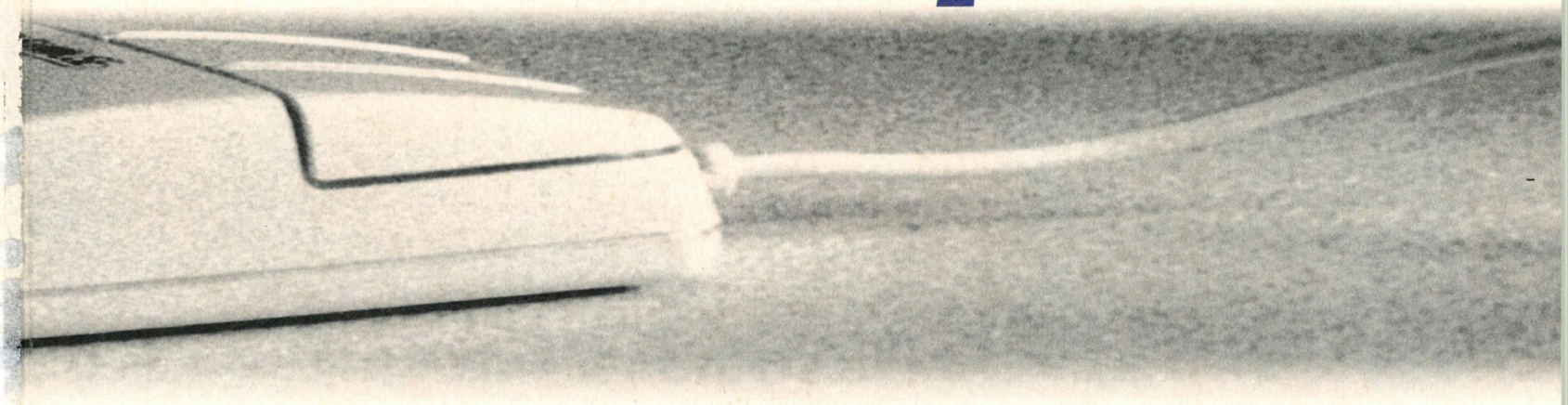
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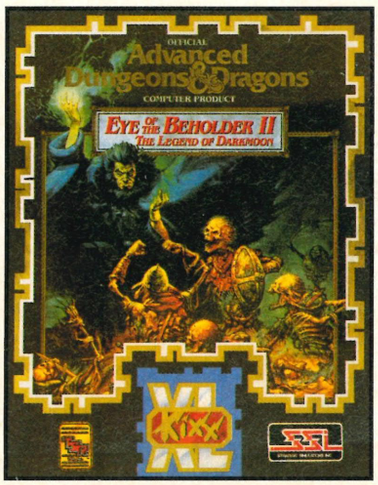
"A classic game that is a worthy addition to anyone's collection" *AMIGA ACTION 84%*

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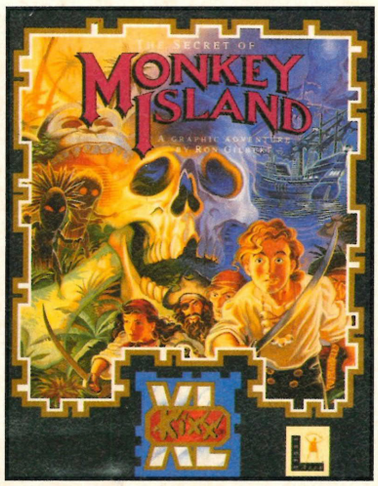
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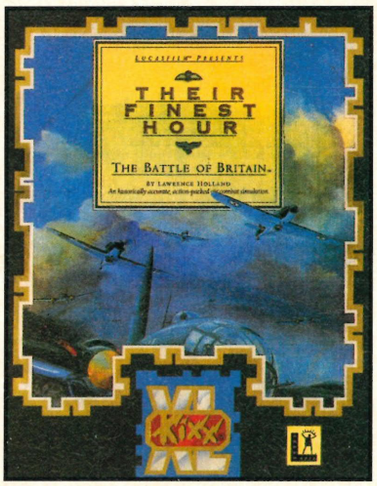




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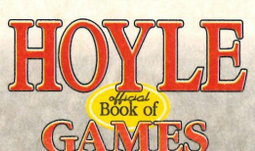
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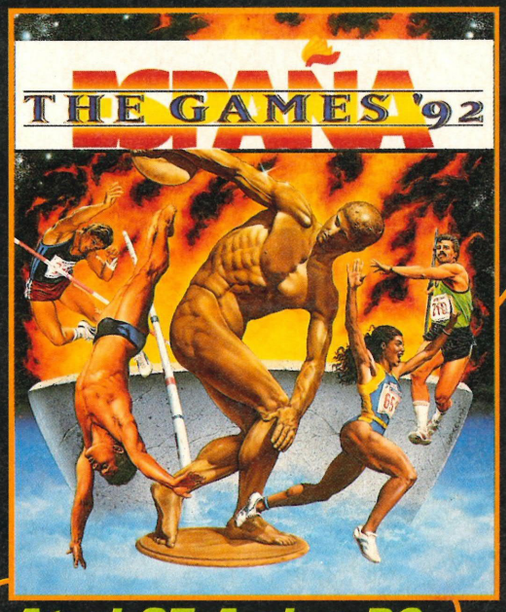




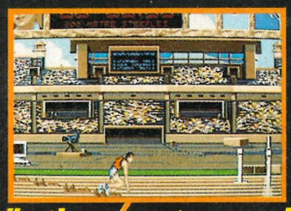




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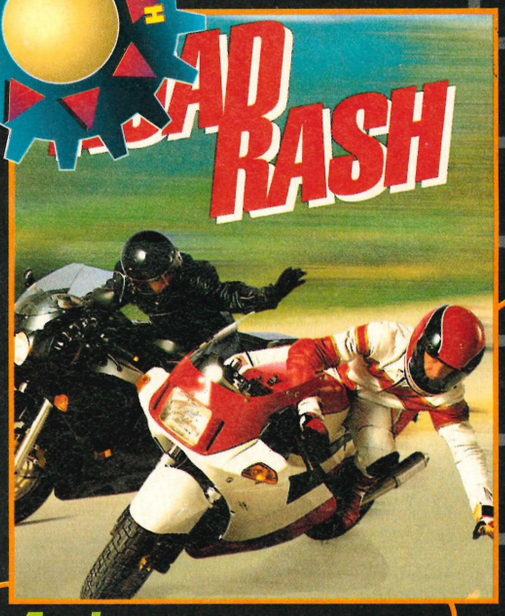


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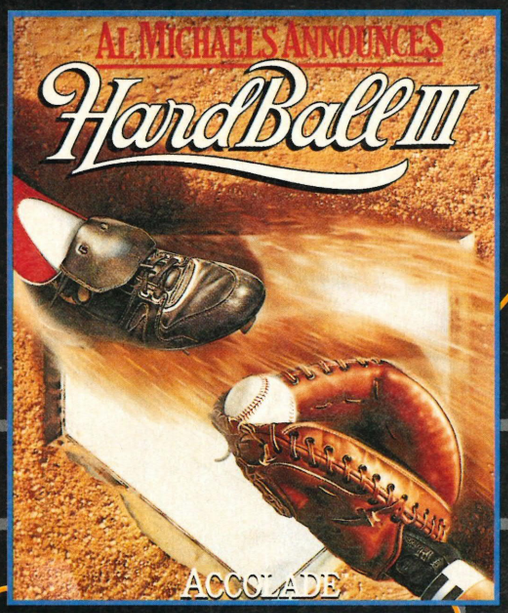


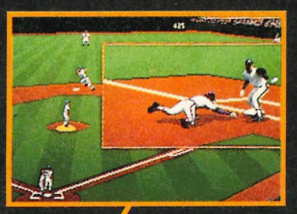
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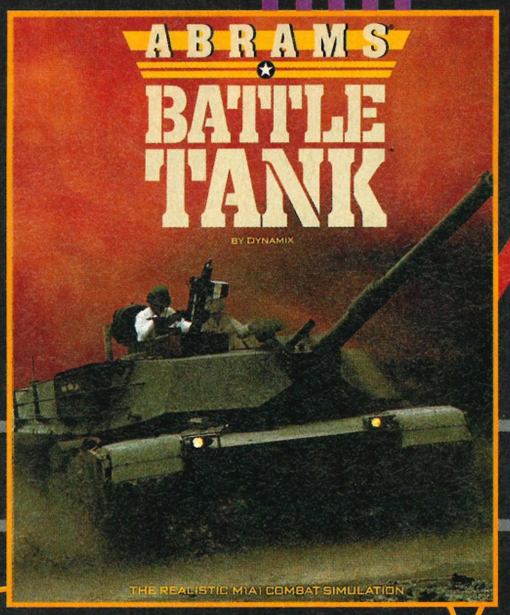
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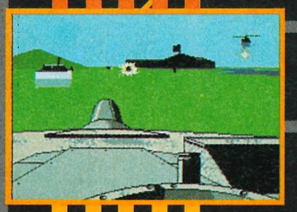


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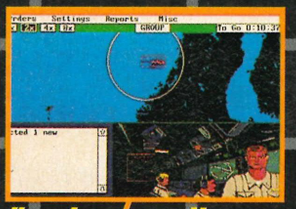
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ESMASTER



Amiga·PC



"...plays well... go buy it!"
PC REVIEW

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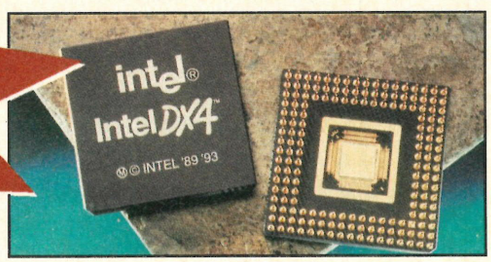
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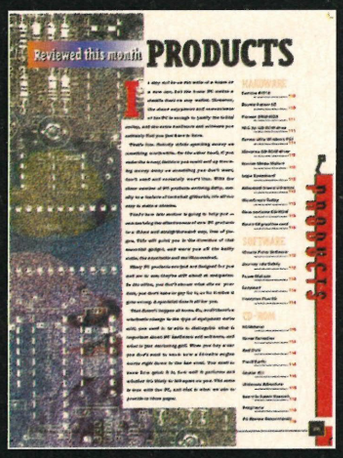
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COMPETITIONS
Win a Battle Isle print!
Win the astonishing Fauve Matisse art package!

Cover disks

CD SPECIAL

Two whole chapters of exclusive PLAYABLE Rebel Assault demo, an entire battle to fight from the stunning Battle Isle 2, and a playable demo of the CD-ROM version of Star Trek 25th Anniversary — with digitised voices, of course. Then there's a preview of the fascinating Knowledge Adventure range. All on one CD-ROM — type PCRCD at the D: prompt to start, and you're away!.

Rebel Assault



Exclusive demo

How to start:

Simply select the game from the PCR CD menu.

How to play

You have four lives per game, three skill levels to test you, and there's a damage indicator at the lower right of your screen to tell you how you're doing.

It's a straight case of up, down, left, right and shoot: you're on a pre-defined flight path anyway, so all you have to do is pilot the craft you're in, and dodge whatever the Imperial Forces throw at you.

The chapters

- Level 1 — Imperial Walkers. You have to bring the walker to its knees by blowing away its armour. Chose your attack path by holding the joystick to the left or right whenever the indicator in your cockpit flashes, and don't get too close to the damn thing!.
- Level 2 — Protect the transport ship. Dodge asteroids and take out the incoming Tie-fighters until the transport ship has time to escape. Miss more than one and they'll take you apart in minutes.

How to quit

Hit Esc at any time during the demo to exit.

Hardware

The LucasArts Rebel Assault demo requires a minimum 386 PC with 4Mb of RAM, CD-ROM drive and a Sound Blaster compatible sound card. An analogue joy stick is preferable.

NOTE: Your Sound Blaster compatible sound card must be set to the following: address 220, IRQ 7, DMA 1, because the demo has no configuration set-up of its own.

Knowledge Adventure



Knowledge Adventure is the USA's leading publisher of interactive edutainment software. This exclusive rolling demo will give you a taste of what the Knowledge Adventure series has to offer.

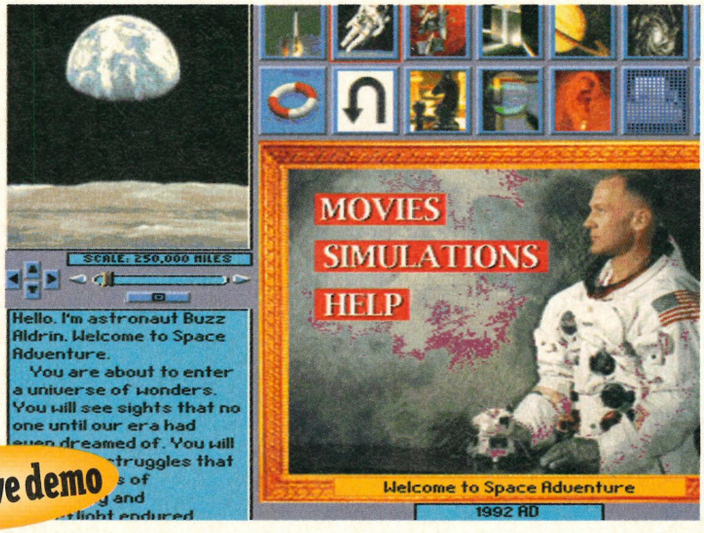
The demos include 3D Dinosaur Adventure, Undersea Adventure, Kid's Zoo,Space Adventure, Bug Adventure, Body Adventure, and Zak's Learning Safari.

To run the demo you need a 386, 2Mb RAM, and preferably a sound card. You will need to install a few files from the cover disk CD, located under the CD-ROM games directory. The files will be installed to your C: drive in the KADEMO directory. Once installed, type:

CD \KADEMO

then

DEMO to run.



Exclusive demo

Battle Isle 2



How to start

Battle Isle 2 needs to install some files to your hard disk. Try to use the default installation directory if possible.

When the game has installed, return to the C: drive and log on to the directory in which you have installed the game. Type BI2 to start.

How to quit

Select the Menu icon from the action bar at the botton of the scree. Select Menu again. Select End Simulation.

How to play

Battle Isle 2 is an enormous hex-based strategy game, with an equally substantial manual — several hundred pages or so.

This demo gives you an entire major battle to fight.

Trying to explain all the features of the demo in six paragraphs is going to be tough. Here goes ...

You're the blue army. The idea is to defeat the three opposing armies, principally the red army. The gold forces are your allies — leave them alone.

At the bottom right of the screen is the icon bar. When you move your mouse over a unit, icons will appear. Release the mouse over the one you want. Right mouse button cancels selections. The panel to the right takes you through the main icons.

In the picture on the right, you can see the control bar across the bottom of the screen. The blue tank is the selected unit. The figure next to it (left side) is the experience rating of the unit. The red bar indicates health, the green bar fuel. The Figures on the right indicate ammo available for each of the tanks main weapons.

Now go get 'em. If it's any help, in amongst this lot are fuel tankers, rail guns, bulldozers and choppers.

The best thing to do is experiment with the various units until you know what they're capable of.

The interface is actually very intuitive — there's just a hell of a lot going on. Enjoy.



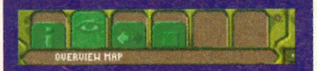
Movement icon, next to the Attack icon, shows the range of a unit.



Some units have a choice of weapons, drag and release to select them.



At the end of your turn, select Change Mode twice to start the enemy moves.



Overview sets the surface scanner on, to give you an idea of the entire map.



Select a unit and click on the Information icon to find out the unit status.

Star Trek 25th Anniversary

How to play

Install game files using the PCRCD menu. Then change to the directory you've installed them to and type STARTREK to start. Keys can be used, but a mouse is preferable.

Your mission to Demon World will be explained at the beginning of the game, which starts with the Enterprise involved in a training scenario. The game will end if any major characters are killed — but you can afford to lose the odd security guard.

On the bridge

Tab: switches between the viewscreen (direction control) and the bridge view. Number keys: ship speed, from 1 (stationary) to 0 (max).

Enemy craft are tracked via the position monitor.

V: toggles between bridge view and full screen view.

On the mission

The left mouse button controls movement and the right mouse button (or spacebar) brings up the interface box.

Talk: click on the mouth to select "talk", then click again on the character you wish to talk to and select what you want to say by scrolling through a list.

Look: click on the eye to select "look", then on what you want to look at.

Pick up: click on the left hand, then on the object you want to pick up.

Use: click on the right hand, then click on the object or person you want to use. You control Kirk, all other crew members have to be "used". Inventory items are used in a similar manner.

Options: click on the Starfleet symbol for the options menu from which you can load, save or quit.

Note: if there's anything you can't figure out or you are having any problems, consult the file README.TRK in the root directory on the CD-ROM.

You can view this in any suitable PC word processor or text editing program.

Hardware needed

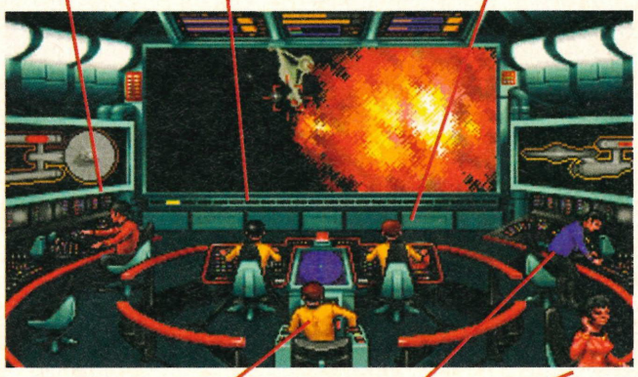
386PC, CD-ROM drive, 10Mb hard disk space, mouse and 1Mb EMS memory

Each member of the crew has a specific function.

Scotty: repairs

Chekov: travel at warp speed, choosing the navigation icon, or select the weapons icon

Sulu: raise or lower shields.



Kirk: click on him to beam down (use the transporter icon), or choose the options icon to load, save or quit.

Spock: advice about your mission, or research info

Uhura: click on her to contact a spaceship or planet.

COVER DISKS



And there's more! We'v ealso got yet more Doom — the latest shareware version, a PC Review customised demo of UFO, plus complete art, music and DTP software and every update you'll ever need. Just type PCRCD at the D: prompt to load up your PC Review cover CD.

COVER DISKS



UFO and Doom

How to start

Both of these playable demos need to be installed on to your hard disk drive, rather than run from the CD-ROM. So, select Install from the PCRCD menu, then Run, and that will put the game onto your disk for you and prompt for the right set-up.

UFO

This personalised PC Review demo is mouse controlled. Each member of your team has to be moved individually. Each soldier has a number of "action points" which are used up by walking, crouching, standing or firing a weapon.

The current selected soldier is indicated by an arrow above his head. To move him, move the cursor to the square where you want him to go and click with the left button.

If an alien is visible to your man (but not necessarily to you), a red square appears on the right of the screen. Click on the map icon (top row, third from the left) to find out where the alien is. Aliens are shown as blue dots on the map. To fire them, click on the weapon icon (far right) and then select how you wish to fire the weapon.

The cursor will then change into a crosshair. Move this over the alien and click to fire.

To move on to the next man, click on the "next soldier" icon (bottom row, third from right).

Once you have eliminated all the aliens, move your surviving men aboard the troop carrier and click on the "end mission" icon (bottom row, far right).

If you end the mission without the team on-board, you lose them.

● Hardware required: minimum 386 PC, 2Mb RAM, VGA and a mouse.

Doom

All right, any excuse to play Doom is a good excuse. But, just in case you've been hiding in a monastery for the past few months — be warned, Doom is a ridiculously violent game and not recommended for children or the squeamish.

This is the latest shareware version of the first chapter of Doom — Knee Deep in the Dead, and it includes several new features that weren't available on our earlier exclusive coverdisk, such as a whole new difficulty level — Nightmare Mode — which makes no attempt to be even slightly fair, and the essential serial/network link capability.

Controls are easy: either cursor keys plus ALT to sidestep, Ctrl to fire and Spacebar to open doors, or use a joystick or mouse. TAB toggles on the automap. F turns off Follow Mode for the map, and the plus and minus keys are used to zoom in and out.

● Hardware: a 386 PC minimum, with 4Mb RAM.

Die happy.

Plus!

Neopaint
The most popular shareware graphics package around. Instructions are found in the file README.DOC

To run, change to the directory in which you have installed Neopaint and type:
NEOPAINT
Minimum: 386SX, VGA, 640k

Envision
Easy to use desk top publishing package.

For instructions, change to the directory in which you have installed Envision and type READ-ME. Additional information can be found in the MANUAL.DOC file, which may be printed.

To run, type: EVP
Minimum: 386SX, VGA, 640k

Modplay
This useful package allows you to play Amiga four channel sampled music files on your PC.

Instructions are contained in the file MP.DOC

To run, type: MP
Minimum: 386SX, VGA, 640k

Whacker Tracker
Make music with this shareware pro music tracker. Instructions are included in the file WHACKER.DOC.

To run, type: WHACKER
Minimum PC: 286, EGA, 640K, soundcard.

And finally

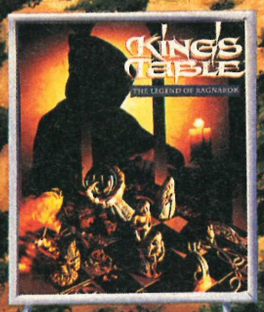
game updates

We have a selection of updates and drivers for the best games around. These include: Civilisation for Windows, TFX, Ringworld, Formula One Grand Prix, Doom (upgrade from V1.1 to V1.2), F15III and Protostar. And, the *complete* software set for the superb Gravis UltraSound sound card.

GAMETEK

"For anyone who plays chess King's Table will prove to be an easy game to get to grips with, for others the game has been designed to be simple to play." **PC PLAYER**

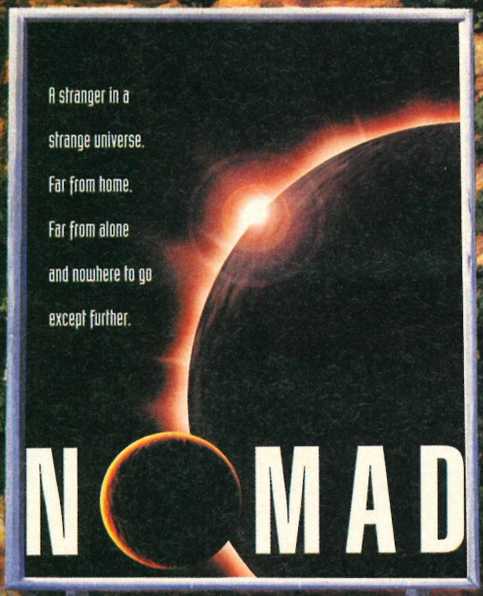
Available for PC COMPATIBLES, PC CD-ROM and CBM AMIGA





"Daemonsgate is a role-player's dream. It is a complex and masterfully done game which must be experienced to be appreciated." **EGM (94%)**

Available for PC COMPATIBLES and PC CD-ROM

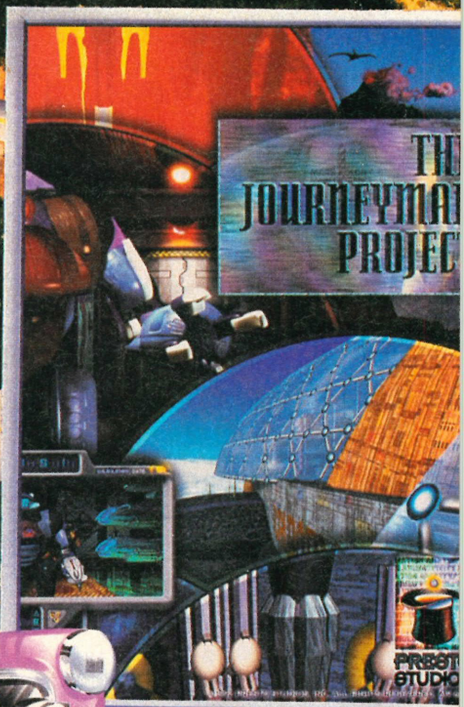


"I found Nomad very addictive, even coming into the office to play it at the weekend. Nomad certainly gives the best a run for their money." **PC PLAYER 4/5**

Available for PC COMPATIBLES and PC CD-ROM

"The Journeyman Project is a stunning game which you just have to buy. You haven't seen or played anything like this ever before – and it only costs £39.99." **PC POWER**

Available on PC CD-ROM and MAC CD-ROM



NOW SHOWING ON A PC NEAR YOU

GAMETEK

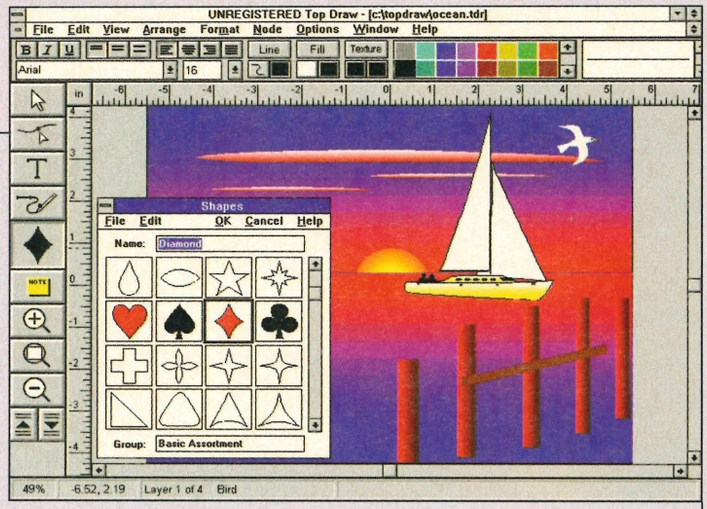
GAMETEK (UK) LIMITED, 5 Bath Road, Slough, Berks, SL1 3UA

Nomad and Papyrus are trademarks of Papyrus Design Group Inc. King's Table 1993 Imagitec Design Inc.



Cover disks

Top Draw is a stunning — and complete — art package on your 3.5" disk. Read on to see how to get the most out of it.



Top Draw

Top Draw is a top class complete shareware package for computer artists, which is as accessible to beginners as it is useful to experienced artists.

Essentially Top Draw enables you to create illustrations, logos, business cards, brochures, and maps by using customised colours, fonts, rulers, and grids, utilising drawings and shapes, overlaying text and even cutting and pasting artwork to other Windows programs.

How to run

Open Windows, access the Program Manager menu option and click on Run. Type

A: Install

v1.0 for Windows 3.1
3.5" disks only

and Top Draw will then go on to install itself.

Hardware required

The minimum configuration required is a 386 or higher PC, Windows 3.1, VGA, DOS 5.0, 2.5Mb of hard disk space and 2Mb free under Windows. You must have a mouse.

Control

Top Draw is all menu driven — just move the mouse pointer to the icon or item you require and click select it. There is also a selection of keyboard strokes to speed up performance as you become more familiar with the package.

Here's a breakdown of the functions of the major icons.

One down

First, those down the left side of the screen.

Select tool: This selects objects to be operated on by other menu commands, also to move, and resize objects.

Node Tool: Allows you to alter the shape of objects. Nodes can be added and deleted, etc.

Draw Tools: This is the icon which lets you to create your own designs, including poly-lines (multi-segment lines), Bezier curves (smoothly curving lines), circles, ellipses and arcs.

Shapes Tool: Gives you access to Top Draw's library of more than 100 standing designs.

Notes Tool: Enables you to put notes on your design and to print them.

Zoom buttons: These enlarge and decrease the size of your drawing and allow to you to focus on specific areas.

Layer buttons: Let you move up or down through the different layers of your drawing.

Two across

The first series of icons across the top of the screen enable you to customise text styles. Fonts can be changed, type made bold, italic or underlined, paragraph styles set and text centred, aligned to the left, the right or justified, ie, set with straight lines down both the left and right hand sides.

The Fill icon changes what goes in the design, ranging from none, solid and three gradient fills — linear, circular and radial. The Texture icon allows you to create hatching, rings, spokes, rays or tiles shapes.

Next comes the the colour palette (pictured left), enabling you to change and mix colours.

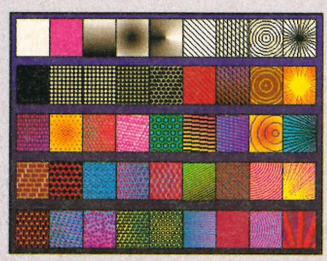
Finally, there is the Line Sample. This shows the current thickness of the line in use which can be changed.

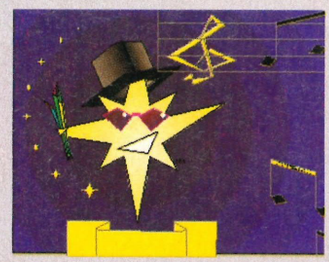
And Help is always at hand. Just move the mouse pointer over an icon and press F1 for assistance or information.

Printing out

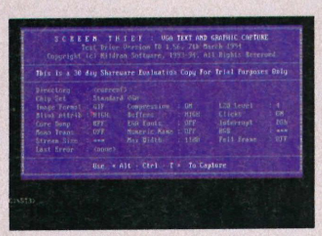
Top Draw artwork can print to any Windows printer.

Top Draw was written by Jeff Becker, president of Colorado-based Top Software and the UK distributor is Nildram Software, tel (0442) 891331.





Latest version Screen Thief



Screen Thief is a memory-resident program which will 'capture' your program or game screens and save them as graphic files to disk. You can then import the pictures into a graphics program or art package (such as Top Draw, see left) in order to edit the files or print them out.

How to use

After installing the files from the cover disk, you need to decompress the program itself. Log on to the directory (probably C:\ST) to which you copied the cover disk files, and type

INSTALL [Enter]

to decompress the files. You need to choose a *different* directory to copy the decompressed files to. Screen Thief will crash if you try to decompress the files in the same directory.

Once decompressed, you need only type

ST [Enter]

from the directory where the expanded files are stored to load the program. You should now see the screen as pictured above.

Next, simply load up the program that you wish to take a picture of in the usual way. Each time you reach a screen you want to capture, hit the Ctrl-Alt-T 'hot-key' combination. You should hear a distinct clicking noise from the PC speaker as Screen Thief processes the screen data then a high-pitched beep when it finishes. You can now carry on using the program as normal.

Configuring Screen Thief

Screen Thief has a number of additional commands, called switches, which you enter when you load the program to configure the way in which it captures screens. Instead of typing simply ST to start the program, type the following to effect the corresponding configurations:

ST C:\CAPTURE: This will save all the grabbed files to the C:\CAPTURE directory. Obviously, you can substitute any directory.

Screen Thief normally captures programs in .GIF format. You can set it to capture in other formats with the following:

ST /O:TIFF: This will capture screens as .TIF files;

ST /O:PCX: This will capture screens as .PCX files;

ST /O:BMP: This will capture screens as .BMP files.

ST /M+: This will produce a black and white image when you capture a screen.

ST /M-: Disables the mono switch, above.

ST /U: Unloads Screen Thief from memory. Windows can only be loaded in Standard mode when Screen Thief is resident.

For example, to use Screen Thief to capture screens and output them in a mono .PCX format to a directory called C:\PICTURES, type the following:

ST C:\PICTURES /M+ /O:PCX

Once Screen Thief is loaded in this way, you could then change the output file format by typing the following from the \ST Directory:

ST /O:GIF

Each time you make a change, the Screen Thief window will pop up showing the new set-up.

If you regularly use a particular set-up for Screen Thief that is not the same as the default set-up, you can avoid having to type all the command line switches each time, as in the example above, by using an environment variable. This is a string containing the required command line parameters that is placed in the AUTOEXEC.BAT file using the DOS SET command as in this example:

SET SCREEN THIEF=C:\PICTURES /M+ /O:PCX

This will then use these parameters every time Screen Thief is run, overriding the defaults so that you only need to type "ST" to access your most used set-up.

3.5" and 5.25" disks

These and more details can also be found in the README.DOC file in the Screen Thief directory.

The resulting pictures will normally be stored in the program's own directory, with a name relating to the program's .EXE file. For example, captured screens from SimCity 2000 will be called SC200001.gif, SC200002.gif, and so on.

How to quit

To unload Screen Thief from memory, type ST /U [Enter]. As Screen Thief is memory resident, it will also be unloaded every time you reset the PC.

NOTE

Screen Thief works with most programs, but if you cannot get it to work with a particular program, it probably means that it can't capture it, rather than your disk being faulty.

Using Screen Thief in the SimCity 2000 competition

You can also enter our Sim Analysis competition (see Issue 30, and also page 95 of this issue) using last month's SimCity 2000 cover disk and this month's copy of Screen Thief. Here's how:

- Install Screen Thief from the cover disk.
- Load Screen Thief as described above.
- Now load the cover disk demo of SimCity 2000.
- When you have built up a mini-metropolis, or you're getting near the end of your 20 minutes, press the hot-key combination (Ctrl-Alt-T) to take a snapshot of your city.
- Take two or three more pictures from different angles, including one zoomed out as far as possible.
- Exit SimCity2000.
- Locate the resulting pictures, which should be .GIFs (but we'll accept .PCXs and .TIFs as well) and should be called SC200001.gif, SC200002.gif and so on.
- Copy the files to a floppy disk, label the disk and send it in to the competition at Sim Analysis, PC Review, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. Full details can be found on page 95 of this issue.
- The cover disk category of the SimCity 2000 competition is judged separately to the full version category.



Problems? Turn to page 14 for details on how to install and use your cover disk

How to use the cover disks

PC Review's cover disks are tested at every stage of production, and rigorously checked for all known viruses. However, if you are new to the magazine, new to PCs, or simply having difficulties using the disks, read on for full instructions.

Step by step guide

Screen Thief

1. Put PC Review cover disk A into your floppy disk drive and log on to the drive, eg, type A:> [Enter]

2. Type PCR [Enter] to bring up the installation menu.

3. After copying over all the Screen Thief files, you will be returned to the installation menu.

4. Press Esc to quit.

5. You now need to decompress the files before you can use the program. Log on to the Screen Thief directory (C:\ST unless you changed the default).

6. Type Install to decompress the files. You should choose to install Screen Thief to a different directory. You can always delete the original files and directory after decompression.

7. When decompression is complete, type ST to load the program. Details of specific configurations can be found elsewhere on these pages.

Top Draw

1. Put the PC Review cover disk into your floppy disk drive.

2. Load Microsoft Windows 3.1.

3. At the Program Manager screen, enter File Manager from the Main menu.

4. Select File/Run and type

A:\INSTALL.EXE

in the dialogue box provided.

5. Top Draw will now copy over to the hard disk, and decompress the cover disk files. It will also create an icon and a program group.

6. Double click on the Top Draw icon to start the program.

If all else fails ...

If you've tried everything, and you just can't get the wretched disks to work, try the PC Review disk helpline:

Disk helpline: (0451) 860770

The helpline operates between 3.00pm and 5.00pm weekdays.

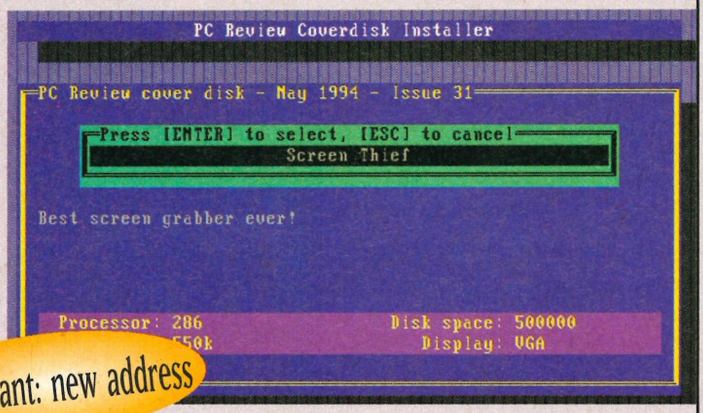
Please note that this is a NEW helpline number. Don't call the old number — they won't understand what you're talking about!

Please note:

- PC Review's cover disks are rigorously checked at each stage of production for all known viruses and duplicated under strict quality control.

- However, cover disks are used at the reader's own risk. PC Review can accept no responsibility for damage to either data or hardware caused by use of our cover disks.

- We also make every effort to ensure that the contents of each disk are exactly as advertised. If, however, circumstances should dictate that we are unable to supply the stated program we will endeavour to supply alternative software. PC Review, its distributors and retailers, will not be held responsible for any unnotified change to the contents of the disks.



Important: new address

Faulty disk?

PC Review's cover disks are checked and validated, but if you have reason to believe that yours is faulty, pop the disk(s) in a jiffy bag with a self-addressed envelope and postage to the value of 28p (55p from overseas) and the form below (filled in), and send the package to the following address:

DiskXpress
Unit 3
Old Coalyard Farm
Northleach
Gloucestershire GL54 3EP

Please DO NOT send the disks back to PC Review – we don't hold stocks of spare disks (and don't send them to the previous address, either).

Name.....
Address.....
.....
.....
.....

The disk on my copy of PC Review was damaged. Please send me a replacement – I enclose return postage to the value of 28p (55p if overseas) and the original disk.

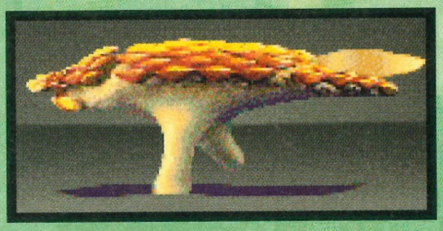


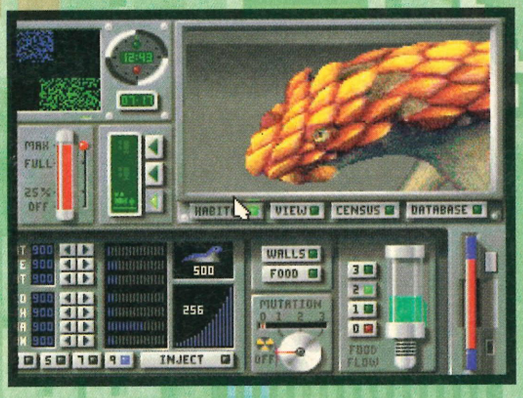
UNNATURAL SELECTION

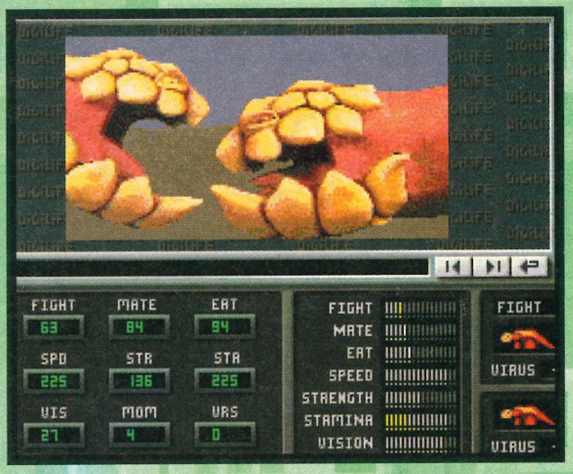


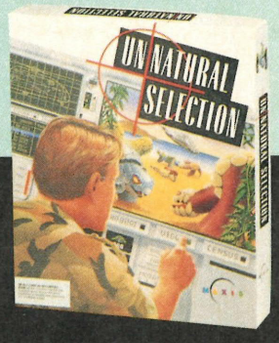
WHAT KIND OF MIND COULD CREATE THESE INCREDIBLE CREATURES ? YOURS.











When a mad scientist unleashes an army of mutant monsters on an unsuspecting group of islands, there's only one course of action. Head for the lab and breed your own monsters to fight back. In Maxis' new strategy game, stunning clay animation and digitised sound brings your genetic creations to life. To wipe out the enemy, you'll need more gene genius than Darwin.

'A serious strategy game....remarkably good fun' - PC Gamer
'If this was a movie, it would be a cult classic' - PC Review

MAXIS

Maxis Ltd 18-20 St John Street, London EC1M 4AY Telephone: 071-490 2333

Unnatural Selection software copyright 1993 Sim-Business

News

On these pages: Microsoft drops DoubleSpace in the US, new PCs from Dell and Packard Bell, the Golden Joystick Awards, and The Cooke Report

Game play by degrees

The first degree course in computer gaming will be launched this year by Middlesex University in an effort to foster new talent who will take computer entertainment into the next century.

Major software houses and hardware manufacturers — including Domark, Virgin, Apple and Sega — have all pledged to sponsor students.

The one year Master of Arts in Design and Production of Interactive Games course , covering all aspects of games design, including software engineering, graphics, design, music and audio , will start this September. A three year Bachelor of Arts course will follow next year.

The unprecedented move by a number of software houses follows widespread concern that the pool of games programming talent which emerged in the 1980s is fast drying up. If there are budding David Brabens, Jon Hares, or Archer Macleans ou t there, they are n't being easily found by the mainstream software publishers.

Where one generation of home computer users learned to program on the machines such as the Spectrum and Commodore, today's adolescents are growing up with the non-home programmable Sega and Nintendo consoles, and the days of the back-bedroom game writer earning fame and fortune are all but over.

"The games industry was in danger of becoming stale and tired and the only solution is to seek out new blood and bring it in," says Russell Ferrier, Domark's development manager and one of the main forces behind the course. "Setting up a degree course will provide this new industry with educated design-trained graduates who will be able to bring fresh creative thinking to the whole area of consumer software."

However, Ocean's software development director Gary Bracey, while broadly in favour, has pointed out that teaching people to write computer games could be difficult: "How do you train these people? In terms of design, they've either got it, or they haven't.".

The number of places available will depend on demand and course fees and living costs will be paid by the companies. Contacts at Middlesex University are Julian Sanderson, Programme Leader for the MA course and Huw D Jones, Programme Leader for the BA, in the Faculty of Art, Design and Performing Arts. The faculty is to be renamed the Centre for Electronic Arts.

It is expected other universities around the country will run similar courses next year.



Domark's Russell Ferrier: "The games industry in danger of becoming stale ... the only solution is to seek out new blood."

Packard Bell rings in changes

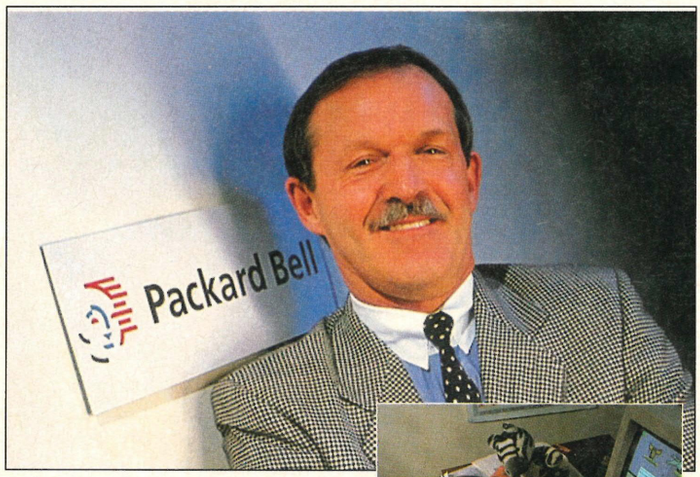
Packard Bell has renewed its attack on the home market with the launch of a new range of re-styled "Energy Star" PCs including multimedia and Pentium-based systems.

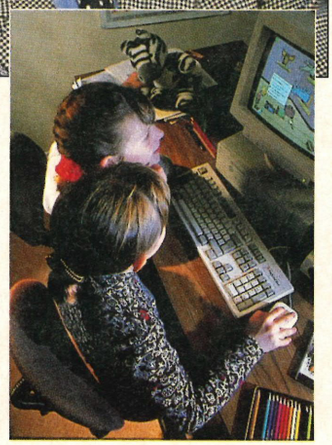
"This industry has talked for years about personal computers finding their way into every household, " says Jamie Muir, Packard Bell's UK managing director. " But the PC needs a facelift and a new attitude if it's to become as commonplace in homes as the VCR."

The new re-styled 486 and Pentium range includes 486SXs running at 25 and 33MHz; 486 SX2s operating at 50MHz; 486DX2s at 50 and 66MHz and a Pentium running at 60MHz. Hard disk choices range from 170 to 420Mb. All are preloaded with DOS 6.2, Windows 3.11 and the Microsoft Entertainment pack and Packard Bell's Navigator, a Windows-based self-help tool and menuing program. The multimedia PCs are based on the 486SX/33 and DX2/50 processors and are Photo CD-compatible. Prices will range from £756 to £2,499.

All the machines will automatically switch to 'stand-by ' mode when the PC is not in use, an essential energy saving device, Packard Bell claims, which will appeal to 'green' PC consumers.







Packard Bell's Jamie Muir (above): "Facelift for PC."

Multimedia bundles from Aztech

Singapore-based Aztech Systems has launched two new multimedia upgrade kits — the Voyager and Asteroid.

The Voyager features Aztech's new Nova 16 soundcard, CDA 268-01A with UltraCD cache utility, microphone and a pair of stereo speakers. It comes with seven CD titles and more than 15 software titles for business and multimedia applications.

Asteroid again features the Nova 16 soundcard, CDA 286-01A with UltraCD cache utility and headphones. It comes with four titles — Macromedia 2.5, Manic Mansion: Day of the Tentacle, Learn to Use Windows and Professor Multimedia, together with 13 more software titles.

Meanwhile, the Nova 16 soundcard will be also be sold separately and will be bundled with the shareware version of Doom.

Aztech will start to ship all these products in April. No UK prices have been announced yet.

Those were the days...

The Story of Civilization, the best-selling 11 volume compilation of more than 3,000 years of world history, is to be released on CD-Rom. Will and Ariel Durant's epic work, which took 40 years to compile, will be on sale in the US this summer with a $100 price tag. The multimedia version will contain the complete text and 800 original illustrations, including old photographs, drawings, maps and paintings.

The Durants' studies range from pre-historic times to around 1840, taking in early Greece, the early days of Christianity, the Dark Ages and the Italian Renaissance.

Logitech sounds off

A new sound card which can bring "pure instrumental sounds to the computer" has been launched by soundboard specialist Logitech.

The SoundMan Wave is a 16 bit stereo card running at 44 kHz and using the new Wave table technology. It is compatible with all leading hardware and software. Its Yamaha OPL-4 chip stores original sounds from a total of 128 musical instruments and other sound sources.

The SoundMan Wave comes with a range of programs design to help the buyer quickly realise the multimedia potential of the new card.

Logitech claims the quality is a distinct improvement over conventional, artificially generated digital sound. For more details, contact Logitech on (0344) 891313 for information.



Learning a lesson

A new range of GCSE revision aids covering English, French and Maths has been released for the PC. Europress Software's ADI GCSE packages conform to National Curriculum guidelines and sell for £34.99 each.

Other educational releases from Europress include Storybook Weaver (£25.99) a story creation and spelling program; Mutanoid Maths Challenge and Mutanoid Word Challenge (both £19.99), in which addition, subtraction, division and multiplication and spelling skills are improved against competitive aliens. Europress can be contacted on (0625) 859333 for further details.

Acorn chews Apple over chip claims

Apple Computers has agreed to review claims made about the chip technology used in the PowerPC following accusations of 'ambiguities' from rivals Acorn.

The dispute centres on the RISC chip (Reduced Instructions Set Computing) and four statementents made in Apple's PowerPC Technology: The Power Behind the Next generation of Macintosh Systems. These statements need "modification," says Acorn.

One of the Apple statements says: "No other personal computer company is making the fundamental commitment to RISC demonstrated by Apple."

Acorn disagreed. It launched its first 32 bit RISC computer — the Archimedes — in 1987. And, although the company says it did not invent RISC, it designed and produced the low-cost, high volume chips and has continued to promote RISC over the past seven years.

Kevin Coleman, Corporate Affairs Manager at Acorn, said: "In 1990 Acorn expanded the availability of this technology by the formation of ARM Ltd in partnership with Apple and VLSI. The success of ARM Ltd and the strategy to widen the availability of RISC technology has resulted in in its chips now being used in a range of products including the Apple Newton."

Apple's decision to review the statements was welcomed by Coleman. "We are pleased that Apple has responded so quickly to our requests," he said.



EDITOR'S COMMENT

You can't have got this far without noticing our new look. I hope it meets with your approval. We've packed in more reviews, more previews, and introduced a whole new section on more general products suitable for home use, perhaps the fastest growing sector in this area. I hope that in taking a more comprehensive approach to PC entertainment, PC Review not only addresses your needs, but may even introduce you to new applications for your PC.

Objects of desire?

The area that is expanding most rapidly at the moment is CD-ROM, both hardware and software. You can hardly move for falling over inexpensive double-speed drives, although the newest quad speed drives are not yet in the affordable bracket. But it's in the software market that publishers are really running ahead of themselves.

It looks to me as though by September, around 75% of software released will come on CD-ROM. We may have had our last disk-based Christmas. And this bothers me. Not necessarily because I doubt that 75% of you, or PC owners in general, will own CD-ROM drives by then.

It might be partly because people seem to have been seduced into thinking CDs are desirable objects. Software publishers look enviously at the way the music business has been sustained by the thirtysomethings who have replaced all their old Eric Clapton LPs for the self-same Eric Clapton CDs. There appears to be no reason why computer users shouldn't do the same with old but beloved games.

I realise that being bothered at all is pretty rich when you consider that this is the first issue of PC Review to carry a fully-fledged CD-ROM on the cover. But actually this is part of it. When we planned our CD-ROM cover disc we deliberately wanted to include previews of CD-based games, rather than disk-based demos that just happened to be piled on to a CD-ROM.

But the capacity of the compact disc means that everything has to be so *big*. You don't want a CD game that only takes up 10Mb, even thought that's still large-ish for a disk-based game. No wonder publishers fill up the disc with "Making of ..." digitised videos and lots of tinkly music. Rendered graphics at over a megabyte per screen must be a real godsend.

When CD-ROM takes over, what will happen to 'little' games? I don't mean little in the sense of the Microsoft Arcade, just games that don't need very much space. Like Tetris, Lemmings, Elite 2, Jimmy White's Snooker and Archer Maclean's Pool, even SimCity 2000 only takes up two high density disks. I don't think I want to see cut-scenes of real Lemmings going over a cliff. I certainly don't want to see a digitised interview with Jimmy White. And I don't see the point of putting Elite 2 (one megabyte) on a CD-ROM (600 megabytes).

So when the floppy disks are pulling in the queues at the Antiques Roadshow, what will have happened to the small but perfectly formed game that is a triumph of compact programming?

Alive and kicking

Religious software has tended to be limited to electronic Bibles, study aids or text-based adventures. But a recently launched Christian software house is planning to change all that.

Since its launch last year, Alive Software has released nine PC titles including Spiritual Warfare, which it claims to be the top-selling piece of Christian software in the UK.

The Bristol-based company aims to produce quality arcade games which are exciting and which have "traditional mainstream Christianity reflected in software that avoids gratuitous violence and shuns pornography and the occult." Violence, bad language and 'desructive images' in films, television and video have long been a source of concern to many parents, says Alive, which claims violence in games could have an adverse effect on the children who play them.

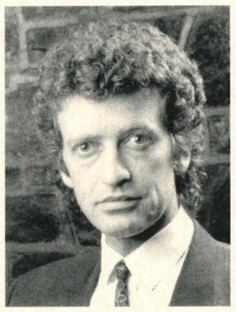
Against this background Alive sets out to provide an alternative choice in gaming which it wants to be entertaining and education with an underlying message which aims to "reinforce traditional family values."

"We do not want kids to be longing to slash their way through hordes of enemies in the latest arcade-type game and groading at having to play the goody-goody eductaion software to keep Mum and Dad happy," says Alive.

In Spiritual Warfare the player takes the part of a soldier in the army of Lord, exploring a city to collect the "full armour of God." Along the way they encounter various villainous charcters and obstacles which are design to test the player's faith.

By correctly answering Bible questions faith is restored and health and spirit strengthened, all played out against Gospel music soundtrack. It costs £33.

Managing director Timothy Buff says Alive Software's next release will be WordWise (out in April, price £24.95), a 'Thought for the Day' style program which produces quotes from the scriptures.



Timothy Buff: Selling "Christian values".

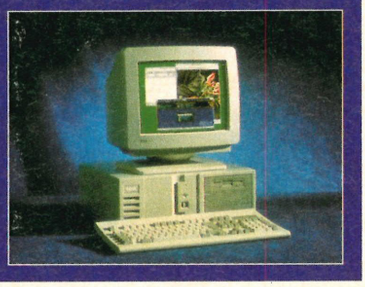


Spiritual Warfare — a best-seller?

Six from Dell

Dell has launched six new PCs based on Intel's 486 SX2 processor targeting entry level and mid-range users. The new systems include Dell NP and Optiplex lines, with prices starting at £1,289 and £1,419.

All of these systems have a full range of 486 processors — based on the 50MHz 486 IntelDX2 processor without a math co-processor — from an entry level 25 MHz SX to the top end 66MHz DX2.



NEWS

Sign of the Times

One year ago...
The venerable Microsoft Flight Simulator 4 approached its 10th birthday. No longer state-of-the-art, with basic graphics and no real combat, this daddy of flight sims still had as massive and dedicated following. Today, one year later, Microsoft Flight Simulator 5 is keeping the tradition flying.

Two years ago...
The massive boom in CD-Rom titles was still a long way away but the release of Sherlock Holmes Consulting Detective from Icom Simulation/Mindscape was showing the potential. "A seminal multimedia product," said our review.



Another kind of magic

There's more ReelMagic on the way from Sigma Designs — ReelMagic Lite. Using the same technology as the original package, ReelMagic Lite comes with standard MPEG (Motion Pictures Experts Group), rather than a built-in soundcard. It will sell for £259 excluding VAT — £100 cheaper than the original.

The Lite package comes with MPEG playback facilities, allowing full screen, full motion video on the PC. Essentially that means it enables the PC run games featuring video footage and also play films and music videos on CD. It is compatible with all leading makes of sound card.

MPEG is the emerging standard for video and audio compression, allowing 74 minutes of full-screen, full-motion video, coupled with CD-quality sound, to be played back from a single-speed CD-ROM drive. "ReelMagic Lite is perfectly suited for those soundboard users, offering them unsurpassed MPEG video and sound playback with out paying extra for sound capabilities they already have," says Sigma"s boss Thinh Tran.

3DO PC deal on the cards

Negotiations are underway to develop a plug-in card which will allow PCs play software titles now being developed for the fast emerging 3DO, the 32-bit RISC, CD-based home entertainment system.

The 3DO company — set-up by for the former chief of Electronic Arts Trip Hawkins — is talking to Singapore-based Creative Technology Ltd about jointly developing the card, which would then be manufactured and marketed by Creative.

As yet software available for the 3DO is not anywhere near testing the machine's formidable capabilities. It is estimated that around 250 companies are actively developing for the 3DO which could mean some interesting conversions for PC owners as well. It sells for $699 in the US. A UK price has not been fixed yet.

Art packages price cuts

The price of the graphics toolkit Conversion Artist 2.0 has been cut from £116.33 to £92.83, developer LTS has announced. The package's facilities include support for 35 popular image formats, image editing, colour correction, style filters and screen capture.

The company has also cut the price of its multimedia video clips and stills package AVI Video for Windows. A total of 18 CD-ROMs are available each containing up to 30 minutes of full motion video and sound files, covering areas such as famous faces, places, special effects, nature, science and sport. The cost is down from £104.58 to £45.83.

Three stills CD collections, each containing 300 images, have been reduced from £45.83 to £34.08.

All the material on the disks can be used royalty free in any computer application.

Finally, A Guide to Multimedia, which includes Super Show and Tell Lite a powerful package for multimedia presentations and training material, PhotoMorph Lite and screen savers is now available from LTS at £9.95. Also included on the CD is a demonstration presentation and samples of animations, video clips, music, and clip art.

All prices include VAT.

In Brief



● Orchid has announced price drops on its CDS-3110 CD-Rom drive (£169 from £189), pictured above, and the GameWave 32 soundcard (down to £129 from £149) and is now available with a pair of stereo speakers.

● Low price office and computer stockists, Staples UK, has opened its fifth superstore at Bordesley Circus, Birmingham. A sixth store will open in Bradford shortly.

● Elonex PCs are now being sold pre-loaded with Ami Pro word processor in a new bundling deal with Lotus. The computers are also pre-loaded with MS-Dos 6.2 or later, Windows for Workgroups 3.11 and Lotus Organizer.

● If this month's cover story on Virtual Reality fires your enthusiasm, you may care to make the following note in your diary: the second VR User show will take place at London's Novotel on Setpember 13-15 this year.

Chip heralds CD sound for PC

CD quality 16-bit sound could become a standard PC configuration following the development of a new audio chipset which features all the key elements of a soundboard.

The Aztech SoundClef will allow motherboard makers to include sound as a standard feature and leave computer slots free for other add-ons.

"We believe that this chipset will change the soundboard market dramatically as it brings audio performance and features to brand new heights," claims Michael Mun, president of Singapore-based Aztech. "Now manufacturers can provide more and exciting sound features with lower component counts and cheaper production costs."

The chip supports Windows 3.1, Sound Blaster, Sound Blaster Pro and Ad Lib and is compatible with MPC 401 and Sound Blaster MIDI interfaces.

Aztech currently claims to be the third largest supplier of soundboards worldwide.

The art of glass

A new interactive computer program designed to explain the materials, history and techniques of glass-making is due to go into operation at the Victoria and Albert Museum's new Glass Gallery.

The National Collection of Glass is one of the world's most outstanding collections, containing more than 7,000 pieces from the Middle East, Europe and the rest of the western world, dating from the second millennium BC to the present day.

Using touch-screen terminals located in the gallery, visitors can access The Story of Glass, and learn from A Brief History of Drinking, and about decay and disease; fakes and forgeries; the techniques of forming and decorating glass; the spread of glass-making; and a guide to the 100 most important glass-makers and glass factories.

THE COOKE REPORT

Interaction or interruption? Steve Cooke isn't so sure that the games industry understands its own business

Acronyms have been setting personal bests recently. BT has fathered quite a few. Company execs were disturbed by endless reference to sods, only to be reassured that these were SODs (Services On Demand). Corporate morality, you'll be glad to hear, has now been restored by GOD (Games On Demand), though rumour has it that this may all be a load of old COD (Communications on Demand).

Two recent terms I've favoured most aren't acronyms, however, but the words Ludite and interruptivity. Ludite was coined inadvertently by Ian Hetherington of Sony in a presentation at the recent Computer Arena conference. It appeared in a slide he put up, and should, of course, have been spelt Luddite. For those of you who were too busy cracking Ultima I to listen to Miss Blenkinsop, a Luddite is someone who unreasonably and violently opposes technical innovation. So what's a Ludite? Obviously someone who is unreasonably and violently opposed to technical innovation in games (Latin, ludo: to play). This promises to be a very useful term for our industry. In fact, I may be the first person to be accused of Ludism, because of my concern about ... interruptivity.

This word was coined by a member of a multimedia working group, designing on-line services like VOD (Video On Demand). It encapsulates the idealogical struggle between those who believe that televisions will become computers before computers become televisions, and those who think the process will happen in the reverse order.

This struggle is deadly serious. On the one hand, you have a group of producers committed to what is loosely termed multimedia. On the other, you have us games fanatics. The multimedia bunch think you can make great products using Macromind Director and video clips. What matters, they argue, is photorealistic graphics, CD quality sound, intuitive interfaces, and topics of universal interest. In essence, they are taking the television and teaching it to interact.

The games fraternity don't disagree about good graphics and sound, but they are more hardware-driven and think that gameplay is what interactivity is all about. They, in essence, are taking the computer and trying to teach it to be more like a TV: visual realism, with interactivity built-in.

I used to think that us games freaks had it all right. Now I'm not so sure. That word interruptivity keeps giving me second thoughts. Because what we regard as interaction, the multimedia group regard as interruption. Live video and audio do not take well to being interrupted by mouse-clicks; neither, more crucially, do plot elaborations and storylines. Yet these are all refinements that the games community is hell-bent on integrating into the interactive experience.



Forl example, MPEG — that delicious compression system which promises to give us videos off our CDs — has to be the most *un*-interactive format ever devised. Based on complicated calculations of differences between reference frames and successive images, MPEG is not something you can stab a mouse at to weave a complex interactive tapestry.

Call me a Ludite if you will, but I'm coming to the conclusion that character, storyline and live video are all utterly irrelevant to interactive entertainment. We already have the best possible characters: they are the players of the games and the personae they create. We have the best possible stories: they are the endless encounters and innovations which take place in the worlds the designers create. In short, we want GOD, not VOD.

I think that we need to understand our own art a bit better before we try imitating the art of other media. Otherwise, we may lose the richness of interactivity, and end up with the frustration of interruptivity.

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Microsoft withdraws DoubleSpace in USA

Microsoft has had to release its latest version of MS-DOS minus the hard disk compression program DoubleSpace in the US. The move comes after successful legal action by Stac Electronics, manufacturer of the rival disk compression program Stacker. Stac's developers believed that code used in DoubleSpace was similar to that used in Stacker, and sued Microsoft for infringement of its patents.

Stac has been awarded $120 million in damages. A counter-suit lodged by Microsoft was dismissed, but it was awarded $13.6 million in damages on one count of misappropriation of trade secrets.

However, Microsoft UK is keen to stress that the court's decision affects only the US market. For the time being, at any rate, the company will continue to sell DOS 6 in its current form, together with the DoubleSpace program.

"The case is about US patents and as such, any outcome only applies to US products," explained a spokeswoman for Microsoft UK.

"Outside the US, it's very much business as usual. DOS 6.21, which doesn't have DoubleSpace, is out in the States and is also available on request in Europe."

Video on demand comes to Ipswich

The Saturday night trip to the local off and rental video store could soon become a thing of the past if an experiment currently being conducted by British Telecom at its massive research facility in Marshalham on Sea, near Ipswich, Suffolk is successful.

Over 60 of the company's employees are being used as the guinea pigs for the first video on demand service. Video on demand is the generic term given to products which allow viewers to simply select a film by dialling down a telephone or ISDN line.

In British Telecom's case, the films are set straight down a normal analogue telephone line from a nCube multi-processor computer running the Oracle Media Server, a database tailor-made for handling images. Up to 1200 films can be stored on the machine.

When the film arrives — in 2Mb chunks — an set-top box, based on an Apple Macintosh, stores the data until it can be broadcast in a reasonably coherent form. BT hopes that data compression technology will soon improve to allow transmission in 6Mb chunks.

If the service is implemented, viewers will simply subsribe to the service, as they subscribe to satellite. According to Oracle, if a million people subscribe to the service, the cost could be as low as a £50 per year, per user.

Oracle also says the Media Server and nCube computer has far more wide-ranging uses than simply feeding film-addicts habits. Other uses the company is touting for it include home shopping, on-line booking of airline tickets and personalised newspapers. This is where every national newspaper is scanned in, and the viewer selects the bits of each paper he or she likes best.

The technology is a good way for BT to combat the burgeoning take-up of cable in this country. The company is currently not allowed to broadcast over digital networks, like ISDN, because of government regulations.

This has held up the company's plans to link every household with ISDN. This would cost £15 billion, and British Telecom says it is not going to do it unless it can broadcast through the cables.

The experiment is only one of a number being conducted around the world. Bell Atlantic is running similar trials in 20 American cities, including the nations' capital, Washington DC.

Future Zone sponsors driver

Computer and games store Future Zone is to sponsor driver Richard Olley in the 1994 Formula Renault Championship. As part of the store's £3m "branding and awareness", it is hoped to raise £100,000 for the charity BLISS (Baby Life Support), which provides specialist intensive care equipment for baby units throughout the UK.

Golden Joystick Awards 1994

Vote for your favourite PC games of the past 12 months

The Golden Joystick Awards are the most prestigious and highly regarded accolades in the computer games industry. And that's because they are voted for by you, the people who buy the games, and not by back-slapping trade representatives, or anonymous judging panels.

The Joysticks, now in their twelfth year, are organised by EMAP Images, publishers of PC Review and other top computer entertainment magazines such as The One for Amiga, PC Games, CU Amiga, Computer and Video Games, Mean Machines, Sega Magazine and Nintendo Magazine System.

Who gets the awards is decided by the votes from the readers of these magazines.

The categories

1. Best Computer Simulation
2. Best Licensed Computer Game
3. Best Original Computer Game
4. Computer Game of the Year
5. Software House of the Year
6. Computer Programmer of the Year
7. Best Advertisement of the Year

If you are stuck for ideas, or your memory of 1993 has blurred, here are a few games which have lodged in the PC Review team's collective consciousness.

What about TFX, Tornado or IndyCar Racing for Best Computer Simulation? Best Licensed Computer Game? Remember Sam and Max Hit the Road, Rebel Assault and Jurassic Park? Hot contenders for Best Original Computer Game could include Doom, Syndicate or Day of the Tentacle. Computer Game of the Year candidates will surely include Doom and Rebel Assault. Software House of the Year? What about Electronic Arts, MicroProse or LucasArts. High fliers for Best Computer Programmer of the Year could include David Braben for Frontier, DID for TFX, or Sensible Software for Sensible Soccer.

As for the Best Advertisement, the humorous Tottenham Court Road Computer Exchange Centre sticks out for us, as did Sierra's dramatic Gabriel Knight advertisements.

But the choice is yours ...

Remember, vote only for games which were released between January 1, 1993 and December 31, 1993.

Now fill in the printed form — you can omit some categories if you wish — and send it to The Golden Joystick Awards 1994, PC Review, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. Your nominations must arrive at our offices no later the May 15, 1994.

Golden Joystick Award Winners last year included Formula One Grand Prix (Best Computer Simulation); Alone in the Dark (Best Original Computer Game); LucasArts (Programming team of the Year); and Electronic Arts (Software House of the Year).

Finally, if you don't vote you can't complain about the results. So don't miss out . Start casting your votes right now ...

Voting form

The Golden Joystick Awards 1994

Fill in your votes for the categories listed below. You can use a photocopy of the form if you do not want to spoil the magazine, but, please, only one entry per person. The closing date is May 15 1994.

The Awards

Best Computer Simulation .....
Best Licensed Computer Game .....
Best Original Computer Game .....
Computer Game of the Year .....
Software House of the Year.....
Best Computer Programmer of the Year .....
Best Advertisement of the Year .....

