PC REVIEW

OCTOBER 1994 • £3.95 $8.95 DM19.00 17.95 HFl

COLONIZATION

THE GRAVIS ULTRASOUND COLLECTION ON CD

MICROPROSE'S TRANSPORT TYCOON

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IF YOUR CD-ROM IS MISSING, CONSULT YOUR NEWSAGENT

EXCLUSIVE REVIEW! Sid Meier surpasses Civilization





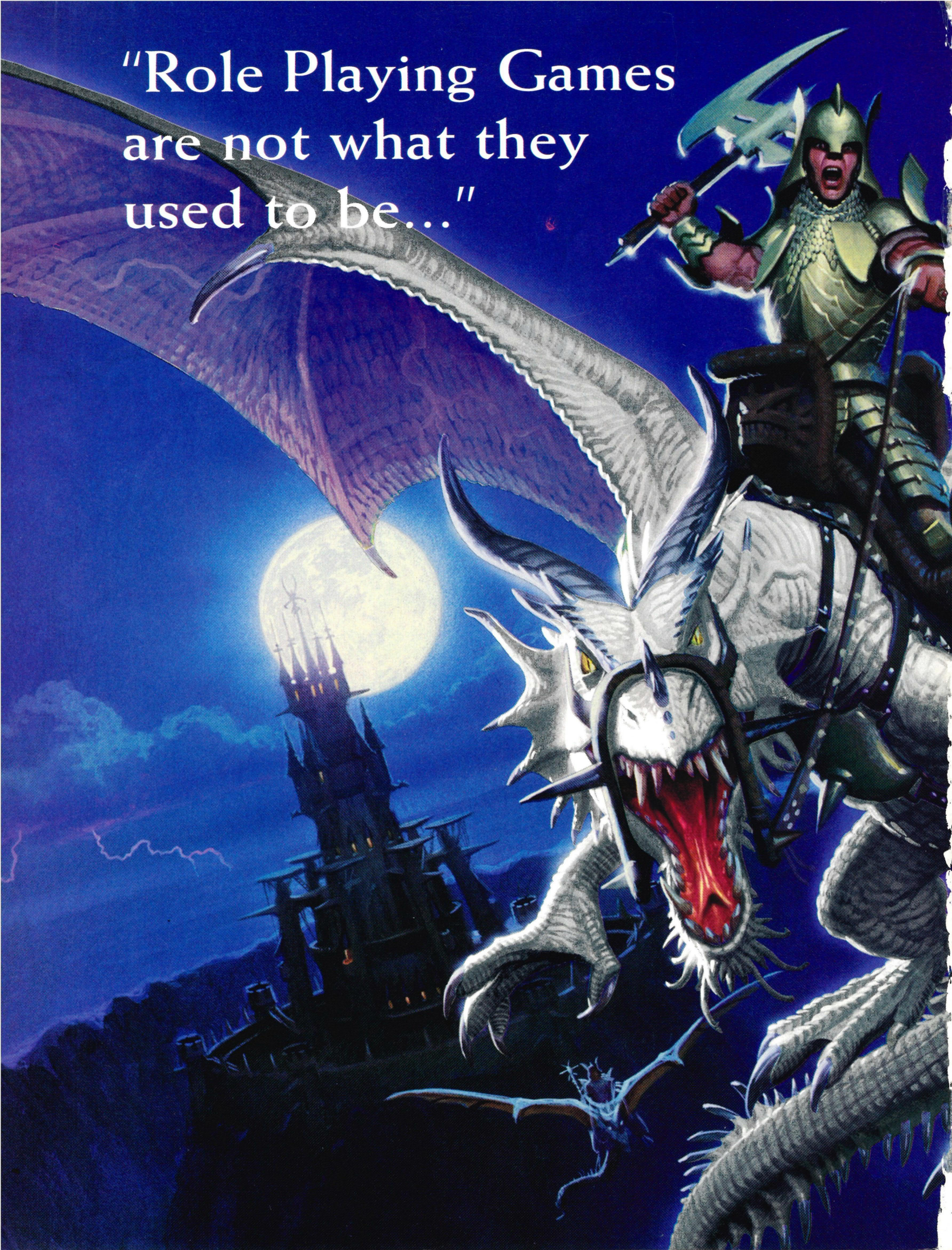
MUSIC SPECIAL!

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REVIEW • Issue 36 COLONIZATION • MUSIC SPECIAL OCTOBER 1994


"Role Playing Games
are not what they
used to be..."

Mike Singleton's LORDS OF MIDNIGHT

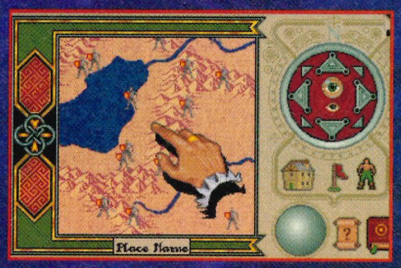
In partnership with Domark, legendary games designer Mike Singleton has produced the most visually impressive PC Role Playing Game of all time. Lead the Lords of Midnight against the Black Citadel of Boroth the Wolfheart across beautiful real time 3D generated landscapes and alongside a huge cast of interactive characters.



Stunning real-time 3D fractally generated landscapes in full first person perspective.

All the action takes place in a diurnal environment so that the sun sets and rises, the seasons change, winter comes and the snow falls, all of which will affect the progress of your armies.

Move and Touch game environment gives you access to an Interactive Book, including an Almanac and Bestiary, the Traveller's Guide, an in game map, information on Heroes and Villains, an updated calendar and diary and the structure of all your Fellowships and Alliances.

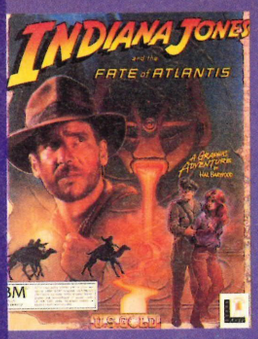




Advanced artificial intelligence allows you to communicate with and control a large cast of superbly 3D animated characters.

Vast playing area that includes mountain ranges, valleys, beaches, estuaries, islands, plains and forests, all shown using glorious 3D graphics.

DOMARK®



"Fate of Atlantis is simply brilliant." **PC Review 9/10.**

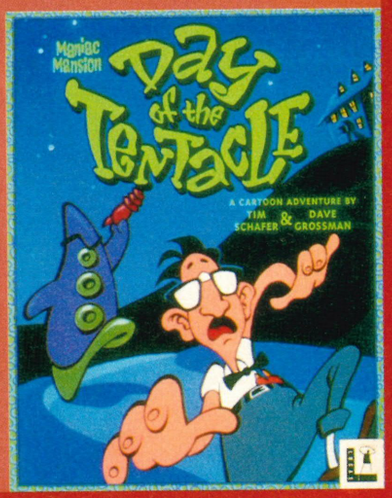
This best selling graphic adventure tests your grey matter with some of the toughest puzzles ever. As enemies prepare to blast the civilised world, one man stands in their way. The man with the hat . . .

Available for PC & Compatibles and Amiga (1Mb).*

INDIANA JONES® and the FATE OF ATLANTIS™

"If a better adventure game shows up this year, I'll eat my trousers." **PC Review 9/10.**





A sequel to the award winning classic 'Maniac Mansion®', this wacky cartoon adventure has set new standards in graphics and sound, with over 100 zany effects. See it. Hear it. Play it.

Available for PC & Compatibles and PC CD-ROM.*

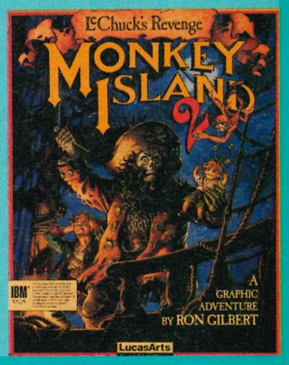
MANIAC MANSION® DAY OF THE TENTACLE™

Just when you thought it was the end for LeChuck, he's back to seek revenge! This comic family entertaining sequel to Monkey Island with 256 colour VGA graphics will have you laughing so hard milk will come out of your nose!

Available for PC and Compatibles and Amiga (1Mb).*



". . . lashings of hilarious animation . . . superb graphic detail. This is the only reason you need for owning a PC." **PC Format 91%.**



MONKEY ISLAND 2 – LeCHUCK'S REVENGE®

100%

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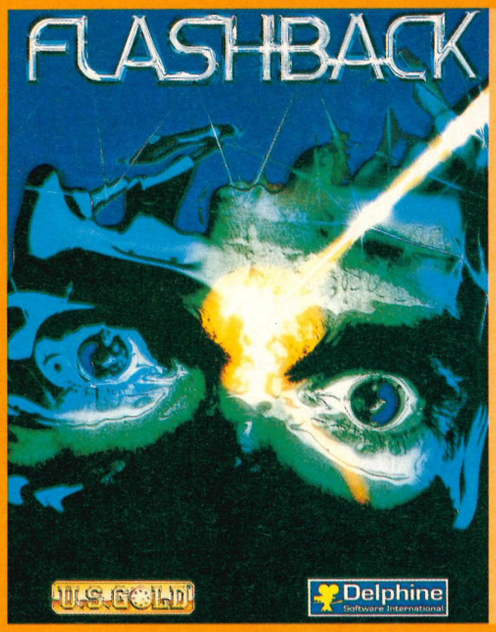
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Screen shots are intended to be illustrative of the gameplay and not the screen graphics which may vary considerably between formats in quality and appearance and are subject to the computer's specifications.





Experience a milestone in action adventure. Fast moving action and incredibly rich adventure is brought together in a unique combination of superb graphics, animation and music.

"This game has no equal in its field."
Gamesmaster.

Available for PC Compatibles and Amiga (1Mb).*

FLASHBACK

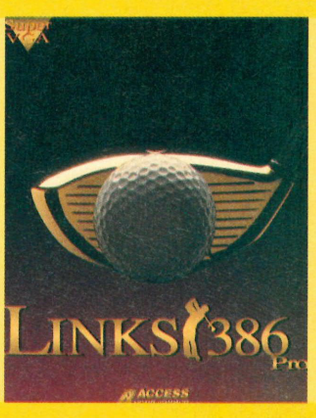
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Issue 36

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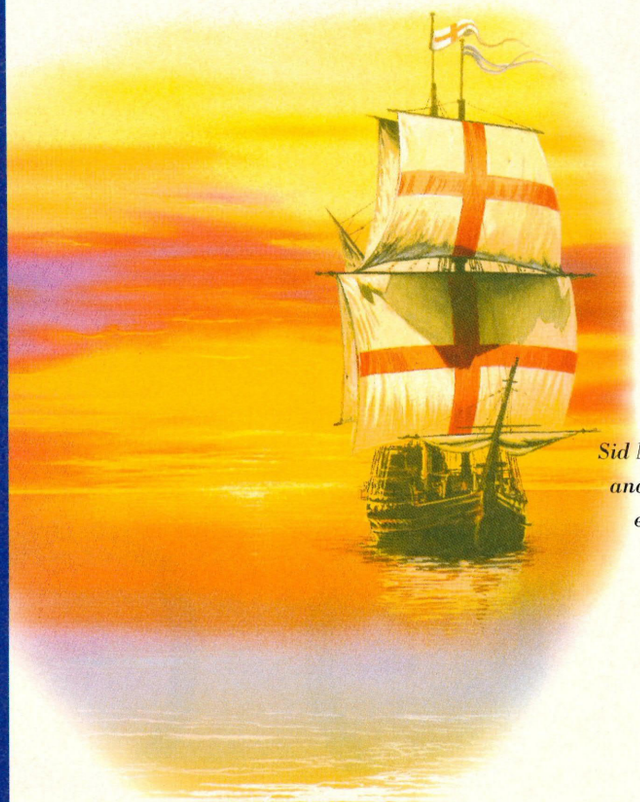
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COMPETITION
Win a CD-ROM drive in our great Zool 2 compo!
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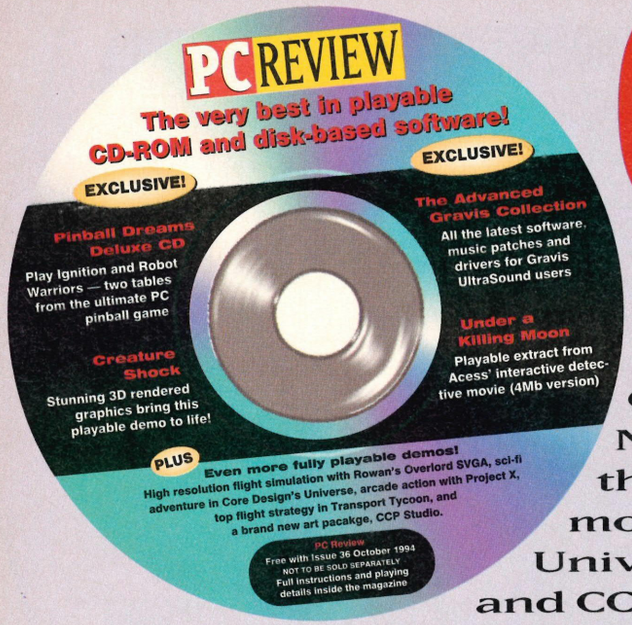




PRODUCT DIRECTORY



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Cover CD

Welcome to the fourth PC Review CD. This month we have the hottest pinball demo in town, adventure in Creature Shock and Under a Killing Moon, plus *all* the latest software for the Gravis UltraSound. And there's more: playable demos of Overlord, Universe, Transport Tycoon, Project X and CCP Studio. What more could you want?

COVER DISKS

PINBALL DREAMS DELUXE

Without a shadow of a doubt, 21st Century Entertainment makes the best pinball simulations on the market, and now you have the chance to try out your pinball wizardry with our fantastic, playable Pinball Dreams Deluxe demo. Choosing from two great tables, Ignition and Revenge of the Robot Warriors, you have exactly five minutes to test your skills by scoring as many points as possible. And that's not all. Discover everything you ever wanted to know about the world's most famous pinball tables in Pinball Dreams' multimedia Interactive Guide to the History of Pinball. Is that good or what?



How to use your free CD-ROM

HOW TO LOAD YOUR PC REVIEW COVER CD

1. Take the PC Review cover CD out of its plastic case.
2. Insert it into your CD-ROM drive and close the drive tray.
3. Wait for the light on the front of the CD-ROM drive to go out.
4. Type D:> [Enter]
5. With the D:> prompt showing on-screen, type the commands as detailed on these pages for each program. Regular readers should note the individual commands given here, because they are different to our normal CD-ROM menu.
6. For example, to play Creature Shock, you should type

   SHOCK [Enter]

   at the D:> prompt.
7. Make sure you have around 15Mb free on your hard disk. Even those programs which run directly from the CD may need to create a directory on your hard disk to hold installation files.

How to install

Log on to your CD-ROM drive (usually D:) and type

PININST [Enter]

When this installer has finished installing files, log back on to your CD-ROM drive and type

PINBALL [Enter]

to complete the process. To start the demo itself, log on the directory where it is installed and type

DELUXE [Enter]

How to play

Either watch the intro, or press Space to skip through to the main menu. You can scroll up and down the menu using the cursor keys, or use the function keys (F1 for Ignition and F7 for Revenge of the Robot Warriors) to choose your table . Once into the game, use the down arrow to launch the ball and left and right shift to control the flippers.To access the Interactive Guide to the History of Pinball, press F9. Using the mouse, click on the topic you're interested in and read on.

How to quit

Hit Esc to exit the game.

Hardware required

286 PC, 640K of RAM, colour VGA. Most major sound cards supported.



GRAVIS ULTRASOUND SOFTWARE COLLECTION

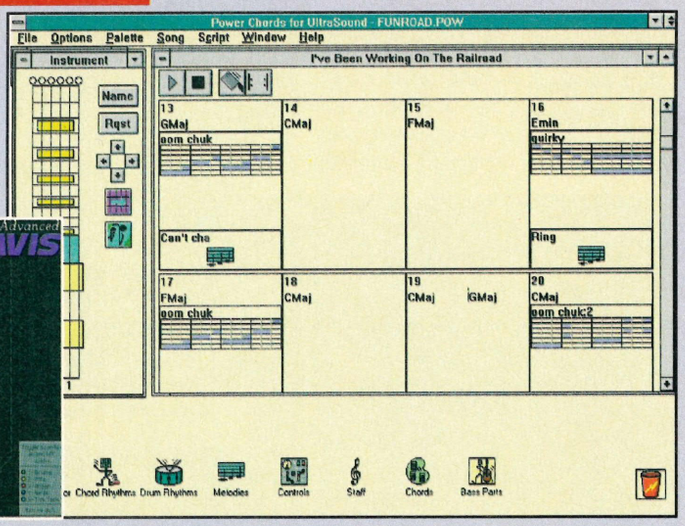
This number's especially for all those Gravis UltraSound fans out there . . . we've got all the latest UltraSound drivers.

This is the latest software set which includes all of the patch management, MIDI file players, compositional and recording tools that ship with the very latest version of the UltraSound.

Simply update your software straight off this CD-ROM by typing GRAVIS at the D:> prompt.

And there's more! Check out the Readme file in the GUS directory on the CD (open it in any text editor) and it'll tell you what's in each directory. There are whole sets of new MIDI music patches, plus unique music demos, not to mention a newsletter update that will show you which modes work best with particular games. To use these facilities just open the file G-list.txt in a text editor and scroll through it at your leisure.

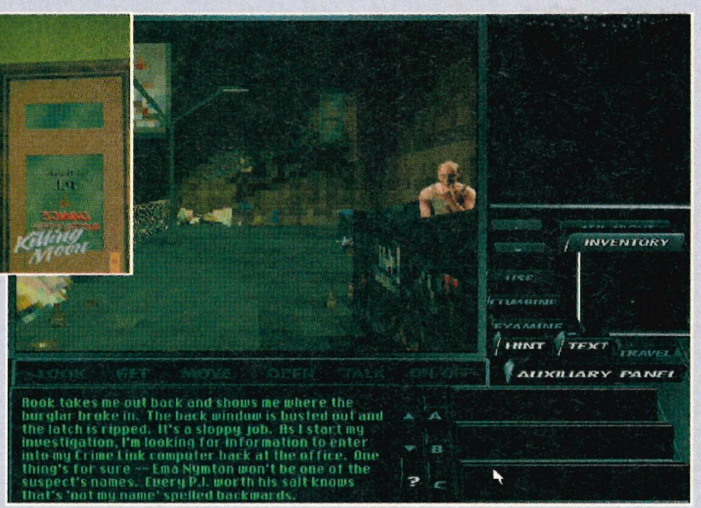




UNDER A KILLING MOON

Possibly the first game which merits the description "interactive movie", Access's Under a Killing Moon is a truly ground-breaking game. Video footage is combined with computer-rendered backgrounds to bring the game and its many colourful characters to life.





You play Tex Murphy, a 1950's style private eye in a dark, Blade-Runner style future. Incompetent and bungling he may be, but as luck would have it, he's the only guy capable of saving the Earth from a terrible fate. And you have to step into his gumshoes ...

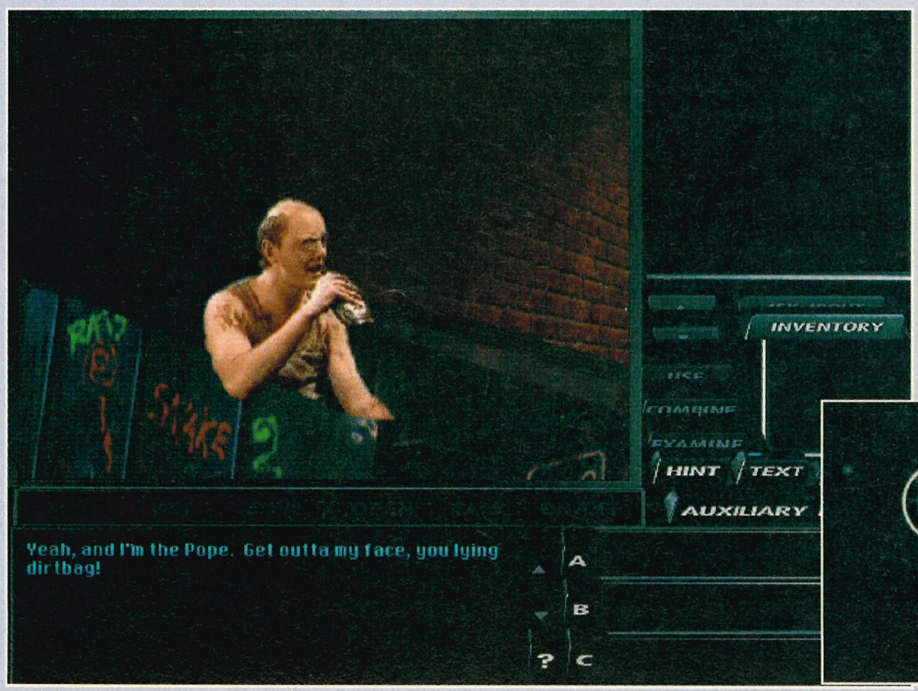
How to start

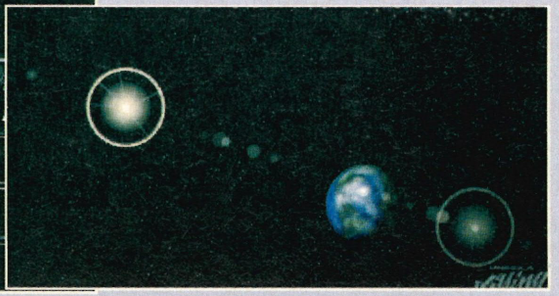
Around 8Mb of files will be installed to your hard disk, so make sure you have enough space before you attempt to install the program. Then change the prompt to the CD-ROM drive (normally D:>), and type

KILLING [Enter]

Then log on to the directory where Killing Moon is installed, and type

MOONDEMO [Enter]





How to play

Press Enter to move from the slideshow to the interactive demo. Instructions for the point and click interface can be accessed by simply clicking on the ? icon. To swap between interactive (talk to, examine, etc) and explore (move around) press Space.

Moving the mouse will allow you to walk around the screen. Then switch to interactive mode and click on objects or characters to interact with them.

How to quit

Hit Esc to exit the demo.

Hardware required

386, 4MB RAM, colour VGA graphics. Most major sound cards supported.

CREATURE SHOCK CD

Creature Shock is the visually arresting shoot 'em up from top British developer Argonaut. This fully playable demo features graphics the likes of which you'll never have seen before — it's simply stunning! You'll find yourself lost in a series of catacombs, where terrifying creatures wait in the shadows to ambush you. And you thought Alien was scary!





How to start

Log on to your CD-ROM drive and type **Shock [Enter]** to begin the demo.

How to play

After viewing the introduction sequence, click the mouse button to get started on the first section. You'll begin by escaping your mother ship in a small fighter, and must blast the asteroids which get in your way. The ship is controlled by the mouse and you need to press the left mouse button to fire.

Once you've landed safely at your target, you move on to the second section of the demo: exploring the catacombs.

To move forward, click with the mouse. If the tunnel forks, click on whichever branch you wish to take. To turn round, move the cursor to either side of the screen until it flashes red. When it does this, then click again.

Every now and then you'll be attacked by a monster. Each monster has a different vulnerable spot which you should try to aim at. Switch from the movement to gun cursor by pressing the space bar, and use the left mouse button to fire.

How to quit

Hit Alt-Q to exit the demo and return to the DOS prompt.

Hardware required

386, 4Mb RAM, colour VGA graphics, mouse. Sound Blaster and compatible cards are supported.



DISK-BASED DEMOS

OVERLORD (SVGA)

Try your piloting skills with Virgin's WW2 flight sim.



First, install the demo to your hard disk in two parts. To do this, log on to your CD-ROM drive and type **LORD1 [Enter]** for the first part. When that has installed, type **LORD2 [Enter]** for the second part. Then log on to your hard disk and change to the directory where you have installed the first part. Type **INSTALL [Enter]**. Now switch to the directory which holds part two and type **INSTALL [Enter]** again (sorry). To use the SVGA mode, type in the following:

SVGATEST [Enter]

Select the video driver that matches your video card. Then run the game by typing

OVERLORD /? [Enter]

The controls

F1 — F12 for external views, plus combinations of Alt and Shift with these keys.

+	increase speed
—	slow down
Ins/Del	rudder
End/PgDn	max rudder
Space	fire weapon
Page up	toggle weapons
Backspace	padlock view
X	toggles rocket camera
P	pause

Hardware required

386 PC, VGA/SVGA (for high-res display), 3Mb RAM. Also supports Sound Blaster and Ad Lib compatible sound cards.

PROJECT X



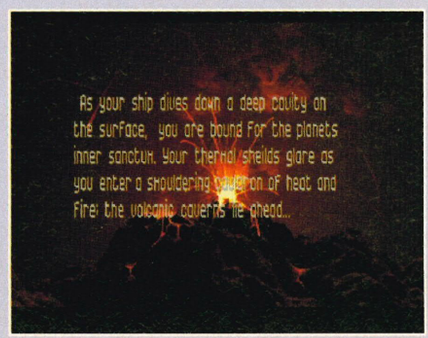
Blast your way through the bad guys in this stunning playable demo level from the latest Team 17 smash hit shoot 'em up.

To start the game, change to the CD-ROM drive, and type **PROJECT [Enter]**. You should now see the Project X opening screen appear.

Game controls are Space (fire), cursor keys (move) and Tab (select power-up).

Hardware required

386 PC, VGA/SVGA (for high-res display), 2Mb RAM.



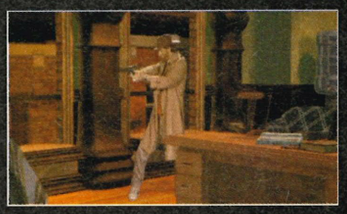
THE FIRST TRULY INTERACTIVE MOVIE

UNDER A Killing Moon



"THE NEXT MULTIMEDIA SENSATION"

CD-ROM AND MULTIMEDIA NOW







"A STUNNING TECHNOLOGICAL ACHIEVEMENT"

PC REVIEW



"ONE THAT'S GOING TO BE WORTH WAITING FOR"

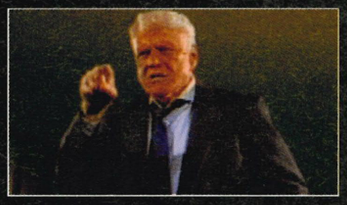
PC POWER



FEATURING...



RUSSELL MEANS
(THE LAST OF THE MOHICANS, NATURAL BORN KILLERS)



BRIAN KEITH
(PARENT TRAP, HARDCASTLE & MCCORMICK, YOUNG GUNS)



MARGOT KIDDER
(SUPERMAN I & II)

AND YOU AS THE HARD BOILED PRIVATE EYE

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ACCESS SOFTWARE presents a CHRIS JONES production UNDER A KILLING MOON story by AARON CONNERS artistic direction by DOUG VAN DEGRIFF music by JON CLARK set design by NATHAN ZARSON, NEIL GALLOWAY, RALPH YARRON, technical direction by BRUCE WARD, BRUCE JOHNSON.

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PC REVIEW

CD-ROM HELPLINE

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(0451) 810788

The helpline operates between 3.00pm and 5.00pm weekdays.

TRANSPORT TYCOON



The strategy game to put Sim City 2000 in the shade? Quite possibly . . . Transport Tycoon is all about building your own travel network in one of the biggest playing areas we've ever seen. In this playable demo you've got two years of game time to experiment with — so get building.

To start the demo, type **TRANS [Enter]** from the D:> prompt. See the floppy disk demo instructions on page 14 for more detailed info on how to play.

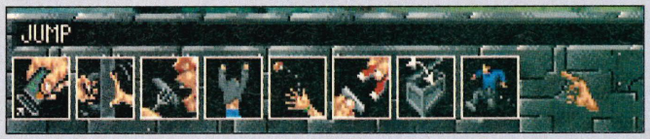
Hardware required

Minimum of a 386 PC with VGA, mouse and 4Mb of RAM.

You also need to have at least 585K of free base memory and 2Mb of free hard disk space.



UNIVERSE



It's graphic adventure time again — this time it's Core Design's quirky sci-fi adventure, Universe.

In Universe you take the role of Boris Verne, a man lost and seemingly alone in a strange alien galaxy. You begin the game by exploring the neighbourhood. The point and click interface is simplicity itself — use the right mouse button to select icons from the menu bar, and then the left button to implement them.

How to start

Log on to your CD-ROM drive and type **UNIVERSE [Enter]**.

Hardware required

256-colour VGA, 386 PC, DOS 5.0, mouse and 2Mb RAM. There is no sound in this demo.



HELP! MY CD-ROM IS DAMAGED

Out of the thousands of CDs we duplicate every month, a very small number may get damaged during transit. If you think your CD-ROM might be faulty, we'll replace it. Just pop the CD-ROM 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 7, Willow Court, Bourton Industrial Park, Bourton-on-the-Water Gloucestershire GL54 2HQ

Please DO NOT send the CD-ROM back to PC Review — we don't hold stocks of spare CDs.

Name.....

Address.....

.....

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● We also make every effort to ensure that the contents of each disk (or CD) 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 either the floppy cover disk or CD-ROM cover disc.