Name.....
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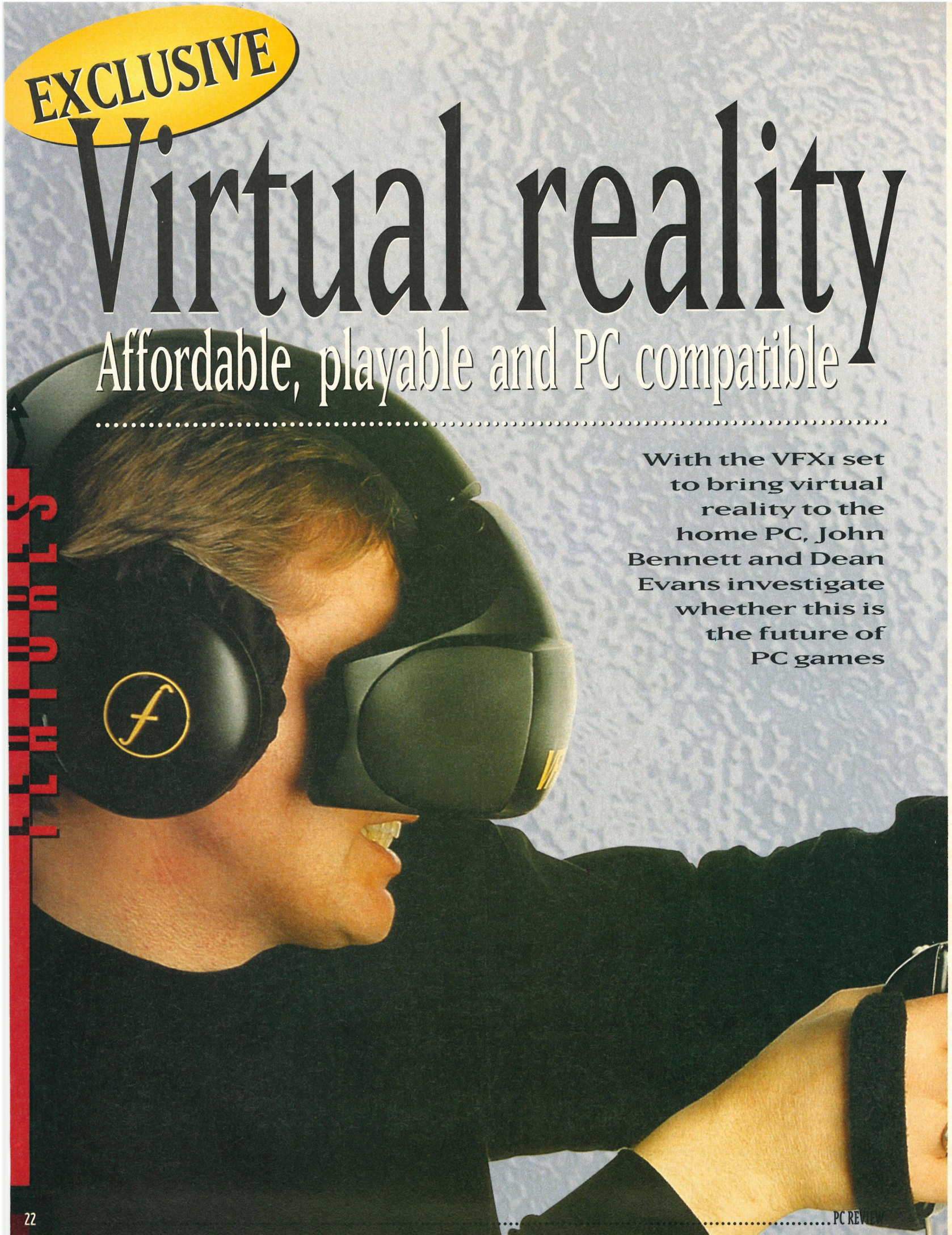
The Golden Joysticks — the awards voted for entirely by readers

EXCLUSIVE

Virtual reality

Affordable, playable and PC compatible

With the VFX1 set to bring virtual reality to the home PC, John Bennett and Dean Evans investigate whether this is the future of PC games



FEATURES

now!



Unless you've actually popped into an arcade and tried a VR helmet on, it's difficult to explain exactly what all this 'Virtual Reality' fuss is about, and why, in fact, the imminent arrival of the Forte VFX1 is so important for PC games.

In essence, Virtual Reality is the experience of interacting with a mathematically generated 'world', a world that only exists inside the computer: architects use VR to view building designs before they get built; pilots use VR simulators to learn to fly without ever leaving the ground and scientists use VR to manipulate virtual molecules in virtual laboratories.

For a brief period, VR was all the rage in computer games. It was the buzz word you just couldn't be without — almost every new game splashed the words 'virtual reality' on its packaging even if it was nothing more than a 3D shoot 'em up. But a 3D game isn't necessarily a Virtual Reality game and for most of us VR is all about sitting in a smoke-filled arcade paying £3 to shoot dull and lumbering robots while wearing a heavy hat. This is motion-tracking, immersive VR and it was supposed to herald an entertainment explosion.

Once the novelty of these first big arcade systems wore off, VR subsided into oblivion because although the potential was always there, the games haven't been great. Since then, technology has been slow to develop and the interesting stuff seems mostly to have been hijacked by the military and heavy industry. Why hasn't someone produced a VR system that runs games of the standard we expect on our PCs? Why hasn't someone produced a low-cost VR system that we can plug directly into a PC, so we can play around in virtual worlds without pumping hundreds of coins into outdated arcade hardware?

Well, they have now. The Forte VFX1 launches this autumn, and it's going to be the first genuinely affordable, mass-produced home VR system.

By affordable, I mean under $1,000. Admittedly this sounds a lot, but most VR systems cost about the same as a new Ferrari, whereas the VFX1 should make its way over here with a price tag of about £650.

So, the Forte VFX1 will be the first VR system you can use on an ordinary computer without having to re-mortgage your house in the process. It runs on a 386/16 PC (although a 486 is recommended) and doesn't require any expensive extras.

Not only that, but it's up and running Doom already. After all, where else would you expect to find a Virtual Chainsaw?

The VFX1 system can be split into five major components:

- The light weight adjustable headset with built-in headphones and a flip-down visor — the visor means you don't have to take the whole thing off when you eventually come back to the real world.
- Twin Epson LCD displays for full colour 3D stereoscopic images, with independent focusing of

> "Forte has been developing its own three axis tracking technologies for several years with the sole aim of producing a mass-market virtual reality system."
>
> Paul Travers, president, Forte Technologies

Anatomy of the VFX1

The VFX1has been deliberately styled for the mass market, it's lightweight and surprisingly comfortable to wear for long periods of time.

Forte plans to build-in an upgrade option whereby you can replace individual components — like the LCDs — as technology improves without having to buy a complete new system.



Visor: **the visor flips up when you want to stop using the headset.**

Connector: **the headset connects very simply to the PC serial port. In many ways, it acts rather like a mouse.**

LCDs: **twin high-resolution Epsom LCDs.**

Lenses: **IPD (interpupilary distance) is adjustable, as is independent focusing.**

Sound: **built in headphones will work with any 16-bit sound card. 3D sound requires the Advanced Gravis UltraSound.**

Adjustable strap: **the headset is fully adjustable so it can be made to sit comfortably on most size heads.**

Moviedrome and the time machine ...

It's easy to imagine a not-too-distant future where everyone has a VR headset and even a VR glove sitting beside their home computer. Given time to develop, and widespread support, the potential uses of VR in its various guises are endless, from virtual medicine to virtual estate agents ...

VR could completely revolutionise the entertainment business, beyond the obvious opportunities in the computer games market.

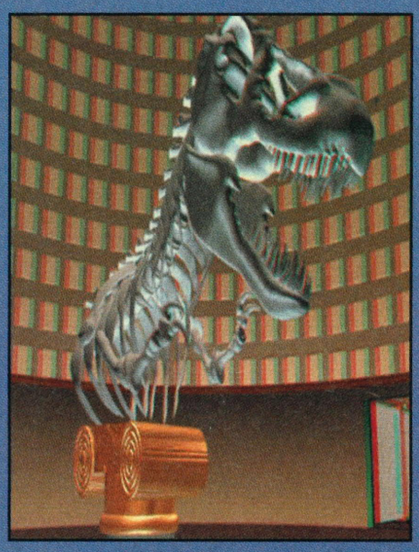
Personally I've never been too happy with the whole interactive movie idea, I find that the idea of merging games and films sits rather uneasily.

But what if you were to combine immersive VR with the full-motion video handling of MPEG (Motion Pictures Expert Group) CD hardware? You could then have an artificial world viewed at near TV quality. In effect, TV taking place all around you.

Just imagine, you could actually step into a movie. You could walk round the main characters, an invisible observer in the thick of the action, peering over the actors' shoulders, out of windows, literally anywhere. What an experience that would be.

Sure, it would involve a radical rethink of cinematography, but that's already happening to a certain extent. Movies and games are already being filmed at the same time, like Demolition Man on the 3DO. So why not VR movies? Or even a VR cinematropolis?

Similarly, VR could have a far-reaching effect on education. There is still an underlying mistrust of computers among many school teachers — the trouble is that kids don't actually learn a great deal from the vast majority of education software they come across — or not in the way they're meant to, anyway. What they learn is how to beat the computer by applying their video game skills, pressing buttons



the lenses and adjustable Inter Pupillary Distance (IPD). The displays can also function as a normal computer monitor.

- Forte's proprietary three axis VOS motion tracking system built into the headset. The on-screen view follows the movement of the wearer's head.
- Internal 16-bit controller card. Handles the processing of the stereoscopic images and the motion tracking to the LCD displays. Connects to the feature connector on a standard VGA card.
- The 'CyberBat' floating controller. Games are controlled by a combination of motion tracking in the headset and the movements of the CyberBat.

"Try to imagine being able to turn your head and see Klingons on your starboard bow in a space sim, or a haunted house mystery where something demonic really is creeping up behind you"

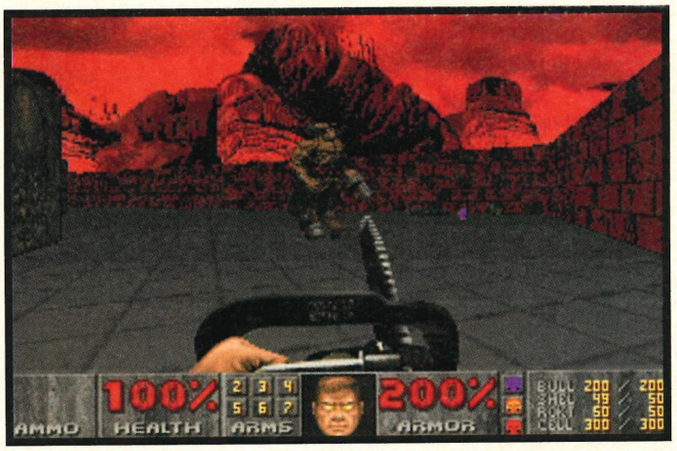
How was it for you?

Close the visor, kick into the game and suddenly you're immersed in the artificial game-world generated by the computer: you become the centre of the action, able to look all around you simply by turning your head while your movement and actions are handled with the multiple buttons on the CyberBat. This is the general idea, anyway.

Past experience has shown that technology is easily let down by a lack of decent software (ReelMagic and Commodore's CD32 console) but when Forte the VFX1 it was already running Knowledge Adventure's Speed, Chuck Yeager's Air Combat and most importantly — Doom. This at a stage when the VFX1 isn't due for release for another four months.

Having seen what is possible at the top end of the scale at a recent VR conference, I was impressed with the quality of the display on the VFX1. I wasn't ecstatic, but it was certainly better than anything I'd seen except on dedicated, high-powered VR systems.

Take Doom, for example. The display is detailed, it pans smoothly, and although there is a slight fuzz and graininess to the image, it's pretty damn close to the original quality of the game.



Forte has a non-stereoscopic version of Doom up and running.

Mind you, five minutes into the game and I'd completely forgotten — or my eyes had decided to ignore — the graininess anyway. You could lay some of the blame for this on the fact that it was Doom we were playing — networked at that — but the sensation was the same with Chuck Yeager even though it's a very old game. It's good. So good in fact that you just don't want to stop playing.

The sensation is difficult to describe. Try to imagine 3D enemies piling at you from all directions, or being able to turn your head and see Klingons on your starboard bow in a space sim, or a haunted house mystery where something unpleasantly demonic really is creeping up behind you ...

Now add the 3D sound capabilities of a Gravis Ultra-Sound card and you should be able to see why it's so easy to lose all track of what's going on in the outside world — so effective is this sensation of 'being there'. The CyberBat adds to the sense of involvement, simply because you're not tied down to the real world of a desk and a joystick. Dean was hacking away inside his own personal nightmare (being chased by Cal with a chainsaw) for nearly an hour without ever realising that he was being photographed and the lights in the room had been turned on and off three or four times ... so yes, it's very playable.

Which also brings me back to the design of the headset itself. I've spent more than my fair share of time in arcade headsets recently — purely for research, you understand — and have often struggled with them. The sheer weight of the massive lump attached to your face has a momentum all of its own, and wearing one for any period of time is knackering.

But after a spot of fiddling to get the focusing and fitting right to start with, the VFX1 is remarkably light and comfortable to wear, and being cut heavily away from the face, it doesn't leave you with that vulnerable, claustrophobic sensation you get with full-face headsets. Cal, Dean and myself were each using the helmet for long periods of time without any sense of the disorientation or eye strain we were half expecting.

Bring on the games ...

The VFX1 could well find itself used for all manner of bizarre applications, such is the nature of VR. These range from straightforward architectural design, construction and engineering applications, to property sales and education. The most macabre idea of the bunch is 'virtual medicine', where research by med-

until they hit upon a sequence that works.

But what if the software was designed to place the child in an exploratory situation? The child could be encouraged to learn by discovery and experience, to react to what they see and hear, rather than follow simple sequences of button-presses. With the VFX1, Forte has the technology: all you need next is the raw information.

As I was writing this, I got a call about the Forte system from a Mr Walwyn, director of the Heritage Management Group. His company is involved in a project to catalogue and record little understood and endangered cultures precisely for educational and reference purposes. "We're very interested in this system [the VFX1]," said Mr Walwyn, "it could be the most effective way to put this sort of information across."

Indeed this is exactly what Immersive VR could make possible, enabling school-children to experience, first-hand, life in a (virtual) mediaeval village; letting them to walk amongst the dinosaurs on prehistoric Earth; to watch London as it burns in the Great Fire or even witness the signing of the Declaration of Independence.

Right now we're swamped with CD-ROMs crammed with information by anyone with access to a database and some video footage. If that information, time and energy was devoted to recreating artificial worlds and environments for teaching purposes, if the learning experience was truly active rather than passive, and if the hardware is developed further — Virtual Reality could become the educational equivalent of a time machine.

Junkies, accidents and personal hygiene ...

There's already massive concern over the damage computer games are doing to kids with the hours they spend staring at the flat screen. The medical arguments for and against VR are well-documented and range from permanent damage to immature eye muscles from prolonged exposure, headaches, eye-strain, not to mention disorientation and nausea. Feelings of nausea are most common and this 'sim sickness' (could this be the next Maxis game?) as it's now known is often induced if the frame rate is particularly slow — say between five and 14 frames a second. There are no clear cut answers and there is still a lot of research to be done on the relationship between the effects of VR on the brain's interpretations of reality.

> " Rooms full of broken furniture, and local casualty departments overflowing with dazed people in dented headsets who've toppled out of second floor windows while fighting their way through the hordes from Horror Manor ..."

Medical worries aside, what about the negative effects of VR in everyday life? Certainly it's more exciting and involving to play within a 3D environment than to stare at a 2D one. It's also a lot more addictive and escapist.

But there are plenty of peo-

ical students is carried out on 'virtual corpses' rather than the real thing.

But let's forget about 'serious' applications for a moment, what most of us will be interested in is the VFX1's games potential and anyone who has tried the location-based entertainment arcade systems (LBEs) pioneered by British company Virtuality Inc (formerly W Industries) should be excited by the prospect.

The success of any home virtual reality system is always going to depend on having the right games and general software available for it. Without that, you've wasted over £500 on a big hat.

Unfortunately, with all their expensive hardware, commercial VR systems have rarely been up to the task of delivering the finished article — a game worth playing. Once the initial novelty value wears off, you're left with a sense of disappointment, and a feeling that something is missing besides the numerous pound coins you've spent for a few minutes action.

Hopefully, the Forte VFX1 has the answer to this problem, simply because it can run conversions of existing games. The most likely candidates would be the first-person perspective games like Terminator Rampage or Wolfenstein 3D, or how about a VR version of Ultima Underworld? That could really put the 'role' into role-playing.

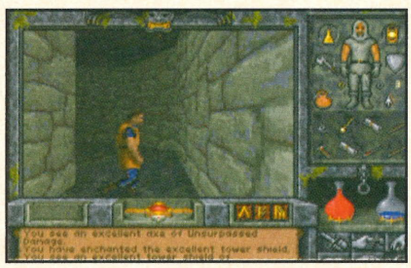
Similarly, any 3D flight sim or racing game using shifting perspectives could make the cross-over, along with all the graphics techniques we've come to expect in modern games — shifting perspectives, texture mapping, Gouraud shading and so on. None of the blocky, cumbersome polygons that have come to be associated with earlier attempts at VR games. You get exactly the same gameplay that came with the game in its initial incarnation, but enhanced by this sensation of 'being there'.

What's more, the VFX1 should prove an attractive proposition to software developers. Not necessarily because we're all going to throw away our PC monitors overnight and only play VR games, but because adapting current games for the system is a low-risk bet for developers.

According to Forte, it's a relatively simple and inexpensive programming task to take any existing first-person perspective game or simulation and convert it to run with the VFX1. The full developer's kit costs £2,600, and most of the work goes into adapting a game for the tracking system. Creating the stereoscopic image simply involves writing the video data to a second video buffer controlled by the VFX1's internal card. Beyond that the VFX1 uses the PCs own capabilities to run the game in a normal way.

The VFX1 is already running a non-stereoscopic version of Doom, and Forte is talking to Id about having a full stereoscopic, 3D sound, VR version of Doom up and running as soon as possible. After all, the game is such a natural for VR that several big names are already squabbling over who's going to convert it and port it over to the big arcade VR machines.

> "With VR, people's expectations often exceed the hardware. The VFX1 is a neat device, but it's too early yet, so no promises. It will depend on how easy the software port is."
>
> Jay Wilbur, business manager, Id Software, the creator of Doom



Will we get the chance to step into Ultima Underworld?

ple who can't tell the difference between reality and fiction — people who honestly believe the characters in Coronation Street are real, for example. For them the lines are already too blurred to cope with.

VR is an escape from the grim realities of everyday life to an artificially created 'better place', and it becomes all the more tempting to lock yourself away. Are we about to create the last word in electronic junkies, wasting away in an artificial world? Will the entire human race call it a day, and retreat into virtual worlds of their own, with a pint of lager and a straw attached to their VR helmet?

Okay, that's all rather speculative and far-fetched. But on a more down-to-earth note, there is one big drawback with head-mounted, immersive virtual reality systems — you just can't see what's going on outside. You can get so wrapped up in what you're doing that it wouldn't matter if there was a war going on in your front room, you just wouldn't notice.

So, first comes the embarrassment. Almost everyone playing a VR game in a headset does so with a decidedly gormless expression, mouth hanging open, face occasionally twisting into a grimace or snarl. All you need is to drool a little at the right time (depends on the game, I guess ...) and you'll look like a complete plonker.

Take Virtuality Inc's latest 2000 series arcade game, Virtual Boxing. It sounds like a great game, it probably is a great game. But it tracks the movements of your hands as you fight your invisible (to the hysterical crowd of onlookers) opponent. Call me a screaming introvert if you will, but I'm not sure I want to act out my fantasies of becoming heavyweight champion of the world in front of Joe Public. Where will it all end, I ask you? Virtual sex? Can you imagine watching somebody engaging in a virtual orgy? Probably. At least with a PC headset like the VFX1 you get to do it in private.

Then there's the pain. As it stands, the VFX1 can easily be used while moving around — if you want to live dangerously.

The logical next step is to add motion tracking to the entire range of body movements, until you come up with a complete body suit. By the time it gets to this point, if you're planning on indulging in a spot of hectic VR gaming, you should seriously be thinking about doing it in a padded room.

I have visions of rooms full of broken furniture, and local casualty departments overflowing with dazed people in dented headsets who've toppled out of second floor windows while fighting their way through the hordes of Horror Manor ...

Come to think of it, what happens when someone drops dead with a heart attack?

A game like Doom is scary enough in 2D. Play it with the lights off and the sound cranked up loud and it can really make you jump. In immersive 3D with directional sound, the shock factor is going to go through the roof.

The lawsuits could go on for years.

Daft things...

There's a rumour going round that legislation is on the way to restrict the use of arcade-based VR systems in America, the land of the free and the bizarre. The reason? Hygiene. Not epilepsy, not eye-strain or disorientation, but personal hygiene.

It sounds daft, I know, but think about it. Around two hundred people a day use your average arcade VR machine.

That's two hundred different sets of dandruff, head lice and God only knows what being passed around.

So now it seems, kids, that you can stop worrying about who's sharing your needles or borrowing your condom — you're obviously more likely to worry instead about who you're sharing your headset with ...

Isn't it great to see a country with its priorities right?



Speed and 3D Dino from Knowledge Adventure, a leading US publisher of educational and multimedia software, Accolade, Bethesda (for Delta V), New World Computing, LucasArts and Origin have all expressed an interest in adapting their games for the system.

This is going to be crucial if there are going to be enough games ready to support the system. OK, so they will be conversions of existing games because it's a cheap way for software houses to dip a toe in the VR water. But that's no bad thing either — fancy Virtual TFX or IndyCar Racing, or dipping into Nam with Seal Team?

What there probably won't be in abundance is original games specifically designed to make the most of VR in general and this headset in particular. With production costs soaring, software developers are becoming very cautious creatures. It's likely that they'll hold off with their wallets until they see how well the system sells.

How do they do that?

The reason we haven't had a home VR system before now is simply one of manufacturing cost. Try and do it on the cheap and you invariably end up with a VR system that isn't worth using because the essential components — like the LCDs, the tracking systems, and the lenses — are too specialist to cut easy corners on.

Sega, with all its financial muscle, tried and failed to get a mass-produced headset out last Christmas. According to Andrew Wright, software product marketing manager at Sega Europe, "Sega has a number of VR products under development, including a headset. But there's no point in releasing the hardware until it's been thoroughly tested and the software is ready to support it."

Sega has now turned to Virtuality Inc to help out with the hardware. Virtuality, which specialises in location based entertainment centres (LBEs) — or arcade VR machines to you and me — is itself interested in consumer VR systems, but remains committed to an expensive six axis tracking system. With the necessary Polhemis trackers costing over £2,000 to start with, Virtuality Inc will be sticking with LBEs for the foreseeable future.

So how does the VFX1, a plausible games headset manage to do the business at a sensible price? According to Paul Travers, president of Forte Technologies, the company has "been developing its own three axis tracking technologies for several years with the sole aim of producing a mass-market virtual reality system."

So, the company has been working towards a VR system on the quiet. By developing this way, there's no need to buy in expensive technologies and know-how from other sources, and the time to source and test affordable components.

What it all boils down to is selling the headset in numbers. Forte isn't pretending to compete with £250,000 military and industrial simulators.

VR: the big picture

Types of VR?

1. Immersive VR: separated and distanced from the real world by a VR helmet or head mounted display, Immersive VR lets you view and hear the VR world in 3D. This is the ultimate VR experience. The immediacy of the sights and sounds lend reality to the artificial world and you can move around the world with a VR mouse or manipulate objects with a dataglove. Datasuits could involve the whole body in the simulation.



The best known immersive VR systems are those pioneered by Virtuality Inc. The company has just released its Series 2000 games for the arcades.

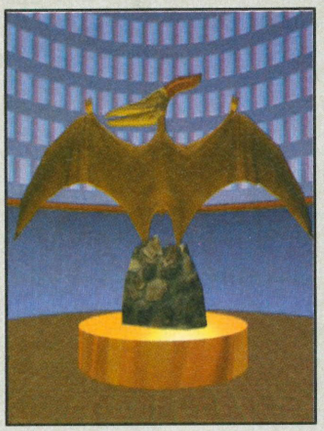
2. 3D modelling: a 2D simulation of a 3D environment. This isn't really true VR at all simply a realistic rendering of, say a kitchen, that exists in a three dimensional space inside the computer. Like a room in Ultima Underworld or Doom you can view your surroundings and move around within them. OK, so it doesn't sound like a barrel of fun but having a Virtual Kitchen for example, can allow you to create your dream kitchen, avoiding the aggravation of putting up shelves, painting walls and measuring cupboards and then discovering that the whole thing is the wrong shade of blue and the washing machine doesn't fit where you planned to put it.



Virtual kitchen or virtual house, one of the most common applications of commercial VR is to display 3D structures on 2D screens for modelling and designing environments.

3. Stereoscopic 3D: viewing objects on a monitor screen that appear to be in 3D when viewed through a special pair of 3D glasses.

The effect is created because the computer draws two separate images which, when displayed at different frequencies and viewed with the aid of the glasses, fool your brain into thinking that they are a solid 3D picture.



You want to try telling a dinosaur he's out of focus? Be my guest. A stereoscopic version of 3D Dino from Knowledge Adventure (Guildsoft) is already running on the VFX1. If you haven't got a headset, try 3D glasses.

The cutting edge

While the VFX1 may well have stolen the media limelight, the big VR pioneers like Superscape, Division and Virtuality Inc have been concentrating on arcade, industrial and even military simulations. Using high resolution visuals and the processing clout of Silicon Graphics workstations, VR has taken a quantum leap forward. Gone are the days of blurred, grainy polygons and headsets that weighed more than a ton of bricks: simulations now use high resolution images and 3D digital sound. The future may be here, it still costs an arm and a leg. Of course if you don't mind losing the odd limb, Virtuality Inc and Division are currently leading the technological charge.

Division:

Division claims that its new Provision VR system is the most powerful machine around. The system can render over 160 million pixels per second, all of which are Gouraud-shaded, photo-textured and fully light-sourced. At its highest resolution, the Provision VR headset can display images up to 1,024 by 768, producing the crispest images outside of a multi-million pound military simulator.

With a lightweight helmet (in matt black, of course), Division are concentrating on simulation and training applications, 3D design and have recently announced a molecular modelling application in partnership with the University of York and Glaxo. But believe me, just one five minute go on their alien infestation game and the experience will truly blow your mind.

Like Virtuality's stuff, the experience doesn't come cheap but if you've got a spare £12,000 lying about or fancy selling your car, the Provision VR system will knock your socks off. Probably at 100 paces.

Virtuality Inc:

Best known for its stand up/sit down cabinet-sized arcade machines, Virtuality has just launched its new Series 2000 model featuring lightweight headsets, real-time playing action, texture-mapped 3D colour and 32 channel digital sound.

Generally acknowledged to be the market leaders in mass market VR, Virtuality concentrates its marketing push around a wide range of reliable machines and technology, targeting potential investors who want to set up and run their own VR arcades.

The Series 2000 also runs a new breed of multi-player interactive games and currently supports: X-treme Strike (a 3D space combat sim), Virtuality Boxing and Zone Hunter (a futuristic urban warrior sim). How much? Only a cool £13,000 or so — and that's if you're buying in bulk.

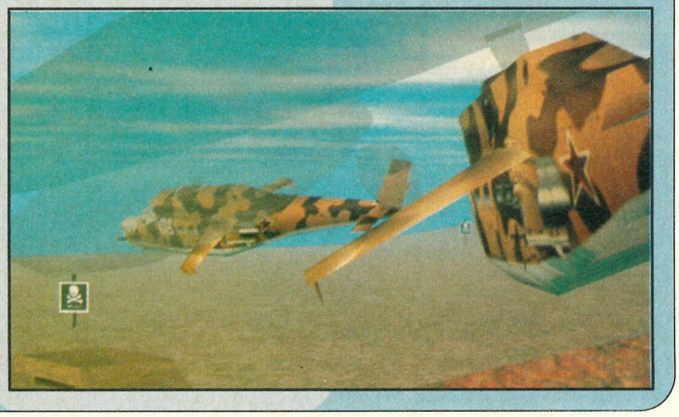
ChartScreen:

A team combining ex-W Industries hardware and ex-DID software know how, Chartscreen have the most affordable British VR system available.

The VRex retails at around £1,800, and features optically coupled three-axis tracking, twin LCDs and built-in stereo sound.

It is mostly aimed at small business and specialist users, with it's advanced capabilities for 3D world modelling.

This sort of stunning high resolution military simulator from VR specialist Division will set you back more than an arm and a leg. The results are awesome. Gimme, gimme.



> The VFX1 is not perfect but it's the first step – the first and only VR system for less than $1,000. We will definitely be developing for it.
>
> Jon Maiara, technology director, Looking Glass Technologies

The company has gone for a compromise instead. By setting out a standard for home VR — a certain quality of resolution, sound capabilities, level of tracking sophistication and so on — Forte has managed to keep the costs down. Travers is convinced "no-one else can produce this quality of VR at this price".

Take, for example, the three axis tracking system — roll, pitch and yaw. This is a considerably cheaper approach than the more sophisticated systems which also use X,Y and Z spatial co-ordinates. Forte has come to the conclusion that three axes are sufficient for home VR, which I would have to agree with.

Then there's the question of sound. Since Forte was heavily involved with the initial development of the 3D sound technology for the Advanced Gravis Ultrasound it already had that technology earmarked for the VFX1 at no extra cost ...

The VFX1 also uses as much of the basic PC's capacity before falling back on dedicated hardware. So, the PC does a fair share of the work, and the VFX1 will will take advantage of future video card developments, including PCI and Local Bus video cards, new sound cards and faster processors.

That upgrade option is going to be critical. As I said, Forte is keen to set an open standard for VR. What they don't want is for people to have to buy a complete new VR system every time the technology improves (honest). The idea is that you will be able to replace components like the lenses and LCDs to upgrade the system as you go, while keeping the original headset. Forte expects this to be a major factor in protecting its head start over other VR developers. Seems fair.

Where to from here?

There are still some refinements to be made to the VFX1. For a start, the pre-production system we saw weighs in at 3lbs, rather than the target weight of only 1.5lbs for the finished version. And, the CyberBat has yet to have its final cosmetic decoration added before it's ready to face the public.

More importantly though, Forte needs to nail down the tracking system properly, and remove the slight graininess in the display if at all possible.

The latter is one of the first things that hits you when you try the system. This can be done by adding a filter over the lenses to increase the luminosity of the pixels — currently running at 20 per cent.

There is also the possibility of increasing the resolution of the Japanese-manufactured LCDs in the future, but at the moment these are a major factor in the cost of producing the system.

And lastly the pre-production model has a nasty tendency to leave the wearer with an embarrassing — temporary, but embarrassing nonetheless — red blotch on the forehead and a bad hair experience. Still — if you want VR, you can live with it messing up your hair.

The first hundred headsets are being run out by Forte right now, prior to the system going into full production in the late autumn. If you're going to shell out £650 you want to know that there will be games to run on it. That's going to decide whether the succeeds or joins the Betamax graveyard.

I don't think there's ever been any question that virtual reality used with the right style of game is the way forward. So, it's up to Forte to convince the developers, but I don't think that's going to be much of an uphill struggle — this system is just too good to ignore.

Contact: Forte Technologies
USA 716 427 8595

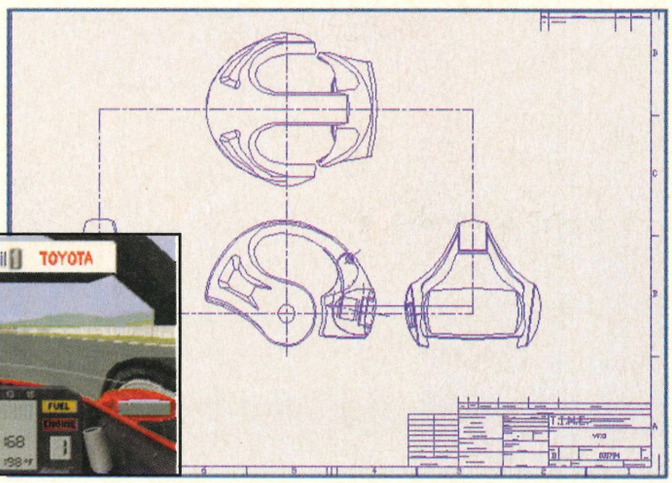
Forte Technologies

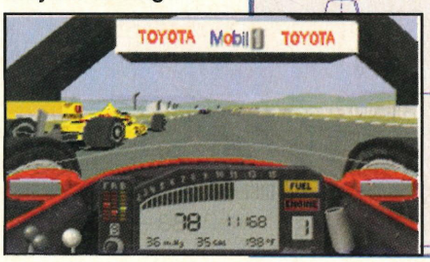
Forte Technologies is an American sound card specialist based in Rochester, New York.

The company was founded in 1987 by Paul Travers to manufacture sound cards, which were then almost unheard of for the PC bar the Ad Lib.

Forte has a long standing relationship with Advanced Gravis, and licensed the original UltraSound to Gravis a couple of years ago, before selling it outright to the Canadian joystick manufacturers.

As yet, Forte has not decided whether to market the VFX1 itself, or whether to license the system through Advanced Gravis or a similar company. Likewise the decision to bundle the CyberBat with the headset or separately has not been confirmed as yet.





Will the VFX1, right, bring us the chance to play virtual IndyCar Racing?

IN BRIEF

History of VR

1832 – CHARLES WHETSTONE INVENTS THE STEREOSCOPIC VIEWER, a machine that fooled the eye into thinking that flat 2D objects possessed depth and were in fact 3D. Today, stereoscopic images help designers and chemists visualise complex objects in full 3D even though they are displayed on a 2D monitor screen.

1962 – Morton Helig, a young cinematographer invents the 'sensorama', a huge wardrobe-sized machine that combined pictures, sounds, movement and fan-blown air to simulate a ride through a flower market or the streets of New York. Sadly it failed to catch on but became popular as a coin-op machine in the arcades.

1965 – Ivan Sutherland, a young engineer, wrote about "a looking glass into a mathematical wonderland".

Sutherland went on to develop the first head-mounted computer display and co-founded Evans & Sutherland, now a major supplier of military simulations.

1970 – The term "Virtual Reality" was coined by one Myron Krueger, a man who looked beyond mere head-mounted displays, prefering to try immerse a person in a whole virtual video room.

1978 – Frederick Brooks took VR into medical and chemistry fields, generating 3D atoms as big as balloons that could be manipulated within the virtual environment. With these virtual atoms programmed to act like real atoms, scientists can manipulate the molecules enabling them to quickly design new drugs and chemicals.

1981 – Thomas Zimmerman has a dream to conduct an invisible orchestra. Wiring up an old gardening glove, Zimmerman connected the glove to his Atari 400 computer. The invention was later to become the Dataglove.

1982 – VPL Research (founded by Zimmerman) produces 'EyePhones' and a DataGlove, the first mass market VR equipment.

1984 – 'Cyberspace'. First used by Cyberpunk guru William Gibson in his novel Neuromancer, cyberspace is a term that describes a VR network, a huge 3D information space where people interact and work. The VR community was quick to latch on to the term and have used it ever since.

1992 W Industries launches first mass-produced commercial LBE — Dactyl Nightmare.

1993 – W Industries goes public and changes its name to Virtuality Inc. Joe Waldern, the company president, becomes an instant millionaire.

1993 – SEGA demos a sub-$200 VR headset at Winter CES in Chicago. Promises Christmas release ...

1994 – Virtuality Inc launches 2000 series LBEs and new games. Still no sign of the Sega headset ... Forte Technologies launch the VFX1. Manchester United win the treble (not).

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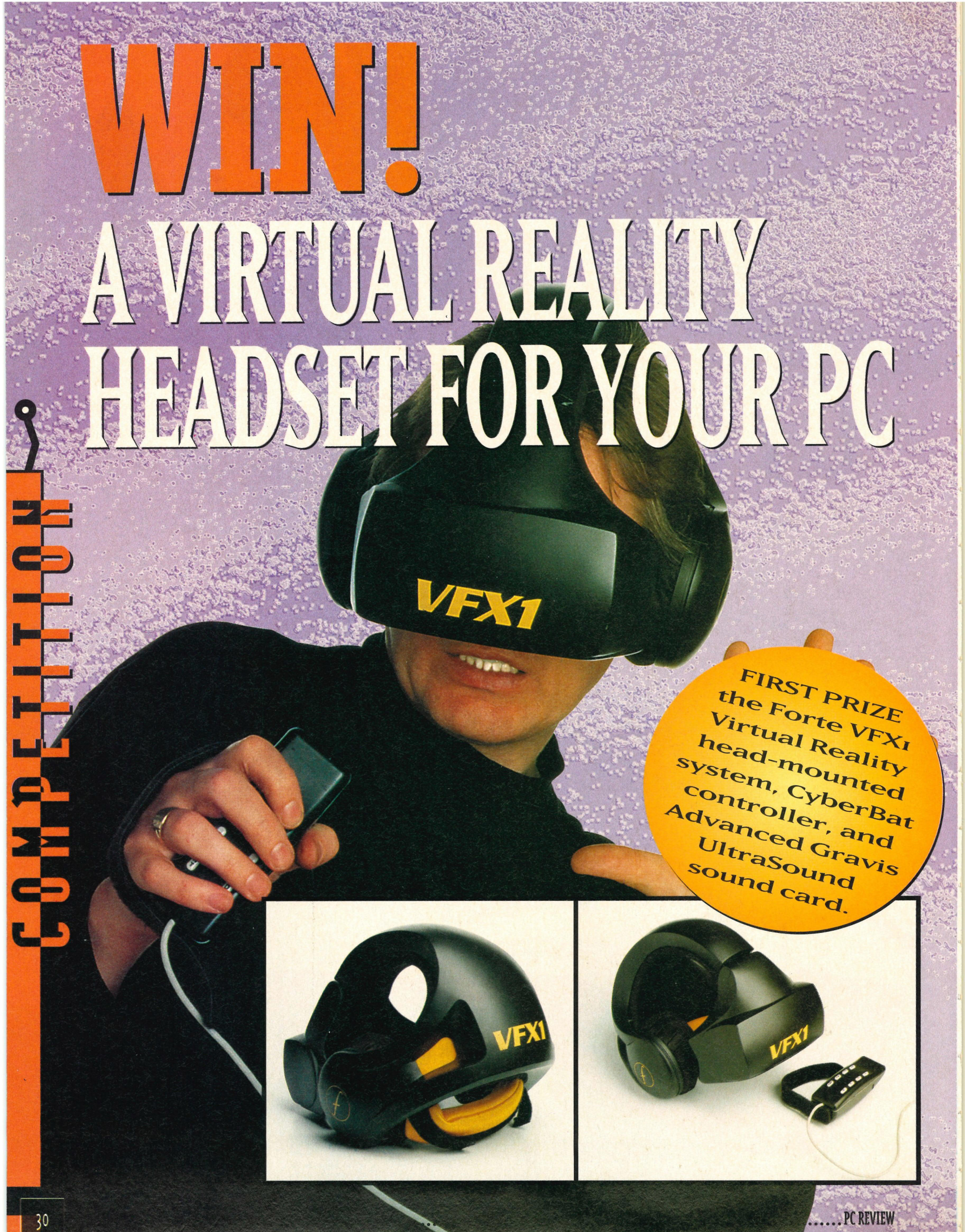
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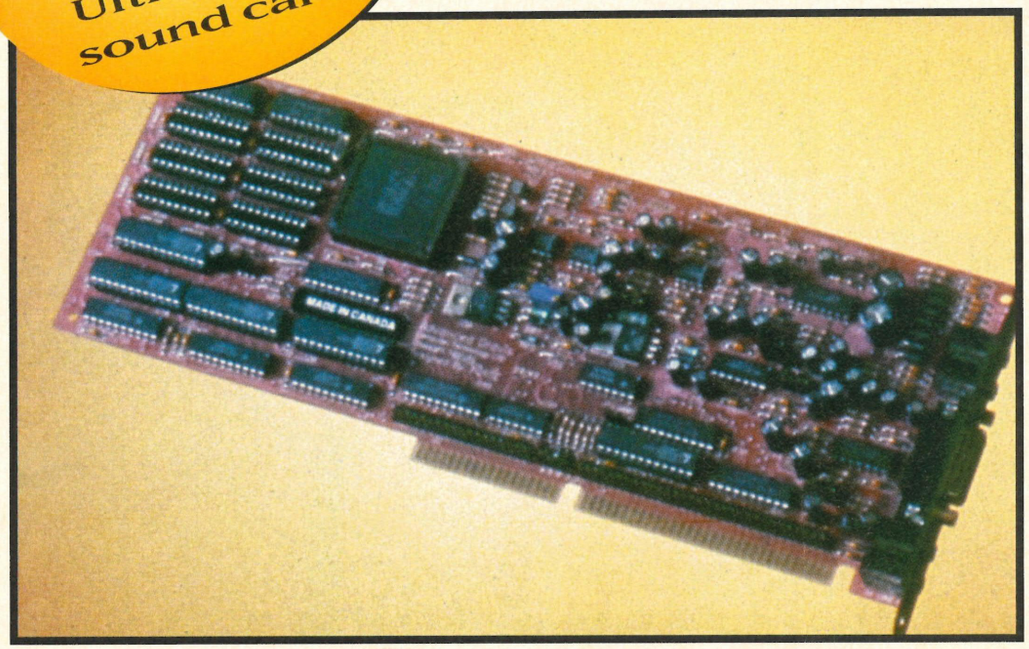
A VIRTUAL REALITY HEADSET FOR YOUR PC



FIRST PRIZE
the Forte VFX1 Virtual Reality head-mounted system, CyberBat controller, and Advanced Gravis UltraSound sound card.

COMPETITION

Five second prize winners will receive an Advanced Gravis UltraSound sound card!



The questions

1. **Name the three major types of VR:**
2. **Who coined the term "Virtual Reality"?**
3. **Where is Forte Technologies based?**

Rules

- **Employees of EMAP, Forte Technologies, Advanced Gravis, their families and associates are not eligible to enter this competition.**
- **Only one entry per house hold, please.**
- **No entries received after 15th May 1994 will be accepted.**
- **The editor's decision is absolutely final.**

Be the first person to own a home Virtual Reality kit in our exclusive competition. The first prize winner will receive a Forte VFX1 headset, plus a unique CyberBat virtual controller and a Gravis UltraSound sound card for that all-important 3D sound experience.

Five second prize winners will each receive a Gravis UltraSound, and there are five Gravis Analog Pro joysticks to give away to the third prize winner.

The VFX1 consists of a lightweight adjustable headset with a flip-up visor, twin Epson colour liquid crystal displays for a stereoscopic image, independent focusing lenses, three axis motion tracking (the on-screen view follows the movement of the player's head) and an internal 16-bit controller card. The built-in headphones will work with any 16-bit sound card, but for full 3D sound a Gravis UltraSound is required. Movement is controlled by Forte's unique floating controller, the CyberBat which, together with the motion tracking, allows the player to move freely. The kit will work with a standard 386 PC, although a 486 is recommended, and the headset plugs straight in to the serial port.

The Gravis UltraSound offers 3D sound in its native mode, and can also emulate both AdLib and SoundBlaster soundcards. The card has an on-board memory of 256K, expandable to 1Mb, and there is full MIDI support. To use the UltraSound you need a 386 or better, with a free 8- or 16-bit expansion slot.

The Gravis Analog Pro is one of the most popular joysticks around, and features two handle top buttons, trigger, throttle and padded flight grip.

How to enter

To win one of these superb prizes, answer the questions above correctly, and send your entries, on the form below, to this address:

Virtual Reality competition
PC Review
Priory Court
30-32 Farringdon Lane
London EC1R 3AU

Five third prize winners will win Advanced Gravis Analogue Pro joysticks!



Virtual Reality Competition

Answers

1. Name the three major types of VR:
a).....
b).....
c).....

2. Who coined the term "Virtual Reality"?
.....

3. Where is Forte Technologies based?
.....

Name.....

Address.....
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❑ **Tick this box if you do not wish to receive any further information from companies associated with this competition**

Closing date May 15 1994 *PC Review May 1994*

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DEFE

THE F-14 TOMC

The steam catapult hurls you into the sunset. There's an incoming threat to the fleet. It could be anything: from 'Bear' bombers to 'Flanker' fighters. Over your shoulder you see your wingman shadowing you. Down below others are waiting for your call.

This is *Fleet Defender* : the definitive simulation of the F-14 Tomcat from MicroProse.

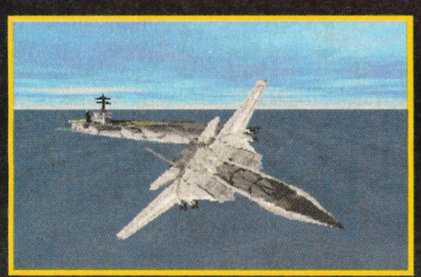
The threat has melted away. Now, you'll have to land. This'll take skill, nerve and lightning quick reactions. Drop onto a 600 ft strip and 'catch the wire' - 150 mph to zero in two seconds!

This is your job: it's what you've been trained for.

This is *Fleet Defender* : featuring some of the most striking graphics ever seen on a flight sim: rolling terrain, rough seas, even the rivets on the Tomcat's skin.

Fleet Defender: the F-14 Tomcat Simulation

This one will take your breath away!





MICRO

FOR IBM PC COMPATIBLES

VY'S TOP GUN!

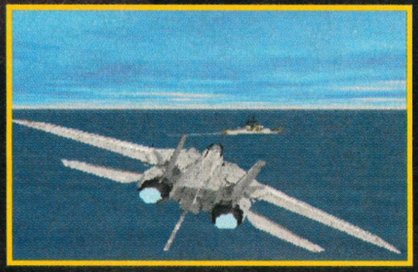
CET NDER

AT SIMULATION











PROSE

ACTUAL GAME GRAPHICS SHOWN

CD comes of age

Suddenly the world's gone CD crazy. With the number of CD-ROM releases trebling in the last three months, is this trend likely to continue? John Bennett talks to software developers and publishers about their plans for CD-ROM games this year.

FEATURES

Maybe, just maybe, the compact disc has finally got its act together. Certainly the current volume and quality of new CD games being output, gives every indication that a CD-ROM drive is an essential purchase for any PC games player today.

But then, how many false starts have there been to the supposed 'CD revolution'? What makes 1994 so different?

> "However attractive CD-ROM drive prices are today, you just know they'll be even more seductive tomorrow."

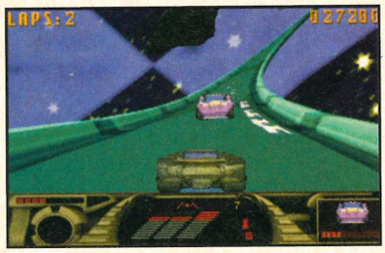
Partly it's the culmination of several developments from the past year.

First off, the hardware has become much more affordable. Single-speed Mitsumi drives were not exactly anybody's idea of state of the art technology, but they did the job (just about) and didn't break the bank.

More importantly they helped force other CD-ROM suppliers to rethink their pricing strategies and bring the overall cost of CD-ROM drives down to an acceptable level. As such the Mitsumi drives probably did more than anything else — bar the Creative Labs Upgrade Kit — to shift CD hardware into homes.

In the next month or so, we'll see the arrival of the next generation of affordable CD-ROM drives, in the shape of NEC's triple speed 3Xi. Costing around £370, it is likely to force the price of the better quality double-speed drives down from that mark to a more affordable level. It won't be too long, either, before the current crop of £1,000-plus quad speed drives begin to drop in price, thus forcing down the price of double and triple speed devices down to bargain levels, and so on. The personal CD-ROM market is currently at that frustrating stage where however attractive prices are today, you just know that they'll be even more seductive tomorrow. The argument against waiting for prices to fall further before shelling out is simple: do you want to use CD-ROM software now, or do you want to start using it in six month's time. The other argument is that you could end up waiting forever, because the next technological development, or price cut, is always just around the corner.

But however good and affordable the hardware is or will be, without the software to make it attractive it will fail to make an impression. And that's where CD has been badly let down in the past; how can you succeed when you're backed by a mass of mundane reference software and debatably



Out this month from French developer Cryo, via Mindscape, Megarace is a confirmed CD-only game.

For more on CD-ROM drives and software, see our brand new product section, starting on page 109. We've got reviews of the latest affordable drives on the market, and new utilities and reference software.

Below right: Sierra's Outpost is the company's first CD original. Below left: still under development, Interplay's Stonekeep has reached the stage where it would need 22 floppy disks, and so CD-ROM has become the only option.





DEVELOPING FOR CD?

ACCOLADE
Mark Harman
Marketing manager

"Accolade will continue to publish games on both formats with no particular emphasis on either. The company is starting a budget games label on CD."

ACTIVISION
Janine Johnson

"Pretty much all our releases will come out simultaneously on CD and floppy from now on. We did Return to Zork last year, of course, and found that the CD version outsold the floppy version by three to one, which was something of a surprise to us, to be honest."



Return to Zork: Activision took Infocom's venerable text-only series and added multimedia elements such as cfull screen graphics, and digitised actors with speaking parts. An MPEG version is also expected.

BLUEBYTE
Thomas Herzler
Managing director

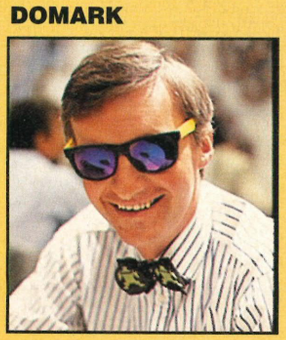
"We're not in the business of making movies ... a CD to us is just like a big hard disk. If we can use the space to improve the game then so be it. If we don't need it we won't use it."

DIGITAL INTEGRATION
Debbie Durrant
Marketing manager

"We're about to start releasing budget products on CD under a new label, Action CD. The first two to come out will be Railroad Tycoon and Silent Service II at £19.99 each, and we're trying to sign up as many products as possible.

"In general, we're supporting CD-ROM fairly heavily. Tornado 2 has been put back until next year, but we're currently concentrating on a helicopter simulation, which will be out in the first quarter of 1995 – and definitely on CD."

DOMARK



Mark Strachan
Managing director

"Every single PC game we produce now will be available jointly on CD and floppy. We take the view that it's now a standard format, and we're trying to get our people to think in terms of CD first, then a cut-down version for floppy disk.

"However, for the foreseeable future, we feel we should play safe and offer the games on floppy disk as well as CD."

EMPIRE
Rik Yapp
Development manager

"CD-ROM is the future of PC games. Although you do not need hundreds of megabytes to make a good game, it will become the standard and will give developers even more scope and a greater challenge too."

GAMETEK
Adrian Cale
Marketing manager

"Games will be developed primarily for CD-ROM, although we aim to keep the floppy market covered while it's still there.

"People expect more of games on CD, which makes them more expensive to develop. Pricing is therefore crucial — Gametek products will retail at £39.99.

"I want to encourage people to buy CDs because they're so much more difficult to pirate than floppy disks. They protect developers like David Braben who have to put up to five years work into a game and want to see their royalties."

GREMLIN GRAPHICS
Steve McKevitt
PR manager

"We're going to major on floppy, but we have one very major CD-only title in the pipeline and we plan to develop on both formats from now on. Our first CD-ROM title should be out by the time you read this (Litil Divil)."

INFOGRAMES
Beverley Gardner
PR manager

"Currently we're thinking CD-ROM before we think floppy disk. Shadow of the Comet 2, for example, will go straight on to CD-ROM, with a cut-down version on disk to follow.

"These aren't direct ports from disk, either. In the CD-ROM version of Alone in the Dark 2, there's a new character, ten new locations and more gameplay."

INTERPLAY PRODUCTIONS
Alison Beasley
Marketing manager

"Stonekeep (still in development) would work out at 22 high density disks right now ... it has to go on to CD. CD is our future. We've stopped commissioning any new floppy products. We're completely committed to CD-ROM. We made that decision two years ago and we think it was the right one."

MAXIS
Chris Knight
PR manager

"We are now starting to produce on CD-ROM — SimCity 2000, for example, will be coming out on CD, and we have two other titles this year. We think it will be a major format."

MICROPROSE
Simon Butler
Marketing manager

"Microprose and Spectrum Holobyte's strategy is to encourage the growth of this [CD] platform. We will design top quality games specifically and exclusively for the CD-ROM ... and we are dedicated to offering all our best disk-based products on CD as an alternative medium.

"Many of these CD versions will include enhancements on their disk-based counterparts at no extra cost."

MINDSCAPE
Geoff Heath
Managing director

"Within the last three to four months, our sales on CD-ROM have exceeded those on floppy disk, and CD sales have represented 30% of our business in the last six months.

"If you'd asked me a year ago, I wouldn't have said it would have grown this much this quickly.

"Games such as Megarace and Dragon Lore simply couldn't be done on floppy disk, and we have another four or five products coming out which are CD only, so it's not just a question of selling souped-up disk titles.

"We're trying to create products which will encourage people to buy CD-ROM drives."



Megarace: the French development company Cryo have proved that it's possible to create fast, interactive games on CD-ROM.

OCEAN
Nick Clarkson
PR manager

"We've realised that the CD-ROM market has taken off big time. Anyone buying a new PC puts a CD-ROM as a top priority.

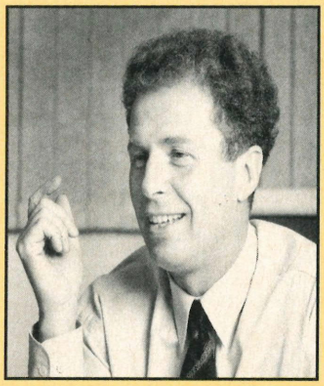
"In acknowledgement of this, our development policy has changed from the start of this year and all PC games — excluding those in the arcade genre — will lead on CD-ROM, exploiting all of the medium's bits and bobs.

"For example, Inferno CD will come out first, around a month before the floppy version which loses some of sound, some animations and full-motion video."

SIERRA
Dana Berkmen
Managing director

"We're about to launch a big promotion on CD-ROM with about 30 to 40 titles to push which will demonstrate that we are the biggest CD publisher in Europe. We believe that CD is very much the way to go, especially since with our latest program, Gabriel Knight, where the CD game actually came out first, the CD-ROM version accounted for around a third of total sales."

US GOLD
Geoff Brown
Chief executive officer



"We have several PC CD-ROM programs in development and we're investing heavily now for products which will be released later in 1995.

"For instance, we're currently recruiting and setting up an external development company called Silicon Dreams, and we hope to be able to create it very much as a market entity."

VIRGIN INTERACTIVE
Doug Johns
PR executive

"CD is a brilliant medium because it means that it's possible to do so much more with both graphics and with sound.

"I've noticed a trend towards developers being quick to exploit the graphics and sound capabilities of a new format at the expense of gameplay.

"I'd be the first to admit that 7th Guest suffered a bit in this respect, but then it should also be remembered that this was the first real CD game and did represent a breakthrough in graphics and sound.

"We've got a lot of excellent stuff coming up on CD in the future — Creature Shock will make you gasp in amazement."

CD-ROM — both sides of the fence

The games industry

CD-ROM has two major attractions for games publishers. Firstly, casual piracy is almost unheard of, which is always likely to put a smile on the face of a software publisher.

Secondly, duplication and packaging costs for one compact disc are way cheaper than those for a hefty game box containing 10 floppy disks. CDs cost around 90p each to buy in bulk, high density disks about 43p.

CDs are also considerably more durable than floppy disks, which means they cost the software house less in replacement discs to send out to disgruntled gamers.

On the other hand, development costs are likely to increase proportionally with the extra effort that goes into producing a fully-fledged CD-ROM game.



Lawnmower Man: on CD, it costs £50 and takes up very little room. On disk, the equivalent would set you back over £90, and just as many megabytes of hard disk space.

Games players

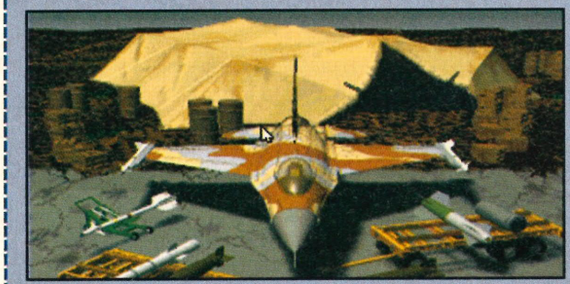
A major advantage of having your games on CD-ROM is the sheer convenience of it all. In a nutshell, you don't have to have whopping great programs cluttering your hard disk. You also don't have to have 15 or so floppy disks to keep track of, or fiddly copy protection devices to lose.

Cost is another argument in favour of CD-ROM games. Many 'enhanced' CD-ROM versions of disk-based games will include the original, plus maybe a later data disk, as well as added speech and music, and work out a lot cheaper all told.

Mind you, it isn't always the case that the savings in duplication costs are reflected in the price we have to pay for CD games. The software companies argue that the reason the CD versions are usually the same price, or slightly more, than the equivalent disk-based games is down to the extra development costs.

This is fair enough when the developers have really gone to town producing a glorious, expansive game. But it doesn't hold much water when you look at CD titles that are essentially little different from their disk-based predecessors — bar the longer intro, digitised video clips and superfluous soundtrack. 'Shovelware', it's called.

Which brings us to the thorny question of quantity over quality. Game developers can easily fall into the trap of putting a disproportionate amount of effort into developing



Strike Commander: like its disk-based sibling, the CD-ROM version is a great looking game, but gameplay has been rather overlooked beneath all the superb special effects.

suitable graphics and sound effects to make the most of the CD capabilities, to such an extent that it feels as if the gameplay was added almost as an afterthought.

And if CD is the platform of the future, how will a game like Tetris make it through the net? Something essentially that simple — and popular — wouldn't even make the short-list for a developer's CD-ROM production schedule.





'enhanced' versions of old games – including even, some 'shovelware'?

However, the availability of good software is rapidly becoming the strongest argument in favour of buying a CD-ROM. We've seen a few titles that have been capable of selling CD-ROM drives in their own right: 7th Guest – for all its faults – exposed the true potential of CD both visually and aurally; Rebel Assault put tried and tested arcade gameplay with stunning full-motion video and produced something very close to the elusive 'interactive movie' on an arcade theme. Both of these games showed the potential of the format to devlopers and games players.

But more important than the individual effect of titles is the abundance of CD releases, both current and planned. That includes games that will only ever appear on CD, like Microcosm and Megarace (both reviewed this month) and Chaos Control, Under a Killing Moon, Outpost and Myst (previewed in this issue) which won't be available on floppy disk, to name but a few forthcoming releases. A more complete list appears opposite.

Top: 11th Hour is Trilobyte's sequel to 7th Guest. Above: the CD version of Battle Isle 2. Below: best-seller Rebel Assault.

The following CD-ROM games are reviewed in this issue:

Megarace	page 56
Dragonsphere	page 61
Battle Isle 2	page 62
Star Trek	page 71
Microcosm	page 72
Wolfpack	page 73
Lemmings	page 76
Gateway 2	page 76
Comanche	page 77
Patrician	page 79
Challenge Pack	page 80
Award Winners	page 80



Coming to a CD-ROM near you in 1994

ACTIVISION	
Mechwarriors	September
DOMARK	
F1	Late March
FST: World War II	Summer
Test Pilot	November
INFOGRAMES	
Alone in the Dark 2	May
Shadow of the Comet	May
Marco Polo	June
International Tennis Open	Summer
Chaos Control	September
MAXIS	
SimCity 2000	May
SimTown	October
Wrath of the Gods	TBA
MICROPROSE	
UFO CD	Late March
Bloodnet CD	Late April
Subwar CD	May
Star Trek TNG	June
VIRGIN INTERACTIVE	
Beneath a Steel Sky	April
Lands of Lore	April
Hand of Fate	April
11th Hour	June
Command and Conquer	September
Creature Shock	Nov
Lost Eden (formerly Saurus)	Nov

There has also been an interesting change in strategy by several software publishers. Previously they would release a disk version of a game, *then* the enhanced CD version. The danger? Being accused of selling shovelware. Now we're finding that companies are turning this right round, holding the release of the floppy disk version until after the CD.

That way the CD becomes the main release, and the disk version avoids the shovelware tag and becomes the 'cut-down' version. Battle Isle 2, for example, appears on CD first, with a smaller disk version to follow. Dragonsphere tells the same story. Interplay's cinematic role-playing game, Stonekeep, was originally planned as a disk-based game with a CD-ROM version to follow. The program has since been delayed to the extent that the disk version has now been shelved.

A parallel trend which may just seal the fate of the floppy disk is that of the CD as a 'delivery mechanism'. This means a program released on CD which could just have easily have been on floppy disk — no attempt is made to fill the 600Mb capacity of the CD, and the user is expected to install the program to hard disk. This is CD for convenience, and there are those who think that this sounds suspiciously like shovelware under a neutral new name. Still, if the publisher is openly not filling the CD to its limit, then we needn't have 30-minute intro sequences and "The Making of..." digitised videos tacked on to a perfectly serviceable game.

Last month was the first time that PC Review received more CD-ROM based software for review than floppy disk-based programs.

So, with readily available CD-ROM drives, and many premier, 'A-list' games either coming out first, or only, on CD, where does that leave us? Have a look at what the major software houses have to say on the previous page about their CD and disk plans for the coming year, and decide whether you can afford to be without a CD-ROM or not.

THE ORIGINAL
THE BEST

BLASTER

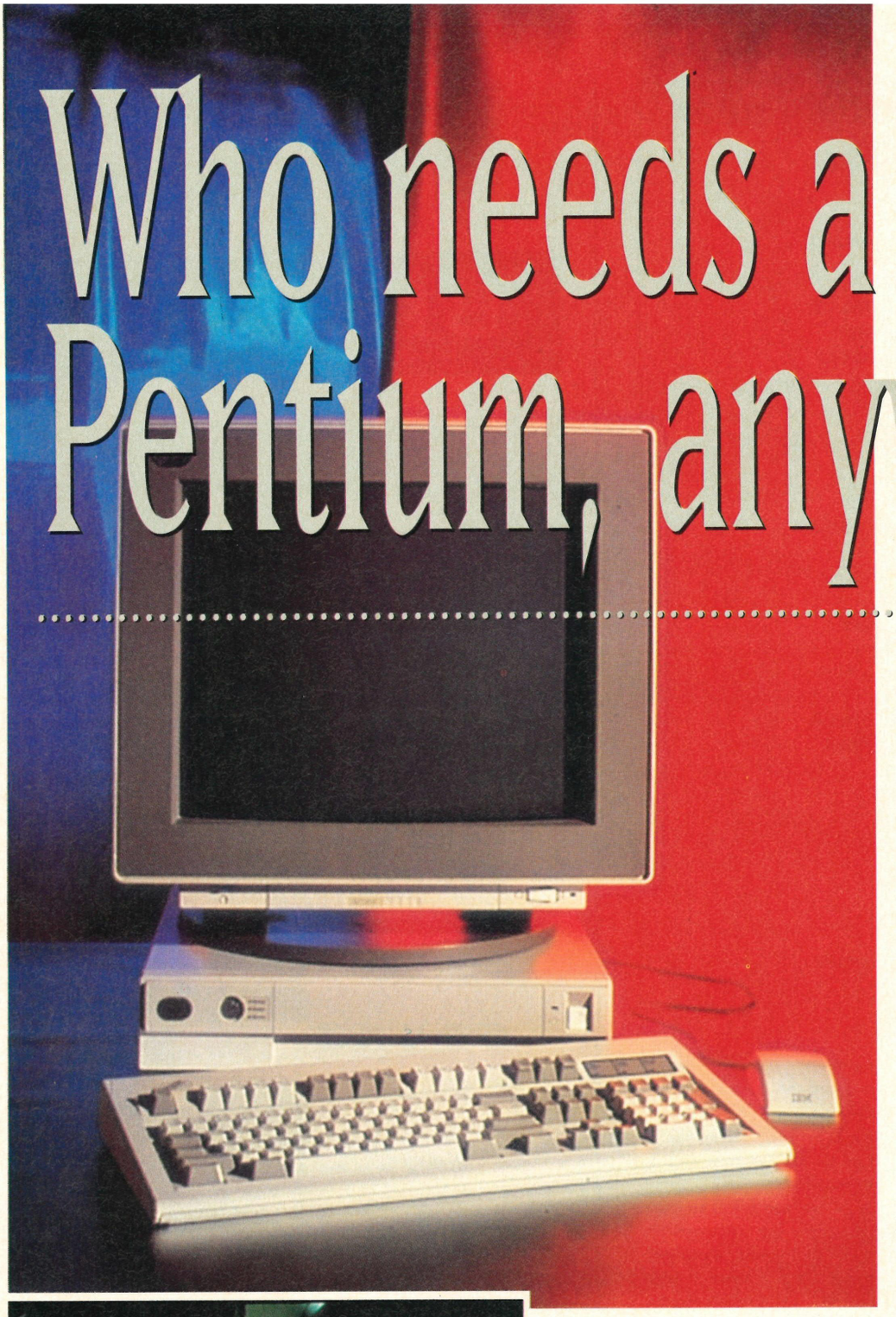
THE PC SOUND STANDARD

Sound

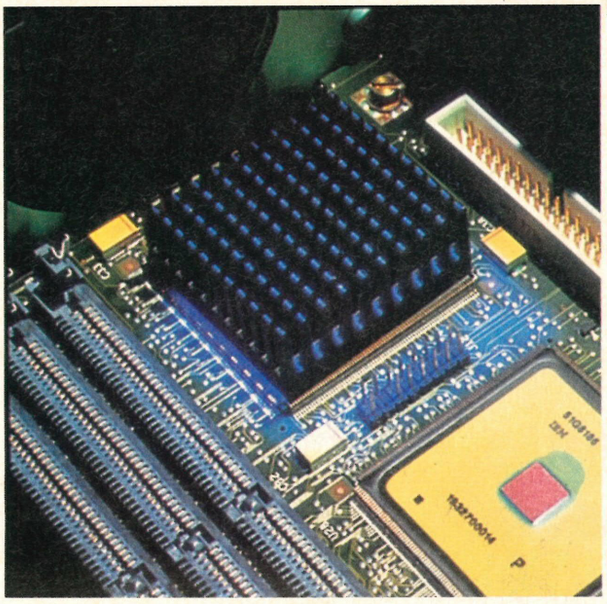
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Who needs a Pentium, anyway?



There's been a sudden explosion in the number of high performance processors on the market, with the 486 DX2, DX4, and Pentium. How are you supposed to know which will succeed? Steve Boxer has a few answers



So, you want to buy a new PC. You've spent some time researching the subject with the help of several magazines, and at last, you've reached a decision. You're going to buy a 486.

Next, you turn to the adverts in the magazines — you're bound to get a better deal if you shop around a bit. And then you realise that you haven't even begun to scratch the surface of the decision-making process. This machine: should it be powered by a 25MHz 486SX or an SL-enhanced 50MHz 486DX2? A 486DX or a 486DX4? If it's a notebook, is the 486SL the chip you should go for? You spot a temptingly priced machine that uses a Cyrix 486S chip; IBM is advertising a 'clock-doubled' machine using a 486SLC2 processor. Are these faster than a 25MHz 486DX? In fact, what the hell are they?

Or maybe you're a bit flush, and you've spotted a Pentium-based machine you can afford. Intel is advertising this on TV as "the next generation" of PCs, so should you buy one of these? Is the Pentium better than DEC's Alpha, or Apple and IBM's PowerPC? Does this mean that 486 machines are out of date?

It's a nightmare, isn't it? Buying a computer is supposed to be easy, yet it seems that you need to have a vast store of market knowledge at your command before even deciding what type of machine to buy, let alone from whom. But don't worry, it's not actually *that* difficult, although Intel has further confused matters by releasing the DX4 which, although the fastest 486 chip yet, makes a further mockery of the company's erratic (to put it politely) naming policy. No wonder it braved press criticism and gave the



name Pentium to what should logically have been called the 586.

The 486: a potted history

Intel's 486 family has become about as convoluted as the Ewing family in that '80s soap Dallas. And like Dallas, Intel would like to write off parts of the 486 family history as a dream. Nevertheless, an examination of the 486 family's history is the best starting point for any confusion-eradication exercise.

Actually, let's start just a little further back in the mists of time, with the previous generation of Intel chips, the 386 family. The reason for starting here is that the 386 series was the first to use the SX/DX concept.

When thinking about Intel chips, all you really need to know about the SX and DX nomenclature, is that a DX version of a particular chip is the full version, whereas an SX is a cut-down, emasculated and cheaper version. In the case of the 386, the SX appeared because of historical reasons — the 386DX was Intel's first 32-bit chip, and motherboard designers wanted to keep on using their existing 16-bit designs, so Intel released the SX, which was a 32-bit chip internally, but appeared to the outside world as a 16-bit one, transferring data in and out 16 bits at a time.

And on the fourth day, Intel created the 486. In the beginning was the 486DX, the standard 486 with all the bits in. As we shall see, the 486DX is no longer the last word in 486s, but it is still the essential baseline chip — other 486s are really 486DXs too, but with bits added or taken away.

The next 486 chip to appear was the 486SX which, following Intel naming conventions, should have been a cut-down version of the 486DX. Indeed it was, but it was cut down in a different way to the 386SX, so, if Intel had been really rigorous, it should have given it a different name. One of the 486DX's strengths was that it was the first Intel chip with a built-in maths co-processor, a device which handles mathematical (or 'floating-point') calculations. Intel chopped the maths co-processor out of the 486DX and thus created the 486SX.

The 486SX is the slowest 486 variant – it operates only slightly faster than the fastest 386DX chips. It's also, naturally, the cheapest, yet it will cope adequately with the demands of Windows, and is the entry-level chip you should go for if money is really tight.

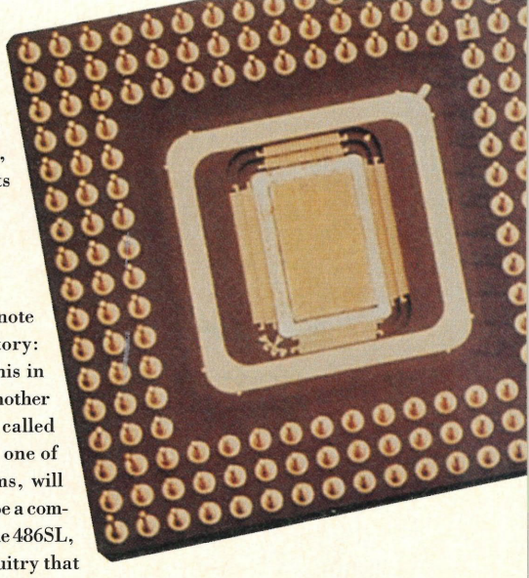
With the 486DX2, Intel introduced a new concept (which isn't really new — it's a tried and tested technique among chip manufacturers) called clock multiplication. On every PC's motherboard, there's a clock which dictates how many instructions are carried out every second. This has to be there to make sure that everything runs smoothly: if parts of the system start getting more instructions than they can cope with, things get hairy and the system is likely to crash.

The theory according to Intel is this: although typical motherboards were going about as fast as they safely could (the maximum speed was 33MHz, or 33 million clock cycles per second), its 486DX chips were operating well within their limits and could cope with twice as many events each second. So, Intel took the 486DX and added some very simple circuitry which multiplied the clock speed by two within the chip's confines. It called the resulting chip the 486DX2.

Introducing the DX4

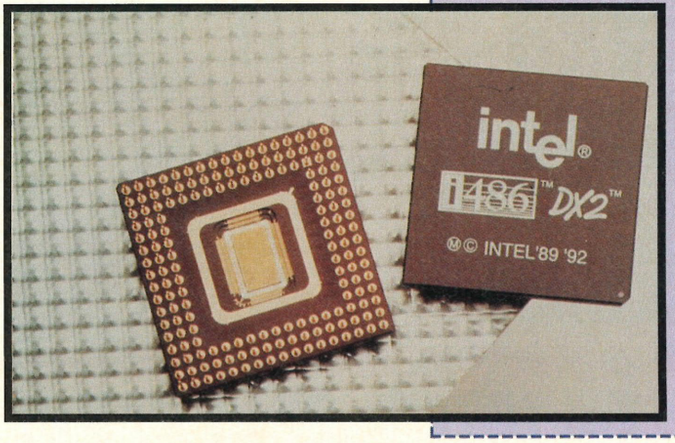
It has now advanced this idea further by introducing the 486DX4. It has also added to the popular confusion about 486 with the DX4, as according to the logic of its naming system, the DX4 should in fact have been called the DX3.

To nearly all intents and purposes, the DX4 is the same as the DX2, except that it runs internally at three times the system clock speed, rather than twice its speed.



The 486 goes frugal

There's one other footnote to the 486 family history: power saving. With this in mind, Intel launched another variant of the 486DX called the 486SL which, like one of Bobby Ewing's dreams, will eventually turn out to be a complete dead end. With the 486SL, Intel added extra circuitry that gave easier control by power-saving software



The competition

It's all very well predicting the future of Intel-based PCs, but what of the other chip vendors, who seem to be mounting a more serious challenge to Intel than ever before. This isn't necessarily the case.

Certain competitors can be easily dismissed. DEC's Alpha chip is fast, but only runs Windows NT, so Alpha machines are only useful as big network servers or CAD workstations. I'm willing to bet that no-one will ever develop a single game to run on the Alpha.

Apple and IBM's PowerPC is a bit more interesting, but scarcely more credible. Its strengths are a fair amount of power (although not as much as the fastest Pentiums, particularly the 150MHz one which will appear towards the end of the year) and low pricing. But it only really makes sense for existing Mac users. Macs have always struggled in the power stakes, and the next generation of PowerPC Macs will rectify this. But who ever bought a Mac to use as a games machine? If you know someone who did, don't tell the authorities, as they'll probably provide that person with free, padded accommodation.

Although IBM has promised full DOS support for PowerPC machines, this has yet to appear. Anyway, when it does appear, it'll be a miracle if it works properly for the first year or so. Forget the PowerPC.

AMD offered a serious Intel alternative for a bit, but ran into legal difficulties, and will find it difficult to make money selling 486 competitors if Intel's prices come down as far as the company says they will. AMD's Pentium competitor may well be a good chip when it appears, but almost certainly won't offer enough of a performance increase to be a real threat.

IBM's chips, such as the Blue Lightning, are very good, but are just steroid-injected versions of Intel chips. Early indications suggest that the DX4 is roughly on a performance par with the Blue Lightning, anyway, and very few Blue Lightnings will make it onto non-IBM motherboards.

That leaves Cyrix, which has been fighting a very credible rearguard action against Intel. Its policy is to compete head-on with Intel chips: it has processors that compete with 486SXs up to 486DX2s. These are perfectly good alternatives to their Intel counterparts, and can be found on a number of desktops and, particularly, notebooks. But no particular chip offers a quantum leap in performance over its Intel equivalent. Cyrix-based machines do tend to be cheaper than their Intel counterparts, though. But if Intel does drag down its prices, PC manufacturers will surely ignore all Cyrix chips below the Cx486DX and Cx486DX2, which thankfully both have self-explanatory names.

Like AMD, Cyrix is developing a 64-bit Pentium competitor, which sounds promising and should appear towards the end of this year. Called the M1, this may well be faster than the Pentium, but how much faster remains to be seen. And Cyrix had better get it onto the market quickly, before Intel starts giving Pentiums away.

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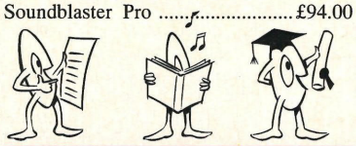
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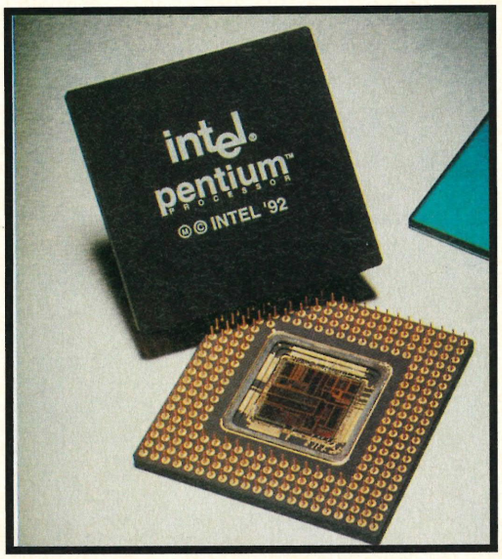


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and hence made it more energy-efficient. But it also made it physically different to other 486s (it's actually part of a technically impressive miniaturised chipset that operates as the best part of a whole motherboard).

Because of this, portable manufacturers had trouble designing machines around it, it proved relatively unpopular and there won't be a Pentium SL.

But it did regain the goodwill of the portable manufacturers by fiddling further with the rest of the 486 family. It released so-called 'SL-enhanced versions' of most of the 486 family, with the power saving part of the 486SL added, but in the old, familiar packaging. SL-enhanced 486SX and 486DX2 chips are starting to appear in notebooks and Green PCs, and very good they are, too – they operate exactly like non-SL-enhanced ones, but use less power. Incidentally, all 486DX4s shipped will be SL-enhanced.



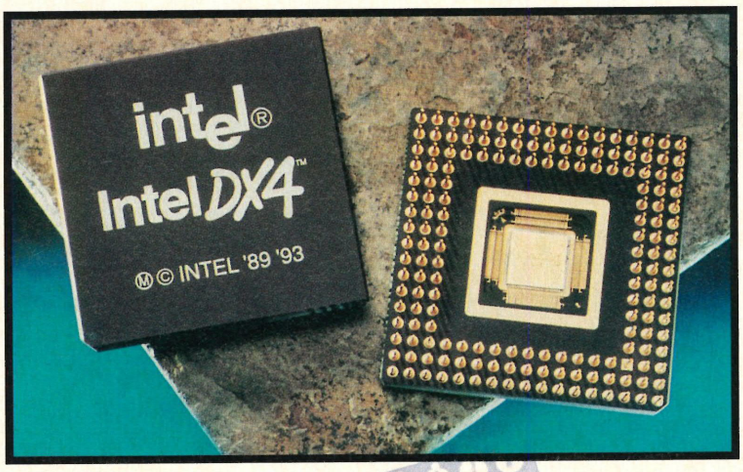
The future of the 486 family

Well, that's the background, but now that you know what all the 486 variants are, how should you go about deciding which one to back? Intel has its own clear view about how the 486 market will develop and as it controls things like chip pricing, it usually gets its way with such exercises, whether the general public wants them or not.

According to Microsoft's vision, in less than a year's time, the 486DX2 will power entry-level desktops (which, typically, are powered by 486SXs today). DX4-based machines will occupy the mid-priced slot currently filled by 486DX machines, and the 486SX and 486DX will be quietly dispatched to graze peacefully in the great semiconductor farm in the sky.

Power users, Intel hopes, will buy 60 and 66MHz Pentium-based machines, which should cost about the same amount as today's 486DX2 machines, and the real hairy-chests among us will buy the recently announced 90MHz and 100MHz Pentiums which, by the end of 1994, shouldn't cost much more than their 60MHz and 66MHz counterparts.

But what should you buy? The answer to this depends entirely on what happens to chip pricing. As more and more of a certain type of processor are made, prices come down as economies of scale come into play. With the Pentium, Intel wants to ramp up manufacturing faster than with any previous processor chip and, to achieve this, prices will have to drop dramatically and quickly. It claims that by the end of the year, you'll be able to buy a Pentium-based system for $2,000, which should equate to about £1,500 over here. If this happens, you should definitely start thinking about buying a Pentium-based machine.



So who needs a Pentium?

Hmm, tricky question. I don't know about you, but I've been able to do without one quite happily so far. It might be tempting, though, if system prices dip below £1,500 — although you'd have to be a devotee of serious games to justify that sort of outlay. Give it 18 months, though, and Pentiums will occupy the ground currently covered by 486s.

If you're thinking of buying a new machine, though, it might be a good idea to hold out until the end of 1994, when, fingers crossed, 486DX2 machines should dip well below the £1,000 mark — in fact, you ought to be able to find one for £700 to £800. The DX2 is a super games platform, and Intel is determined to use it to eliminate the confusion surrounding the current plethora of 486 chips by selling it so cheaply that it undercuts the opposition. If you're thinking that this might lead to £400 486SX-based machines, don't hold your breath: Intel will try to phase out all sub-DX2 processors quietly, and won't cut its prices as aggressively.

It's a bit more difficult to see what will happen with DX4 machines — we don't even know how much they'll cost initially, let alone in a year's time.

The DX4 is a good chip: the 100MHz version is about 1.5 times as quick as the 66MHz DX2, so it should be ideal for running demanding games that have cutting-edge graphics, loads of video footage and so on. In fact, you ought to be able to run just about any game well on a DX4 machine with a CD-ROM drive. But the same could be said for the DX2.

In other words, the DX4's arrival is good news. Not necessarily in itself, but because, indirectly, it'll lead to affordably priced yet powerful kit. The word on the streets is that a price earthquake will strike at the end of the year. So start saving and get yourself a DX2-based Christmas present.

Which upgrade?

Processor upgrading is one of those activities, like satanic abuse or wearing designer clothes, that everyone talks about but, as far as I've ever been able to tell, nobody ever actually *does*. Nevertheless, it has its merits. It also has enormous pitfalls, which have to be avoided. So where does processor upgrading stand after the latest round of new processors from Intel?

The DX4 has thrown a bit of a spanner into the upgrading works. For some time now, Intel has been encouraging manufacturers to put its blue Zero Insertion Force processor sockets on their motherboards, claiming that these will allow machines to be upgraded. As well as whatever is sitting in the socket when you buy the machine, these sockets will take DX2s and the forthcoming P24T 'Pentium Technology' upgrade processor. But you won't be able to drop a DX4 chip into a blue Intel ZIF socket.

This is because all DX4 chips operate at 3.3 volts, rather than the old 5-volt standard. This has its benefits (particularly when it comes to power-saving) but is a bit of a shame, as the DX4 would be a great upgrade chip. Intel has sort of addressed this problem by releasing a new processor upgrade socket (this is white and is called Socket 3 — the blue ones having been retrospectively named Socket 2), which will fit onto both 3.3V and 5V motherboards.

Intel hasn't yet decided whether it will release a DX4 OverDrive chip, but plugging in an OverDrive chip to get extra power is an almost prohibitively expensive option, anyway. The P24T is a completely unknown quantity — it'll appear this summer — but it will basically be a brain-damaged Pentium, and its difficult to see it being much faster than a 100MHz DX4.

Nevertheless, the P24T will be Intel's main upgrade chip, and will undoubtedly breathe life into 486SXs and upwards (Intel claims that it will work in blue Socket 2s, also). Because of this, Intel will probably give it an aggressive price, and if you have a 486SX or even a DX with an upgrade socket, it may well be a good buy. If you're shopping around for a new machine and upgradeability is a priority, though, make sure that you buy a PC with a white Socket 3 on the motherboard.

Probably the best upgrade processors on the market are Cyrix' 486SRx2 and DRx2 ranges. These actually clamp on top of 386SX and DX chips, bringing performance up to 486 levels. Admittedly, they're a bit Heath Robinson, but they're better than anything else around at breathing life into your old dog of a PC. Prices range from £200 to £270, depending on the speed and type of your original processor.

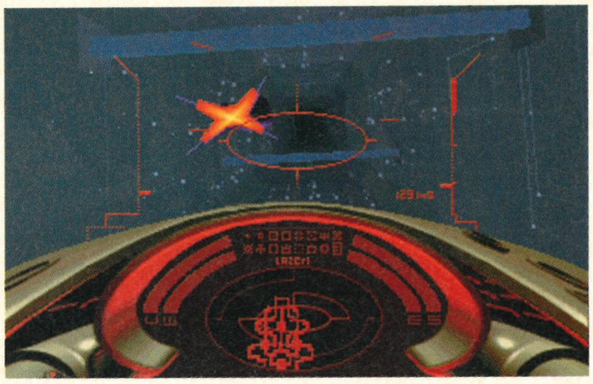
Steve Boxer is a freelance writer specialising in computers. He was formerly reviews editor of PC User, and the PPA's feature writer of the year in 1993.

Did someone say 3D?

Digital Image Design is the team behind TFX and the forthcoming Inferno. DID's Martin Kenwright talks to Dean Evans.

The PC Review profile





Charter House is an unassuming office building in Runcorn. It sits next to a petrol station and a funeral parlour and takes in a lovely view of the hills and the picturesque, smoke-belching Fiddler's Ferry power station. But go through the front door, up the stairs and turn left and you'll walk into the office of Digital Image Design, currently the hottest and busiest 3D development team in the country.

After the huge success of its hyper-realistic flight sim TFX, DID's graphic artists and programmers are now tinkering with Inferno, a vast space epic that promises to take cinematic gaming to undreamt of heights. And if you thought TFX was good, wait until you get a load of what they're going to be doing next ...

Martin Kenwright formed DID with Phil Allsopp and Russell Payne back in 1989 and set up the limited company in 1990. Jostling for recognition with 3D developers such as Vektor Grafix, DID quickly established itself and, tucked safely under the protective wing of Ocean, it created the flight sim F29 Retaliator, the stylish Robocop 3 and the sprawling, but ill-fated, space fantasy Epic. But times have changed, the company is growing (DID hopes to be hiring up to 15 new staff) and although Russell Payne's superfast 3D coding forms the basis of the TFX and Inferno code, those early games pale into insignificance compared to what DID is planning to do in the next 12 months.

PCR: How many people work at DID?

MK: On a good day we have 18 people but there are 22 involved in total. Most of them are 3D designers and graphics people. The company is split into two halves but with a lot of overlap. The programmers will work across two games but it's the artists and designers that put the actual games together. The programmers only provide the tools and the code for the 3D. We've created our own game editors that allow us to create 3D landscapes, 3D shapes and put text and play music in where we want.

What exactly are your aims?

If I say something about our aims now they'll probably have changed in six months. At this point in time we're planning to expand to twice our size and work on a few projects on all of the different formats, PCs, consoles, etc.

Consoles?

Yeah. The whole situation has changed. Our three year contract with Ocean was probably out of date after six months. We agreed to do Amiga CD32 and 3DO games but now four exciting new machines are on the way [Atari's Jaguar, Sony's PSX, Sega's Saturn and Nintendo's Project Reality] that we hadn't even considered. Obviously we want to make provision for these.



Inferno

Inferno is a huge space opera, a CD-based game with silky smooth 3D and gripping gameplay. Inferno takes place in a galaxy under siege by the Rexxons, an evil race first encountered in Epic. You play mankind's greatest pilot, a square-jawed, muscular hero charged with leading the human resistance. Inferno is huge: it's freeform structure means that there's over 700 missions, seven planets, three moons and even an asteroid field to navigate. Each mission can consist of 12 sub-missions, taking you from the depths of space, down to the planets, into the buildings and back out again.

Inferno looks as though it will actually use the the full potential of the CD format. "There was so much more we wanted to do with Epic," said Gary Bracey Ocean's software director. "But time and technology prevented us from doing so. We were determined that with Inferno we would hold nothing back. The finished result includes everything we set out to achieve. It's the definitive space sim."

Inferno is Shaun Hollywood's baby, and with a background in film and TV he was the perfect choice to turn the game into one of DID's most cinematic projects to date. As a result Inferno is structured very much like a move, with storyboards, models and even script conferences. "This was the first game I's worked on which really allowed me to put down my ideas on design," said Shaun (pictured, in the pink shirt). "I wanted true visual sophistication and that's why in many ways this was as much like making a film as a game."

With Shaun at the helm and using the superfast 3D graphics engine developed for TFX, Inferno promises to be a groundbreaking game. Inferno allows you to fly about in a fully believable 3D world and with 16,000 possible game permutations, three modes of play, 'evolutionary', 'director's cut' and 'arcade', an original digital soundtrack by legendary goth-rock band Alien Sex Fiend and also a graphic novel designed by Judge Dredd artist Sean Phillips, it looks, sounds, even smells superb.

Want to play? I'm afraid you'll have to wait until the summer.

Martin Kenwright

Will you ever abandon the PC?

The PC will haunt us forever, unfortunately. It's such a good machine to program on but lack of a single standard means it's a real pain in the ass to use. But saying that the PC will be going longer than you and I, in five years we'll probably have the 10-86 processor or something.

SVGA?

We've started playing with that. We're almost on our fifth generation code and if we do the military sim, the game of the sim could follow on from that.

Did you say 'military' sim?

We have been approached officially by the military to be involved in the official million pound EFA simulator. It's not a full-blown trainer or a desk-top game but a sim where you sit in a cockpit and get used to flying the plane — a familiarisation tool. I thought someone was joking when they said they wanted to use our 3D for the military.

Would you like to do a heavyweight flight sim?

There has been pressure to do a heavyweight sim that's got a 1,000 page manual and comes on 50 disks and we met so many consultants and engineers when we did TFX that we've got the resources to do one. You never know it could be a spin-off from the work we do for the military. Normally we try and write games that have mass appeal and so we'd do a heavyweight sim for the prestige of doing it, not for the money.

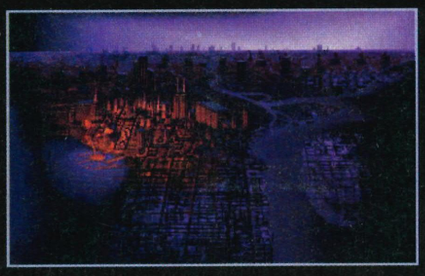
Were you happy with TFX?

We ran out of time and there are still a few problems. These though are caused by some of the problems with PC's in general. All these DOS extenders means that so many people have had trouble because they have a soundcard where they shouldn't or an IRQ channel set the wrong way. We spent two or three months trying to make it completely compatible, time we could have spent putting in a few extra graphical features. We did this for the US version and included enhanced weapons, greater soundcard support and a few graphical bits. We also wanted to get the instrumentation

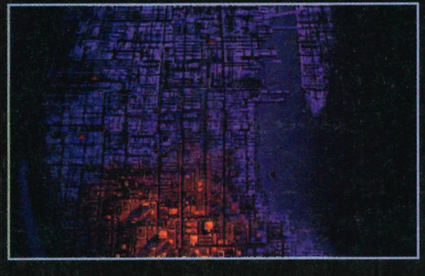


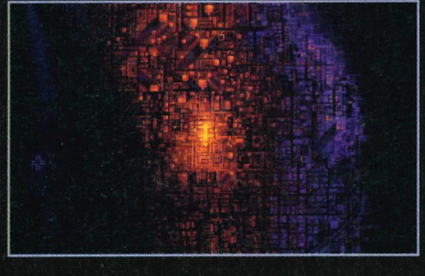
BLOODNET

Killer Bites and Megabytes in the Big Apple







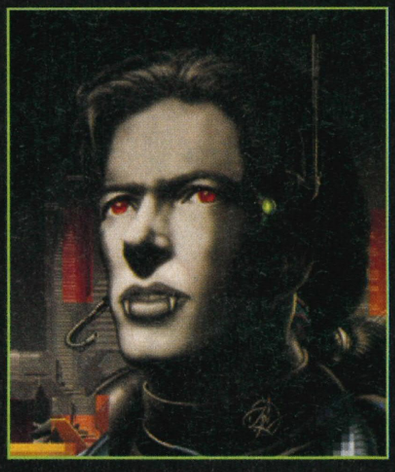




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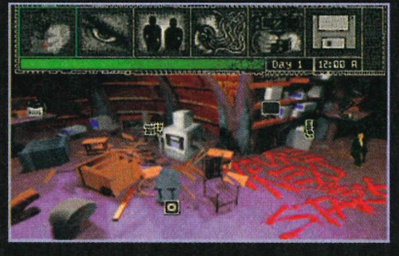
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working in the Virtual Cockpit so that whenever you moved around the MFDs still moved and worked. I also wanted to try and project TFX in widescreen simply because I've got a widescreen television and it's really cool.

What about your next PC games?

We've just started our next PC product after TFX, but in the meantime we're going to do 'TFXtra', as we're calling it. It's a TFX add-on disk that will include modem, network, serial and parallel play; a chat facility between pilots; extra weapons; more scenarios like Angola and Sudan; weapons stats; flight manoeuvres ... in fact everything we didn't manage to squeeze into the original. It could even be TFX 2 but it's planned as a mission disk. The manuals have been written, so has the comms software. Hopefully it will launch in May or June.

Martin also let me have a quick look at the next 3D project. This untitled game is set 30-40 years in the future, where mankind is battling an alien invasion. Featuring advanced 3D landscapes, helicopters and futuristic fighter jets, Martin promises that it will be a seamless 3D war game; fly your planes, order battalions around, then step out at the end of it all and walk about.

If you can imagine the characters out of Alone in the Dark 2 or Virtua Fighter flying high-powered fighter jets of the future, you might get some idea of what we're thinking about.

Do you have a philosophy of game design?

Yes we do. What we're trying to achieve is a flight of fantasy, a simulator type product but not a heavy-weight simulator. We're trying to create a movie feel of action-packed gung-ho. David Braben managed to get Elite 2 on to one floppy disk! Imagine what it would have been like on one CD. People don't necessary want to see FMV squashed on to CD, why spend £40 on a game when you can buy a video for £10? It should be treated as a storage medium."

You don't believe in the interactive movie, then?

The 'interactive movie' won't happen for a long time. Interactivity isn't just watching a piece of video and then making a yes/no decision. If you do it this way and do it properly, you could have 22 billion combinations after 15 minutes of play. For me interactive movie is something like the holodeck in Star Trek ... not a quick 10 minutes of tacky FMV and some limited and disappointing gameplay.

How about virtual reality?

Images of the Lawnmower Man inspired so many people but computer games don't look this good. What we want and what we've got is still five years away. The idea of VR boxing is stunning; punching in mid-air, everyone laughing at you. It shouldn't stop there though, maybe you could get electric shocks if you get hit. Take interactive sex. It will happen one day. People standing in VR helmets trying to grab a lamp post because they think it's Cindy Crawford ...

Enough, I think. Look out for DID's next 3D game and if you want the upgrade patch for TFX ring Ocean on (061) 832 6633.

● (below) DID's Runcorn office and scenes from Inferno.



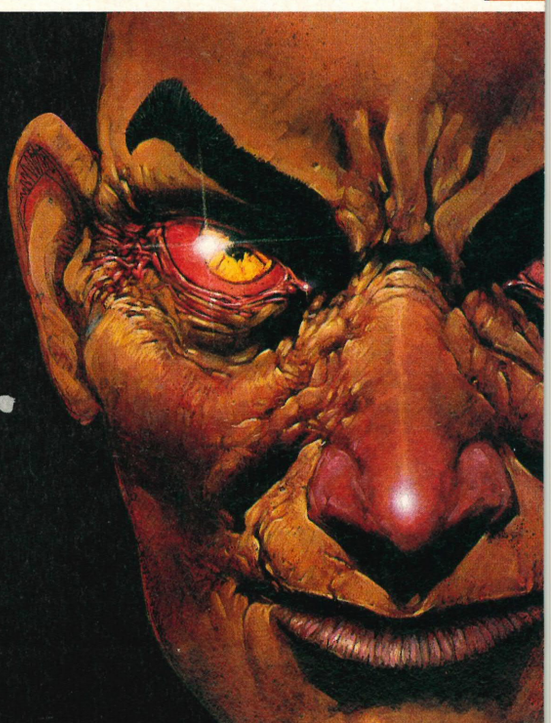




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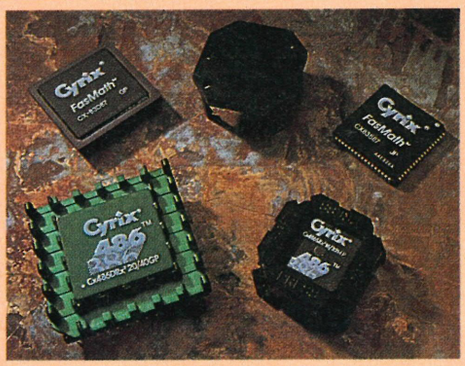
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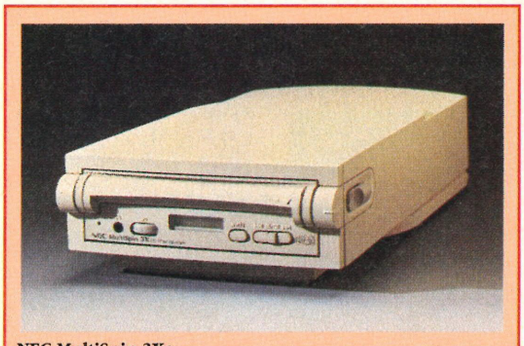
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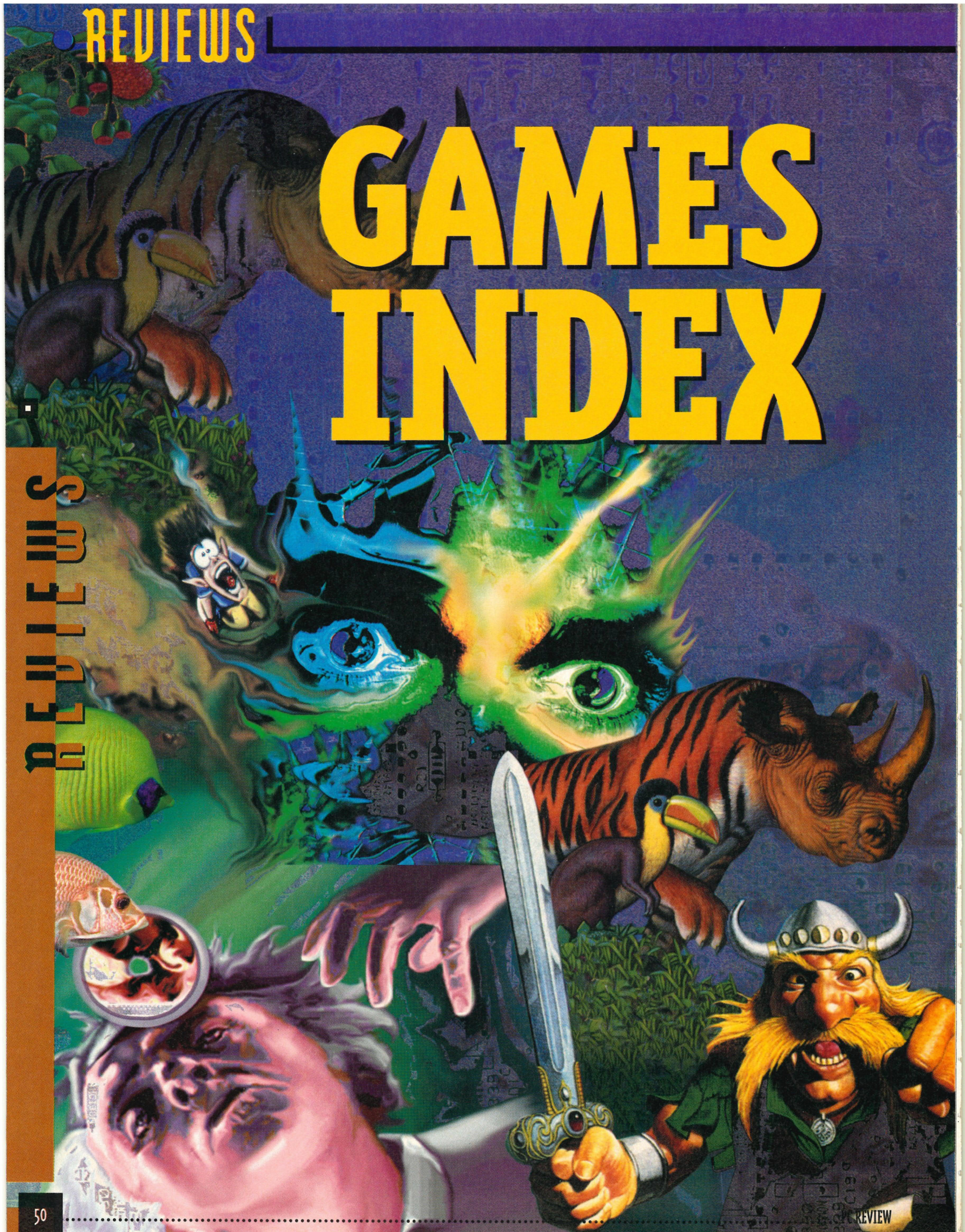
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GAMES INDEX



REVIEWS

Welcome to the new PC Review games section, 50 pages of reviews, news, previews and tips covering absolutely everything that's happening in the world of PC games.

We know from our surveys and correspondence that you consider the reviews not only the most important part of the magazine, but also the best games reviews in the business. While we've given the reviews section a facelift, you'll find that all the essential elements are still there. We've also managed to pack more information in the page and as you can see from the index, we're now reviewing more games than ever before. The PC games market is growing fast, and there are more games being released each month now than ever before, particularly with the current trend for re-releasing 'enhanced' versions of disk-based games on CD-ROM.

Let us know what you think of the new games section and its new style — we look forward to hearing from you!

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THE RATINGS

PC Review gives a single mark out of ten to rate games. We chose ten because it's succinct, simple, and because there's little point in haggling over the odd percentage point between an arcade game and a war game which can't really be directly compared anyway.

We can be pretty tough on games when we put our minds to it — since 'five' is the average mark, any rating above five means the game is above average and vice versa.

0 A game without absolutely nothing to recommend it to anyone.

1-2 Poorly implemented game, badly programmed, very disappointing.

3-4 A game with some good ideas but serious drawbacks: poor controls, poor animation, maybe just plain tedious.

5 A solidly average game. Competent without being anything special, probably enjoyable in the short term.

6 Won't disappoint any fans of the genre; an above average title but probably one which doesn't break any new ground.

7 Good, imaginatively programmed game which should appeal to the majority of players.

8 Very good indeed — a game will need something special in the way of gameplay, innovation, graphics or sound to worth an eight.

9 Outstanding as an all-rounder. Few, if any, failings, in graphics, sound, atmosphere, playability, ease of use, etc.

10 Sheer perfection.

REVIEWS

Ultima VIII: PAGAN

Origin attempts to make the noble art of role-playing more accessible to the masses.

Of all the games due to be released in 1994, Ultima VIII was the one I was most looking forward to. Having battled my way through several Ultima titles, including Ultima VII and its follow-up, Serpent Isle, I couldn't wait to get stuck into the latest instalment of Richard Garriot's long-running saga. What I'd seen of the game prior to playing it looked extremely promising: improved graphics,larger, more detailed sprites with a greater number of frames of animation, wonderful music and a dramatic new plot. Apparently, Origin is aiming it at a wider audience than the previous Ultimas, so it's smaller (no bad thing considering that it took me four months to complete Serpent Isle), with fewer irrelevant characters and more action. What I expected to see was a game that was easy to get into, a friendlier interface and all the old problems, such as slow disk accessing and jerky scrolling, rectified. What I actually got was something surprisingly different.

"The first thing you notice about Ultima VIII is that it has an almost arcade feel to it."

If, like me, you're a seasoned Ultima veteran, the first thing you notice about Ultima VIII is that it has an almost arcade feel to it. There is a heavy emphasis on real time action, which basically means that you're going to need a tad more co-ordination than in previous games in the series. The Avatar now runs, jumps and climbs (he's obviously been taking lessons from the Prince of Persia) and many of the puzzles are centred around these activities. This wouldn't be such a bad thing were it not for the fact that the control interface has become, if anything, even more fiddly than before.

Fiddly interface

In Ultima VII, you moved your character around the screen using the right mouse button, whilst other actions, such as accessing your inventory, talking to people and picking up or using items were controlled using the left mouse button. This remains the case in Ultima VIII. However, you now have to be right next to an item to use it or pick it up,

PAGAN: A HISTORY

Pagan was originally ruled by a race known as the Zealans, who worshipped the Ancient Ones, the gods of the emotions. The Zealan society lasted for many years, but was eventually destroyed by a religious rebellion. A powerful being called the Guardian appeared to the leaders of the rebellion, informing them that a champion of evil, the Destroyer, would come to Pagan and turn the forces of nature (earth, air, fire and water) against them. Only by worshipping these elements could the people hope to dissuade them from siding with the Destroyer. Thus the elemental spirits were raised to power, becoming Lithos, the mountain king (earth), Hydros, the lurker (water), Stratos, the mystic voice (air) and Pyros, lord of the flame (fire). The gods of the emotions became angry, and ordered their remaining worshippers to destroy the followers of the new religion, who became known as Pagans. After a long and bloody war, the Pagans emerged victorious, only to be told by the Guardian that they must flee because the Destroyer had arrived.

The struggle between the Destroyer and the elementals scarred the land, turning into a world of eternal twilight in which the sky was permanently obscured. Although the Destroyer was beaten, the elementals continued to battle with each other for supremacy. Each elemental has its own cult: the necromancers, who prepare the dead for Lithos; the tempests, who worship Hydros; the theurgists, who pray to Stratos and the sorcerers, a secret organisation which deals with Pyros.



and it often takes several attempts to place it in your back-pack. Movement has also become more difficult: in Ultima VII you moved the Avatar around the screen via the cursor, but if you double-clicked on a spot, he would try and make his way there automatically, navigating obstacles en route. This feature has now been removed, with the result that you have to do all the navigating yourself. When it takes more than one attempt to walk through a door (your character has to be lined up perfectly to succeed), it can be damned annoying. There are reasons for these changes, however. According to Richard Garriott, the interface had to be changed to accommodate the new action-based puzzles. For example, one of the first problems you come across involves crossing a lake via a series of awkwardly placed stepping stones. The idea is to make the Avatar jump from one to the other, and consequently you have to get him in exactly the right place before you attempt the leap. If you could simply double-click on the next stone and have the Avatar jump there of his own accord, the challenge would be entirely removed. Still, I'd happily sacrifice all this jumping around for a friendlier control system. I buy Ultima games for their richness of plot and depth of character interaction – if I'd wanted a platform game I would have bought Prince of Persia or Flashback.

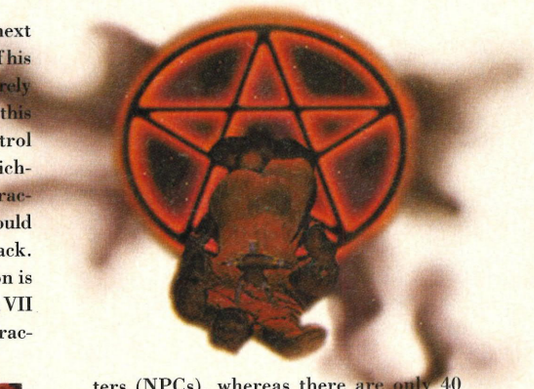
The amount of character interaction is another thing that's changed. In Ultima VII there were around 300 non-player characters (NPCs), whereas there are only 40 (excluding guards and peasants) in Ultima VIII. However, each character plays a far larger part in the story, which allows them to develop better. In addition, you only control one character, the Avatar, instead of trailing a party of five or six people around the land. Although I really enjoyed recruiting party members in previous Ultimas, I can well understand why you are now limited to one character. Many of the arcade-style puzzles are tricky enough to complete with one character, let alone six. Having spent half an hour getting the Avatar across the stepping stones on the way to Mythran's house, I was extremely thankful that I didn't have to go back and have to do it all again with other party members.

LOOK BEFORE YOU LEAP

If you've played Ultima VII or Serpent Isle, you'll notice that the graphics have undergone several changes. The top-down view has been replaced by an isometric one, and sprites are far more detailed. The Avatar now has over 3,000 frames of animation as opposed to around 64 in Ultima VII, which enables him to walk, run, climb, jump and sway precariously when standing on the edge of a cliff.











Speed woes

The inclusion of real time action and puzzles didn't appeal to me, but this is largely a matter of taste. The one thing which did disappoint me was that the game didn't seem any faster than Ultima VII or Serpent Isle. My main criticism of these two games was that the scrolling was jerky and games took ages to save and load. Unfortunately, these problems have not been rectified in Ultima VIII — it runs at roughly the same speed on a 66MHz 486DX2 as Ultima VII ran on my 20MHz 486SX, and doesn't appear to be any smoother. Not only this, but when I walked under an archway in the main town, it took 10 seconds (count 'em) before I appeared on the other side. Now I know the PC I reviewed it on doesn't have the fastest hard disk in the world, but even so, this is not good.

Top: double click on the Avatar to bring up the inventory and statistics screen — just like Ultima VII.

Left: allowing a demon to run amok in your living room plays havoc with your soft furnishings, but try telling that to the woman who just summoned him.

Below left: summoning Pyros, the most dangerous of all the elemental Titans, was not a bright move.

GETTING STARTED

Although Ultima VII is meant to be accessible to first time role-players, it's all too easy to lose sight of your next goal and end up wandering aimlessly in search of something to do. Here's how to get started.



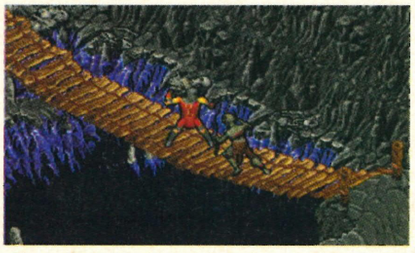
At the start of the game you wake up on the beach after being rescued by Devon, a friendly fisherman. Question him, and he'll tell you to visit a scholar called Bentic at the local library.



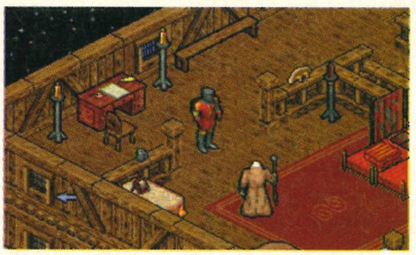
But first there's an execution to attend. Lady Mordea, the local ruler and tempest, will have you executed for anything from picking your nose in public, to speaking your mind.



The library is located in north-east Tenebrae, and here you'll meet Bentic. After explaining your woes, he advises you to seek out a mage called Mythran who lives on the Plateau.

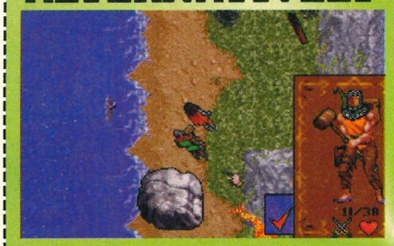


The Plateau can only be reached by travelling through a system of caves populated by flesh-eating ghouls. This is an arcade-style section, with lots of fighting, jumping and climbing involved.



When you finally reach Mythran's house, he'll tell you to speak to the Necromancer back in Tenebrae. What is it with these buck-passing Pagans, eh?

ALTERNATIVELY



Serpent Isle
Origin, £44.99
Rated 7, Issue 20

Falling somewhere between Ultima VII and Ultima VIII is Serpent Isle, a huge game with a complex and captivating storyline. The interesting characters, tricky puzzles and plot developments make it a compelling game to play, although first time role-players may find it daunting — it can take months to complete. I personally prefer it to Ultima VIII.



Alone in the Dark
Infogrames, £44.99
Rated 9, Issue 14

If it's an arcade adventure you're after, I can't recommend Alone in the Dark highly enough. It's set in a haunted house populated by evil spirits, and features combat, puzzle solving and, yes, that bit where you have to jump across stepping stones. It's incredibly atmospheric and features ground-breaking graphics and an awesome, scary soundtrack.

On the positive side, the Ultima games are famous for their strong, carefully plotted storylines, and Ultima VIII is no different in this respect. After defeating the malevolent Guardian in the Serpent Isle, you have been whisked through the Ethereal Void to Pagan, a harsh world ruled by elemental deities (see Pagan: a history). When you arrive, you are gripped by the realisation that you have left the gas on (or something) and must return home immediately. To do so, you need to bargain with the aforementioned deities, and this involves joining the religious cults who worship them. That's the plot in basic terms — in reality, it's a little more complicated than that.

> "Most of the improvements to Ultima VIII are purely cosmetic."

A Pagan place

As soon as you arrive in Pagan, you are told to seek out Bentic, a scholar who may be able to help you. Bentic then tells you to visit a wizard, and the wizard, when you finally find him, advises you to speak to the local necromancer. And so it goes on. It's very easy to miss vital information such as this when talking to people, with the result that you end up wandering in circles wondering what on earth you're supposed to be doing next. Since characters rarely repeat information, I would have welcomed a facility, such as a log book, which allowed you to record exactly what was said for future reference. This is just the sort of feature which Origin should consider adding to Ultima games if it's serious about making them more accessible to first-time role-players.

On the whole, Ultima VIII is a reasonable game, but I felt that it was let down by the awkward control system. Because of this, the action oriented puzzles and combat are frustrating rather than challenging, and got in the way of my enjoyment of the game.

Most of the improvements to Ultima VIII are purely cosmetic, so the game is initially attractive, but I think Origin would have done better to have concentrated on improving the interface and speed. I feel that some people who have been attracted to Ultima VIII by its good looks may well be put off by fiddly controls — let's hope that this is put right in Ultima IX.

■ **Cal Jones**



TECHSPEC

7 RATING

Great story, but controls are annoying.

Publisher:	Origin
Price:	£44.99
Contact:	(0753) 549442
Minimum PC:	486, MS-DOS 5.0, mouse
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Sound Blaster, Roland

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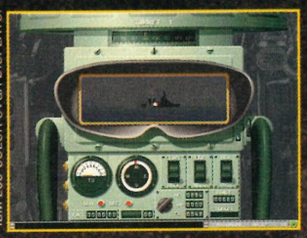
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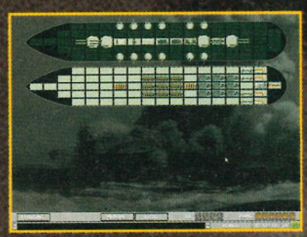
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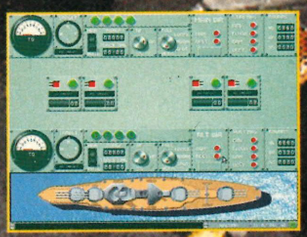
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Every so often you'll get a bonus track. Luckily you don't have to complete it to stay in the game, because everyone I saw attempt this track lasted precisely two seconds before crashing in flames.

Below left: MegaRace is packed full of explosive action, especially when you destroy an opponent.

Driving fast is fun. Driving fast whilst blowing other cars off the road with lasers and missiles is also fun, but will probably earn you a few points on your licence and a long stay in Broadmoor. But don't fret. As a contestant on the Virtual Television game show, MegaRace, you can do both without worrying about the consequences. All you have to do is put on your Virtuality suit, climb into your virtual car and burn virtual rubber. Thanks to a little TV magic, you can compete in this no-holds-barred deadly racing game without risking your hide. Finishing first isn't good enough, though: MegaRace is a fight to the death. Each exotic location is being terrorised by a local speed gang, and you have to eliminate every gang member before the end of the three lap race. Succeed and you win through to the next round – fail and you're off the air for good. Just remember: no-one actually dies in MegaRace — it just feels that way.

But never mind the scenario. MegaRace is essentially a driving game, and a damned good one at that. It's one of those rare games which causes everyone in the office to stop what they're doing and gather round. It's bad enough trying to assess a game when you've got a crowd of spectators peering over your shoulder, but it's even worse when they're all shouting, "Me! Me! I want a go!" (or something like that).

So why all the fuss? Well, I've a sneaking suspicion that it's something to do with the graphics. From the awesomely wonderful intro sequence to the game itself, MegaRace looks amazing. The in-game graphics have been rendered using 3D Studio, and the result is a game which looks as though it belongs on an arcade machine rather than a humble PC. The cars are not quite as impressive as the backgrounds, but then the backgrounds are pretty phenomenal. Every track is different, from roller-coaster speedways set high above glittering cities to circuits housed in giant plastic tubes deep beneath the ocean's surface. And they're fast. So fast, in fact, that you won't have much time to enjoy the view.

"From the awesomely wonderful intro sequence to the game itself, MegaRace looks amazing."

Not just a pretty face

Yes, there is a game lurking under all those marvellous visuals. Unlike many CD-specific products, MegaRace is fun to play as well as good looking. Unless you've skipped the first part of the review, you'll know that the main aim of each race is to blast

Stick Bladerunner, the Running Man and Deathrace 2000 in a blender and hit the switch, and out will pour MegaRace, Cryo's hot new CD-ROM racing game.

MegaRace

WIBBLE ATTACK!

The further you progress, the tougher it gets. Not only do you have more cars to destroy, but in later races the tracks are riddled with hazards. This track, Particle 1, is exceptionally tricky. Run over a Blinding Zone and the whole screen distorts, making it difficult to see what's going on.





the other competitors off the track. In the first race, New San, there are four cars to destroy, and the number increases as you progress. There are three ways to get rid of these unwholesome speedgang members. The first, and easiest, is to sneak up close behind them and fry them with your lasers. Some cars are able to carry missiles, which are even more devastating when they hit home. The second method is to simply ram them off the road. This has the disadvantage of damaging your own car, but if you've run out of weapons you don't have a lot of choice in the matter. The final method is to try and overtake the other cars, and if you manage to stay ahead for long enough they'll automatically self-destruct. This last method is very risky in the later races — it takes a fair while for the cars to blow up and chances are you won't be able to complete the race in time.

To add to the problem, every race-track is covered with symbols, each of which affects your car in a different way. Some give you an extra burst of speed, some slow you down, some make you skid, some distort your view of the track and some add or decrease your weapon power. These symbols are often cunningly placed, so you might aim for a speed-up arrow only to lose all your weapons by driving over the symbol which lies directly behind it. Hitting the wrong symbol can cost you the race, so quick reactions are needed.

Spoilt for choice

Your choice of car also heavily influences how well you do. You begin with a pool of three cars, but every time you win a race and destroy a gang leader, his car becomes available to you. Every car has its own advantages and disadvantages: some are faster than others, some carry more weapons and some are heavily armoured — useful if you want to avoid being reduced to shrapnel after a high-speed collision with the track wall. Pick the wrong car for the conditions and you'll be at a serious disadvantage.

All this racing, shooting and avoiding hazards might make it difficult for you to take time out to admire the graphics, but it won't stop you from enjoying the the soundtrack. I have to admit that I liked the music a lot. Even if it's not the sort of thing you'd normally listen to, the funky techno tunes suit the game perfectly and really help to get the adrenaline flowing. There are sound effects too: skids, explosions and various different

Right: New San 2 is a fast, twisty circuit built high above the city. It's a long way to fall if you crash.

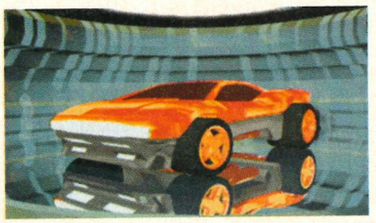


Below: The Suburbs track is tough, good-looking and has the best soundtrack in the entire game. Just watch out for all those hazards.



MEAN MACHINES

There are eight dream machines to choose from, but not all are as fast as they look ...



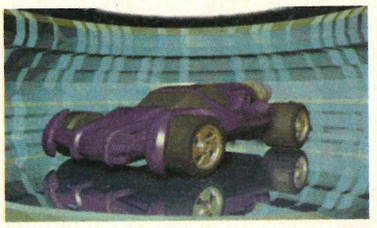
Jose

The Jose looks fast, but its heavy armour slows it down. It's also light on weapons, making it a poor first choice.



Luis

The Luis is speedy, light and, with three lasers, a good performer all round. One of my favourites.



Ousbel

The Ousbel looks chunky, but is actually quite light and fast. It's strongly armoured and can carry missiles.



Ramon

The Ramon is a bit of a pig — heavy, slow and lacking in armour. It does have some tasty weapons, however.



Omega

The Omega is similar to the Ramon in speed, weight and armour, but has a poor selection of weapons.



Paloma

The Paloma is quick and heavily armoured, but unfortunately doesn't score too well in the weapons division.



Maria

The Maria is the heaviest car of the lot, and consequently doesn't move too quickly. A real tank.



Hooper

The strongly armoured Hooper is heavy and slow, and lacks a good set of weapons. Do not choose if you want to win.

AND YOUR HOST FOR TONIGHTS SHOW IS...

MegaRace is, for all its technical wizardry, a cheap and tacky game show with trashy prizes and an equally trashy host. Lance Boyle (chortle) is a manic slimeball with an appaling taste in clothes and an equally appaling line in banter. Try as you might, you just can't get away from him: Lance Boyle is piped into every home and leers down from giant video screens across the city. Well OK, you can get away from him: just hit Return to skip to the next cut scene, or hit Escape to move on to the next race.



noises for each of the symbols on the track, but the cars are pretty much silent, and a bit of engine noise would have added to the thrill.

The host with the most

In between races, you'll also be able to listen to the voice of your MegaRace host, Lance Boyle. Lance introduces each race in his own inimitable fashion: he's occasionally amusing but very often irritating — in other words, a typical game show host. Christian Erikson, the actor who plays Lance, does a very good job, but the character is truly obnoxious. It's possible to skip the cut-scenes which feature him, and although they're definitely worth watching during the early part of the game, you'll probably get tired of them after a while.

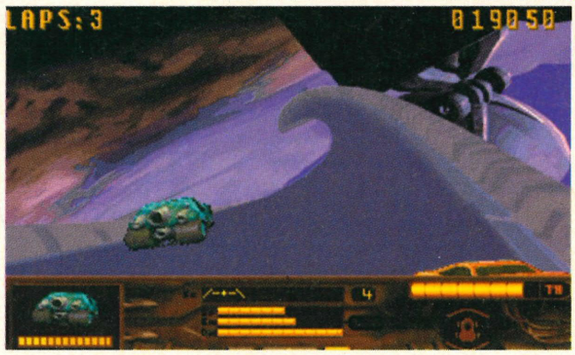
Having played my way through a good many levels of MegaRace (when I could drag my colleagues away from the PC, that is), I found it an extremely enjoyable and entertaining game. I won the first couple of races fairly easily, and was worried that the game might be too easy to complete. However, the difficulty level seems just about right, because at the time of writing I still can't get past that annoyingly difficult Particle track. If you do manage to complete the game on 'easy' level, you could always try it again on 'hardened,' but in any case it's the perfect game if you want a quick ten minute blast of something fast and furious.

MegaRace is a simple game to grasp, but it's still challenging enough to keep you coming back for more.

■ Cal Jones

"The funky techno tunes suit the game perfectly and really help to get the adrenalin flowing."





ALTERNATIVELY



CyberRace
Cyberdreams, £44.99
Rated 7, Issue 27

Fast cars and guns feature heavily in Cyberdreams' futuristic racing game. Your main aim is to finish ahead of your opponents, though if you can blow them off the track, so much the better. The Voxel-spaced graphics are impressive, and although it isn't quite as fast and furious as MegaRace, CyberRace is a good alternative if you don't yet have a CD-ROM drive.



Rebel Assault
LucasArts/US Gold, £49.99
Rated 9, Issue 27

No cars in this one, but like MegaRace, Rebel Assault is a fine example of what can be achieved on CD. Rebel Assault is a fast-paced arcade shoot 'em up, but instead of cars, you're shooting down TIE fighters or bombing the Death Star. The Star Wars theme, together with superb full motion video sequences and stirring music make it an essential purchase for CD-ROM owners.

Top: MegaRace contains a whole host of weird and wonderful racetracks. Fasten your seat-belts for those stomach-churning loops.

Above: Factory 1's gravity defying spiral makes anything you'd find at Alton Towers look tame by comparison.



TECHSPEC

8

RATING

Great on both gameplay and on looks.

Publisher:	Cyro/Mindscape
Price:	£44.99
Contact:	(0444) 246333
Minimum PC:	386, CD (dble spd recommended)
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Ad Lib, Sound Blaster

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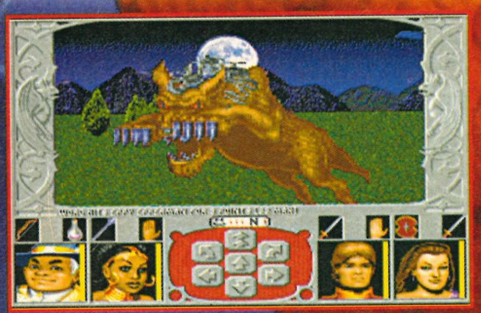
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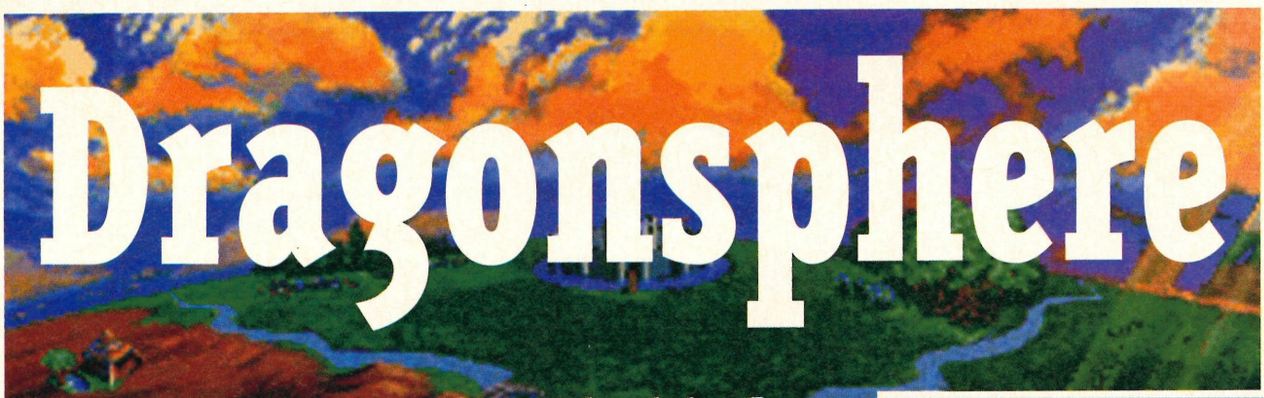
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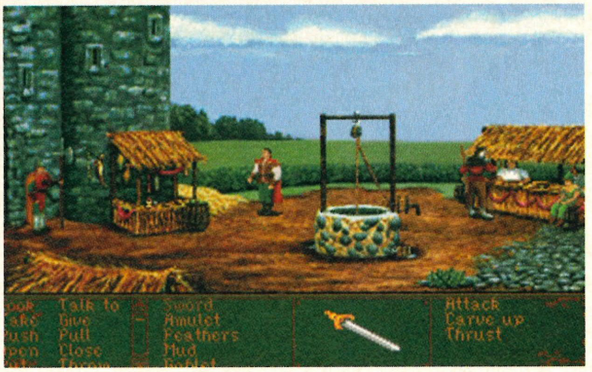
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Dragonsphere



Grab your sword, get hold of your stone collecting kit and make a beeline for the latest adventure, Dragonsphere.

Beyond your castle lies the kingdom of Callahach, a diverse land of people and places. Three of the regions are vaguely allied to your cause but won't offer much help unless you satisfy their demands.

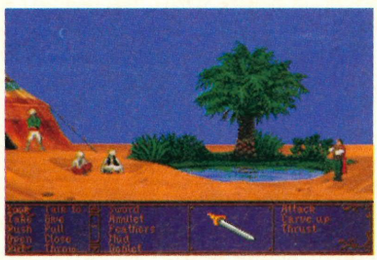


At first, the CD game Dragonsphere appears to be a pretty standard tale of a king saving his kingdom (and a fair maiden) by allying with friends to battle against the forces of evil.

You play the king of Callahach. Your task is to save your country from the sorcerer Sanwe by finding three stones of power which can be combined to defeat him. But no one knows how they work or where to find them. The job falls to you ...

The action develops in a traditional adventure way: you talk to people and they give you information or objects; you complete puzzles and get a reward. Rewards can come in the form of objects, new puzzles or access to a new location. There are two difficulty modes — novice and challenging. Novice is for beginners: challenging features the same obstacles as novice mode, but makes you work harder.

Puzzles can be tough to crack, but conversation is the backbone of the action. Occasionally, when you've spoken to a Dragonsphere, you get a number of magic and ordinary items which can be used in conjunction with special commands or combined with other objects and creatures to lead you into new areas of the game. Their uses aren't always obvious though, and much of your time is taken up trying out new combinations.



How does it look?

Dragonsphere is a very friendly game to play. The interface is excellent and offers a good deal of complexity, but like most games of this kind the depth and richness of plot that you might have found in a text adventure are sacrificed for simplicity and graphical power.

So although Dragonsphere may not be the best adventure game ever, nevertheless it's certainly polished and playable enough to warrant your attention.

■ **Gordon Houghton**



TECHSPEC

7

RATING

Some minor flaws but still a good game.

Publisher:	MicroProse
Price:	£39.99
Contact:	(0454) 329510

Minimum PC: 386, double speed drive, mouse

Minimum memory: 2Mb

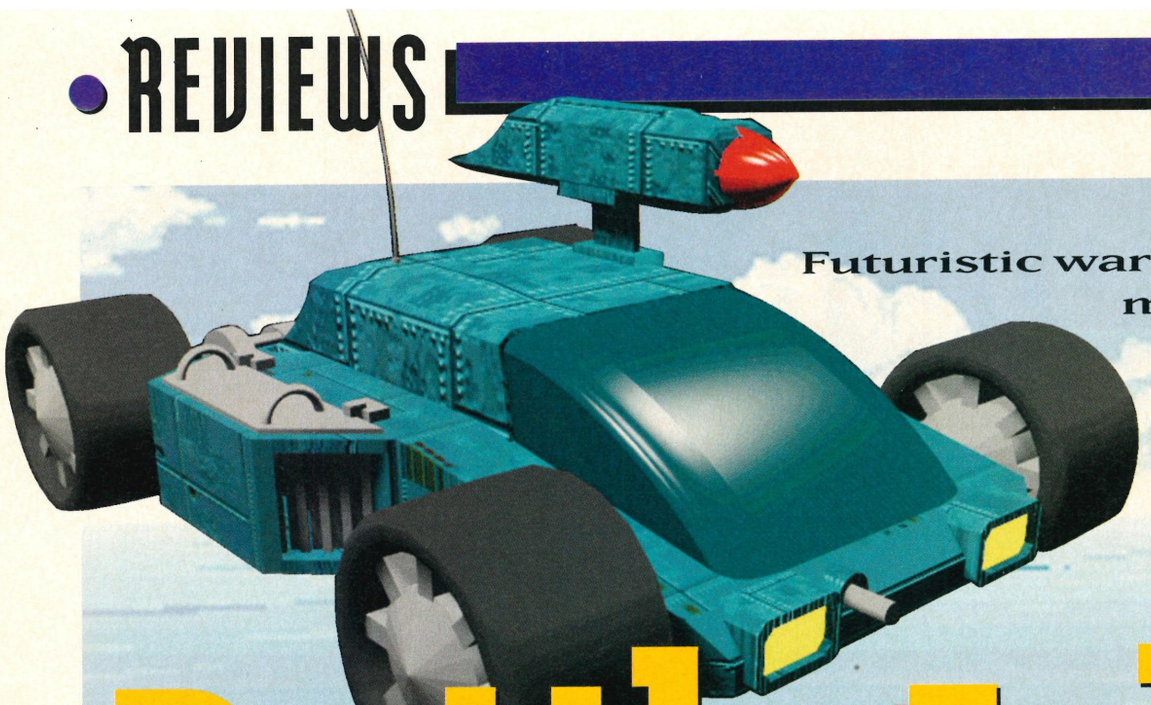
Minimum graphics: VGA

Sound: Ad-Lib, Sound Blaster, Roland, Covox

Above: the castle of Gran Callahach is where you begin the game. There are many useful objects here as well as a couple of secret locations.

Left: the Soptus Ecliptus nomads have their own language and their own customs based on mutual flattery. Gain their confidence and the rewards are very great.





Futuristic war gaming gets a much needed shot in the arm with the arrival of Bluebyte's mechanised showpiece.

Battle Isle 2

In WWI, General Haig employed a single-minded approach to the 'noble' art of war — more men plus more machines equals more mayhem. The sheer number of units and the vast array of weaponry in Battle Isle 2 gives you much of the same kind of feeling: this is strategy warfare on a massive scale.

Still, the game remains true to the trusty hex-based principles of its predecessors: Battle Isle, Battle Isle '93 and Historyline. Beneath all the fancy graphics, it's a table top war board game with counters — and nothing more.

But unlike some strategy war games I could mention, Battle Isle 2, released first on CD, and yet to appear on disk, makes full use of the PC's capabilities to produce an attractive, clever game. It looks good, sounds good, and has options and refinements coming out of its ears. If you've ever come across the original, all you have to do is imagine it 10 times more sophisticated — with 3D animated combat scenes thrown in for good measure — and you'll have a fair idea of what Battle Isle 2 is all about.

This has inevitably cost Battle Isle 2 some of the original's simple charm, swapping that instead for a more challenging and comprehensive game, that results in Battle Isle 2 being an all-round 'big' game.

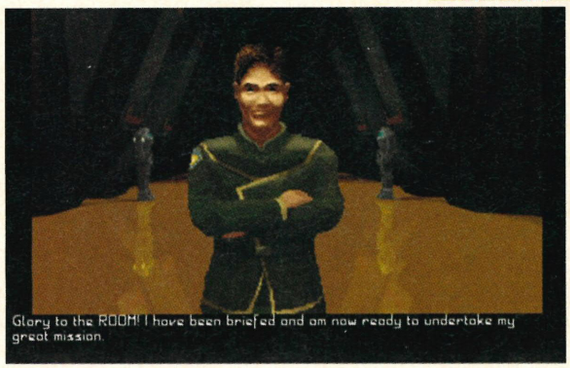
Method in all this madness

Rather than a simple sequence of individual maps to play through, Battle Isle 2 has a plot that dictates an overall campaign, and it's a tough nut to crack. I won't bore you with all the details, but suffice to say that the developing storyline does provide a sense of purpose and fresh impetus to the daily grind of PC trench warfare.

Secondary tasks, new units and (often misleading) intelligence reports may force you to rethink your plans at any stage, so it becomes more than a case of beating the enemy to a pulp and then gleefully hoisting your flag over the remains of their HQ.

What's more, Battle Isle 2 is a very different game tactically from its predecessors. The turn-based structure of the game has been radically rearranged, borrowing from the 'impulse movement' used in many board war games. Instead of completing an attack or a movement phase, then waiting for all the battles to be resolved, you now move your units and attack individually during the same turn. This allows you to follow up successful attacks quickly and changes the nature of the game for the better.

The visual range is limited depending on the vehicles in the area, the terrain, the weather conditions and radar cover. A menacing red mask sits over the area you can't see, and although you can make out the gist of the terrain ahead, you have no idea how many enemy tanks are waiting to pounce





Right: meet Matthew Harris, aka 'The Strategist.' Far right: simply click on the unit icon to bring up the stats on massive battle tanks like this Imperator.

on a rash advance. As a result you need to use the reconnaissance and radar units carefully to get an idea of what you're up against. I must admit, it took a bit of getting used to, but it makes for an altogether different, more suspenseful game.

Mind you, there's so much emphasis placed on supply lines that even rash and sloppy commanders — like yours truly — will think twice before committing to the charge without adequate support. I lost my first battle simply because all my tanks ran out of gas, which was embarrassing to say the least. To have a chance of establishing decent supply lines it becomes vital to build road and rail links, and to disrupt the enemy supply units by demolishing strategic targets such as bridges and roads.

Terrain is more varied, of course, and there are a wide number of buildings and settings, including temples and villages, docks and depots.

Perhaps the nicest touch is the introduction of seasonal weather changes. One minute your tanks are thundering happily across a plain to cut off the enemy retreat; the next, they're bogged down in heavy mud and sitting ducks for an enemy counter-attack. And when the rivers freeze over, you can always take a chance that they'll stay frozen long enough for you to get a light armoured division safely across to the other side. Decisions, decisions ...

A high IQ

Battle Isle 2 has a completely new set of artificial routines. And to be honest, much as I liked Battle Isle '93, the game needs it. In the earlier games, all you needed to come up with for a winning strategy was a bit of thought, a couple of beers and a few practice runs.

Now, though, there are three levels of difficulty and the computer opponent is not only very tough to beat, but also a hell of a lot more circumspect. You used to be able to fool Battle Isle into diverting units to attack a weak unit left as bait while you made a rapid dash for the strategically important targets like factories and depots. Not any more though.

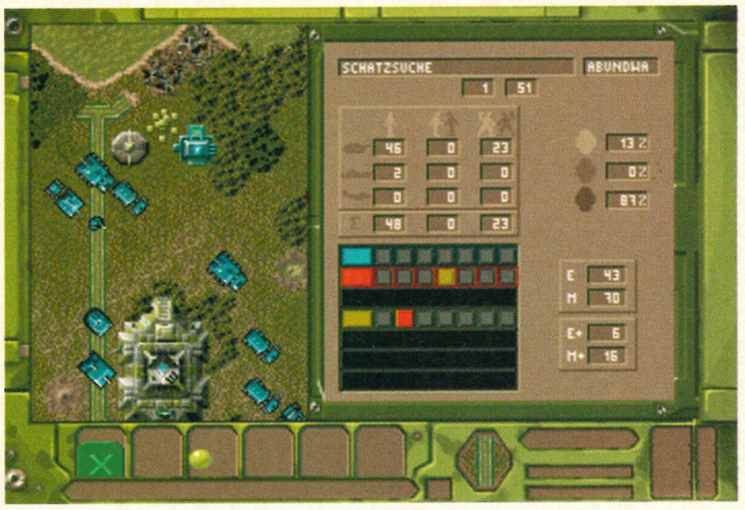
"Paradoxically, the game's new AI is its biggest fault as well as its biggest bonus."