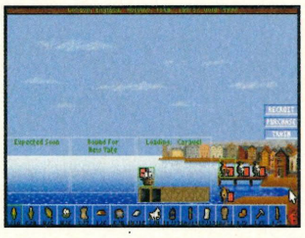
BE THERE AT THE BIRTH OF A NATION

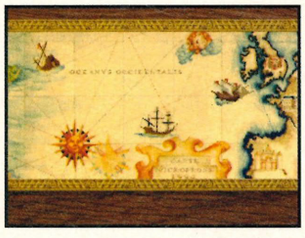
Sid Meier's
COLONIZATION



Sid Meier's

DON'T SETTLE FOR ANYTHING LESS!









FOR IBM PC COMPATIBLES



Cover disks

This month's cover disk has something for everyone. It not only includes a fully playable and totally exclusive demo of the fantastic Transport Tycoon from MicroProse — but also a blast of sharp shoot 'em up action in Liberator.

TRANSPORT TYCOON

3.5" disks only

Ever fancied your chances at running a railroad for a couple of years? Well now's you can have a go! Our exclusive two year (game time) demo of MicroProse's Transport Tycoon gives you the cash you need to get started, then lets you loose in one of the biggest playing areas you'll see in an isometric strategy game.

How to start

Log on to the directory in which you installed Transport Tycoon and type in the following

TRANS [Enter]

Then, select New Game from the menu.

How to play

The idea seems simple enough: create a profitable transport network. You have two years of game time in which to do this. As you create your transport system new vehicles will become available, but towns will grow and evolve — placing greater demands on your network, while also offering the chance of greater profits.

In this demo, you have the chance to run the railways — hopefully somewhat better than British Rail manages on a day to day basis. In the full game, there's over a hundred years playing time, and ships, planes, helicopters, buses and lorries to work with.

So how do you go about building your railroad? Read on!



How to quit

Quitting out of your game of Transport Tycoon is simple. Just select the second icon from the left on the top icon bar, then click and hold to select the Abandon Game option. It's easy.

Hardware required

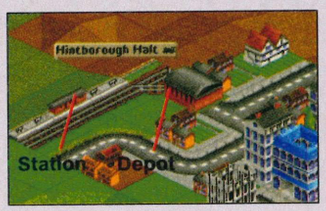
Transport Tycoon needs a minimum of a 386 PC with VGA, mouse and 4Mb of RAM. You also need to have at least 585k of free base memory and just under 2Mb of free hard disk space.

	Produce	Need
Towns	passengers and mail	passengers, mail, food, goods
Coal mine	coal	nothing
Factory	goods	iron ore
Iron mine	iron ore	nothing
Plant (coal)	goods	coal
Plant (oil)	goods	oil
Farm	goods	oil, passengers, wood
Forest	wood	nothing
Sawmill	goods	wood
Airport	not used in demo	nothing
Oil field	not used in demo	nothing



Your first train ...

Before you can buy a train you must connect up a depot and a station. Select a spot near a suitable town or industrial complex and start building: your stations need to connect between suitable sources of goods and so on. Click on a town or whatever to see what it produces and what it needs. (The basic relationships are shown in the table on the previous page.)



Generally useful stuff

The icon on the left end of the icon bar (see right) is the pause button.

Third from the left is the map icon. You can use this icon to view geographic, and industrial information for the playing area.

The train icon will tell you how many vehicles you have in operation, where they are, and allow you to zoom over to them quickly.

The magnifying glass icon magnifies things. Zoom in and out using both mouse buttons

The rail icon is, not surprisingly, for building your railways. The options here are for bulldozing an area, raising/lowering land, tunnels, adding a depot and signals, and adding a station. Plus, of course, laying track.

Track and signals

Laying track takes a bit of getting used to. There are four track icons depending on which direction you want to go. When going diagonally across a square you need to click towards either one half or the other of the square. Tracks can cross each other, or run side by side, but track cannot go diagonally across a slope. Heavy slopes slow trains down considerably, so you may have to lower/raise land to help.

If you want to have branch lines and more than one train using the same stretch of track then you need to add signals. Add these in pairs before each junction. A train will wait at the signal until the train ahead of it has passed through the next signal — you'll even see the lights go from green to red!





HOW TO USE YOUR COVER DISKS

1. Put your PC Review cover disk into your floppy drive,and log on to it, ie, type

A: [Enter]

(Your floppy disk drive might be called B:, in which case substitute B: for A: above.)

2. Type PCR [Enter] to bring up the installation menu (above right).

3. Using the cursor keys, select the program you wish to install from the on-screen menu. Check the disk and PC requirements listed at the foot of the screen; you will get an error message, for example, if there is not enough space on your hard disk to install the program. Press Enter to confirm your selection.

4. The programs on the cover disk are compressed. The installer will decompress these files and copy them to your hard disk. After choosing the program to install, you will be prompted with the name of the drive and directory that the installer intends to decompress the program you've selected to. There's no need to change this unless, a) your hard drive is not called C:, or b) you have a directory with the same name as that suggested on-screen. If you want to change this default, just backspace over the installer's suggestion and type in your preferred destination.

5. The program files will now be decompressed and copied to your hard disk. After they have done so, you will see a screen explaining how to access the demo from your hard disk. There are also instructions for starting and playing each program on these pages. Press Enter to return to the PC Review installer menu.

6. Either press Esc to quit the installer, or use the cursor keys to select another program, and run through steps 3-6 again.

COMMON PROBLEMS

I can't free up enough system memory.

You can check the amount of free memory by typing MEM at the C:> prompt. If the number listed as memory free at the end of the resulting screenful of numbers is under 550,000 bytes, you may have difficulties running the programs on this disk.

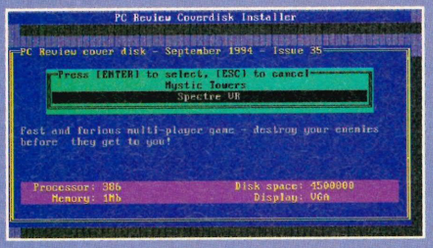
If you think you have a memory problem, first make sure that you don't have any memory-resident programs open in the background. If you don't fancy editing your Config.sys and Autoexec.bat files just to run our cover disk, you can always make a boot disk, which is a quick and easy way to make a disk containing just the bare bones of DOS to run your PC and lots of free system memory.

A detailed description on making a boot disk is given in our technical help section on page 122. What follows is a quick guide:

Put a blank, formatted floppy disk into your disk drive. At the C:> prompt, type

SYS A: [Enter]

This will copy the three system start-up



files that you need to boot the PC over to the floppy disk. You can now start up your PC from this boot disk — just put the disk in the floppy drive and switch the PC on.

Note that because there is no Config.sys or Autoexec.bat file on the boot disk, you will have to load things like mice or sound card drivers separately.

The mouse doesn't work.

If your mouse cursor won't move at all, you either don't have the mouse loaded, or you don't have the correct mouse driver for this program. Either quit the program and load up the mouse, or if you don't have a compatible driver, you'll have to use an alternative control method.

I type in the correct command to start the game but it just says "Bad command or filename."

Nine times out of ten the reason is that you've typed the command from the wrong subdirectory. If you have a prompt on-screen that just reads C:>, and still says C:> even when you type CD [correct directory], then type in this command from C:>: PROMPT $p $g. This command should be in your Autoexec.bat and will show you which directory you're in.

LIBERATOR

3.5" disks only

No, it doesn't have anything to do with cult TV series Blake's 7 (shame), but you can fire plasma bolts to your heart's content in this smooth, vertically-scrolling slice of arcade action. The aim, as in all shoot 'em ups, is to shoot everything on screen, including those gargantuan end-of-level guardians. Liberator was written by British-based developer Akore Software, and is published by the Watson Games Workshop.

Registration details are included along with the game.

How to start
Log on to the directory in which you installed Liberator (the default is C:\LIBER) and type

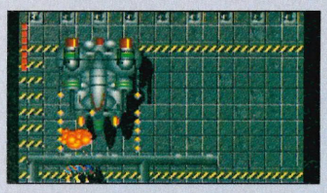
LIBER [Enter]

How to quit
Hit [Esc] to exit the game and select "Y" (yes), then choose the Exit option shown on the pop-up menu to return to DOS.

Hardware required
16MHz 286, 640K RAM, colour VGA graphics. Liberator also supports Sound Blaster and other compatible sound cards.

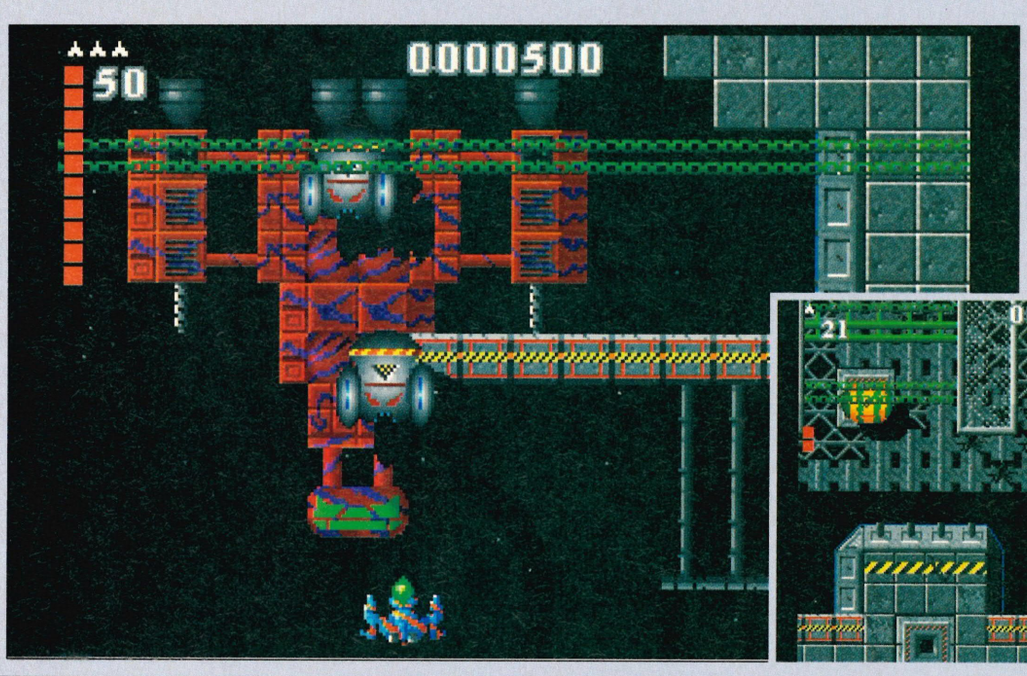
Controls

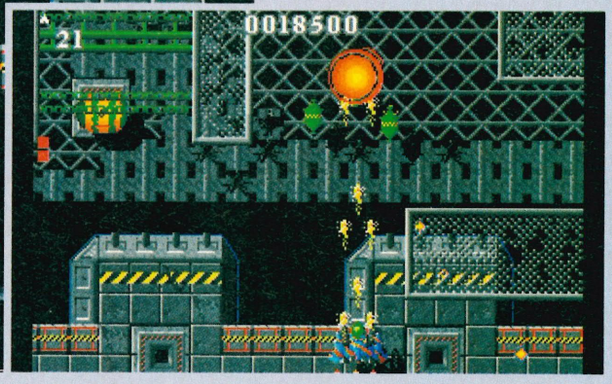
Cursor keys	Move ship
Space	Fire
Esc	Quit Game



How to play
The idea is to shoot everything which moves, plus a few ground-based gun turrets as well. When an enemy ship is destroyed, it will leave behind a green fuel pod which you must try to collect.

When you've collected enough fuel you will face the end-of-level guardian, and if you manage to destroy it you will proceed to the next level. Some ships will also drop a square power-up, which could be a boost in speed, extra fire-power, more devastating ammunition, a health bonus or an extra life.





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Unit 17
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Bourton-on-the-Water
Gloucestershire GL54 2HQ

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Name .....

Address .....

.....

.....

.....

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HELP! I CAN'T GET THE DISK TO WORK

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Disk helpline:

(0451) 810788

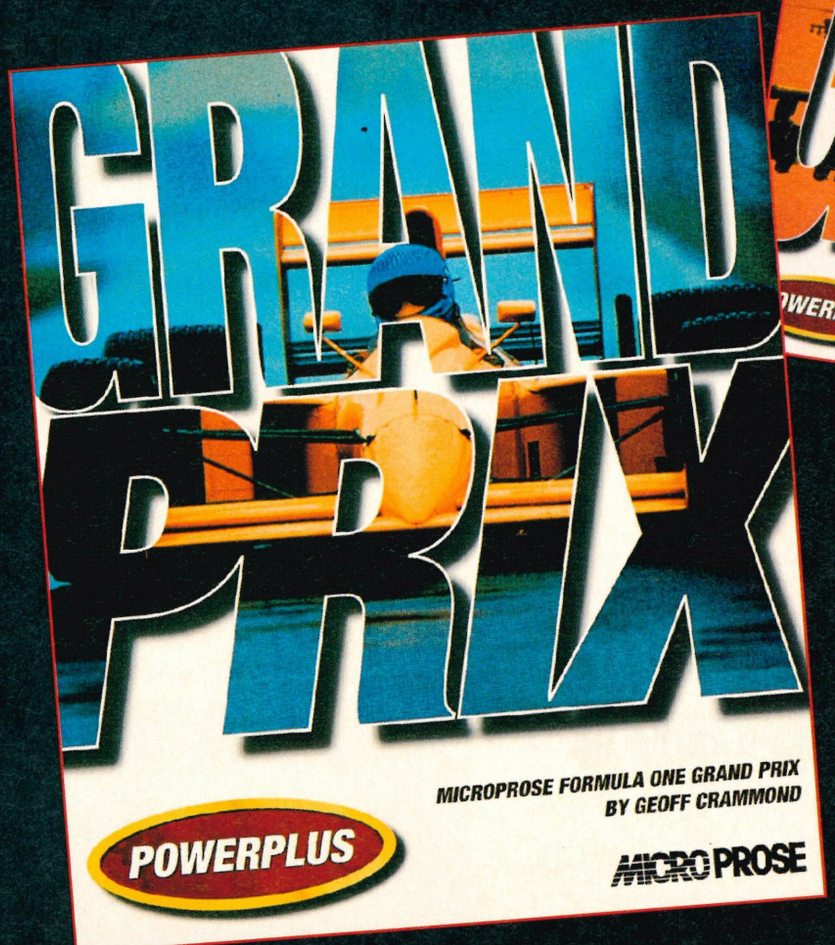
The helpline operates between 3.00pm and 5.00pm weekdays.

Please note: this is a new helpline number. Don't call the old number — you won't get through!

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SO BUY THEM!

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for each classic game from the masterminds at MicroProse.

NEW FROM

MICROPROSE

SERIOUS SOFTWARE AT CRAZY PRICES

MicroProse Formula One Grand Prix/Gunship 2000 available for Commodore Amiga, IBM PC and CD ROM. F15 III is available for IBM PC and CD ROM.

News

Anti-piracy raids net £500,000 of software

In the continuing crackdown against software theft, anti-piracy investigators and police have seized in excess of 200 CD-ROM discs and CD-ROM writing equipment in raids on two addresses in Manchester.

Software taken away in the raids by members of the European Leisure Software Publishers Association crime unit and Greater Manchester Police Obscene Publications Department, had an estimated street value of £500,000, allegedly containing pirated commercial software and obscene computerised images.

Detective Sergeant John Ashley, of Greater Manchester Police Obscene Publications Department, said: "Illegal duplication of CD-ROM disks is rapidly increasing. The majority contain cracked copyright protected software, however we are aware that the pornographers are using this method of distribution for both still and moving obscene images."

John Loader, chief investigator of ELSPA's crime unit, said: "Not only does illegal activity pose an enormous threat to the commercial interests of the UK's legitimate computer games software industry, but highlights the increasing problem of the production and distribution of illegal, pornographic software throughout the UK."

He appealed to the public to contact ELSPA if they come across large quantities of commercial software on CD-ROMs "which are easily identifiable by their golden colour."

In May this year ELSPA warned that the UK is set to be flooded with illegal CD-ROMS. ELSPA can be contacted on (0386) 833810.

Online CD adds 'multimedia'

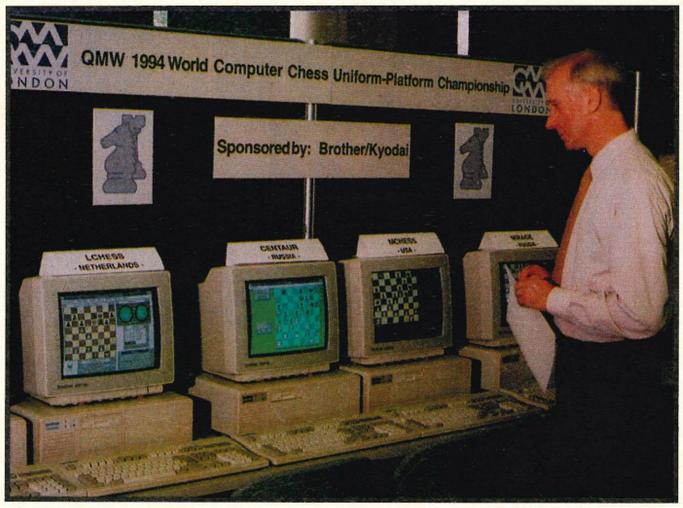
Online information service CompuServe is publishing a CompuServe CD-ROM disc giving users a sound, graphics, animation and video multimedia "enhancement".

The company estimates more than one third of its two million worldwide members — 48,000 of which are based in the UK — currently have CD-ROM drives and another 35 per cent intends to buy one within the next six or 12 months.

Other products on the disc are designed to help users save time and money in accessing the service — including a disc-version of File Finder which searches and downloads programs stored in libraries.

At first the bi-monthly CompuServeCD will only be sold on subscription. The cost will be £5.95.

Contact CompuServe on (0734) 391064 for further details.



Your move, chess champ

Professional chess programmers, academics and chess playing amateurs from the US, Canada, Brazil, Holland, Germany, Russia and the UK have gathered in London for this year's world computer chess championships.

But there are no people playing the game. This is a championship to find the best computerised chess program!

The Uniform-Platform Computer Chess Championship is being run by the Department of Computer Science at the Queen Mary and Westfield College, Mile End Road, London.

The chess programs will run on identical machines, at the same clock speed and with the same system software. All the computers are connected to a network and communicate using software designed for the event.

A supervising program running on a separate computer monitors and records the game progress.

Don Beal, a senior lecturer at QMW and event organiser, said: "The QMW championship is designed to reward innovation in software and heuristic* search and artificial intelligence, not the choice of hardware."

The results of the championship, which is sponsored by Brother/Kyodai, were not available before the current issue of PC Review went to press.

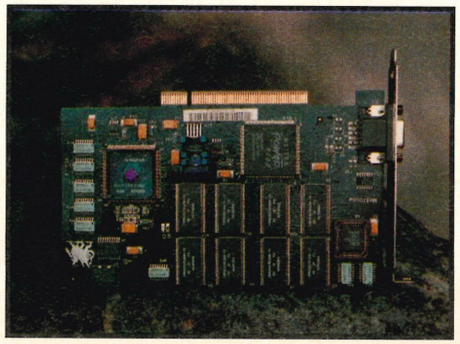
Enter the Blue Dragon

The Blue Dragon PC graphics accelerator board — a high end board which provides high resolution, flicker-free colour graphics — has gone on sale price £360.

The accelerator board uses IBM Microelectronics' 170MHz palette DAC, the RGB525, and Weitek's P9100 graphics processor to give the user 16.7million colours at resolutions from 640 x 480 up to 1280 x1024 at refresh rates of up to 100MHz.

The board is currently available with PCI local bus architecture, but a VESA local bus version is planned. The board also comes with software drivers for Windows 3.1, Windows NT, OS2, Autocad and Microstation.

The Blue Dragon is developed by GenSys Computing, (031) 553 3305.



Plug-in hard drive

The problem of compatibility of removable hard disks with different PC manufacturers has been solved, according to notebook PC specialists Obodex Computers that is.

The company claims that its new Obodex Disklite pocket hard drive will work with just about every PC fitted with a standard Centronics-type parallel port.

The drive, which measures 96mm x 125mm x 29mm and weighs less than a kilo, plugs directly into the port. It can be powered from the host computer in two ways using either a PS/2 of AT (5-pin DIN) keyboard connector.

The Disklite range is as follows: Disklite case only (add your own 2.5" drive) £99; 120Mb IDE, £249; 200Mb IDE, £299; 250Mb IDE, £349; 340Mb IDE, £399; 520Mb IDE, £499. Access time for all drives is 14mS. All prices exclusive of VAT. Contact Obodex on (081) 841 3555.



Media giant signs Crystal

Media conglomerate Bertelsmann has entered the multimedia arena by clinching a distribution deal with US entertainment development house Crystal Dynamics.

BMG Interactive Entertainment, part of Bertelsmann Music Group International, the music and entertainment division of Bertelsmann AG, will handle marketing, sales and distribution of Crystal Dynamics' product in 39 countries, except North America.

In the UK Crystal Dynamics is probably best known for the game The Horde, distributed here by US Gold. It has also been developing new software for 3DO.

The $3billion a year BMG International, which owns Arista Records and RCA Records, sees significant overlaps between the audience for music and multimedia. Parent company Bertelsmann AG also has interests in film; television; radio; book, magazine and newspaper publishing; printing and manufacturing. Last year its profit/turnover was $11billion.

Meanwhile, former European marketing manager at Sega Europe, Andrew Wright, has joined BMG Interactive Entertainment as head of communications.



EDITOR'S COMMENT

The PC is not a games machine

You may neither know nor care much about this, but there is a fevered debate going on in the games industry at the moment about "the next games platform". The argument runs that the Sega Megadrive and Super Nintendo machines have had their day, and that it's difficult to choose which of the new machines waiting in the wings will be the best one to back — for games publishers, distributors and retailers alike. Will Philips' international corporate muscle force the CD-i system into success? Talking of corporate power, is Sony the company most likely to win with the Play Station? Can Atari capture the hearts and minds of the games-playing populace with its 64-bit Jaguar? Will there be a Commodore to sell the CD32? Will 3DO make it? And so on.

In many ways, the games industry is still rootling around for the interactive equivalent of VHS, the format that will win through against all others, that may not necessarily be the most technologically advanced or the most beautiful, but by sheer marketing force will beat all the others into submission.

It's usually at this point that I want to stick my hand up and say, "But please ... what's wrong with the games platform that's growing at the moment? Why do all these discussions take place without ever mentioning the PC?"

And the answer is that for the purposes of this discussion, the PC doesn't count. It isn't a games machine. It never will be.

It sure looks like a games machine for much of the time. It has high resolution graphics, advanced sound capabilities, it plays Sam & Max and SimCity 2000 and Links Pro and even Zool 2. These days, there are even people who have bought their PCs solely in order to play SimCity 2000 and Links (though probably not Zool 2).

But the PC will never take the place of the latest video game console for a number of reasons. Partly, because its pedigree as a business tool doesn't exactly give it street cred. More seriously, it looks all wrong — it takes up far too much space, it has a keyboard and the separate monitor and CD/hard disk needs make it expensive. Far worse is the fact that it is such an awful machine to use.

This is a subject which we've covered before in PC Review, but the more the PC home market grows, the more you realise how utterly unsuited the PC is to this job. We may hear more horror stories than most of PCs that won't work properly to the mystification of their owners, but there is an infinite variety to the problems that makes it impossible to place your finger on one single thing and say, "It's DOS that's the problem" — or memory handling, or hardware configuration, or whatever.

The PC is here to stay. It's survived too long, made its presence felt in too many offices and homes, it supports and is supported by too many companies, and it has some of the very best in entertainment software developed for it. But the complexity that makes it versatile and expansible is also what makes it too damned difficult ever to become the industry's equivalent of VHS. Even if the nation moves over wholesale to the Sony/Sega Hyper-Pluto games-station, there'll still be a PC lurking in the back bedroom like a gatecrasher at a wedding. And it'll still play the best flight sims.

■ Christina Erskine

Longman aims at schools and home users

Longman Logotron, part of the Longman book publishing group, is launching a new range of home and educational CD-ROMs. The company has recently signed distribution deals with Los Angeles-based developer 7th Level — formed last year by record producer Bob Ezrin, saxophonist Scott Page, who has played with Pink Floyd, and former president of Micrografx George Grayson — and some Software Toolworks product.

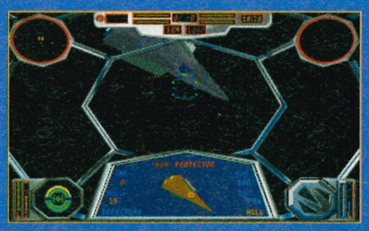
The first 7th Level CD-ROM will be TuneLand, an interactive musical cartoon aimed at three-year-olds and up. Software Toolworks' titles will include the Multimedia World Atlas, the Guinness Multimedia Book of Records and the New Grolier Multimedia Encyclopedia.

In addition there will be a photography library called the Photobase Series, which will cover subjects such as landscapes and science, and largely be aimed at students and teachers.

Longman's parent company is Pearson, which currently owns Software Toolworks, Mindscape, The Financial Times, The Penguin Group, the Tussauds Group, Westminster Press group of newspapers and Thames Television. More in-depth information about Longman Logotron's products can be found on (0223) 425558.

PC CHARTS

Disk-based games



1	TIE Fighter	*LucasArts*
2	FIFA Soccer	*Electronic Arts*
3	Sim City 2000	*Maxis*
4	Theme Park	*Bullfrog/Electronic Arts*
5	Cannon Fodder	*Sensible/Virgin*
6	Ultima 8	*Origin Systems*
7	Settlers	*Blue Byte*
8	1942 Pacific Air War	*MicroProse*
9	UFO	*MicroProse*
10	Harpoon 2	*360/Electronic Arts*

CD-ROM games



1	Outpost	*Sierra*
2	Theme Park	*Bullfrog/Electronic Arts*
3	UFO	*MicroProse*
4	Rebel Assault	*LucasArts*
5	TFX	*Ocean*

Charts compiled by Virgin Retail



New CD-ROM and sound packs from Amitek

New CD-ROM and sound card packs have been unveiled by Amitek. The Amitek SCSI CD-ROM pack — priced at £151.58 — consists of a Media Vision CDR-H93MV drive, with an access of time of 320ms, a transfer rate of 300K/sec and a 256K cache. Not only that, but it also conforms to MPC2 status, reads Kodak Multi-Session Photo CDs and is compatible with ReelMagic video.

Software titles sold with the pack are Anecdote, a database with maps, clip art, sounds etc, a 3D animation display, Animator, and Sneak Peeks, demos of interactive game segments.

The SCSI Sound Card pack features the Jazz 16 chip set with 16-bit, 44.1 KHz sample rate and CD quality digital recording and playback, 20 voice stereo FM music synthesiser, SCSI CD-ROM interface, an MPU-401 compatible joystick/MIDI port and stereo line IN/OUT. The pack also includes games Alien Breed, James Pond II and Doom level 1. It costs £59 plus VAT.

Both packs are available from Silica, (081) 309 1111.

Ace bass?

Labtec's new TL-50 speakers for the PC were unveiled at the European Computer Trade Show in London, with particular emphasis on the clean bass sound that they produced.

The tower design speakers are just 3.5 inches wide and feature a peak music power of 80 watts; they include headphone jack for private listening; magnetically shielded speakers for monitor, drive and disk protection; and 10Kohms amplifier impedance.

The US price is $179.95. The European distributor is Dimensional Services.

Sign of the Times

One year Ago

We first previewed Rise of the Robots which was creating a stir because of it use of the latest 3D graphic techniques. But, today, still no game. Longer play-testing and a deal between publisher Mirage and Time Warner means the game should be in the shops in October. Disk-based games with high-score impact were NHL Hockey from Electronic Arts and Adventure Soft's Simon the Sorcerer. On CD, Virgin's Dune was causing a buzz.

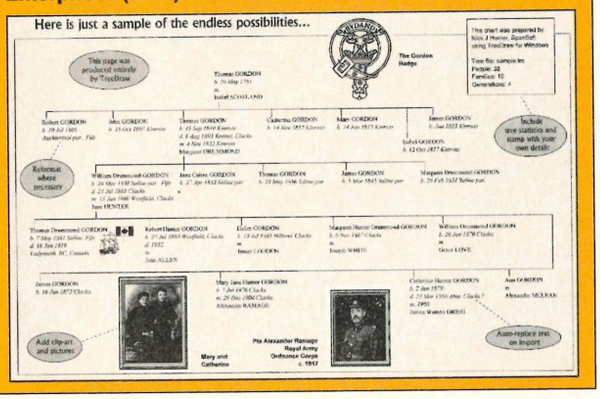
Two years ago

PC Review unveiled a brand new look for itself — remember the half man, half monster cover? — to great success. Tumbling PC prices and rising specifications made the news. You could pick up a 386 for around £800 and 486s were selling for just under £1,000. Laura Bow II: The Dagger of Amon Ra (Sierra On-line) and Hong Kong Mahjong Pro (Electronic Arts) were our top games.

All in the family

TreeDraw, a specialist graphics editor for creating family tree charts, has been released by Nick J Hunter/Spansoft, creators of the genealogical program Kith and Kin.

The charts can incorporate text, lines, boxes, circles, pictures, clip-art and diagrams. TreeDraw is a shareware program and the registration fee is £20. Contact S&N Enterprises (0252) 510486.



In Brief

- **Thrustmaster joysticks will now be exclusively distributed in the UK by Paperlogic, the Oregon-based company has announced. Contact Paperlogic on (071) 636 7099.**

- **CH Products' Rollermouse has been renamed Trackball Pro. The four button trackball can be used for games and CAD/CAM products. A UK price has not been announced yet but it sells $129.95 in the US.**



- **A new series of training guides — covering products such as Lotus 123, WordPerfect, MS-DOS — has been launched in the UK by Inst Publishing. The three-part guides cover Training, Quick Reference Section and Speed Discs, and cost £16.99. They are distributed here by One Stop Direct (081) 780 1001.**

- **A PC which allows users to watch TV, videos and teletext is being launched by Olivetti. The computer has an add-in card with special tuner which fits into the video adapter. It will cost around £250 more than the standard machine.**

- **Warranty on all parts of computers bought from MJN Technology has been extended to three years, in addition to the standard full-year warranty on all parts and labour. "After-sales support is of a major concern to nearly every computer buyer, and this extended parts warranty should assure them that their investment is not going to be expensive to maintain," said MJN's Sheelagh Dick. For more details contact MJN on (0282) 777555**

Sound price from Gravis

In last issue's sound card test, we reported the price of the new all-singing, all-dancing Gravis UltraSound Max as being £299 (plus VAT) — the price we were given by the distributors. The price obviously was a consideration when we rated the card.

Unfortunately there were some crossed wires between the UK and Canada on this one, and the actual UK retail price should be a far more reasonable £229 (plus VAT). You can even pick up the card for £199 (plus VAT) from Koch Media, telephone (0252) 714340.

THE COOKE REPORT

Nothing if not ambitious, Steve Cooke launches a three-part, interactive mini-series this month.

This month sees the launch of a three part mini-series in this column. Together we're going to come up with two lists that could change the face of games history (nothing like a bit of ambition, eh?). I'll introduce the topic this month and then ask for your contribution. Next month, we'll publish a list drawn from key game designers and programmers, and then in the final column we'll publish your contributions and credit those who've written in. We may even — steady on, — offer something in the way of an enormously valuable prize.

The question to be answered is a simple one: what makes a really *bad* game? Not just something mildly obnoxious, but a true stinker. This isn't an exercise in masochism; if we could create a checklist for the truly naff, we might be able to avoid it more often. I want you to jot down on a postcard a list of 10 hit points (or miss points, if you prefer); 10 features that really make you want to reach for the barf bag. In the meantime, I'll compile a list of 10 glowing virtues: 10 design features that programmers and publishers think makes a good game really hot.

This way, you get to have the most fun. Slagging off the ungodly is always more satisfying than praising the angels. In this case, it's also just as important. Eliminating the negative, as the Eastern sages say, is the easiest path to the positive.

There are a few landmarks to establish; the word 'game' itself, for starters. There's a world of difference between something like Klax or Tetris and an epic in the style of Ultima VIII. Working out what's good or bad about a game like Ultima VIII isn't such a useful exercise. That's because you can use a set of yardsticks that were in part developed by other media. How good are the graphics? How original are the location designs? How good is the story? What's the music like? And so on. Ultima is clearly a game, but it's also a storytelling engine and for that reason it's easier to apply a set of critical standards to it. It can also be misleading, if we're trying to get close to the nitty gritty of interaction.

Tetris, on the other hand, doesn't tell any story at all (although I always wondered what those little dancing Russians were up to on the bonus screens). The graphics are functional, but otherwise irrelevant. The music is neither here nor there. All of which explains why the quality of a Tetris conversion is quite independent of the platform it's played upon. Personally, I still think the Game Boy version is the best. The Mac version, on the other hand, was dire.

The other interesting thing about Tetris is that it's very hard to imagine the idea working in any other medium. You could make a film about Ultima, I suppose, but a film about Tetris? No, the Russian program is quintessential computer entertainment. So you and I, being games players, ought to be able to say why it's such a cracker; but no . . . when it first came out, most reviewers found it difficult enough to describe what it was all about, let alone why they were spending so many hours playing it.

This difficulty with articulating what makes a high-quality pure-blooded game isn't new. In the old days, games magazines rated games on four categories: graphics, sound, playability and overall score. Playability, you will notice, tends to be missing these days, not because it isn't important, but — I suspect — because people got sick of the arguments that used to precede every playability rating. Hardly surprising, when no-one could define it.



It may also be missing because we're getting so many other categories of interactive entertainment (storytelling, point-and-click, environmental explorations and so forth) these days. Somehow, the notion of playability isn't easily applied to a title like Grandma & Me, Myst, or — ugh! — Plumbers Don't Wear Ties. This last example — possibly the naffest CD-ROM of all time — is a good example of why it's suddenly becoming more important than ever before to come up with some guidelines as to what cuts the crumpet in the world of interaction. So jump to it. Your list of the Ten Most Gag-Making Game Design Features Of All Time, please, on a postcard and sent to me c/o The Editor, PC Review, Priory Court, 30-32 Farringdon Lane, London, EC1R 3AU.

And next month, we'll see what the industry can come up with when asked for their list of Ten Of The Cleverest And Most Wonderful Things We Put Into Our Amazing Games. We'll be waiting . . .

■ **Steve Cooke**

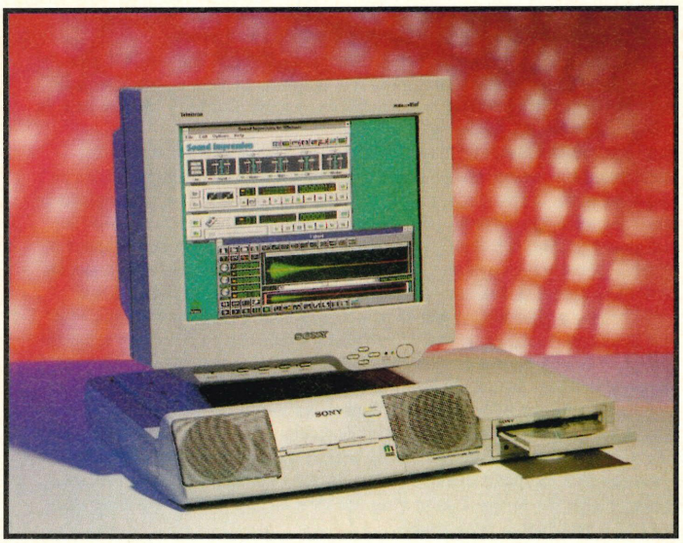
Space-saving speakers

A new Sony speaker system which fits neatly beneath a standard 14in x 15in or 17in monitor, and takes up no extra desk space, goes on sale in September, price £89, exclusive of VAT.

The CSS-B100T Computer Speaker System uses a sound cavity and and two-way bass reflex design which does not require a separate bass speaker. Electrical interference is reduced by built-in magnetic shielding.

Front-panel inputs cater for headphones, microphones, and other audio/visual devices. Input and output devices at the back can connect to a CD-ROm drive or sound card an AC adapter is also supplied.

For more details contact Sony on (0932) 816650.



In Brief

- **A Student's Guide to WordPerfect 5.1 has been published by Kuma, price £12.95. Written by Alick Hartley and Rachel S. Hewitt, the 222-page book covers a 'learn-by-doing' approach to WordPerfect. Contact Kuma on (0734) 844335.**

- **Sierra is reorganising its European operation following the acquisition of French software house Coktel Vision earlier this year. All future games titles published in Europe — including the Dynamix brands — will come under Sierra's name. Educational titles will now carry the Coktel name.**

- **The official Fantasy Football licence has been won by GST Software, best known for its home and office programs. The game, which runs under Windows, price £19.95, will be launched at the start of the new football season.**

- **The Philips 17C 17inch colour monitor, with built-in stereo audio, and a refresh rate of 72MHz in both Super VGA and 1024 x768 non-interlaced modes, has gone on sale price £549. For more information contact Philips (081) 689 4444.**

- **A new range of Fun School education programs aimed for younger children is set for release by Europress Software this autumn. Titles include Fun School in Dreamland, Fun School in Space and Fun School in Time. Subjects covered in the adventures include maths and ecology. Europress Software (0625) 8593444.**

The plane facts of air war

What is claimed to the most comprehensive survey ever published on military aircraft in any medium is to be released shortly on CD-ROM.

The first volume, Warplanes, Modern Fighting Aircraft is available now from Mindscape, price £54.99. A second volume, Warplanes, From the Cold War to Vietnam, is due for release later in the year.

Warplanes, Modern Fighting Aircraft features technical and service data on more than 500 aircraft — including the A-10 Thunderbolt, F-16 Falcon and Soviet SU-27 — and in excess of 200 weapons systems; more than 1,000 full screen photographs; an hour of live action video; 3D rendered models of aircraft and military airfield; and examinations of the role of aircraft in warfare, including Operation Desert Storm and the Falklands invasion.

The CD-ROM is produced by Maris Multimedia, makers of the Red-Shift Multimedia Astronomy. Contact Mindscape on (0444) 246333.

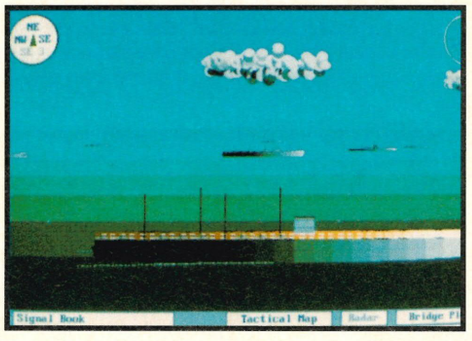
Let battle commence

Midway, the World War II sea battle which saw the destruction of the Japanese elite naval aviation forces, is set to be the first in a series of aircraft carrier strategy games.

These "Cinpac" games — short for Commander-in-Chief Pacific Fleet — are created by Dr Peter Turcan.

The player does not play the commander-in-chief but a task force commander, either Japanese or American. Information is gathered on a tactical map, centred on the island of Midway, covering one million square of the Pacific and hopes to recapture the "decision-making and anxieties of a task force commander who will never know exactly what is happening."

Midway will sell for £39.95 including VAT and is set for release this autumn. Contact Turcan Research on (071) 625 8455.



Frontier faxing

Electronic Frontier has launched its latest range of fax modems, with prices starting at just £68.

The six model range consists of: Frontier V.22bis Pocket Modem with (£68.15); Frontier V.22bis Internal PC Card Modem (£68.15); Frontier V.32bis Internal PC Modem Card (£170.38); Frontier V.32bis External Desktop Modem (£170.38). These models come with Eclipse SE Windows fax software. Frontier V.FAST Internal PC Card Modem with a choice of WinFax Pro 4 or Eclipse with OCR (£351.33); Frontier V.FAST Internal Desktop Modem with a choice of WinFax Pro 4 or Eclipse with OCR (£351.33). Prices are all inclusive of VAT.

The Eclipse SE software features timed sending, fax redirection, custom cover sheet and graphic file import for logos and signatures. OCR is an extra module for converting faxes to word processor formats and a five-year warranty. For more information contact Electronic Frontier on (0734) 810600.

UNIVERSE

Take Boris Verne, a uniquely ordinary guy...

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Imagine how he feels when he emerges from a rip in the space-time continuum into an unknown dimension...

Encounter weird alien worlds and their even wierder alien inhabitants! Guide Boris on an action-packed chase across the gulfs of space to find a fabled lost star. Help him find the key to defeating the evil Golden King who rules his **UNIVERSE!**

Rotoscoped game character with real-time scaling and over 500 frames of animation...

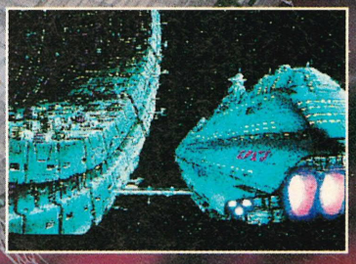
Lush, 256-colour hand-painted scenes teeming with background animations...

Feel the sense of total immersion in this parallel universe, enhanced by atmospheric, mood-responsive music...





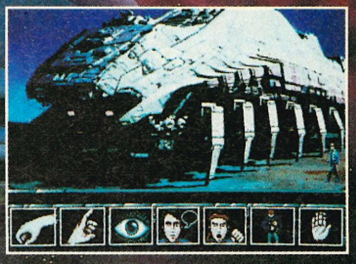




Available on: Amiga (compatible with 500, 600 and 1200), Amiga CD32, PC and PC CD ROM



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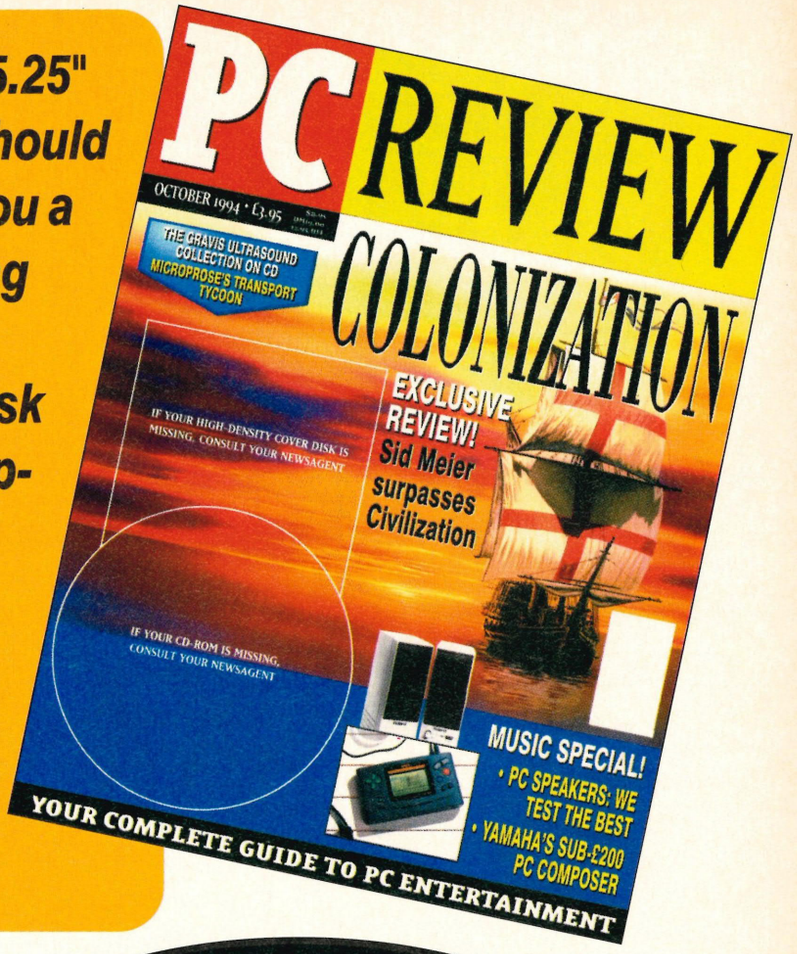
ATTENTION 5.25" DISK USERS!

Until now, PC Review has published a limited number of issues carrying 5.25" disks. Unfortunately, disk demos now tend to be so large that we have now reached the stage where it is no longer possible to provide you with the quality of software on 5.25" disks that we would wish, and we have come to the conclusion that we must discontinue this service.

We apologise for any inconvenience this causes, but the vast majority of PC users now have access to a 3.5" disk drive.



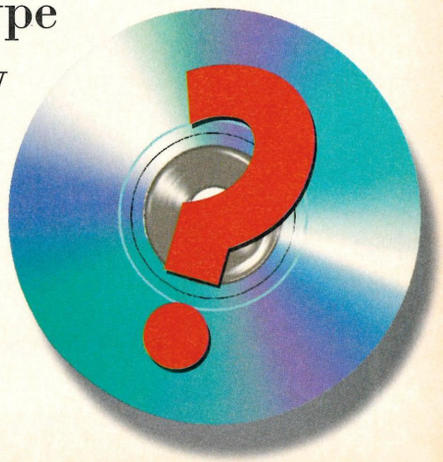
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ATTENTION CD-ROM DRIVE OWNERS!



As the number of readers with CD-ROM drives increases steadily, PC Review has big plans in the making for CD-ROM. In the next few months, you'll see a whole new type of CD-ROM attached to your copy of PC Review — it'll be just like having a magazine on CD. So don't miss the November edition of PC Review — complete with a free cover-mounted CD-ROM and, of course, a high density 3.5" floppy disk.



Corporate muscle

Big business meets multimedia

Even if nobody quite knows what it means, multimedia has emerged as the growth industry of the nineties. The world's biggest multinationals want a piece of the action — and games publishers are the prime targets. Tim Green investigates.





It's almost impossible to open a newspaper at the city pages without reading a story about multimedia. Telecommunications giants, film studios, computer companies, cable TV stations and consumer electronics corporations are jostling to control a hi-tech future in which interactivity is key and everything is digital.

But who are these giant corporations fighting over? Increasingly it's the games publishers. Almost imperceptibly companies started by hobbyists on kitchen tables have become essential to the future health of giants like BT, Sony, Time Warner, AT&T and Microsoft.

The games industry has undergone a revolution in the last few years. Consoles have introduced huge revenues and mass marketing, while the advent of the PC (and CD-ROM) has ushered in a degree of standardisation and a medium for reference and education to co-exist alongside games.

These two factors have alerted the 'big boys' and now software publishers find themselves at the leading edge of the digital revolution. In the last two years the games business has reeled at the size of the acquisitions — and the acqusitors:

- May 1993. Sony buys Psygnosis for an undisclosed sum.

- September 1993. Toy giant Hasbro acquires a minority stake in Virgin Interactive Entertainment for $25 million.

- March 1994. Media conglomerate Pearson buys Mindscape/Software Toolworks for £312 million.

- June 1994. Blockbuster Entertainment buys 75 per cent of Virgin Interactive Entertainment for $165 million (and increased its stake to 90% in August).

The best way to understand the motives behind these deals is to focus on one of them.

Let's take the last one. Just a few years ago the relationship between Virgin and Blockbuster Entertainment probably consisted of Virgin's salesforce desperately trying to convince the video chain that its shops should stock games alongside movies and popcorn. Now things have changed to such an extent that Blockbuster agreed to pay $165 million to own the software company.

It would be easy to look at this bit of business and think, yes, Virgin Interactive Entertainment is obviously making money and that's why Blockbuster acquired it. But that's just the surface. Dig deeper and hidden strategies reveal themselves.

Hidden secrets

For instance, Blockbuster is in the process of merger with Viacom. As arguably the world's major cable channel (it owns MTV), Viacom is always looking for 'software' to pipe down its lines. With MTV it needs music, but if 'games on demand' is going to take off, then Viacom may just have an outlet for, say, The 7th Guest.

But Blockbuster didn't just buy VIE's product, it bought its expertise too. In the race to develop interactive services — banking, shopping — it's software publishers who have the skills needed.

There's another example of this at the other Viacom end of the Blockbuster empire. Viacom purchased the Paramount film studio for $10 billion. But it didn't just buy a film library — Paramount Technology Group also came with the deal, and it, in turn, is allied to Spectrum Holobyte.

So it seems that, in a year of decline, games companies are more valuable than ever. Mark Phillips, entertainment lawyer with Harbottle & Lewis, says: "The games industry has been doing its own thing for nearly a decade and suddenly it's right in the middle of a revolution because it has the technological know-how, the right customer demographics and the most interesting products."

There's a more prosaic reason for the invasion too. The UK games industry is now worth around £700 million a year, which is more than the video sell-through business. Clearly games have stolen revenue from existing entertainment sectors and now the entertainment conglomerates want their cash back.

In demand

According to UK independents potential buyers are everywhere. They don't always know too much about their would-be prey either. Simon Jeffery, joint director of Empire Software, says. "If we changed our name to Interactive Enterprises we'd probably add a few million to our market worth."

But this is not just the story of poor publishers losing their independence to Global Media Inc. Games companies recognise the market has changed and it's not enough to be a big fish in a small pond any more. As Psygnosis's managing director Ian Hetherington said just after the buy-out by Sony: "You have to decide - do you want to be breakfast or do you want to have breakfast? We decided we'd like to have breakfast."

> "You have to decide – do you want to be breakfast or do you want to have breakfast?"

The primary reason for selling up is the sheer cost of development. Many companies recognise that they may have the imagination, the know-how and the will to make the next 7th Guest, but without the roomful of Silicon Graphics workstations at £25,000 apiece, they can't get started.

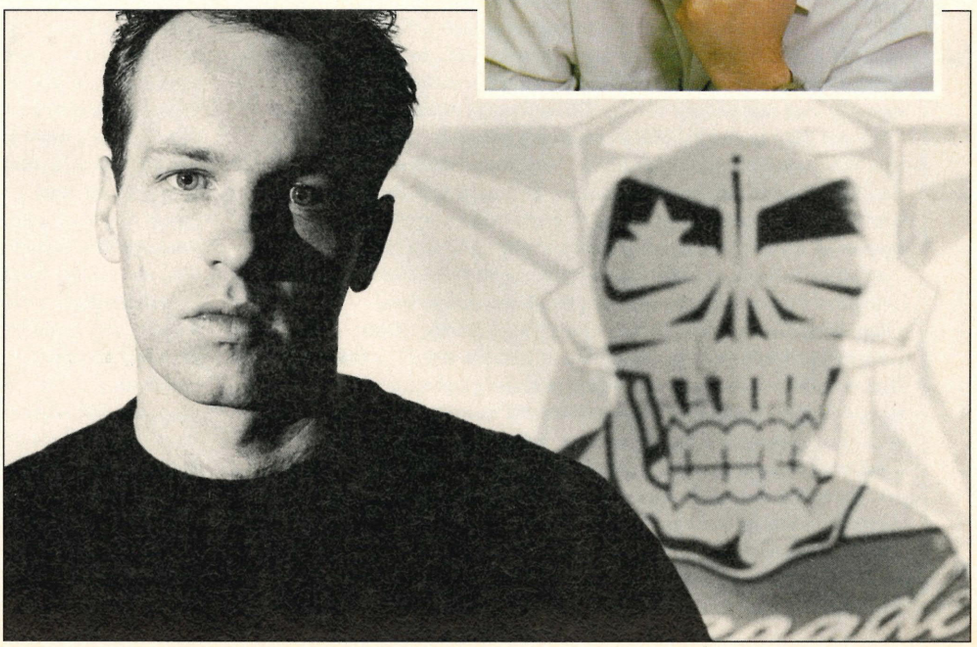
Gary Bracey, formerly software director of Ocean Software and now with Telstar, says: "It was pretty simple to produce a game in the early days. There'd be three people working on it. It would take two to three months and cost just a few thousand pounds." This method threw up early Ocean hits like Daley Thompson's Decathlon and Hunchback, "plus a whole load of other crap as well" adds Bracey.

Compare that to today. Ocean's forthcoming space-sim Inferno took two and a half years to complete and required seven coders, four 3D graphics artists, four artists, an aeronautical engineer and even a professor of aeronautics on the team. Bracey won't reveal its precise cost but says it compares to a small movie — probably just under £1 million.

Rising costs and changing markets

Securing the cash to develop has become a preoccupation for small independents who, in Amiga





Right: Jez San, founder of Argonaut Software. Below: Tom Watson, co-founder of Renegade, and friend (Tom is on the left).

days, managed perfectly well with little else besides a couple of A3000s.

According to Tom Watson, managing director of Renegade, nothing matters more than investment. "It's the key issue facing us all — we're aware that costs are spiralling and the industry is changing to take account of this. Smaller companies have to ask themselves how they will adapt."

Watson believes a long term perspective is needed as the speed with which new technologies develop grows faster. "Three to four years used to divide current technology from the next format. Not any more. Formats can change during product development. It's impossible to second guess how technology will shape up. In 1992 we were producing PC games for 286 machines — now users are more likely to own a 486 with CD-ROM."

There are, of course, cash-raising alternatives to selling up. US Gold raised £30 million with a public floatation last year, while development house DID (responsible for Inferno) handed over exclusive distribution to Ocean for £1million.

Restricted access

The issue of distribution is another which weighs heavy on independent minds. Gone are the days when games sold almost exclusively through independent specialist shops. Fuelled by the console explosion the industry has learned to service the like of Dixons, Woolworths, HMV and Virgin.

"I'm sure games publishers have got no idea how well their product is selling."

These retailers are used to the slick operations of the record companies. Now, the very same companies are making inroads into games distribution too.

Sony, besides buying Psygnosis, has been operational as Sony Electronic Publishing for over a year. It has distributed titles for Tradewest, Absolute, Delphine and Renegade as well as major players in their own right, including companies such as Ocean and Sales Curve Interactive .

Nick Garnell, Sony's director of business development, suggests the retail trade are happier now to deal with a handful of major names. "This year there'll be a major shakeout at retail and we'll see those left demanding professional salespeople and fewer of them. Obviously companies like Sony have built superb links with entertainment buyers and our handling of affiliate labels does cut back the number of visits," he says.

David Pullan, who heads up the new multimedia division of another music giant BMG, agrees and adds that, if retailers want fewer reps, so do developers. "There are so many formats and territories. Developers license Amiga rights to one publisher, CD to another, Mega Drive to someone else. It's chaotic. I'm sure games publishers have got no idea in most cases how well their product is selling. And if they don't know, how can they possibly maximise sales?"

He proposes that BMG's system, with sales information and orders processed in real time across 35 countries, can do it for them.

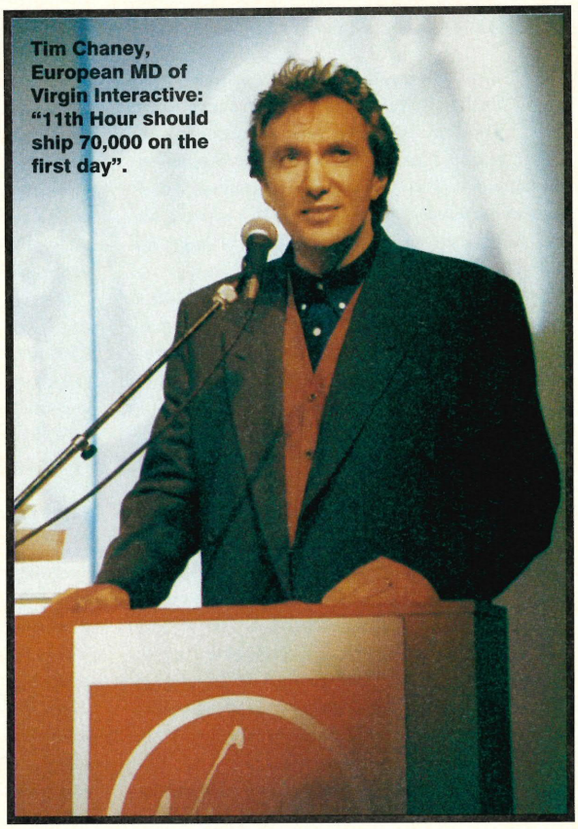
On the up

Over the coming months Pullan's task will be to acquire games product, whether it's through one-off distribution deals or total buy-outs. He says: "Now that a game can cost $5 million dollars you need the cashflow and the understanding of international markets to make that product work for you. We've got the resources and we've certainly got the cash. We've got loads of that." Pullan estimates that BMG has $2 billion in the bank

The growth of the PC CD-ROM sector and the decline of the consoles has also helped to persuade these companies that the time is right to enter the market. BMG *et al*, are instinctively appalled by the prohibitive trading conditions laid down by Sega and Nintendo. And of course five-inch CD is a medium they understand.

Tim Chaney, European managing director of VIE, gives an example to show how the sector is flourishing. "CD-ROM is a vast worldwide user base which needs to be fed. If we take The 7th Guest and Rebel Assault as benchmark titles on CD they've each sold about 80,000 in Europe since launch. For example, 11th Hour should ship 70,000 on the first day. And in terms of margins that's equivalent to 400,000 carts."

The music companies can look to their own artists too. Peter Gabriel's Xplora 1, David



Tim Chaney, European MD of Virgin Interactive: "11th Hour should ship 70,000 on the first day".

All the world's a double speed CD-Rom drive

Ponder this question for a minute. Which professional group is the most utterly unsuited to understanding the electronic revolution? It's a tricky one, but for some reason a mental picture of dear old John Gielgud keeps coming to mind. Let's be honest. It's hard to think of a more technophobic bunch than thespians. Good at emoting they may be, but surfing the Internet? I think not.

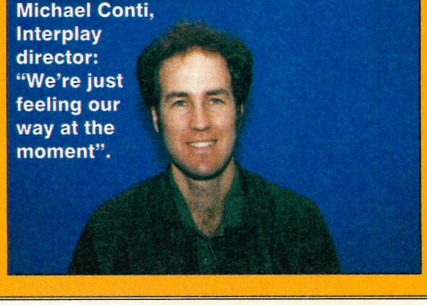
And yet it is actors who stand at the very gateway to the new media age. Hollywood is beginning to invest in games/multimedia companies (see The Movies go to Gamesville on page 32) because of the blurring divisions between films and computer entertainment. Making a game with video footage — whether a fully fledged interactive movie like Return to Zork, or just a regular game with video thrown in like Sim City Enhanced — requires film making skills. And actors.