This is particularly evident in the campaign game, where the computer's objective, like yours, can be something totally different from the usual 'fight until you drop' stuff: it might be trying to take a particular port or hold a bridge until reinforcements arrive. This means it won't necessarily be tempted into a rash move. On this score, I can't fault it. You can't ask more than a really challenging opponent in a good strategy game, and the AI is certainly that.

Paradoxically, the game's shiny new AI is also its biggest fault as well as its biggest bonus. The damned computer spends so much time trying to prove just how intelligent it is that it can take ages making up its mind what moves to make. It's like playing chess against someone who keeps nodding off.

What's actually happening is that it's working out every single possible move, for every single unit. With maps as big as 56x64 and hundreds of units, this can mean a wait of anything up to 10 minutes or more where there are more than the two armies going at it, each with different objectives.

As for the 3D cut scenes, well, personally I can take them or leave them — which is



It's not just one army you're up against, it can be two or three with the odd band of rebels thrown in for good measure. Life is never simple ...



A quick sortie into the 3D combat animations as we wave goodbye to the Belgrano.

Weather conditions are very changeable. Right now it's a corker of a day, hence the good visibility. But any second ...

Submarines dive to escape, and only attack certain targets on the surface.

Difficult terrain eats into your fuel. These bulldozers help you build new road and rail links.

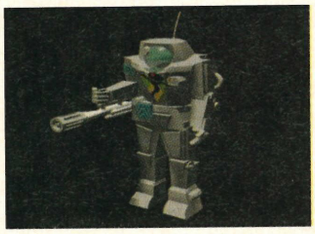
No reason really: warships do exactly what you'd expect them to. I just liked the picture.

Air supremacy is vital in many of the battles. Like the subs, planes can now climb or dive.

Factories, depots, airstrips and seaports, there's always somewhere to build new equipment and train the rookies.

IN YOUR ARSENAL ...

Tooling up in Battle Isle 2 is no small feat. Luckily there is no small amount of fighters lying around for you to tool up with ...



Troll: Grunts, cannon-fodder, call them what you will — just make sure you send them straight into the nearest firefight.



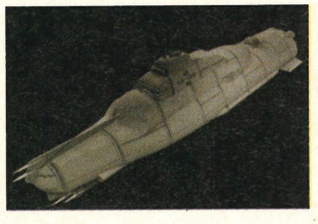
Ranger: The reconnaissance division. Ideal for a quick smash 'n' grab raid on an enemy depot.



Technotrax: Fast, light tanks which are often the mainstay of your attacks.



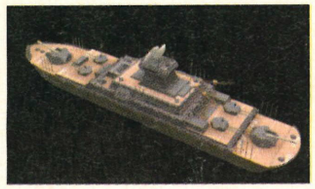
Imperator: The mother of all battle tanks. Watch out for changing weather conditions and difficult terrain.



Orca: Hunter-killer submarine with a penchant for lurking in unsuspected places.



Stormbringer: High altitude death and destruction courtesy of your local bomber division.



Zenith: It's big. It's a ship, and it's heavily armed. Speaks for itself really.

ALTERNATIVELY



Battle Isle '93
BlueByte
Reviewed: Issue 21 Rated: 7
Price: £19.99
A veritable babe in arms compared to its newer, and much bigger brother. Still, because it's that much more lightwidget, it's also that much more approachable and a good alternative if you can't face the strain of Battle Isle 2. Excellent value.



V for Victory
360/Electronic Arts
Price: £39.99
A more traditional approach to strategy gaming, and arguably the finest hex-based strategic warfare game on the market. I've picked the first game in the series here, but it could equally have been any of the four, as they're all first-rate war games, managing to be both complex and accessible to play.

exactly what you'll have to do for the disk-based version of Battle Isle 2. They're very well done polygon-based animated sequences (they represent the locations and circumstances of the particular units in battle rather than being just stock footage) and they do add atmosphere to the game. You can toggle them on or off at any time by hitting F2, and by and large that's what I found myself doing, particularly with the larger bust-ups.

Call me impatient, but the only way I could deal with the waiting time on the big maps was to be doing something else at the same time, like reading a book or watching the TV. The trouble with this is that you then miss what the computer's been up to and you end up playing blind.

The delay is likely to be even more of a problem when you start playing Battle Isle 2 against more than one opponent.

The more the merrier?

BlueByte has put a hell of a lot of effort into adding multi-player options in Battle Isle 2, and it probably boasts the most sophisticated and varied setup for network, modem or single-screen game play I've ever seen in a strategy game.

Up to seven players can play over a network. You can also play head to head over a null-modem cable and a multi-player game on the same PC. Rather than a split screen job where the drawback is the obvious one that you get to see your opponent making his moves, this is done with an ingenious secrecy screen. When your turn is over, simply hit the F5 key and the game is locked, the screen blanked until the other player wants to look at it and make his move. Because of the visibility restrictions, each player sees only the terrain and units available to him.

It's still open to a spot of cheating of course, but it's about the best solution you're likely to come across.

But either way, taking on the computer or pitting your wits against a friend, it's still going to be a long job. BlueByte is aware of the problem and is working on an update



which should cut down the waiting time by simplifying the computer animations.

And finally ...

That's my only criticism of Battle Isle 2, and the sole reason why it doesn't rate a nine. It's a marvellous game, beautifully presented, tough and varied. If you've got the patience, you'll love it. I've thoroughly enjoyed the game, I'm just not sure whether I can get all that time off work that I'd need to complete a full campaign.

■ John Bennett



All my tanks ran out of gas ... oh dear.

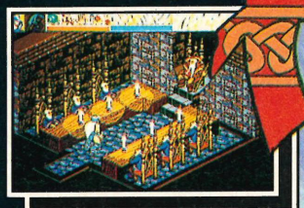
TECHSPEC 8 RATING

Publisher:	Bluebyte
Price:	£39.99
Contact:	(0727) 868005
Minimum PC:	386 with CD-ROM
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Ad Lib, Sound Blaster

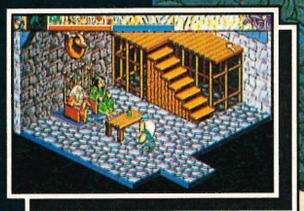
And so it was that during the age of Ragnarok, Heimdall, beloved of the Gods, came to Earth from Valhalla to find the pieces of a Sacred Amulet - the power of which would banish the evil Loki from the viking lands.

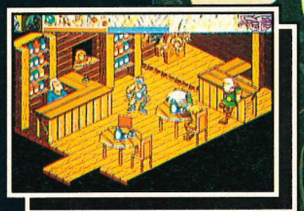
It came to pass that Heimdall's quest was revealed in the mighty saga that is....

Heimdall 2











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The Elder Scrolls: Arena

Bethesda's best product to date is a role-playing game which could well give Ultima Underworld a run for its money.

You may be forgiven for thinking that Elder Scrolls is Bethesda's answer to Ultima Underworld. Like Underworld it's a first-person perspective, multi-directional scrolling role-playing game, and also like Underworld, it has a fantasy knights-goblins-and-magic type theme. However, first impressions aren't always accurate, and if you look more closely you'll see that Elder Scrolls is actually quite different.

Unlike many games, Elder Scrolls doesn't restrict you to one quest and one dungeon: you've got a whole world to explore. If you want to stay in one town, visiting the inns and temples, slaying the monsters which prowl the streets at night and running small errands for people, that's fine. If you'd rather wander the countryside looking for treasure in abandoned buildings, that's fine too. Elder Scrolls is the role-playing equivalent of Elite: a huge game in which you can go where you want, when you want and do exactly what you want.

Sounds daunting, doesn't it? Having being brought up on a diet of linear RPGs in which I knew more or less what I had to do next in order to progress, the freedom offered by Elder Scrolls is almost scary in comparison. After all, it's difficult to know where to start with a game as large as this. Elder Scrolls does have an overall objective, but you can take as long as you like to achieve it.

The game opens with you waking up in a cold, smelly dungeon where you have been left to die. This might not seem like the best of starts, but let me assure you, it gets worse. The ghost of a recently murdered friend appears and tells you of an evil plot which threatens your home world, Arena. A sorcerer, Jagar Tharn, (yes, it's the old wicked wizard routine again) has trapped the good Emperor in another dimension whilst usurping his throne. Tharn can only be defeated by the legendary Holy Hand-Grenade of Antioch, oops, I mean the Staff of Chaos, which has been broken into eight pieces and scattered around the continent. Naturally, it's down to you to save the day.

Elder Scrolls is the role-playing equivalent of Elite: a huge game in which you can do what you want.

First things first

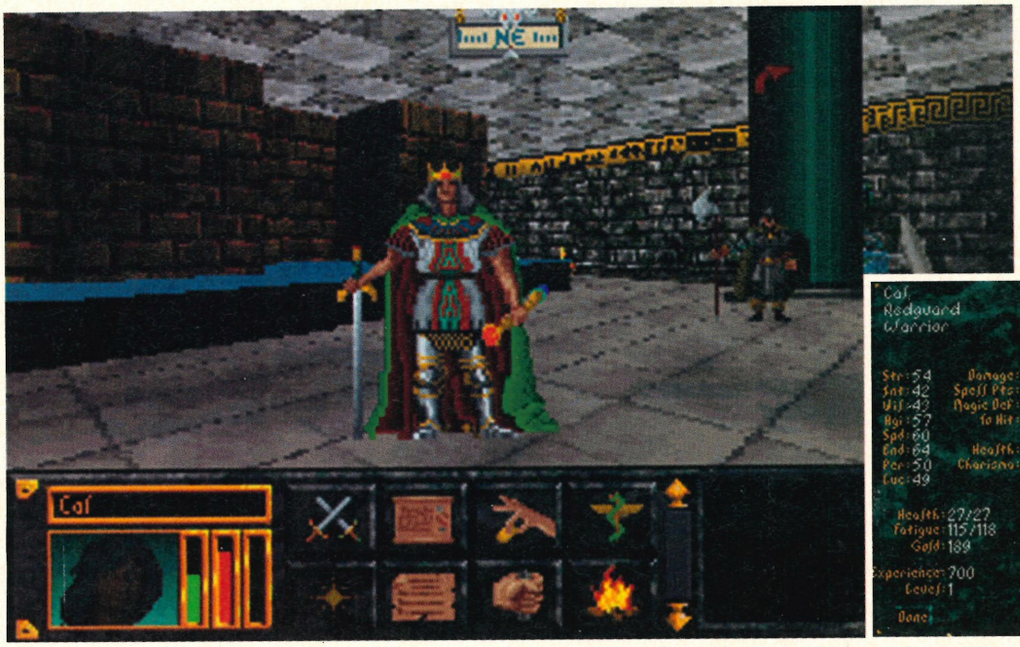
Your first step is to escape the dungeon. This opening dungeon isn't too demanding, and is there to help you get used to the control system while picking up arms, treasure and experience points along the way. Once you've made it out into the big, wide world, the fun really starts.

Above the dungeon lies one of Arena's many towns, and it's here that you begin your quest in earnest. At this point you realise that you have to start looking for the staff, but you don't really know how to go about it. Don't panic. The trick is to forget the staff for the moment and concentrate on your immediate needs: a job and a place to sleep. Lodgings are easy to come by. Every town has several inns and, providing you have picked up enough gold in the dungeon, you shouldn't have any trouble renting a room.

Finding work is more difficult. Your reasons for getting a job are twofold: firstly, to earn money, and secondly to build yourself a good

Below: No, it's not Lord British. Arena is divided into several city states, each with its own ruler, and if you've built yourself a good reputation, the local royalty might send you on a quest.

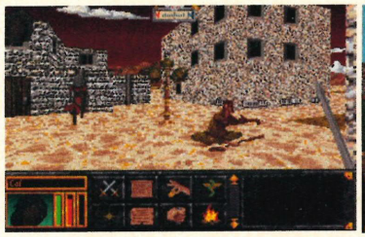
Below right: This screen shows your vital statistics (pretty average in my case).





TOURING THE ARENA

Arena is a vast place and climate varies greatly across the continent. You can explore at your leisure, picking up quests along the way.



The arid region of Hammerfell is a place where men are men and women are scantily clad. No wonder they all look so tanned.



The capital (Imperial City) is a far more green and pleasant place, with its tree-lined avenues and fountains.



The volcanic region of Morrowind looks inhospitable but that hasn't stopped a few foolhardy souls from setting up home here.



Tenmar Forest in Elsweyr (I kid you not) is another cold, snowy place. Naturally, the citizens are all wrapped up warm.

reputation. During the day, the streets are full of people who are happy to stop and help you. There are a number of questions you can ask them, including who they are, where certain places are located, whether they've heard any rumours and where you can find work. They won't always know, (one monk claimed he belonged to a certain temple but couldn't tell me where it was) but if you strike lucky they might inform you that someone in a nearby inn is willing to pay you to carry out a job. To start with, work is fairly unexciting, running errands or escorting people to other parts of town. But if you are consistently successful at completing these tasks, you'll be able to pick up better and more complex quests later on. Eventually, you'll be able to get work from the kings and queens of Arena's city states, and occasionally you'll be rewarded with information which could lead to finding another piece of the staff.

> The sheer scale of the game is extremely impressive, and there's a hell of a lot of attention to detail.

Enormous

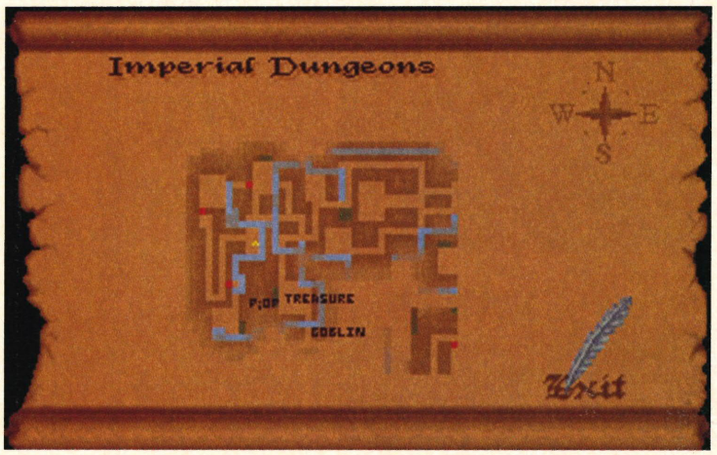
The Elder Scrolls game world is not what you'd call original – it's the same old monsters and the scenario is fairly typical of the majority of RPGs. However, the sheer scale of the game is extremely impressive, and there's a hell of a lot of attention to detail. Every town in Arena is different, reflecting the local climate and customs (see Touring the Arena above) – some areas are hot and dry, whilst others are located high in the mountains or on the coast. You'll experience different weather conditions, including rain, snow and thunderstorms, and it also gets dark at night. Arena even has its own days, months, seasons and public holidays, as well as shops, inns, guilds and secret societies. Indeed, while it's possible to remain in one place for most of the game, why would you want to when there's so much to see and do?

You could easily play Elder Scrolls more than once, tackling it one way the first time and another the next. The way in which you approach the game is partially affected by the character you play, which could be anything from a healer to an assassin. Character creation can be done in two ways: you can either answer 10 multiple choice questions which determine which character class best reflects your personality, or you can simply choose your career. You must also decide where in Arena you want to come from (some races are better suited to certain vocations than others) and whether you wish to be male or female.

What you'll wind up with is a list of statistics, including strength, intelligence, agility and even luck. The average score for each is 50, so obviously you'll need an above average score for statistics which directly affect your career (ie, you can't have a wimpy warrior or a thick wizard). Every time you go up a level you are awarded three or more points, which you may then use to boost these statistics. It's up to you whether you add to your strengths or try to improve on your weaknesses – being a bit of a brute I usually opted for greater strength.

Elder Scrolls, like other multi-directional scrolling games, allows you to move around the screen freely. It doesn't have the fastest scrolling routines I've seen – it's slower than both Origin's Shadowcaster and Psygnosis's Wizard, and falls a long way short of Doom. Reducing the level of the graphic detail speeds things up a bit, but my 20MHz 486SX had difficulty coping with anything above the minimum setting.

The control system is remarkably similar to Ultima Underworld. Movement is controlled via the mouse or cursor keys, and the higher the cursor appears on screen, the faster you move. Like Underworld you can jump, swim or, with the aid of magic, fly. Fighting is also similar: click on the combat icon to draw your weapon, then use the



Elder Scrolls has an automap feature and, like Ultima Underworld, you can annotate the maps with your own messages.

ATTENTION TO DETAIL

Elder Scrolls is not the fastest game around, but reducing the detail of the graphics helps to speed things up a bit. The reduction of detail is only really noticeable in outdoor location, such as this city.



With the detail on maximum, all the buildings are visible but the game moves slowly (it's sluggish even on a 50MHz, local bus 486).



Turn the detail down to minimum and the buildings disappear, reappearing only when you get close to them.



Whilst it's possible to wander through the countryside on foot, it's quicker to travel via the map. Click on the town you wish to visit, then click on the horse icon and off you trot.

ALTERNATIVELY



Ultima Underworld 2
Origin, £44.99
Rated 8, Issue 18

The sequel to the ground-breaking Underworld is a large, involving game with an intriguing plot, lots of character interaction and numerous quests to fulfil. The graphics are similar to Elder Scrolls and, although there are no outdoor locations, there is still plenty of variety with eight different worlds to visit. Extremely atmospheric.



Wizard
Psygnosis, £44.99
Rated 5, Issue 29

This British attempt at an Underworld beater looks reasonable, but the lack of character interaction and linear gameplay make it less interesting. It's more like a multi-directional scrolling Eye of the Beholder than an Underworld, with its solve-the-puzzle, kill-the-monster approach. Elder Scrolls offers much more freedom.

A FEW FRIENDLY FACES

Elder Scrolls isn't exactly brimming with originality as far as monsters go, (there's nothing in here you wouldn't have come across in Dungeons and Dragons), but the various beasties have quite a lot of character.



You can't have a fantasy RPG without goblins, so Bethesda has kindly provided a few. When hit hard enough, these ugly little creatures explode in a mass of severed limbs and blood.



If you're caught stealing or house-breaking, several large guards will appear from nowhere and attempt to relieve you of your life. Kill one and you get a nice suit of plate mail for free.



Like goblins, lizard men don't pose much of a threat beyond the very early stages of the game. These primitive carnivores have little in the way of intelligence and are fairly easy to kill.



Minotaurs have the head of a bull, the body of a human and the legs of an anorexic. Despite their spindly limbs, they are very strong and enjoy eating their prey alive. Yum.

mouse to direct the blows at your enemy. I found the combat quite satisfying. Although you can't see how badly your enemy is hurt, (there are no atmosphere destroying messages such as "you hit orc for six points of damage") you can always tell when a blow strikes home because of all the blood.

The magic system is also well thought out. If you're playing a magic-user, you'll have a variety of spells available to you, and these are accompanied by some good visual and sound effects. By far the most interesting feature, though, is the option to create your own spells by combining the effects of up to three existing spells. Since each spell costs a certain number of magic points, it's no good trying to create a spell which will wipe out a dozen enemies if you lack the power to cast it.

Although the scrolling could be faster, Elder Scrolls is, on the whole, a nice looking game. The graphics are somewhat pixellated, but there's a pleasing variety of locations and the sprites have lots of character. There are one or two little niggles, but the standard of the presentation is generally high.

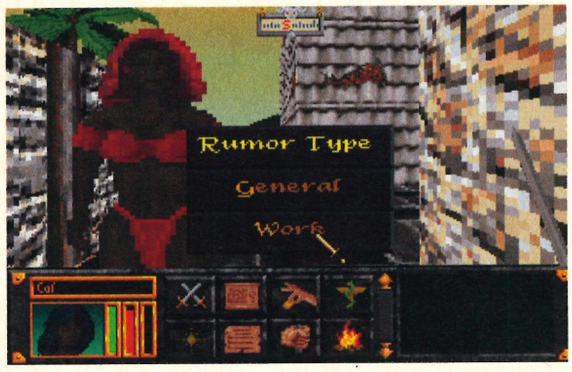
Sounds scary

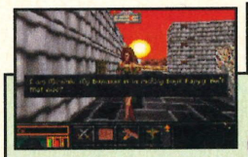
This also extends to the sound. The music is fairly good, but the sound effects are excellent. Exploring the first dungeon is a genuinely creepy experience: in fact, I haven't felt this nervous in a game since I first played Doom. Doors clang shut behind you, water drips and monsters howl. You'll often hear a monster before it appears, which greatly adds to the tension.

Elder Scrolls is the best thing Bethesda has produced by a long way, and contains a lot of good ideas. The combat, magic and character creation systems are well designed, and the game is large enough to keep you going for some time. Although I wish it moved a bit quicker, Elder Scrolls has few faults and is definitely worth adding to your shopping list.

■ **Cal Jones**

People are generally helpful, and can sometimes help you find your way around or point you in the direction of a job.





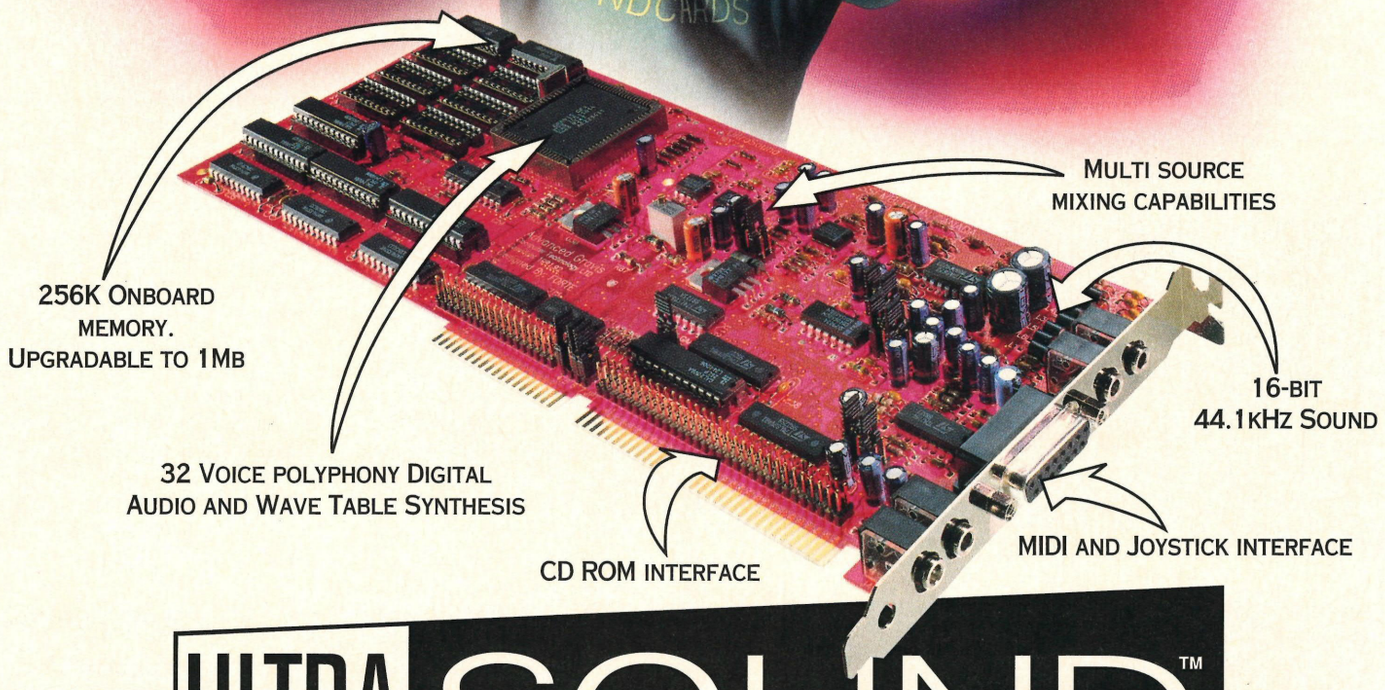
Role-playing as it should be

TECHSPEC 8 RATING

Publisher:	US Gold
Price:	£45.99
Contact:	(021) 625 3366
Minimum PC:	386, MS-DOS 5.0. mouse
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Sound Blaster, Aria Roland

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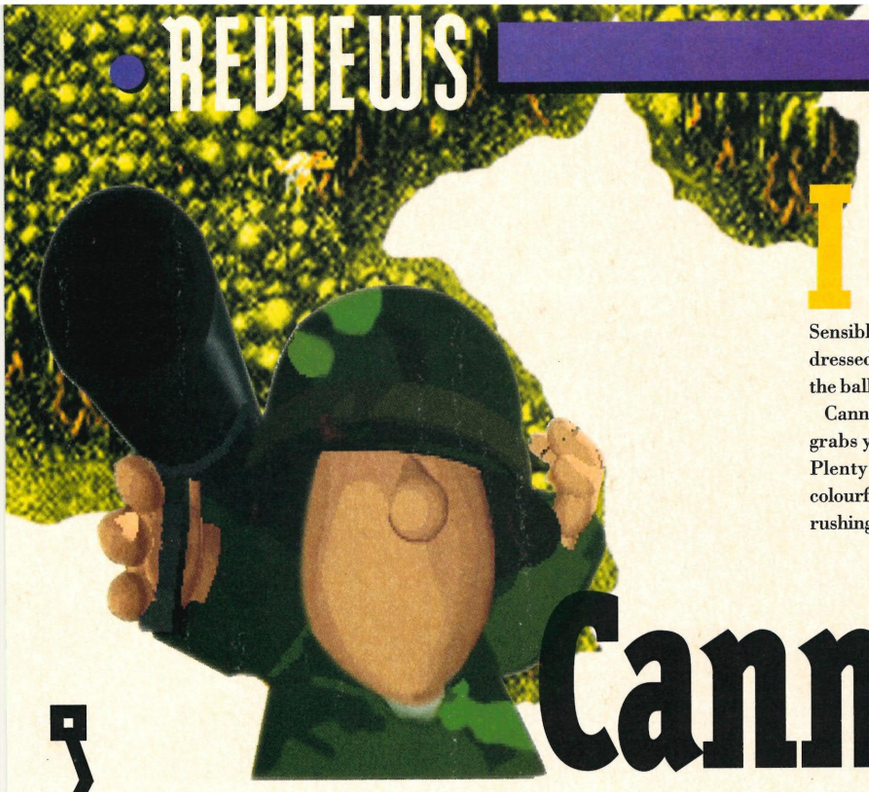
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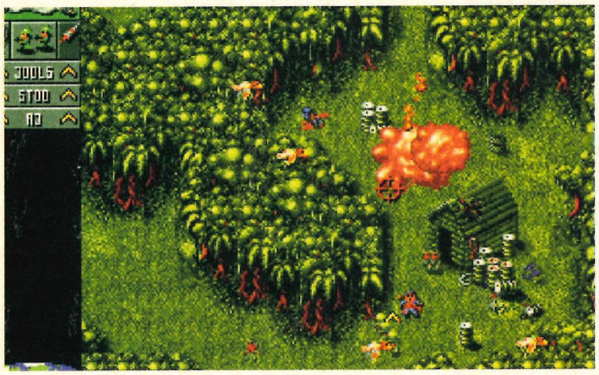


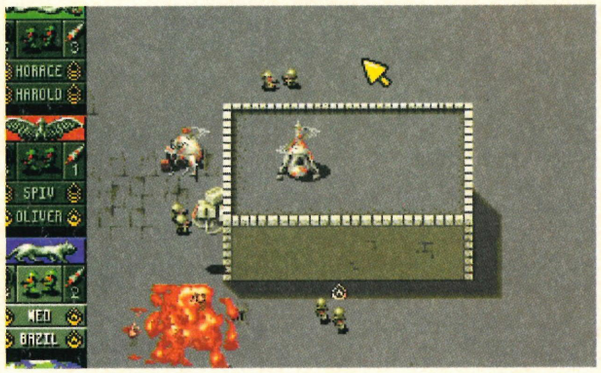
Cannon Fodder

War at its worst fought by sprites at their best. Cannon Fodder throws up blood and laughs a-plenty.

If you were the type of player who always thought that hacking the legs from under the opponent was the best part of Sensible Soccer, then you'll love the daft things that the folks at Sensible Software have been up to. They've dressed all the sprites in khaki, taken away the ball and given everyone machine guns.

Cannon Fodder is one of those games which grabs you from the moment you load it up. Plenty of sprites rushing around against a colourful background, plenty of other sprites rushing around just as frantically in different uniforms and no small amount of mayhem between the two. It's visually arresting and the minute you get moving you're hooked.





Top: A large explosion in the jungle.

Centre: A large explosion near the heliport.



It's all very simple: guide a squad of up to six men through a series of increasingly difficult missions, each split into several phases. Get them all killed before achieving your objectives, and you have to start again with a new squad. Succeed and you'll be rewarded with a burst of upbeat music and the chance to send the same poor troops into an even more dangerous situation.

The whole feel to the game is very upbeat, in fact. It's fast and furious and unashamedly gory, but has an undeniable sense of humour about it. Control is incredibly simple, which means that you're up and playing in seconds, and there's never a dull moment. You can split your team into up to three smaller units, and have them all charging around, firing machine guns, hurling grenades and launching rocket attacks simultaneously. Found an abandoned vehicle? Hot wire it, and bundle the boys in for a joy-ride. The animation is fun throughout, although on occasion it can be a bit tough to see what's what with such small sprites.

None of which means that there isn't something a bit deeper for the thinkers amongst you, because Cannon Fodder is far more than a mere shoot 'em up. If truth be told, by the time you've worked through the easy stages you'll be spending more time planning your next move, *a la* Lemmings, than charging in with all guns blazing. If I was going to classify Cannon Fodder, I'd liken it to Bullfrog's Syndicate, except that things are a hundred times more frantic and the dark moody atmosphere has been replaced by something much more light-hearted.

The humour element is, over all, what really makes Cannon Fodder. It's violent, sure, but the cartoon feel puts a stop to Doom-type sadism. The missions all have tongue-in-cheek names and the graphics and sound both have light moments. Shoot a man and he hits the ground with a scream. He'll die anyway, but there's just enough time to shoot him once more if you fancy hearing him scream again. So it's not hard to see why the Royal British Legion wouldn't support Cannon Fodder.

If I have one reservation about the game, it is perhaps that there isn't really enough variety in the gameplay or missions to keep you going for all that long. Sure, you get to battle through jungles, ice-scapes, and other locales, but the basic system is the same each time. Also, there are only 24 missions, even if the last few are damn tough.

Cannon Fodder is a tactician's shoot 'em up which poses questions like, "How do I get all my men across this river without getting them perforated by that machine-gun nest?" "Should I charge across the open land or risk an ambush in the cover of the forest?" And the ever popular, "why did I just throw that grenade and run underneath it as it went off?"

Frequently frustrating, often amusing and consistently engaging, Cannon Fodder is a simple but entertaining game.

■ Martin Klimes



TECHSPEC

8

RATING

Sergeant Bilko meets Lemmings.

Publisher:	Virgin/Sensible Software
Price:	£35.99
Contact:	(081) 960 2255
Minimum PC:	386 plus mouse
Minimum memory:	2MB
Minimum graphics:	VGA
Sound:	Most major soundcards

Star Trek 25th Anniversary CD



Say 'goodbye' to those cumbersome text boxes with Star Trek on CD.

Like most CD conversions, Star Trek CD enhances the original Star Trek graphic adventure with sampled music, a veritable wealth of sound effects and replaces all those cumbersome text boxes with over 6,000 lines of digitised speech.

Although the game's colourful graphics haven't changed, Interplay *has* managed to sign up the original cast members to provide the voice-overs. With William Shatner, Leonard Nimoy, DeForest Kelley, James Doohan, George Takei and Walter Koenig involved, now you can not only see the Enterprise crew members but hear Kirk shout his familiar commands and listen to the incessant bickering between Bones and Spock. I'm not a massive Star Trek fan but I must admit, the addition of those familiar voices makes the game so much better.

The original game was rightly praised for its recreation of the look and feel of the 60's TV series and now with the addition of the speech, the Star Trek experience is much more immediate. Just listening to the dialogue books you a first class seat on the nostalgia express: a ride that takes you back to those heady Star Trek days of spooky alien ships, pointy ears and dramatic Shatner kisses. Occasionally the lines are a touch wooden, but overall the speech is clear and very well produced. But hey, I'm no drama critic, what do I know?

If you haven't bought 25th Anniversary yet, I urge you to consider the CD version. It adds a whole new dimension to this classic game and in my opinion, it's absolutely superb.

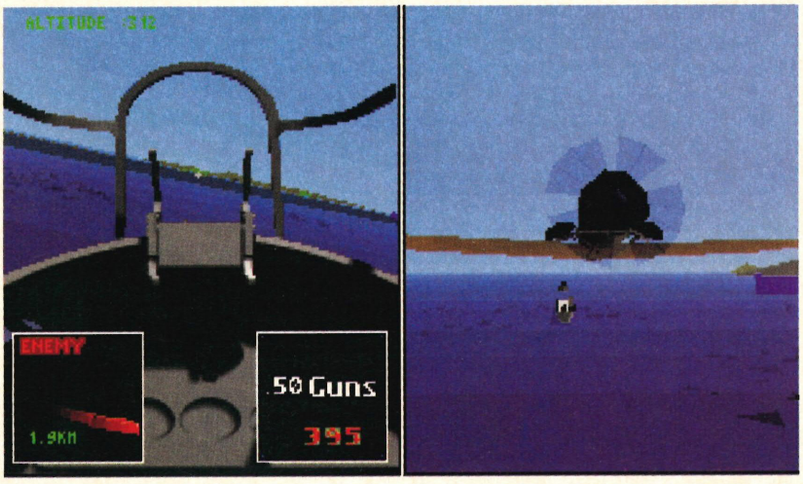
■ **Dean Evans**

TECHSPEC

Publisher:	Interplay
Price:	£49.99
Contact:	(0865) 390029
Minimum PC:	386 PC, DOS 3.3 or higher, CD-ROM drive
Minimum memory:	2Mb RAM
Minimum graphics:	EGA, VGA
Sound:	Pro Audio Spectrum, Sound Blaster

RATING 8

Fascinating, Captain.



It's chocks away as you take to the skies in this rather good two-player, action filled, flight and fight sim.

Evasive Action

Evasive Action is a no-nonsense flight game that takes the basic flight sim, trims off the time-consuming realism, streamlines the controls and dumps you straight into the dogfighting action. In fact, EA boots out stall speeds, lift ratios and other aerodynamic whatnots and takes flying back to its up, down, left, right fundamentals.

The game is set across four very different time zones: 1914 with Sopwiths and Fokkers; 1942 with Hellcats and Zeros; 1993 with F/A 18 Hornets and Russian MiG-29's and even a space scenario set in 2064 with suitably futuristic starfighters.

As for the gameplay, it's really very simple. First, get up in the air and second, shoot down your opponent. That's basically it. There's also a number of stunts you can try – lying under bridges, between Zeppelins and so on – which, when successfully completed, handily replenish shrinking weapon and fuel stocks.

All controls can be accessed via the joystick, mouse or keyboard, leaving you free to focus on the fighting and allowing you to perform all those nifty little manoeuvres. But the thing that really makes EA shine is the two-player split screen option. Two players can either dogfight each other on the same PC or play across two by using a null modem cable or a modem. The computer opponents are good but there's nothing like fighting a real person.

EA is a fun, very different flight game. Don't go expecting Falcon 3.0, EA is more a Falcon 0.25. But that's no bad thing.

■ **Dean Evans**

TECHSPEC

Publisher:	Mindscape
Price:	£39.99
Contact:	(0444) 246333
Minimum PC:	386, MS-DOS 5.0
Minimum memory:	4Mb RAM
Minimum graphics:	VGA
Sound:	AdLib, Sound Blaster, Roland

RATING 7

Fast but not much fun on your own.

Air Force Commander

TECHSPEC	
Publisher:	Impressions
Price:	£34.99
Contact:	(071) 351 2133
Minimum PC:	286, MS-DOS 3.0. Mouse recommended
Minimum memory:	640k
Minimum graphics:	VGA
Sound:	Ad-Lib, Sound Blaster

Highly playable strategy game.

RATING 6

Air Force Commander is an unusual strategy game which effectively simulates a huge variety of conflicts from World War 2 to the present day . It's played in real time and requires quick thinking as well as mouse-dexterity. You control your country's airfields and resources, and it's up to you to scramble your planes, choose targets or patrol paths and take out key installations like radar stations and fuel dumps, while defending your own. Obliterate enough material and the enemy's morale will crack. That's the theory anyway, and while this isn't the most realistic war game I've ever played, it's certainly very enjoyable. The big scenarios are challenging, when played at full speed. Graphics and interface could be better, but it's easy to pick up and the historical scenarios are well thought out. Though limited this is a fun game, with a lot of clever touches. If it didn't have the feel of being not quite finished it would deserve a much higher mark.

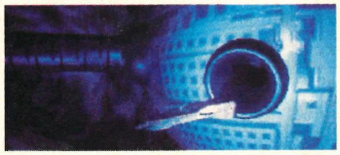
■ Simon Shaw





Hurricanes sit on the tarmac waiting to scramble in the Battle of Britain scenario. There's no shortage of Dorniers and Stukas winging their way over looking for a wizard prang.

REVIEWS



Microcosm

The intro sequence is to die for. With a thumping soundtrack and beautiful fluid graphics, it's another example of what can be done on CD. Disappointingly, the game itself is not very good.

The global intrigues of a futuristic mega-corporation have led you to a miniaturised sub floating around someone's body. It's a case of moving the cursor over objects as they float towards you and shooting at them until they aren't floating towards you any more. The docking sequences and end-of-level guardians are nothing more than distractions from the fact that there isn't a lot to Microcosm. And they didn't distract me for long.

The graphics aren't bad: the tunnel-like arteries and veins through which you travel look quite good, but the cockpit of your craft and the blood cells and anti-bodies you encounter are uninspiring.

Microcosm is a well presented but essentially dull game. After 10 minutes I was already looking forward to something else.

■ Martin Klimes

TECHSPEC	
Publisher:	Psygnosis
Price:	£49.99
Contact:	(051) 709 5755
Minimum PC:	386 CD-ROM, MS-DOS 3.3.
Minimum memory:	4MB
Minimum graphics:	VGA
Sound:	Ad-Lib, Sound Blaster, Roland

Nice intro. Shame about the game.

RATING 4

F14 Fleet Defender

Fleet Defender is a variation on the combat flightsim, and is as competent a package as you would expect from MicroProse. It looks and feels fairly good, and offers plenty of excitement for your money. You get a good choice of options, including either one-off sorties or full blown campaigns. In this respect it's a lot more than just an update of F15 Strike Eagle III.

The nice thing about flying the F14 is that it's a two-seater plane, and MicroProse has made the most of this. For navigation and radar your really have to be in the back seat, while during dogfights you'll be up front most of the time, listening to the warnings and messages from your number two. However, the plane does have its disadvantages.

For starters, the F14 handles like an overweight albatross with concrete wings. You're slower and less manoeuvrable than many of your enemies, and if you attempt to pull off the kind of stunts which a Falcon is capable of, you'll find yourself stalling or blacking out. If you're used to flying speedier birds, this can be mightily frustrating.

One thing I did notice was that the cockpit is very crowded. You get very little view of the outside world unless you switch off the dials. To check your speed and altitude, you have to flick to the external views, and in the heat of combat this can be annoying.

F14 Fleet Defender is a worthy addition to MicroProse's flight sim catalogue, although the object graphics should have been better and I'm surprised at the omission of a 'virtual' cockpit (as in TFX). If you like MicroProse's style, you'll definitely enjoy F14. It contains all the best bits from the other MicroProse sims, including the artificial intelligence with a few good new features to boot.

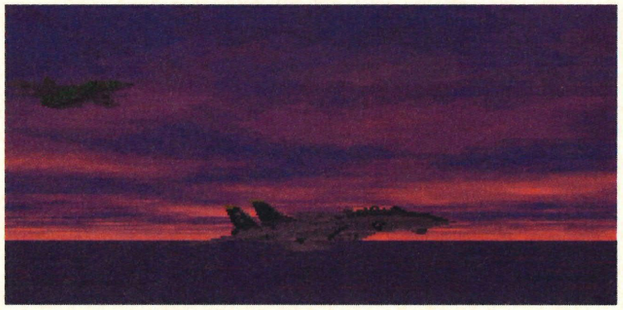
Personally, I don't think it's a patch on TFX, but overall it's certainly MicroProse's best flight-sim to date.

■ Martin Klimes

It was a stormy evening's patrol when the MiG screamed out of the clouds right past me, heading for my carrier.

Dogfight! Flying wing tip to wing tip above the ocean. The Tomcat was sluggish but ...

... he hadn't figured with Marty "Feldman" Klimes. A cunning series of twists and turns and I had him in my sights ...







TECHSPEC	
Publisher:	MicroProse
Price:	£44.99
Contact:	(0454) 326 532
Minimum PC:	386 (486 recommended)
Minimum memory:	
Minimum graphics:	VGA
Sound:	Ad-Lib, Sound Blaster, Roland

A good, solid sim but not quite up there.

RATING 7

Wolfpack CD



Being a U-Boat commander used to be a glorious occupation. It was the thrill of the chase, where in the blink of an eye you could become the victim of an exploding depth charge. It was raw tension punctuated by sinister sonar pings.

Until now, that is. Wolfpack CD still gives you plenty of pings but loses the tension along the way. Although there are some nice options, such as playing either submarines or destroyers in a series of WWII scenarios (and when you get bored with the predesigned options you can design your own campaign) the overall feel is primitive.

Both in terms of graphics and sound Wolfpack takes no advantage of the huge storage capacity of the CD. It looks as though it came out at the same time as Silent Service II from MicroProse, which you can now get as a budget title for a tenner.

Ultimately however, if you do have a penchant for diving to the depths, upping your periscope and firing off a few torpedoes, Wolfpack CD isn't totally incompetent. However, you do get the feeling that, compared to other games in the sub-sim market, Nova Logic is a bit out of its depth.

■ **Martin Klimes**

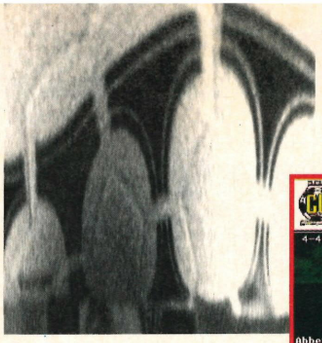
TECHSPEC

Publisher:	Nova Logic/Optica
Price:	£29.99
Contact:	(0494) 488551
Minimum PC:	386 MS-DOS 3.3, CD
Minimum memory:	2Mb
Minimum graphics:	VGA, MCGA
Sound:	Ad-Lib, Sound Blaster,

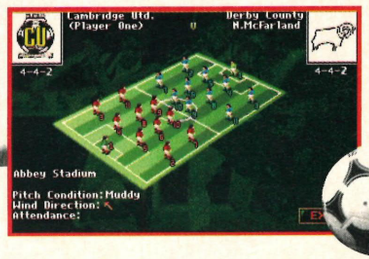
RATING 5

Good price, dull game.





can

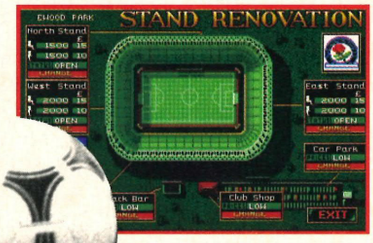


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Starlord

Plan, negotiate, trade and battle for supreme galactic power in Mike Singleton's epic tale of ordinary space-faring folk.

Starlord could have been *the* space simulation. Imagine a game that mixed galactic domination and empire building with huge and frantic 3D space battles. Just think of it: hundreds of polygon ships battling for supremacy over pastel coloured planets and massive royal armadas crushing the weak while smaller families secretly plot and ally against them.

It sounds pretty good, doesn't it? But what Starlord promises and what Starlord actually delivers are two entirely separate things. If, like me, you were hoping that Mike Singleton was going to take the playability of X-Wing and marry it with a good, tough strategy game, you're about to be thoroughly disappointed. After playing the game for only ten minutes I whispered, as Han Solo put it so eloquently in Star Wars, "I've got a bad feeling about this..."

Strategic battleground

Before I go any further it's important to remember that Starlord is a strategy game. Don't be fooled into thinking that this is a Privateer or Elite 2 beater, because although the 3D battles have received a lot of attention, they are not an integral part of the game. Starlord does indeed have a 3D section, and yes, starfighters do clash above pastel planets, but the game is about power and ascendancy and about making sure your fleet has enough water, weapons and fuel. The 3D space section is really little more than a cosmetic extra.



Now imperial domination might sound a tad daunting but Starlord's gameplay is in fact relatively simple. Galactic society is based upon a medieaval feudal system ruled by an Emperor, and beneath the Emperor, influence filters down a chain of command from kings to dukes to earls and finally down to starlords.

> The 3D space section in Starlord, seems to be little more than an attractive cosmetic extra.

As a Starlord your aim, like those eagerly jostling for power around you, is to battle your way to Emperor and also to install members of your family in the five main galactic kingdoms. Sounds like a tall order? Believe me, it isn't. Simply wait a bit, build up your money and your fleet and then go and bash the nearest earl. Wait a bit more, build up your fleet, then bash the nearest duke. Repeat this ad nauseam until you rise the galactic ladder to grab the topmost rung of Emperordom. Then it's hello end-game and cue credits.

A family affair

Families play an important role in Starlord because when you defeat a lord at their base star you can install one of your many offspring there as a replacement. The idea is to build up a powerful family dynasty,

ALTERNATIVELY



Master of Orion
MicroProse, £44.99
Rated 7, Issue 27

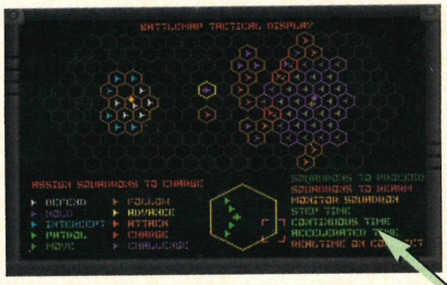
Dubbed 'Civilisation in Space' by over-enthusiastic blurb writers, Master of Orion is also a space strategy game. The aim is to build up the resources of your home planet, to colonise new worlds and to fight or avoid the seven other races doing exactly the same thing. Hardly inspiring but very involving.



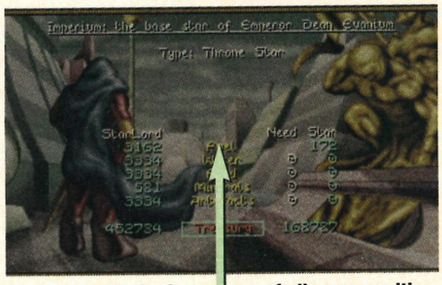
Pirates Gold
MicroProse, £44.99
Rated 6, Issue 23

Like Starlord, Pirates Gold involves attacking enemy towns and has some nice but ultimately pointless ship-to-ship battles. Apart from piracy on the high seas you can plunder towns, dig for treasure and even marry the governor's daughter. Very pretty but ultimately lacks a real sense of purpose.

A DAY IN THE LIFE...



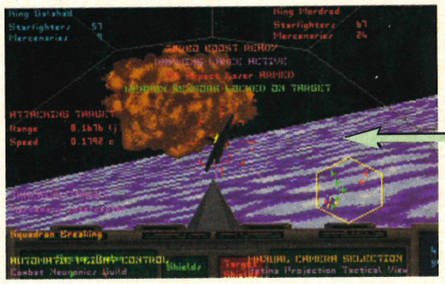
Battles can be fought on a 2D battle map ...



The base star is the source of all your wealth.



Plan your next conquest on the galactic map.



... or in slightly dodgy 3D combat sequences.



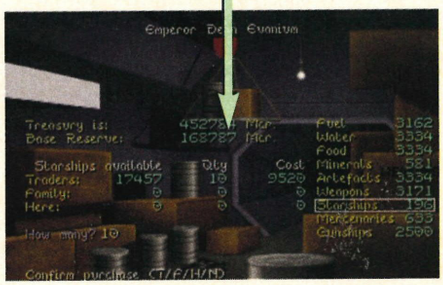
The bridge: the link between the sub-screens.



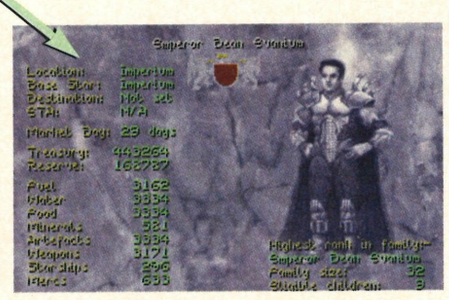
Check out your enemies in the ship's library.



Random encounters make travel unpredictable.



The trading screen: buy and sell items here.



The status screen tells you how you're doing.

trading cheaply with family members and using your combined military might to destroy your feudal overlords.

For example, if you haven't got enough ships to beat your nearest enemy, you can call upon your family to give you a hand. If anybody is near enough they will send ships to help and you might then have two or three fleets under your command. Win and you can occupy the planet, lose and you are stripped of your cash and supplies and forced home to your base star.

As for winning, this is often dictated by sheer numbers rather than any cunning tactical planning. Victory is achieved by simply having more guns than the next guy.

Empire building in Starlord is not only dull and repetitive – it's also far too easy. I don't consider myself that much of a strategist but I sat down with a cup of coffee and read the manual (which is so ludicrously vague it's almost completely useless), played on what I assumed was the hardest level and promptly finished the game in five hours.

I strolled casually into Imperium (the Emperor's home star) while he was out, pinched all his cash, bought 3,500 gunships and waited for him to return.

After soundly beating him, I was crowned Emperor and then all I had to do was head out into deep space to destroy the five kings.

Forty quid for five hours of gameplay. It doesn't seem like value for money to me.

Out of control

Now I'm not a naturally harsh kind of guy and I could ignore the gaping holes in the strategy if the 3D battles were good enough to save it all. Unfortunately they aren't.

For starters, the control system is awful. Instead of a fixed cockpit view like Privateer or X-Wing, the view tracks the currently targeted fighter, so to turn and move your ship all you do is move the view around to face the enemy. Worse still, whether you're controlling your starship with the mouse or the joystick, you still have to tap the space bar to fire the guns. Why couldn't the fire button have been on the mouse or joystick?

As for the polygon graphics, they are garish in the extreme. Yes, they're fast and you can indeed sweep over pastel planets firing purple lasers, but the gameplay is tedious beyond belief. Even if you can master the fiddly controls, each ship needs over 300 hits before it's destroyed. The whole point of polygon graphics was to get lots of ships on screen with no loss of overall speed. But as the battles are so tiresome and with the control system so horrendous, who cares?

The sound is also dreadful, horribly grating and probably the worst rendition of the Planets Suite I've ever heard .

All in all, Starlord is immensely disappointing. It's tedious, repetitive and more of a chore to play than a pleasure. If Starlord had used a fixed cockpit view, had better character AI, some decent sound and more variety to the gameplay rather than randomised kidnappings, assassinations and navigation errors, it could have been so much better. As it stands it's a poor strategy game with a badly designed 3D section.

My advice? Don't buy it. Unless of course you happen to think £40 for five hours gameplay is a good deal.

■ **Dean Evans**



TECHSPEC

3

RATING

Dull, repetitive, tedious and far too easy.

Publisher:	Microprose
Price:	£49.99
Contact:	(0454) 326532
Minimum PC:	386, DOS 5.0 or higher
Minimum memory:	2Mb
Minimum graphics:	VGA
Sound:	Ad-Lib, Sound Blaster, Roland

Fantastic Dizzy



Codemasters' very own super-hero egg, Dizzy, is back in his most challenging adventure to date. Dizzy's quest is to reverse an evil spell that has been cast over his homeland, Yolkfolk, by the evil wizard Zaks. The spell has turned all of the friendly creatures into fiends and, to make matters worse, Zaks has kidnapped Dizzy's girlfriend Daisy and is holding her captive in his mystic castle. Dizzy has to rescue her before Zaks turns her into an omelette. So once again, it's time for Dizzy to don his red, PVC boxing gloves and do battle with the forces of evil (yawn). Still, despite the "we've seen it a hundred times before" storyline, Dizzy is a huge platform adventure and retains the playability that Dizzy games are famous for.

As you explore the kingdom, you'll find silver stars and various objects which help solve the many puzzles which hinder Dizzy's progress. Solving puzzles generally involves picking up an object and then dropping it in front of the correct door to open it. Silver stars are to be found throughout the map and by collecting 250 of these you will gain access to Zaks' castle.

This game is highly playable and probably best recommended to children.

■ **Paul Clarke**

TECHSPEC

Publisher:	Codemasters
Price:	£29.99
Contact:	(0926) 814132
Minimum PC:	386, MS-DOS 5.0
Minimum memory:	640K
Minimum graphics:	VGA
Sound:	AdLib, Sound Blaster

RATING **6**

A great game for children.

Lemmings Double Pack

Unless you've been stranded on a raft in the Pacific Ocean for the last three years, you will probably have heard of Lemmings. If you do know all about them, it's likely too that you already own at least one, if not both of the games on this double pack: the original Lemmings and its data disk sequel. Oh No! More Lemmings. If you don't own and haven't played either, now is your chance to find out what made millions of people worldwide tear their hair out in frustration.



The games in this double CD pack are all about saving lives. Lemmings are foolish creatures. who without your help and guidance gradually get released into a playing area and will walk until they fall off a cliff, get roasted alive, drown, dissolve or get crushed. Your job is to ensure that a specific percentage of them survive, by giving individual Lemmings special powers such as the ability to dig holes or build bridges. Achieve this within the time limit, and you can move on.

Together, both games offer you 200 levels to complete. Some are ridiculously easy, but others contain nail-biting arcade action. The more recent Lemmings 2 (not included in this package is a far superior game, but this CD-ROM provides a good, if slightly expensive, introduction to the series.

■ **Gordon Houghton**

TECHSPEC

Publisher:	Psygnosis
Price:	£39.99
Contact:	(051) 709 5755
Minimum PC:	DOS 5.0, single spped CD-ROM drive, mouse recommended
Minimum memory:	1Mb
Minimum graphics:	VGA, EGA, CGA,Tandy 16 colour
Sound:	Ad Lib, Sound Blaster

RATING **7**

Two good games for the price of one.

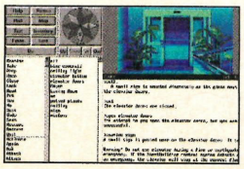
Gateway II: Homeworld

Legend has produced a string of good, solid text adventures over the past couple of years, including Eric The Unready, Spellcasting 301: Spring Break, and (most recently) Gateway II. The release of Gateway II and its apparently 'primitive' technology on CD might cause a few owners of CD-ROM drives to laugh loudly, but text adventures of this quality shouldn't be ignored.

For a start, the system itself is light years from the clumsy text parsers of old. You can treat it as a pure text adventure, use the verb/object menus to explore further complex possibilities, and click on the icons or use the graphics window for simple actions. As a result, the variety and depth of puzzles is excellent, and often very different from the sort of thing you're likely to come up against in a simple point-and-click graphic adventure.

The CD version is a fiver more expensive than its floppy disk rival, but boasts five times more animation, giving you plenty of opportunity to sit back and admire the scenery. These extra graphics are a great enhancement to an already well-crafted sci-fi game. Even though its challenges are ultimately a little too easy, Gateway II is an enjoyable experience. It won't please anyone who thinks touching the keyboard is equivalent to contracting a social disease, but all other adventure fans should take a look.

■ **Gordon Houghton**



TECHSPEC

Publisher:	Accolade
Price:	£39.99
Contact:	(081) 877 0880
Minimum PC:	286, MS-DOS 5.0. Double speed CD drive recommended.
Minimum memory:	1Mb
Minimum graphics:	256-colour VGA, SVGA
Sound:	Roland MT-32, Ad Lib, Sound Blaster

RATING **6**

Not the best advert for CD technology.

Privateer: Righteous Fire



Faithful to Origin marketing philosophy, Righteous Fire is the inevitable Privateer add on: three disks that deliver 26 new missions, all linked loosely together in a shiny new storyline.

Righteous Fire begins on the neon-lit pleasure planet of Jolson. After a security guard informs you of the theft of your prized Steltek gun, once again you zoom boldly into the Gemini sector in search of clues. Like the original, if you stop in a bar at Oxford, New Constantinople or Perry you'll meet someone with missions on offer and these will take you right across the sector, battling pirates, running Retro blockades and clashing with Kilrathi.

Obviously Righteous Fire is little more than a new plot and a couple of new pieces of equipment (gun coolers, improved armour, shield regenerators, an advanced repair droid, etc) and all the original Privateer criticisms still apply. Nevertheless I have to say that I enjoyed Righteous Fire far more than the original game because as you can load in your old Privateer ship you don't have to waste valuable playing time trading between two nondescript planets making tiny profits. It means you can leap into the thick of the action almost immediately.

It goes without saying that if you're a Privateer junkie you'll enjoy Righteous Fire. If you're not, you won't. It's that simple.

■ **Dean Evans**

TECHSPEC

Publisher:	Electronic Arts
Price:	£19.99
Contact:	(0753) 549442
Minimum PC:	386 PC+original Privateer game
Minimum memory:	4Mb RAM
Minimum graphics:	VGA
Sound:	Roland, Ad Lib, Sound Blaster

RATING **5**

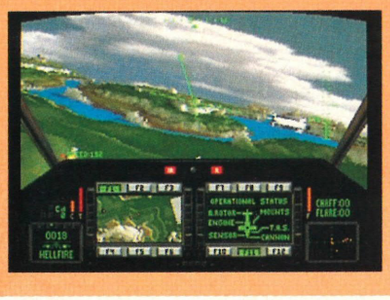
Ho hum. More of the same.

Comanche Maximum Overkill CD

Stick words like 'maximum' and 'overkill' on a game and you've made your position pretty damn clear from the word go. So it's no surprise, then, that Comanche is long on action and short on realism. There's nothing wrong in that, of course. I'm all for action over the mindless tedium of 'heavyweight' sims any day.

The trouble is that although there's plenty of gameplay on offer, the appeal is rather short-lived. Comanche's flight model is so simplistic it almost feels insulting – even for a shoot 'em up.

What's more, the endless round of missions lacks even the most basic sense of purpose, and the action is far too easy once you've mastered the basics. Missile targeting, for example, often involves little more than aiming at roughly the same continent as your intended victims, and watching them explode.



And somehow their missiles don't seem to be half as effective as yours. Funny, that ...

But for sheer wanton destruction and reflex action, Comanche CD takes a lot of beating. For a start, the Voxel Space landscaping is still way ahead of its time, and although it's not perfect, it's by far the most excitingly realistic environment I've come across for a combat game. The level of ground detail and the varied contours make low-level flying a real buzz. The only problem comes when you get to close to a mountainside and everything starts to pixellate horribly. Voxel Space really needs the PC to make that jump from standard VGA to higher resolutions.

The bad guys just keep coming, and with 55 missions to face, you can't claim you're being short-changed in terms of game hours, either.

Comanche CD starts off on the right foot, it just fails to hit the target – for once – in the long run. Like Origin's Strike Commander CD you don't get anything worthwhile that can't be found on the original disk-based releases, it's just more convenient and a whole lot cheaper to buy the game on CD. What you end up with is a fun, noisy and simple-hearted game, with a nasty tendency to repeat itself.

■ **John Bennett**



TECHSPEC

Publisher:	Optima
Price:	£49.99
Contact:	(0494) 488551
Minimum PC:	386, plus CD-ROM drive
Minimum memory:	2Mb
Minimum graphics:	VGA
Sound:	Roland, Ad Lib, Sound Blaster

Lots of fun for your money, but not enough.

RATING **6**

Comanche is short on thought and long on action — if you're after barrelling down a canyon obliterating everything in sight it's the game for you.

Credit where credit's due, the Voxel-Space landscaping is one of the most exciting combat environments for any simulation.

NFL Pro-League Football



It's 4th and long, with pressure mounting. you set the players up for a dummy field goal and prepare for the crashing of pad on pad. Then the computer takes over and runs the play, totally ignoring the gaping hole in the defence and getting stuffed for a seven yard loss. How frustrating.

Pro-League Football never billed itself as a sports simulation. It's a coaching sim, pure and simple, and it effectively offers two games in one. At the options screen you can chose either head-on or game plan play. Each test different team manager skills.

Head-on you take a side-line seat, calling the plays that your players then execute, and lead them through a whole match. It's your decisions against the opponents' that make the winner, the bluff and counter bluff that draws many people to the sport. But ...

Unfortunately there is a serious down-side to all this. The graphics are prehistoric, the sound stilted, and the players' artificial intelligence on the pitch heart-breakingly substandard. I don't mind my quarterback missing the open man and throwing into double coverage every now and again, but it would be nice if he got it right occasionally.

Which brings us onto game plan mode. Whereas head-on is the tactics of an individual game, game plan is the strategy for the whole year. Which players should be traded? Which types of play would work well against which opponents?

The depth here is really quite impressive, but you have to follow American football very closely indeed to get the most out of it, and the presentation is still abysmal. You get stats for teams going five years back, but the almost EGA graphics look very dated.

Call me a straight-laced accountant, but I'm part of the (small) market for this sort of thing, although it was clearly designed with the US in mind. Sadly it's the implementation that lets it down. Frankly, head-on mode is done far better in the coaching option of Microprose's Coaches Club Football, and game plan is a stats machine on the NFL for people who want to ask "What if ...?" rather than being a true game.

It's nice to see a product that doesn't require a 486, but this isn't pushing a 386 particularly hard either. And the thing is, even modem play doesn't interest me – play it in modem mode and you just get two bored people at the same time.

■ **Martin Klimes**

TECHSPEC

Publisher:	Digital Integration
Price:	£39.99
Contact:	(0276) 684959
Minimum PC:	33MHz 386
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Ad Lib, Sound Blaster

A limited appeal game, poorly done.

RATING **4**

"Give me an N! Give me an O! Give me a ... break!" NFL is good on stats , but poor on gameplay. Oh well.

REVIEWS



The four main menus are presided over by the relevant crewmen. Click on F4 for example to bring up the sonar officer. Give them orders and if you have a digitised sound card you'll get to listen to their responses. And if you're hit by an enemy missile it'll probably be the last thing you do hear ...

Seawolf

You just don't get that claustrophobic feeling of being stuck inside a tin can.

It's time to batten down the hatches with EA's latest undersea release. Is it another combat classic — or just sub standard?

Seawolf is the successor to the old favourite 688 Attack Sub and as such puts you in charge of a state of the art modern submarine, crammed with the latest in electronics and armaments. Your mission, should you choose to accept it, is to keep the world's oceans a nice shade of SVGA blue and free of the Red Menace.

Scenario one plonks you straight down within Exocet range of Havana. The scam is that there's been a military coup in Moscow and the new hardline government has instantly despatched a task force to seize all the cigars they can carry. Something like that anyway. Whatever the rubric it's irrelevant. All you're looking for is an excuse to blow quite a lot of things up.

And that, unfortunately, brings us to the first disappointment. As the rather dull introduction demonstrates, this is not the product to buy if you're after flashy pyrotechnics. The graphics may be crisp and clear, but, as is only to be expected, trawling one's way through the murky depths isn't very visually stimulating, so the odd burst of explosive colour wouldn't come amiss. Alas, popping up to periscope depth to watch your destructive handiwork is sadly underwhelming.

There are compensations, though. Sound support is excellent and all those sinister pinging noises give the game a lot of atmosphere. The sonar display is also neatly designed, allowing you the chance to identify enemy vessels by their acoustic signature. Once you've made a positive ID it's battle stations, and the tension is maintained as you try to approach the target in the best underhand traditions of the silent service.

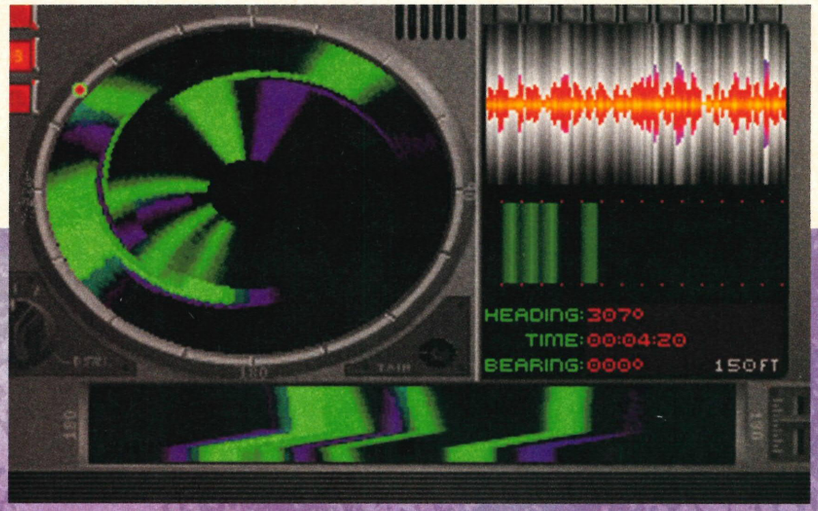
As captain of the sub you get to do everything, from setting speed and depth to selecting the appropriate torpedo or missile. These functions are accessed by pressing the F keys then mouse-clicking your way down the menus. There are hot key commands, but it's a lot to learn and gameplay would benefit enormously from a keyboard overlay.

When all is said and done however, despite all the atmospheric pings and digitised chat from the crew, when playing I didn't get that all important sense of 'being there', and in the long run play becomes too repetitive. Submarines move slowly, and there are times when all you can do is set a few waypoints, sit back and wait. You can't see where you're going, and even if you could there wouldn't be a lot to see. Seawolf makes demands on the imagination which ultimately it can't quite justify. You just don't get that claustrophobic feeling of being stuck in a floating tin can.

These are problems which are almost bound to occur in any submarine simulation. Because of the speed you don't get the buzz of aerial combat, and because of the environment there isn't the variety of tactical permutations experienced on land. It really comes down to a question of sneak, shoot and scoot. True, you can occasionally dart into the shallows to confuse the enemy's sonar, but essentially all you can do if the bad guys lock on to you is dive, cut your engines and hope. And you could have a long wait.

Despite my criticisms Seawolf is ultimately still a pretty fair game but if, like me, you're the impatient sort, you might be better off keeping your feet dry.

■ Simon Shaw



This is the 'waterfall' on the sonar display. All vessels leave unique signatures, like aquatic fingerprints, and by consulting the reference chart supplied you can keep yourself up to the minute with enemy intentions.



TECHSPEC

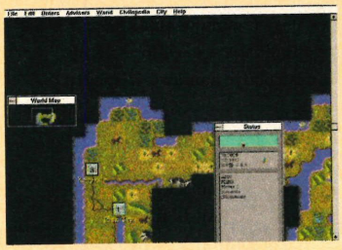
7

RATING

Landlubbers need not apply.

Publisher:	Electronic Arts
Price:	£44.99
Contact:	(0753) 549442
Minimum PC:	386, (486 recommended)
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Sound Blaster, Roland

Civilization for Windows



Initially released two and a half years ago, Civilization has proved to be one of the PC's greatest games. Its success has got to be largely down to its accessibility: although it's a turn-based strategy game, the playing interface is easy to get to grips with. You start with a virtually blank screen and an unspoilt world to explore. You need to build cities for your people to live in and create a suitable environment for them to grow. If your empire is going to be durable, your people will need to acquire knowledge and develop from a basic peasant economy to a thriving industrial and technological nation.

This Windows version is essentially a 256-colour version of the original, and apart from the undeniably superior presentation, the gameplay is the same. In fact, normally we wouldn't be reviewing Civilization for Windows as a game in its own right, were it not for one small but significant fact.

Way back in Issue 1 of PC Review, we appraised the original Civilization, found it utterly absorbing, but queried its long-term appeal and also the workmanlike nature of the graphics. This graphically enhanced Windows version is undeniably superior in presentation, though unfortunately at the expense of speed. On a 25MHz 486 it crawled at half the speed of the DOS version on my old 286. That factor notwithstanding, I'm happy to uprate the Windows version.