For the performers it's all rather perplexing. Margot Kidder, who stars in US Gold's Under a Killing Moon, arrived at the set without a clue as to what was going on. "Normally a script gives you a beginning, a middle and an end and you work out from the dialogue how your character should be. But with an interactive film there are a number of ways in which the plot could go and a number of ways to play the same scene. All discipline goes out the window and you have to rely on raw energy to get you through."

But if conventional preparation is made impossible by a script which could be 10 times as long as usual, the actual performance is even more ticklish. Under A Killing Moon, like its prominent counterparts The 7th Guest and Return To Zork, used real actors in rendered environments. Rendering replaces sets and props, the traditional tools of the actor's trade. Instead all scenes were filmed in front of a blue Chromakey background which was edited out later to allow programmers to create a surreal new world.

Kidder came to the 'set' with extensive knowledge of Chromakey (she was Lois Lane in the Superman movies). But she was still freaked. "You're trying to give a good performance and there's pressure to co-ordinate your head movements properly. It's really strange," she says.

But working is working. And not surprisingly other actors are beginning to jump aboard the bandwagon. They've even got a collective name. At a recent trade show Argonaut boss Jez San reported that the industry has coined the term vactor (as in Virtual Actor) to describe this new breed. Some familiar names are cropping up. Sega's Double Switch starred Deborah Harry and R Lee Ermey (from Full Metal Jacket), and Electronic Art's forthcoming game, Wing Commander 3 will feature Mark Hamill, Tim Curry and Malcolm McDowell while Dennis Hopper and Grace Jones are rumoured to be working on Gametek's latest, Hell.



Michael Conti, Interplay director: "We're just feeling our way at the moment".

Bowie's Jump and Prince's new disc have pioneered the fledgling music CD-ROM market. Meanwhile UK marketing company ESP is working on creating discs for U2, The Orb and Nine Inch Nails which provide video footage, back catalogue and biographical details while the audio plays uninterrupted.

Absolute beginners

But if outsiders like the music giants are learning about the business, there are many who doubt their ability to master it.

David Gardner, European vice president of Electronic Arts, says: "It's easier to be good at distribution than publishing. I really don't believe the BMGs and the PolyGrams will be a force for at least five to 10 years. That's how long it will take to learn the business."

The majors counter that they won't try to ape games expertise, they'll buy it. Not just in development but in sales and marketing too.

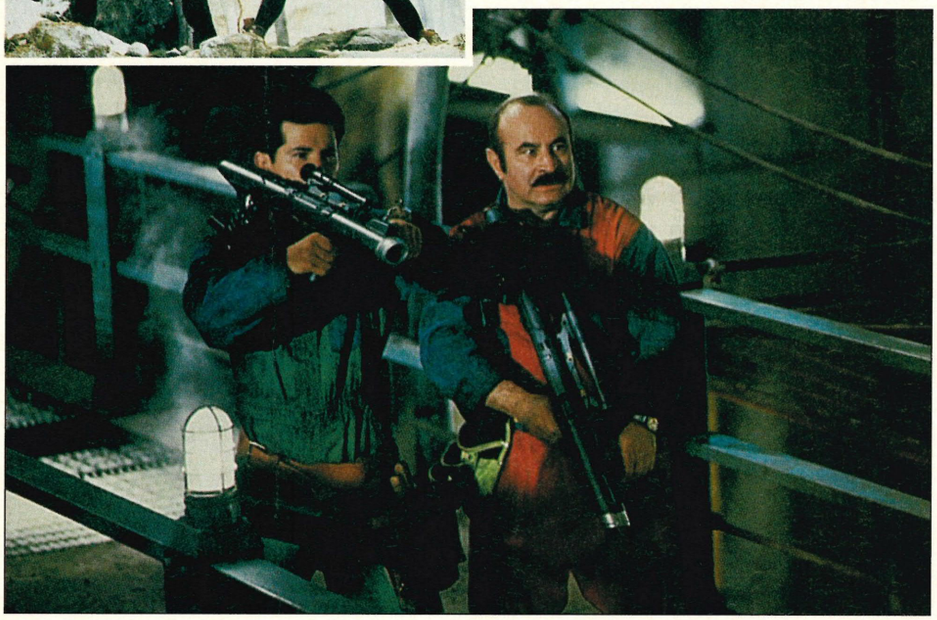
Pullan is under no illusions. "You can't ask a music sales rep to go into Our Price and talk about texture mapping and pixellation."

But the fact is that games marketing is already light years from the days when it was enough to get good reviews in the specialist press. Now the major releases have TV advertising, launch parties and their own birthday (remember Sonic Twosday?).



Character acting

In keeping with this spirit, games characters have expanded beyond the confines of their pixels. Earlier this year Millennium put out a Pinky record and, after Super Mario Bros the movie and Sonic the cartoon, this autumn the movie version of Double Dragon will hit the screens.



Licensing and merchandising opportunities like these offer another reason to link up with multinationals. In January the movie studio MCA/Universal bought a 15 per cent share in Interplay. The games publisher talked excitedly about "unique access" to Universal lots and licences. In July its enthusiasm proved well-placed when it picked up the rights to Steven Spielberg's work-in-progress Casper (the friendly ghost).

Similar cross-media motives lie behind Mirage's partnership with Time Warner on Rise Of The Robots (see panel on page 30). Andy Wood, managing director of Mirage, explains. "Increasingly we're dealing not so much in a game as an intellectual property. We might want to make, say, a novel out of Rise Of The Robots. If that's the case it's far easier to go through Time Publishing using existing contacts than it is starting from scratch. I suppose you call that synergy."

Many insiders note the same incentives in Pearson's acquisition of Mindscape/Software Toolworks. Since Pearson owns the FT, Thames TV and Penguin, they say it can't be long before Mindscape's expertise is put to work on making interactive versions of these ripe properties.

Not everyone agrees. Mark Phillips says: "The idea of a multimedia conspiracy is a lot of hype. Pearson is an ownership organisation in which Thames, Penguin and the others exist as separate companies. If they want to develop CDs they'll do it with whoever has the best ideas at the right price. I can't imagine they're under any obligation to go with Mindscape," he says.

Laying the bait

Even if Phillips is right, the temptation dangled by a huge corporation with cross-media resources will still be hard for many small companies to resist. These 'synergies' will be used as bait as markets go global.

But a snag still lurks. You can only make a game into a book, a film, a cartoon, a T-shirt or a lunch box if it's any good. And if corporate money men run the business the way they run, say, Hollywood are we to expect the games equivalent of Police Academy 8 Mission To Moscow?

Of course not every actor is a delicate technophobe. The interactive sector holds no fear for games-literate younger talent in Hollywood. Corey Haim, who has risen imperceptibly to become a video teen idol in movies like Prayer Of The Rollerboys and Licence To Drive, is becoming a specialist. Likewise Kirk Cameron, a huge teen TV idol in the US (if virtual unknown over here), can be seen in the video sequences of The Horde on 3DO.

Few doubt that interactive movies will emerge as a distinct new entertainment avenue. As if to confirm this the US actors' union the Screen Actors Guild has already drafted a Standard Interactive Media Agreement to standardise payments to performers. The contract was actually founded following confusion from producers rather than SAG members. They feared that they would be overcharged by actors who could demand a separate payment for every plot pathway in the game.

Mike Prohaska, SAG's senior administrator for interactive technology, says: "The agreement came about after producers kept calling to complain that existing contracts weren't really applicable to this new kind of work. For instance, an interactive game could require an actor to respond to the player's question in five different ways. It could be argued that this requires five payments. Clearly games producers just don't have that kind of finance." As if to prove the growth of the sector Prohaska estimates $2 million has been earned by his members in a year since the agreement was launched.

But so far none of Hollywood's A-list — an impressive list of actors that includes the likes of Schwarzenegger, Cruise and Costner amongst others — has given an interactive performance. In marketing terms their value would be considerable because they can deliver genuine global appeal. But games insiders doubt whether they would be cost-effective. Robert Stein, the designer behind Trilobyte's The 7th Guest, says: "Our percentage profits are higher than you could ever expect to make on a movie. Hollywood simply can't do something for $1.5 million, especially if your actors' fees are $12 million. I see no need for name actors."

The closest the market has come to the involvement of top drawer



Margot Kidder, here in character in Killing Moon: "All discipline goes out the window".

stars is when licensed games are produced using digitised images of "real" people. The best known example of this is Interplay's Demolition Man in which the digitised versions of Sly Stallone and Wesley Snipes were produced using real footage filmed specially by the two stars. Stallone performed a similar service on Cliffhanger as did Shaq O'Neal for Electronic Arts' Shaq Fu. Of course this is hardly the same as making a fully interactive movie, but it's a toe in the water for the actors and the studios.

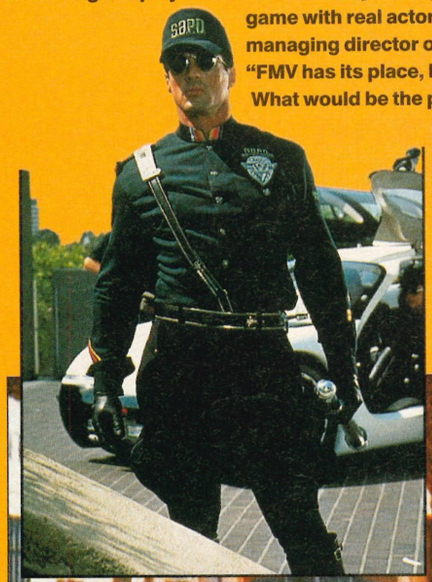
Although actors with no knowledge of games at all are beginning to appear on CD-ROM, directors can't afford to be technophobic. Yes, they have to coax good performances from their cast, but they also have to picture the visual impact of the computer imaging to be added later. This is not a simple task.

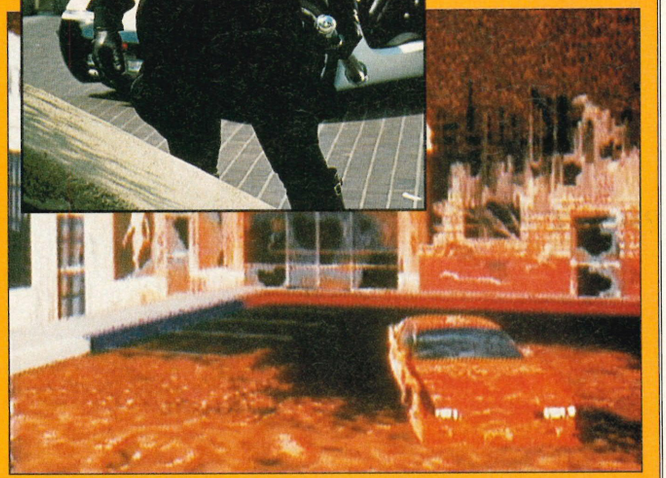
Michael Conti, director of Interplay's SimCity Enhanced, says: "Directors in this new medium need to combine technical know-how with acting skills. There's so much to remember that we're really just feeling our way at the moment. The real pioneers will be the computer-literate kids who are coming out of film schools now."

Conti, who studied under Hollywood's B movie king Roger Corman and worked on the thriller Jennifer 8, can count himself as something of a Hollywood insider. A select few of his contemporaries are exploring the new medium as well. Mary Lambert (Siesta, Pet Sematary and assorted Madonna videos) directed Double Switch, Ed Neumeier (writer of RoboCop) penned Sega's live action shoot-em-up Ground Zero Texas while Steven Spielberg is supposedly working on The Dig although that particular project is shrouded in mystery. Even Francis Ford Coppola, who experimented so spectacularly with special effects in Bram Stoker's Dracula, has been linked with interactive movie company Digital Pictures.

The crossover of movie actors and technicians into the games field has led to some pessimism among what's left of the independent home grown games industry in the United Kingdom. If games become more like movies then it will be hard for a home grown industry to compete with the glamour of the Hollywood elite, the nous of its technicians and the sheer wedge of its execs. And then there's the cultural difference — RoboCop makes a better game than Four Weddings And A Funeral. Simon Jeffery, director of Empire Software, says: "Hollywood will lead this industry because of the global pulling power of its stars. And anyway, what's $5 million for them to invest in a game when an average movie costs $25 million?"

But not everyone feels this way. After all surely the best games are all about gameplay? And how could anyone replicate a platform game with real actors? Ian Hetherington, managing director of Psygnosis, says: "FMV has its place, but not in all games. What would be the point in putting video into Lemmings? And there are things you can't do with real actors. We can't throw Schwarzenegger of a tall building. The technology doesn't exist and never will."





Pullan believes the answer is to buy the talent and then leave well alone. "If we buy into a company, it's because we like what we see. Why change it? We don't play safe. Artists on BMG's affiliate music labels include Bhangara bands and dance acts like M People. It doesn't make sense to interfere."

Changing the parameters

This shift will turn developers into creative specialists, unfettered by sales, marketing and distribution headaches. For many, it already has. Notorious individualists Bullfrog, for example, basically exist entirely within the Electronic Arts empire.

Tom Watson says: "Developers will have to produce great ideas and leave the risk of investment and distribution to their partners. After all a good game is still a good game however simple it is — Tetris may be the most popular game ever and it goes from the Game Boy to the PC."

The number of formats shows no sign of falling despite the widespread wish for a 'games VHS'. Many within the industry agree that while the PC sector will continue to grow, it is not going to remove the demand for consoles. Those who differ come, not surprisingly, from the PC industry. It was Intel's CEO Andy Grove who predicted that, in the future, "TV will be a mere PC peripheral."

One format which looks set to play a key role is not really a format at all. The ability to dial up games on the phone — games-on-demand — has begun a frenzy of activity among telephone and cable giants. BT has begun testing the technology among 70 of its employees in East Anglia. Thanks to a quirk of British broadcasting law BT is not allowed to broadcast TV across its network, even though the cable TV companies are allowed to supply telephony services. BT thinks this is unfair, but until it gets the law changed it is concentrating on video and games-on-demand, which is "narrowcasting" and therefore legal.

BT's intent was revealed when it signed up with the games industry's European Leisure Software Pub-

A case in point: Rise of the Robots

To misquote a line from Life Of Brian, "What have the majors ever done for us?" They might be able to tell you in Cheshire. Because the story behind the development of Mirage's Rise of the Robots is a little microcosm of how the smaller companies are linking with the big boys to meet the needs of a mature marketplace.

Mirage's great white hope for 1994 began life two and a half years ago as a solo project destined for one platform — PC CD-ROM. The game would probably have hit the shelves around Easter. But somewhere along the way the plan changed so that in November it will be released simultaneously, worldwide, across all formats.

But how? With someone else's cash, that's how. The money came from Time Warner Interactive, one of the world's biggest corporations with a $15 billion turnover. Earlier this year TWI swallowed up Atari Games and Tengen and opened its own UK office. Buying into Rise of the Robots was a perfect way to announce its arrival on the scene — and to make some money.

In the beginning

According to Mirage's managing director Andy Wood, the first lines of code for Rise of the Robots began life as a collective twinkle at Mirage in late 1992. The intention was to produce a 3D ray-traced beat 'em up. Soon Mirage knew that Rise of the Robots, with its stunning visuals, was shaping up as a real winner.

But when Nintendo's Streetfighter 2, and later Mortal Kombat, began setting records and frightening the tabloids, it realised that one format wouldn't be enough to do the game justice.

So Wood began to consider a multi-format release. But he knew that console versions would require more time and more funds. In turn that would mean either a staggered release schedule for all the formats or delaying all of them to fit in with the consoles.



The alternative was to find a partner with the financial resources to enable Mirage to speed everything up.

For a small company like Mirage the problem wasn't so much the cost of development as the risk associated with

10th OCTOBER 1994

DOOMSDAY

The movies go to Gamesville

Here's a great idea for a screenplay. A small town — let's call it Gamesville — is overrun by men in power suits. They talk in a strange, alien tongue — "let's talk turkey", "I'll greenlight that one" — and they stop at nothing until they have complete control. Could it happen? It already is. Below is a guide to the interactive activities of the movie companies.

MCA/Universal

Universal Interactive Studios was opened in January and didn't waste any time snapping into acquisitive mode by buying a 15 per cent stake in Interplay. It's a fully staffed software publisher actively seeking links with third parties. UIS's first major project was Jurassic Park for 3DO. Not surprising since Universal's parent company Japanese consumer electronics giant Matsushita has a major stake in the hardware company. The MCA/Universal empire also comprises the Geffen record company and MCA TV.

Movie hits: Jurassic Park, ET, Back To The Future.

Columbia/Tri-Star

These two sister studios used to be owned by Coca Cola and were run famously (and disastrously) by our own David Puttnam in the mid-eighties. Now they are run by the Sony Corporation which has divided its business into Sony Software and Sony Hardware. It launched a multimedia division Sony Electronic Publishing Ltd in 1991 and among its five divisions are games publishers Psygnosis (all format games) and Sony Imagesoft (Sega and Nintendo games). Now SEPL has a London office which has quickly sewn up numerous deals with smaller publishers such as Absolute.

Movie hits: Sleepless In Seattle, A Few Good Men

20th Century Fox

In June Fox confirmed that it would go ahead with a games division operating as an extension of its licensing and merchandising division. The company is extremely aggressive. It's part of Rupert Murdoch's News International group which also comprises BSkyB and Fox Broadcasting, the only serious challenger to have emerged to America's three network giants ABC, CBS and NBC. The movie studio has had something of a revival in the last few years and Murdoch himself is personally involved in its activities.

Movie hits: Home Alone, The Simpsons, Alien, Die Hard.

Warner Bros

The famous film studio was bought by Time Inc (the magazine people) for a staggering $14.1 billion in 1990. The organisation has fingers in every pie — telephone company US West, cable company HBO, 3DO and consumer electronics company Toshiba to name but four. It established the Time Warner Interactive Group in 1988. This division has developed mostly 'infotainment' product for Mac and PC CD-ROM until the merger with Atari Games and Tengen in April opened up the games market. It will be distributing Mirage's Rise Of The Robots worldwide in September.

Movie hits: Batman, Lethal Weapon, The Fugitive

Paramount

Earlier this year cable company Viacom and home shopping channel QVC locked horns in a heroic battle for control of Paramount — proof of the premium on 'content' in today's business climate. Viacom won, but only after it semi-merged with Blockbuster Video and coughed up around $10 billion. Part of the prize was the Paramount Technology Group. So far products have been mostly educational (Richard Scarry's Busy Pen) or reference (Movie Select). No movie or TV licences have been released. But this is set to change. One of PTG's investments has been in Spectrum Holobyte which is now working on a series of Star Trek games.

Movie hits: Star Trek, Wayne's World, Patriot Games

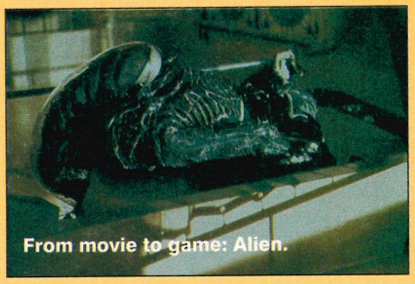
Walt Disney

Until EuroDisney, the Disney organisation had done little seriously wrong for over a decade. Its revived animated division (from The Little Mermaid through to The Lion King) has been a sensation, while its 'adult' studios Touchstone and Hollywood Pictures have thrown up massive blockbusters like Three Men and a Baby and Sister Act. The company's games division Walt Disney Computer Software exists to lend animation expertise to developers (eg, Virgin's Aladdin) although the group's boss Michael Eisner pours scorn on the whole notion of a multimedia future. Insiders don't buy it and reckon Disney is biding time until the right 'partner' comes along (it was linked with Virgin). At the moment Disney games licences are negotiated through its consumer products division.

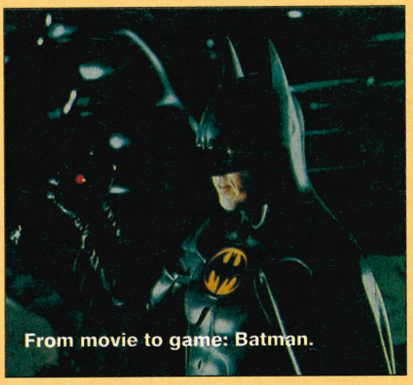
Movie hits: Aladdin, The Lion King, Cool Runnings



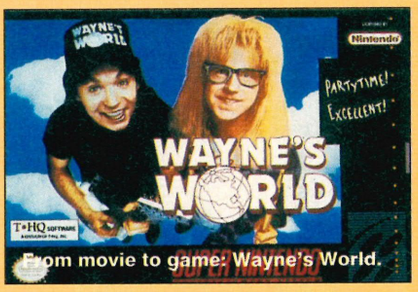
From movie to game: Jurassic Park.



From movie to game: Alien.



From movie to game: Batman.



From movie to game: Wayne's World.



From movie to game: The Lion King.

lishers Association earlier this year.

For the games publishers BT and the like represent a revenue possibility. The companies which stand to lose are those manufacturing and distributing software, but they don't seem too bothered. David Gardner, European vice president of EA, says: "We don't want to shed distribution business but we may have to. At the end of the day content is more important to us. So if that means dealing with BT Electronic Distribution, or whatever, then we will."

The forces which shape this currazy business are shifting fast. But nobody really knows anything for sure. Maybe the cash injected by outsiders will send creativity to new levels. Or maybe it will send it plummeting to mediocre sludge. The only thing you can count on is that consumers aren't stupid. Okay, some are. But not enough to continue buying poor-quality conversions of hit movies released because some suit thinks it makes great "synergy".

Long may corporate coffers rain down dollar bills on some developers. And long may others snub the cash to create ground-breaking titles like Doom and Elite all by themselves.

Case history: Rise of the Robots

manufacturing Sega and Nintendo games. Cartridges are ordered months before release date and have to be paid for in advance — before any cash is received from retailers.

"Technically it wasn't difficult to scale down the game for a console release," says Wood. "The problem was the inventory risk associated with cartridges. It can reach as high as one million which left us no option but to seek a deal with a third party."

Mirage wasn't short of suitors. TWI won out after months of talks and a nine-hour meeting which concluded at 12.30am on the night before the spring trade show ECTS.

Neither company will be drawn on the figures involved. The deal is based on a part-guarantee, part-royalty basis, not unusual in the business. What will be exceptional are revenues which look set to be in the millions, though once again, no one's prepared to project.

For Wood it was all a question of maths. He says: "When we linked up with a partner we had to make a compromise over margins. But you have to weigh that against the total volumes involved." He believes global sales could hit eight million.

Despite TWI's monolithic reputation the company's existing salesforce will not handle Robots. Instead it will be down to familiar industry salesforce USD. Essentially USD will act for TWI, dispatching orders to the major's Irish distribution centre for picking, packing and mailing out to all destinations across Europe.

Besides formalising release dates and speeding development, Mirage and TWI have also been able to improve the value of the game by employing Brian May to contribute the soundtrack. The CD versions is particular will rock to the sound of big hair.

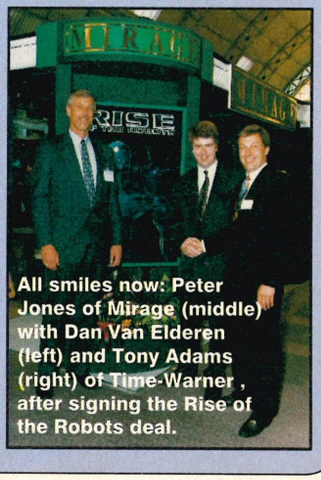
Making a difference

But where TWI's muscle will really make a difference is in marketing. A campaign worth more than $1 million, light years beyond what Mirage could stump up on its own, is just cranking up now. Expect blanket TV ads in the Christmas run-up.

If Mirage had stuck to Plan A, Rise of the Robots would be out now on PC CD-ROM, Amiga CD32 and floppy formats. But because of the breathing space Mirage has been able to use $20,000 of Time Warner's money on 'playtesting' which even stretches to watching players' reactions through two-way mirrors. This has given the programmers the leisure to tweak the gameplay in time for launch.

Wood raves about this benefit. "In the long run the opportunity to properly playtest will be just as important as the extra sums for marketing," he says.

Until the marketing really kicks in Mirage can luxuriate in a groundswell of Rise of the Robots hype. And not just about the game itself. Think about it. The link between "small Cheshire developer" and "rampaging international giant" makes a great story and adds to the hype. Want an example? You're reading it.



All smiles now: Peter Jones of Mirage (middle) with Dan Van Elderen (left) and Tony Adams (right) of Time-Warner , after signing the Rise of the Robots deal.

There is nothing on Earth like it.

INFERNO

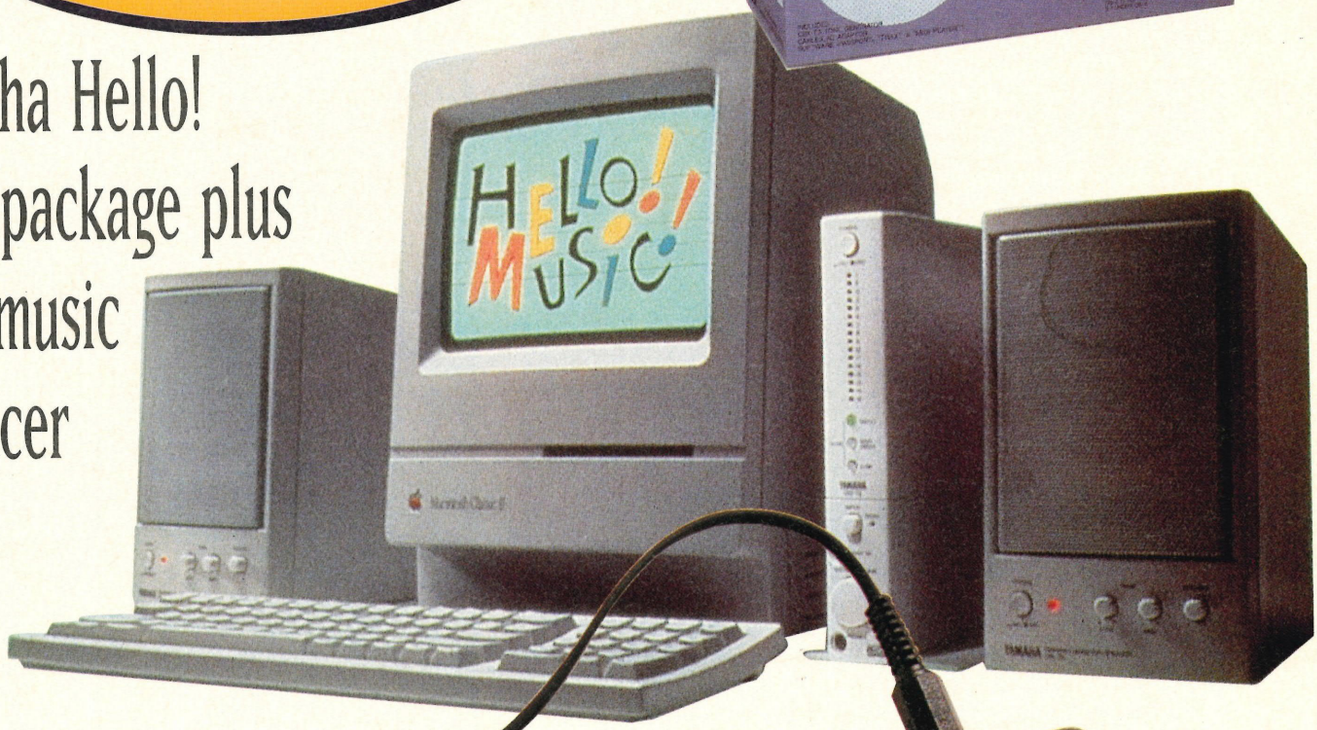
THE ODYSSEY CONTINUES

COMPETITION

WIN!

a Yamaha Hello! Music! package plus a QY8 music sequencer





PLUS!

Two QY8 sequencers for the runners up



You've played games, mucked around with multimedia and perhaps even experimented with graphics packages, so why not try your hand at making music on your PC? For our first prize in this amazing competition Yamaha's brilliant Hello! Music! package is up for grabs, which comprises of Yamaha's revolutionary CBX-T3 module, plus two easy to use music programs, QBase Lite and Music Box.

The CBX-T3 is a smart, compact module which forms the basis of your PC's music system. It can generate 192 instrumental sounds, plus 10 drum and percussion sets, most of which conform to General MIDI specifications (the building blocks for all music-related computer information).

The Hello! Music! module is based on Yamaha's AWM (Advanced Wave Memory) tone generator technology, which is behind some of today's most popular electronic instruments. There are 16 available MIDI channels, stunning reverb and delay effects all tied up with an easy-to-use Windows interface.

So, you've got the machinery to create state of the art sounds, but you also need the software. Hello! Music! comes with Steinberg's market leading sequencing software, QBase Lite. QBase enables you to record, edit and play back your musical compositions, and you can also edit existing MIDI files. In addition, the program includes a comprehensive score window which enables you to edit, enter and read your musical score using standard musical notation.

The second software package, Steinberg's Music Box, is the easiest way to play back General MIDI song files via the CBX-T3, and it also allows you to control instrument, tempo, pitch and reverb settings via a simple click of the mouse. And you thought making music was difficult?