■ **Christina Erskine**

TECHSPEC

Publisher:	Microprose
Price:	£44.99
Contact:	(0454) 326532
Minimum PC:	386, DOS 5, Windows 3.1
Minimum memory:	4Mb
Minimum graphics:	VGA, or 256 colour SVGA
Sound:	SB, Roland, Ad Lib, Pro Audio Spectrum

RATING **8**

One of the PC's greatest games.

The Patrician

Violence, greed, bribery and corruption – The Patrician has it all. Set in the Middle Ages, it's a trading game which spans two centuries of European history. You take the role of a merchant who must build a fleet of ships, battle with pirates and amass a huge fortune in the process. If you succeed, you'll become the Alderman of the mighty Hanseatic League (a kind of mediaeval Mafia).

The newly released CD version packs in some goodies that you won't find on the floppy release, including a 25 minute stereo soundtrack and ten extra animated sequences.

The plot remains as before. You enter a harbour, hire a ship, and then click on a few buildings to enter them, buy food and weapons and recruit a crew. To liven things up, you also get the chance to do a bit of marriage brokering and bribing of officials. Unfortunately, the level of interaction is fairly primitive. When you click on relevant buildings or people, simple dialogue boxes pop up which let you select alternative commands or specify amounts of money to be used as payment.

The Patrician offers a bit of strategy, a bit of animation, but not quite enough of either to be really satisfying.

■ **Huw Collingbourne**



TECHSPEC

Publisher:	Daze Marketing
Price:	£39.99
Contact:	(071) 328 2762
Minimum PC:	386SX with CD-ROM, mouse
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Ad-Lib, Sound Blaster

RATING **8**

Mediaeval trading at a plodding pace.

Award Winners GOLD EDITION

Four outstanding classics, at one outstanding price!

Sensible SOCCER 92/93 SEASON -EDITION- European Champions

JIMMY WHITE'S 'WHIRLWIND' snooker

Elite Plus*

ZOOL NINJA OF THE "NTH" DIMENSION

ELITE

Jimmy Whites Whirlwind Snooker
© 1991 Virgin Games Ltd.
Zool
©1992 Gremlin Graphics Software Ltd.
Sensible Soccer
©1992 Sensible Software. Published by Renegade.
Elite
©1993 Bell & Braben.
Elite plus programming © Chris Sawyer.
*Elite replaces Elite Plus on Amiga versions

SENSIBLE SOCCER
"Definitely, without the merest inkling of a suggestion of a shadow of a doubt, the best football game ever." Amiga Power - 93%

JIMMY WHITES WHIRLWIND SNOOKER
Impressive as the 3D is, it's only one aspect of a game chockfull of brilliant features. PC Review 9

ELITE-ELITE Plus
"Quite simply the most original game-play since the birth of computer entertainment. An all time classic. PC Format.

ZOOL
"Zool conforms in every way to what you'd expect from a perfect cutesy platform game. And in doing so has become the perfect platform game... If you like all things cute and colourful, you'll love this, and if you aren't predisposed to platform games you'll still love it." Amiga Format Gold 95%

empire SOFTWARE

CD ROM Challenge Pack

As well as introducing a host of technological innovations into games software, CDs offer great potential for compilations. Instead of using up half a dozen floppy disks, all that data can be stored on one CD, with room to spare. Unfortunately, the latest technology doesn't always guarantee the greatest games.

If it's quantity rather than quality you're after, the CD ROM Challenge Pack offers you nine games. Most of them are a couple of years old at least, and some (such as Might and Magic II) are easily past their sell-by date. This shouldn't necessarily discourage you from buying, particularly if you want a representative selection of games quickly and for little expense. If you're wondering what exactly you're getting for your money, here is a complete list: RoboCop 3D (a so-so arcade game with basic 3D polygon graphics), Epic (a disappointing Elite-style space game), F-29 Retaliator (a flight simulator easily surpassed by recent releases), Push-Over (good puzzle action), Chessmaster 2100 (a half-decent chess program which should suit beginners), Paperboy 2 (a dull sequel to the classic coin-op), D/Generation (a reasonably good, and unusual, isometric-3D arcade adventure), Contraption Zack (a decent puzzle game) and Might and Magic II (old-style role-playing fare for die-hard enthusiasts only).

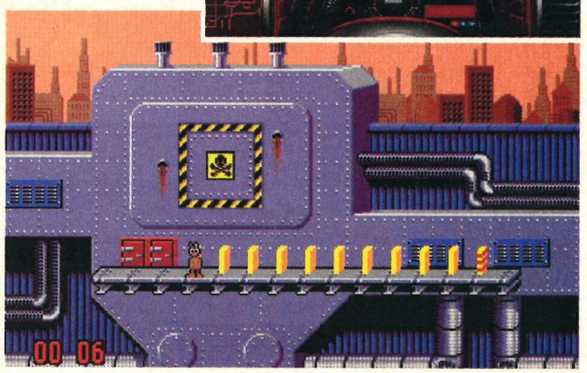
As a collection of games it scores on variety – few other compilations offer you genres as diverse as chess, arcade, puzzle, flight sim, strategy and RPG – but fails miserably when it comes to consistently high standards. Only three or four of these releases will hold your attention for any length of time, and none of them are irresistibly good.

On the positive side the price is very low, and if you can't afford to splash out on the latest releases it does offer pretty good value for money. Also, if you're new to the world of computer games this compilation offers a good, cheap insight into the variety of releases on offer, and will give you a taste of the kind of genres which may grab your interest in the future to boot.

■ Gordon Houghton

Below: Push-Over
Bottom: RoboCop 3D





TECHSPEC

Publisher:	The Software Toolworks
Price:	£39.99
Contact:	(0444) 246333
Minimum PC:	386, DOS 5.0, Mscdx 2.1
Minimum memory:	1Mb
Minimum graphics:	VGA
Sound:	Ad-Lib, Sound Blaster, Roland MT-32

Some good games, but too many weak ones

RATING 5

REVIEWS

Award Winners Gold Edition

Award Winners may not score highly on quantity – there are only four games here – but the quality of the releases more than makes up for it.

Sensible Soccer is just about the best footy game available for the PC. An overhead view with smooth pitch scrolling, intelligent, computer-assisted passing and a variety of opponents are just the basis for an excellent game. In-game features include substitutions, red and yellow cards, sliding tackles, dribbling, headers, and a variety of swerving and looping kicks. Weather, auto replays, customisable game lengths and weird music add to the action, but Sensible Soccer scores most highly in its menu options. These include 100 European teams, a league programme, the ability to design your own cup tournament, transfers and tactics.

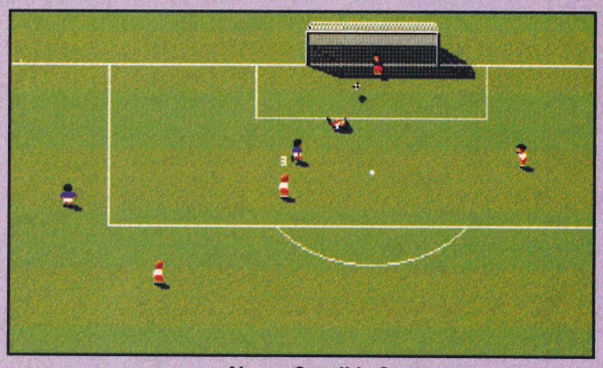
Jimmy White's Whirlwind Snooker is easily the smoothest and most accurate simulation of the game you'll find. The deceptively simple 3D graphics are its most impressive feature, but they are still only one small part of a game packed with brilliant features. Even if you don't like the real thing this is a game not to be missed.

The other two releases included on the compilation do more than make up the numbers, although both have rivals in their respective genres. Elite Plus, the VGA version of Bell and Braben's classic space trading game, has since been surpassed by the recent release of Frontier: Elite 2. It still has a lot to offer, however, including combat, trading, piracy and exploration of a whole galaxy of planets. A variety of ship gadgets and the incentive to achieve the legendary Elite pilot status will keep you coming back for more.

Zool is probably the weakest game of the quartet, but is still one of the fastest and most colourful arcade games around. Six worlds packed with surprises are enhanced by three difficulty levels, four music tracks and a variety of special weapons, such as smart bombs. Secret rooms and other bonuses add depth to an already enjoyable game.

Award Winners is highly recommended. Even if you already own one of these games, it's still well worth investing in this compilation because of the exceptional quality of the other three.

■ Gordon Houghton



Above: Sensible Soccer
Below left: Elite Plus



TECHSPEC

Publisher:	Empire
Price:	£34.99
Contact:	(081) 343 7337
Minimum PC:	286, DOS 5.0, mouse
Minimum memory:	1Mb
Minimum graphics:	VGA
Sound:	Ad-Lib, Sound Blaster, Roland MT-32

Short on quantity, but excellent on quality.

RATING 8

Budget games

Some games never die. They come back in repackaged, re-released form — and at half the price. Danny Vice takes you on a tour.

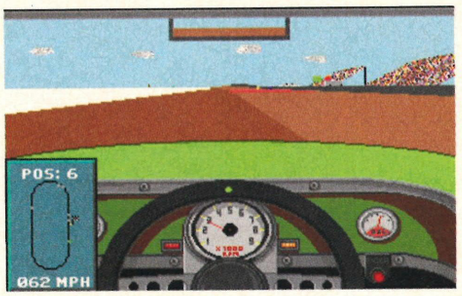
BARGAINS GALORE!



Rampart
Hit Squad
£12.99

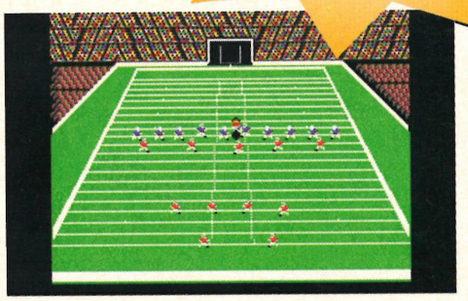
Build a fortress, attack your enemy and ultimately destroy them. You have the ability to situate cannons in your fortress where you like and shoot your enemy. After the cannon firing has ended, you have the ability to repair and extend your fortress making it better and stronger than your opponent's. Once your power and strength is sufficient, you have the ability to destroy more of your enemy by creating artillaries and fleets of ships. This can go on for a very long time but remember, only one can be the winner.

Rampart is far too easy to play on your own and is far more effective with a real opponent to play against. Not bad for the price though.



Mario Andretti's Racing Challenge
Hit Squad
£12.99

Put yourself in the driving seat of a real racing car. The aim of the game is to obtain sponsorship from a company and buy a racing car. Work your way up through the classes of race car by winning the races and receiving more money. This game attempts to be a good driving sim by hiding behind the many gimmicky features which plague it. This includes far too many unnecessary different camera angles and an action replay feature which constantly bores. The graphics are primitive and so is the sound. The many stages of the game give you good gameplay potential however, but it is severely lacking in excitement. Andretti picked the wrong game to endorse.



John Madden Football
Hit Squad
£14.99

John Madden Football requires the player to use their skill and knowledge in choosing their team and players themselves and then beat the opposing team. There are many strategies and gameplay plans to choose from which gives you the ability to create your own method of successful gameplay. John Madden will also help you throughout the game if you access the John Madden Report menu. This feature gives you the ability to compare the two teams and will also display helpful information. The actual game itself is fairly reasonable but control of players is hard and slow. Not bad for a budget package but there are other football sims available which I would rather buy.



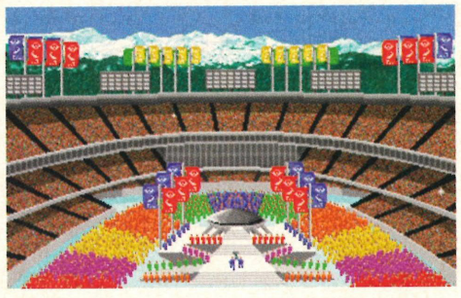
Heroes of the 357th
Hit Squad
£14.99

You are a fighter pilot in the 357th Squadron in World War II where you have the opportunity to fly historical missions which actually took place. You will fly with the world's finest pilots and help them to carry out operations such as attacks over Germany and sweeps over Holland. You also have the opportunity to attend cinematic pre-flight briefings which will help you to carry out your mission successfully. This is one of the best flight sims available at a budget price. It has very smooth and fluid movements which compliment the detailed graphics which it uses. If you are looking for a flight sim for under £15 this is the one to choose – it's great.



Road & Track — Grand Prix Unlimited
Hit Squad
£12.99

The aim of Grand Prix Unlimited is to race – fast. It gives you the opportunity to choose your own Formula One racing team from Bennetton Ford to Ferrari. You also have the chance to either use an already established race track or to create your own. What's more, you can modify any of the 16 famous tracks such as Silverstone and Indianapolis that are already stored on the program, giving them a feeling of originality. Compared to other driving sims, this is like a breath of fresh air. It gives you almost total control of the game and shows everything in infinite detail. Grand Prix is also very easy to control making this a very good budget game indeed.



Winter Challenge
Accolade
£12.99

Winter Challenge – compete against the worlds fittest athletes and win a medal, of bronze, silver or gold. Pick one of the eight events from the menu and ski, slalom or even skate to your hearts content. As well as competing in tournaments, a training option allows you to practise each event and become one of the best. As the game is incredibly easy to conquer, this is not always necessary however. Control of the athlete is simple enough giving the game good playability. Visual and audio features are a little raw and does little for this game, but what do you expect for £12.99? Overall, Winter Challenge is a pretty good buy if you don't mind easy games.

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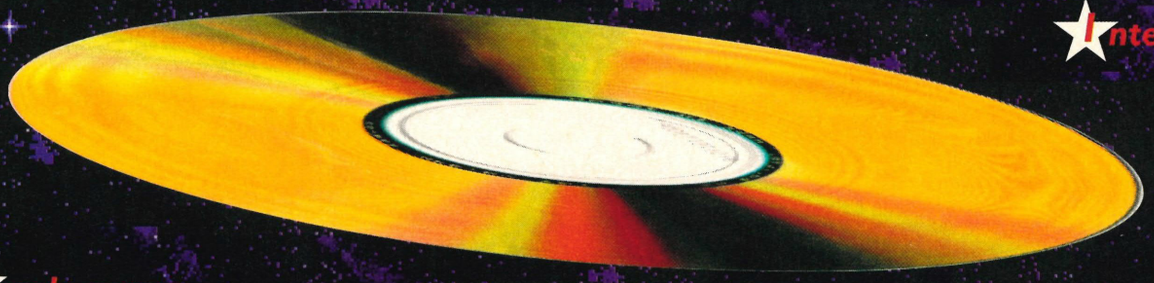
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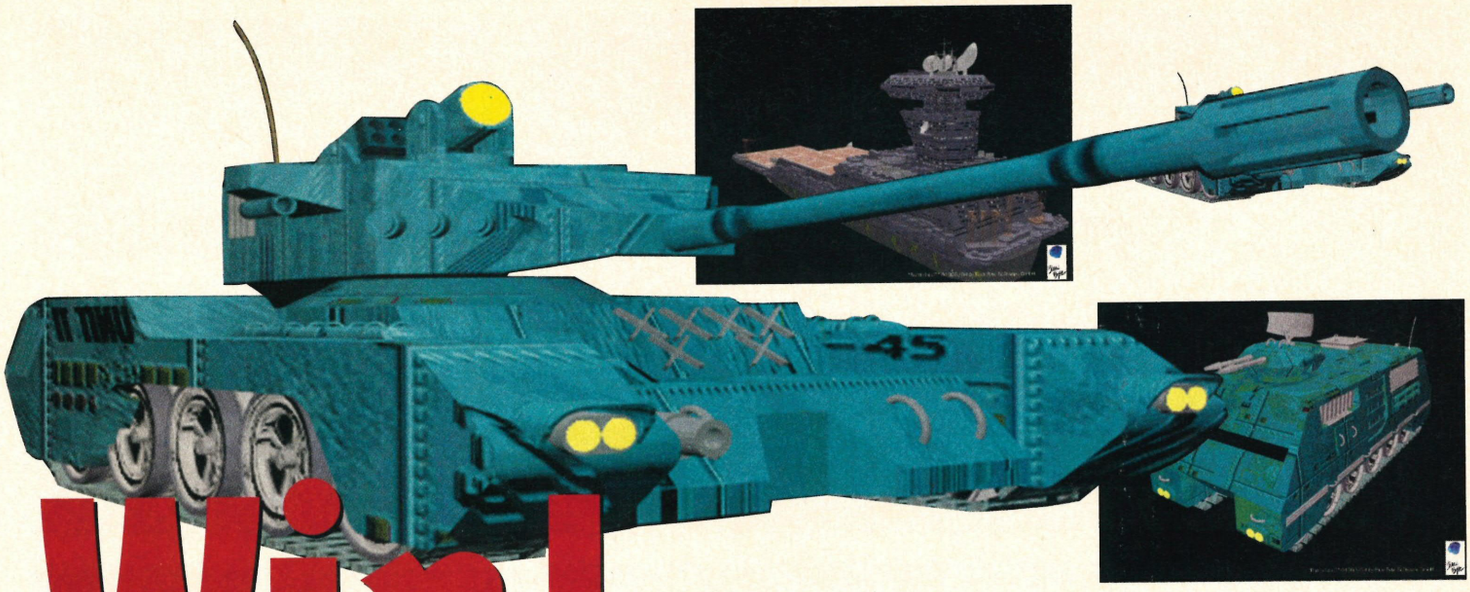
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Win!

6 unique Battle Isle prints · SVGA art – poster size

PLUS a copy of Battle Isle 2

COMPETITION

This issue, we're proud to present a unique prize: a set of six prints from Battle Isle 2 direct from the game's designers, featuring superb SVGA artwork. Bluebyte has generously agreed to create these prints from the game and make them available to the winners of this exclusive PC Review competition.

We've got six copies of these sets of six to give away to six prize winners, and each of the winners will also receive a copy of this intriguing and complex strategy game, which is reviewed in this issue and rated 8. They'll also receive a Bluebyte baseball cap (wow!) – the icing on the cake, so to speak.

How to enter

All you have to do to be in with a shout of winning this unique prize is to answer the following questions correctly.

All are well-known quotations connected with war and the nature of war, and what we want you to do is read the unfinished quotes and then using your skill and knowledge, complete the quotation correctly. Once you've done that, take a pen and fill out your answers on the form supplied on this very page.

When you've completed the coupon, send it (or a photocopy if you don't want to spoil your copy of the magazine) to:

Battle Isle 2 Competition
PC Review
EMAP Images
30-32 Farringdon Lane
London EC1R 3AU

It *must* reach us by May 15th, 1994. This is the closing date and any entries which arrive after that will be filed under W for 'wastepaper basket'.

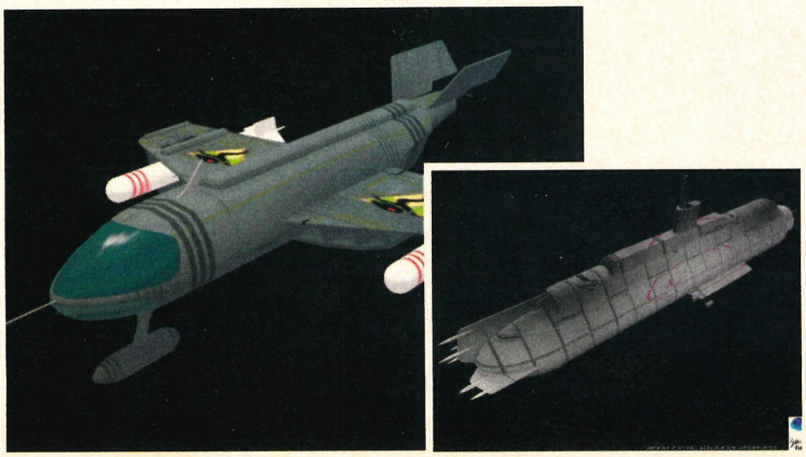
The quotations

1. "We will fight them on the ....."
2. "I love the smell of ..... in the morning"
3. "I ..... them all out, and I ..... them all back in again"

NB screens on this page may not be representations of the actual prizes.

Rules

- Employees of EMAP Images, Bluebyte, Kompart, and their families and associates are not eligible to enter this competition.
- No multiple entries: only one entry per person, please.
- No entries received after the closing date will be accepted.
- The editor's decision is incontrovertibly final.



Battle Isle 2

Name .....
Address .....
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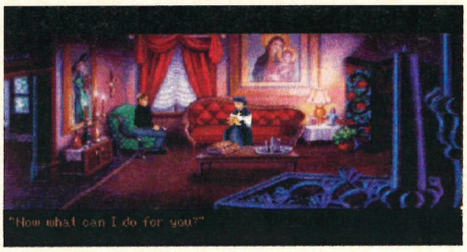
Answers
1.....
2.....
3.....

❑ Tick this box if you do not wish to receive further information from companies associated with this competition

Closing date May 15, 1994 *PC Review May 1994*



An unhappy-looking man explores the dangers of drinking alone.





Cal Jones sorts out the Voodoo from the Hoodoo in the first part of our amazing Gabriel Knight full solution. Watch out for the concluding part next month.

Gabriel Knight

Gabriel Knight takes place over 10 days, and some puzzles must be solved by the end of a certain day so that you can progress to the next one. On Day One you start off in Gabriel's bookshop, and the first thing you must do is interrogate Grace. Question her on every topic, making sure that you ask about messages that have been left for you. Next, read the paper, and pick up the magnifying glass and tweezers from the table. Try picking up books on all the shelves – there are three you need to read. Then open the till, try taking some money and pick up the red voucher on the left. If Bruno walks in, you must refuse to sell him the painting.

Go into the bedroom and pick up the hair gel from the medicine cabinet and the torch from the chest of drawers. Finally, leave the shop and head for Grandma's on the main map.

Talk to Grandma before going up to the attic. Pick up the sketch book from the chair and open it. Then operate the clock which is on top of the trunk. Set the hands to three o'clock and move the dragon to the 12 position, then turn the winder. Take the letter and photo from the secret drawer and look at them. Go back downstairs and show them to Grandma then ask her about your family, Heinz Ritter and Shattenjager.

Next, head for the police station. Talk to the desk sergeant and ask about Mosely and the photos you have come to pick up. Open the envelope he gives you and look at the photos.

Then go to the cemetery. Look at the marks on Marie Laveau's tomb and draw them using the sketch-book. Pick up the brick. Show your sketch to the watchman and then interrogate him.

Call in at Napoleon House. Ask the bartender about everything, including street musicians and bar patrons. Ask about Sam and voodoo.

Then go to the dixieland drug Store.



Look at the sign on the counter and interrogate Willy.

Your next port of call should be the Voodoo Museum. Look around and try operating the switch by the door. Talk to the woman.

Go to Jackson Square and observe the cop. Walk to the north west corner and watch the mime artist. Get him to follow you to the cop, who will then be distracted. When he leaves, use the radio on the bike to find out where the crime scene is.

Before going off to the crime scene, have a look around the cathedral just north of the park. Open the door on the right of the screen and enter. Take the collar and black shirt from the cupboard and leave.

At the crime scene, watch what happens and talk to Mosely. After he's left, sketch the marks on the ground using the sketch-book. Take some clay from the shore and use the magnifying glass on the grass just under the tree. Use the tweezers to pick up the snake scale, and use the magnifying glass again to examine it.





Return to the police station and ask the desk sergeant if you can see Mosely. Show him the scale, then interrogate him thoroughly. Ask about the patterns found around the bodies, and ask him for a coffee. Go out of his office and talk to Franks – ask to see the file. Look at it, then replace it in her tray. Return to Mosely's office and interrogate him again, this time asking about photos. When he gets Franks in to photograph you, say you need to check your hair. Go back into the main office and take the file. Use it on the photocopier and then replace it in the tray. Return to Mosley's office,get photographed and go home. Talk to Grace and ask her to research Malia Gedde.

Day 2

Talk to Grace, read the paper and then go to the police station. You'll see a man repairing the air conditioning. Look at the gauge next to Mosely's door and set it to maximum. Go in and talk to him, and ask for more coffee. Once he's out of the office, take the badge from his jacket. Leave.

Go to the Gedde Mansion and ask to speak to Malia. Say you're on official business and show the butler Mosely's badge. Interrogate Malia about everything, then flatter her. Next, take your leave and go to the Voodoo Museum.

Talk to Dr John who will give you directions to Magentia Moonbeam's house. Go straight there and interrogate her, asking about snakes and Grimwald. When she does her snake dance, take the snake skin from the cage. Magnify it. Then give her your sketch of the marks on the tomb so that she can translate them.

At the start of each day, read the paper and ask Grace for messages. These will provide you with vital clues which will aid your progress.

Return to Jackson Square. Go to the north east section, look at the artist and then go north east. Go back to the north east and see the artist lose his drawing.

Go south west and talk to the Lucky Dog vendor. Give him the voucher to get a Lucky Dog, then give it to the tap dancer. Talk to him, and ask if he can fit through the bars.

When he retrieves the drawing, give it back to the artist. Give him the pattern you copied at the murder site and the patterns from the police file. He'll offer to reconstruct them for you.

Next, go to the drug store and observe the woman who comes in. Talk to Willy and ask him about masks, Willy Jr and Madame Cazaunoux. Then go home and ask Grace to research Cazaunoux's address.



Day 3

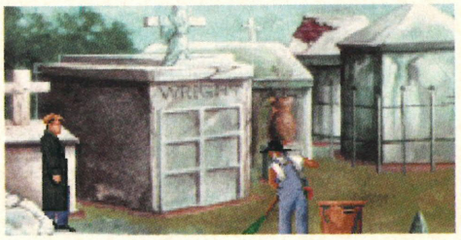
Read the paper and get the directory page from Grace. Go into the bedroom and call all the Cazaunouxs until you find the right one. Dial Cajun Critters and ask about Cazaunoux. Say you're worried about Castro so you can find out her address.

Go back into the shop and try to take some money from the till. Bruno will turn up again. Ask how much he'll give you for the picture and tell Grace to stay out of it. Sell the painting for $100. Ask Grace about messages and get Wolfgang Ritter's number. Then phone him. Go to Jackson Square and get the diagram from the artist. Go north west and talk to the fortune teller. When she dances, use the 'pick up' icon on her. Pick up the veil she drops and use the magnifying glass on it. Take the scale using the tweezers and magnify that as well.

Give the veil back to her and she'll tell you your fortune. Exit the park.Go to the police station and watch Mosely interrogating Crash. Ask Mosely about case status. Leave. Call in at the drug store and give $100 to Willy to buy the mask. He'll give you a free bottle of Master Gambling Oil.

Then go to the University on the main map. Attend the lecture, and when it's over, enter the office at the back of the hall and talk to Professor Hartridge. Show him the veve diagram and the murder photo. Interrogate him and ask about everything.

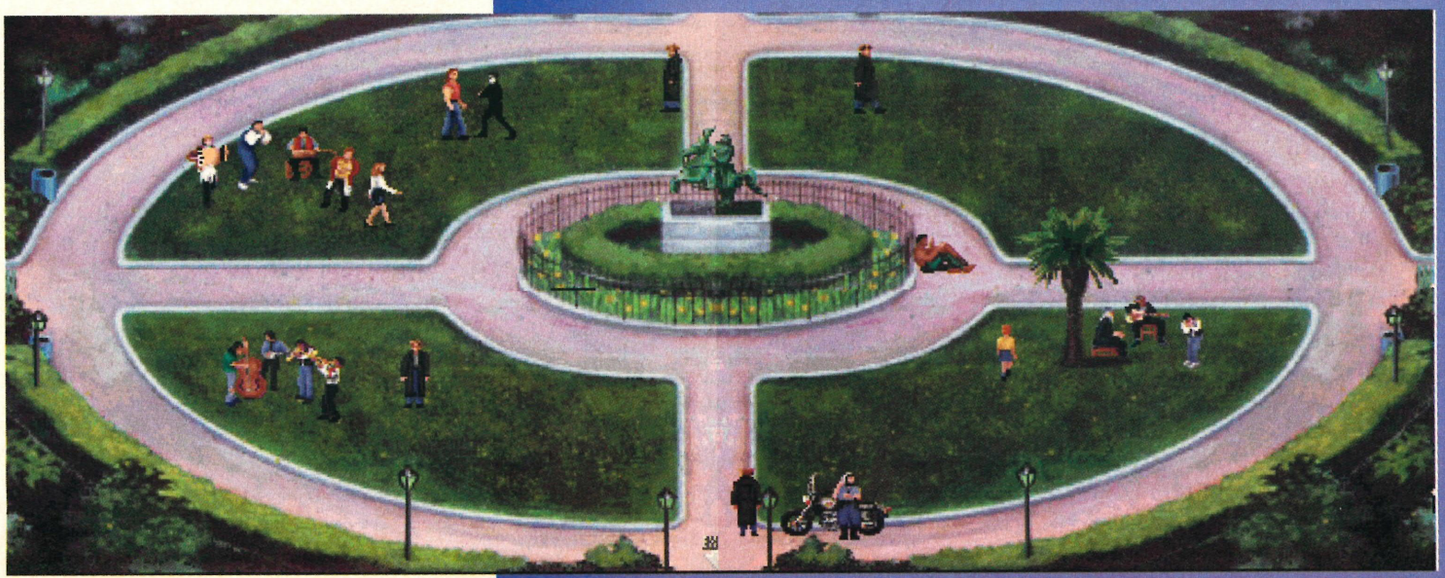




Now go and call on Madame Cazaunoux. Wear the vicar outfit and use the hair gel before knocking on the door. Tell her you're Father McLaughlin. Interrogate her on all topics. She'll give you a snake to bless, which you must use the clay on to get an impression.

After this, return to Napoleon House and give the gambling oil to Sam. He'll want to repay you, give him the clay mould of the bracelet so he can make a replica. Visit the cemetery, talk to the watchman. Ask about Marie Laveau and the marked tombs. Go to the Gedde tomb where you'll meet Malia, then go home.

Jackson Square is the haunt of New Orleans' artists and entertainers. You can learn a lot from observing or talking to the people who hang out here, so make a point of visiting it every day.



Hand of Fate: Legend of Kyrandia 2









Westwood's colourful adventure is a lot tougher than it looks. Cedric Holden of Orpington guides you through the puzzles with this handy two-part solution.

The start

Before you leave the laboratory, take an empty flask (on the bottom shelf), a blueberry and a flask of water (under the carpet). Outside, pick up another blueberry. Go north to the dock and pick a mushroom, then west to the weed patch to recover your spellbook from the hollow tree. Go north again to the gnarlwood tree where you must get a piece of gnarly bark and an onion.

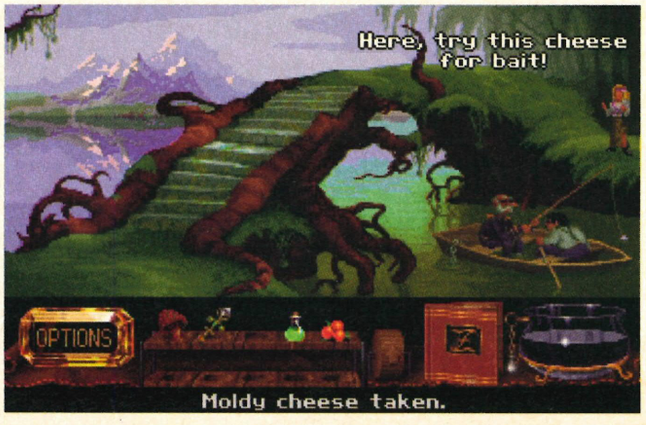
The ferry lies to the north. Speak to the ferryman before going west to the dark swamp. Take the feather from the nest and walk north to Herb's shack. Outside, put water on the fireberries and then pick them. Inside, get the flask, plant food and stool.

Next, go south to the bog and use the feather on the crocodile to make him cry. Collect the tears in a flask, then get your cauldron from the hollow tree. Then visit the sulphur springs, take a sulphur rock and fill a flask with hot water. Now make the swampsnake potion by putting the gnarlybark, sulphur rock, onion, tears, stool and hot water in the cauldron. Fill a flask with the potion.

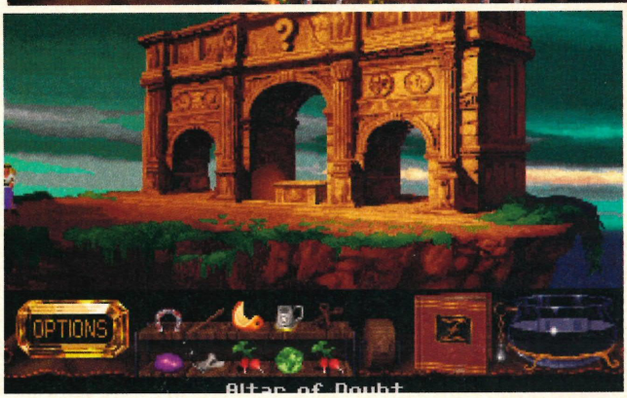
Go back to the ferry, then east and east again to the cave entrance where you'll meet Marko and the Hand, and then south to the firefly tree. Use the blueberries on the tree to find the order in which the flies light up, then use the fireberries to confirm the colour of each fly. Make a note of the colours and the order in which they light up – you'll need to remember as you will use it twice later on.

Go north and then west to the twisty tunnel. Wake the rat and scare him away by using the potion. Walk west to the dark cavern. Touch each tooth on the skull to determine its colour, then touch them again in the same order as the firefly tree. This opens the mouth. Open the treasure chest with the skeleton key and then get the alchemist magnet and the cheese.

Return west to the bridge and give the cheese to the fisherman, then back to the weed patch to rescue Marko by giving food to the plant. Travel east to the dock again and pick up the lead anchor – use the alchemist magnet to turn it to gold. Next, go to the ferry to speak to the ferryman, then wander around to find his four lost letters (try sulphur springs, bog, laboratory and firefly tree). Give the letters to the ferryman and fly to Morning Mist.







Morning mist

When you arrive in the meadow, take a flask from the haystack, a letter and some wheat. Go south to the farmhouse and speak to the farmer. Give him the letter and learn the formula for mustard (radish plus vinegar). Take the vinegar and the water bowl and walk west to the water wheel. Remove the stick from the wheel and open the valve, then go east to the garden. Pick up the alchemist's magnet and use the aardvark trunk to water the vegetable plot. Pick a radish and a lettuce.

At the meadow a ghost appears from the haystack. Speak to it, then capture it in a flask. Go to the garden and use the ghost on the scarecrow. Back at the farmhouse, wait for the farmer to chase the scarecrow and then enter the cellar. Get two horseshoes (one facing up and one facing down) and the scissors. Return to the meadow to get some wool (use the scissors on sheep) and milk (use flask on sheep). Go back to the cellar to make some cheese (put the milk in the machine hopper and pull the lever), then on to the water wheel to make mustard (grind the radish on the wheel, collect in the water bowl and add vinegar). Put it in the cauldron, along with the wheat (grind using the wheel), lettuce and cheese which you will need to make the sandwich spell. Collect it in a flask and then use the flask to remove the sandwich.

Always flush your cauldron before concocting a new spell. Because you never know what might be lurking in its murky depths.



Use the upside-down horseshoe on the wheel to make a magnet, then return to the farmhouse and replace the bowl. Exit the screen, then come back and take the bowl again. Collect the dragon tears in a flask. Now go north and east to the city gates.

Give the sandwich to the guards and enter the city. Take the stick from the fountain and go north to the inn. Press each of the rings to the left of the inn door in the same order as the firefly tree.

Enter the inn and take the mug and taffy. Fill the mug with beer from the hanging cask. Speak to the men and then try to leave.

Listen to the poetry recital and then go behind the dais and recite a poem. Leave the inn but ignore the octopus outside.

Go back inside and speak to the men who are fighting, wait for a gold tooth to fall out and use the alchemist magnet to turn it to lead. Pick it up.

The Altar of Doubt

Travel south and east to the street and pick up the parchment (from the spellbook) and flask. Cross to the fish building (jail), then to the lower causeway and pick up a key from the sea using the horseshoe magnet. Pick up the magnet again.

Go east along the top causeway, take some mud and use it on the rabbit's foot to make a footprint. Continue east and then cross the gorge by using the rope with the stick.

Further east lies the altar. Make the sceptic spell by mixing the taffy and vinegar in the bowl to make sweet and sour, then place in the cauldron with the footprint, tears and lucky horseshoe. Fill a flask and put it on the altar, then repeat.

Return to the street and give the potion to the sheriff.

Enter the jail and speak to Marko, then use the key on the lock. The sheriff will come in and put you in a cell. Use the magnet on the key which makes the sheriff throw the key through the window. Pick up the coil of rope in the cell and get a hook from Marko. Throw the rope through the window, hook the fish and retrieve the key. Unlock both cell doors.

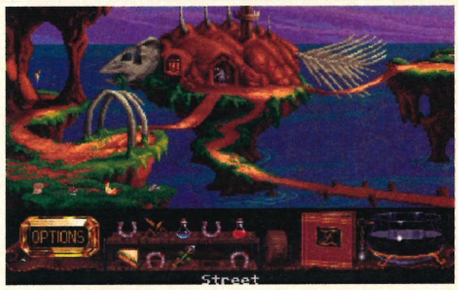
Go back to the altar, fill another flask with the potion and place it on the altar as before. Now go to the wharf by travelling east along the lower causeway. Give the potion to the boatman and speak to him.

Next, go to the store and give the potion to the storeman. Speak to him. Make a gold coin by using the alchemist magnet on the lead tooth and then using the tooth on the water wheel.

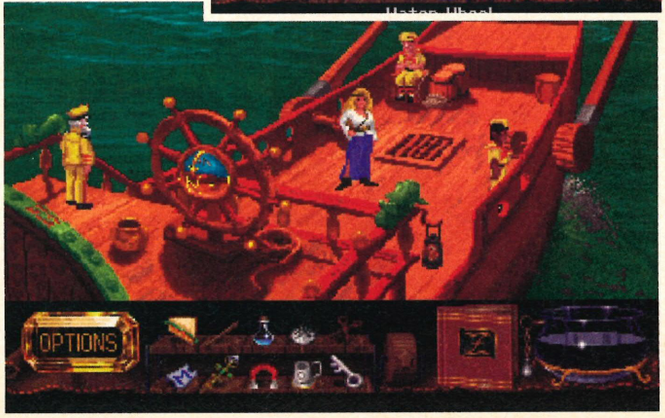
Return to the inn and get another lead tooth and make that into another coin. Repeat a third time. Give the coins to the storeman to get a voucher, then give it to the boatman and board the ship. Put the horseshoe magnet in the coil of rope when the captain is not looking to divert the boat to Volcania.

Next month, journey to Kyrandia's core and find out what's over the rainbow.









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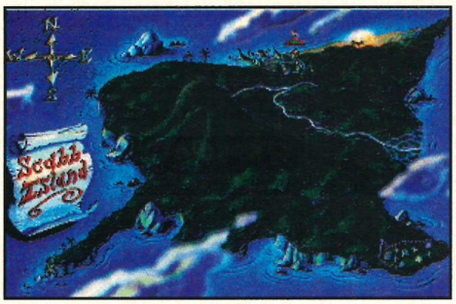
Tips

LeChuck's Revenge

Arne Michael Paulson from Trondheim in Norway has some tips for Matthew Sears and Paula Pheby to use in Monkey Island 2, and these are....

"The last map piece is in Governor Marley's house. When you are walking in the door on the front, the map is on your left hand side in the frame on the wall. When you are trying to get out, the dog's barking at you and the gardener is taking you to Marley's room.

"About the balloons and the gloves; fill 'em with helium and go to the elevator. Wait for LeChuck to approach. Then use the lever when he's standing in front of the door. The door will close and the beard is stuck between the doors."



STAR TIP!

Alone in the Dark 2

Thomas Roebuck and Edward Sykes from Huddersfield have come up with a cheat for Alone In The Dark 2 that turns you into a virtually indestructible character.



Read this and find out....

"Right to start with when you are in the house, collect the poison in the kitchen by the dumb waiter and the poison from the worksurface in the kitchen also. Now make the poisoned wine and drink it, then hold the button (enter) pressed until it is back onto the inventory and actions list. You will see on your body points display it is on minus 1000 at least. Now repeat this process until the minus disappears and you will be left with approximately 32,000 body points. Also, to enhance this and to stop yourself from getting drunk at the end of the process, collect the frying pan before hand and when you have 32,000 body points, use it".

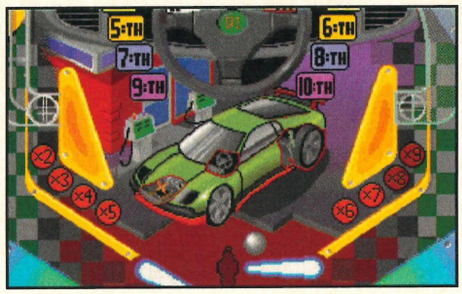


Pinball Fantasies

Martyn Rikchaert of Holland has wrote in with a couple of game-spoiling cheats for Pinball Fantasies and these are they ...

"These cheats will only work when you're looking at the table but not yet playing the game. Now enter one of the following codes: Earthquake = disable tilt

Extra Balls = you now have seven balls."



Huw Morgan from Cardiff has help for anyone on any computer game. Want to know how to get extra lives, or solution on seemingly impossible games, read this....

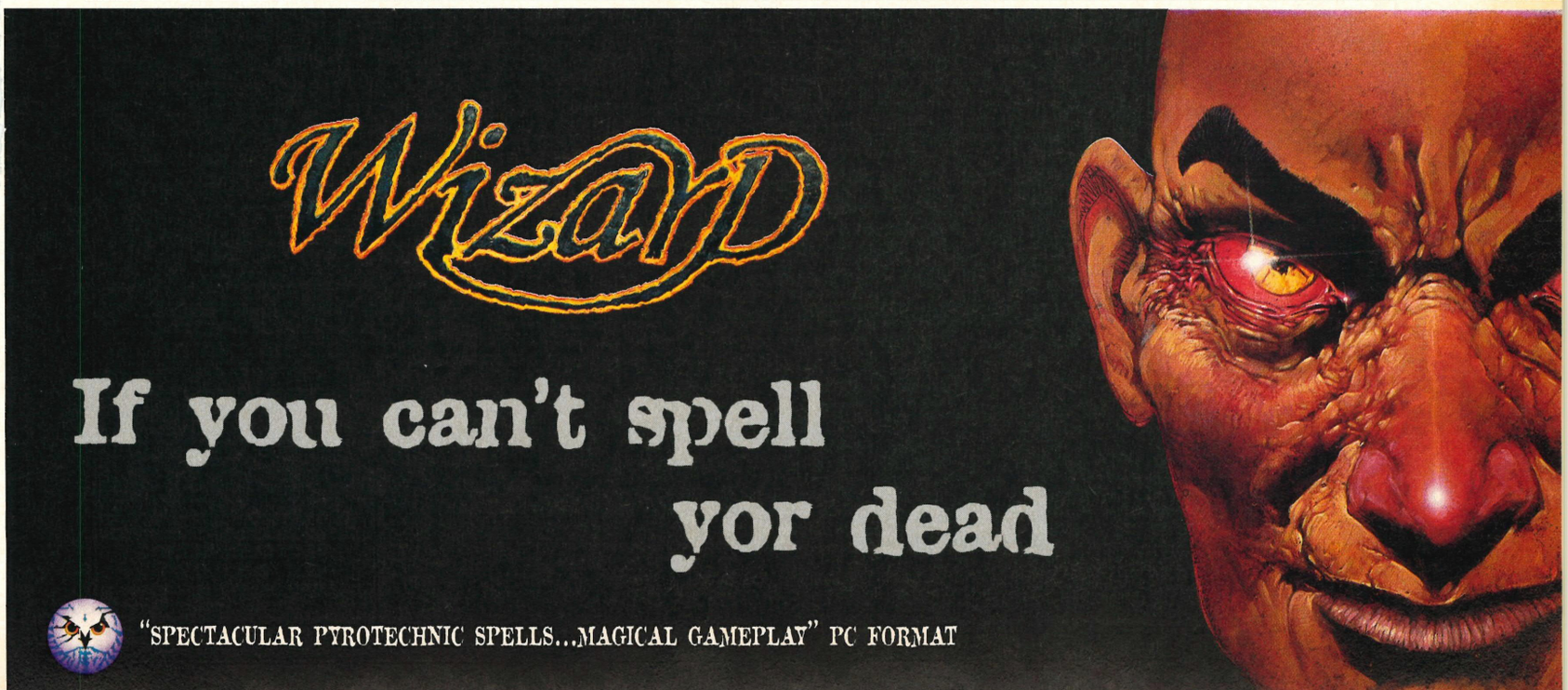
"My name is Huw Morgan and I would like to help anyone who is stuck on any computer game and I will do my best to help them. If any of your readers need help on computer games all they have to do is phone Cardiff (0222) 614842 I will be there between 5pm and 7pm".

SEND YOUR TIPS TO:
QED Tips at PC Review,
Priory Court,
30-32 Farringdon Lane,
London EC1R 3AU.

We'll print as many as possible each month and the sender of the highlighted Star Tip wins a software prize — so don't forget to include details of your PC's configuration along with your letter.

Your cries for help should go to Help Wanted at the same address as above. And if you can solve someone's problem as published on these pages, send in your solution and mark the envelope Help Supplied.

QED



Help wanted

I am stuck in Act 5 of the Dagger of Amon Ra where I am asked "What room do you leave which you have not entered?" I have even gone back to the beginning in case I have missed the necessary information from earlier.

I really am stuck and would appreciate a hint to get me back on the move.

Miss P.M.Wigley
Nr Wigan

I am stuck in Simon the Sorcerer. Can you please tell me how to get 30 gold coins so I can be a wizard.

Tony Weeks
London

Answer: Attach the magnet to the bit of string. Climb on top of the dragon's lair using the rope and grappling hook you got from the dwarven mines. Use the magnet and the string in the hole. Keep doing it till you have all the money.

I am hopelessly stuck in Alone In The Dark and I hope you can help. I can't open the door in the wall of the library and also I can't get past the spiders in the courtyard. Please help.

Matthew Baxter
Kent

Answer: Place the false book (found in the room at the far end of the gallery) in the hole in the bookshelf to open the door. The spiders appear when you take the arrows from the statue. Get the arrows and leave the room the way you came in. The ballroom can be entered via a different door.

Please, please, please can you help me with the excellent Indy and the Fate of Atlantis. I've got to the part where I am in Crete, with Sophia (Team path). I have got the following items: The Lost Dialogue of Plato, The National Archeology, the whip, the gum, the balloon ticket, the map, a clay jar, a ship rib, a hose, an amber fish, a wooden peg, a sunstone and a transit. I have uncovered the two statues and used the transit. Looking through the transit, I have seen a door between the tall horns. What do I do next, because I cannot find the door.

Asif Hameed
Manchester

I was wondering if you could possibly help me in Freddy Pharleas Frontier Pharmacist. At the moment, she has given me a prescription (Madam Ovarie that is) that is unreadable. Could you help me overcome this problem and also tell me how I must fill in the prescription?

Your help would be most appreciated.

Renes Barrow
London

Answer: Go to the saloon, wait till the guy drinking whiskey has stopped drinking. Then take the glass and use it to magnify the writing.

I have written to you once about not being able to get Return to Zork to work several weeks after I faxed someone and they told me what to do. Now that I've got it going I've been playing on it every day and now I'm stuck, just how are you supposed to get into Chuckles Comedy Club? I know that you have to have a healthy bonding plant but mine's dead. HELP!!!

Here are all the objects which I have: carrots, Mavis Peeper's book, a whistle (which I got from the fun cereal in the General store), an orb (with a battery in), a crank (which I used to open the silo latch), a knife, dwarven sword, a coin (which I got after beating Moodock at the Surviver game), a piece off some sort of circular disk, a piece of wire (which I got from the bra box when I put it in the incinerator), a sturdy piece of climbing rope, a tile game, a private note from Ben Fishin, a flask, a thermos, some hay (which I got from the cow), a highly reflective mirror, a dead bonding plant, the book of terrible jokes, keys to the basement, keys to the shop, a box with deceased mice in and some meat (frozen thawing, rotten).

I hope you can help me with my problem! I also think that out of all the magazines PC Review is the best!

Luke Boswell
Warks

Several people have been having problems with the Elite tip we printed in Issue 29 ("That Elite cheat again"). Unfortunately, it appears that the facility to use the cheat to gain unlimited cash has been removed from the latest versions of the game. So, if you bought the game early, you should be able to use it, but more recent purchasers may find it doesn't work.

Publishers' helplines

Hopelessly stuck in a game? Many software publishers run games helplines to help out hapless souls with hints and tips.

Accolade	
Helpline Number:	(081) 887 0880
Cyberdreams	
Helpline Number:	(071) 372 4307
Domark	
Helpline Number:	(081) 780 2224
Electronics Arts	
Helpline Number:	(0753) 546465
Gametek	
Helpline Number:	(0753) 553445
Gremlin Graphics	
Helpline Number:	(0742) 753423
Interplay	
Helpline Number:	(0865) 390029
Microprose	
Helpline Number:	(0454) 329510
Mindscape	
Helpline Number:	(0444) 246333
Ocean	
Helpline Number:	(061) 839 0999
Renegade	
Helpline Number:	(071) 481 9214
Sierra	
Helpline number	
(games after 1993):	(0336) 417410
(games before 1993:	(0734) 304004
US Gold	
Helpline Number:	(021) 326 6418
Virgin Games	
Helpline Number:	(081) 964 8242

Remember that with the automated numbers (0839) that you should get the permission of whoever pays the phone bill before making the call. Calls cost 36p per minute cheap rate, 48p per minute at all other times.

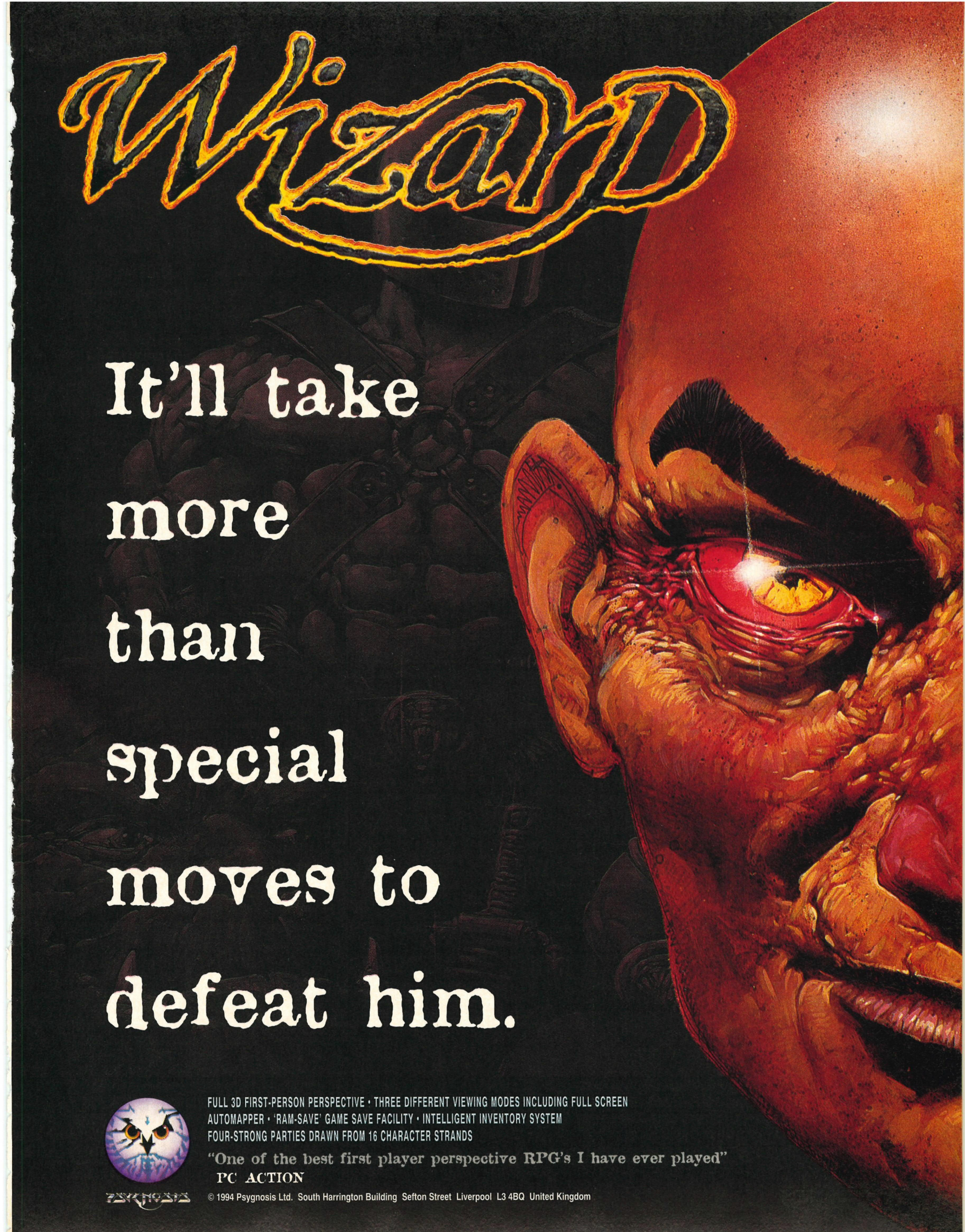
And finally ...

Mr S R Lane from Wolverhampton writes, "I recently purchased a copy of TFX and found it to be well worth the money. I eventually completed the training missions and was looking forward to getting down to some real combat in the Tour of Duty. Unfortunately, during my first mission I shot down an enemy aircraft too soon, was court martialled and had to do all my training again.

"I can't help it if I'm trigger happy. Is there any way to get round the training sessions and straight into the other missions?"

Indeed there is. If you want to skip training, press Ctrl-Enter after you input your call-sign, instead of simply Enter. More next month.

Wizard



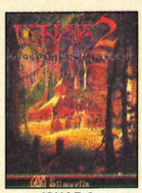
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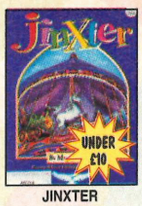
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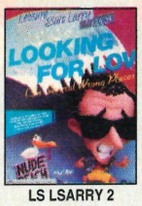
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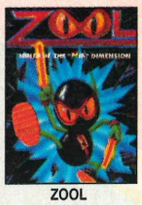
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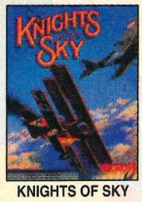
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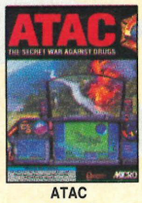
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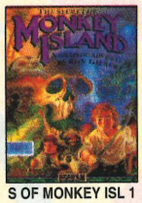
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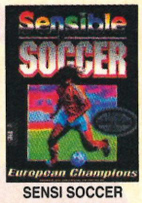
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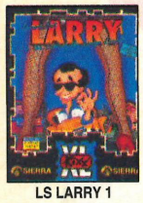
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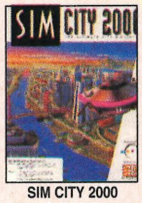
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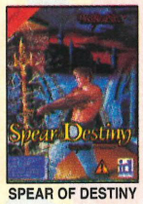
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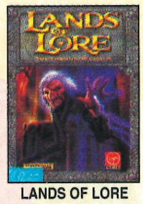
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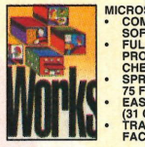
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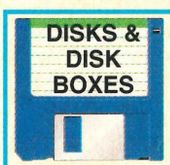


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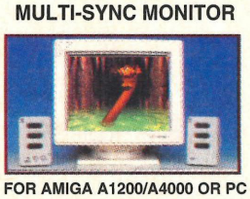
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Sim Analysis

'Dr' Cal Jones gives her own special treatment to the first three entries in our SimCity competition .

Cal Jones thinks that a lot can be learned about a person by studying the cities they build using SimCity 2000. Last month she cast her analytical eye over the PC Review team and Chris Knight of Maxis. Now it's your turn. We asked you to send in the best city you could build in 50 years, with a prize awarded for the most outstanding creation and a wooden spoon for the worst. Here are the best of the cities that we have received so far — if you haven't sent in your city yet, the competition is still open.

Subject One: James Browne of Worcester Park, Surrey

James has written his name across the landscape using trees and water, showing that he has a strong personality, intends to make a name for himself and has an ego the size of a planet. Although his city doesn't cover a huge area of the map, it's very dense, with a population of 46,250 and a large number of flashy apartment blocks. This indicates that James prefers to improve his existing assets before branching out and trying new things. I don't think he likes taking risks either: he has been playing the game with the disasters



turned off! Unemployment is low, crime and education are average, but life expectancy is only 57 years — probably because of the high pollution rate. James should be careful not to neglect his health. He should also keep an eye on spending — he finished with $1,061 in the bank but only after taking out a $10,000 bond. Overall, though, a fine effort.

Subject Two: Stephen Higgins of Sale, Cheshire

There's something a very suspicious about this city. With a population of 164,300, Ankh-Morpork (named after the Discworld metropolis) covers the entire map, and Stephen has somehow managed to achieve this whilst keeping a staggering $291,783,575 in the bank. Own up, Stephen, you've been cheating, haven't you? Hacking into the program files, perhaps? This tells me that Stephen is an enterprising sort, but is willing to resort to underhand methods to get what he wants.

Perhaps he should consider a career in finance, where his 'creative' accounting skills would be much in demand. I don't think this city is going to win any prizes, but if you're reading, Stephen, our QED section would love to hear from you.

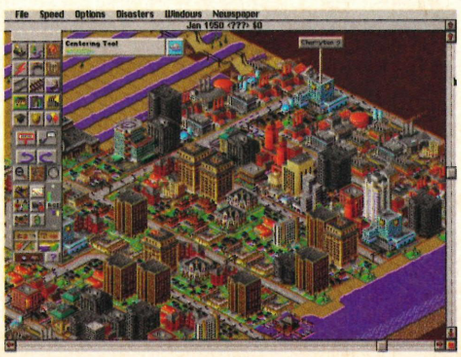


Subject Three: Mr or Ms X of ???

This anonymous entrant (yes, you know who you are) thought it was a good idea to put a stamp on the floppy disk and send it through the post, *sans* envelope. Consequently, I wasn't terribly optimistic about the chances of this disk working, but fortunately, it did. The imaginatively titled city of ??? has obviously been built along the guidelines offered by our Sim City 2000 guide last issue. Mr/Ms X has included several money-making mini-cities, but for all that was left with no money whatsoever at the end of the 50 years. Still, at least (s)he hasn't cheated or issued any bonds, although I notice that this is another person who likes to play with the disasters turned off. Cowards, the lot of you!

Mr/Ms X, then, likes to play safe, keeping everything above board and listening to advice where necessary. The town in commendable for its low crime and pollution and high standard of education, but unfortunately has a population of only 18,390 and the highest unemployment I've ever seen in a game. Perhaps (s)he's too honest for his (or her) own good!

If you're reading this, Mr/Ms X, please send in your address and details — we can't send you a prize if we don't know who you are.



Attention cover disk users

We're also running a separate category for the best town built using the SimCity 2000 cover disk demo on last month's issue. Since you can't save the game on this demo version, use the latest version of Screen Thief, as supplied on *this* month's cover disk, to capture images of your city. What we'd like to see is one screen at maximum zoom-out (ie, showing as much of the whole terrain as possible) and one or more zoomed in, to show the salient features which you believe make your city worth a prize. Include details of your population, crime, pollution, health, unemployment, traffic and land values. No fibbing!

How to enter

You have 50 years to build your city, starting from 1900. You may edit the terrain to begin with, and you may use standard tactics such as borrowing bonds, and using the Maxis 'money-maker' (see QED, Issue 30), but you may not hack the code.

If you are using the full version of SimCity 2000, save your game in January 1950, and send in this saved game on disk.

If you are using the cover disk demo version of SimCity, take your screen grabs, using this month's cover disk version of Screen Thief, in January 1950, and save the resulting picture files to disk.

Either way, your disks should be sent to
SimAnalysis
PC Review
Priory Court
30-32 Farringdon Lane
London EC1R 3AU

The prizes

Every city we publish will win a SIm prize, such as a SimCity 2000 pen, T-shirt, or mayor's badge. The best cities in each category will go forward to receive a copy of the the Great Cities of the World SimCity 2000 add-on disk when released.

Particularly duff cities will also win a mystery booby prize, so send them in if you dare!

Rules

Your entries should arrive on disk and be in the form of either a saved game from January 1950, or up to four screen grabs from January 1950.

Write your name and address, the name of your city and whether the disk contains picture files (cover disk category), or a saved game (full game category).

Please enclose an SAE if you absolutely must have your disk returned.

You may enter as many times as you like.

COMPETITION

PC REVIEW

RECOMMENDED

PC Review playlist

That's enough of the classic games of yesteryear. What about the games that are out now? The games which are getting the most intensive plays here in the office aren't necessarily the most sophisticated or complex. We all have our 'security blanket' games — the ones we keep coming back to, month in, month out for sheer playability and familiarity.

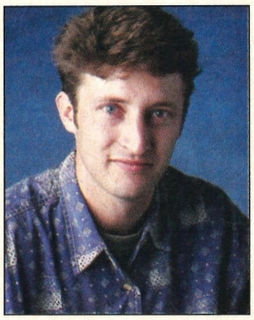
Christina Erskine



Christina has built up an impressive number of SimCity 2000 conurbations, each with their own characteristics. There's the urban jungle, dotted with arcologies and with an underground transport system like scrambled string. There's the city of connected villages, with rocketing land prices but comparatively low population. There's her equivalent of Venice, a series of small towns built on islands ... is there anything quite so dull as a SimCity fanatic rambling on about the minutiae of their creations?

John Bennett

John is sulking because he wasn't invited to enterour sister magazine The One's Sensible Soccer competition. His only consolation has been Doom. Doom the nightmare level, Doom the network version, but most of all, Doom the VR version. But you can't say John isn't loyal, having played Sensi for a year, and Doom for the past three months. Constantly.



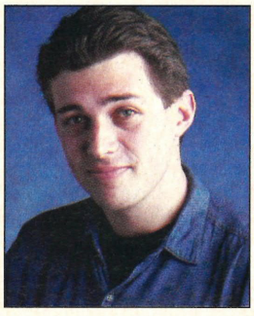
Cal Jones

Struggling with Ultima VIII, pleasantly surprised by Elder Scrolls, Cal has been honing her already polished role-playing skills this month. But her security blanket is Pinball Fantasies — as soon as there's a slack moment, you'll find Cal playing Pinball. She says she'd like to go back to Megarace, too, but "I lent it to my flatmate and now he won't give it back."



Dean Evans

Dean came back from DID's HQ in sunny Runcorn full of the joys of Inferno: "It's the best-looking game I've ever seen," he bubbled, and settled down with a calendar to mark off the days until the release date. As for more current games, Dean now lives in a Doom-laden household: the network has finally been set up in his flat and the neighbours are becoming concerned about the sounds of gunfire and whirling chainsaws emanating from Evans Towers.



David Upchurch

Dave used to be an Amiga man (ex-editor of The One, no less) but now that he's editing our new sister magazine PC Games, he's finally seen the light and frankly, is being a bit like a child in a sweetshop confronted with all these wonderful PC games to play. Top of his list of goodies has got to be LucasArts' follow-up to X-Wing, TIE Fighter — yes, PC Games is putting TIE Fighter on its cover disk and this demo must be, without any doubt at all, the most intensively play-tested cover disk ever.



PC Review Recommends

The best of the last three months

Gabriel Knight
Sierra, £39.99 disk, £44.99 CD-ROM
Not for the faint-hearted, Gabriel Knight is an adult game dealing with adult themes, which manages to pull off the difficult trick of creating strong believable characters. On CD-ROM, the roles are spoken by professional actors, such as Mark Hamill and Tim Curry.

SimCity 2000
Maxis, £39.99
A sequel which delivered everything it promised: a sophisticated, detailed and beautifully illustrated game in which you build up your own city, from raw terrain to a thriving metropolis. An absorbing experience.

Doom
Id/Transend, £34.75
Anyone who says the PC "can't do" arcade games needs to look at Doom and then eat their words. It's mayhem and carnage at a frantic pace all the way, though of course, having played it on PC Review's cover disk, you'll know about all that.

PC Review's notorious 9's

In 31 issues, we've reviewed over 450 games, of which only 22 have received the prestigious award of nine out of ten (and nothing has yet been rated ten). The games



Alone in the Dark	Fate of Atlantis
Alone in the Dark 2	IndyCar Racing
AV-8B Harrier Assault	Jimmy White's Whirlwind Snooker
Chessmaster 3000	Monkey Island 2
Chessmaster 4000 Turbo	Rebel Assault
Day of the Tentacle	Sensible Soccer
Doom	SimCity 2000
Falcon 3.0	Syndicate
Frontier: Elite II	TFX
Gabriel Knight	Tornado
	Ultima Underworld

Recommended competition

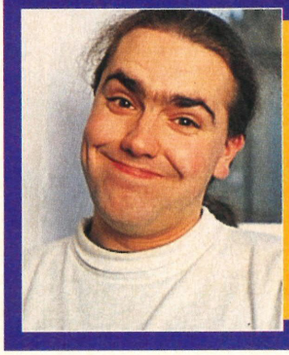
There's no PC Review Recommended competition this month because there are no new Recommended games (the bumper Christmas crop seems to have petered out a bit). Don't worry: we haven't abandoned the scheme, and normal service will be resumed just as soon as the next batch of 9-rated games comes.

Jon Hare's Classic Game of the Month



Ultima IV

Jon Hare founded Sensible Software with Chris Yates on a Government Enterprise Scheme in March 1986. Sensible's first game was Parallax for Ocean, followed by the classic Wizball, and then Shoot 'Em Up Construction Kit. Before Sensible Soccer they also wrote MicroProse Soccer. Sensible's latest game, Cannon Fodder, is reviewed in this issue.



"You can get lost in this game – but it's big without being boring. It reminds me of the time when I could play games for three to four days at a time"

Reviewed this issue

Disk-based games

Award Winners Gold Edition *Empire*	8
Cannon Fodder *Sensible/Virgin Interactive*	8
Civilization for Windows *MicroProse*	8
Elder Scrolls: Arena *Bethesda Softworks/US Gold*	8
Evasive Action *Mindscape*	7
F14 Fleet Defender *MicroProse*	7
SSN-21 Seawolf *Electronic Arts*	7
Ultima VIII *Origin Systems*	7
Air Force Commander *Impressions*	6
Fantastic Dizzy *Code Masters*	6
Privateer: Righteous Fire *Origin Systems*	5
NFL Pro League Football *Digital Integration*	4
Starlord *MicroProse*	3

CD-ROM games

Battle Isle 2 *Bluebyte*	8
Megarace *Mindscape*	8
Star Trek CD *Interplay Productions*	8
Dragonsphere *MicroProse*	7
Lemmings CD *Psygnosis*	7
Comanche Maximum Overkill *NovaLogic/Optima*	6
Gateway 2 *Legend/Accolade*	6
CD Challenge Pack *Software Toolworks*	5
Patrician *Daze Marketing*	5
Wolfpack *NovaLogic/Optima*	5
Microcosm *Psygnosis*	4

CIARAN'S RANT

Impressive statistics are being touted to show the march of PCs into the home

I'm an absolute sucker for statistics — no matter how dull the subject, all you have to do is break it down into units and percentages and you'll have my attention. Annual percentage rainfall in Manchester? Yes, please. Statistics can be used to prove all sorts of nonsense, but in a war of words, statistics are the equivalent of nuclear weapons and I'd therefore much rather have them with me than against me.