The first prize winner and runners up will also take home the Yamaha QY8 sequencer, a pocket-sized device only slightly larger than hand-held consoles such as the Gameboy and Gamegear. Despite its extremely handy size, it includes 40 voices, a 58 piece drum kit, 50 accompaniment styles and a 20 song memory which holds a staggering 6,400 notes — proof that great things often come in small packages.

But what does it do? Well, quite simply you use the QY8 as a device for creating and editing songs when you're on the move. So, if you come up with a great bass riff while you're sitting on the train — just tap it in to the QY8 and hear it played back over your headphones in any number of different styles.

You can use your QY8 to create accompaniments you can play along to on the instrument of your choice, try out different musical arrangements, use it as a drum machine or an AWM quality tone generator. In a nutshell, create entire multi-track songs. Its excellent voices and sequencing capability, along with its size, make it an extremely handy tool for both experienced musicians and those who just want to experiment. And when you're back sitting in front of your PC or a full size electronic keyboard set-up, you can then dump everything you've composed back off the QY8 and on to the PC ready to turn in to a professional quality recording!

COMPETITION RULES

- **Employees of EMAP, Yamaha, their families and associates are not eligible to enter this competition.**
- **No multiple entries, please.**
- **No cash equivalent to the prizes is available.**
- **No entries received after the closing date will be accepted.**
- **The editor's decision is final.**

Remember, if you want to enter more than one competition in each edition of PC Review, you can put your entries in one single envelope. If you do this, please mark clearly on the front of the envelope which competitions you have entered.

HOW TO ENTER

To stand a chance of winning one of these magnificent prizes, you need to do four things. First, complete the word puzzle below to the best of your ability. Second, add your answer to the tie-breaker question on the coupon. Thirdly, put your answers on the coupon below (if you don't want to spoil the magazine you may photocopy the page or write out the answers by hand) and stick it to the back of a postcard or sealed envelope. Finally, send it to the following address:

Hello! Music! Competition
PC Review
Priory Court
30-32 Farringdon Lane
London EC1R 3AU

The question . . .

You must get from the word "wave" to the word "midi" in six steps, changing only one letter at a time. You can, for example, follow "wave" with "wove", "rave" or "wade" because each word is only one letter different from the first, but not with "mave" (the word doesn't exist, at least not in this language) or "navy" (more than one letter has been changed).

Your entry must arrive at PC Review by October 15th, 1994. This is the closing date, and if any entries arrive after this, we will tear them into little pieces and jump up and down on them. So there.

Please note: the minimum hardware requirement for the Hello! Music! package and QY8 is a 386 running Windows 3.1.

Hello! Music! Competition

Name .....

Address.....

.....

.....

Fill in the blanks:

1. WAVE

2.....

3.....

4.....

5.....

6. MIDI

Tie breaker

I'd like to say "Hello! Music! because

.....

.....

.....

.....

(complete this sentence in not more than ten words in a way that you feel is witty or appropriate to the subject matter.)

❒ **Data protection: tick this box if you do not wish to receive further information or other offers or services in the future.**

❒ **I am under 18**
❒ **I am 18 or over**

Closing date: 15 October 1994
PC Review Issue 36 October 1994

COMPETITION

PC for rent?

To buy yourself a decent PC these days can set you back the price of a small second-hand car. But there is an alternative — you can rent one instead. Steve Boxer investigates the world of PC rental schemes.

PC manufacturers have started to make their machines less fiendish to use, although computing still remains more of a black art, with its own Klingon-like vocabulary, than it really should. The average new user is, then, probably still scared about the technical complexity of PCs, but perhaps less so than a year ago. And the time when a PC is seen as a home appliance on a par with a VCR is finally approaching.

So that's one major obstacle lying in the path of potential home PC users which, although not bulldozed out of the way, is at least having a set of hand and footholds built into it by the PC manufacturers. But there's another obstacle which perhaps millions of people who want PCs in their home are finding too slippery and tall to climb.

The problem is that a decent PC costs much the same as a second-hand car. And added to that, it has the lifespan of a caterpillar. I don't know about you, but if I had to find £1,500 in cash, I'd have no option but to rob the nearest building society. I could, of course, take out a bank loan, but I'd be rather loath to do that if the item I was buying needed replacing as soon as I'd paid off the loan I bought it with.

Becoming a consumer durable

It seems fairly obvious: if PCs are to become consumer goods (in fact, the correct marketing phrase is 'brown goods', which includes hi-fis, TVs and so on), they should be distributed to the public in exactly the same way as other consumer goods.

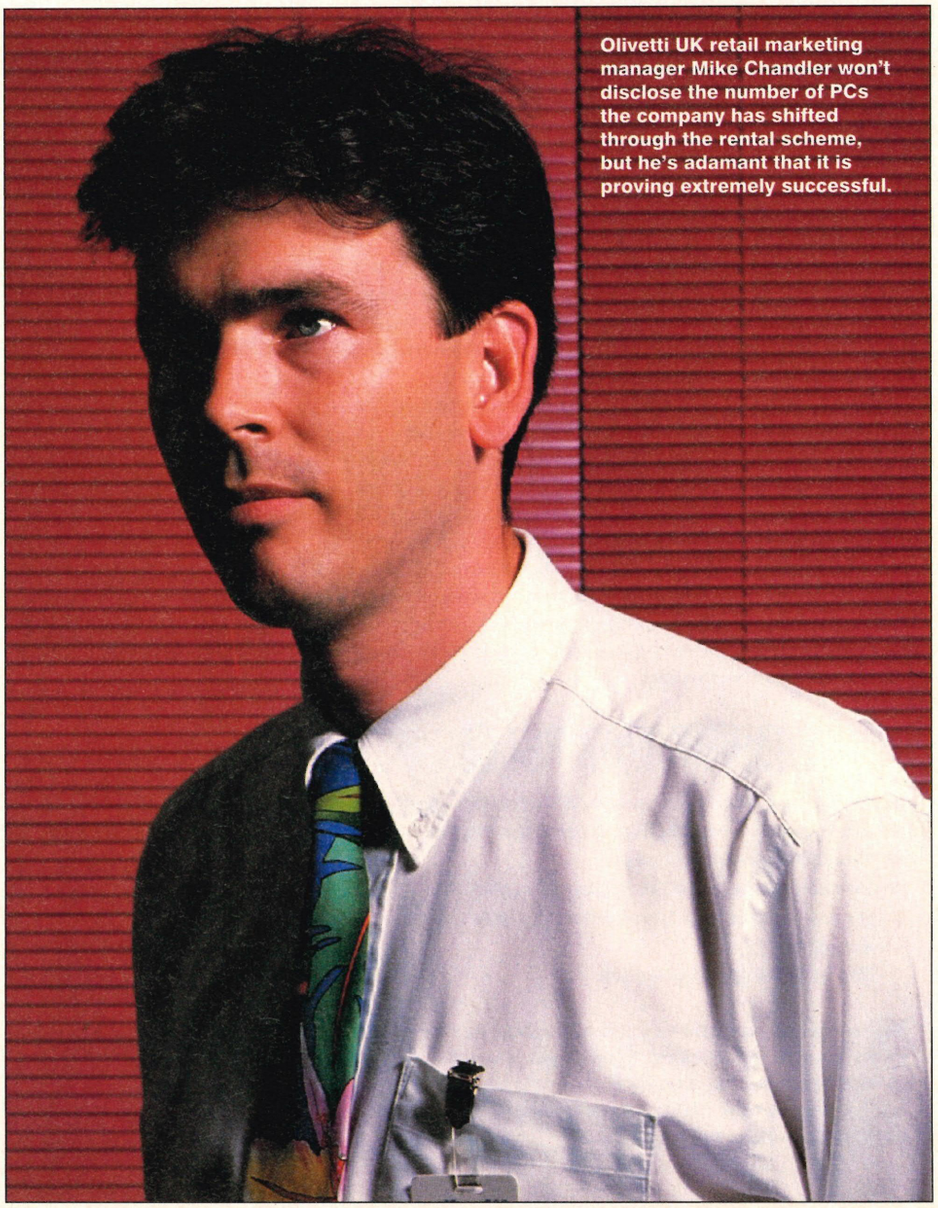
With regard to sell-through, this has happened to a limited extent, thanks to the advent of computer superstores and the arrival of decent PCs in the high street shops, but one thing has been lacking: the opportunity to rent a PC just as you would rent a TV and video.

This massive gap in the market was finally filled last year by, of all people, good old Radio Rentals who, for me, conjure up strange images of low-rise 60s shopping malls, Watneys Party Seven tins and bobbies clipping cheeky kids round the ears.

There's nothing parochial about Radio Rentals these days, though, especially if you consider the way it has revamped its business and cannily expanded it to cover PCs.

Rent first, own later

Last October, Radio Rentals started a scheme called Option 2 Own which, it claims, has been a huge success. It applied it to all its more usual products — TVs, VCRs, washing machines — but also, for the first time, for PCs. The principle is simple — choose between four different PC/software packages, each of which have a different monthly price. But there are two crucial aspects which make it infinitely more attractive than any other PC rental or credit scheme — you don't have to pay a deposit, and after you've paid off the last of 36 monthly payments, the kit is yours.



Olivetti UK retail marketing manager Mike Chandler won't disclose the number of PCs the company has shifted through the rental scheme, but he's adamant that it is proving extremely successful.

The first aspect sees off the high street operators, who always charge a deposit. Alan Hely, Radio Rentals' marketing manager, adds: "We also charge a nought per cent annual percentage rate (APR), and most of the high street outlets will charge some sort of APR." And the second aspect counters the built-in problem of renting a PC, that, if you weren't careful, you could eventually find yourself whacking out a monthly fee for the PC equivalent of a Ford Model T.

It's difficult to find any flaws in Option 2 Own. There's a minimum six-month payment period, so if you want to rent a PC for a two-week project or something, it doesn't really make sense, but apart from that, it's the only way in which you can get a PC without putting any money (apart from the first payment, in advance) down.

Three year warranty

All machines have a three-year (that is, lasting the whole of the rental period) on-site warranty, and if you return one, you won't have to make any more payments.

You can also opt to upgrade at any time, although if you do that, you'll have to start paying for the new machine from scratch, so it'll be another three years before it becomes yours.

In other words, if you want to rent a machine via Option 2 Own, make damn sure that it can easily cope with your requirements for the next three years. Three years, of course, is a long time in the world of computing.

This is fairly limited in the Option 2 Own scheme, but Hely explains why: "We've tried to take away the jargon and mystery about PCs, to suit our sort of customers, so we picked one particular brand and range. It's important that we start with a simple proposition." He's quite right, of course: shoppers walking into Radio Rentals shops are going to want to spend no more than five minutes picking one particular PC package for their own use.

As the panel headed 'Option 2 Own Ranges' on page 38 shows, Radio Rentals has standardised on Olivetti's PCS range of home PCs, which are perfectly good boxes, and supplied them with a level of software which is not dissimilar to that supplied with the PCs range by Olivetti.

A bit of elementary multiplication shows that the amount of money you're actually paying out to own the machines ranges from £1439.64 for the starter package to £2,447.64 for the home/office package, which is pretty good when you consider that these take no account of interest rates, and don't even require a deposit. As the panel states, Radio Rentals also has a couple of printer options, and the company also distributes a software catalogue (naturally, you have to pay for this rather than rent it), but of course, the whole point of having a PC is to make it do what you want it to do by putting your particular favoured software on it, and Option 2 Owners would do well to shop around for software.

> "The amount you pay to own the machines starts from £1439.64, which is pretty good when you consider you don't even require a deposit."

Room for manoeuvre

According to Radio Rentals' Hely, there's plenty of room in the scheme for expansion: "We're looking at the role of add-ons. For example, if a customer doesn't have a CD-ROM, he or she should be able to upgrade without having to send the machine back and receive a new one." This is actually more important than it sounds, as, according to Hely: "We don't recommend that customers open the kit up during the 36-month period," mainly, apparently, for legal reasons, as until the last payment has been made, the PCs still belong to Radio Rentals. It's possible that this essential element of flexibility will be added to the scheme this Christmas, when what Hely calls "the season" begins.

Cheaper rental

In fact, if you're interested in the scheme, you might do well to wait for the season, as Hely is looking to add another aspect to it which could keep a lot of bank managers happy. You may wonder what happens to machines which are returned part-way through the 36-month period. Not a lot, at the moment, is the answer, but when Radio Rentals has enough in stock, according to Hely, it will start putting them back out on the Option 2 Own scheme under the tag "Quality Refurbished", at lower monthly prices.

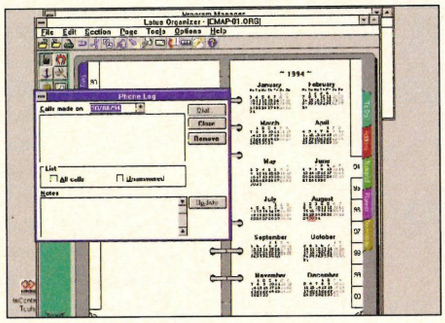
Thus, patient customers could save themselves a bit of money at little risk. If PCs break down, they tend to do that soon after purchase, and in any case, they'll probably be covered by the same three-year warranty.

Alternatives

Buying a PC is always a case of swings and roundabouts, but it's nice to be able to choose between as many swings and roundabouts as possible. Option 2 Own won't suit everybody, but it adds an extra alternative. Those it will suit are first-time users who don't want to have to learn all the attendant jargon surrounding PCs, or teach themselves about all the different makes of PC on offer. Those who know the market









As well as the PC itself, the Radio Rentals deal also includes software. Above from top: The Animals, Lotus Organiser and Return to Zork (the last two with CD-ROM machines only.)

OPTION 2 OWN RANGES

Option 2 Own offers four packages, aimed at different potential users. They are:

Starter package

Hardware:
Olivetti PCS42S: 486SX/25, 4Mb RAM, 170Mb hard disk

Software
MS-DOS 6.2, Windows 3.1, MS-Works 3, Lotus Organizer

Price:
£39.99 per month (36-month total £1,439.64; RRP inc VAT £1,056.33)

Family package

Hardware:
Olivetti PCS42S: 486SX/33, 4Mb RAM, 170Mb hard disk, 8-bit mono sound card plus speakers

Software
MS-DOS 6.2, Windows 3.1, MS-Works 3, Lotus Organizer, Fury of Furies game

Price:
£47.99 per month (36-month total £1,727.64)

Multimedia package

Hardware:
Olivetti PCS42MM: 486SX/33, 4Mb RAM, 170Mb hard disk, 16-bit stereo sound card plus speakers, dual-speed CD-ROM drive

Software
MS-DOS 6.2, Windows 3.1, MS-Works 3, Lotus Organizer, 6 CDs including Comptons Encyclopedia, Return to Zork, Star Wars Chess

Price:
£57.99 per month (36-month total £2,087.64; RRP inc VAT £1,408.33)

Home/office package

Hardware
Olivetti PCS42H: 486DX2/50, 8Mb RAM, 210Mb hard disk

Software
MS-DOS 6.2, Windows 3.1, MS-Works 3, Lotus Organizer, Sage Moneywise, GST PressWorks, GST DesignWorks

Price:
£67.99 per month (36-month total £2,447.64)

Printer options

Along with the PCs above, you can also add a printer, at the extra cost quoted below.

Olivetti JP-250 inkjet printer: £10.99 per month
Oki OL400 laser printer: £17.99 per month

could certainly save themselves money by shopping around among the off the page direct PC vendors, but this always carries an element of risk.

This risk, of course, is pretty much eliminated if you can go into a shop, see a machine and take it away with you, and this particularly applies to the computer superstores, which offer a much higher choice (and less dubious advice from salesmen) than the high street stores. But the high street stores have much more experience of offering financing and so on.

Finding the right company

PC rental companies do exist, but they are all geared up to the corporate market — PC manufacturer Carrera Technologies, for example, has tried to cash in on the rail strikes by advertising machines for hire to those who can't make it into work. All such schemes are much less financially attractive than Option 2 Own. But this does demonstrate that PC manufacturers are at least thinking about renting or leasing out PCs, as well as selling them.

Potential market

Radio Rentals' efforts at treating PCs in the way it treats many of its other consumer goods, are all the more admirable when you consider that a Catch-22 situation exists in the home PC rental market.

> "Radio Rentals' efforts at treating PCs in the way it treats many of its other consumer goods, can be seen as highly admirable."

The problem is that schemes along the lines of Option 2 Own will only become really widespread when the size of the SOHO (small office, home office) market reaches a critical mass, and in order to reach the critical mass required, the SOHO market needs such schemes to be easily available. The SOHO market also needs to be targeted by more PC manufacturers — currently the only ones selling PCs into it with any credibility are Packard Bell, Olivetti, Compaq, IBM and Apple, as a trip to any high street shop selling computers will confirm. None of these companies has really managed to convince the general public that buying a PC is as easy as buying a VCR, which is why the Option 2 Own scheme is so important.

The future looks bright

But applying consumer goods marketing principles to the PC market offers SOHO market manufacturers a lot of encouragement.

According to Olivetti, there are 22.6 million households in the UK, of which 95 per cent have TVs and about 75 per cent have videos. Olivetti's own research into UK households suggest that six per cent of households have PCs, which equates to about 1.35 million homes. The equivalent figure in the much more advanced US household market is 35 to 38 per cent penetration.

If the UK market was to reach the same level, nearly seven million PCs would have to be sold, and any manufacturer with a big slice of that market would make a lot of money.

Option 2 Own could be one of the necessary catalysts fuelling the home PC explosion.

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TAKE 2 INTERACTIVE SOFTWARE

Creative thinking



Some while back, the company Creative Labs made one of the few true standards on the PC — the Sound Blaster sound card. Several years later Martin Klimes finds that the company is still up to its old tricks.

Creative Labs is a big company nowadays, with a veritable stranglehold on mass-market PC sound and multimedia. It has offices all over the world. But every now and again, some of its top brass travel the globe in the name of a bigger profile.

Most recently marketing director Arnold Waldstein, developer relations manager David Fleck and European product manager Claudia Romanini from California, France, and rural Berkshire respectively, talked about the company and more specifically about what developers can do with Creative Labs products, especially the Sound Blaster AWE32 (its latest pride and joy).

Sound business sense

I began by asking Waldstein how Creative Labs had reached such a dominant position.

"We know that generally customers don't care about technical specifications. All they care about is the end product. By supporting developers in the most aggressive fashion possible we enable them to make products our products look good."

Creative has a range of ways to persuade developers into to support its products. It doesn't cost anything to become a developer, and there are advantages to be gained in the form of technical support, news-letter updates, and free development hardware. "It's an ongoing service," adds Waldstein, "and besides, it's counter-productive to charge people who you want to help."

This is a strategy that has helped make the Sound Blaster the best supported sound card in the games industry. However, Creative Labs doesn't just sell sound cards any more.

According to Waldstein, "Over 60 per cent of our revenue comes from the multimedia upgrade market. That's a category that didn't even exist three years ago when the MPC standard was actually announced."

Creative Labs doesn't evenmake its own CD-ROM drives, selling even Matsushita's manufactured models. The majority of its income now comes from shifting boxes containing products from other manufacturers. Why not make its own?

"We are re-sellers not manufacturers because while Sound Blaster is a legitimate technology, CD is neither proprietary nor interesting."

The multimedia boom

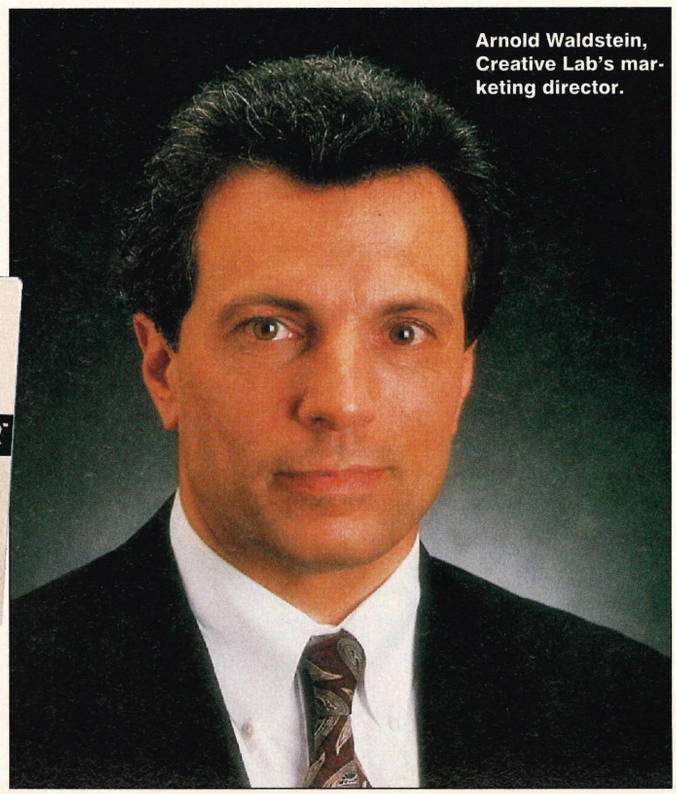
I asked Waldstein and Fleck about how the company had managed to ride the coat tails of the multimedia boom so successfully.

"People want the multimedia software that's coming out, particularly in the last year. Some hardware manufacturers bring out their products into a barren market place and wait for software support. We want software support as soon as possible after our products come out. With the upgrade kits that was easy, games like The 7th Guest had done it for us.

"We're in a great position to track this demand. With our jobs we have a good idea of about 90 per cent of the software that's being written around the



Creative Labs' made its name with the success of the Sound Blaster card.



Arnold Waldstein, Creative Lab's marketing director.



The latest in video capture hardware and software from Creative Labs.

Gary Davenport, Creative Labs' Technical Marketing Manager explains his vision of the future of multimedia hardware technology.

"With regard to the way in which Creative Labs will develop, we will be watching advances in graphics more than other areas in the coming year. In our research department we still spend about 60 per cent of our time in audio, but video is probably about 25 per cent now."

Creative doesn't believe the next stage is going to be MPEG, though. "We do have an MPEG board coming out, but its value to the gaming community is arguable. It's just not manipulable enough or cheap enough for gamers. The next move is likely to be in the 3D world.

"You can see this next stage by the way people are clamouring for full-motion video. Video is the bottle-neck at the moment, because people see a tiny box in the corner of the screen and say, 'You can make it big on my TV, so why not on my PC?' We need to consider graphics as a data type on to which to map video. That way people will be able to see a difference as well as hear it."

Talking about sound cards

"The difference between the FM synthesis and wave tabling generations of sound card was demonstrable. The EMU 8000 chip we had specially made for the AWE32 is truly remarkable. The box of tools that we've given developers is good and there's plenty of scope.

"It's a new card, and we'll have to see whether the boasting is justified." What about the ageing FM standard, though?

"Doing away with FM synthesis altogether is not a reality at the moment, but we're working on creating synthetic variations of samples, and eventually that will be a replacement. Being able to do that however without using huge amounts of RAM is quite a challenge for us.

"In the meanwhile, we're looking towards integration of sound and video, like MPEG has done. There's also downsizing to consider, what with PCMCIA and all. It's a reality of our industry that as technology advances things get smaller, more powerful, and cheaper."

"In the future, you can also expect the company to be announcing links with PC manufacturers. This will probably mean that we will see Sound Blaster chips preinstalled on the computer you buy.

"It's partly come about because new people have entered the market who expect sound as a standard, whereas two years ago it was a tough road to convince people that sound had any place on the PC. As for Creative Labs' place in all this, manufacturers are interested in us because they want quality, a competitive price that won't push up the price of the whole system, and a product that's good enough so that people won't just treat it as a gimmick and pull off the chip first thing and get a separate sound card."

It's good to talk

Packaged with the AWE32 are Voice Assist and Text Assist, its latest voice recognition and text to speech software. I asked Davenport whether we could ditch our keyboards yet, and use the microphone alone instead.

"If you remember, when the mouse came out people said it would be the end of the keyboard, but it's still very much with us. There are always going to be some things you need it for.

"What we are planning, however, is pretty exciting just the same. By the end of 1995 we expect to have an affordable large vocabulary voice recognition package. It's speaker independent, so it will respond to more than one person, and you can dictate at up to 80 words per minute, if you say one word at a time.

"Training for the package will take about an hour, and it's an hour well spent. Compare that to the current competition which, apart from all costing over $1,000, are far more cumbersome and limited. They require 8Mb of RAM to be dedicated, which means 16Mb machines only. We're working on fitting this on to 8Mb machines as a priority."

How were the developers taking this?

"Really well. We've found that most people weren't aware of the possibilities of speech technology, but walked away reassessing its role in their development efforts. Voice Assist and Text Assist are more than applications. They're platforms for developers, so expect to see speech recognition making inroads into the games market over the next year or so."

Talk of the Town

Between the speech technology, sound cards and video research, Creative Labs has more than one way to attack the multimedia market. Although still vital to the company, sound card sales and development is only one part. Multimedia bundles make up over half of their sales now, and we can look towards graphics hardware in the future, too.



TV on your PC? No problem with a TV coder card.





Despite the fact that its success was founded on original sound card technology, Creative Labs now does the bulk of its money-making in CD-ROM upgrades.

world, what tools are writing it, whether they're going to DOS or Windows, where they get their drivers . . . these developers are our clients, and we have seen the rise of multimedia take place."

Creative was well placed to see the money that could be made from multimedia. Its bundles came early on at acceptable prices, both popularising multimedia and turning a healthy profit. At which point did it realise CD-ROM's time had come?

"The catalyst was the transition from single to double speed drives. Before that point it was a transport medium for the game publishers to get their products onto your hard disk. With double speed drives, CD-ROM becomes an asset in itself."

These days , it's likely that the majority of games will come out on CD-ROM. "Over and above the huge storage capacity of CDs, floppy disks are just too expensive. Take TIE Fighter, which may end up being the last great disk-only game. It's on five disks, which costs far more than a single CD-ROM. The economics mean that CD is a winner.

"Nowadays, a 486 with 4Mb of RAM and a double speed drive is the platform that most games developers are writing for. Intel plans to sell three million Pentiums world-wide this year, and that's still not a big enough market — so we've reached a temporary stasis. As for quad-speed drives, developers, who work on a 12-18 month production cycle, are not now making the leap that requires quad speed for their games. So you won't need them for at least a year."

What's happening to games?

Many of these multimedia games arguably have hardly any gameplay at all. Can they really be called games, and can they be expected to maintain the current level of interest in CD-ROM and sound hardware?

"Originally we saw developers from Hollywood or the music industry looking upon the CD-ROM as a palette on which they could drop lots of graphics or sound.

"The exciting programs came from traditional programmers who are now really starting to pack CDs with gameplay.

"However, the concept of gaming is changing. The world that traditional computer games players come from is full of preconceptions of what a 'traditional computer game' is.

"Every day, people are going into stores buying computers for the first time and their experience is solely of films and videos. Their idea of interactivity comes from a passive environment.

"Out of this will have to come some redefinition of the word 'game'. It's not here yet, but it's coming. If you look at The Horde, that's a wedding of compressed video, a linear format, and what we perceive as gameplay. The next generation of games players may well have a completely different definition of interactivity.

"Even now, products like Rebel Assault, Return to Zork, and 7th Guest prove the point. They each sold over 175,000 copies, but are far removed from Space Invaders and Frogger in the eyes of the new consumers of computer games.

"If you distil these products to their basic elements, you'll see the definitions are changing."

Clear as mud

So, where does this leave Creative Labs with relation to the future?

"Well, this definition thing is a problem for us when we're planning ahead." replies Fleck.

"We have to be aware that things are changing, but the future beyond 12 months is clear to no-one. We are manufacturing huge quantities of products for shipping next year without knowing exactly where the market's going to be, or for what purposes people will be using our products."

This may make a company of their size susceptible to other peoples' technology advances. Perhaps it's partly the reason they are looking to expand into new areas.

For example, Creative Labs is broadening out into the small and home office (SOHO) sector, where it foresees a need for multimedia.

"60 per cent of our revenue is from the multimedia upgrade market."

The company has 'evangelists' taking Creative products into new markets like this, and apparently the SOHO sector has shown some interest, particularly in speech technology.

"Consider the possibilities for multimedia in areas like training. Where previously computer training was mostly video-based, the training tapes are getting enhanced and transferred to CD-ROM. That way you can be in Word or Excel with a window set aside for the training video. This drives people in the business community to turn to multimedia and more uses are born from that."

So far Creative Labs has undoubtedly taken the market lead in sound cards, and by using all their marketing muscle as much as the new technology, they may well force their own sound card, the AWE32 to make an impact also. As for the future, plans are already under way.

READ WHAT'S ON THE PACKET

Creative Labs is serious about continuing to be a standard in sound technology. Hence the new 'Sound Blaster Compatible' logo which was recently unveiled. Rather like the Dolby logo in the audio cassette industry, Creative hopes that its logo will be appearing on software and hardware all over the place.

But what must a product do to earn the right to bear the logo?

Firstly a product must go through inspection by Creative Labs itself. That way the end consumer is guaranteed to get sound without any hassle. At the moment there are too many false claims of '100 per cent Sound Blaster compatibility' for Creative Labs' liking.

Fleck seemed confident about the success of the logo, and what it means to the company, "Sound Blaster will continue to be a standard because the huge install base of Sound Blaster products, and backward compatibility of all we make, reassure producers of good software that they should go the Creative Labs way."

It's a method that Creative sees as good for the consumer, not to mention good for Creative Labs marketing plan too.

The rest of the sound card industry, however, may not be so keen on this ploy to get a higher profile.

"By the year 2000 we would like to be in excess of 90% the standard bearer in audio and 3D graphics generation." said Romanini. Creative Labs is certainly aiming at that target with a vengeance. To its competitors, 90 per cent might just smack of an attempt at monopolisation.

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Westwood who?

After seven years of converting and designing games for other people, Westwood became part of the Virgin Interactive stable and its profile has risen rapidly since. Christina Erskine visited Westwood's offices in Las Vegas to view the big-name games currently in development.

For a company with 80 computer games under its belt, Westwood should really be more of a household name, especially when you consider how diverse its output has been.

It has developed games for Infocom, SSI, Disney and Tengen, before becoming part of Virgin Interactive in 1992, and writing exclusively for them.

Westwood was founded in 1985 by Brett Sperry and Louis Castle, initially as a conversion house. They would take games already developed for other formats and convert them to the specifications of the publisher. An early partnership with SSI gave Westwood the Amiga and ST versions of Roadwar Europa, 2000 and Phantasie III, before the company teamed up with Epyx to produce selected versions of Super Cycle, Winter Games, California Games and World Games.

The lot of the conversion house is a decidedly unglamorous one. Who remembers that Westwood were the force behind the PC and Commodore 64 versions of some of Disney's educational titles, or Pacmania for the original Nintendo system?

The first time it came to any particular notice — and that only to the sharp-eyed — was in 1988 when Westwood produced Battletech for Infocom, which was then operating only as a label for Mediagenic (later Activision). However, the bulk of Westwood's work at this time was with the role-playing specialist SSI — RPG enthusiasts will know of Hillsfar and Dragonstrike, both of which are Westwood games.

Beholder breakthrough

The breakthrough came with Eye of the Beholder, developed for SSI and acclaimed as one of the first role-playing games to attract non-role players to the genre.

"I suppose Eye of the Beholder is still our biggest claim to fame, well, Eye of the Beholder I and II, anyway," says Chris Yates, Westwood's vice-president of research and develpment. "We didn't have anything to do with EOTB III, which we're proud of," he adds drily.

After Eye of the Beholder II came out Westwood came into contact with Virgin and began work on a sequel to the successful Dune. By this time, Sperry and Castle had decided that Westwood's future lay with just one publishing partner, and were actively courting buyers.

"We originally talked to a couple of companies. Particularly we were talking to Sierra and at the time we were doing contract work for Virgin on Dune 2 and Kyrandia," explains Chris Yates. "When Virgin heard we were in negotiations with Sierra they decided they wanted to be in on it. We felt Westwood and Virgin would complement each other very well — their licences versus our original games, their strength in consoles allied to our strength on the PC."

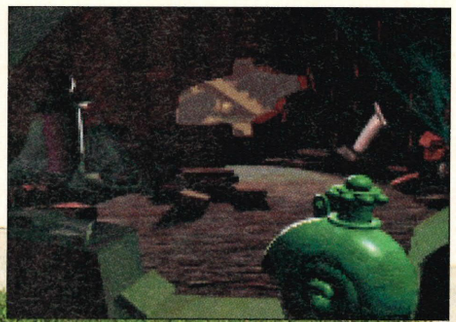
And so, in July 1992, the partnership was sealed and Westwood became part of the burgeoning Virgin group. It seems to have been something of a perfect relationship, with few rows and plenty of mutual respect. Virgin's investment has enabled Westwood to build up its resources and equip its Las Vegas offices, while Westwood has contributed Virgin considerable strength in PC games. "Virgin offered us a high degree of autonomy and creative input. We've been allowed to grow when we wanted to," says Yates. But it cuts both ways: "We represent a significant amount of their development capabilities — and they've solved all the problems we've had.

"Virgin has also enabled us to strengthen our presence in Europe — that was important to us. Europe is a big market and accounts for around half our sales."

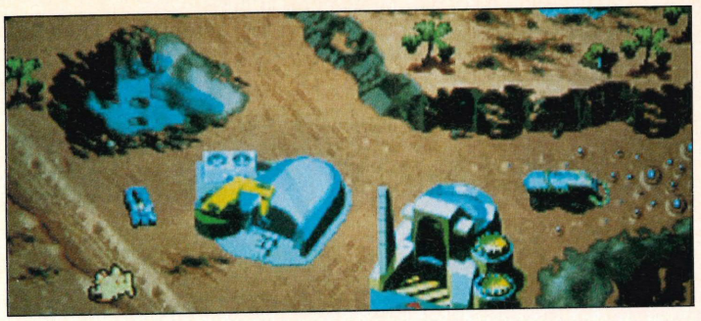
And Virgin is certainly a company with deep pockets at the moment. Back in July, the multinational group Blockbuster acquired 75 per cent of the company, leaving just 10 per cent in the hands of its original owner, Richard Branson and the remainder with the toy company Hasbro. That deal has been extended further in the last month with Blockbuster now owning 90 per cent of the company. It is a set-up which will give Virgin valuable contacts with Hollywood, video and music.

The big three

Since Dune II, the first Westwood/Virgin collaboration, Westwood has established its Fables and Fiends series, with legend of Kyrandia and Hand



Left: Chris Yates outside Westwood's headquarters in Las Vegas. Above: for the forthcoming Kyrandia game, Malcolm's Revenge, Westwood has created fully rendered 3D backgrounds. Opposite page, top: Command and Conquer favours an isometric view for the in-game screens.



VIVA LAS VEGAS

Westwood is based in Las Vegas, the US city best known for its casinos and shows. It's a city in the middle of the Nevada desert which originally existed only to provide a gambling haven (the state of Nevada's gambling laws being more tolerant than those in neighbouring California), but which is now the US's fastest-growing metropolitan area.

Many of Westwood's employees are Las Vegas born and bred, but the company has more recently been recruiting from further afield than the surrounding area.

"Many of us grew up together in Vegas," says Chris Yates, a local boy himself. "We haven't taken that many people from Silicon Valley, but if you can afford to bring in people who are passionate and excellent, even if they have no direct video game experience, it can be painful to train them but it works."

"In some ways it can be difficult to recruit to Las Vegas *(I don't suppose having temperatures of 120 degrees in summer helps. Ed)* — there are a lot of software companies in California. But there are a lot of people leaving California for Las Vegas at the moment.

"Then good people attract other good people. For example, we have Chuck Carter, the principal artist on Myst, working with Westwood now."

of Fate, and introduced an adventure cum role-playing saga in Lands of Lore. Each of these bears Westwood hallmarks of quality visuals, a strong storytelling element, and a no-fuss game interface.

However, it is with the four games currently in development that Westwood hopes to make some giant leaps forward, and which generated such a buzz around the company at the summer Consumer Electronics Show in Chicago. The fruits of the relationship with Virgin — where Westwood can now create a project from start to finish with guaranteed investment rather than simply designing a game to someone else's specifications and banking the cheque — are apparent.

Malcolm's Revenge, Lands of Lore 2 and Command and Conquer all follow Westwood's standard strategy-cum-adventure mould, but it is also branching out with the licence to develop the video game versions of Disney's Lion King. This last project is initially destined for the Sega Megadrive and the Super NES machines, but a PC version is planned to appear early this Christmas.

> "We have different games . . . I don't think there's anything we can't tackle."

The three prime PC titles have all had time, money and effort lavished on presentation and depth of plot. Each is destined for release on CD-ROM rather than disk. And while each may be a sequel, visuals and game engines have been revamped each time.

Malcolm's Revenge is the third adventure in the Fables and Fiends series, the first two being Legend of Kyrandia and Hand of Fate. These first games in the series were always strong on visuals and twisty puzzles and Westwood is pushing the boat out in both areas for Malcolm's Revenge.

The backdrops and scenery have been created using 3D Studio throughout the game, and enhanced the images with lush and vibrant colouring. The characters and objects have been created as 2D images overlaid on the backgrounds, which gives them speed of movement and easy manipulation by the player, as well as the depth of focus of the landscape. A completely new soundtrack has been written for the game and all dialogue is realised as digitised speech.

Westwood has had fun with Malcolm, the 'hero'. Kyrandia aficionados will know that Malcolm appeared in the first game as the wicked court jester and finished it encased in stone. They'll also know that putting Malcolm at the forefront of the game is a departure after the naive Brandon of Kyrandia 1 and bossy Zanthia of Hand of Fate. Handing the action over to the malicious, mischievous and malevolent Malcolm means that the player can have a lot of fun with this one. Your job, as player is to wreak revenge for your enforced imprisonment: where there is peace in Kyrandia, you can bring havoc.

Malcolm's Revenge is undoubtedly the lightest of the three games — if you don't count Simba frolicking around in Lion King. In Lands of Lore 2, you return to a mediaeval style land populated by monsters, and this time the monsters are all in 3D.

Westwood has again used 3D rendering software to create backgrounds, and here also the characters, although the designers have combined 3D Studio with other software such as Lightwave.

"We find that Lightwave is a better renderer and it offers advantages when you include video because it co-operates so well with other add-ons."

Command and Conquer is, at this stage of development, something of a flagship for Westwood's capabilities. It mixes 3D rendered graphics with full motion video sequences, cinematic cut-scenes and an isometric/top-down playing viewpoint to show a mix of styles in this mission-based strategy game. All this is held in place by the same game engine which was developed for Dune II — which means that the strategic elements in the gameplay will be exceptionally well-realised.

Your task in Command and Conquer is to win the race for control of a powerful new mineral which has been discovered. Two companies are in the running, one of which wants to develop the resource in the world's interest, the other solely in the name of wealth and power.

Each has the strength to command and conquer the other — hence the title — and you can choose which side to plump for.

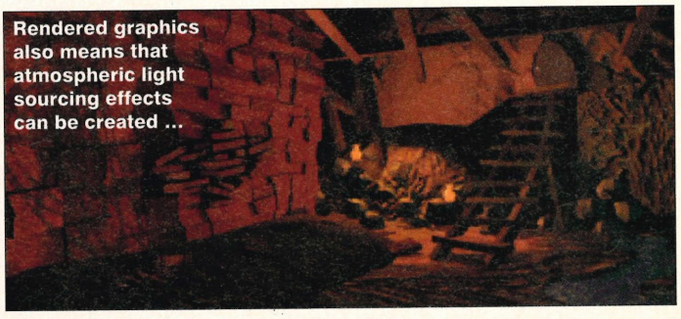
These three games are all due out for Christmas. After that, Westwood is taking Command and Conquer and Malcolm to the new Sony and Sega console formats. And then?

"We'll have different types of games coming out. We're leaning also towards the coin-op style titles — products for a mass market, although actually, I don't think there's anything we can't tackle."

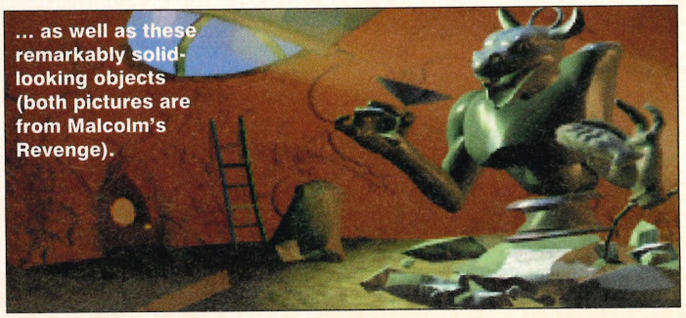
Sound and vision

Westwood has its own in-house studio and four full-time employees whose job is solely to create the music and sound effects for games: Frank Klepacki composes many of the soundtracks, Dwight Okahara specialises in creating sound effects, Pat Collins has been spending most of his time recently sample editing. The studio is headed by Paul Mudra: "It's a little mini-studio rather than a full production studio. All the work with actors, voiceovers, dialogue tends to be at Midiworks (another studio in Las Vegas) not Westwood. Joe Coogan, our casting director, has a lot of theatre experience and contacts and Las Vegas is a great town for attracting people, a lot of talent comes in and out all the time."

While most games require an original soundtrack and effects to be created from scratch, some, like Lion King, are more tightly controlled: "Disney provided the sheet music and scores for this while the movie was in development. They wanted the music to remain consistent to the movie."



Rendered graphics also means that atmospheric light sourcing effects can be created ...



... as well as these remarkably solid-looking objects (both pictures are from Malcolm's Revenge).

IN THE WORKS



Lion King
Westwood is currently working on designing the console versions of Simba the lion's progress from cub to king of the jungle, but a PC version of Disney's latest animated movie is planned.



Command and Conquer
Using the game engine that powered Dune II, but a mix of styles including rendered graphics and full motion video to bring strategy games bang up to date.



Lands of Lore 2
The graphics and interface that made up the original Lands of Lore get a complete overhaul in Lands of Lore 2 with some stunning 3D images accompanied by some horrifically large monsters.



Malcolm's Revenge
Play dirty in this third episode in the Fables and Fiends series. This time you're Malcolm and it's your task to spread mayhem and mischief throughout Kyrandia in traditional graphic adventure style.

WESTWOOD: THOSE PC TITLES IN FULL

Blackjack Academy
Microillusions
Dated but probably underrated in its day, this plays various styles of blackjack with on-line help and analysis available.

War Game Construction Set
SSI
Create your own battlefield, complete with roads, rivers, bridges, woods, etc, and add your own military units, each with their own weapons, movement, defence power, etc. Good for simple scenarios.

Phantasie III
SSI
Based on a role-playing engine with basic version of table-top rules. Improved combat system and character development, but still inevitably dated.

Nightmare on Elm Street
Monarch
Not one of Westwood's finest hours — perhaps rather hampered by the subject matter?

Mickey's Runaway Zoo
Disney Software
A very basic program designed to teach the very young to recognise numbers.

Goofy's Railway Express
Disney Software
Colour and shape recognition with on-screen animation, for two to five-year-olds.

Donald's Alphabet Chase
Disney Software
Basic alphabet learning aid aimed at two to five year olds.

Questron II
SSI
Top-down view RPG with a single character, very simple combat but rather nice graphics.

Mines of Titan
Mediagenic/Infocom
This converted Commodore 64 game is a multi-character RPG with presentation much enhanced from the original.

Battletech
Mediagenic/Infocom
A simple and functional role-playing game. You play Jason Youngblood on a mission to liberate the planet.

Battletech II
Mediagenic/Infocom
Top-down view combat with your troop of mechs out to defeat the other mechs in a mission-based strategy game.



Circuit's Edge
Mediagenic/Infocom
Cyberpunk-themed role-playing game with real-time fighting.
This game is based on the novels of George Alec Effinger .
It also makes much use of windows and menu selection during most of the gameplay.

Hillsfar
SSI
One of SSI's early Advanced Dungeons & Dragons adventures — and really more of an adventure than an RPG. Plenty of quests and puzzles, and even a horse-jumping section.

Dragonstrike
SSI
A role-playing game with you taking on the airborne dragon of the title against other dragons and monsters called Wyverns.



Eye of the Beholder
SSI
Something of a role-playing milestone, this has been hailed as one of those rare games that brings a specialised genre to a wider audience, with 3D style graphics and an easy point and click interface.



Eye of the Beholder II
SSI
Continued the strong pedigree of the original with more puzzles, and more interaction.

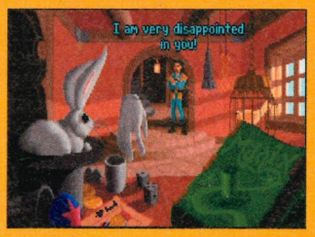
Dune II
Westwood/Virgin
Westwood's version of Frank Herbert's spice opera, with an empire to build, troops to manage and battles to win.



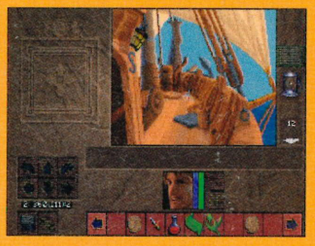
Legend of Kyrandia
Westwood/Virgin
Very pretty traditional graphics adventure involving the arch-nerd Brandon's return from the woods to claim the throne of Kyrandia.



Lands of Lore
Westwood/Virgin
First-person perspective role-playing game with four characters for you to play with the full monty of combat, magic, quests and mythical monsters. Now also available on CD-ROM.

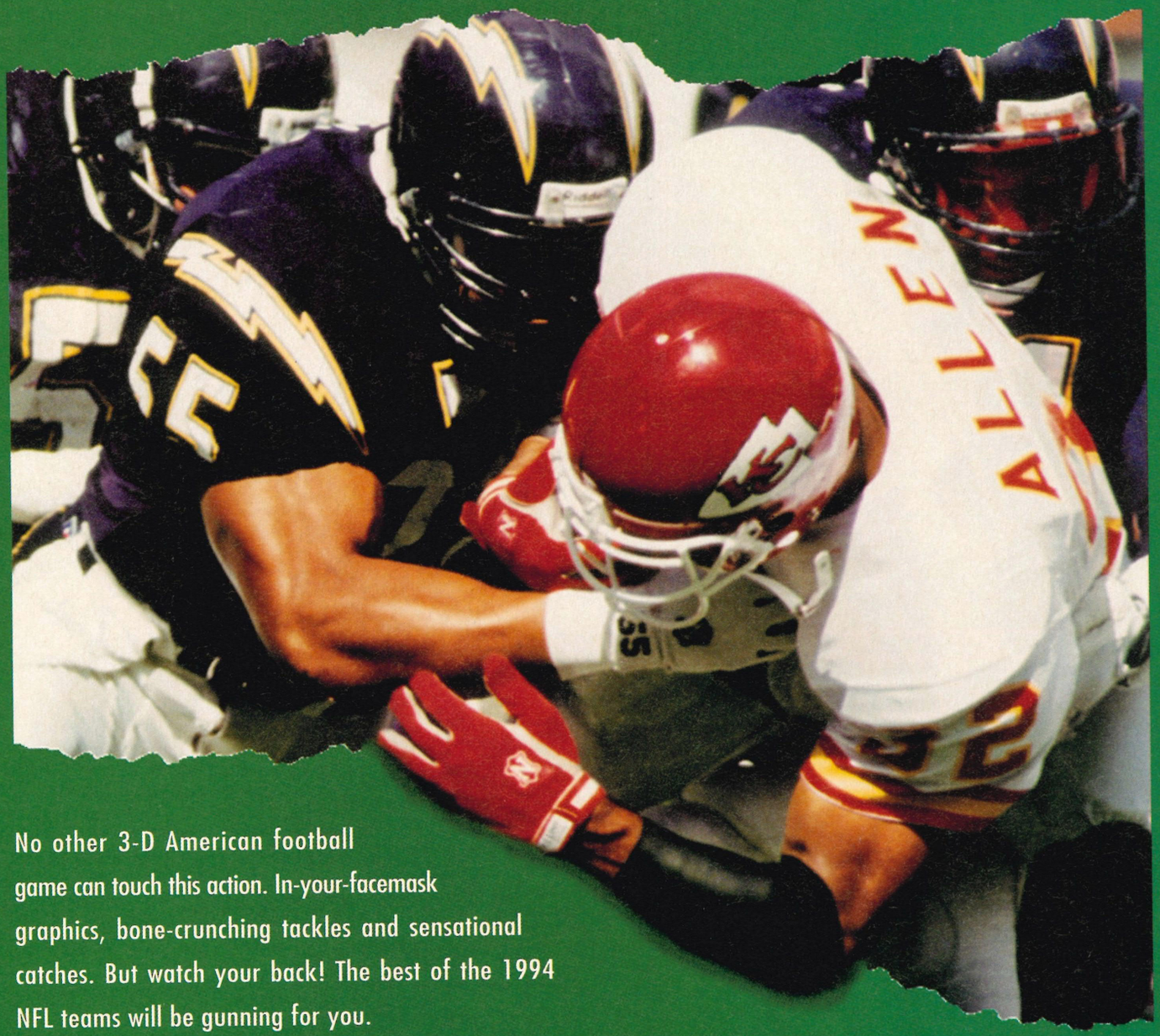


Hand of Fate
Westwood/Virgin
Sequel to Legend of Kyrandia, this time with a heroine. Zanthia is a feisty woman who would kick sand straight into Brandon's face. Not an easy game, with puzzles and problems that require more than a bit of lateral thinking. Now also available on CD-ROM.



Lands of Lore CD
Westwood/Virgin
Enhanced version of the above, with speech throughout and featuring renowned actor Patrick Stewart's (ex-RSC and Star Trek) voice as King Richard.

RIP THROUGH THE OPPOSITION!



No other 3-D American football game can touch this action. In-your-facemask graphics, bone-crunching tackles and sensational catches. But watch your back! The best of the 1994 NFL teams will be gunning for you.

Be there! With close-up 3-D action through unlimited camera angles and the true-to-life sounds of a frantic crowd. In this game you'll visit real NFL fields and stadiums and use actual NFL team uniforms and logos for your team. It's complete!

Plus! A multitude of stats, head-to-head modem play and the ability to create your ultimate Fantasy League of up to 16 teams.

This is Ultimate Football.

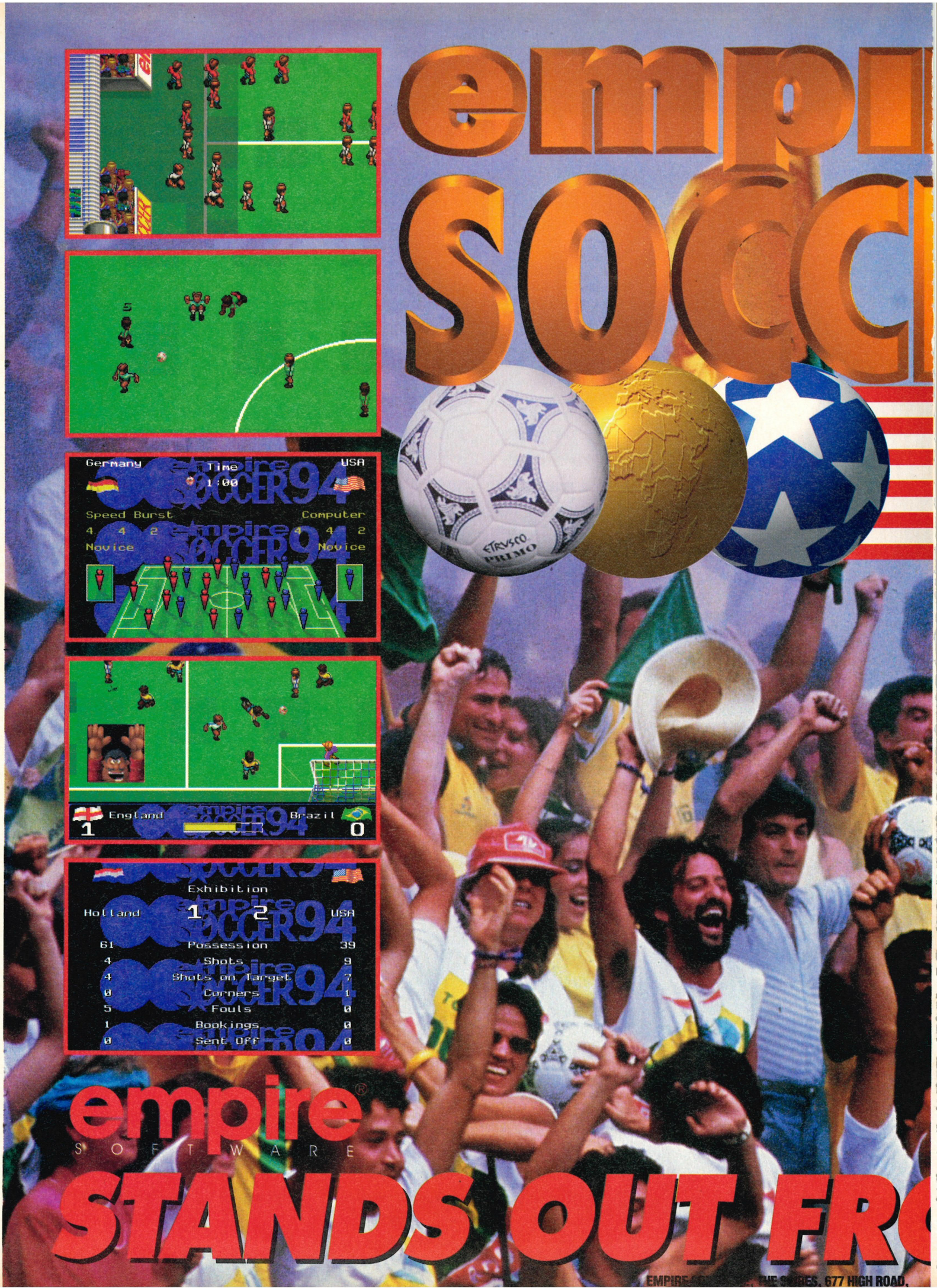
The game that could only be produced on CD-ROM!

ULTIMATE FOOTBALL

Opposition? What opposition?

Available on IBM PC CD-ROM

MICROPROSE


empi
SOCC
Germany
Time
1:00
USA
Speed Burst
Computer
Novice
Novice
England
Brazil
1
0
Exhibition
Holland
1
2
USA
61
Possession
39
4
Shots
9
4
Shots on Target
7
0
Corners
1
5
Fouls
0
1
Bookings
0
0
Sent Off
0
empire
SOFTWARE
STANDS OUT FR
EMPIRE
THE SERIES. 677 HIGH ROAD.

re
ER94

THE SUPREME FOOTBALL CHALLENGE

Empire have teamed up with leading developer Graftgold, the masters of arcade excitement to create a total NEW soccer sensation!

MATCH THIS!

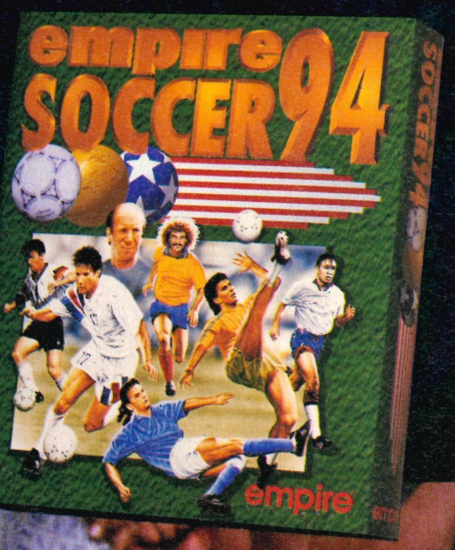
Speed burst
Power Drive - Snap shot
Banana shot
Super dribble - Super barge

Overhead kicks
Sliding tackles
Back heels
Headers - Diving headers
Passing
One/two passing
Keeper drop kicks
Trap the ball

Free kicks
Throw-ins
Special long throw
Corners
Sendings off
Penalties
Bookings
Substitutions

Action replays with special video control mode
Fully variable skill levels
Novice modes - Professional modes
Atmospheric crowd effects
Superb graphics
Leagues
Training - Exhibition
World cup Tournament and customised tournaments
8 player competition - 32 teams
Results + full game statistics

IF YOU ONLY EVER BUY ONE SOCCER GAME, BUY THE BEST!