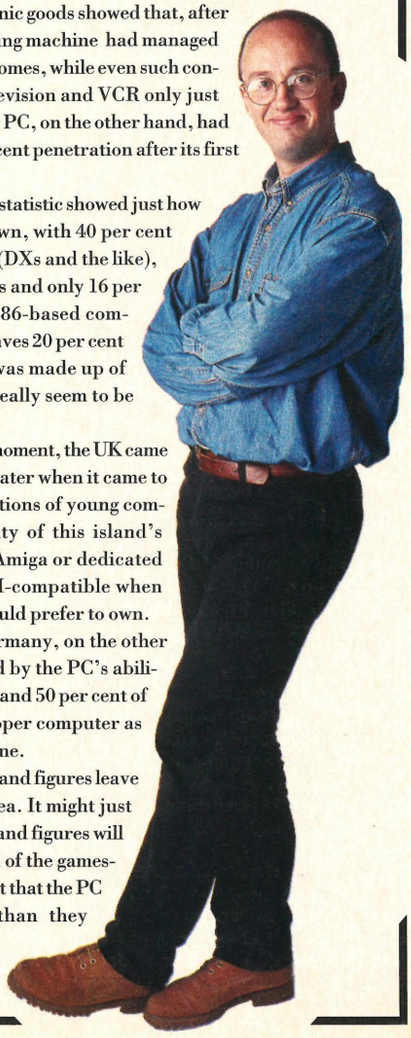
This point was beautifully demonstrated at a recent computer and video games business conference in Monte Carlo, which our esteemed editor asked me to attend (I know what you're thinking ... whatever they pay me here, it isn't enough).

There, among all of the noises made about Sega, Nintendo and the next generation of games machines (see last issue), one man used the power of numbers to make himself stand out from the crowd — Intel's Andy Tait, who, along with Peter Bromage of Packard Bell, attended the conference to represent the entire PC business.

If Mr Tait's facts and figures proved only one thing, they proved something that you and I have suspected for quite a while now — that the PC is no longer exclusively a business machine. The march of the PC into the home which has been moving steadily for the best part of five years has brought us to the current situation where a whopping 31 per cent of all PCs sold throughout Europe are for home use.

However, probably because the US PC market is that much more mature than its European counterpart, most of the truly interesting stats concerned the spread and use of PCs on the other side of the Atlantic.

For example, a chart demonstrating the household penetration of a number of domestic electronic goods showed that, after their first 10 years, the answering machine had managed to hit less than five per cent of homes, while even such consumer staples as the colour television and VCR only just managed to hit 10 per cent. The PC, on the other hand, had managed an impressive 20 per cent penetration after its first decade.



Another interesting Stateside statistic showed just how the range of US PCs broke down, with 40 per cent being 'high end' 486 machines (DXs and the like), 24 per cent being 'low end' 486s and only 16 per cent being accounted for by 386-based computers (all right, I know that leaves 20 per cent unaccounted for, but as this was made up of Apples and Amigas, it didn't really seem to be worth mentioning).

Moving back to Europe for a moment, the UK came across as something of a backwater when it came to the figures charting the aspirations of young computer users, with the majority of this island's teenagers choosing either an Amiga or dedicated games machine above an IBM-compatible when asked which computer they would prefer to own.

The youth of France and Germany, on the other hand, were far more convinced by the PC's abilities, with 60 per cent of French and 50 per cent of German youths choosing a proper computer as their number one games machine.

So, where do all of these facts and figures leave us then? Frankly, I have no idea. It might just be that Intel's barrage of facts and figures will have woken the great and good of the games-producing community to the fact that the PC market is not only bigger than they thought, but also that it's here to stay and growing rapidly.

Games News

All the latest moves, deals, events, tie-ins and tie-ups in PC games. SimCity 2000's still top of the charts, and — inevitably— plans are being laid for Elite 3

BBC2 gets caught in the Net

BBC2 hopes to attract a broad audience to its new weekly series on computers and new technology. The Net will cover subjects as diverse as the increasing influence of the far right on German bulletin boards, Thomas Dolby's music generation program and profiles of prominent people (such as Virtuality's Jonathan Walden). The Net will also carry a regular games slot presented by 13 year old "Jules" featuring one game in some depth each week.

"It's purely about computers, the technological culture and digital education," says series producer Stephen Arkell.

The Net's first show was scheduled for April 13 and there will be ten shows in all, boradcast at 8.00pm each Wednesday.

Virgin strengthens ties with Sensible Software

Virgin Interactive Entertainment has strengthen its ties with two of Britain's top software developers, Sensible Software and Revolution Software.

Virgin has bought a 25 per cent stake in adventure game specialist Revolution Software in a deal thought to worth more than £1 million.

Hull-based Revolution — headed by former Activision and US Gold development chief Charles Cecil — made its debut with Lure of the Temptress. The follow-up Beneath a Steel Sky (reviewed in the January issue of PC Review) is due for release shortly.

The deal is seen as strengthening Virgin's portfolio of games in an area which has been traditionally dominated by the Americans.

Meanwhile, Virgin has signed up Sensible Golf, which will be released towards the end of the year.

Sensible's managing director Jon Hare said: "We've worked successfully with Virgin before and they're our perfect publishing partner."

Top ten PC games (disk)

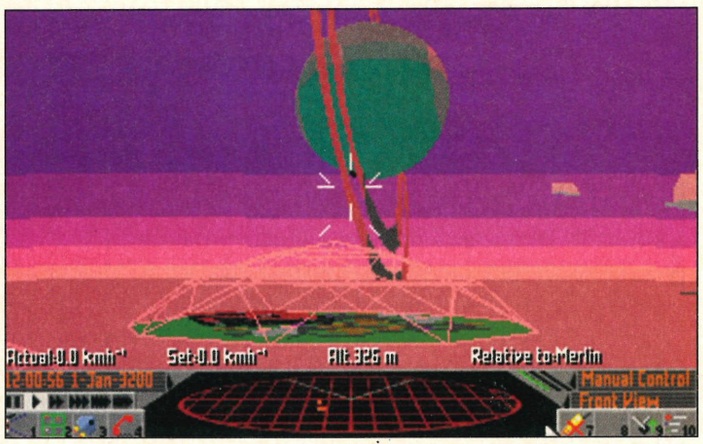


1. SimCity 2000 *Maxis*
2. Flight Simulator 5 *Microsoft*
3. TFX *Ocean*
4. Mortal Kombat *Virgin Interactive*
5. Gabriel Knight *Sierra On-Line*
6. X-Wing *LucasArts/US Gold*
7. Starlord *MicroProse*
8. Elder Scrolls: Arena *Bethesda Softworks/US Gold*
9. Frontier: Elite 2 *Gametek*
10. Police Quest 4 *Sierra On-Line*

Charts supplied by Virgin Retail

Frontier 2 is on the way

Gametek, the publisher of Frontier: Elite 2 (pictured right), has announced plans to release a sequel towards the end of this year. Frontier: Elite 2 was the follow up to David Braben's classic space trading game Elite, but the new game will be titled Frontier 2 rather than Elite 3. It will feature a stronger storyline than either of its predecessors, involving an enemy empire which attempts to thwart your every move. Combat has also been improved, following criticisms of Frontier's combat system, and there will be more enemy interaction and a new range of ships and weapons. The question is, will all this still fit on to one floppy disk?



Simon the Sorcerer goes "talkie"

A full "talkie" version of Adventuresoft's Simon the Sorcerer (pictured below) is to be released on CD-ROM in May. Chris Barrie, who plays Rimmer in Red Dwarf and Gordon Brittas in the Brittas Empire, provides the voice of Simon himself. The CD version will also include a sneak preview of Simon the Sorcerer 2.



Action 16 on CD

Action Sixteen is releasing a series of CD titles. The range kicks off with MicroProse's Silent Service II and Railroad Tycoon. Both games will retail at £19.99.

IndyCar Racing wins "Oscar"

IndyCar Racing has been awarded the prestigious Excellence in Software Award for Best Sports Program by the American Software Publishers.

Known as the "Codie", the award is promoted as an Oscar of the software industry.

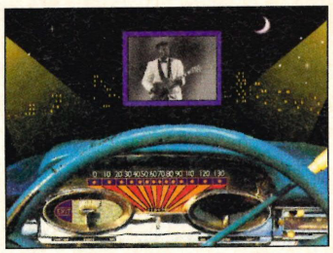
Developed by Papyrus, the game was released in the UK by Virgin and rated 9 in PC Review in January

The awards are voted for by the SPA's membership, currently more than 1000 software firms. Executive Director Ken Wasch said: "The innovation, intelligence and sheer imagination demonstrated in the Codie-winning products is simply astonishing."

Rock of ages

The Rock 'n' Roll Decades: The Fifties, a multimedia tribute, is to be released by Waddingtons' division Supervision.

Priced at £24.99, the CD-ROM includes 30 minutes of full motion video, 700 trivia question, thousands of facts and figures, and a month by month listing of UK and USA albums and singles charts. Further "Decades" releases are planned for the rest of the year.



PC Games hits the streets

The newest, and probably the best of the latest clutch of PC games magazines to appear in the shops (not that we're biased or anything) is PC Games, a fine publication from PC Review's publisher EMAP Images.

PC Games will be concentrating solely on well, PC games, obviously enough, with in-depth and highly pictorial reviews of all the latest games, extensive tips section, and up-to-the minute features, all covered in a refreshingly humorous style. Editor David Upchurch says, "It's going to be a belter. We've got exclusive reviews and previews by the bucketload and some smashing fully-playable cover disk demos, including LucasArts' brill TIE Fighter"

Yes, they've got TIE Fighter on their cover disk. The bastards.



Dagger at the cutting edge

Dagger Interactive Technologies is a new games software development company, formed by former MicroProse employees Steven Green and Adrian Earle, and based in Chipping Sodbury.

Green has been programming for 15 years and was lead programmer on Team Yankee, Pacific Islands for Empire, and Fields of Glory (pictured above) for MicroProse, whilst Earle has been designing games for 20 years, including Subbuteo (Electronic Zoo), Fields of Glory and World Championship Boxing.

Dagger has already won a contract with Entertainment International, the London-based company which publishes the Empire label. They intend to develop state of the art games with the emphasis on gameplay. "The recent trend in computer games has been towards lots of high tech graphics and sound but with little actual game. We see no reason why a product should not contain both," said Earle.

CD Dizzy
This summer, Codemasters is releasing a compilation of ten Dizzy titles on CD-ROM for £21.99. The Dizzy Collection will include Kwik Snax, Bubble Dizzy and other games starring Codemasters' hero egg.

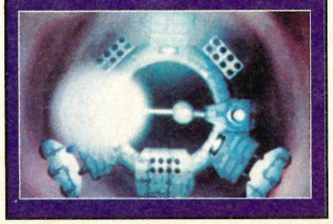
Psygnosis moves in with Scops

Psygnosis has entered the edutainment scene via and international distribution deal with educational specialist Scops. Scops will continue to develop edutainment products, while Psygnosis has worldwide distribution rights excluding the United States and Canada. Psygnosis's international sales manager, Diane Lefly, said, "This is a very exciting time for childrens' computing both at home and at school. The edutainment market is a rapidly growing area in Europe and with Scops we are in an ideal position to greatly influence the market."

Psygnosis can be contacted for details on (051) 709 5755

Top five PC games (CD-ROM)

1. Microcosm *Psygnosis*
2. Gabriel Knight *Sierra On-Line*
3. Rebel Assault *LucasArts/US Gold*
4. Iron Helix *Spectrum Holobyte/MicroProse*
5. Lawnmower Man *Sales Curve*



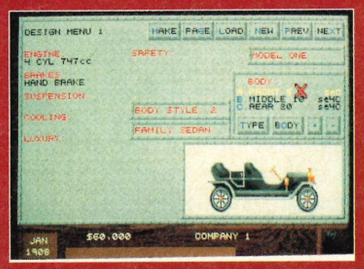
Coming soon



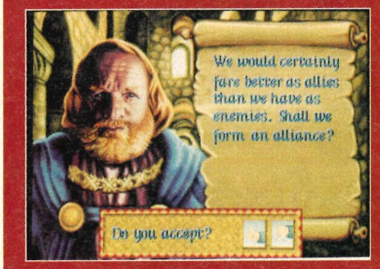
Mike Singleton's updated version of Lords of Midnight III is due to ship in May, and features fractal generated landscapes and seasonal weather.



The HR Giger inspired Dark Seed, published by Cyberdreams, is now available on CD-ROM, complete with digitised speech.



Design, build and mass produce the car of your dreams with Detroit from Impressions. Due to hit the streets in May.



Also from Impressions is Lords of the Realm, a strategy game of feudal governing and conquest in thirteenth century England.



Corridor 7 is a Wolfenstein-style 3D shoot 'em up set in an alien infested space ship. It's available from Gametek priced ú19.99.



Interplay's Space Federation, previously known as Star Reach, is a space conquest strategy game in the Spaceward Ho! mould.

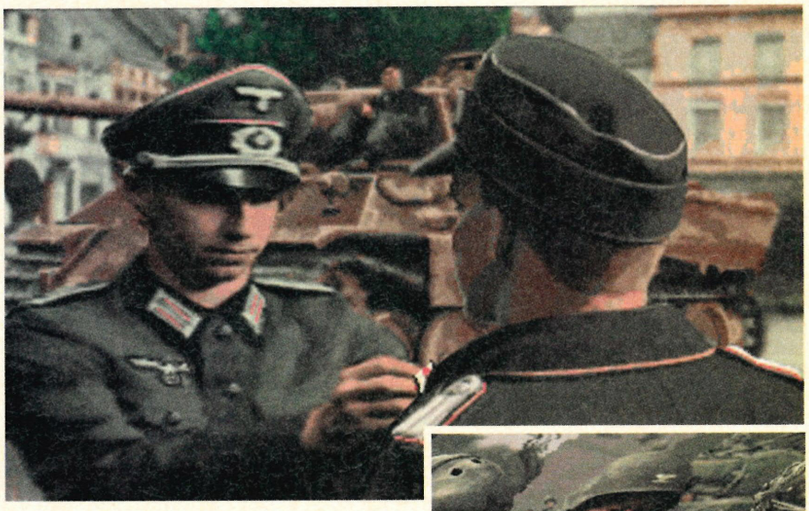
Across the Rhine

FAXBOX

ACROSS THE RHINE	
Developer:	MicroProse
Publisher:	MicroProse
Release date:	June
Genre:	Simulation
Price:	£TBA

Across the Rhine is a World War II tank warfare simulation which re-creates the epic struggle between the United States Army and the German Wehrmacht.

Play begins in June 1944 with the allied landings in Normandy and continues through to the end of the war in 1945. You may opt to join either the American or German sides, and will start the game as a sergeant or Unteroffizier controlling a single tank. At this level, the action is seen from a 3D first-person perspective view which features 3D landscapes and objects. However, as the player moves up the promotional ladder, the game opens up to include several levels of strategic and tactical command. Promotion comes with success in battle, and eventually you will be able to control sections, squads, platoons and tank companies.



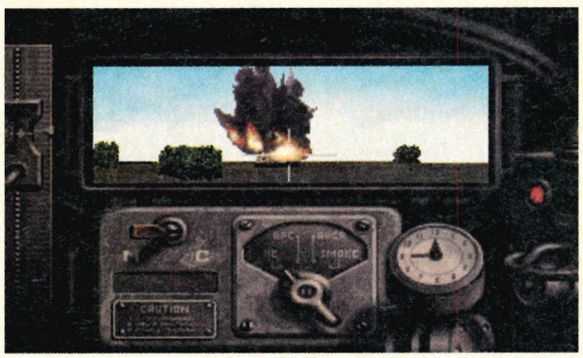


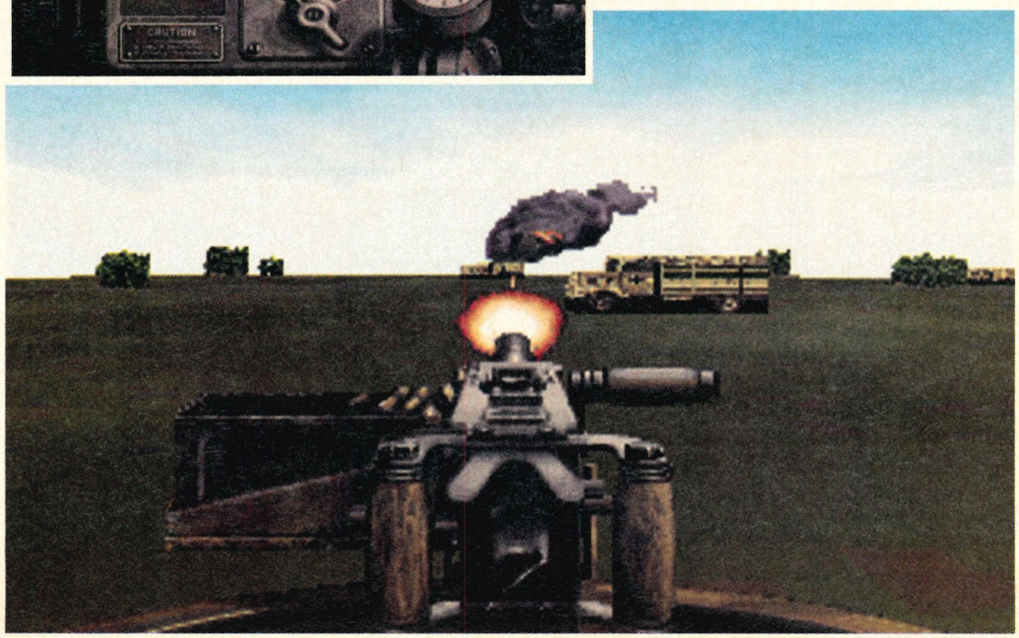
Achieving promotion takes time, though, so MicroProse has included an instant promotion feature which allows you to jump straight in at a higher level.

As an individual you can't change the course of the war, but you will be able to influence the outcome of each battle. All the major battles have been re-created, including Mortain, Falaise, the Battle of the Bulge and the breaching of the Siegfried Line, and it's also possible to invent your own conflicts using the battle builder.

Across the Rhine will be available in June, and will support head-to-head play via a modem or direct link. The early signs are very promising, and if it lives up to expectations, it could just be the definitive tank sim we've all been waiting for.

■ **Cal Jones**





'Ten-shun!

Across the Rhine builds on months of research drawn from archives and individual accounts of the war. In fact MicroProse is so proud of its new game that it even considers it accurate enough to be used at any military academy as a reference guide.

The game itself has been in production for two and a half years, and the development team was led by James Day, a game designer and expert on armoured warfare.

James has been designing strategy board games since 1979, and numbers amongst his achievements titles such as Armor, Panzer and 88 (published by Yaquinto Publishers Inc.) and more recently, Main Battle Tank and Israeli Defence Force through Avalon Hill.



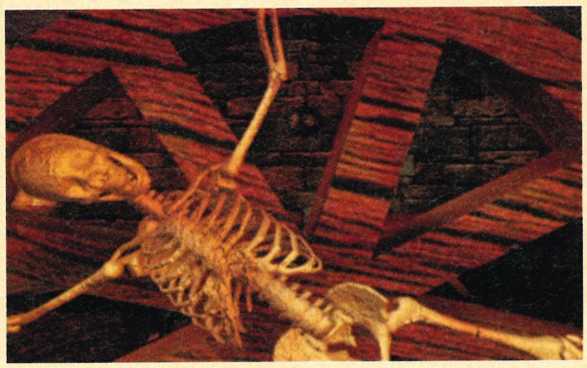
Dragon Tales

FAXBOX

DRAGON TALES	
Developer:	Cryo
Publisher:	Mindscape
Release date:	Summer
Genre:	Role-playing game
Price:	£TBA

Cryo, the Paris-based software house responsible for Dune and Megarace, has developed some remarkably good looking games over over the years. One look at these pictures from Dragon Tales will tell you that the trend is set to continue. Dragon Tales is a first-person perspective role-playing game with a traditional fantasy storyline (knights, dragons, beautiful princesses — you know the kind of thing), in which you, as the amusingly named Werner Von Wallenrod, must seek to avenge the death of your father. It might not sound very remarkable, but the phenomenal graphics really make you sit up and take notice. The locations, both indoor and outdoor, look incredibly realistic, and every room appears at it would if you were really stepping into it.

The beautifully animated characters are no less impressive, and unlike sprites in the majority of first-person perspective games, these ones don't break up into an unrecognisable mass of pixels when you get close up to them.



Fortunately, the gameplay looks likely to be every bit as good as the graphics. There is a high level of interaction throughout: you can talk to every character you meet (speech is fully synchronised, of course) or fight them using a wide range of weapons, and everything you find in a room can be used or examined. Puzzles (and there are plenty of these) often have more than one solution, making the game more flexible. Dragon Tales is scheduled for a summer release, and having salivated over the screenshots, I can't wait to get into the game.





The characters are first drawn by an artist (left) before being re-created on computer as a wire frame model. Finally, they are filled in and rendered (right) using 3D Studio.

■ **Cal Jones**

Myst

FAXBOX

MYST	
Developer:	Cyan
Publisher:	Electronic Arts
Release date:	April
Genre:	Adventure
Price:	£44.99

Myst is a first-person perspective adventure which features the kind of wonderful photo-realistic 3D graphics you'd associate with a CD-based product. It was created by two brothers, Rand and Robyn Miller, whose company, Cyan, has been producing childrens' games since 1988. Its second release, Cosmic Osmo, in 1989, was probably ahead of its time, but it certainly provided a taste of the potential of multimedia games. Its latest game, Myst, has no inhibitions about being a multimedia game for the '90s with 256 colour graphics and over an hour of video footage and animation, filling almost the entire CD-ROM.

Unlike earlier Cyan products, Myst is an adult game. The story revolves around a writer named Atrus whose books have come to life. These books are, in fact, doorways to strange and surreal worlds known as Ages, but for some unknown reason they are being destroyed. After falling into one of the books, the player must find out what has happened to Atrus and who is destroying the books.

Exploration is a key part of the game, and so it takes a non-linear approach — if you get stuck or aren't interested in solving the puzzles, you will still be able to wander around and enjoy the scenery, which mainly consists of 3D rendered graphics for a photorealistic look throughout. The soundtrack has been written by Robyn Miller himself.



The CD-ROM will also include a QuickTime 'movie' on the making of the game. Myst was very well received after being released on the Apple Macintosh, and there's no reason why it shouldn't do equally as well on the PC.

■ **Cal Jones**



The graphics were created using the 3D toolkit program StratPro. "We create a wireframe model of a tree, scan in a piece of bark and give the computer various parameters which include lighting, fog, reflectivity and texture," Rand explained. "So for example, when we come back many hours later, the 3D program has rendered an entire forest."

Werewolf KA50

When it comes to buying flight simulations, PC owners are spoilt for choice. You can guarantee that you'll find something to suit your taste, whether it's dogfighting in a Fokker Triplane, bombing Dresden from a B17 Flying Fortress or flying over Somalia in a European Fighter Aircraft.

But what if you want to fly a helicopter? Well, there's MicroProse's good but ageing Gunship 2000, a game released back in 1991, there's the even older LHX Attack Chopper, and unless you count Nova Logic's arcade-style Comanche, that's your lot. Until now, that is. Virgin has come to the rescue with Werewolf KA-50, a game described as "the most accurate helicopter flight sim model of any light simulator on PC."

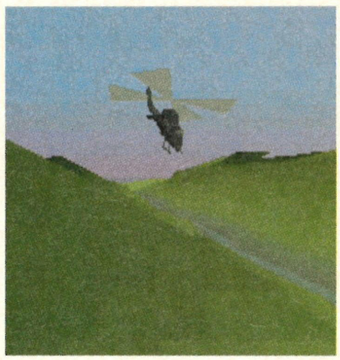
Werewolf has a fictional scenario which is centred around the sea lanes of the South China Sea. Up to 200 ships a day sail through these shallow waters, slowing down to 10 or 12 knots to avoid running aground.

This makes them vulnerable to pirates, who, armed with machetes, have been making off with cash and other valuables. You are the captain of a group of mercenaries and chopper pilots, and have been contracted by a cartel of businessmen to find and destroy the organisation responsible for this piracy.

You have a limited stock of weapons and six helicopters, including the Bell Supercobra, the Westland Army Lynx and the Kamov Hokum KA-50, otherwise known as the Werewolf. New supplies are not readily available and must be earned: successfully destroying pirate bases will be rewarded by cash which allows you to restock your arsenal.

Werewolf has a strategic battle planning system and the outcome of every mission is affected by your decisions. Too many defeats will result in you being destroyed by the pirates before you have a chance to put a dent in their operation.

■ Cal Jones



You have a choice of two graphics modes: MCGA 320 x 200 with full Gouraud shading, or SVGA 640 x 480 with no shading. Both come in 256 colours.

Grab your surf-board, crank up the Ride of the Valkyries and head out for a spot of mass destruction.

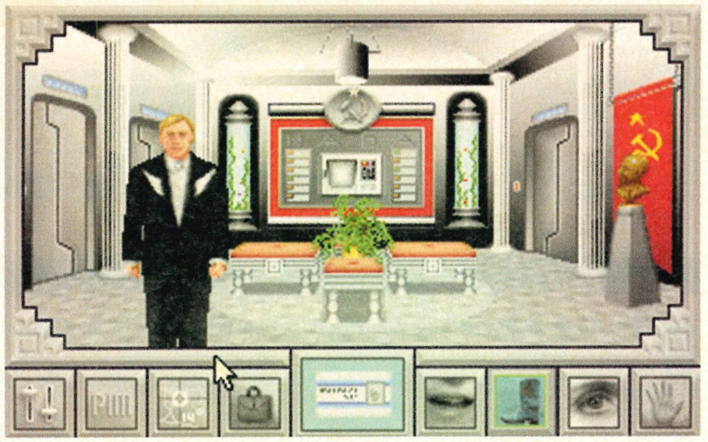
The graphics aren't quite finished yet, and the helicopters will appear more detailed in the final version of the game.

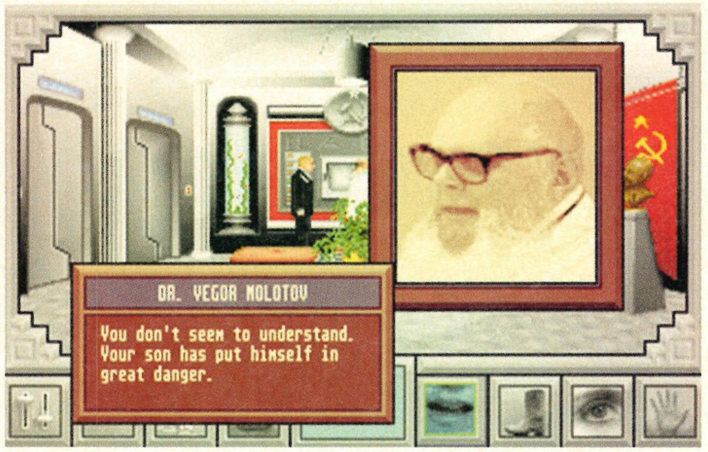


FAXBOX

WEREWOLF KA50	
Developer:	Virgin
Publisher:	Virgin
Release date:	April
Genre:	Flight Sim
Price:	£35.99







Red Hell

Cyberdreams is not the most prolific of companies, having released only two games (Darkseed, a sinister graphic adventure which is about to be re-released on CD-ROM, and CyberRace, a high-tech driving game) since being formed in 1990. This year, however, the Cyberdreams catalogue should more than double in size, starting with the release of a political adventure from Texas-based developers Castleworks.

Red Hell is set in 2020AD, in a world under the control of the Soviet Union. Yes, I know, the Soviet Union no longer exists and you're probably wondering how this could possibly happen. Well, you need to suspend your disbelief for a moment. Red Hell has a clever "alternative history" scenario in which the Soviets have won World War II, thanks to winning the race to develop the atomic bomb. Having bludgeoned the Germans into submission, they promptly decided to take on the rest of the world, using the nuclear threat to bully their way to global domination.

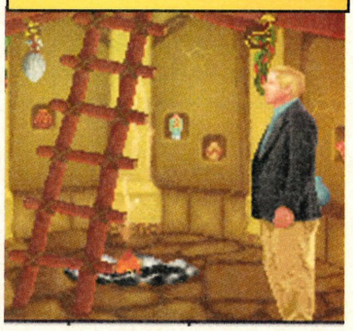
You play Mark Constantine, a man whose life is in danger because he has discovered that the Soviet industrial machine is sending earth plummeting towards ecological disaster. Not only this, but your son has been identified as a dangerous dissident, and you must find him in order to prevent his assassination. As you try to find your son's enemies, you stumble upon the shocking secret behind the Soviet victory in World War II.

Red Hell will be available on floppy disk at the end of April/beginning of May.

■ Cal Jones

FAXBOX

RED HELL	
Developer:	Castleworks
Publisher:	Cyberdreams
Release date:	May
Genre:	Adventure
Price:	£39.99

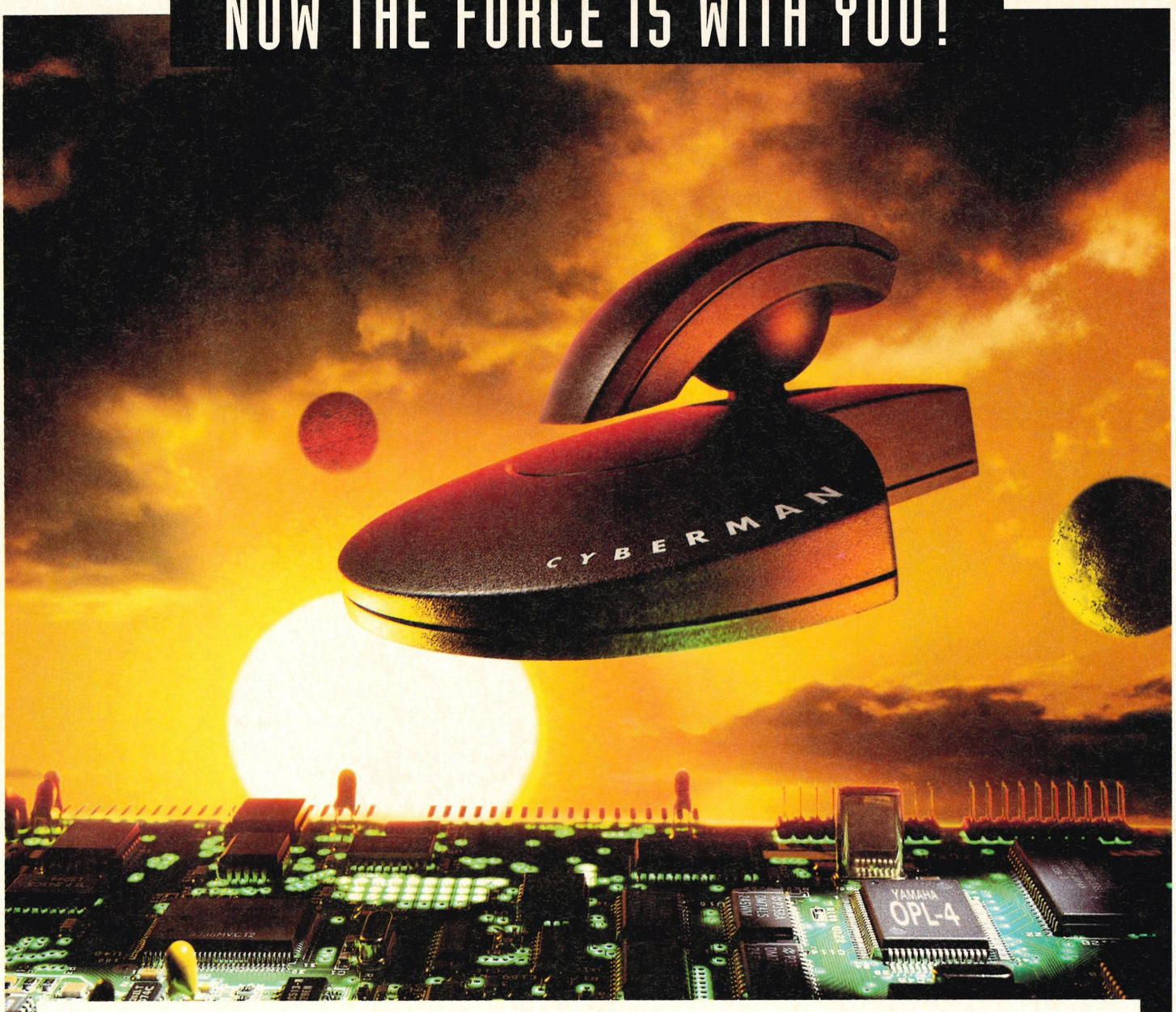


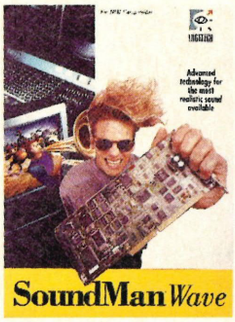
I really object to having to give up my seat to a pot plant.

Ah, Dr Molotov, I wonder if you'd be so kind as to fix me a coctail?

Oops! My trousers are clashing with the decor again.

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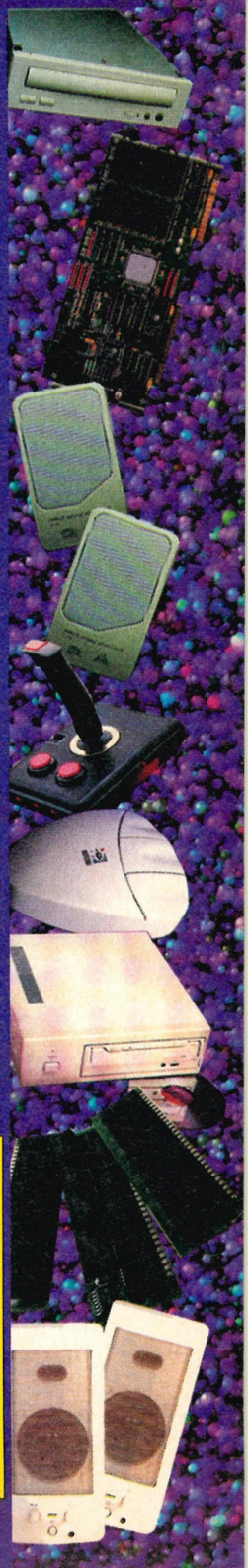
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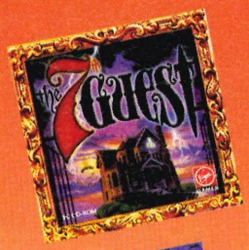
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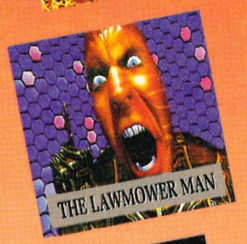
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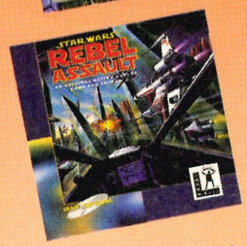
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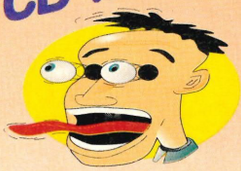
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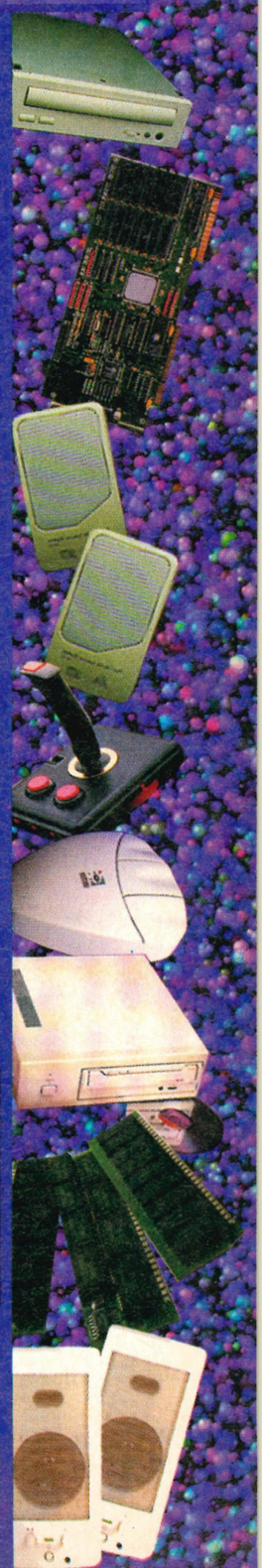
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The latest in the highly acclaimed range of Suncom joysticks brings further advances in comfort and control. The pistol grip can be easily rotated to give perfect orientation for left or right handed use, while the unique "V" designed top fire button allows lightning fast response. Switchable autofire, throttle control and suction feet complete the package. Requires game port.



COMMAND CONTROL £17.00+VAT

TWO-HANDED HIGH DEFINITION CURSOR CONTROL – IDEAL FOR ALL GAMES!

New from Suncom Technologies is this exclusive **Command Control**. Giving full two handed cursor control it adds a new dimension to playing action games. Two fire buttons *and* autofire buttons at your fingertips maximise your scoring. Requires game port.



FLIGHTSTICK £32.00+VAT

THE FLIGHTSTICK IS CONSISTENTLY REVIEWED AS THE BEST QUALITY JOYSTICK IN ITS CLASS

Test fly a Flightstick with your favourite simulator and you will know the meaning of *control*. Whether you're a novice or experienced combat pilot, flying skills will be improved and enemy kill rate will increase. Excellent construction - looks and feels like the real thing! Includes throttle control and 7ft long connection cable. Requires game port.



FLIGHTSTICK PRO £59.00+VAT

THE ULTIMATE COMBAT STICK FOR COMPUTER PILOTS!

The new Flightstick PRO from CH Products offers the ultimate in fingertip control. It has four fire buttons, and a four-way switch which allows you to control weapons, radar and viewing functions on more advanced software – all without taking your hand from the stick! With its top quality sturdy construction it is designed to last for years. Includes driver software and long connection cable. Requires game port.



FLIGHT YOKE £49.00+VAT

Introducing G-FORCE from Suncom, designed for realistic control of all simulation software.

The G-FORCE functions as a full size aviation yoke with pitch and roll control, and twin fire buttons at your thumb-tips. For driving games, simply engage the column lock and G-FORCE functions as a stable steering wheel. The base plate has large suction feet and table edge clamps. Requires game port.



VIRTUAL PILOT £68.00+VAT

THE MOST REALISTIC FLIGHT YOKE AVAILABLE FOR THE PC

Enjoy the ultimate realism in all flight simulation games with the **Virtual Pilot**, made in the USA by **CH Products**. Looking just like a real airplane yoke, it is designed for the ultimate precision, giving you superb control. Also ideal for driving games. Clamps to table top. Requires game port.

GAME PORT CARD £10.00+VAT

Game port card for any of these joysticks/yokes. Works with any clock speed up tp 33Mhz.

PANASONIC CD-ROM DRIVE



CR-562 Double Speed, multi-session drive for only £139.00+VAT

- Double speed 300kb/sec data transfer rate
- Multi-session mechanism - compatible with Kodak Photo CD Standard
- Motorised loading tray – no need for a caddy
- High speed 320ms access
- MPC compatible
- Mounts in 5.25" drive bay
- Output from audio CDs via headphone socket
- Includes cables and driver software
- Requires SoundBlaster PRO compatible card

February 1994

1A £199.00+VAT – CR-562 bundled with SoundBlaster PRO card

1B £229.00+VAT – CR-562 bundled with SoundBlaster 16 card

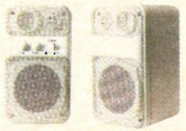
1C £259.00+VAT – CR-562 bundled with SoundBlaster 16 ASP card

1D £229.00+VAT – CR-562 bundled with Diamond Sonic Sound LX

COMPLETE MULTIMEDIA SOLUTIONS

- Panasonic CR-562 CD-ROM drive
- Choice of SoundBlaster sound cards
- Zy-Fi active speakers
- CD-ROM software:

'GROLIER ENCYCLOPAEDIA 94' *fully featured encyclopaedia* with 33000 researched articles, plus dazzling array of graphics, sound, video sequences and animation.
PHOTO-CD software.
'WORLD ATLAS 4' (latest version);
'CHALLENGE PACK' featuring 'F-29 Retaliator', 'The Chessmaster 2100', 'RoboCop 3D', 'Paperboy 2' and 5 others.





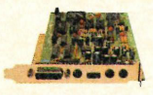
2A £269.00+VAT – Multimedia kit with SoundBlaster PRO card

2B £299.00+VAT – Multimedia kit with SoundBlaster 16 card

2C £329.00+VAT – Multimedia kit with SoundBlaster 16 ASP card

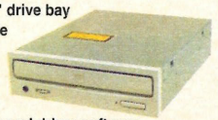
2D £299.00+VAT – Multimedia kit with Diamond Sonic Sound LX





SONY CD-ROM DRIVE & BUNDLES

- Double speed 300kb/sec data transfer rate
- Multi-session mechanism - compatible with Kodak Photo CD
- Mounts in 5.25" drive bay
- MPC compatible
- Output from audio CDs via headphone socket
- Includes cables and driver software
- Requires sound card with Sony CD-ROM interface or AT-bus driver card



4A £129.00+VAT – Sony CDU33A CD-ROM drive

4B £139.00+VAT – Sony CD-ROM drive with AT-bus driver card

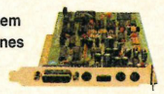
4E £159.00+VAT – Sony CD-ROM drive with SoundBlaster PRO compatible card

4C £189.00+VAT – Sony CD-ROM drive with multimedia kit as left featuring SoundBlaster PRO compatible card

MULTIMEDIA BUNDLES

- Sony CDU33A double speed CD-ROM drive
- Full multimedia kit featuring:

Choice of sound card
Soundplus speaker system
Microphone and Earphones
CD-ROM software:
PHOTO-CD software;
'WORLD ATLAS 4' (latest version);
'F-14 Tomcat', 'Hammer Boy' and 'Flashy Cars' games.



4F £209.00+VAT – Sony CD-ROM drive with Diamond Sonic Sound LX card

4D £239.00+VAT – Sony CD-ROM drive with multimedia kit as left featuring Diamond Sonic Sound LX card



4G £229.00+VAT – Sony CD-ROM drive with SoundBlaster PRO compatible card, Zy-Fi active speaker system and CD-ROM software as pack 2x (see left)

4H £279.00+VAT – Sony CD-ROM drive with Diamond Sonic Sound LX card, Zy-Fi active speaker system and CD-ROM software as pack 2x (see left)

CREATIVE

SOUNDBLASTER CARDS

SoundBlaster 2 Deluxe card ..... £47.00+VAT
includes "Lemmings" and "Indianapolis 500" games

SoundBlaster PRO Basic card ..... £62.00+VAT

SoundBlaster PRO Deluxe card ..... £76.00+VAT
includes Software Toolworks Multimedia Encyclopaedia CD plus "Lemmings" and "Indianapolis 500" games

SoundBlaster 16 Basic card ..... £89.00+VAT
with Panasonic only CD-ROM interface

SoundBlaster 16 MCD card ..... £145.00+VAT

SoundBlaster 16 ASP MCD card ..... £175.00+VAT

MCD cards have a triple CD-ROM interface for Panasonic/Sony/Mitsumi drives

NEW INTEGRATED DESIGN BRINGS CD QUALITY AUDIO WITH TRUE INSTRUMENT SOUNDS TO YOUR PC

SoundBlaster 16 AWE-32 card
Latest innovation from Creative Labs combines SoundBlaster 16 ASP MCD with WaveBlaster.
On-board ROM provides 4Mb of PCM samples. The Advanced Signal Processor chip reduces CPU overhead by up to 60% when recording CD quality sound. ..... £199.00+VAT

SoundBlaster 16 SCSI card ..... £169.00+VAT

SoundBlaster 16 ASP SCSI card ..... £199.00+VAT

All SoundBlaster 16 cards (except the 16 Basic) include the Software Toolworks Multimedia Encyclopaedia CD and a microphone

WaveBlaster ..... £129.00+VAT

MidiBlaster ..... £179.00+VAT



VIDEO PRODUCTS

VideoBlaster SE The ultimate in video versatility for multimedia computing for only ..... £219.00+VAT

TV Coder VGA to Video encoder. Transfer your PC creations and manipulations back to video ..... £129.00+VAT

DIAMOND Computer Systems, Inc.

SONIC SOUND LX

The latest product from the masters of Video Technology is a fully-featured sound card

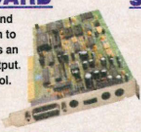


- True 16-bit OPL-3 FM sound card
- SoundBlaster PRO compatible
- MS Windows sound system compatible
- Jumperless 'Plug and Play' design
- Triple Panasonic/Sony/Mitsumi CD-ROM interfaces
- Free software: Midisoft Recording Session and Animotion MusicRack
- Joystick port with full MIDI support
- On-board 4W/channel amplifier

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SYMPHONY II SOUND CARD

Featuring full SoundBlaster, AdLib and Windows Sound System compatibility, this card adds a new dimension to PC games and entertainment software. It incorporates an 11-voice FM synthesizer for realistic, good quality output. Also has on-board power amplifier with volume control.



Only £39.00+VAT

SYMPHONY PRO SOUND CARD

As Symphony II with triple CD-ROM interface for Panasonic/Sony/Mitsumi drives; *plus* 2 speakers, microphone and earphone system .....**Only £49.00+VAT**



SOUNDWAVE 32

ONLY £149.00+VAT



PC Magazine February 1994



Computer Shopper January 1994

SoundWave card with CD-ROM drive ... £299.00+VAT
GameWave card ..... £109.00+VAT
CDS-3110 CD-ROM drive ..... £155.00+VAT

ORCHID

VIDIOLA DIGITAL VIDEO SOLUTION

ONLY £285.00+VAT

- **Capture real-time video to disk from VCR, Video camera or TV tuner at 30fps**
- **Full motion display during capture**
- **Unique 'SuperZoom' full screen, full motion video playback**
- **Includes *Adobe Premier* professional video editing package**
- **Includes *Asymedia PE* software for integrating text and graphic screens into presentations**



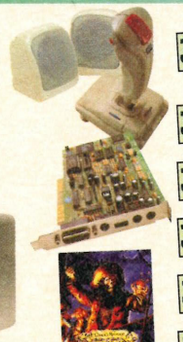
Please note that the bundled software does not feature full retail packaging.

COMPLETE PC SOUND PACKS

QS-123 Joystick
Ergonomic design with auto-centering, 2 fire buttons and autofire.

Soundplus Speakers
Full range shielded speakers.

Monkey Island 2
Renowned adventure game with fantastic sound and gaphics.



"Monkey Island 2 Le Chuck's Revenge" is a registered trademark of Lucasfilm Games

3A £49.00+VAT – Symphony II sound card with QS-123 joystick and Soundplus speaker system (see left)

3B £59.00+VAT – Symphony II sound card with QS-123 joystick, Zy-Fi active speaker system and Monkey Island 2

3C £89.00+VAT – Pack 3a with genuine SoundBlaster PRO card

3D £119.00+VAT – Pack 3a with genuine SoundBlaster 16 card

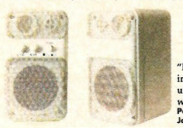
3E £119.00+VAT – Pack 3a with Diamond Sonic Sound LX

3F £149.00+VAT – Pack 3a with genuine SoundBlaster 16 ASP card

ZY-FI STEREO SPEAKERS

ACTIVE POWER AMPLIFIED STEREO SPEAKERS – IDEAL FOR ALL SOUND CARDS AND MULTIMEDIA SYSTEMS!

Includes built-in power amplifier with separate L/R volume controls and stereo jack/phono inputs.



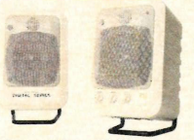
Personal Computer World

"In use the speakers sounded infinitely better than the cheap unbadged speakers bundled with some sound cards..." **Personal Computer World, January 1994**

Only £29.00+VAT

ZY-FI PRO SPEAKERS

The latest addition to the serious multi–media system must be our new 15W/channel ZY–FI PRO Active speaker system. Features built-in power amplifier with volume control and bass/treble controls. Speaker size 14x20x13cm.



Personal Computer World

"The Pros passed all tests with flying colours... ...ideal for the multimedia or games setup...A nice pair." **Personal Computer World, January 1994**

Only £49.00+VAT

MICE & TRACKBALL

Truemouse
3 button serial or PS/2 (state which) ..... £19.00+VAT

Trackball ..... £30.00+VAT

Handy mouse Total one handed cursor control from this hand held unit – perfect for all portable users..... £260.00+VAT

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All goods subject to availability. Details correct at time of going to press. Prices and specifications subject to change without notice. E & O.E.

Please note that bundled versions of sound cards are not full retail packs. When ordering please quote pack number.

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Reviewed this month PRODUCTS

It may not be on the scale of a house or a new car, but the home PC makes a sizable dent on any wallet. However, the sheer enjoyment and convenience of the PC is enough to justify the initial outlay, and the extra hardware and software you suddenly find you just have to have.

That's fine. Nobody minds spending money on something worthwhile. On the other hand, if you make the wrong decision you could end up throwing money away on something you don't want, don't need and certainly won't like. With the sheer number of PC products arriving daily, usually to a fanfare of technical gibberish, it's all too easy to make a mistake.

That's how this section is going to help you — summarising the effectiveness of new PC products in a direct and straightforward way, free of jargon. This will point you in the direction of that essential gadget, and warn you off the badly made, the unsuitable and the ill-conceived.

Many PC products are just not designed for you and me to use; they're still aimed at companies. In the office, you don't choose what sits on your desk, you don't have to pay for it, or fix it when it goes wrong. A specialist does it all for you.

That doesn't happen at home. So, until there's a wholesale change in the type of equipment we're sold, you need to be able to distinguish what is important about PC hardware and software, and what is just marketing guff. When you buy a car you don't need to know how a 16-valve engine works right down to the last rivet. You need to know how quick it is, how well it performs and whether it's likely to fall apart on you. The same is true with the PC, and that is what we aim to provide in these pages.

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Product directory

PRODUCTS

This month sees the start of PC Review's all new Product Directory, bringing you concise, jargon-free and informative reviews of all the latest hardware and software releases You'll find all you need to know about PCs and printers, sound cards, joysticks, graphics and music software, utilities and CD-ROM titles in the PC Review Product Directory.

With triple and even quad speed CD drives starting to appear in the high street at affordable — well, almost affordable — prices, the double speed drive is still the staple diet for CD games and multimedia on the PC.

So, we start with new drives from Toshiba, MediaVison and Pioneer, before taking a look at the latest PC architecture — PCI — on the Kamco UltraWindows PC. Highlights on the software front include Micrograph's Fauve Matisse and Undersea Adventure from Knowledge Adventure.

Toshiba 4101B

Double-speed CD-ROM drive

Toshiba's CD-ROM drives are never the cheapest but their build quality and reliability are superb. The double-speed Toshiba 4101B meets all the essential MPC2 multimedia standards, and although it's by no means the fastest double-speed CD-ROM drive on the market, it's no slouch either. It will cope quite happily with all latest crop of heavy-weight CD games.

It's worth pointing out that the Toshiba 4101B is a SCSI drive. There are two main ways of adding a CD-ROM drive to a PC. One method uses what's known as a 'proprietary' interface, while the other uses an industry-standard SCSI (Small Computer Systems Interface).

The advantage of this is that a single SCSI card can support up to seven different peripherals such as hard disks, CD-ROM drives, scanners, and so on. That means that you can expand the capabilities of your PC much more with a SCSI card than if you go with one of the manufacturer's proprietary cards.



It's also a lot less fuss.

The Toshiba 4101B is the CD-ROM equivalent of a Volvo: thoroughly well designed, consistent and very safe, but lacking a bit of sparkle.

Terence Green

★★★

- *Supplier* Ideal Hardware
- *Contact* (081) 390 1211
- *Price* £256.00 (drive only)

■ Internal drive, SCSI-2 interface, CD-Audio outputs, XA-ready, multi-session, MPC2. 385ms access time, 300KB/sec sustained throughput.

Double Fusion LX

CD-ROM/Sound card bundle

The Double Fusion LX multimedia kit consists of a ProAudio Spectrum 16 card, a double-speed Panasonic CD-ROM drive, a pair of Labtec speakers and a pile of software, both on floppy disks and CD-ROM.

It's pretty easy to install — which is hugely important for a multimedia kit. There are a few fiddly bits of wire that can easily get lost when you open the box, and the Double Fusion LX turns the inside of your PC into Spaghetti Junction, but that's not a problem.

The important thing is that it works with the minimum of fuss. The ProAudio Spectrum 16 sounds pretty much the same as the ProAudio 16 Basic (featured in Issue 30), and the Panasonic CD-ROM is a solid performer that isn't really quick enough to get your pulse racing. The software includes Compton's Interactive Encyclopedia, Space Adventure, assorted games (including Railroad Tycon Deluxe), and a kids' program called Arthur's Teacher Troubles.

I had no quibbles with the Double Fusion LX, apart from the plasticky and tinny-sounding Labtec speakers, and it certainly makes more sense to buy this sort of package than to buy a

sound card and add a cheap drive later, with a ll the installation hassles that is likely to involve.

The Media Vision Double Fusion LX may not be the cheapest bundle around, or give the sort of performance you could get by shopping around for separate components, but it won't let you down. You'd buy it to avoid technical hassles and ensure compatibility.

Steve Boxer

★★★★

Supplier	GEM Distribution
Contact	(0279) 112 411
Price	£299.00

■ Double speed Panasonic MPC CD-ROM drive, Pro Audio Spectrum 16 sound card (speakers and software included).

Pioneer DRM-602X

Double speed CD-ROM drive

Pioneer has had a very expensive multi-disc CD-ROM jukebox for PCs and Macintosh computers for some time. Now it has introduced a more reasonably priced double speed version of the same drive.

The DRM-602X uses a multi-disc caddy which holds up to six CD-ROM discs at a time. In fact, it's the same mechanism as used in all of Pioneer's Hi-Fi equipment and it works very well — I've used one without any problems in my Pioneer CD player for years.

The six discs appear as six different drive letters on the PC, and the changer flips the required disc into position when you change drives. The mechanism works extremely quickly so there's never more than a second or two's delay when changing drives.

Purely in performance terms, the DRM-602X is an excellent drive — if you can afford it. For people who need to change discs a lot, the 6-disc autochanger is far and away the most sophisticated solution. Realistically, it must be of most use in the office. At home, it would be an expensive luxury.

I like using it, but to be honest I don't need it, and you probably don't either. Not at this price.

Terence Green

★★★

Supplier	Ideal Hardware
Contact	(081) 390 1211
Price	£697.00

■ 6 disc autocharger, double speed, multisession, Photo CD, XA ready, MPC2. 307KB/sec throughput, 300ms average access time.

CD-ROM DRIVES

All change on the CD front

NEC is due to bring out a triple-speed internal CD-ROM drive later this month, costing around £379. You may well have seen the adverts for them already. Triple-speed simply means that the drive spins the disk at three times the speed of a single-speed drive — not surprisingly — and so the time it takes to access information on the disc is that much quicker. The end result is better, smoother handling of animations, graphics and all the paraphernalia that comes with modern CD-ROM games.

And, given that competitive street pricing should soon bring the price of the NEC 3Xi down considerably, this could put a whole new complexion on buying a CD-ROM drive.

Up till now, buying a CD drives has involved some relatively straightforward decisions. Single speed drives are obselete to all intents and purposes — they just don't have the necessary oomph to cope with modern CD games. So they're out.

That leaves a choice of either a sub-£200 double-speed drive when cash is tight, or a marginally faster and certainly more consistent double-speed CD-ROM drive for around £300 from the likes of Toshiba or Sony.

But if the NEC 3Xi performs as well as the specification suggests, it could quickly become the first choice for games players who want to be sure that their CD will cope with the inevitably demanding games releases nine months. At least, it will be first choice until other manufacturers can get their own triple speed drives out in the shops at comparable prices. It could also have the effect of dramatically lowering the price of quality double-speed drives, which is good news in anybody's book. The only question that remains to be answered is simply whether triple speed is really the next step in CD-ROM drives, or whether as some CD manufacturers suggest, we skip that and go straight for quad speed drives instead.



If you've got between £500 and £800 to spare there are quad speed drives to chose from ...

But lets see how the NEC 3Xi performs before consigmning our old double speed Cds to the bin, or shelling out ridiculous amounts of a quad speed drive.

UltraWindows PCI

PCI-based 486 PC

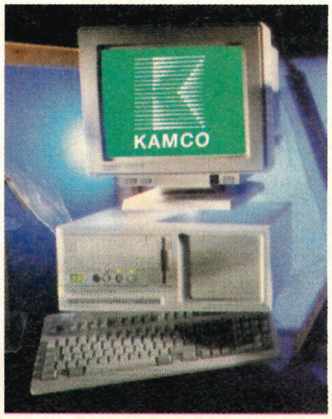
The Kamco UltraWindows PCI is one of a new breed of PCs that take advantage of the latest high-speed architecture, PCI; a joint development between Intel and leading PC manufacturers.

And it's quick. The whole system, particularly the Diamond Viper PCI graphics card, gave superb results from a variety of benchtests. Windows runs smoothly (for a change ...) and DOS performance is good, bordering on excellent. From the sheer power aspect, the Kamco UltraWindows makes a great games machine.

I'm also suitably impressed by the way it's been put together. Inside, it's well designed and uncluttered, without lengths of cable trailing everywhere, and there's plenty of room for expansion.

Then there's the first class 15" monitor, which is the icing on an already well made cake. Capable of displaying all the card's resolutions without complaint, the display is clear and bright, with no sign of flicker whatsoever.

Unfortunately, there were enough teething problems with the UltraWindows when it arrived to make me doubt



the stability of the PCI architecture used in 486 PCs at this moment. A couple of phone calls and a visit from an engineer have rectified the situation, but it's the sort of thing you — and I — can do without from an expensive PC.

From the build quality and performace of the machine as a whole, I'd happily consider buying a Kamco PC. But I'd think carefully before opting for the PCI version.

Alan Clark

★★★

Supplier	Kamco Computers
Contact	(0895) 271 919
Price	£2,397

■ 66MHz 486DX/2, 8Mb RAM, 256K cache, PCI SCSI-2 controller, PCI Diamond Viper card, Multi I/O Card, 15" monitor, and 330Mb HD.

Media Vision Memphis

CD-ROM and sound system

Supplier	GEM Distribution
Contact	(0279) 412 441
Price	£599.00

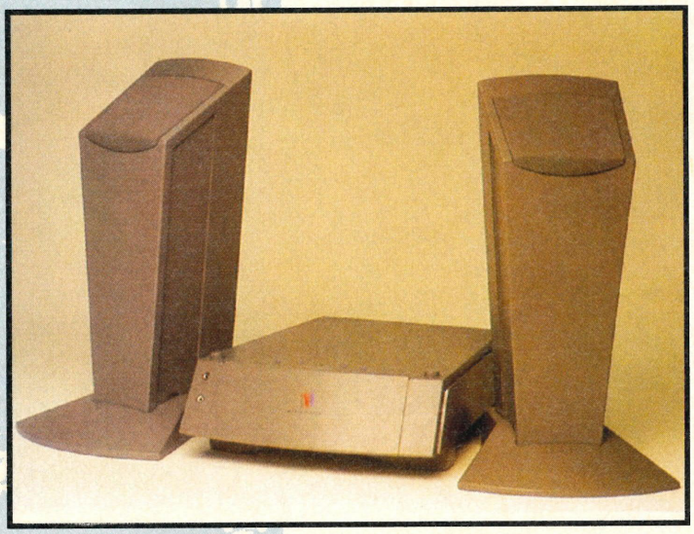
■ 100% Ad Lib and Sound Blaster compatible, meets MPC2 requirements and supports Windows 3.1. Connects via a SCSI cable.

Hardware bundles are the convenient way to upgrade your PC. Look at it this way, you don't want to spend £500 on a sound card from company X and a CD-ROM drive from company Y only to find out that, for some reason, one doesn't want to work with the other.

Memphis fits this all-in-one, no fuss bill to a tee. The sound card and the CD-ROM interface are on one card, and the main CD unit is easily connected via a single cable. A simple installation program then configures the Memphis automatically to work with your PC. If you're a dab hand with a screwdriver you can have your very own multimedia workstation — with double-speed CD-ROM drive, Pro Audio Spectrum 16 soundcard and detachable speakers — up and running in under ten minutes.

But what sets the Memphis apart from the current crop of multimedia bundles is the distinctive styling. External CD drives, and this is essentially what the Memphis amounts to, have never really had prettiness high on their list of objectives, but with the Memphis Media Vision has donned a consumer hat and has attempted to produce something that is both stylish and desirable. If the whole thing was matt black, had a flashing light or seven and a boasted a graphic equaliser, you'd probably feel as confident buying the Memphis for your PC as you would a matching CD player for your existing hi-fi. Of course, this is exactly what Media Vision want you to think.

So far it all sounds like a very attractive deal: convenience, stereo sound and a CD unit that can also be used as a stand-alone audio CD player. Unfortunately the cheap-looking grey plastic makes it seem horribly nasty and tacky and despite its sculpted style it's probably best to carry the whole thing home from the shops in a big plastic shopping bag. Maybe two.



Like a green and yellow polka dot Ferrari, the Memphis is a lovely piece of machinery but Media Vision has made it completely the wrong colour. If you can ignore this (and it's nigh on impossible) the Memphis is good, dependable package, though not exactly cheap for what it is. ★★★

Dean Evans

Rombo Media Station

TV emulator and video editing hardware

Adding TV and video to your PC really does round it off a treat as a complete home entertainment system, doesn't it?

The Rombo Media Station does exactly that — combining two internal cards for TV emulation and video editing, it can also handle cable and satellite channels provided you're a fully paid-up member of the 24-hour TV fraternity.

It's a shame then, that it's so poorly documented and sloppily finished (with cables that should have been part of the card itself but weren't, for example). To cap it all, you get a pair of speakers and a set of headphones I'd resent finding in a Christmas cracker. OK, they're extras, but for over £400 Rombo could do a bit better than this.

When, or perhaps 'if', you get the thing working, the Media Station does a very good job. I've no complaints on that score at all: the resolution and quality of the image is fine, and the freeze frame and edit capabilities are excellent. Mind you, you don't actually need the TV tuner as your video recorder does much the same job anyway in decoding the images. But I can't help feeling that the ends in this case do not justify the means: PC hardware shouldn't make you jump through hoops like this before you get it up and running. It's the sort of thing that makes new PC owners say, "stuff this, I'll take the damn thing back and buy a Gameboy." And I don't blame them.

John Bennett

★★

Supplier	Rombo
Contact	(0506) 414631
Price	£499.00

■ Requires two free 8-bit ISA slots, Windows 3.1. Supports PAL and NTSC. Up to 1,000 preset channels

Logic Speedcard

Twin joystick card

Games cards are like cheap bottles of vodka. They all cost much the same and you buy one with a single glory-less task in mind. It gets you drunk. For flavour you invest in a good bottle of single malt Scotch. The same can be said of game cards. They give you somewhere to plug a joystick into, but they're hardly the piece of kit that will get your heart racing — It's the choice of joystick itself that improves performance and looks good.

In all this, the Speedcard fits into the pack quite nicely. It hardly breaks new ground, but it's as good as any in getting you up and blasting with a joystick.

What it does solve, and solve reasonably consistently is the nasty problem of getting two joysticks working for those essentially two-player games like Mortal Kombat, Micro Machines or Sensible Soccer.

Martin Klimes

★★★

Supplier	Logic 3
Contact	(081) 900 0024
Price	£14.99

■ You don't need a powerful system, you don't need to install drivers, one free 8-bit slot is all that's needed. What a rarity on the PC.

PREVIEW

Advanced Gravis UltraMax

After the UltraSound, comes the UltraMax. It's hard to argue against the superiority of wave table cards when you compare them with the much older FM synthesis cards, so it's likely that the UltraMax will produce a very nice noise indeed with the latest games.

The 16-bit sampling — conspicuously missing in the UltraSound — to DAT quality (48.9Khz) is there to make it an attractive card for PC musicians. Similarly, 4:1 data compression capabilities will mean that wave file recording and samples take up considerably less hard disk space than they normally do.

But most importantly, the UltraMax will have three CD-ROM drive interfaces built-in, unlike the Gravis UltraSound for which you needed to buy an exrtra daughter-board to connect the two.

It's a fiercely competitive business, though, and the UltraMax will be going head-on against new 16-bit sound cards from the likes of Westpoint Creative and Blue-Point which are due out at the same time.

Software

Miracle Piano Software

Piano tuition

The Miracle keyboard first made an appearance over a year ago, and was a clever way of learning to play piano through on-screen games and lessons. This, as you've undoubtedly guessed, is the software that came with it.

The idea is that you can hook it up to your own MIDI keyboard (which means just about any electronic keyboard these days) and then simply sit in front of the PC, follow the lessons, play the games, do what you're told ... and learn to play in a remarkably short space of time.

And true enough, it is in fact a very effective teaching program. There is a distinct advantage to learning the piano from a PC: since you're concentrating on the screen instructions you forget what your hands are doing, so your 'hand memory' of chord shapes and the like comes on in leaps and bounds.

The software starts with the absolute basics, and it's a bit like taking lessons in music from Barbara Woodhouse. From the word go, it's a stickler for technique, hand position, timing and rhythm.

Although the presentation — arcade games and performance rating fanfares — will appeal more to children than to adults, it's well worth a try. It won't work miracles, but £50 on something that takes the pain out of tortuous chord shapes is fifty quid well spent when you want to learn the piano.

John Bennett

★★★★

- *Supplier* Mindscape
- *Contact* (0444) 246 333
- *Price* £49.00

■ Needs a 386 PC or better, with DOS 5, a sound card, MIDI keyboard and adapter cable.

Journey into Safety

Safety tuition

Wreckless driver? Not once you've been put through the mill by Journey into Safety, a simple program designed to increase awareness of traffic law, general road safety and give learner drivers a helping hand.

It tests your awareness of hazards and information while driving, and grills you on the nitty-gritty of the Highway Code as you navigate your way around a cute little town, pointing at 'hot spots' — traffic signs, road markings and the like.

When you click on a sign, a relevant multiple choice question pops up. It's all rather slow and you don't get a sense of going anywhere in particular, but it gets the point across and it's quite informative if you really want to test your knowledge. Your score is recorded as you go, and you can print out a report of your progress and give everyone a good laugh.

If you're not into practical tasks, a straightforward question and answer session is one of several options you can tackle, with fifty questions flashing brightly-coloured signs at you in succession. Get it wrong and you're straight back to the beginning, which is a bit cruel. Mind you, for a learner driver, which I happen to be, this is a good exercise and, thankfully, the questions return in a different order.

There's also a run through the Green Cross Code for the kids, but its text-only screens would benefit from a few pictures to help keep them interested.

On the whole, the presentation is rather basic. In fact, if someone brought a game into the PC Review offices that looked like this, they'd get laughed right out of EMAP Towers. But that's not what Journey into Safety is about.

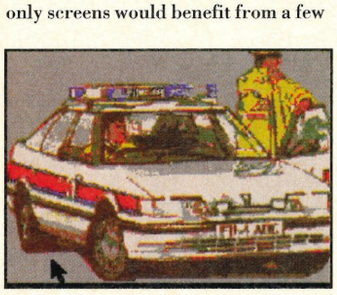
It's a relatively painless, and thorough, way of increasing your knowledge of road safety.

As such, it's highly recommended for parents with kids approaching that dreaded age when they want to start borrowing your car, it's good for anybody about to take a driving test, and quite capable of wiping the smile off the faces of more than a few know-it-all 'experienced' drivers.

An added bonus is that a percentage of the profits go to the Royal Society for the Prevention of Accidents.

Angela Bailey

★★★



- *Supplier* Kosmos Software
- *Contact* (0525) 873 942
- *Price* £34.99

■ 286 PC is the minimum hardware required, with VGA graphics and 640K of RAM. A mouse is recommended.

Micrograph Tabby

Graphics tablet

Windows without a mouse is like a car without wheels. Until someone comes up with a better idea, the mouse is really the only effective way of navigating the desktop we're stuck with. But trying to draw with a mouse is anything but easy. Even a talented draughtsman or painter will struggle to produce something with a mouse that doesn't look like it would come third in the 7-10 age group in a Blue Peter painting competition.

Which is why the Tabby is such a welcome arrival. It's a simple stylus combined with a graphics tablet, and you use it just the same way as using a pencil on a pad.

The graphics tablet itself is about the size of an average mouse mat. The stylus is attached to this tablet and you use it instead of a mouse. The left mouse button is activated by clicking the nib of the stylus onto the pad and the right button through a combination key press.

After using a mouse it takes a little while to get used to, and it's certainly not something you'd use to replace the mouse altogether. But for anything where you'd prefer a more natural, pen-like tool — say, working with creative painting and image editing packages like Fauve Matisse, Micrografx PhotoMagic or Aldus PhotoStyler — it beats the mouse hands down.

My only little tiny gripe is that the pointer on-screen and the stylus are relative to each other; what I mean is that say you're working at the bottom of the screen then the stylus has to be at the bottom of the pad — I always like to keep the mouse in the middle of the pad at all times. Still, it's just a knack, and you get used to it very quickly.

Most tablets cost well in excess of £200. True, they are considerably more refined than the Tabby. But the Tabby is a mere £43, simple to install, comfortable and effective. It does a very good job and you can't ask more than that.

Alan Clark



- *Supplier* Micrograph
- *Contact* (0923) 248 222
- *Price* £43.00

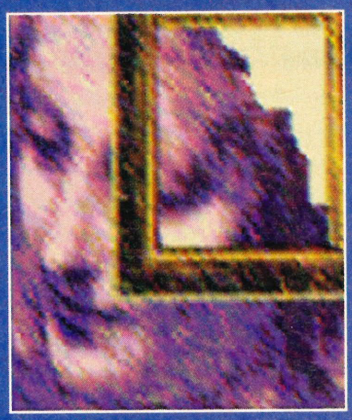
■ Runs under Windows 3.1, connects via a serial RS232 port. DOS and Macintosh drivers are available.

PRODUCTS

FAUVE MATISSE

FAUVE MATISSE

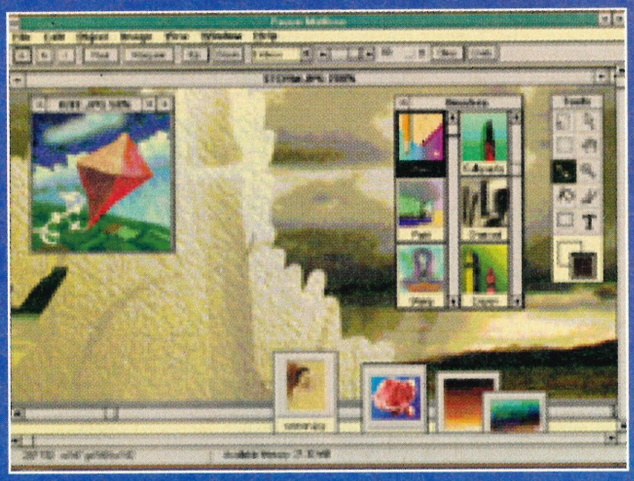
Bitmap image editing software



Fauve Matisse is a dead ringer for the award-winning Fractal Design Painter, a unique painting program designed to simulate the feel and style of brushes, chalks and and other 'natural' painting and drawing tools.

But Fauve Matisse takes up where Painter left off, and ends up doing a better all-round job for a quarter of the price. It's easier to use, better laid-out and a much quicker worker. It also boasts a broader range of talents, with advanced image editing tools to complement the various brush techniques.

Take, for example, the ability to layer an image in sections — so you can work on parts of an image separately without messing up the whole thing. This is so ridiculously useful it's amazing it's not compulsory on every paint package. In fact, it's a rare occurence on even the most expensive.



But the real fun comes from working with those natural brush styles and effects. Normally when you work with bitmap pictures the image you end up with has a rather flat feel to it. But when you can mix and blend colours, wash them over each other with a watercolour brush, or bring out the effect of grain in the paper you start to realise how much creative potential Fauve Matisse has to offer you.

Sure, there are one or two minor points — like the fixed zoom options — that could still be improved. But not enough to detract from what is a superb package overall. Fauve Matisse is one of the most impressive pieces of graphics software, if not the most impressive, I've come across in the past five or six years.

John Bennettt

★★★★★

- *Supplier* CGS Computerbild
- *Contact* (081) 679 7307
- *Price* £99.00

■ Windows 3.1, SVGA (preferably 24-bit) and 386 PC with 4Mb RAM. Supports Photostyler and Photoshop plug-ins, Photo CD and Twain.

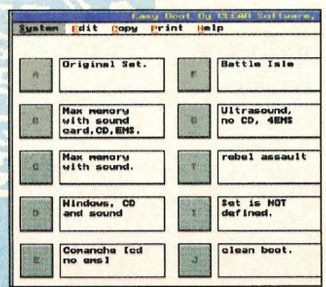
EasyBoot

Configuration menu system

Sod's Law says that if you buy two PC games on the same day they'll need a different set-up, often mutually exclusive, and always totally at odds with what's needed to keep Windows running smoothly on your PC.

EasyBoot is simply a push-button screen for a variety of pre-prepared configurations to set-up your computer. Click on button A for example, and reboot with a new memory set-up geared for, say, Windows. Chose button B, and restart the PC ready for something like Strike Commander's peculiar and excessive memory requirements.

Still, you can always get round this problem without EasyBoot by using a boot disk, or setting up a menu system in DOS 6. The former is an inelegant solution, the latter trickier and poorly documented. A bit of regular housekeeping with EasyBoot will enable you to swap set-ups at the touch of a button with a lot less fuss.



The house-keeping bit is the catch, of course: you have to set up the different configurations yourself before EasyBoot will let you at them and make sure they stay up to date. EasyBoot tries hard to help, honest it does, but in the end it still assumes you have a familiarity with the vagaries of the Config.sys and Autoexec.bat that isn't always going to be the case.

If EasyBoot tried to make some sense of your system for you, and if it could do more to explain exactly *how* to get around specific problems — say if you could use it to set up your PC with plain English commands, like, "more Expanded memory, plus mouse loaded", etc — it would be the answer to all our prayers.

But even as it stands, provided you know enough about your PC to do the initial hard graft EasyBoot is marvellously convenient to have around. partiucularly if you're likely to be swapping between a work set-up for your PC and a games set-up on a regular basis. What it does, it does very well and I wouldn't be without it. Think about it next time you swear at the thought of having to make another boot disk for a troublesome game.

John Bennett

★★★

- *Supplier* Guildsoft
- *Contact* (0752) 606 200
- *Price* £29.00

■ Provides 15 configuration options. Needs a 286 PC minimum, 500K disk space and DOS 2.0 or better

FloorPlan Plus 3D for Windows

3D CAD/drawing software

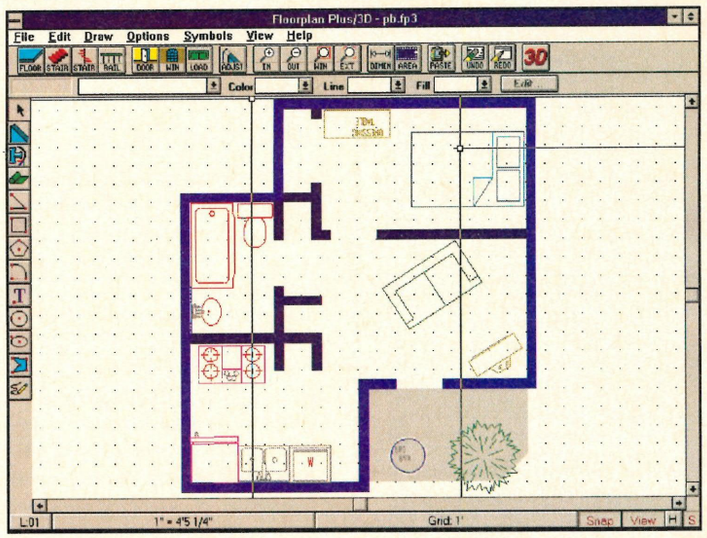
Do architects live in the sort of homes they design for other people? It's debatable. And we could all do better at designing our perfect home, couldn't we?

Now FloorPlan Plus 3D for Windows allows you to put your own design ideas into action and remake and remodel your dream home right down to the kitchen sink.

This is a hybrid program designed to bridge the gap between basic drawing packages and professional CAD systems with the buzz tag of "virtual reality" added which allows you to walk-through your creation.

It's a hefty, powerful package which lets you to design a home — or office- from scratch. You construct floors, walls, doors, windows through to placing beds, sofas, TVs, mirrors, stairs, carpets and virtually every household item in can be placed to your perfection. You can even fiddle with the wiring and plumbing.

But is this a program for home use? Not really. Most of us have only limited scope for home improvements such as adding extra rooms, another floor or raising the roof. And it's all very well creating the plans for your own imaginary home, but would it work and be



safe in reality. Just what do you really know about load-bearing walls, soil pipes and building standards? Not a lot, I bet.

The space planning aspect of the program sounds of more use to the home user but is in reality is a disappointment. It would be quicker to shift all your worldly goods and chattels around physically than it would to construct a walk-through computer version of your home and furniture and then start re-arranging everything. Add to this eye-strainingly small tool and utility icons and a uninspiring manual.

So, in reality we have a program which purports to be really useful, but really isn't. By not buying this program you can save space and £149.

Professional architects may be find it more of more use. But then again ...

Paul Boughton

★★

- *Supplier* CEI/Fast CAD Europe
- *Contact* (0923) 246 427
- *Price* £149.00

■ Minimum 386SX, 2Mb RAM, 5Mb hard disk, DOS 3.1 and Windows 3.0 or higher, VGA or SVGA needed for 3D.

CD software

ROMaterial

Desktop animation bundle

Anything that will make our 'graphical user interface' more, well, graphic is a welcome addition.

ROMaterial is Moon Valley's latest expansion to the Icon HearIt toolbox of Windows gizmos. Packed on one CD-ROM disc are a host of alternative icons and cursors, sound effects and screensavers. The short booklet that comes with the disc is little more than an introduction but then again the applications are fairly self-explanatory, and it's only a matter of moments between installing the basics and animating your first icon.

Sure, there were times when I wanted to beat it round the icons with an electronic pick-axe handle, but on the PC scale of potential frustration it's mercifully low in the ratings.

The defaults are fun, but there's plenty of room for designer creativity. If you want a husky woman's voice to announce "minimise" in Japanese then it can be done easily. There are a couple of things I would have liked to have done which weren't available, but by and large I felt quietly chuffed with the results.

The part that clinched it for me, though, were the screensaver options. A wide selection of full-motion video clips adds a whole new dimension to a Windows session. I messed around for ages and loved the personalised feel of my desktop: a different textured wallpaper every two minutes, an easy-going Frenchman's voice, and plenty of scuba-diving screensavers.

Next week I'm thinking of changing the Jacques Cousteau look for something altogether more Marilyn Monroe.

So go on. Give your PC a personality. Get ROMaterial.

Martin Klimes

★★★★

- *Supplier* Guildsoft
- *Contact* (0752) 606 200
- *Price* £41.07

■ Be prepared with at least 25Mb of hard disk space. Minimum system: a 386 PC with VGA, 2Mb of RAM, a CD-ROM drive and Windows 3.1.

The Doctor's Book of Home Remedies

Alternative medical reference

One particularly cold winter in my childhood, I caught tonsillitis. Much to my distress, the doctor frowned, ummed and aahed, and finally announced that nature would take care of it.

All of which meant that I was particularly interested to hear that I might never need to see one again. Home Remedies would cure anything in one spin of the CD-ROM.

The only problem is that, as the name suggests, the Doctor's Book was written by doctors. And pretty unhelpfully, as well. Thousands of pages of it. If you won't let nature take care of it, then here's where to find dozens of hints on everything from averting athlete's foot to making sure your spleen doesn't explode. There aren't even any of those anatomical pictures I was so looking forward to. Suffice to say I haven't ditched my GP's number just yet.

Martin Klimes

★

- *Supplier* Universe Services
- *Contact* (081) 838 1280
- *Price* £31.71

■ DOS or Windows will do, since Home Remedies uses MOST (Multiple Operating System Technology).

PREVIEW

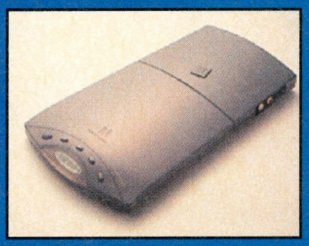
MediaVision Reno CD-ROM drive

MediaVision may have shot rather wide of the mark with the Memphis but the Reno, due out next month, may prove to be a lot more desirable.

The dinky, twin-speed Reno CD-ROM drive doubles-up as a 'walkman'-like personal CD player. Just unclip it from your PC, slap in the latest album, attach headphones and swagger off down the road with the ultimate computer accessory blasting your brains into mush.

Computer hardware meets fashion accessory? Stranger things have happened ...





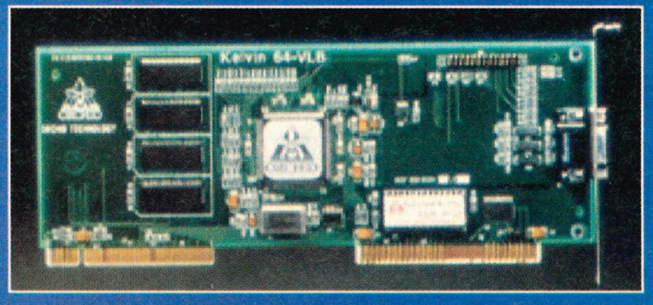
Orchid Kelvin-64 graphics accelerator

Presumably many moons ago, there was one and two-bit (no pun intended ...) computing. If so, it was before my time. Now we're about to reach the giddy heights of 64-bit computing, when most of us are still trying to keep up with the 16 and 32-bit stuff.

First off the (affordable) production line will be the Orchid Kelvin 64 graphics accelerator, at £179. In theory, 64-bit accelerators should be twice as fast as their predecessors. It rarely works out quite that way, but it's still likely to be a very quick video card. As usual these days, Kelvin concentrates on producing blistering Windows performance before anything else. However, DOS performance — and therefore games — should also be pretty hot.

A range of high resolutions and the ability to display 16.7 million colours round off the cards list of talents.

And, as if we haven't got enough decisions to make already, the Kelvin will arrive in three flavours: ISA, PCI and Local Bus.



PRODUCTS

PLAN-IT EARTH

PLAN-IT EARTH

Multimedia personal organiser

The ultimate Filofax, photo album and book of quotations rolled into one comes in three distinct styles to chose from: Plan-it Adrenaline — action shots for the sporty types, Plan-it Earth — environmental shots for the eco-concious, and Plan-it Paradise — swimwear for the lecherous.

How I got sent the environmental edition, I'll never know.

Anyway, besides throwing a selection of high-quality pictures at you, Plan-it Earth also offers up a distinctly American shade of trivia in the form of quotations, jokes and facts at the touch of a button. And being able to speak to it — albeit in a fairly limited fashion — using the voice recognition software is a neat trick, and a first for a desktop personal organiser.

All of which is very interesting ... but it would help if the organiser itself was more sophisticated. There's no easy method to link things you enter from one section to another, and there's no easy way to import, say, an existing database of telephone numbers into the address portion.

That really got up my nose. I'm not going to start typing in my address book from scratch all over again no matter how attractive an organiser may look. This thing is supposed to make life easier, not create more work.

To cap it all, the pictures have to come off the CD and this slows things down no end. When I need to look at my diary I'm usually in a hurry, so I found myself disabling the picture options in Plan-it, because waiting just the few seconds it took for the CD to get its pictorial act together soon became an irritation.

I'm not against trying to brighten up our lives on the PC, but to me an organiser is a functional thing. An organiser with moving images is not, it's an executive toy.

Still, I guess it depends on how desperate your need is for pretty pictures. Plan-it Earth does a fair job as a straightforward, neat little electronic diary and timetabler, with an interesting sideline as an art gallery and trivia collection, but I can't see myself carrying on using it.

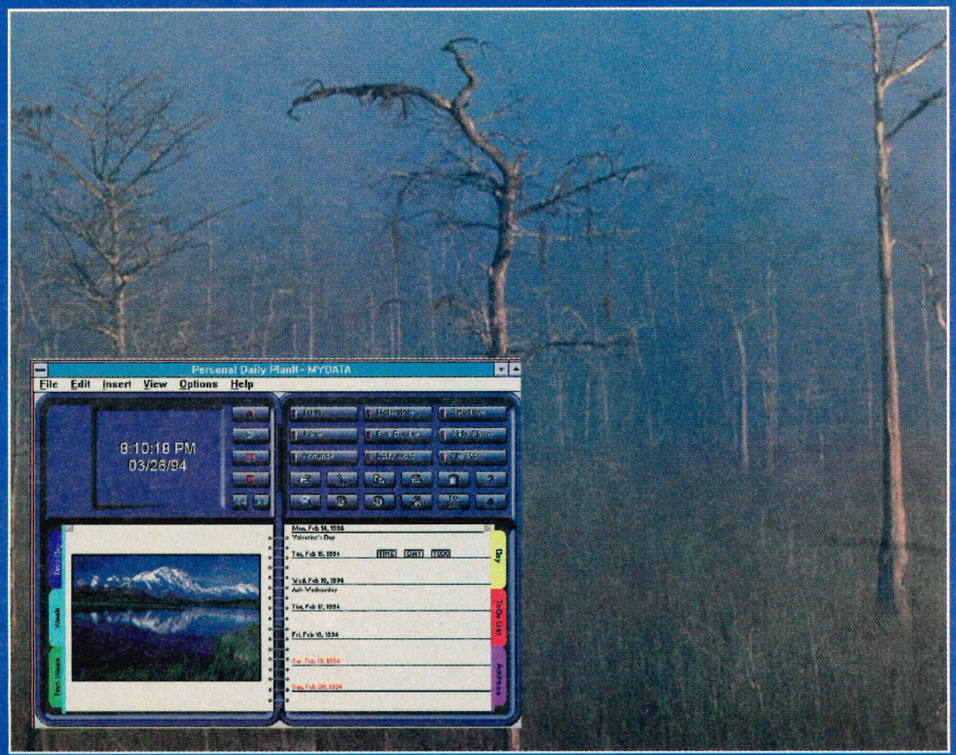
John Bennett

★★



- *Supplier* GEM Distribution
- *Contact* (0279) 412 411
- *Price* £15.00

■ Requires a 25MHz 386 PC, 4Mb RAM, SVGA, Windows 3.1, DOS 5, 150Kb/s CD-ROM drive and 8-bit sound card



Red Shift

Astronomy CD

The latest trend is to collect up all the information you can find on a subject, slap it on a CD-ROM and flog it to all and sundry. Red Shift joins this crowd with a vengence, offering enough astronomy on one CD-ROM for even the most enthusiastic star-gazer.

It is a package with a million facts at its electronic fingertips. The interface is sophisticated enough for you to be able to manipulate the data and video sections in just about any way needed, and there aren't any sounds or unnecessary 'multimedia' frills to distract you from the serious encyclopedic pretentions of the disc.

At no point can you mistake Red Shift for a casual program. This is hard core science, so if the words 'Capricorn' and 'Virgo' conjure up images of the horoscope page in the weekly gossip mags, instead of groups of dots viewed through a telescope, then think carefully before splashing out this much money.

Red Shift is well thought out and cleverly put together, but only the select few will find they get value for money out of it.

However, I thought it was a nice touch to dedicate Redshift to the brave astronauts of Russia. Very much a hands-across-the-water, multicultural understanding sort of thing, which professional astronomy has been for years. And Redshift is decidedly a product for the amateur who knows enough to be a professional but isn't, because he's an electrician by trade. Yes, it's packed with informative stuff, but don't make the mistake of thinking that it's a beginners' guide.

Martin Klimes

★★★

- *Supplier* Maris Multimedia
- *Contact* (071) 702 0800
- *Price* £79.00

■ 386 PC with SVGA graphics and 4Mb RAM, Windows 3.1 and a CD-ROM drive.

Capitol Hill

American History/politics CD

What with a cool hair-cut, saxophone playing president like Bill Clinton in the White House, there are all sorts of things going on in American politics right now. For those of you that follow the internal workings of the US administration, Software Toolworks offers you Capitol Hill, a multi-media government simulator.

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UNDERSEA ADVENTURE

UNDERSEA ADVENTURE

Educational program

Personally I've always thought the underwater world is interesting and fun. For me there's nothing better than being face to face with a shark on its home ground, so when the intro sequence video of a Great White came up I was all smiles. What fond memories it evoked!

However, Undersea Adventure is designed to be more than just a nostalgia tool for masochistic SCUBA divers. It's edutainment, as the Americans would put it. Supposedly for people "aged 3 to 103" there's a definite slant towards children, and everything from the starfish cursor to the little built-in games help give it a good kids' atmosphere. And very cute it all is too, although I did wish the video clips had been a little bigger on screen and the sound a little better. This isn't a weighty reference document for marine biologists, more an easy to follow guide of the ecology of the world's seas.

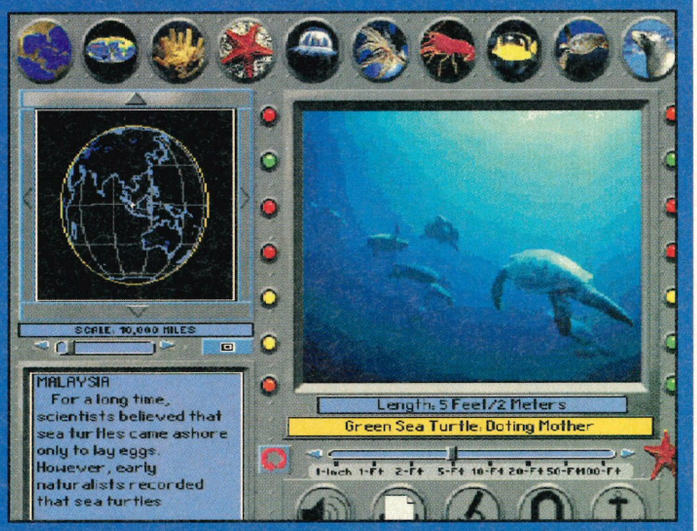
I loved everything from the video clips to the dissection classes, and even had a good bash at the treasure hunt game. Undersea Adventure is a great learning tool if you can't afford to take the children to the Barrier Reef and show it all to them first hand.

Martin Klimes

★★★★

- *Supplier* Guildsoft
- *Contact* (0752) 606 200
- *Price* £59.95

■ You will need a VGA screen and a CD-ROM drive (a disk version is available). A mouse and sound card are recommended.



(Capitol Hill continued) Start life off as a new congressman, have drinks in your office with the high and mighty, and sleaze your way to the top. It's a full-motion video clip type of walk-through, full of fascinating facts and interesting people. Shame it's so dull, really.

As a guided tour and all round educational tool it has all you'd want to know about behind the scenes politics in the US. It just does it without any character.

And no, shoving in a little game based on the tackiest of pub quizzes to test how much you remember doesn't save it, either.

Martin Klimes

★★

- *Supplier* Mindscape
- *Contact* (0444) 246333
- *Price* £39.99

■ Minimum 25MHz 386 with 4MB RAM and Windows 3.1, plus SVGA graphics, sound card, and an MPC CD-ROM drive (most are).

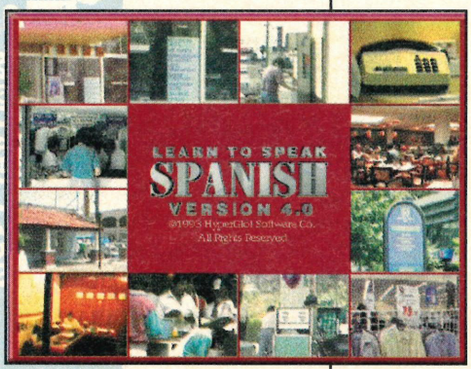
Learn to Speak Spanish

Language teacher

Learn to Speak Spanish comes in two versions: PC and Mac, on the same CD-ROM. The PC version is a Windows MPC program so you don't have to worry about sound card compatibility. It installed swiftly and easily without a hitch, taking up around 5Mb of hard disk space and installing the relevant icons in its own program group.

It launched relatively slowly on my single speed CD-ROM drive to the strains of La Bamba. This is appropriate since the program concentrates entirely on Latin American Spanish rather than Castilian — Mexican Spanish, to be precise. So if you wanted to use this to brush up before a trip to Spain you should be aware that there are salient differences in vocabulary and pronunciation between the two.

In order to squeeze the two versions on the CD, the sound used by the game may come at you from any direction: sometimes a wave file, sometimes CD-audio (often one channel or the other rather than stereo) ,which can be rather disorientating. It also means you have to take care to balance your wave and CD audio volumes or you will be straining to hear one minute, then blasted the next.



The 30 lessons are each built around a theme, such as Arriving at the Airport, The Party and so on. After a short QuickTime video, about the same postage stamp size as Video for Windows on my screen, you can then choose from a number of different exercises relating to the subject at hand. These include:

- the Story Thus Far and The Action: detailed dialgoue shown on-screen and spoken; you can select any exchange for repetition;
- vocabulary: a list of the relevant words with a definition of each and a short contextual example with a talking head;
- listening skills: a series of sentences with words missing. Listen tot he talking head and guess the words;
- fill in the blanks: more blanks, guess the word from the others;
- word jumble: sort out the jumble of words into a proper sequence;
- drag and drop the right form of prepositions to the verbs;
- communication skills: answering in Spanish questions posed in English.

With some of these exercises you can listen to the correct pronunciation and then record your own version with your sound card microphone, then listen to your attempt compared to the native speaker, which is a great idea.

The screens are well-designed, attractive and generally easy to follow. On a few occasions, it wasn't very clear what to do next, but either trial and error, or a glance at the manual helped out. Some fo the marking is pretty pedantic — the answer to one question was *Gracias*. It would not accept anything but the capitalised word followed by a full stop.

Apart from the CD and a short manual, you also get a 350-page work book, which you can refer to throughout the lessons, and contains the same exercises for revision purposes. It is also worth mentioning that you get a 30 day, no quibble, money back guarantee if you find that you can't work with this method of learning.

I can imagine learning basic Spanish this way after a lot of time and effort: the only way you can learn any language. This would make it relatively interesting and enjoyable, and I can see that the multimedia elements, together with some innovative touches, would be an improvement over cassette tapes and books, although less portable. On the whole then, while not rating an *estupendo*, it gets an *bueno*.

Neil Cameron

★★★

- *Supplier* Guildsoft
- *Contact* (0752) 606200
- *Price* £116.33

■ Images can be randomized, speeds selected and password added. MIDI support. Minimum: 386 SX, 4Mb RAM, Windows 3.1 or later, VGA.

Imaginaria for Windows

Screen saver

The promise is seductive: sensational screen saver displays, tantalising transition screens, dazzling desktop animations.

Impressive, eh? But there's more.

These are "daydreams from the sublime to the surreal" to "match you every mood." "It's an amusement park for your mind!" the blurb gushes.

What a load of old tosh!

This screen saver package comes in three parts:

- Ten desktop animations, ranging from a rowboat to a dolphin and a car to a winged monkey.
- Eleven transition screens, a collection of half-human, half animal creations which appear just before the main saver screens.
- Fifteen screen saver displays, including a picturesque view of a coral reef, Yosemite park and a rainforest. All screens are animated and accompanied by music or sound effects.

Personally I found "the ultimate multimedia screen saver collection" entirely unnecessary. This is dull as in ditchwater, as stimulating Ovaltine, as entertaining as paint drying.

Paul Boughton

★★★★

- *Supplier* Claris Cear Choice
- *Contact* (081) 756 0101
- *Price* £41.13

■ Images can be randomized, speeds selected and password added. Minimum 386 SX, 4Mb RAM, Windows 3.1 or later, VGA.

THE RATINGS

The products in the following section are marked out of five:

*** Dreadful. Don't touch with a bargepole.**

**** Usefulness is probably limited, but could be suitable for specific need.**

***** Generally good; some limitations**

****** Good. Should go on anyone's shortlist to buy**

******* Superb, either outperforming or offering features that other products can't do.**

Ease of use, ease of installation, value for money and sheer performance are the most important factors we take into consideration.

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PC REVIEW TRIED & TESTED

Some software gets deleted from the hard disk the minute the review is written, some gets used way beyond the call of duty. Some hardware we wish we'd never taken out of the box, while some we wish we could keep. The products we see, work with and, most importantly, still enjoy using will appear on these pages each months under the following eight — admittedly broad — categories.

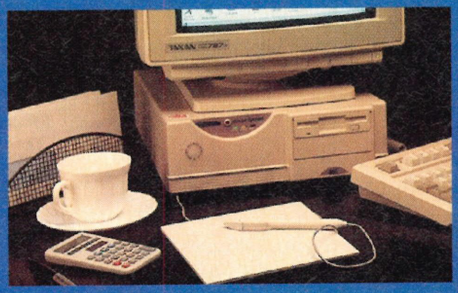
As the months go by, the faces here will change as new products come along to prove they have a better all-round combination of price and performance. Until then, these are our pick of the PC hardware and software



Multimedia PC:
Dan for Windows/33 486 £1,570
Thoroughly well behaved, and impeccably finished.



Budget PC:
Gateway 2000 486/33SX £1,570
Excellent starter PC, a nippy performer.



General hardware:
Micrograph Tabby £43
Never thought we'd see a good graphics tablet this cheap



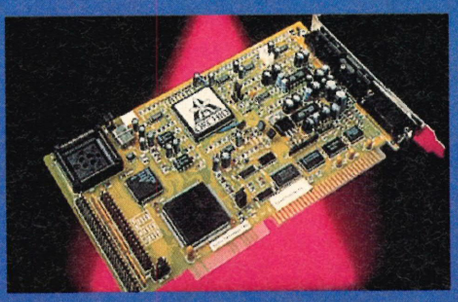
General software:
Fauve Matisse £99
The finest creative painting package we've ever seen.



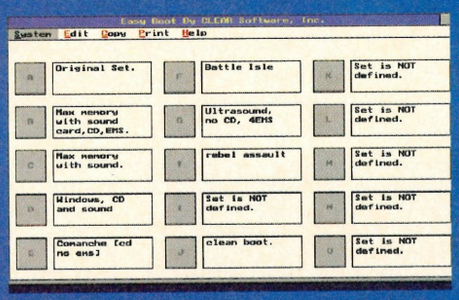
CD reference software:
Microsoft Art Gallery £50
The ultimate coffee-table book on CD-ROM. Beautiful.



CD-ROM drive:
MediaVision Double FusionLX £299
Good, stable bundle. Won't let you down.



Sound card:
Orchid GameWave 32 £149
Great sound for games players, difficult to trip up.



Utility:
EasyBoot £29
Very convenient, particularly for gamers.

PRODUCTS

Shareware reviews

There's no need to spend a fortune on software, when shareware and public domain programs exist for just about every application you can think of. Alan Clark looks at some of the latest and best in recent shareware releases

CM Filer

CM Filer is a very comprehensive DOS-based file and directory manager. Its large range of functions include copying, deleting and renaming files and directories on any drives that are available on your system. Other features include customisable functions keys, printing of directory and file listings, floppy disk copying and in-built PKZip and UNZip functions. On-line help is also available for those overwhelmed by the host of functions on offer. A very friendly and easy-to-use utility for people who don't like DOS.



Registration fee $30 — PC REVIEW RATING 7

Config 700E

For all those who want to know virtually everything about their machine, Config 700E is one of the most comprehensive system information programs available. This DOS-based utility is remarkably easy to use: just run the program and then press the appropriate key to bring up information regarding that particular area of your system.

Config 700E covers everything from the CPU and its speed to the motherboard chipset, memory resident programs to available drives.

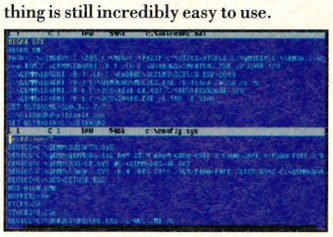
The information displayed is uncluttered and easy to read, yet the whole utility is as comprehensive as the likes of Norton SysInfo, and it's also a good deal cheaper too: $37 for the registered version which includes one or two other functions thrown in as well.



Registration fee $37 — PC REVIEW RATING 7

QEdit 3

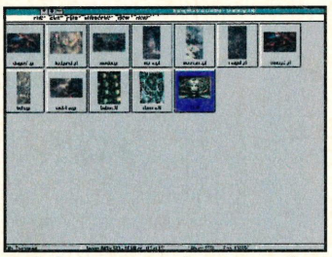
The Edit command that comes with DOS isn't the most powerful file editor available, but it will cope with simple text files. If you'd like a little bit more power and control, however, QEdit 3 is well worth a look. The sort of facilities on offer include the ability to edit multiple files and multiple views of one large file, simple line drawing for diagrams, whilst text files can be as large as system memory allows. A host of powerful editing commands normally found in expensive word processing packages are on offer for creating professional looking documents. Comprehensive custom facilities and a powerful macro language add to QEdit 3's vast amount of options, yet the whole thing is still incredibly easy to use.



Registration fee $71 ($12 shipping charge) — PC REVIEW RATING 8

Image Commander

Everyone who collects image files will know of the hassle of searching through a long list of unintelligible file names trying to find one particular picture. Image Commander enables you to create custom album files of all your pictures and then displays the images within these albums as 'thumbnails'. With the appropriate disk in the drive you can then display the images full screen at the click of a mouse button. For editing purposes, Image Commander allows you to assign up to four external applications to different image files, so you could search through your albums, choose a picture



and edit it using your favourite application, all from within the one utility.

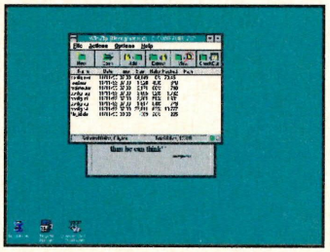
Available from The Thompson Partnership, Church Croft, Bramshall, Uttoxeter, Staffs ST14 5DE, tel (0889) 564601.

Registration fee £29 — PC REVIEW RATING 7

WinZip 5

The popular Windows front end for PKZip, ARJ and LHA archivers has now been updated and a few new features have always been added.

This latest version of WinZip 5 now has a number of new and useful utilities, including; built-in support for basic Zip and UNZip functions, support for external virus scanners and drag-and-drop facilities for extracting and archiving files.



A couple of bugs have also been fixed allowing proper extraction of files with 0-byte lengths and hidden directories.

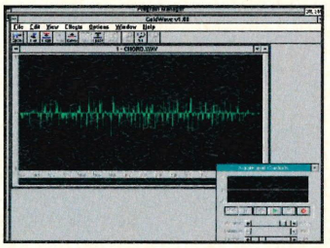
For people uncomfortable with PKZip's command line and those who want convenience, this is a great utility.

Available from Shareware plc, 3A Queens Street, Seaton, Devon EX12 2NY, tel (0279) 24088

Registration fee £23.50 + £4 postage — PC REVIEW RATING 7

GoldWave

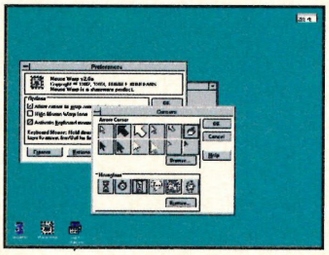
Everyone who owns a sound card will want to play around with its sampling capabilities. GoldWave, a Windows-based sampling utility, is great for doing just that. It has all the usual sampling and editing options, mono and stereo capabilities and a range of effects, such as adding echos, mixing two separate samples and playing samples backward. A very straightforward and easy to use utility, it will work with any Windows compatible card.



Registration fee $59 — PC REVIEW RATING 7

MouseWarp

This little utility allows you to change not only the normal Windows pointer but also the sleepy pointer as well. A range of samples are provided or you can create your own from any icon editor. Just pop this little utility into the StartUp group and whenever Windows loads you'll have your very own custom mouse pointers. Other options include the ability to wrap the pointer around the edges of the screen and display the pointer co-ordinates. It's great fun for livening up Windows.



Registration fee $20 — PC REVIEW RATING 6

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Win! Fauve Matisse and the Micrograph Tabby

COMPETITION

What a combination – the most exciting creative art package there is and the handiest graphics tablet we've ever seen make an unbeatable prize for any PC artist. And there are five sets to be won!

Fauve Matisse is a brilliant and very powerful new Windows painting package from CGS Computerbild (see picture, below). It's so good, it comes as close to creating the effect of natural painting tools as you could possibly hope for without having a watercolour brush in your hand.

To unleash your artistic capabilities fully with a package like Fauve Matisse you need to get away from the wobbly lines of the tired old mouse. And that's where the Micrograph Tabby comes in. It's a nifty mouse-mat sized graphics tablet and stylus (pictured, below right), which you simply hook up to your PC instead of the mouse and then use just as a pen and paper. What could be simpler?



How to enter

On this page you'll see five details from famous paintings. All you have to do is match the picture detail to the artist who painted it. It's not going to be easy. But just to help you, we thought we'd give you a clue. The five artists can all be found in the list of painters in the panel on this page.

So, for example, if you think that picture A was painted by Picasso, put Picasso on your entry form in the space provided.

When you've got all the answers, put the completed coupon (or a photocopy if you don't want to spoil your copy of the magazine) into an envelope and send it to:

PC Review Gallery
Priory Court
30-32 Farringdon Lane
London EC1R 3AU

Your entry must reach us by May 24, 1994. This is the closing date and any entries which arrive after that will not be counted in the prize draw.



The artists on the list which follows includes the five who painted the pictures shown in detail on the page. So, to be in with a chance of winning, you need to identify the five relevant names from the following list:

Camille Pissarro	Vincent Van Gogh
Peter Paul Rubens	Alfred Sisley
Jackson Pollock	Mark Rothko
Edouard Manet	Pierre-Auguste Renoir
Claude Monet	David Hockney
Hans Holbein	Rembrandt
Edgar Degas	Leonardo da Vinci
Raphael	Pablo Picasso
J M W Turner	Michelangelo
John Constable	

Rules

- **Employees of EMAP Images, CGS Computerbild, Micrograph, and their families and associates are not eligible to enter this competition.**
- **No multiple entries, please.**
- **No entries will be accepted after the closing date.**
- **The editor's decision is unarguably final.**

Fauve Matisse costs £99 and requires Windows 3.1 and DOS 5.0. For further information, contact CGS Computerbild on (081) 679 7307. The Micrograph Tabby costs £43, and also requires Windows 3.1 and DOS 5.0. Call Micrograph on (0923) 248222.

PC Review Gallery

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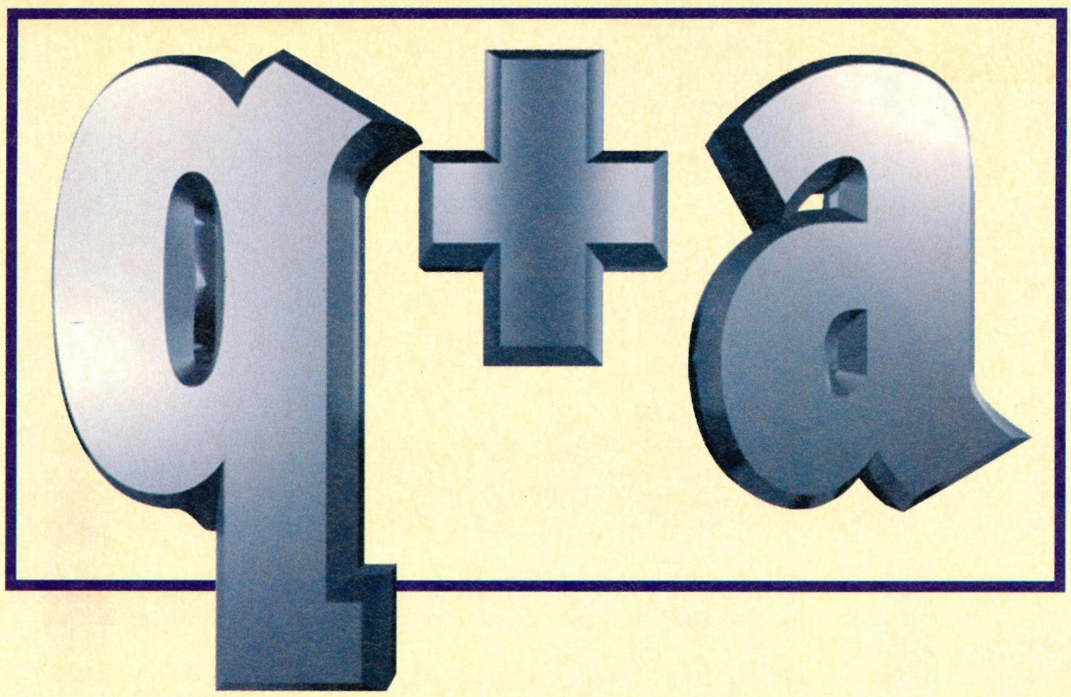
.....

Answers

A .....
B .....
C .....
D .....
E .....

❑ **Tick this box if you do not wish to receive further information from companies associated with this competition.**

Closing date May 24, 1994 ***PC Review May 1994.***



Is your hardware making your head ache? Is DOS driving you dotty? If you're having problems with your PC, share them with Mike James and he'll endeavour to help.

Take five

I am new to PCs and own a 386. I am saving up for a 486 and have a few questions:

1) Some of my friends have told me not to pay extra for a Pentium-ready machine because there aren't any games that will require this chip. Is this true?

2) How long will it be before the DX2-33 or 66 became as outdated as the 286?

3) I have heard that in the near future you will need an XA standard CD-ROM drive for CD games. Is this true? And what is the difference between XA standard and XA-compliant drives?

4) What is a tape streamer, and what is it used for?

5) When you delete a file using File Manager, is it still on the hard drive and taking up disk space?

Jasmit Shergill
Bristol

Some quick answers to a list of questions that could make a whole Q&A alone:

1) The best Pentium systems are about twice as powerful as the fastest 486 machines you can buy, but they are about four times as expensive. There is little difference between a Pentium and a 486 system except speed and price. Currently I wouldn't recommend anyone to buy a Pentium system for games – a 486DX2-66 or similar is about the best machine for games, but you can be very happy with less.

2) I don't think that the DX2-66 is going to be outdated in quite the same way as the 286. The reason is that the 286 was significantly different from the 386 and the 486 and lacked some of their important features. The only difference between the 386, 486 and the Pentium is how fast they run the same software. Having said this I wouldn't like to place a bet on how long any machine will last — I've been wrong before!

3) The whole XA question is very murky. In practice, you only need part of the XA standard implemented to do some of the important things — such as reading a Photo CD — but in principle you need the full XA standard to run the sort of clever multimedia programs that XA was designed for. At the moment there is no PC software that uses the full range of XA capabilities. Most software that does mention XA uses so few of its features that the drive only has to be XA-compliant for it to work. You can take XA-compliant to mean, "it should work at the moment, but might not in the future".

4) A tape streamer is a special type of tape drive that can be used to make a back-up copy of the contents of a hard disk. If the hard disk fails, then you have the tape copy that can be used to restore the data to a new drive.

5) When you delete a file, using the File Manager or any other method, the space that the file occupied is released for re-use. However until a program actually wants to store some new data in the same space the old data is not actually erased. This accounts for the fact that it is possible to undelete files and why sometimes it is not. It's all a matter of how much of the disk space has actually been re-used.

A galaxy of problems

In PC Review, Issue 28, I noticed that one of your readers was having compatibility problems with the Sound Galaxy Pro sound card. A few months ago I invested in this same soundboard, along with a Mitsumi CD-ROM drive and on doing so I bought the game The 7th Guest.

On installing the game I discovered that the sound board was faulty as the PCM speech was not working.

I quickly went back to the shop and they gave me a new card. I installed the game for a second time with the set-up mode on 'Sound Blaster' and this time the speech worked fine.

It wasn't until a few weeks later, when playing the game on a different system, I discovered that the there should be introductory music when you start a new game. I sat for hours checking every single set-up mode there was, including the interrupt, DMA and port settings. I came to the conclusion that it must not be able to play raw PCM data.

I doubt that I have picked up another faulty card, but what is weird is that when I am printing on my HP550C there is a lot of interference from the printer (popping and loud crackles).

I have tried different speakers, but have resorted to unplugging them every time I have to print which is very annoying and frustrating.

Not only do I find problems with 7th Guest but also with Flight Sim 5. The game crashed after about 30 seconds on all the modes except with the card select on 'Thunderboard', which seems very strange as I don't think that that is even designed to be compatible with the Sound Galaxy Pro, although I could be wrong. This soundboard has been more trouble than it is worth — what should I do?

Peter Doggart
Cheshire

Regarding your request asking for problems found with the Sound Galaxy NX Pro (SGNXPro). After reading "the definitive guide to soundboards" back in PC Review, Issue 13, the SGNXPro was given the thumbs up, and I bought one in early 1993.

However, when I went to boot up my machine (I have a Western Systems 386SX-25 with 8Mb RAM) there were problems. The sound board changed the layout of my keyboard.

I contacted the SGNXPro distributors who listened to my query and said there must be a fault in the board.

I then returned the board to them (costing me £5 in postage) and the same happened with the replacement. Western Systems said there was an IRQ clash and the only way around this was to run the card software, but as I couldn't use the keyboard I couldn't install the software. I spent £50 getting an engineer to change the settings on my PC but the problems remained.

Finally, I sent it back to the company from which I originally bought the card (another £5 postage) and eventually got a Creative Labs Sound Blaster Pro, which worked fine first time.

The thing is the whole process took five months and cost me £185. Although I don't blame anybody in particular, why aren't all these problems researched better before the hardware goes on general sale? The UK Sound Galaxy distributor told me I wasn't the only person with this exact problem.

Tony Arbenz
East Sussex

I personally haven't had any experience of the Sound Galaxy board but I could easily have bought one, having been impressed by the price and performance claims — so I don't see how you could have avoided the problems in the first place! The only comments I have are that Thunderboard is Sound Blaster compatible and so is likely to be Galaxy compatible as well, and that clearly the board can be made to work in some situations.

The problem with the keyboard could be some sort of machine incompatibility – perhaps there is something odd about the expansion bus, but it can't be that odd because the Sound Blaster worked.

Do any readers have any more comments about problems with the Galaxy sound card that aren't just configuration related? Hard facts would be helpful.

Helping with shareware

I have recently started designing a game that will probably be released as shareware. The game that I am writing is a platform game, not exactly original, but a reasonable game programming start and a good challenge! I have most of it planned except that I have run into trouble. I can't find a VGA Programmers Reference anywhere and I don't know what the VGA registers are. I need this at hardware level as the BIOS is slow. Also, is the VRI (Vertical Retrace Interval) at the same address on all machines? According to the DOS Programmers Reference, it's at address 3DAh Bit 3. I need to check for it so I can synchronise the screen properly. Together with this check and the screen swapping, it will be a very smooth game!

My second problem is that I want it to be a full 32-bit game in C++ and assembler using 368/486 instructions and registers. The documentation on 386/486 programming seems scarce, too. All the stuff I found was for 8086.

Also, do you know where I can get the file layout of a GIF file as all my sprites are in GIF 320x200 256-colour format, at the moment.

Peter Flynn
Cleveland

VGA hardware is very complex and there aren't many good references to it. Most programmers cope by using a pre-written graphics library of routines that do the job for them. If you want to do it the hard, but cheap, way, then try the VGA Programmers Reference which is a shareware document (PDSL 2975).

To find out about the 386/486 get hold of the technical manual from Intel which details the register configuration and the complete instruction set. For a 32-bit compiler plus a lot of extra help you could do worse than the Symantec C++ compiler which is currently available on special offer – Symantec is on (0628) 776343.

And finally, to work with GIF files, why not just get hold of GIF–LIB, a shareware C library that does everything you need to do with GIF files (PDSL 3498).

If you want a good book on graphics file formats, including GIF, then try Bitmapped Graphics Programming in C++ by Marv Luse (Addison Wesley ISBN 0-201-63209-9).

Changing sides

I don't really know how to start this! I am, at present, an Amiga owner, but don't worry, I have seen the light and am currently saving to buy a good 486 PC. The thing is, I know very little about these monsters and so desperately need to know the answers to the following problems:

1) I would like to produce music on my PC. Is there any way of doing this without buying a MIDI keyboard? I know you need a good sound card (after reading your music article in Issue 28) but can you buy sample disks that already contain sampled instruments?

2) Can a PC recognise IFF and RAW files as used on the Amiga?

3) Presuming I mainly wanted to play fast simulation games, which is the faster processor , the 486DX or 486SX? Do I really need a maths co-processor?

4) Do all programs need to be installed on hard disk before I can play them?

5) Are there any Spectrum or Amiga emulators out there to enable me to run a lot of Spectrum or Amiga games?

6) What is an Intel processor? Is it something to do with being 32 bits?

7) Is a normal 486 processor 16-bit?

Sorry for the long list, but if you can answer my questions it will make my life easier when the time comes to buy. Thanks a lot, and keep up the good work.

Dave Fox
Sheffield

Glad you have finally seen the light, but don't expect the transition to be easy as you have a lot of adjusting to do!

1) If you're serious you do need a MIDI keyboard, but you can buy disks of sound samples as well.

2) Some graphics programs do recognise IFF and RAW files and there are also conversion utilities that will translate them into more standard PC formats such as TIFF and PCX.

3) You don't really need a co-processor, so a 486SX is just as good as a 486DX as long as it runs at the same clock speed.

4) Yes! In most cases you need to install programs and in the few cases where a program can be run from a floppy it tends to be inconvenient and slow.

5) There are Spectrum emulators available as shareware. I'm not so sure about Amiga emulators — does any reader know more about this?

6) Intel is the name of the company which makes most of the 386/486 processor chips. It invented it and so feels bad when other companies try to make the same thing.

The reason you know the name so well is that it started the "Intel Inside" advertising campaign just to persuade you to insist on chips made by Intel.

7) A 486, SX or DX is a 32-bit processor.

Why no DIY?

I know that I shouldn't have been, but the thing is I was reading an Amiga magazine recently and saw what I thought was a great idea for PC Review. The Amiga magazine had a projects page and it included all the instructions to build your own sound sampler. I for one would be interested to see a couple of pages devoted to DIY electronics. Any chance do you think?

Phillip Morris
Merseyside

q+a update

Save energy — go green

The latest sales angle on the PC is the energy saving green machine and you will be seeing lots of Energy Star logos on advertising and packaging. You can even buy energy-saving monitors. But the situation is a bit more complicated than it appears.

The energy saving idea is a good one. A PC uses 300-400 watts of electrical power and 40% of machines used in business are left on 24 hours a day. However, for home use this isn't a huge amount of power – around one unit of electricity for every three hours on. Even so, the 'green' image is being used to sell machines intended for multimedia and home use. The Video Electronics Standards Association, or VESA, has agreed a set of standards governing the way that monitors should operate to save power. After all, more than half of the power used by a machine is used by the monitor. To reduce this power consumption the VESA standard defines four operating states — full power, standby mode, suspend mode and shut down mode.

If you don't use your machine for a few minutes the monitor is supposed to switch to standby mode which blanks the screen but keeps all the other electronics active. This cuts power consumption by 30% and the monitor will switch back to full power almost instantaneously. In use, it behaves a lot like a screen saver — except of course, that the screen goes completely blank! Clearly Energy Star monitors are going to be the death knell for screen saver programs. What's the point of having a wonderful display of swimming fish if a few seconds after they have cut in, the monitor cuts out?

If you leave the monitor in standby mode for a while it goes into a deeper sleep. In this case the high voltage circuits are switched off. This increases power saving to 85%, but slows down recovery to a few seconds. If you still don't use the machine a deep coma is the next stage. The monitor shuts down everything apart from the wake-up circuit. Now we are consuming virtually no power — perhaps 10 watts or less, but wake-up takes almost as long to switch the monitor on from cold.

Sounds good, doesn't it? However, I haven't yet mentioned how the monitor knows that you're not using the PC. VESA decided that it was up to the PC to tell the monitor when it wasn't being used. It does this by monitoring activity in the same way that a screen saver does. The difference is that instead of just putting a pretty display on the screen, it signals to the monitor that nothing is happening by removing the sync pulses that it normally feeds to it on regular basis. The monitor uses the presence or absence of sync pulses to determine when the PC is being used. So there is no point in buying an energy saving monitor unless your machine has this sync switching facility. It also needs a BIOS that supports power saving and a copy of MS-DOS 6.

If you do buy a complete green machine then you get more than just a green monitor. The machine itself has a number of power saving options. After so many minutes of inactivity the motor on the hard disk drive will be switched off. This not only saves power, but makes the machine quieter on average. The second power saving is that the processor's clock rate is cut. The amount of power that a processor uses is very dependent on its clock rate – the faster the clock, the more power used and the hotter the chip gets. Reducing the clock speed in this way not only cuts power consumption, but keeps the processor cooler and might even increase its life expectancy. Of course you might not be so keen if you have left your machine doing some task that you expect to be finished when you come back to it. If you use Fractint, say, to draw a particularly complicated fractal pattern overnight then power saving might just get in the way!

As you've probably guessed, I'm not in favour of the green machine for home use. After only a couple of days using one, I was very irritated by the way the screen kept going blank while I was reading something or watching an animation. Fortunately, the solution is to use the BIOS set-up to change the keyboard and mouse 'idle time' needed to send the screen into blackness. This was easy, but I'm worried about how many users will find their way into the BIOS set-up at all? Will a whole new generation of PC users grow up thinking that you have to waggle the mouse every few minutes to ward off the evil back screen? Is it some sort of enforced fitness program? A game, even?

■ *Mike James*

Back in the days when electronics had just graduated from valves to transistors and integrated circuits were new I used to write an electronics projects column for a now-defunct magazine called Electronics and Computing. In those days there was a lot of point to DIY because you could build things that weren't available, or, if they were, you could do it better and cheaper.

Now the situation is very different. In nearly all cases it is cheaper to buy ready-made. Even if you want to do it just for the kicks the prospect still isn't so wonderful. The reason is that electronics has now become so complicated and reliant on large chips that do everything, that DIY is just a matter of choosing the right chips and reading the manufacturers specification sheets. If you want to be more ambitious, then you aren't talking about a project that is small enough to fit into a magazine article.

Take the Amiga sound sampler for example – in the PC world it is easier to buy a low cost sound card. To build something of roughly equal capabilities from scratch would be a major project and to do better would be a major project!

Don't blame the printer

I feel I really must write to you with my problem. I recently had a new Canon BJ-10SX bubble jet printer for my birthday, and installed it on my computer. My main problem comes with Windows. Paintshop Pro accepts it and prints out some nice graphics, but Corel Draw does not like it. After creating several posters, leaflets, etc, for my shop, I asked Corel Draw to print one out. It ran up the dialogue box, and then started to print. After maybe 10 seconds of printing, my screen turned blue and the message "SYSTEM ERROR. Memory Parity error. System stopped." appeared. It usually prints half of the page and then produces the memory error.

John V Arnold
Devon

There is nothing wrong with the printer or Corel Draw. The only way that you can ever see a parity error is if there is a memory fault in the machine itself. No software can generate a parity error by mistake or on purpose. (I admit that it might be possible to write a program to simulate a parity error, but it is reasonable to suppose that Corel doesn't actually try to do this!) A parity error indicates that part of your machine's RAM isn't working properly.

Why then do you only see the fault when working with Draw? The reason is probably that only Draw uses the particular portion of memory that is faulty. In short, you need to have your machine repaired. By the way, the assumption that Corel Draw might be the problem might be justified in other slightly different situations, since Draw is notoriously fickle about what it will print successfully.

3D, or not 2D

I am looking for a piece of software that can generate 3D diagrams from a set of 2D diagrams. The reason I am asking is because I am doing a project along these lines and am looking for ideas for my own user interface. I would also be grateful if you could tell me of any books on the subject that could help me in my project.

Mr L Giulianelli
Coventry

You appear to have taken on a very difficult project. The only software that I know of that will convert 2D diagrams to 3D is very expensive and runs only on £20,000 workstations. This is a computer aided design package that will read in three elevations of an object and then construct a 3D model of it — but as I say, I don't know of any equivalent PC program. Perhaps a reader does? I'm sorry, I don't know of any books that cover the subject; graphics books have enough trouble coping with the standard theory of 3D graphics!

A digital joystick

My joystick has recently broken and instead of replacing it with another I've been considering a joypad such as the Gravis Game Pad and the Suncom Command Control. Games I would like to use the joypad with include X-Wing, and Sensible Soccer.

However these games make no mention of such joypads. Could you tell me if the Gravis Game Pad and/or the Suncom Command Control pad are compatible with these games I have mentioned and future CD-ROM titles?

M Edmonds
West Sussex

The reason that none of the games you mention don't refer to a digital joystick is that as far as the PC is concerned they don't exist. The standard analogue joystick gives you smooth control that allows you to position a cursor anywhere on the screen. A digital joystick doesn't give you this smooth control, only hard up, down, left and right. Some games do let you to use a standard analogue joystick to control movement in this way. They don't bother to read how far to the left or right the joystick is, but just whether it is to the left or the right. For example, a platform game may allow you to use an analogue joystick to control movement left or right — but the character doesn't move any faster the more you pull the joystick left or right. In this situation the analogue control is just a nuisance that forces you to move the stick large distances for no real reason.

The solution is a digital version of the analogue stick which has four buttons: up, down, left and right. This is still an analogue joystick but now you get full up, down, left and right positions at the click of a button. This is great for platform games and also games where the control is limited in this way. Unfortunately, this is useless for flight sims and the like.

My advice is to buy an analogue joystick and use the keyboard for games that would benefit from a digital joystick. In an ideal world you need both — which isn't impossible, given that the Quickshot Starfighter 5 is less than £10.

Multiple Configs

If any readers are using DOS 6 and find that they are making several boot disks to suit different applications they can use the multi Config.sys file which enables different configurations to be stored in the one file. Below is the Config.sys that I use on my 486SX 25 with a CD-ROM drive:

```
Files=40
echo= 1 Normal startup
echo= 2 Cobol startup
echo= 3 Windows 3.1 startup
echo= 4 CD-ROM startup
echo = Please select relevant option 1,
                                    2, 3, or 4
timeout 5
switch config1, config2, config3, config4
exit

:config1
SHELL=C:\COMMAND.COM C:\ /P /E:256
BREAK=OFF
HIBUFFERS=8
REM ** FILES=20
FCBS2,2
FASTOPEN=0
LASTDRIVE=E
HISTORY=ON
COUNTRY=044,,C:\DRDOS\COUNTRY.SYS
HIDOS=ON
DEVICE=C:\DRDOS\EMM386.SYS
/F=AUTO /K=3072 B=FFFF R=AUTO
return

:config2
SHELL=C:\COMMAND.COM C:\ /P /E:256
BREAK=OFF
HIBUFFERS=8
REM ** FILES=20
FCBS=2,2
FASTOPEN=0
LASTDRIVE=E
HISTORY=ON
COUNTRY=044,,C:\DRDOS\COUNTRY.SYS
HIDOS=ON
return

:config3
REM ** FILES=10
DEVICE=C:\PANA\CDMKE.SYS /SBP:220
DEVICE=C:\WINDOWS\HIMEM.SYS
DOS=HIGH,UMB
REM
DEVICEHIGH=C:\WINDOWS\EMM386.EXE
                                    1024 RAM
DEVICEHIGH=C:\WINDOWS\EMM386.EXE
                                    1024 RAM
BUFFERS=2
STACKS=9,256
return

:config4
DEVICE=C:\PANA\CDMKE.SYS /SBP:220
SHELL=C:\COMMAND.COM C:\ /P /E:256
BREAK=OFF
HIBUFFERS=8
REM ** FILES=20
FCBS=2,2
FASTOPEN=0
LASTDRIVE=E
HISTORY=ON
COUNTRY=044,,C:\DRDOS\COUNTRY.SYS
HIDOS=ON
DEVICE=C:\DRDOS\EMM386.SYS
/F=AUTO /K=3072 B=FFFF R=AUTO
return
```

This is a very good way of getting round the configuration problem as it means there is no need to keep searching for the correct floppy every time you wish to load a new application. For example, I can now load Sensible Soccer and the CD-ROM drivers without the need for a boot disk.

Craig Buck
Nuneaton, Warks

Readers who are interested in making use of the multiple configuration facility in MS-DOS 6, rather than DR-DOS, should also take a look at our new technical help pages, starting on page 128, which cover this subject. Multiple configurations can do away with the need to tinker with the Config.sys to free up memory for one program, then re-insert the relevant lines to load a driver for the next — all very time-consuming, when you have to reboot after every little alteration.

Write to Mike James at Q&A, PC Review, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. Mike can only answer your queries on these pages, so please don't include SAEs.

q+a extra

● Further to G Elie's request for information on optical character recognition (OCR) software for musical score sheets in PC Review, Issue 30, we've received the following information from Mark Knight at Software Toolworks' audio development department:

"Just to let you know, with regard to the OCR question, the closest program available to do this is called Midiscan by Digital Music, on (0703) 252131. This will allow you to scan music off sheet music and convert it into a MIDI file (type 1). You can edit with the program, but you would be better off loading the MIDI file into a proper score editing program. I hope this is of some help to you."

Many thanks for that, Mark, and I too hope this is of some use for Mr/Ms Elie and any other readers interested in the subject.

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Help!

Don't Panic – check the PC Review technical reference guide (then panic)

Nobody ever said PCs were easy to use. If you're going to load software on to the machine, then sooner or later, you're going to have to get to grips with the DOS prompt and some simple file commands. The trouble really begins when something goes wrong and your programs won't load, or the PC doesn't behave in the way it should.

However, the days of worrying about the state of your hard disk, or wading through the DOS manual could be over. PC Review's technical help pages are designed to pinpoint the most common problems encountered with DOS and we'll explain, in clear English, what they mean and what you should do about them. So if there's something that's puzzling you, or you turn to jelly at the thought of making a boot disk, read on. We may have the solution here.

If you are new to PCs, or just plain bewildered by talk of boot disks, device drivers and upper memory blocks, then these pages have been designed with you in mind.

In this month's Technical Help section, we cover editing Config.sys and Autoexec.bat files, basic disk and memory problems, common error messages, and making a boot disk.

There's also a glossary of PC jargon, which should help to explain terms not only in these pages, but those which you may come across in hardware and program manuals.

USEFUL PRODUCTS

Norton Utilities
£139
Symantec
(0628) 592222
Disk housekeeping utilities, file and disk repair

PC Tools v8
£139
Central Point Software
(081) 848 1414
Disk housekeeping utilities, file and disk repair

Rescue
£129
Shareware Marketing plc
(0297) 24088
Shareware file recovery

Spinrite II
£89.99
Gibson Research
(0420) 22666
Diagnostic and treatment program for sick disks

QEMM 386
£80
Quarterdeck (0245) 496699
Memory manager for increasing conventional memory

CONFIG.SYS AND AUTOEXEC.BAT

Config.sys and Autoexec.bat are two files which are processed every time you switch your PC on. Autoexec.bat contains commands which precisely configure your PC. Config.sys contains commands which — mainly — set up your device drivers.

What are device drivers?

Anything that has been added to the basic PC box — like a sound card, a mouse, extra memory chips, or a CD-ROM drive — counts as a device for the purposes of the Config.sys file. Each device needs a driver, ie, a software file needs to be run which loads up the device so that your PC will recognise it.

A line in your Config.sys file which reads something like

Device=C:\dos\himem.sys

loads up the device driver for extended memory. Look out for the words Device= and then the location of the file.

What is an upper memory block?

If you have extra memory (more than 640K RAM) fitted in the PC, you can load some of your device drivers into the upper memory area, which is between 640K and 1Mb. For example,

Dos=high,umb

will tell DOS to reserve you some upper memory blocks for device drivers.

What is a country code?

A line stating which 'country code' you want to use helps to configure the way the machine displays the time and date — so that the day appears before the month, for example. This line will look something like this:

Country=044,,c:\dos\country.sys

044 is the country code for the UK.

What about files and buffers?

You may have the following two lines in Config.sys:

Files=20
Buffers=20

The numbers may be different: files=30, maybe, or buffers=15. Files=x determines the number of files MS-DOS allows to be open at any one time; Buffers=x determines the amount of RAM that MS-DOS reserves to hold information being transferred to and from disk. Don't worry too much about these, their workings will be invisible to you unless a program asks to change the settings in your Config.sys file when it's being installed.

How do I edit my Config.sys file?

Load it into a word processor, or type

Edit Config.sys

at the C:\ prompt. It's only lines of text, so you can change the words or delete or add lines, then save it (**Alt-F, S**, if you used EDIT to load it up). Then reboot your machine and the changes will take effect.

REMEMBER: BEFORE YOU MAKE ANY CHANGES TO YOUR CONFIG.SYS FILE, YOU SHOULD ALWAYS BACK IT UP.

Either copy it to a floppy disk:

Copy c:\config.sys a:

or copy it under another name:

Copy config.sys config.bak

Now make the changes to the original Config.sys and if it doesn't work, you can always replace the new one with the one you copied earlier.



So what is an Autoexec.bat file?

The Autoexec.bat contains a variety of DOS commands which are *auto*matically *exec*uted when you switch the PC on. DOS will look for the presence of an Autoexec.bat file and then carry out the instructions in it. It consists of lines which will tweak things such as the way your C:\ prompt is displayed, the exact layout of your keyboard — so that you get a pound sign when you press Shift-3, for example — and it will define the precise settings for the device drivers loaded in Config.sys.

For example, try this: at the C:\ prompt, type the following, exactly as it appears below:

Prompt td$_$p$g

What you should have now is, instead of boring old C:\, is the time, the date, then, on a new line, the current drive and directory as your prompt.

$t displays the time;
$d displays the date;
$_ moves the next text down one line;
$p displays the current drive and directory;
$g displays a > sign to separate your prompt from your commands.

If you put that line in your Autoexec.bat file, in the same way that you alter Config.sys as explained above, then you will always see that information as part of your C:\ prompt.

If I've already loaded the device drivers, why do I need precise settings for the devices?

The device driver simply tells DOS the device is there. Without Device=x, your x won't be recognised at all. The Autoexec.bat settings tell DOS more about how to use the devices, and can be tweaked, if you're feeling confident, to suit your exact configuration.

When you fit something like a sound card or CD-ROM, and run the install software that comes with it, nine times out of ten, the install program will automatically add these lines to Config.sys and Autoexec.bat with the correct numbers. It will probably ask you some questions about your PC set-up, and if you don't know or don't have the manual handy, there should be a default mode you can choose for convenience. If you have bought a machine with devices already fitted, the correct settings should be included already in the Autoexec.bat file.

I've heard that I can choose which Config.sys settings to use at each start-up. How do I do this?

If you have DOS 6 or later, you can choose which Config commands to activate. When you switch your PC on, the machine goes through its self-tests and after a few seconds, the words, "Starting MS-DOS ..." will appear on-screen. When that message is displayed, press the F8 key. Now you see the message

MS-DOS will prompt you to confirm each Config.sys command

You will be given a choice of pressing Y to carry out each command, or N to bypass it — useful if you want to disable temporarily the CD-ROM drive to free up more memory for a disk-based program, for example.

What are multiple configurations?

Again, if you have any version of DOS 6, you can create a Config.sys file with separate configuration blocks. At start-up you can choose which block of commands to process. So you might have a configuration block which loads the sound card and CD-ROM drive, and another which doesn't include these and leaves you with much more free RAM for those really memory-hungry games.

In very, very simple form, a Config.sys set up for multiple configurations looks something like this:

```
[menu]
menuitem=CD-ROM games
menuitem=Disk games

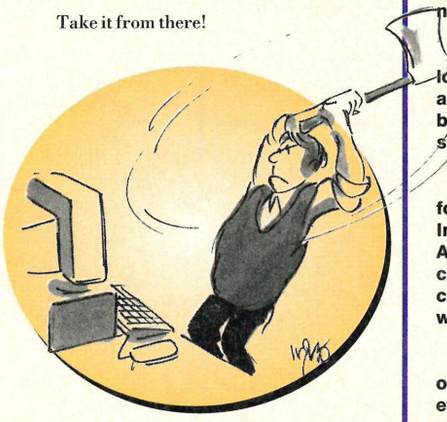
[CD-ROM games]
device=c:\cdrom\cdriver.sys
device=c:\sndcard\sound.sys
device=c:\mouse\mouse.sys

[Disk games]
device=c:\sndcard\sound.sys
device=c:\mouse\mouse.sys
```

Now when you switch on your PC, you will see the message

```
MS-DOS 6 Startup Menu
1. CD-ROM games
2. Disk games
Enter a choice:
```

Take it from there!