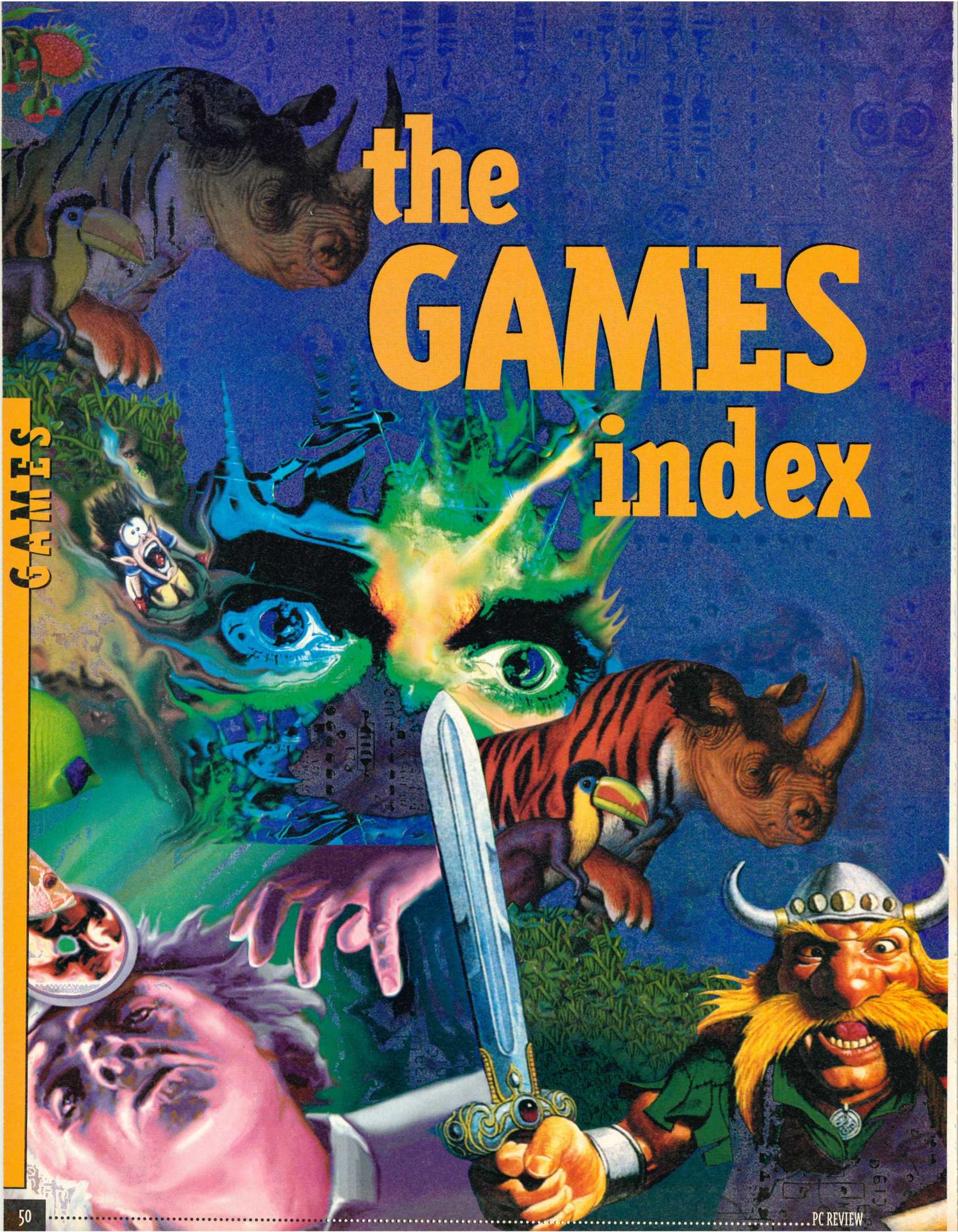


GRAFTGOLD

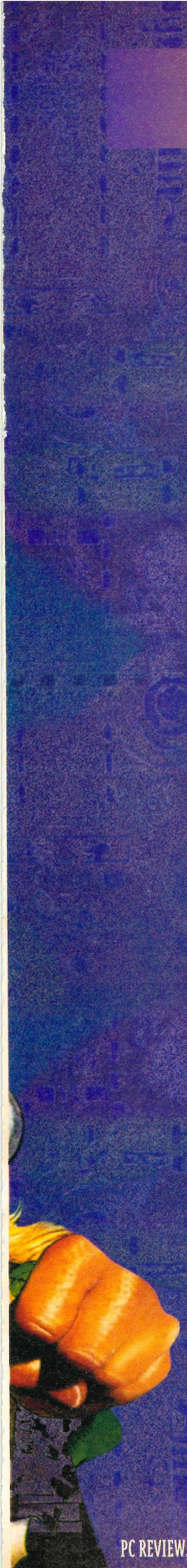
OM THE CROWD!

...CHLEY, LONDON N12 0DA. TELEPHONE: 081 ... 9143

the GAMES index



Reviewed this month GAMES



Welcome to PC Review's 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. That's why we take the trouble to include additional information such as the Alternatively panels which are there to place the title being reviewed in context. We'll tell you about similar types of game which may be more – or less – to your taste. We also include playing guides to many of the games we reviewed, designed to give you a feel for what the game is really like.

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.

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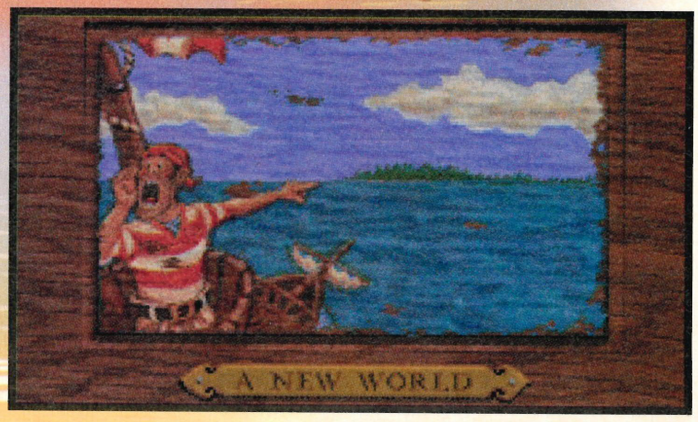
Ciarán Brennan.....97

COLONIZATION



Even the title shots manage to look like a bad childrens' cartoon. If America had really looked like it does in Colonization, Colombus would have probably given up and gone back home.

It's here at last — ever since Sid Meier finished Civilization, everyone has wanted to know what his next game would be. Simon Shaw, a Civilization fanatic, has been playing Colonization intensively and brings you this first full review of the game. This is not Civilization on Alpha Centauri, and it's not Civil War. This is Colonization, a game which reflects the beginnings of European settlement in the north American continent.



THE MAIN CITY



Key

1. Your colony comes with some basic buildings, but you'll need particular structures if you're to get the best out of your specialist workforce. New buildings in Jamestown include a church, a town hall, a tobacconist's and a blacksmith.

2. This panel shows the work that's going on immediately outside your city. My resource gathering activities include farming, fishing, tobacco planting, fur-trapping and lumber.

3. Check here on the size of your population and their loyalty rating. You need to keep a particular eye on your food reserves.

4. Here you load up goods on to your ships and wagon trains for sale either in the new or the old world.

5. Go to this panel to order new constructions and to check on the state of your defences and raw materials.

6. The various commodities available in your colony are displayed in this strip along the bottom. You transfer goods to and from ships by simple drag-clicking.

Before I begin this review I want to nail my colours firmly to the mast: I'm an out-and-out, unashamed strategy fan and for me Sid Meier is *the* number one computer game designer. No one has kept me glued to my screen for longer, and nothing has ever got its claws into me as much as Civilization, which I rate the best strategy game ever. Better than SimCity 2000, do I hear you say? Well, I think yes. I might concede a pedantic point and admit that SimCity is the best *simulation* ever, but for sheer pound-for-pound super-addictive game playing value, Civ just nudges its way into my own personal top spot. Good, well I'm glad that's out of the way. Now that you know I'm blatantly prejudiced I'll get on with the review.

Strictly speaking, Colonization isn't a sequel to Civilization at all (the official Civ II, picking up again at Alpha Centauri, is apparently under design). What we have here is more of a sideways branching than a progression, focusing on the historical period from 1500-1800 and taking as its theme the Age of Discovery.

You begin as the servant of one of four European powers, with a single caravel containing soldiers and some hardy pioneers. The game map is unexplored (you can choose to generate either historical or random worlds), but strike out to the west and you'll soon find land.

This is America, and the race to establish your colonies has begun.

Stake your claim

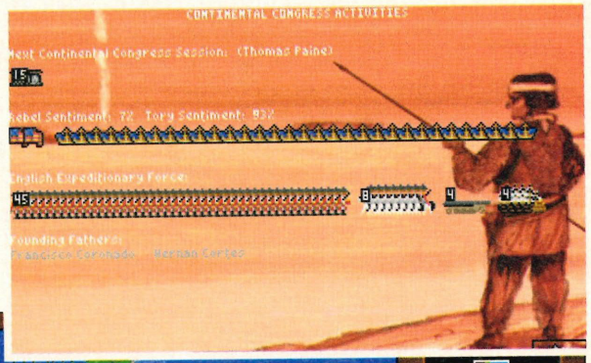
You can be sure that the other Europeans are beavering away in hidden corners of the map, so it's important to stake out your territory quickly and build up your strength. Indian tribes already own much of the land, and although they're inclined to be friendly, peace won't last if you start trampling over their sacred burial grounds. The New World is rich in natural resources, but forests must be cleared, fields ploughed and roads built. When you've founded a colony you control it via a separate city screen, where you construct improvements and direct your labour force. You must set up trade routes, because you'll need a lot of money to pay for everything, not least military expenditure. And as your colonies grow and encroach on other colonies and territories, you inevitably find yourself at war.

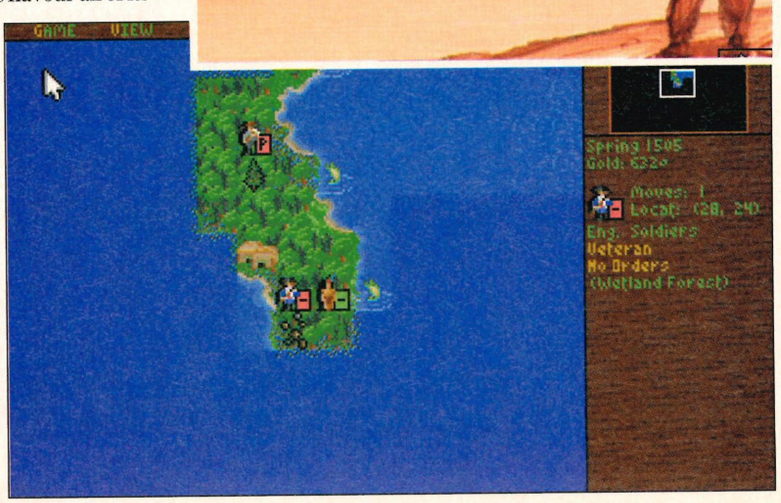
> "Strictly speaking Colonization is more of a sideways branching, than a progression."

If all this sounds exactly like Civilization it's hardly surprising, but in fact there are as many differences as similarities, and Colonization has a distinctive flavour all of its own. It does, however, share one striking characteristic with Civilization: both games boast rotten graphics and *look* irredeemably second-rate. Mind you, this doesn't actually matter in the final analysis, and merely emphasises that where strategy games are concerned appearances are strictly secondary. Sheer quality of gameplay is what counts, and in Colonization it

Below: there are various F-key menu options to keep you abreast of events and aid you in your calculations. This one provides a guide to the state of rebellious feeling in the colonies and also enables you to gauge the size of the potential anti-revolutionary army.

Bottom: I've discovered America (looks like Florida down there at the bottom) and made contact with the Indians. They've kindly donated me some land, and as long as I'm not greedy they'll be happy to trade with me. My pioneers are clearing the forest while the caravel sails back to England to pick up the next batch of colonists.





practically oozes constantly from the screen.

"The major flaw in Civilization? If you pursue an aggressive strategy you'll usually win."

This is a great game. I won't say it's better than Civ (it's too early to tell), but at the least I'd say it's comparable, and I suspect that as a pure gaming experience it may actually enjoy greater longevity.

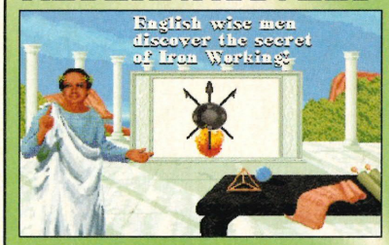
The major flaw in Civilization is that if you pursue an aggressive 'Mongolian' strategy, churn out innumerable chariots and concentrate only on taking everyone else out, you'll usually win even at the highest levels.

It's a dull way to play, but it works. I don't think you could pursue a similar line in Colonization and get away with it.

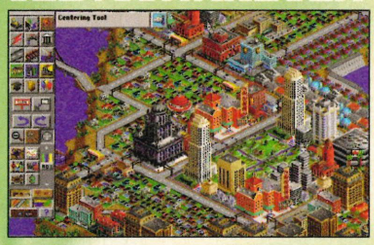
Go for growth

The reason is that in the new game the mechanics of production and growth are both more realistic and, therefore, more restrictive. You can't concentrate solely on military units, because you don't have a naturally increasing population, and the trickle of immigrants from the Old World is erratic. If you want to make soldiers you'll have to take colonists out of the labour pool and equip them with muskets, and that means, firstly, that you'll have fewer workers, and, secondly, that your coffers will be drained to pay for the guns. More sophisticated weapons (such as cannons) cost a fortune, and although your scouts might strike lucky and find El Dorado during the course of their explorations, the fruits of conquest and discovery alone will be insufficient to sustain you. You'll need to build productive colonies, and the economic model is more complex than in Civilization.

ALTERNATIVELY



Civilization
MicroProse, £39.99
Issue 1, Rated 7
No one ever accused Sid Meier of lack of ambition. Civilization starts with a single nomadic Bronze Age tribe and ends with the first starship to reach Alpha Centauri, casually embracing the entire sweep of human history along the way. It's fascinating, rewarding and addictive, with true long-term appeal.



SimCity 2000
Maxis, £39.99
Issue 29, Rated 9
SimCity 2000 is one of the great games, and every bit as fascinating and rewarding as Civilization. However, if you're an old-fashioned soul and like your games to have a clearly defined beginning, middle and end., then you'd probably do better to lean slightly towards the Sid Meier school of design.

In fact, trading has more or less replaced technology as the linchpin of the game, because there are no scientific advances (and no equivalent of the Wonders). You begin and end in the horse and musket era, and there's nothing available in 1800 that you can't get in 1500.

The Old World doesn't actually appear on the map, but if you direct your ships back across the ocean they'll reappear on a special European harbour screen after a couple of turns. Here you sell your cargoes and pick up immigrants. To begin with you can only trade in basic commodities, such as sugar, tobacco, or cotton, but as you acquire specialist labour you can convert the materials at source into rum, cigars, or cloth, and sell them for a hefty profit in the old country. Flood the market, though, and prices will go down, while inflationary pressures will also push up the cost of goods you may need to buy, such as muskets or tools. You've also got to contend with your European sovereign taking a piece of the action, and during the course of a game the tax rate will rise inexorably. When the rate becomes too intolerable it'll be time to start a rebellion.

Making a declaration of independence

Your ultimate aim is first to declare and then to maintain your political independence. This is perhaps the game's most

Below: Jamestown has expanded, I've conquered Quebec and turned it into a fortress, founded Plymouth and heavied in on Montreal down at the bottom of the map. My mainland colonies are linked by road and a wagon train is ferrying goods between them. The only drawback is that the Indians are getting restless.







Left: back in harbour in the Old World you get to sell your trade goods and embark new colonists. You can also pay for weapons or specialist labour, or if you're very rich train up immigrants with particular skills. Alternatively you could build a schoolhouse in your colony and educate the populace there.



original aspect, and it uses a typically ingenious device: as your colonies grow, separatist sentiments arise naturally, but it's up to you to nurture them at the right pace. If, for example, an expanding town stays too long in the loyalist camp there'll be a sharp slackening off of productivity.

You stimulate revolt by manufacturing 'liberty bells', but you mustn't overdo it because a premature declaration will certainly fail — the moment you start a revolution your king is going to send over a thumping big army to suppress it. You'll have to get your colonies so well established that they'll be able both to defend themselves and to sustain a violent war to the death. Fall at this hurdle and you'll blow all the hard work you've put in.

It's a tough challenge, and there are five levels of difficulty against which to test yourself. Even better, there's a network option, which makes it a whole different ball game. There's no doubt at all in my mind that Colonization will be a serious long-term resident on my hard disk.

There's a slight element of role-playing involved, inasmuch as the four European powers have distinctive characteristics which will actually affect your strategy. The Dutch, for example, are interested in trade, the Spanish, conquest. The English player enjoys a steadier flow of immigrants, while the French, rather mysteriously, have an alleged knack for living harmoniously. No, I haven't been able to work that one out either. Unlike in Civilization, racial profiles have a bearing not just on your opponents' behaviour, but also your own.

There's also a religious theme. The Indians are heathens and must be converted. Send out missionaries to change them to your way of thinking, and at the same time build churches to encourage potential immigrants fleeing religious persecution back home. Jesuit priests and even firebrand preachers get to make an appearance.

"Colonization is a tough challenge. There are five levels of difficulty against which to test yourself."

Delving the depths

This is, as you've no doubt realised, a game of immense subtlety and depth. It's a more historically accurate simulation than Civilization, but although it channels you in certain directions it's elastic enough to cope with a variety of different approaches. Since overcoming my initial disappointment with the primitive look of it, I've been well and truly hooked.

Actually I've a theory about the lousy graphics: if Sid Meier's games looked as well as they played we'd all be reduced to nit-picking and searching in vain for imaginary flaws. At least the graphics give us something to complain about, because there's not much wrong anywhere else. In fact, whenever the graphics have been revamped (Civilization for Windows, Railroad Tycoon deluxe), I've hated it.

Only one question remains: is Colonization actually better than Civilization? To be honest, I don't know . . . It took me ages to get the hang of Civ, and even after some pretty intensive playing I feel I've barely scratched the surface of the new game. I'm afraid I'm going to hedge my bets for now, but I don't have any hesitation in awarding Colonization the best mark I decently can. Thank heaven for those lousy graphics. If the wretched thing looked even half-way decent I'd have to at least start thinking about giving it that elusive perfect ten ...

■ **Simon Shaw**



Below: my scouts have been busy. They've come across Indian encampments and mapped out a land rich in resources.



Sid's done it again.

TECHSPEC 9 RATING

Publisher:	MicroProse
Price:	£44.99
Contact:	(0454) 326532
Minimum PC:	386, MS-DOS 3.3, mouse
Minimum memory:	1Mb
Minimum graphics:	VGA
Sound:	Ad-Lib, Sound Blaster, Roland

Inferno



Below: With its digitised speech and high-res cut scenes, Inferno comes the closest yet to the much vaunted 'interactive movie' ideal.

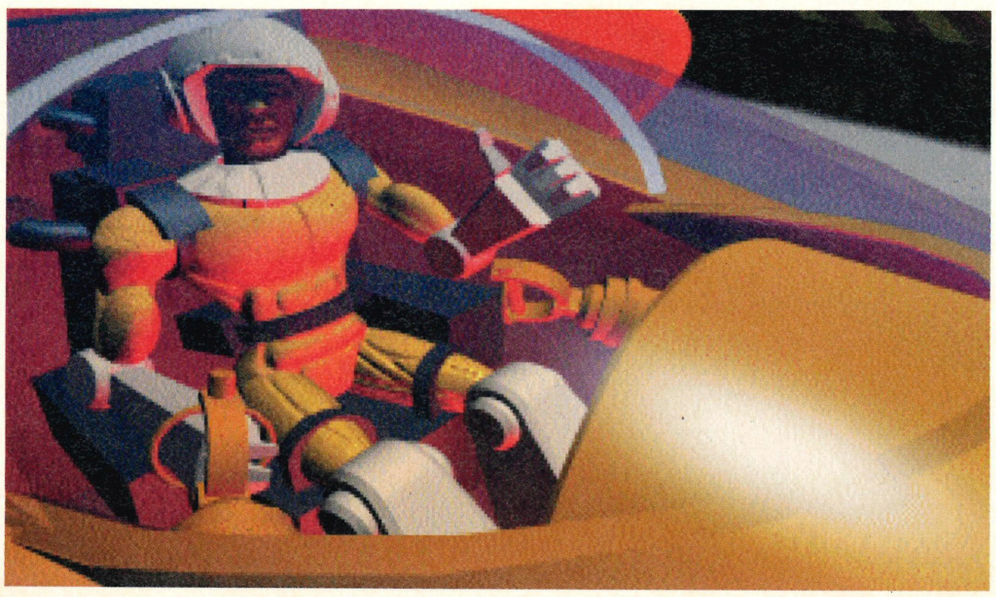
I swoop across the surface of airless moons, dive beneath the waves on a water world, fight hordes of alien spacecraft in asteroid fields and even thundered through the corridors of huge starships and buildings, dodging tiny soldiers, catwalks and hulking ED-209-type robots along the way.

Yes, at last Inferno is finally finished and although it's a game that has probably been hyped more times than an Arnold Schwarzenegger movie, it doesn't disappoint. DID set out to create a free-form, cinematic space opera; a combat simulator with the feel of an arcade game and with gameplay that isn't hindered by the restraints of real-world physics. And Inferno is exactly that.

Stick it up your Rexxon

While not officially a sequel, Inferno is the next chapter in the Epic saga. It seems that long ago, mankind battled the evil Rexxon hordes while fleeing from a supernova that vaporised Earth, along with the rest of our fragile solar system. Fortunately they triumphed over the alien threat and settled in safely around a new star, but unluckily, the Rexxons have caught up with them and are determined to wreak a bloody revenge for their earlier, embarrassing defeats.

You play mankind's greatest space pilot, an oddly proportioned hero who seems to be vacuum-packed into his orange spacesuit. During the opening cinematic mission briefing, you learn that the Rexxons are preparing to strike against your new home. Of course, it's up to you to single-handedly defeat the invaders, destroy their bases and rout their capital ships. If you can do all this and do it in style, so much the better.



Like X-Wing, Inferno is a tale of a tiny band of humans fighting an all-powerful enemy, and after the initial introduction sequence, you can choose to play the game in any one of three different ways.

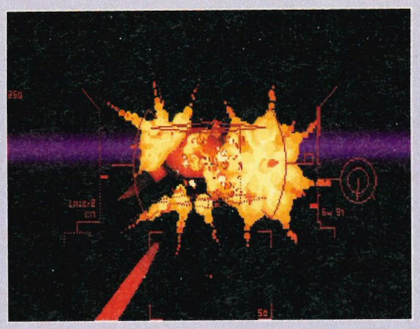
Arcade, as the name suggests, is the option for those who just want to have a quick, plot-free blast. You simply pick a planet from the solar system map and play a series of missions from the campaign. As it's self-contained you don't have to worry about winning, or indeed achieving any tactical goals. Just fly around and blast the hell out of everything.

The next mode is Evolutionary, which unlike Arcade lets you fly a whole section of the game, a series of linked missions that lead to a specific tactical goal. Obviously, it demands much more concentration than the blast-fest that the Arcade option provides, but even the complexity of this doesn't come close to the last option, Director's Cut.

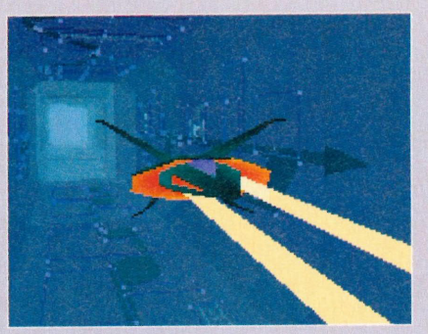
The Director's Cut is the full-blown campaign, and like the Wing Commander series before it, success in this mode will depend on how you perform in battle. Do well in a particular mission and the game will happily guide you down the winning plot path, but do badly and you could easily book mankind and its allies a one-way ticket to extinction. Both success and failure are dictated by your actions and the plot unfolds accordingly.

No matter which option you eventually pick, before each mission you will be

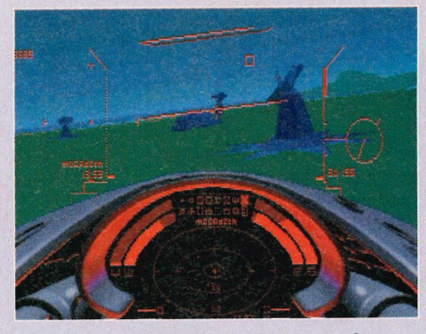
HERE THERE AND EVERYWHERE



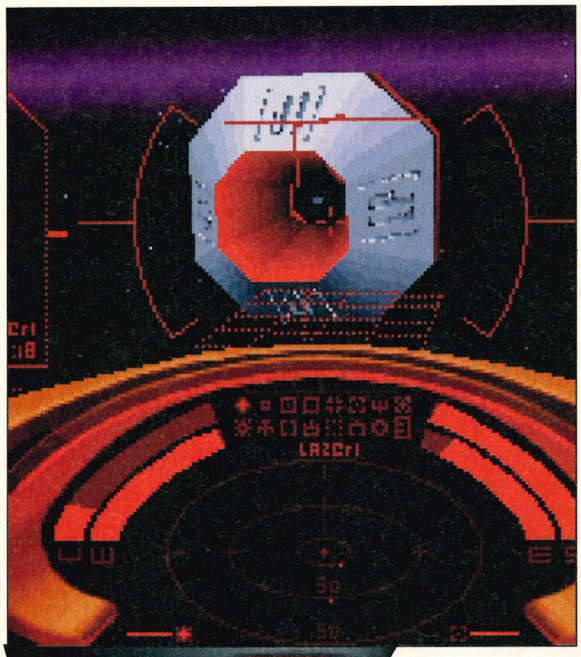
Although the initial fighting is your usual deep-space variety, in Inferno you also get to weave around through the asteroids surrounding the planet Troon and glide by friendly star cruisers and impressively large alien bugships. DID has included a handy purple horizon to help you orientate you ship and rumour has it that the original Epic fleet lies derelict in the asteroid field. What secrets lie within?



After a quick blast in the relatively safe environment of sub-space, you're often called upon to dive into satellites and assorted installations to defend or destroy them from within. All enemy buildings are very well defended and although you have the Navicom system (a powerful map) to help you, when you're thundering through tight alien corridors, dodging barrages of laser fire, things can still get a touch tricky.

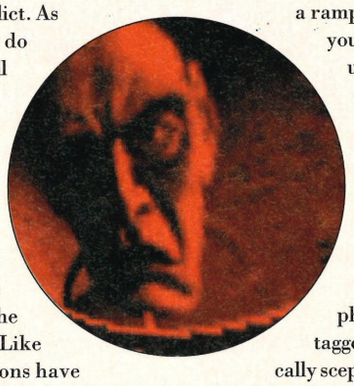


If all this wasn't impressive enough, you can also fly down over the surface of planets. There are seven of these and four moons to discover and missions based planetside will often consist of building defence duties or ground assaults on enemy radar bases and starfighter launch sites. Dogfighting becomes much harder when you've suddenly got the ground to worry about as well as the enemy.



Above: In Inferno weapons pods are liberally scattered about to replenish your weapons and if you should bite the big one, you can always be brought back via the Information Vortex (left). But, you've only got three lives..

briefed by a federation elder. These cinematic conversations — which remind me of old pulp science fiction novels and 1930s action adventures — are highly atmospheric and serve not only to describe the mission objectives, but to set the tone for the entire conflict. As I've mentioned, if you do badly in a mission, you'll get chastised by your boss. Acquit yourself heroically, however, and you'll be praised and applauded.



At the end of each initial briefing you also get to watch the plot unfold from the Rexxon perspective. Like the humans, the Rexxons have their top fighter pilot, Kreeg, and he'll be the one to get resoundingly slapped if things are going badly or given a reptilian rub-down if the Rexxons are riding on the back of a recent victory.

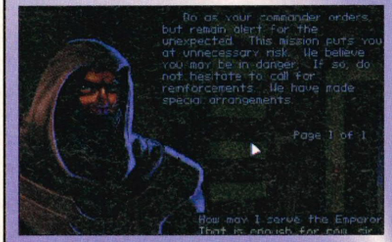
Before I get to the 3D polygon sequences, special mention must be made of Inferno's superb soundtrack. Recorded by goth rock band Alien Sex Fiend, it's absolutely stunning and infinitely enhances the atmosphere of the game. No, I'm not a rampant ASF fan, but when you hear it and you crank it up loud during the battle sequences, you really get the feeling that you're part of a real movie.

Movie schmovie..

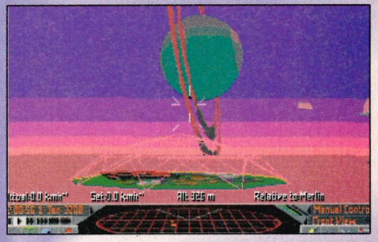
When a game has the phrase 'Interactive Movie' tagged onto it, I'm automatically sceptical. Usually this dread phrase translates to mean a distinct lack of gameplay, but this is not a criticism you can level at Inferno.

Unlike TIE Fighter and Wing Commander, the missions in Inferno are mas-

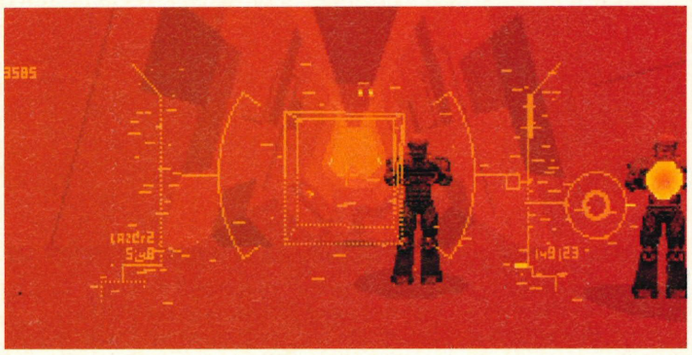
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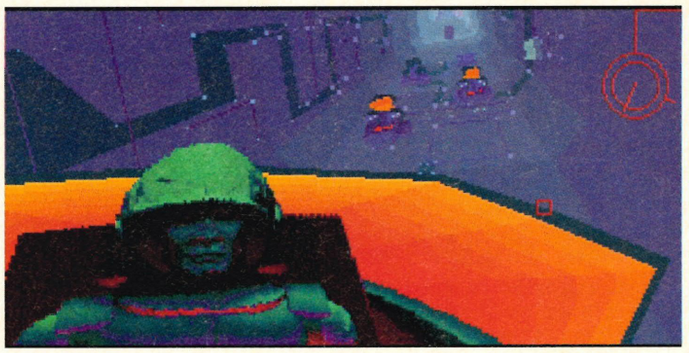


TIE Fighter
Rated 8, Issue 35
Virgin, £49.99
If Inferno doesn't sound quite right for you, then TIE Fighter, LucasArts' sequel to the highly acclaimed X-Wing is definitely worth a look. Fly any of six TIE Fighters against the Rebel Alliance, complete multiple mission objectives and even rescue the Emperor himself. It is an absolute must for Star Wars fans everywhere.