MEMORY PROBLEMS

One of the first stumbling blocks that many new users come across is how memory works on the PC, partly because the word 'memory' is used to mean both permanent file storage space and the memory chips, called RAM, installed inside the machine. Thus ...

When I try to run Tharg Commander, it says I have insufficient memory. But there's 120Mb on my hard disk — what's going on?

Your hard disk and floppy disks are the permanent storage places for your programs and data. Your system memory, in the form of memory chips on the main circuit board of your PC, temporarily holds programs, or parts of programs, when you use them.

A word processor program, for example, is stored on your hard disk, but when you type the command to load it, or click on its icon in Windows, however much of the word processor is needed for the program to display on-screen and function is loaded into system memory. Documents that you write with the word processor are held in system memory until you actually save them to disk.

GLOSSARY

8-bit: a bus (see below) or processor which can transfer and process data eight bits at a time. See bits, below.

16-bit: a bus (see below) or processor which can transfer data 16 bits at a time. A 16/32-bit processor, such as the 386SX takes data in and spurts it out 16 bits at a time, but internally processes it 32 bits at a time.

32-bit: a bus (see below) or processor which can transfer and process data 32 bits at a time.

3DO: a digital CD-based console system developed by The 3DO Company, intended to set a standard for interactive entertainment on CD (as per CD-i). The name is derived from a rather excruciating extension of audio, video ...

Analogue: a device capable of representation by electrical voltages rather than electrical signals.

Ansi.sys: this DOS file can be loaded as a device in Config.sys and then used to present very basic coloured block displays on-screen.

ASCII: (*pron Ass-key*) stands for American Standard Code for Information Interchange. An ASCII file is a plain text file which contains no codes or formatting commands specific to the software the file was created with.

Autoexec.bat: a file you create on your PC which is acted upon every time you switch on the machine and which tailors the PC's configuration.

Backup: to copy a file so that it can be retrieved if something goes horribly wrong. Some programs will automatically create backup files when you save a new version, often with the extension .BAK to denote what they are.

BASIC: stands for Beginners' All-purpose Symbolic Instruction Code. A programming language.

Batch file: a file with the extension .BAT consists of a series of other DOS commands, so that you can implement a series of commands in one go. A very simple batch file might consist of the following:

```
CD\
MOUSE\MOUSE
CD THARG
THARG
```

which would move you into the root directory, load up the mouse driver, move to the Tharg directory and start up the program Tharg. If you named this file GO.BAT, you would only need type GO to load up Tharg.

Baud rate: speed of transfer by a modem as measured in bits per second. See modem.

BBS: stands for Bulletin Board System. A database of programs, demos, and mailbox areas which you can phone using a modem. Facilities vary, but normally include access to the programs, the option to upload your own programs and messages and to 'chat' on-line to other users.

Bit: the smallest unit of computer data, equal to either of the digits 0 or 1 (bit actually stands for 'binary digit').

Bitmap: a way of defining a graphics image so that one bit equals one pixel.

Booting: booting up the PC is the same as switching it on and loading up the start-up programs.

Buffer: an area of memory used for temporary storage. The buffers command in the Config.sys files specifies how much RAM MS-DOS reserves for storing bits of data that can be called upon more quickly than accessing the hard disk. Printers normally contain a memory buffer into which the file to be printed is transferred, leaving the PC free for work on other applications.

Bus: the software, hardware and wiring that enables the different parts of your PC to communicate with each other. The expansion bus, for example, enables the PC to connect to external devices.

Byte: a unit of data equal to eight bits; more understandably, one character in ASCII (plain text) takes up one byte of space.

Cache: a form of buffer memory, a disk cache or cache memory is an area where data is stored and can be transferred very rapidly rather than being called up from the hard disk, floppy disk or CD-ROM.

CAD: stands for Computer-Aided Design. Technical drawing on the computer.

CD-i: stands for Compact Disc Interactive. A digital CD-based machine developed and sold by Philips with limited compatibility with other CD-ROM formats.

CD-ROM: stands for Compact Disc Read Only Memory. Physically the same as the compact discs you play music on, CD-ROMs hold up to 600Mb of computer data, stored digitally.

Centronics: the standard interface for computer printers, named after the manufacturer.

CGA: stands for Colour Graphics Adapter. A PC graphics mode, now virtually obsolete.

Chkdsk: Useful, but not foolproof, DOS command which when used regularly, will check your hard disk for file errors.

System memory is dynamic, ie, when you switch the PC off, the system memory switches off too, and contents are lost, which is why you lose any work not saved if your machine crashes. Files saved to hard or floppy disk remain stored until you physically delete them.

So, each program will require a different amount of system memory to be free. When you switch on the PC, MS-DOS will load into your system memory, as will any software used to run devices such as mice or sound cards. If Tharg Commander wants 610K free to run the program and you only have 570K left after DOS and devices have loaded, you will get a message saying you have insufficient memory.

That's all right. My PC's got 4Mb of RAM, so I must have at least 600K left.

Not necessarily. What the program is talking about is the first 640K of your system memory. This 640K is called base or conventional memory, and this is where programs will load the pertinent parts into in order to run.

The rest of your 4Mb can be configured as expanded or extended memory and your programs will make use of this as well, but they still need a good chunk of that first 640K.

How do I know how much conventional memory I have left?

At the C:\ prompt, type **MEM**, and you will see a table of conventional memory used, expanded/extended memory used, and then a line reading:

Largest executable program size

followed by a number in kilobytes, and then in bytes in brackets, which indicates the amount of free system memory.

On average, you could expect to find a figure between 535K and 600K. If you have less than 500K free out of your base 640K, then you may well have a TSR (terminate and stay resident) program running. This could be a DOS shell, a diary/calendar program, or you may have 'shelled' out of a word processor or even Windows, without quitting the program and removing it from memory properly.

If you want a more detailed breakdown of exactly which programs are using up memory, type **MEM /C** for a full list. This means you can identify the real memory chewers and remove them (see above).

What do the terms 'expanded' and 'extended' memory mean?

When a program calls for expanded or extended memory, the actual memory chips it requires are precisely the same; it's the way in which the memory is managed that differs.

Expanded memory is the older way. It works, roughly speaking, by moving 16K blocks of data in and out of the high memory area (the area between 640K and 1Mb) as needed by the program, which must be written specifically to take advantage of it.

Memory above 640K is extended memory by default on PCs with at least a 286 processor. While DOS itself doesn't use extended memory, many programs do.

With a 386 or later processor, an expanded memory manager will convert your extended memory to expanded. With a 286 or older, you need to add expanded memory on a separate board. Current versions of DOS come with both an expanded memory manager (Emm386.exe) and an extended memory manager (Himem.sys). The following line in your Config.sys file

Device=C:\[path]\Emm386.exe

makes your PC ready to run programs needing expanded memory. The word [path] just means the name of the directory where the file is kept — probably the DOS directory. If you add a number such



as 1024, or 2048, at the end of this line, then that is the amount, in kilobytes, that DOS will allocate to expanded memory.

Any that is left over is configured as extended memory, providing you also have a line reading

Device=c:\[path]\Himem.sys

at the top of the Config.sys file. This line needs to come *before* the Emm386 line.



How do I free up more conventional memory then?

There are two things you can do with Config.sys and Autoexec.bat to free up more base memory. Either remove some of the commands so that non-essential device drivers and configurations aren't loaded, or load them into the high memory area, or upper memory blocks (386/486 PCs only).

IMPORTANT: BEFORE YOU MAKE ANY CHANGES TO YOUR CONFIG.SYS FILE, YOU SHOULD ALWAYS BACK IT UP.

To take this latter method first: if the first two lines in your Config.sys are:

Device=Himem.sys
Dos=High

then, after rebooting the PC, DOS will load into the high memory area, a 64K block above 640K. This works with a 286, 386 or 486 and DOS 5 or later.

If you put the following two lines are in your Config.sys, immediately after the Device=Himem.sys line:

Device=c:\[path]\Emm386.exe noems
Dos=High,umb

then the next time you reboot your PC, some spare upper memory blocks will be created. These blocks can then be used to load device drivers into, such as

Devicehigh=c:\cdrom\cdriver.sys

in place of **Device=** in the Config.sys. This line will load this mythical CD-ROM driver into an upper memory block.

The first method is simply to disable anything in the Config.sys and Autoexec.bat that looks superfluous, and to save memory that way. However, we wouldn't advise deleting the line altogether: you might discover it was useful for something after all!

Instead, you can simply alter the lines in the Config.sys or Autoexec.bat file (see the section on editing these files, above, for exactly how to do this), so that instead of reading, say

Path=c:\dos;c:\mouse

MAKING A BOOT DISK

If you're having difficulties freeing up enough memory to run a program and you're fed to the back teeth with editing Config.sys and Autoexec.bat to no avail, an easy way out is to make a boot disk.

This is a floppy disk with just enough files on it to load MS-DOS but not so many that it eats into your conventional memory.

There are two ways to create a boot disk, one for formatted floppy disks, and one for unformatted. All you need is the floppy disk, a sticky label and a pen.

If your floppy disk is already formatted, make sure it's blank, put it in your disk drive and then, at the C:\ prompt, type

SYS A:

This will transfer three files (four in DOS 6) from the hard drive to the floppy drive. The two system files, which are probably called Io.sys and Msdos.sys, are 'hidden' and not normally visible to a directory listing (so just take our word for it that they're copied across). The third is the all-important Command.com. The fourth, exclusive to DOS 6, is Dblspace.bin, which is also a hidden file.

Once the files have copied over, your floppy disk is now a boot disk. It contains the bare minimum to run MS-DOS, while leaving plenty of memory free for running hefty games.

If your floppy disk is unformatted, you can format it and make it a system disk in one fell swoop. Put the disk in your floppy disk drive and type:

FORMAT A: /S

The Format command will format the disk. The /s is called a switch, and tells DOS to transfer the three main system files to the floppy disk, making it a boot disk.

Now take the sticky label and pen and label the floppy clearly as a boot disk.

Because the Sys and Format /s commands only transfer the fewest files necessary to boot the system, your mouse will not be loaded, nor will a sound card or CD-ROM drive be loaded with a device driver. You may also want to copy your Autoexec.bat and Config.sys files over to your newly created boot disk.

COPY C:\AUTOEXEC.BAT A:

and

COPY C:\CONFIG.SYS A:

will take care of that. Now, if you switch the PC on with the boot disk in drive a:, DOS will load from drive a: and run the Config.sys and Autoexec.bat as they appear in drive a:, so you should get both your standard start-up configuration as normal, and more free memory as well.

Note: several program manuals explain how to make a boot disk and suggest specific commands to go into the Config and Autoexec files on the boot disk — usually with regard to extended and/or expanded memory requirements specific to the program in question. Let the program manual's recommendations override your existing configuration if you want the program to work properly.

the line reads

Rem path=c:\dos;c:\mouse

Rem stands for *Rem*ark, and tells DOS that this line is only a comment, not a command. Now, if you ever want the line back, all you have to do is to delete the word Rem.

If you have DOS 6, you can choose which Config.sys lines to use at start-up, by pressing F8 when you see the line **Starting MS-DOS ...** appear on-screen after you switch on. Now MS-DOS will go through the Config.sys file line by line, asking if you want to load it or not. Again, this is explained in more detail in the section, above, on Config.sys and Autoexec.bat.

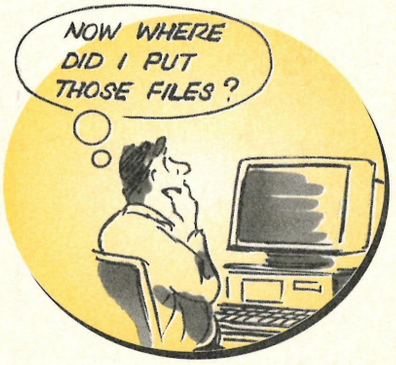
DISK PROBLEMS

Data error reading drive x:

MS-DOS has found a fault on the disk, a corrupted or unreadable area where the data is scrambled. This error message is often the first you know of potential problems with the disk, and if it's referring to the hard disk, you need to take action, such as running a file recovery program, so that any damaged files can (hopefully) be restored. The program will also mark the damaged area as 'bad' so that DOS doesn't try to write to it again.

Disk error reading drive x:, or
Sector not found reading drive x:

Or "writing drive x:". DOS cannot read the data on the disk, or save data to it, probably because there is a defective area



on that part of the disk. If it's a floppy disk, copy off as much from the disk as you and don't use the disk again. If it's your hard disk, again, try to back up any essential files — your hard disk could be about to crash.

General failure reading drive a:

The PC cannot read the disk at all. Usually this will be because the disk has been formatted for another computer such as the Apple Macintosh or Commodore Amiga. Or it may be an unformatted disk.

Non-system disk or disk error
Replace and press any key when ready

You have switched your PC on with a program or data disk in the floppy drive. Remove the disk and press a key to carry on with start-up.

Not ready reading drive A: [or drive B:]
Abort, Retry, or Fail?

You have forgotten to put the disk in the drive. Or the disk is in, but the drive door isn't closed properly. Put the disk in the right drive, and type **R** for retry.

Seek error reading drive x:

Rare, but potentially nasty. This means that the drive head can't find a track or sector on the hard disk and it can precede a major crash. Get a file recovery program and run it as soon as possible.

OTHER COMMON ERROR MESSAGES

Bad command or filename

This is probably the error message you'll see most often in DOS. It means that DOS cannot understand the command as you typed it in, and one of two things has happened. Either you have mistyped the command ("dit" for "dir", for instance), or you have typed the right command but from the wrong directory. For example, if you want to install a game on floppy disk, and type "install" from the hard disk, DOS will look in the current directory and if it can't find a file called Install.bat, Install.com, or Install.exe, it will throw the "bad command or filename" message back at you. The answer, in this case, is to log on to the drive or directory where the 'install' file is stored and then type Install.

Bad or missing command interpreter

The start-up cannot find the file Command.com in the root directory. Or it can't find one that it likes. Command.com should be in the root directory, ie, it should show up in the file listing when you type **Dir** from the plain C:\ prompt. After getting this error message, type in the path to the directory where the Command.com file is stored, eg,

C:\dos\command.com

if Command.com is in your DOS directory. If you know that Command.com is indeed in the root directory, and that you definitely haven't deleted it by accident, proceed with caution: the file may be corrupted, or it's possible there's a virus about. Boot up from a write-protected system floppy disk and investigate.

Code page specified has not been prepared

The keyboard layout, as defined by the Keyb command in the Autoexec.bat file, isn't compatible with your current character set. You can find out which charac-

REBOOTING

Press Ctrl-Alt-Del to restart the machine so that it runs through its start-up files again. If the PC has frozen up completely, press the reset button which should be at the front of the PC and labelled clearly.

GLOSSARY

CIX: stands for Compulink Information eXchange, a bulletin board and e-mail service.

CLI: stands for Command Line Interface. A system, such as DOS, in which you must type in the correct commands to get the computer to perform.

Clip art: usually found in art packages or desktop publishing programs, these are files of images saved in the program's preferred format.

Co-processor: an additional processor used for auxiliary functions, especially mathematical operations.

Command.com: This is MS-DOS's command interpreter, a file which contains the bulk of the commands for MS-DOS, and without which your PC will not function.

Config.sys: a file which you create on your PC to load up device drivers for items such as a sound card, CD-ROM drive, etc, every time your machine is switched on.

Conventional memory: The first 640K of RAM, into which MS-DOS is loaded, and where all your programs must run from.

Cpi: stands for characters per inch. Used to describe the width of character output by a printer.

Cps: stands for characters per second. Used to describe the speed of printer output.

CPU: stands for central processing unit. Generally means the processor inside your PC, but it's often used loosely to refer to that and the motherboard as well.

Digital: making use of binary digits, eg, a device, such as a computer in which data is stored as binary numbers, as opposed to analogue devices (see above).

Digitisation: the act of turning non-digital data into a form understood by computers (ie, in binary digit form). Most often used at present to describe graphics (taken from film, paper, slides, etc) or sound (taken from tape) which scanned (see below) into a computer-compatible form.

Directory: Your PC files can be grouped together in directories on a hard or floppy disk to make easier to sort them or find them. A common analogy is to compare the files with documents, stored in folders (directories) in a filing cabinet (the hard disk).

DOS: stands for Disk Operating System. A generic term which can refer either to MS-DOS or DR-DOS (see below).

DOS shell: a pseudo-graphical user interface (see below) included with MS-DOS v4 and later. This presents your filing system in tree-structure form and can make it easier to find, sort, copy and move files than typing commands at the C:\ prompt.

Dot matrix printer: printer which produces output by firing pins through an inked ribbon.

Download: to transfer data from a bulletin board system or central database on to your own computer.

Dpi: stands for dots per inch. A way of describing the density of output from the computer.

DR-DOS: stands for Digital Research Disk Operating System. An alternative and rival to MS-DOS, with some different functions, but compatible with it.

DTP: stands for desktop publishing. Software which enables the user to mix text, text effects, and graphics in a document to produce newsletters, newspapers and magazines.

DX: The DX sub-set of processors are the full-blown versions in their grade. A 386DX is a 32-bit processor as opposed to the 16/32-bit 386SX. A 486DX is a fully enabled version of the Intel 486 family.

DX2: A version of the 486 processor which does its internal calculations at twice the speed of the equivalent 486DX.

Edutainment: a term for educational games, ie, program which mix traditional gaming elements with educational content.

EGA: Enhanced Graphics Adapter. PC graphics mode which succeeded CGA. Now, like CGA, virtually obsolete.

EISA: stands for Electronics Industry Standards Association. The EISA bus is an advanced interface for use in 386 and 486 PCs which remains compatible with the older AT bus.

Electronic mail, e-mail: files sent from one computer user to another, often via a bulletin board, or over a network.

EMS: stands for Expanded Memory System. This was the first standard enabling MS-DOS to use system memory above 640K in the PC.

Emulator: a piece of hardware or software, which enables one computer to behave like another.

Expanded memory: a form of adding system memory above 640K to the PC so that it can be used by MS-DOS, and also programs written to support it.

Expansion ports, expansion slots: the connectors in the PC

ter set you are using by typing Chcp at the C:\ prompt. Now you can choose the compatible keyboard layout with the Keyb command at the C:\ prompt. How do you know which is a compatible keyboard layout? By looking it up, basically: there's a table in the DOS manual listing country codes and compatible keyboard layouts. The syntax is

Keyb UK,c:\dos\keyboard.sys

where UK is the keyboard you want to use. The last bit tells DOS where to find the file which defines keyboard layouts.

Keyboard error. Press <F1> to resume

or similar. This contradictory message means one of two things. Either it doesn't like the keyboard — the connector may be dodgy — or your keyboard may not be plugged in. If it is and you still get this message, try to get hold of a friend's keyboard and plug that in to see if it's the keyboard at fault or the connector.

Not enough space to install x

(or similar). This is pretty self-explanatory. Your disk is full, and you will need to delete some files before you can add any more.

Out of memory

This refers to system memory, not hard disk capacity. For a quick fix, restart the computer by pressing either Ctrl-Alt-Del, or the Reset button, and press F8 to confirm each Config.sys command. Then you can press N for "no" in response to memory-hungry drivers and free up enough RAM for the operation in hand. See the panel on Config.sys for more details.

In DOS 6, you can also run MemMaker to optimise the amount of memory available, but remember this will make changes to your Config.sys and Autoexec.bat start-up files.

This program requires Microsoft Windows

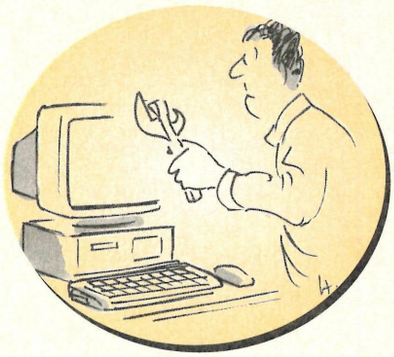
You have tried to load a program from the DOS prompt, when it needs to be loaded from within Windows, either by selecting the command in the File Manager window, or double-clicking on the program icon in Windows.

BEFORE YOU USE THE PC ...

In all the excitement of unwrapping your brand new PC it's easy to overlook things like guarantees and installation guides. In the box there will be bitty leaflets and loose sheets which care to call themselves 'documentation'.

Unless you have bought from a particularly customer-conscious supplier, these won't appear to follow any particular style or logic, but you should have the following:

- A 'manual' for the PC itself. Even if it's four sheets of paper, it will probably begin with the words "Welcome to the Bloggs 486", or, worse, "Congratulations! You have bought a Bloggs 486";
- A guide to the graphics card (may well be in with the system manual);
- A guide to the monitor, possibly with an installation disk;
- An MS-DOS manual and original DOS master disks;
- A Windows manual and original Windows master disks (if you have purchased Windows with the PC):
- A guide to the mouse (maybe);
- Mouse installation software;
- Documentation for the sound card, if the machine has one, plus installation/configuration master disks;
- Documentation for the CD-ROM drive, if the machine has one, plus installation/configuration disks;
- Manuals plus original master disks for any software bundled with the machine (eg, games, word processor, virus scanner, disk compression software, etc);
- A warranty card or documentation.



If any of it appears to be missing, demand it from the supplier. Make sure, particularly, that any relevant master disks have been included in your package. You may not need any of it now, but it could be your lifeline if the PC goes wrong ...

Gather all of the bits up and keep them safe somewhere, like the place where you keep your birth certificate, the TV licence, unpaid bills, whatever. It's worth making a note or memorising things such as the make of the graphics card (whether it's a Cirrus, Trident, etc), make and type of hard disk, CD-ROM and other major devices. This information should all be included with the documentation.

Make sure that you keep the warranty card and anything with hotline phone numbers, telephone support lines and the like on them. If the machine does need to be repaired, you will need that warranty card handy ...

NEXT MONTH

In our next issue we'll also include advice on formatting disks, using compressed drives, and how to ensure that you *never* catch a virus.

GLOSSARY

into which are inserted add-ons such as sound cards, joystick cards, internal modems, etc.

Extended memory: a form of system memory above 1Mb which can be used by programs written to support it.

Format: to prepare a disk, either a floppy disk or the hard drive, so that it will accept the relevant data (ie, format a disk on the PC and it will accept PC data, format it on an Amiga and it will take Amiga files, etc).

Game card: or joystick card. A board which fits into an expansion slot (see above), which a joystick can be plugged into.

Gigabyte: 1,024 megabytes.

Gouraud shading: a graphic technique in which colours are blended at the edges and rounded at the corners to give the impression of smoothness and speed when animated.

Graphical user interface: a system, such as Windows, in which you move an on-screen cursor and 'click' (usually with a mouse) on pictorial representations (icons) in order to make the PC perform commands.

Graphics card: the circuitry which drives the type of graphics and resolution (density) at which they appear on-screen.

GUI: stands for graphical user interface. See above.

Hidden file: a DOS file which has been marked as 'hidden' will not be displayed on the directory listing, and cannot normally be opened, moved, read or deleted.

HMA, high memory area: a 64K block of memory above 640K which MS-DOS can load into with the command Dos=high after the Device=Himem.sys line in Config.sys.

Icon: a pictorial representation of a file or command on screen.

Inkjet printer: printer which works by ejecting tiny droplets of ink on the paper.

Io.sys: one of MS-DOS's two hidden system files. Needs to be present at start-up.

Joystick card: see game card, above.

Kermit: an old, not very advanced, protocol (method) for transferring files by modem.

Key disk: some programs require you to insert a master disk in your floppy disk drive while using the program on hard disk as a form of copy protection. This master disk is referred to as the key disk.

Kilobyte: 1,024 bytes. See bytes.

Laser printer: printer which produces output in not too dissimilar fashion to a photocopier.

Low level format: Formatting a hard disk is a two-stage process: the initial low-level format prepares the disk for a high level format, after which data can be recorded. Occasionally, a low level format may be the only way to repair a damaged hard disk, although you will lose all existing data in the process.

Main board: general term for the motherboard of the PC.

Maths co-processor: a second processor in the machine, which is specifically used to carry out mathematical functions by programs which support them.

MCA: stands for Micro Channel Architecture. A new expansion bus developed by IBM, designed to bring the bus in line with faster 386 processors. However, it was incompatible with the existing expansion bus, and thus with existing expansion cards, which meant that it simply didn't catch on with other PC manufacturers and users.

MCGA: stands for Multi-Colour Graphics Array, a graphics mode on some IBM PS/2 machines.

Megabyte: 1,024 kilobytes.

Memory-resident: a program which remains in memory even while other programs are running. Programs such as desktop organisers are often designed to be memory resident so that the user can switch to them at a single keypress; virus scanners usually remain in memory so that they can scan any floppy disks as they are inserted in the drive.

MHz, megahertz: the unit of frequency at which electric current cycles through the processor. Used to describe the speed of the processor.

MIDI: stands for Musical Instrument Digital Interface. A system by which electronic musical instruments can be connected to each other and to a computer, which then controls all of them.

Mini-Tower: a squat — roughly half-height — version of the Tower, where the PC itself is housed in upright casing. See Tower, below.

Modem: stands for *Mod*ulator/*Dem*odulator. A device

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GLOSSARY

which enables you to connect your PC to the telephone line and send and receive data through it.

Motherboard: the main, or base, board for a computer circuit.

MPC: stands for Multimedia PC. A standard defining the minimum specification for developing and running CD-ROM software.

MPEG: stands for Motions Pictures Experts Group, a compression standard for video images.

MS-DOS: stands for MicroSoft Disk Operating System. The standard operating system for the PC. The operating system is the base program which enables you to use other applications on the PC, use disks and add-on devices and organise your files.

Msdos.sys: one of MS-DOS's two hidden system files. Needs to be present on start-up.

Multimedia: the use of data from different media in the same program, eg, mixing video, computer-generated graphics, sampled speech, music, text, etc. Often sloppily used to describe any CD-ROM program.

Multisync: a type of monitor which can switch between high resolution graphics modes without the need for extra software.

OCR: stands for optical character recognition. Software which 'reads' text scanned into the computer with a scanner (see below) and converts it into the original characters (when scanned, the document will be saved as a graphics file rather than a text file).

Parallel port, interface: interface for parallel signals. Generally used to connect printers.

Partition: division of a hard disk drive into more than one 'logical' drive, ie, although physically the same hard disk, different areas are assigned their own drive letter. Originally, users were forced to partition larger drives, because early versions of MS-DOS could only address up to 32Mb on one disk.

Patch: an add-on disk to a program which can be bought by existing users and which usually fixes a bug, or provides an update to the program.

Path, pathname: the 'tree' of directories and sub-directories that defines the location of a file or group of files. For example, c:\wordpro\john\sample.let is the path for the file Sample.let in the sub-directory John, in the directory Wordpro which is in the root directory.

Pentium: The name for what is logically the 80586 processor. Intel, the manufacturer, gave the chip a name rather than a number to make life more difficult for rival manufacturers. Numbers — such as 586 — cannot be trademarked in the US but, of course, names can be. Thus, while other companies can develop what is, in effect, also a 586 chip, they cannot call it a Pentium and reap the reflected rewards from Intel's high brand name visibility.

Pixel: stands for Picture Element. The smallest size of on-screen dot that can be directly controlled by the computer.

Port: a chip which controls the connection of external devices to the computer. Often used loosely to mean the socket, the interface, the back of the PC, and so on.

Processor: the chip that drives your PC, and deals with mathematical and logical operations.

Program Manager: the main screen, or 'front end' to Windows, from where all Windows operations can be accessed.

Public domain: software designed to be distributed free of charge, with no copyright attached.

RAM: stands for Random Access Memory. This is the dynamic system memory which holds programs and data while they are open and being worked on. RAM is used because it's much faster to transfer data in and out of RAM than permanent storage devices such as hard or floppy disk.

Read-only: a file or disk whose contents can be read or copied, but cannot be changed (or 'written to').

Resolution: the density of dots on-screen, or in printed hard copy (or in graphic files) which determines how detailed the picture (or print) looks to the eye. Standard VGA screens display at 640x480 pixels, SVGA at up to 1024x768. Resolution of print is measured in dots per inch — a standard laser printer prints at 300dpi.

ROM: stands for Read Only Memory. This is permanent memory, and in PCs is generally used for start-up operations — routines stored in Rom carry out the self-tests and activate DOS when you switch the machine on.

Root directory: the directory immediately under C:. See path, pathname.

Scanner: a device which 'reads' printed matter and converts it into digital information which can be stored as a computer file.

Screen saver: Spurious, but mildly diverting software which puts pretty pictures and animations on your screen if you don't press a key for a certain length of time.

SCSI: (*pron Scuzzy*) stands for Small Computer Systems Interface. A multi-purpose interface between the computer and peripherals, mainly disk drives and CD-ROM drives. Provides very fast data transfer.

Serial port, interface: an interface which uses serial connections. Mainly used for modems, networks, and some mice. Standard serial interfaces on PCs come in two versions: 9-pin and 24-pin and adapters are readily available (there's usually one in the box for any serial device).

Shareware: Software designed to be used and distributed freely on a trial approval basis, but for which users are expected to register and pay if they wish to use it regularly. Shareware is subject to copyright.

Shell: see DOS shell, above.

SIMM: stands for Single Inline Memory Module. Board with a set of memory chips for comparatively easy RAM upgrades.

Sound card, soundboard: board which plugs into a spare expansion slot and enables programs to play music and sound effects through it, coupled with a set of speakers.

Sub-directory: any directory which lies within another directory. See directory, above.

SVGA: stands for Super VGA (Video Graphics Array, see below). A general standard describing graphics modes of 800x600 and up to 1024x768 with at least 256 colours.

SX: the 'cut-down' versions of processors. The 386SX processor is a cut-down version of the 386DX, because although it processes data internally 32 bits at a time, it only accepts and transfers data 16 bits at a time. The 386DX is a true 32 bit processor. The 486SX, however, is a 486DX without a built-in maths co-processor.

System disk: a floppy disk with DOS system files on it which will boot up the machine.

System files: the files which make up the operating system of the computer.

TLA: stands for Three Letter Acronym, much beloved of computer programmers, journalists and data processing managers.

Tower, mini-Tower: an upright casing for the PC, designed to save desk space, since the PC can stand on the floor rather than sitting on the desktop.

TSR: stands for Terminate and Stay Resident, a memory resident program which you can exit from but call up typically with a single keypress since it is still stored in system memory. See Memory Resident, above.

UMB, upper memory block: smallish areas of unused memory between the first 640K and 1Mb. You can put device drivers in here by using the command DEVICEHIGH instead of DEVICE in the Config.sys file. Upper memory blocks are explained in more detail elsewhere on these pages.

Upload: to transfer files from your computer to another, typically to a bulletin board or central database.

Vector graphics: a graphics technique characterised by the drawing of geometric lines for precise scaling and movement.

VESA: stands for Video Electronics Standards Association. A group of graphics card manufacturers who have determined standards for high resolution monitors and graphics adapters.

VGA: stands for Video Graphics Array. An IBM graphics mode which has become the base standard for PC colour displays.

Virus: a program which has been specifically designed to alter the contents of other programs, with differing effects but usually rendering the programs unusable. Some viruses are also written to copy themselves on to system files, and into areas such as the file allocation table where they can lock up an entire disk.

Virus checker, virus scanner: a program that will check file contents for the presence of a virus, usually by looking for unexpected patterns in the file contents.

Virus killer: a program which will remove the virus elements from an infected file and — optimally — repair the file.

Wallpaper: the background to — usually — a graphical user interface screen, such as the screen background in Windows.

Windows: a graphical user interface developed by Microsoft for use with DOS on the PC.

Write-protect: to render a disk read-only, so that its contents cannot be altered, usually by moving a notch at the top of the disk's casing.

XA, CD-ROM XA: stands for eXtended Architecture. CD-ROM with additional video capabilities.

XGA: stands for eXtended Graphics Array. IBM graphics mode.

XModem, YModem, ZModem: three different protocols — sets of rules — for transferring data via modem. ZModem has become the preferred standard.

XMS: stands for eXtended Memory System. See Extended memory, above.

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Letters

PC Review welcomes your comments, opinions and criticism on just about any PC-related subject. We reserve the right to edit your letters if need be, and we'll also assume your correspondence is for publication unless you state otherwise. Send your letters to us at Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

To travel hopefully?

I read your review of The Journeyman Project (Issue 29) with interest, but I have come to the conclusion that I must have a different version of the game.

"The missions you get sent on are wonderfully varied," it says. Well, they may be varied in the aims of the missions, but they are very similar in how they are completed – ie, use this item with this thing. The game is just too easy – even a console owner could complete it quickly.

I do however agree with most of the review: the graphics and animation are both stunning, the sound is atmospheric and the whole game gives a good impression, but lurking under the veil of the sound, graphics and presentation is a very easy and linear gameplay.

I completed it in two days and that was playing casually. When you pay £40 on a game you expect it to last for a while. In your review of Inca 2 you said its appeal was short-lived, and it costs £55. When you can't afford many games – say, one every two to three months – you have to be careful that the game you buy lasts a fair amount of time. I don't call two days very fair at all.

There seems to be a trend with new CD-ROM games, that the 650Mb seems just full of graphics and sound. Just look at the CD-ROM reviews in Issue 29: The Journeyman Project – very little gameplay, ditto with Inca 2, Iron Helix, Quantum Leap and Critical Path; Rebel Assault also suffers from this lack of lastability.

I also agree with your views concerning the high spec machine needed to run The Journeyman Project. I have a 486DX 33MHz and a Panasonic CR562, When I first got the game I had 4Mb of RAM but I had ordered another 4Mb. What a difference the extra megabytes make. With only 4Mb, some parts of the intro didn't even play, and the gaps in accessing from the disks were at times more than one minute, it got to the stage where I thought the game had crashed. So do not buy the game if you only have 4Mb, unless of course you don't mind long waits.

Kerry Hoskin
Polperro, Cornwall

An amazing romp

I bought The Journeyman Project (after reading your review), to run on my Viglen 486DX-33, 16Mb RAM, 300ms Sony CD-ROM, but at first found the experience soul-destroying due to slowdown. However, I have managed to speed things up by about 300% by removing the disk cache software Smartdrv supplied with DOS 6.

I couldn't believe the difference. It could be that I have nearly 630K of free base memory as a result, or on the other hand it could be that Smartdrv was causing a bit of a wobbly.

Now I can't recommend the game enough – it is brilliant, awesome, sheer genius: a classic cross between 2001, Silent Running, Alien and Wargames.

Karl Reynolds
AT&T
Chertsey, Surrey

As a disk cache, Smartdrv is intended to speed up programs which access the hard disk/CD-ROM a lot, but some programs do include a recommendation that you do remove the program first, so as to improve performance.

... I get home, install Cardshop Plus, play around for a bit and only then do I notice that it will do just about anything — except PRINT. Well, what a useful thing to have, eh! OK, so you did mention this on the second page of the instructions, but are we really meant to read the entire magazine before buying it? What do you guys do in your spare time? Sell chocolate fireguards? ...

Mrs Pia Saunders
Selby, Yorks

The fourth bridge?

Flicking through the pages of my son's magazine PC Review, I was surprised to find a review of Bridge Champion, reviewed by a bridge player!

I wrote to Oxford Softworks after purchasing their first attempt informing them that the program was seriously flawed. I had hoped their third and fourth try would be an improvement, but apparently not. You mention Micro Bridge Companion for the PC in your write-up. Could you please advise me where I can purchase this program?

Thanks for an excellent review.

Mr S Hamblin
Tenbury Wells, Worcs

Micro Bridge Companion is distributed in the UK by Mindscape as part of the Lifestyle Software series. Contact Mindscape on (0444) 246333 for details.

Magazines on CD

In reply to David Evans' letter in Issue 29 I would like to say that I think he has some very good ideas. However, his idea of a magazine you can install on to your computer and interact with is not as far away as five to 10 years. In fact, such a magazine has been in the pipeline for several months and is due to be available very soon. It won't arrive through your door on a "nice shiny CD" but will instead be available on a few 3.5" HD disks.

An on-screen mag such as this will provide full-sized 256 colour screen shots, Sound Blaster Pro compatible audio effects and background music, and easy to use menu systems amongst other features, all for the readers' enjoyment. If things progress the way the producers want it to then animated clips of some games reviewed within its pages will also be present. So you see, Mr Evans, the magazine of the future is just around the corner.

As for a mag in CD format, well, again, if all goes well then this should be available in a year or so. Look out for an advertisement within these very pages!

Chris Pelling
Barton, Torquay

Quality demos wanted

In reply to David Evans' letter (Issue 29), I also feel that other than the occasional Apogee and Id gems such as Duke Nukem and Doom, the quality of shareware programs on cover disks is fairly low. I would much prefer to have quality demos of full price games and applications, and screenshots and soundtracks.

Alex Moore
Weymouth, Dorset

Miniature games

Cover disk demos are OK, but seem so stripped down as to be little more than a slide show. Would not complete, but small, miniatures of game be more successful? In the case of a flight sim, this could be, say, one aircraft, limited fuel, a few targets, a limited war zone, but otherwise complete and playable.

Gray Hodgkinson
Christchurch, New Zealand

Discussion group

As a subscriber to your magazine, could I suggest that as you obviously have an account at CIX, you should start a conference for the discussion of PC Review.

Simon Hillier
shillier@cix.compulink.co.uk

More Comms please

I think it is time for another feature on communications. I am uncertain as to the amount of time the PC Review office uses CIX but I for one use it almost every day!

I am a member of Compuserve, which has lowered its connection charges by 40%, and numerous amounts of BBS dotted around London and the south of England. To someone unfamiliar with comms it may seem very expensive, but not if you created a guide on how to use comms economically. Many existing users find, with comms, that they are opened to the *true* benefits of computers, ie, information.

What do you think?

Terry Leetleeb@cix.compulink.co.uk

Striker hassle

I have been having problems with the game Striker. I had played the SNES version of the game and found it brilliant. The conversion itself is good, with big sprites, and good, if not better, player action. But I became suspicious opening the box, because it looks just like the SNES box, and even has rave reviews on the SNES game. Inside, one finds a black and white manual, not like the glossy SNES one and a 720K disk. Where's the registration card? The disk must be compressed, I thought, but no, it isn't. £20 is a lot of money for this.

When you play, a screen comes up asking you to choose between the 16 or 256-colour option and you need to have the game disk in the drive. Why? Is this a copy protection device? What happens if my disk is ever corrupted? Can I send it back, and will it be under warranty, since there is no registration card to allow for that?

If Rage wanted to copy protect the game, why not build a method in? I know some people don't like searching for manuals, but what about searching for disks? At least if you spill coffee on the manual you can still play the game.

After getting into the game, 256-colour only will work if you type Striker C, or Striker D, when starting the game. The Read.bat file even says there may be problems with video card compatibility.

In 256-colour, the sprites are great, but after one game or pausing to make a substitution, the screen blanks out when you go back to the play. I have a common Trident 8900C card and in 16-colour there are no problems, except that it crashes very occasionally. Why?

If it did not have these faults it would easily equal or better the SNES version, apart from the fact that it does not have indoor six-a-side soccer and the pitch could be more detailed.

Richard Blanchard
Aberystwyth

> **... But, but, "what about those really useful DOS utilities?" If I loaded all the DOS utilities that have been freebies on PC magazine disks in the last 18 months, I wouldn't have the space to load your "massive over 2.5Mb" cover disk on to my not insignificant 120Mb hard drive ...**
>
> *Mrs Pia Saunders*
> *Selby, Yorks*

We have shown your letter on Striker to Rage Software, and forwarded you the company's reply. Extracts from Rage's comments appear below:

"The PC version is packaged in a standard sized box which we use for all disk-based versions of the game. Using the same box and cover design makes the product easily distinguishable, no matter what the format.

"The use of SNES reviews on the packaging was dictated by the timetable for producing the packaging. At the time that the boxes were printed no PC reviews were available.

"The PC version does use compressed files, which is why it fits on to a single 720K floppy disk. The files are decompressed as they are loaded in and used by the program.

"The decision to use a key disk as protection, rather than a manual-based key word entry system, was based on the ease with which people can photocopy manuals."

Missing Galaxy

What happened in the sound card feature in Issue 29?

Where was the bit about Sound Galaxy Pros? They are good cards, very Sound Blaster and Sound Blaster Pro compatible. The Nx Pro16 even emulates up to six other types. The card also has the wherewithal to run three different types of CD-ROM. It can even produce Wave Synthesis with the Wave Power card.

The Wave card add-ons were fairly rudely treated in the article. The emphasis seemed to be that if the Wave is not in-built then it's not worth the mention.

Secondly, would I be right in my suspicion that Cal Jones can, on occasions, be seen on Games World as a Videator?

Damon Howarth
Nelson, Lancs

Yes, Combat Cal the Videator (as seen on Sky 1's Games World programme) and Cal Jones the PC Review writer are one and the same. Brings a touch of class to Games World, don't you think?

For more (indeed, much, much more) on the sound card feature in Issue 29, see over the page.

Playing God

I love god games (and driving games, but that is beside the point). I have read every issue (except Issue 2) of your excellent magazine and have not yet seen *one* feature on god games in 29 issues. Why not? I feel this would be an appropriate time to have one, just after the release of SimCity 2000.

Also, do you think it would be too much to ask to have a small column with yet-to-be-released games and their release dates in each issue?

Another point: how do you get your screen shots as I would like to have several print-outs of SimCity 2000 and other games. I have seen a shareware utility called Screen Thief: would that do it?

> **... "But," I hear you cry, "we also included an intriguing and addictive Mother of all Battles." Do me a favour lasting the four days of game time before a save became a challenge in itself (I failed) ...**
>
> *Mrs Pia Saunders*
> *Selby, Yorks*
>
> *Can we take it, Mrs Saunders, that this particular cover disk didn't do a great deal for you?*

Do you remember Issue 1, and the review of Civilization? Do you remember the rating you gave it? Seven, yes, seven! Now, looking at the Top 100 Games 1993, in issue 25, I see Civ was eighth, yes eighth. After two years in your top ten. All other games there got a nine, I'm sure.

Don't you think you should amend Civilization's score to nine? I mean, in your own words, "It's hard to see how Civilization's appeal will ever diminish." That was the oldest game there. Soon Civilization 2 will be out, do you think it'll be the first ever 10 game? I don't, but maybe it might make 9.5.

Tom Giles
Hamsterley Colliery
Newcastle

Top of the pops

I am a great fan of your magazine and I buy it every month. My favourite parts are probably Cal Jones' reviews, as I think she has a definite skill for writing, and can change styles from humourous to deadly serious in the same review, in the space of a few lines. I was also thankful when you released a list of the games you had reviewed (Issue 27), as I feel influenced by the marks you give games – I have bought X-Wing after the eight it was given, and I am thinking of getting Syndicate. I thought I would send you a list of my best games, not because I think you might be interested, but because we have just bought Ami Pro, and I am experimenting with the chart feature!

You may have noticed I have included Robin Hood: Conquests of the Longbow, and you may have never heard of this game, but it is a very good adventure game by Sierra, and for anyone who has 7Mb of disk space and a couple of months free, it is well worth taking a look. The backgrounds are drawn superbly, and the characters move very smoothly, even at 8MHz. It has got a very American sense of humour, and the speech is a beautiful American accent.

I hope you have enjoyed reading this letter: it has shown me how to use the table function on Ami Pro.

Ben Stephenson
Crowthorne, Berkshire

Thank you for your comments, Ben. I only hope we have reproduced your chart as beautifully as you designed it in your original letter. Incidentally, we reviewed Conquests of the Longbow in Issue 3, and rated it 7.

Game	Company	Comment	Mark	Alternative
Day Of The Tentacle	LucasArts	Brilliant, funny	9	Robin Hood
X-Wing	LucasArts	Action packed - wonderful sound	9	Don't know
Civilization(Amiga)	MicroProse	Attention to detail is astounding	8	SimCity
Wolfenstein	Apogee Id	Smooth, violent, and only five pounds	8	Doom (Doom runs far too slowly on my 16MHz 386SX)
Commander Keen 4	Apogee Id	Cheap and fun	7	Duke Nukem
Duke Nukem	Apogee	Addictive, not as good as Comm. Keen	6	Commander Keen 1, 4, or 6
SimCity	Maxis	Getting on a bit, but still 'god' fun	7	Civilization
Magic Pockets	Bitmap Brothers	Bright, big sprites, not easy, but not too hard	8	Zool
Robin Hood: Conquests of the Longbow	Sierra On-Line	Nicely drawn, good sound, tricky to complete, sense of humour is very American.	8	Day of the Tentacle

We've always held our hands up and admitted that we were pretty hard on Civilization in Issue 1, and we've been waiting ever since for an excuse to get the egg off our face and wriggle out of the situation.

This I think we have managed to do in this very issue (see page 79 for the review of Civilization for Windows).

So thank you for what now looks like a suspiciously slickly-timed letter, Mr Giles.

In answer to your other questions: yes, we'd like to do a feature on 'god', or empire-building, games sometime soon (though after our utter inability to predict how durable Civilization would be, perhaps we'd better let the dust settle on SimCity 2000 before we make any rash statements there!).

A small column of forthcoming release dates is also something we've considered. The problem, though, is that software release dates are constantly being changed. Given the rate at which PC game releases 'slip' (an industry-wide euphemism for 'delayed'), we would hate to be held to account for most of our forthcoming releases section becoming fiction within days of the magazine coming out.

And finally ... Screen Thief would certainly capture your screens in SimCity 2000, in .GIF, .PCX, .TIF or .BMP formats (and, of course, you can try it out on this month's cover disk).

To print them out, you should import the picture files into an art package and use the print facility from there.

Write to PC Review at Priory Court, 30-32 Farringdon Lane, London EC1R 3AU, or contact us by e-mail: pcreview@CIX.compulink.co.uk

Competition winners

Remember our brilliant Spot the CD competition in Issue 28? Here are the winners — and the answers ...

Answers: A) 10, The 7th Guest: B) 1, Day of the Tentacle; C) 3, Dune; D) 7, Rebel Assault

Winners: first prize of Double Fusion multimedia upgrade kit goes to Mik Porter of Reading, Berks.

Second prize of a Pro Sonic 16 sound card goes to John McLoughlin, of South Croydon, Surrey.

Runners-up prizes of Critical Path plus Quantum Gate CD games go to D Fake, of Portchester, Hants; Thomas Knudsen, of Sondre Stromfjord, Greenland, and James Giblin, of Wallsend, Tyne and Wear.

Ultrasound corner

Rarely has an article in PC Review generated quite such a spirited response as our appraisal of the Gravis Ultrasound card in Issue 29. Many of you feel that our emphasis on some of the potential problems with installation was harsh and that we didn't give enough weight to its undoubtedly advanced features. A selection of the correspondence received appears below.

Not an SB emulator

The Ultrasound was criticised for having no games support. Actually there are more games released in the last six months that use the GUS fully than those that used all of the Sound Blaster 16's advanced features. Those games that do support the GUS tend to put Sound Blaster emulator cards to shame.

It was also criticised for providing poor Sound Blaster emulation. The article implied that a GUS owner would want to use Sound Blaster emulation most of the time. This is simply not true. I chose a GUS because I wanted the best possible sound, for the money.

It would be such a waste to use the Ultrasound as just another Sound Blaster emulator. It can be argued that this is the Ultrasound's strength – despite the Sound Blaster 16's good features, in games it will always be used as a Sound Blaster Pro. When the Ultrasound is supported it normally is used more fully.

In your review of Doom (also Issue 29), the TechSpec at the end only lists Ad Lib and Sound Blaster support. Any die-hard Doom fan knows that the only way to play it is with an Ultrasound. Compared to a Sound Blaster emulator card, the sound is clearer, the stereo effects are more realistic and the music is dramatically better. I've played it with both, so I'd know.

Nickwt <nickwt@aol.com>
Via CIX

Plenty of drivers

When you state that most of the time a GUS user will use the Sound Board Operating System (SBOS), this is a big mistake. SBOS is only a temporary solution for GUS users. This is not an optimal solution since the GUS does not have hardware support for the FM-based Sound Blaster chip.

The Readme file has information about the GUS, and which drivers to use with different games:

SBOS: Sound Blaster emulator with very different results.

AIL: GUS drivers for the games using the well-known Miles drivers.

GUSDRV: drivers released by Sierra On-line, for its games using general MIDI and digital effects. (When before has a publisher released new sound drivers for its old games? Thank you, Sierra!)

GAIL32: new Miles drivers for 32-bit protected mode games, eg, SimCity 2000, IndyCar, Syndicate.

Mega-Em: this superb emulator that makes the GUS both a Roland SCC-1 and a SoundBlaster DAC.

I will admit that setting up the GUS can be a little bit hard for a new user and that is certainly correct, but it isn't much harder than getting Falcon 3 working by fiddling with EMM386.

Jo Haavar Slangsvold
Norway

Not for the illiterate

Software prize winner!

I am sure you are receiving lots of mail, some constructive and some less so. I'd just like to add my two pence worth, I guess.

At this point in time the Gravis Ultrasound is the most feature rich, flexible sound card on the normal user market. At bangs for the buck it is unsurpassed. Only uninformed people will disagree with this.

It is very true that this is not a card for PC illiterate people, and if you do not have access to the Internet or a good Bulletin Board system, you will experience some frustrations with getting things to work. Most people can get this access these days, and many outlets that sell the GUS get their hands on the latest drivers and emulators anyway.

For those who have access to these resources, they have the best quality sound card for games and music you can put in a PC.

Gravis has done an extraordinary job providing various emulators and patches to allow the GUS to work with almost all existing games. In fact I am aware of only three games, all from Sierra, that do not provide any level of support for the GUS.

With those games that use the GUS for music the results are truly magnificent. Two games that show what actual native GUS support looks like are Epic Pinball and Doom. Nothing compares to the sound you get out of the GUS with these two games.

I have seen many other games that provide GUS support via the Ultramid interface and Mega Em. Sound Blaster users hang their heads and shuffle their feet and then use the only comeback they can find, "Yeah sure, but it doesn't work for all games, does it?"

Well no, just like a SB16 doesn't work properly with all games due to a slightly flaky SB Pro stereo emulation. That doesn't mean that a vast number of games sound fine, with a lot of them sounding significantly better. An example is The 7th Guest. Gravis patched this to utilise the GUS, then showed the original developers. It blew their socks off! They had never imagined their own product could sound so good. A good endorsement.

Master of Orion is another example. Myself and a friend own a copy. It sounds good with Mega Em, but someone patched it to use Ultramid. He turns the music off when he plays at home with his SB16, but he turns my stereo UP when he plays it with my GUS.

I'm happy with my purchase. It can take a bit of fiddling to get the GUS going properly, but when it is running, take it from me, it leaves the others eating its dust!

Peter Enzerink
Via CIX

Interesting options

I agree with the Gravis comments. I used one for some time, when it worked it was superb, it played 7th Guest beautifully. Sadly it did not always quite manage to emulate the Sound Blaster very well.

On the other hand, the software Mega Em provided interesting options, not the least of which was the ability to enable the Ultrasound to be both a Sound Blaster and a Roland in one go.

Damon Howarth
Nelson, Lancs

Fast car, first gear

How did you ever rate the SB16 over the Gravis Ultrasound?

I cannot understand the reasoning behind it: the specification for the GUS is much better. If this is correct you must have rated the cards on ease of use factors. I must say that most software titles are harder to configure and install.

This would mean that you rated it on its software compatibility: most new software supports the GUS in native mode and lots of companies have given their support to it.

Yes, SBOS is rubbish, but if you have a fast car why drive it around in first gear?

Thanks — keep up the good (well 99% of it) work.

J Hauxwell
Via CIX

Doomed to failure

Your problems with Doom were caused by the fact that DOS4GW does not support high IRQ, not for *any* sound card. The Doom installation program was (and is) badly designed, and it warns you about the fact if you try to install a SB Pro on IRQ 9, but Ultrasound set-up is read from the environment variable, and the set-up program does not check it.

On the first release ID forgot to include a file which included the MIDI instrument information for GUS. It was released immediately after the 0.99 version went out, but you saw people having problems with the GUS support on Doom for months. Of course, version 1.1, the first commercial version, does not suffer from this problem.

You're right about the emulator business: SBOS is flaky, GM-emulator does not work with protected mode software, and not every game supports AIL drivers. Still, if it comes down to the dreaded moment when only the SBOS works, I'd rather turn on the CD than listen to the FM 'music'.

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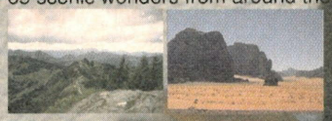
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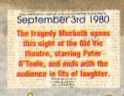
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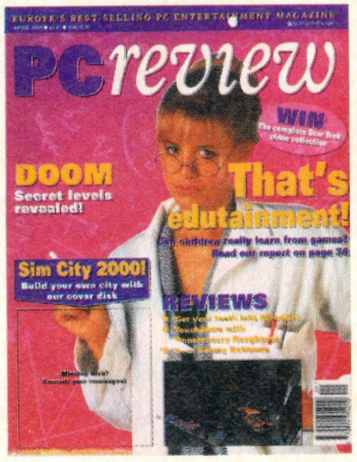
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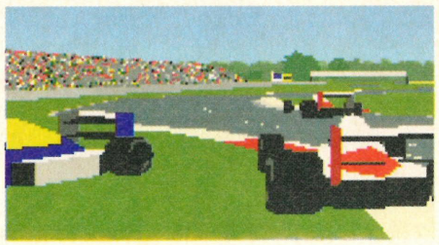
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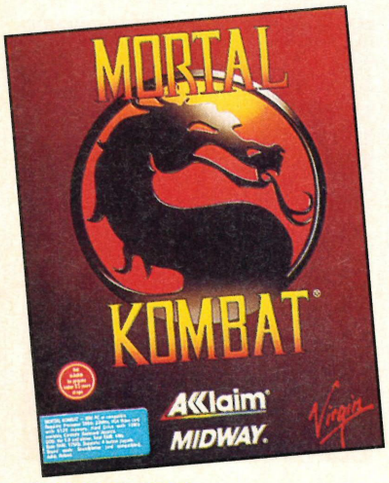
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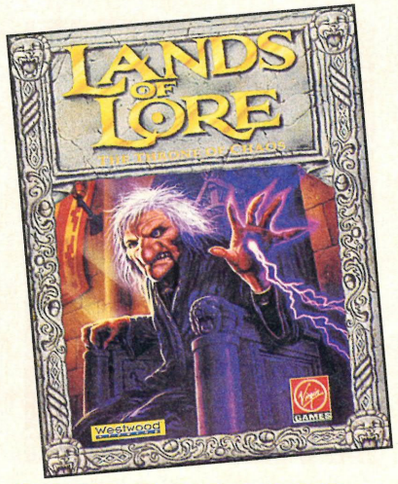
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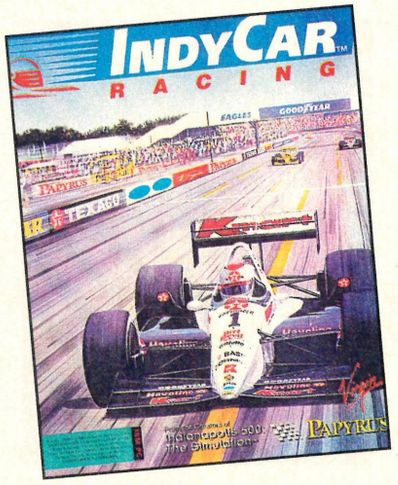
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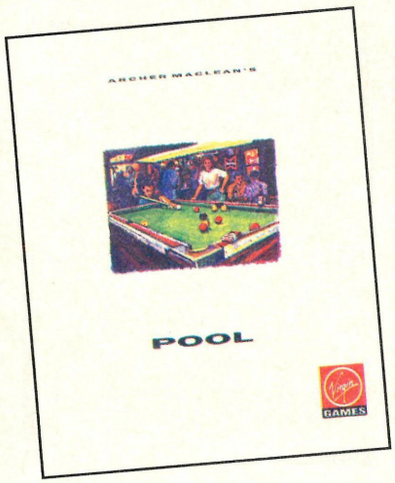
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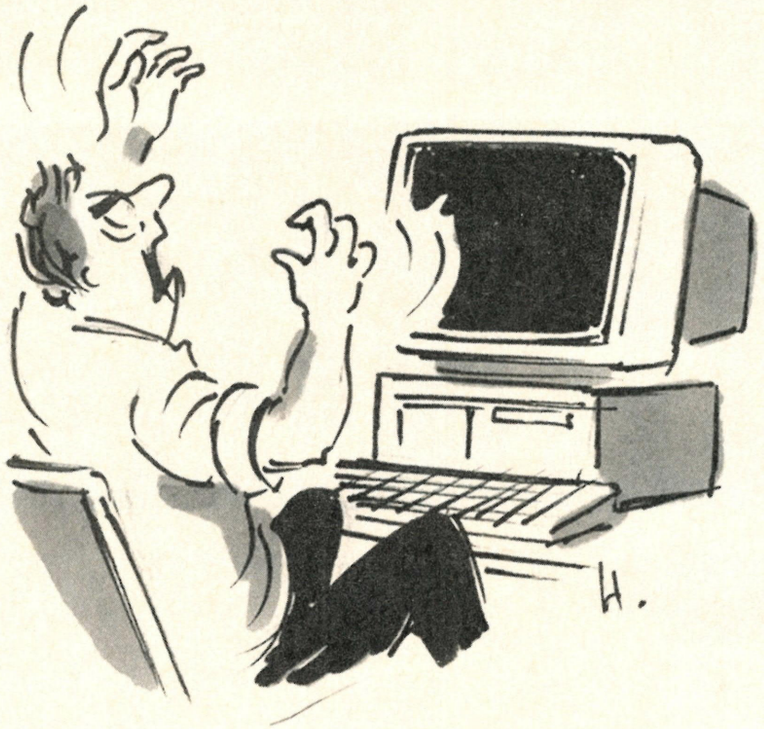
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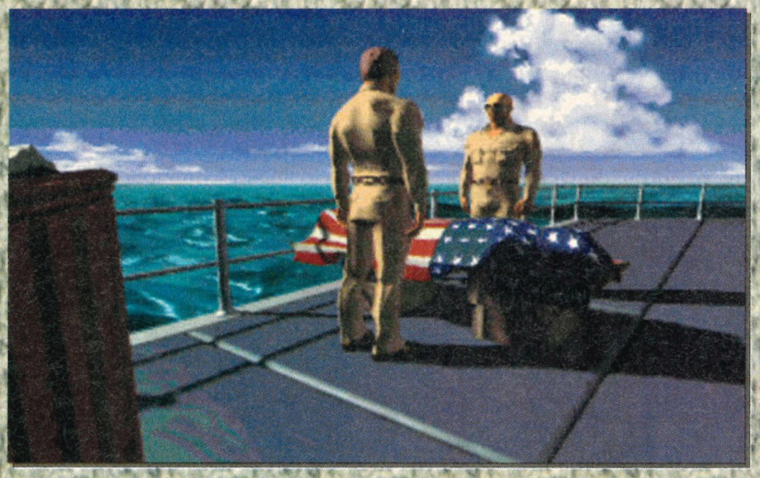
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And ...
Your chance to win the fastest printer in the world (yes, really!)

NB Contents may be subject to change

Why is the PC such a pain in the butt?

How can the PC be the future of interactive entertainment, when it's so difficult to use? You don't have to edit the Config.sys, configure your system memory or set up your sound interrupts on a Megadrive or a 3DO, so why the hell should you have to do it on a PC? PC Review looks at some of the ways in which PCs could be made genuinely user-friendly and some products being developed which could change the way you use your machine.

Make your own videos

Discover the potential of video editing. There are an increasing number of packages on the market which are affordable, and offer sophisticated facilities for capturing and editing video images on your PC.

Plus

- Windows 4 — Microsoft's forthcoming Windows upgrade promises to shake up DOS once and for all.
- Sound cards — the new boards on the block.
- NEC triple speed CD-ROM drive reviewed.
- How to avoid viruses, and how to use compressed disks — a quick users' guide in our Technical Help section.

PC Review June 1994. In the shops on May 15th. Place an order with your newsagent now, or you could miss out.

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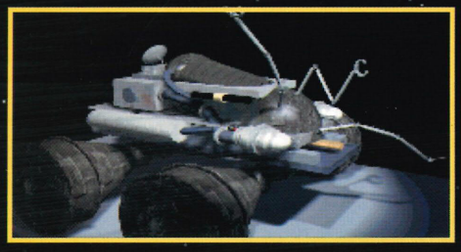
Develop agriculture, mining and manufacturing to survive, and then invest in research and recreation facilities to make life more comfortable for your colonists - hopefully they'll be around long enough to enjoy it. Because, in the end, the decisions you make will determine the destiny of mankind.



A virtual reality interface lets you build and control the growth of your colony.



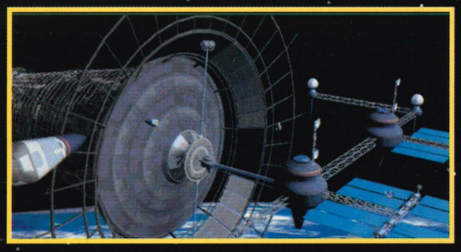
The command structure allows you to analyze the overall status of your colony.



You can build and operate a large variety of robots, including Explorer robots, Miner robots, and Bull-dozer robots.



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Fuel up on Jupiter's hydrogen atmosphere.

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Since you've been in the bath Prince Luxor has been captured and is now held by Wolfheart.



What are you going to do about it?

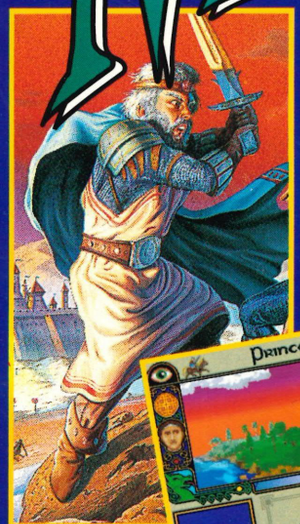
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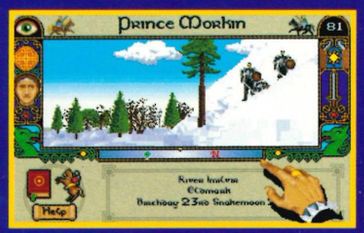
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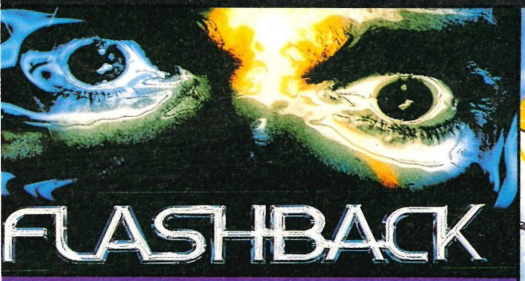
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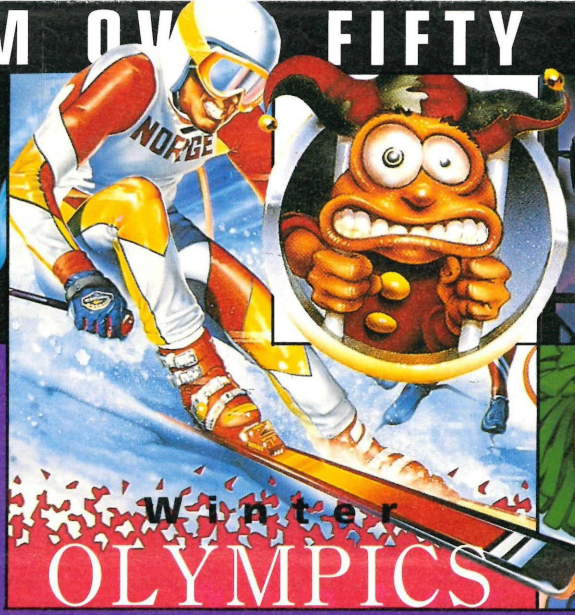
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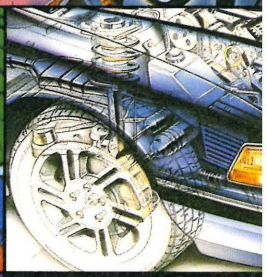
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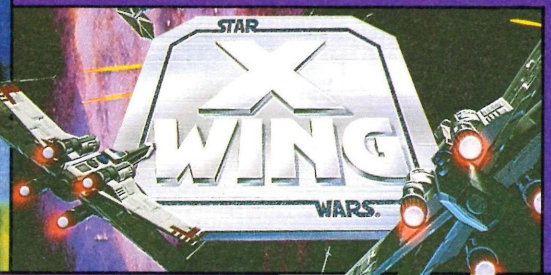


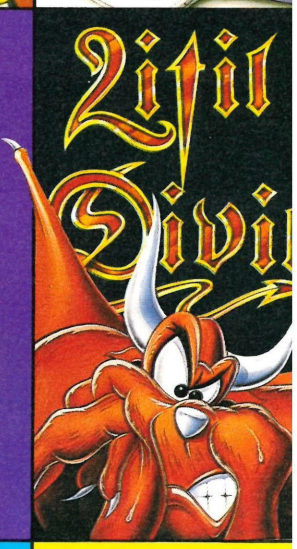




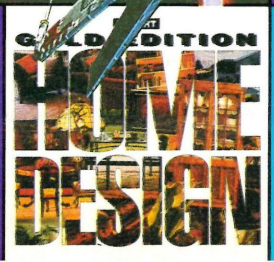
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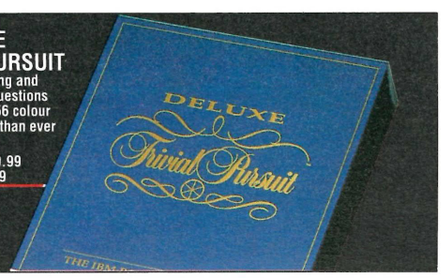
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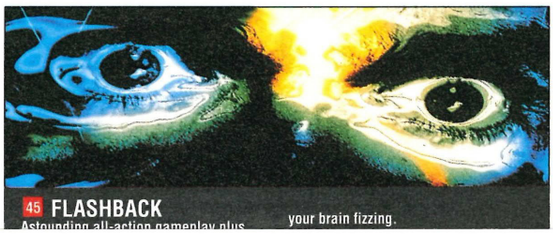
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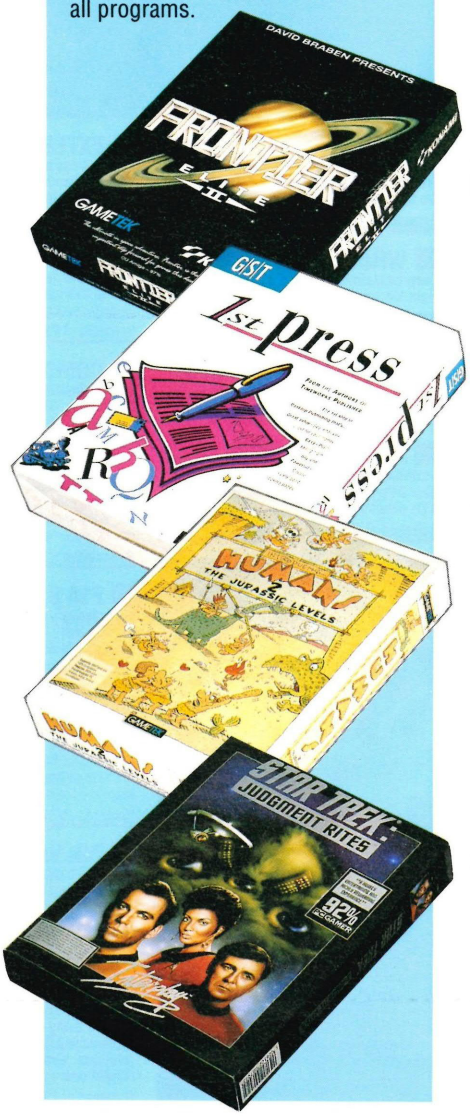
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