Frontier: Elite 2
Rated 9, Issue 26
Gametek, £44.99
OK, it's not strictly a combat sim, but if you want a game that allows complete freedom of movement and lets you fly down on to the surface of over 2,000 planets, then the hyper-realistic Elite 2 is worth checking out. Watch out for the new Elite, Frontier: First Encounters, which promises to correct a few game anomalies and make the combat system simpler...





Above left: The detail in Inferno is stunning. Apart from tiny gun emplacements and the cut scenes, you can also shoot little Rexxon soldiers as they stand on aerial walkways.

Above: Inferno is the first space combat sim to feature a virtual cockpit.

sively varied. As you doubtless will have noticed, you're not confined to flying around in space. You'll have the opportunity to dive into satellites, descend onto the surface of planets and even dogfight in the depths of huge alien spacecraft. The missions in Inferno don't just have one set objective, they have several. As a result, they're utterly absorbing and where a typical mission in TIE Fighter might take you 15 minutes to complete, in Inferno you can still be blasting away after half an hour.

"If you liked TFX but wished it had been simpler, then Inferno is the game for you."

For example. in one mission there are reports that the Rexxons are massing for an attack on the water planet, Hydra Verdi, and so you are promptly dispatched to the threatened planet to intercept the strike force. When you arrive you discover four Rexxon bug-ships which launch 20 starfighters to keep you occupied. If that wasn't bad enough, the Rexxons then attack the nearby communications satellite, so you nip into the superstructure to defend it from within.

Unfortunately, you discover that the satellite attack is an elaborate decoy and that the main Rexxon force is preparing for an assault on the planetary shield. So now you blast out of the satellite and enter Hydra Verdi orbit. Dogfighting the usual complement of Rexxon fighters, you are then told to enter the main enemy bug-craft and destroy it. This can only be achieved by finding the three engine reactors, destroying them and then zipping out of the ship in 60 seconds before the whole thing explodes . . .

And that's just the beginning of the mission. After that you have to fly across the planet's surface, destroy Rexxon radar bases, defend your own installations and finally lay waste to the main enemy base by flying deep inside it and destroying the computer core. It's no easy task.

Megadeath weaponry

If the odds seem a little stacked against you, in your favour you do have the Inferno starfighter. Admittedly, it's a dull-looking spaceship but it packs three types of laser for ship-to-ship combat, three models of homing torpedo (short, medium and long range) plus cluster missiles (rockets that split into six smaller rockets after firing) and a Megadeath gun, which packs a punch verging on the nuclear.

Like a flight sim you can also view the action from a multitude of different internal and external views and Inferno is the first space combat sim to feature a virtual cockpit, a feature now de rigueur in all modern flight sims.

With three types of autopilot, weaponry power-ups, a complex navigation system and more than 700 missions to get your teeth into, Inferno, for my money, nudges TIE Fighter off the podium, pokes X-Wing in the eye and kicks sand in the face of Wing Commander.

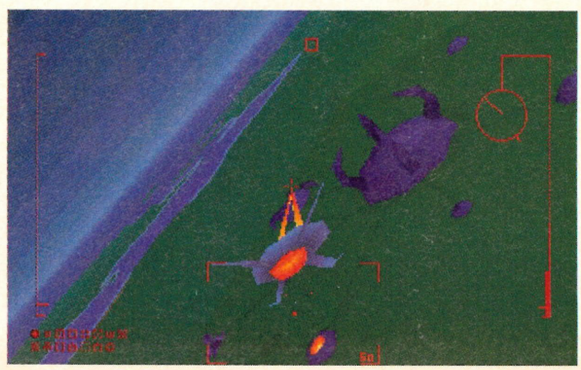
It's a stunning game, utterly absorbing and the closest I've seen so far to the ideal of the interactive movie. Although the 3D seems quite basic, it isn't texture-mapped or Gouraud-shaded, it moves at a blistering pace and while Origin may have the edge in flashy 3D technology, with Inferno you're not going to need a nuclear-powered PC to get the best out of it. DID recommends a 486 but if you've got a high-end 386 PC, say a 33MHz machine, I see no reason why it shouldn't run if you turn the low detail option on.

It's a shame that the disc accessing is frustratingly slow and this does tend to spoil the flow of the action. It's unfortunate because the atmosphere created by Inferno with the 3D, the cut scenes, the digitised speech and the music is absolutely superb and when you have to wait 30 seconds after diving headlong into a beleaguered research vessel for the new 3D world to be loaded in, it's really annoying.

Of course, Inferno isn't a seamless 3D game and although I would gladly have sacrificed some of the cut-scenes for fluid gameplay. The attention to detail and the sheer fun factor outweighs most of the minor niggles as in TFX. As to whether it's better than TIE Fighter, I think it most definitely is, but this is just my opinion.

It's a game that does take some getting used to, but if you're prepared to put the time in, you'll not regret shelling out your hard-earned money on it. If you liked TFX but wished it could have been a bit simpler, then Inferno is the game for you. With deep-space combat, flight sim-style ground assaults and lots of flying through twisty corridors shooting gun emplacements, Inferno justly deserves the attention it's been getting. Do believe the hype . . .

■ **Dean Evans**



Below: If you're not a fan of sim-style cockpit views, Inferno also features a playable chase view.



TECHSPEC 8 RATING

Innovative, engrossing and massively huge.

Publisher:	Ocean
Price:	£TBA
Contact:	(061) 832 6633
Minimum PC:	386MHz 386 with CD-ROM
Minimum memory:	4Mb RAM
Minimum graphics:	VGA
Sound:	All major soundcards

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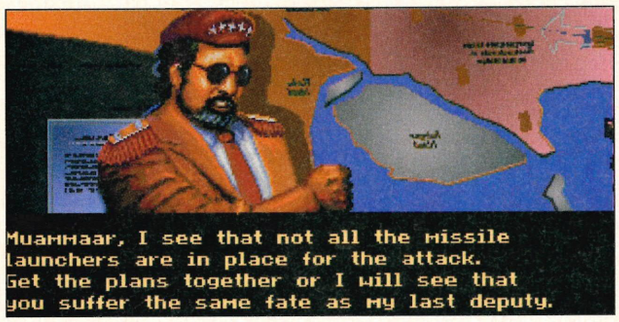
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FOR IBM PC COMPATIBLES AND CD-ROM

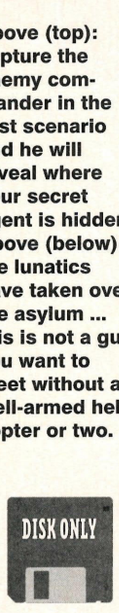
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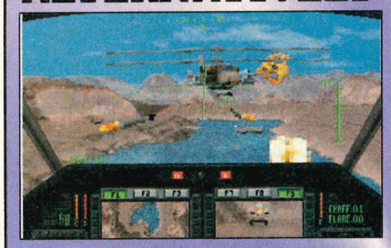




Above (top): capture the enemy commander in the first scenario and he will reveal where your secret agent is hidden. Above (below): the lunatics have taken over the asylum ... this is not a guy you want to meet without a well-armed helicopter or two.



ALTERNATIVELY



Comanche: Maximum Overkill
Novalogic, £44.99
Rated 6, Issue 16
Just as direct in the action stakes as Desert Strike but actually requires even less thought (although it would like to pretend otherwise). Comanche's biggest claim to fame is its remarkable and incredibly detailed Voxel Space landscaping technology which is about to make a fresh appearance in the tank sim, Armoured Fist .



Gunship 2000
MicroProse, £29.99
(CD compilation)
If you want your helicopter games a bit more realistic, and a lot more detailed, then MicroProse's admittedly venerable, polygon-based sim still packs a powerful punch and comes at an affordable price. This one includes a built-in mission editor and a series of neatly varied campaigns, from the Middle East, to the Phillipines and even the Arctic.

Desert Strike turns the shoot 'em up in to a gung-ho American dream — John Bennett takes it through its paces, all guns blazing.



The long and the short of Desert Strike's storyline is that you — and your trusty attack helicopter — are based in the Middle East and the local power-mad dictator is bent on ruling the world by fair means or foul.

The game is split into four main scenarios, each with set missions to complete. You don't have to approach the six or so missions in any particular order. You just can't complete the scenario till they're all done, that's all.

As you progress through the scenarios the plot unfolds. For example, in the first scene the crucial thing to do is capture one of the enemy officers — who will conveniently reveal the location of one of your secret agents. You then rescue the agent, of course, and follow that with a prison break in the next scenario.

The high point has to be taking out a baby-milk factory towards the end of the game — acting on information you've gathered earlier — because it is, in fact, a chemical weapons plant.

Winch me up, Scottie

So that's what it's all about. But OK, you're out there, you've got the hang of flying the pint-sized 'copter and decided which mission to take on. Besides reducing your target to rubble, what happens next?

Well, for a start the isometric viewpoint works a treat — both for flying the helicopter and getting as much of the landscape on screen as possible. It takes a bit of time to get the hang of aligning the chopper in exactly the right direction you want, but the guns are semi-targeted anyway, which makes things easier.

> "Take Desert Strike at face value, and you'll find that it's a clever, detailed shoot 'em up."

As with all good shoot 'em ups, you need to pick up extra fuel and ammo (you've got eight Hellfires, 20-odd Hydras and a sackload of cannon rounds when you're fully tooled up) which are dotted around the landscape. There are also a number of extra goodies like a maximum health crate (always handy to find on a battlefield, I think), a faster winch and so on.

The locations of all of the useful stuff — including your objectives — can be found with a quick look at the command screen.

Usually you'll find what you need is hidden inside a building. Which means to get at it, you have to first take out the building — but without going completely OTT and sending the supplies up in smoke in the process.

Unfortunately, while you're manoeuvring backwards and forwards over the



fuel drums or whatever — waiting for your highly skilled co-pilot/winch operator (selected at the start of the campaign) to snag the stuff and get it on-board — you become a sitting duck for any enemy AA or Scuds in the neighbourhood.

Perfecting the slick pick-up is what it's all about. This is particularly true when you've run out of soft options, and have to get your ammo, for example, from a heavily defended base. If you screw it up on the first pass, the chances are that you'll have so many holes shot in you that you won't make it through a second run. Trying to snatch supplies in one smooth move amidst a battery of enemy fire is tough.

And to make life even tougher, not all the pick-ups are inanimate. Some are MIAs, civilians or enemy soldiers. You could, of course, leave them behind. But for each one you manage to cart back to one of the designated landing sites equals damage repaired on your helicopter (and bonus points, of course).

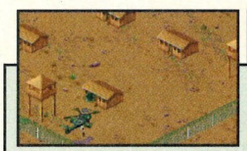
A wing and a prayer

After the first scenario or so, Desert Strike gets increasingly tough. Yes, you can just barrel straight across the map blasting all and sundry. But your chances of completing all the missions in that way are usually next to zero. The reason being that there are so many guns pointed your way that although it's always fun to go in full pelt over a well defended air base, weaving and blasting away till you get to the far side, the damage the enemy usually do to you on the way through, means that you won't be able to pull the same stunt without repairing, re-fueling and re-arming your helicopter first.

Repairing and supplying your craft, becomes increasingly difficult as you move further into the game. The missions also get more convoluted, so unlike most shoot 'em ups you actually have to plan your routes and attacks quite carefully as well as fly like a demon. Desert Strike hits a nice balance in this respect — plenty of action but without being mindless.

You could hardly describe Desert Strike as ground breaking in any respect — which is hardly surprising given that it originally appeared on the Sega Mega Drive a couple of years ago. But take it at face value, and you'll find it's a clever, detailed shoot 'em up. The view works well, the animations are good, and more thought has gone into providing decently varied gameplay in Desert Strike than just about any other shoot 'em up I've ever played.

■ John Bennett



Good action and varied gameplay.

TECHSPEC 7 RATING

Publisher:	Gremlin
Price:	£34.99
Contact:	(0742) 753423
Minimum PC:	386 PC
Minimum memory:	2Mb RAM, 550K free
Minimum graphics:	VGA
Sound:	Sound Blaster

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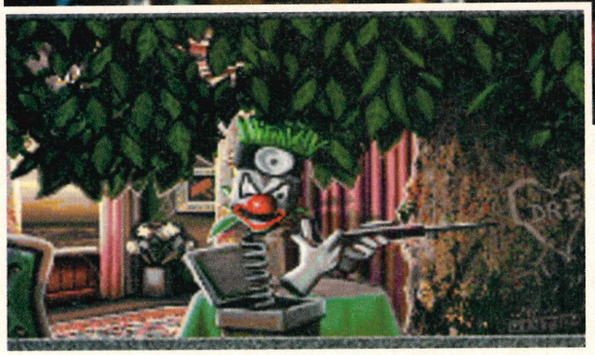
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Superman, eat your heart out. The Crimson Tape, Tropical Oil Man and The Caped Cod are about to steal your thunder . . .

Superhero League of Hoboken



Above: doesn't look very threatening, does he? Doctor Entropy's attempts at global domination usually end in chaos, but I guess that's kind of appropriate, really.

DISK ONLY

The future ain't what it used to be . . . or so we're led to believe at the start of one of the silliest games to emerge this year. Creator Steve Meretzky's vision of the future is a far cry from the grim cyberpunk scenarios which often crop up in games these days. In Superhero League of Hoboken, New York is a flooded, radioactive wasteland inhabited by bizarre mutants. Nothing new there, you might think, except that the nasties include such 'wacky' creatures as King Kong Salmon (which swim to the top of the Empire State Building to spawn); aerobots (robotic aerobic instructors who punish their victims with gruelling workouts); glowing beaneaters (they stun their adversaries with noxious farts — ho ho); lawyers (pass me a corset before I split my sides) and many more.

On the side of the good guys are the superheroes: men and women in daft costumes whose superpowers range from being really good at treading water to the ability to tell what toppings a pizza has without opening the box. Ho hum. These superheroes have formed leagues which compete to do acts of good, whether it's ridding a marketplace of rabid sheep or disabling bombs made out of cheese. Yes, I say that Hoboken is a silly game — but when you consider that Meretzky's earlier titles include the Spellcasting series and Leather Goddesses of Phobos, it's hardly surprising.

> "Captain Excitement bores his enemies to sleep, whilst Oxide Man will rust them to death."

You take on the role of The Crimson Tape, leader of the Superhero League of Hoboken, the most inept bunch of losers in New York. Not only do you have to try and raise your league to the top of the table, but you must also foil the world domination plans of ultimate bad guy Doctor Entropy — and this means completing a variety of tricky missions and ridding your turf of all the evil mutants.

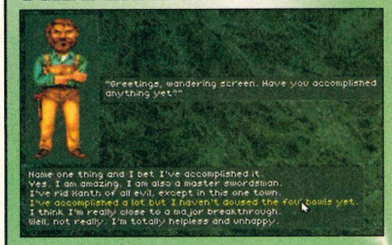
Hoboken falls somewhere between a role-playing game and an adventure — you have a party of characters boasting different abilities, you engage in a fair bit of combat, but there's also a lot of exploration and puzzle solving too. Don't expect some great big multi-directional scrolling, texture mapped graphics fest, though. Hoboken can, at best, be described as basic.

Static shock

You start off in the relative safety of your HQ. Most interiors are presented as pretty, but static, backgrounds which you can "interact" with (ie, move your cursor over an object and you get a couple of options — look at it, pick it up or whatever), plus a text description. Although you won't actually have to type, the game is not so far removed from the later Infocom adventures which were essentially illustrated text adventures.

Move outside and you find yourself on a large map. The map is black to begin with, but squares are revealed as you move over them. Most squares are of little consequence, but a few contain important locations such as markets, famous landmarks (Times Square, the Empire State Building and so on), subway stations and ferries. To complicate matters further, some squares contain nasties who are invariably

ALTERNATIVELY



Companions of Xanth
Legend/Accolade, £39.99
Rated 6, Issue 28
If you like the look of the game but don't fancy the 'wacky' humour, try Xanth instead. It has a fantasy theme, being based on Piers Anthony's novel Demons Don't Dream. Not the most exciting of games, but quite engaging nonetheless.



BloodNet
MicroProse, £44.99
Rated 8, Issue 30
This role-playing adventure takes a rather more serious view of the future than Hoboken, mixing extreme William Gibson inspired cyberpunk with the Dracula legend. What results is an original and entertaining game, with adult themes.

ON LOCATION WITH THE SUPERHERO LEAGUE



Edison's lab is in a sorry state, but that won't stop Dr Entropy from using it to his own ends.

One of the many markets you'll come across. Here you'll be able to buy items to help you in your quest.

The headquarters of the Superhero League of Hoboken lies bang in the middle of the Hudson river.

The entrance to Newark, site of your first mission. There's also an entrance to the subway system here.

Newark Helipad still functions, and runs a shuttle service to JFK airport in the next sector.

The Statue of Liberty — now fallen into disrepair like many of New York's other landmarks.

looking for a fight. When this happens, you find yourself in the combat screen. Combat is turn-based, so that each monster (monsters number from one to 20) takes a turn and then each superhero takes a turn. Most characters have the choice of using two weapons: a hand weapon (which could be a plank, a chainsaw or something even more preposterous) and a projectile weapon (ranging from a rubber band to an altogether more sensible sawn-off shotgun).

In addition, you can also use a superpower. Some superpowers, such as treading water, are completely useless when it comes to fighting. Others, though, are quite devastating. Tropical Oil Man has the ability to raise his opponent's cholesterol level, whilst Captain Excitement bores his enemies to sleep and Oxide Man can rust them to death. It's worth bearing in mind that raising cholesterol is useless against robot and plant monsters, in the same way that you can't make an animal rust — so it's a good idea if your heroes aren't limited to one power apiece.

Most heroes start with one power. Others can be added by drinking coloured isotopes, which vary in strength and can be bought from markets. You can also boost character statistics by eating certain foods: fish increases brains, meat promotes brawn and greens add toughness.

Mission impossible

The interface may be a bit old-fashioned, but the idea of comical superheroes has a certain appeal. The missions are daft in the extreme — trying to rescue the formula for Silly Putty from a dying inventor, acquiring some guacamole for the League's party, stopping Doctor Entropy from breeding pigeons which can cack on people from a great height with 100 per cent accuracy . . . you get the picture.

You start off with five missions, and once you've completed these, your league is promoted and you get another five missions. And so on. Each time you're promoted, a new superhero will join.

The main problem with Hoboken is this: it's just too damned hard. Some missions are simply a case of taking an object to a place and using it, but the majority are as convoluted as a plate of spaghetti and as obscure as, er, something very obscure indeed. Several missions require objects which you can only get from a pawnbroker — a particular pawnbroker at a particular marketplace, that is — and the only way of finding that out is by accident. More frustratingly, omitting to do something in a mission can spell disaster later on. In one of the first missions you need to break a plant pot in a church. The soil ends up all over the floor, and although it's won't help you solve that particular mission, you're supposed to wipe it up with a cloth you found earlier. This is because the now soil-impregnated cloth is essential to a later mission, though I'm not sure how you're supposed to figure that one out. Trouble is, if you don't use the cloth on the soil after breaking the pot, you're stuffed because you won't be able to get back into the church afterwards.

The game is full of annoying things like this. Unless you keep a solution close to you while you play, you're going to lose patience with it. It's a shame really. Hoboken is not the best looking game I've ever seen, but it does have a certain charm, and if the puzzles weren't so illogical it would have been a lot more fun to play. As it is, Hoboken is hair-tearingly frustrating. It makes Sam and Max look almost logical.

■ **Cal Jones**

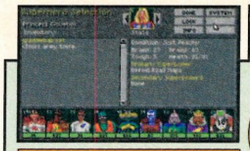


Above right: you'll often run into mutants. Can you bore them into submission before they bury you with junk mail?

Below: Doctor Entropy's fiendish plan to unleash King Kong misfires. Now, where the hell did you put those bananas?



•TECHSPEC•



6 RATING

Whimsically entertaining but ultimately frustating.

Publisher:	Legend/Accolade
Price:	£39.99
Contact:	(081) 788 0200
Minimum PC:	386, MS-DOS 5.0, mouse
Minimum memory:	640K
Minimum graphics:	VGA
Sound:	Ad Lib, Sound Blaster, Roland



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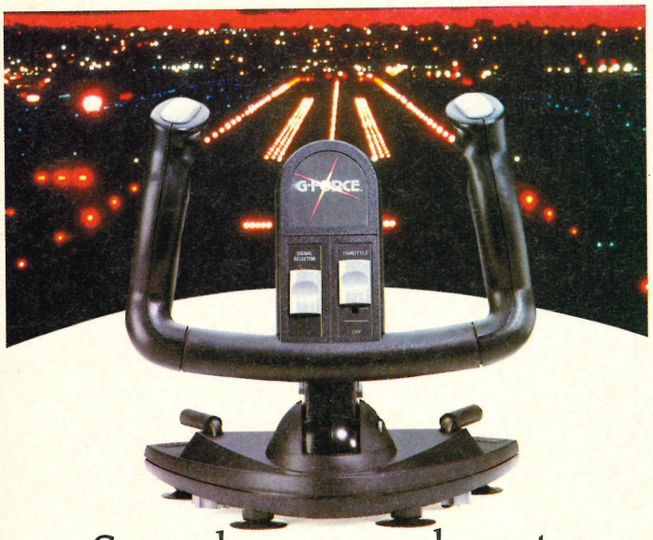


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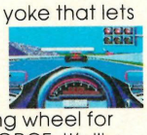
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Juggle with your Lira, bring in your Stranieri, and become the Supremo Allenatore.



AMIGA SCREEN SHOTS

"Easy to control, comparatively quick and impressively atmospheric. The strategic elements are strong enough to keep you hooked for a long time".
PC Review about Tactical Manager

"The game is executed with such precision and attention to detail that before long you are looking for ways to slip your players interest free loans and one-off payments".
James Binns, PC Format Recommended

"A real atmospheric treat"
PC Format Recommended

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Manchester United Premier League Champions

Having already sold a couple of unspectacular Man United games to the footy sim-buying public, is Krisalis flogging a dead horse?



Manchester United are a success: back-to-back Premiership titles, double winners, Charity Shield holders and owners of a spankingly impressive stadium. Most footy fans outside Manchester — and half of those inside — hate them, but grudgingly admit that they play fast, attractive football. Manchester United — Premier League Champions (MUPLC) capitalises on this grudging respect with a combined arcade/management game.

All the teams from the top four divisions and the GM Vauxhall Conference are here. Over 2,500 players are available, and each one has ten different attributes. You and up to three other people can take part in all the league and cup competitions during a full season (apart from Europe), create your own custom leagues and cups, or simply play a one-off match.

Each game is divided into two phases: a management section followed by 90 minutes of footy action. As manager, you can examine the attributes of your squad, view a variety of statistics , arrange friendlies and create a unique playing style for the club of your choice.

This last feature is particularly impressive and is made possible by the 'Tacti-Grid'. It's not as gimmicky as it sounds. Apart from the usual tactical options and information such as substitutes, designated penalty-takers and injuries, it offers sophisticated control over team formation. Basically, your players can be placed almost anywhere within an 11x9 grid, and can be instructed to play defensively, aggressively, or a combination of both. Eight pre-set formations are also included for those of you who don't want to bother fiddling about with individual players.

The arcade side is marginally less impressive. On the surface it's quite similar to Sensible Soccer, with an overhead display and the usual range of moves and skills — accurate passes, shooting (with variable swerve and height), volleys, headers, diving headers, slide-tackles and set-pieces. In addition, half a dozen varied pitch conditions (from normal to foggy), plus deflections, injuries, substitutions, bookings, sendings-off, extra time and penalty shoot-outs all add to the realism.

In practice, however, this apparent complexity doesn't add up to an entirely enjoyable experience. The computer opponents are well graded and can provide stern opposition, but they often poorly reflect the playing styles of the clubs they are supposed to represent. Too often you simply find yourself hoofing the ball upfield and chasing after it, or pursuing an attacker who's sprinting towards your goal. The action is also slightly too fast, a situation not helped by the computer's sometimes quirky decisions about which player you should control. The arcade game is much more satisfying in two-player mode, but then the tactical preparations become almost irrelevant.

MUPLC scores well on presentation, with plenty of nice touches throughout.

However, the main problem is that it tries too hard to be comprehensive. MUPLC isn't quite strong enough in either its strategic or arcade sections.

The management elements aren't as complex as those in Gremlin's Premier Manager 2, for example, and there are some significant omissions, such as the absence of a transfer market and squad training.

Nor is the arcade side as smooth or sophisticated as the game which it most resembles: which is , of course, the old fave Sensible Soccer.

While MUPLC can't reasonably claim to offer much that is innovative or stunning, it's polished and playable enough to warrant your attention. A decent hybrid of genres which should keep most footy fans happy.

■ Gordon Houghton

Below left: using the Tacti-Grid to implement the most devastating team tactics since Holland created 'total football' is easy.

Above: watching your strategy fail miserably on the pitch is not.







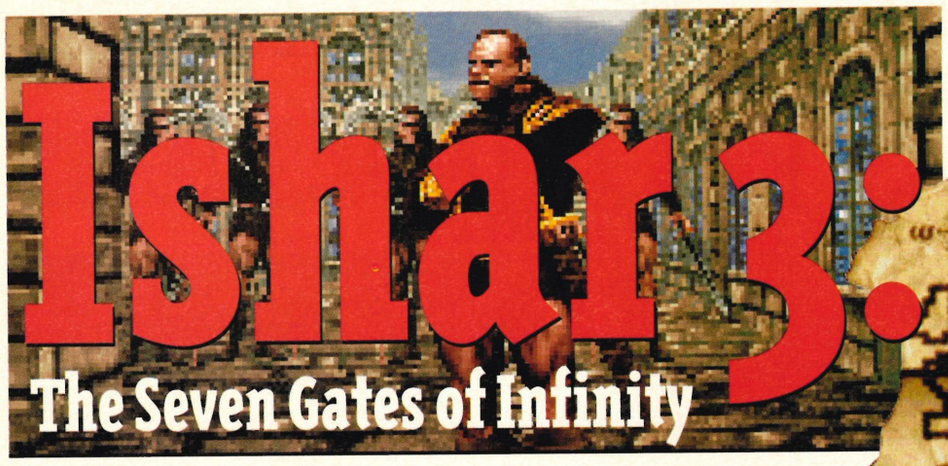
TECHSPEC

6

RATING

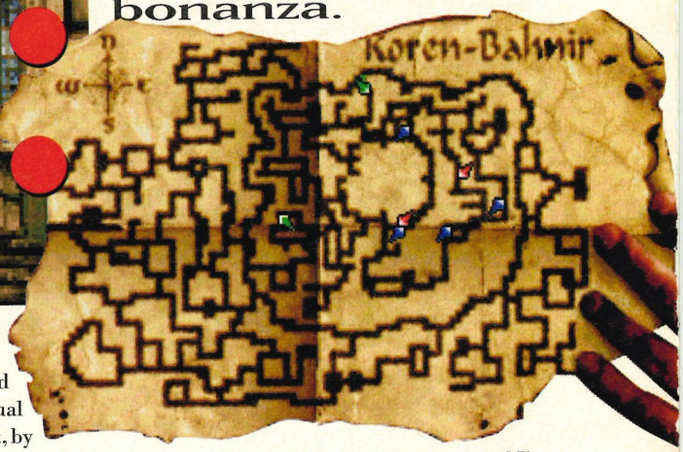
A solid performer, but could do better.

Publisher:	Krisalis
Price:	£29.99
Contact:	(0709) 372290
Minimum PC:	386, MS-DOS 3.3 joystick
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Sound Blaster



Ishar 3: The Seven Gates of Infinity

Step back in time with Silmaril's latest role-playing bonanza.



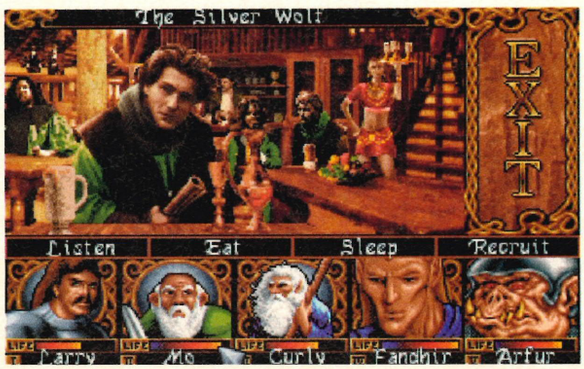
DISK ONLY

Here's a series that seems indefatigable. The Ishar set was started by 1991's Crystals of Arborea and followed a year later by Ishar: Legend of the Fortress, then a year after that by Ishar 2. Now here we are at the fourth game in the "trilogy" and all I can say is I hope they don't try for number five.

If you had the stamina to complete the previous game, you'll remember slaying an evil sorcerer called Shandar. Well, like all villains, Shandar is back for seconds, or at least he will be when the imminent conjunction of the planets takes place. At that moment his drifting consciousness will be able to take possession of a new body, that of a black dragon named Wohratax.

There is, of course, only one way to stop him, and that is by going back in time, Terminator-style, to wipe out Wohratax before he can cause any trouble. As if by magic, the conjunction of the planets also creates a series of seven gates in the local space-time continuum which can take you back to the dawn of history, if only you can find them. And finding them is your job.

Fortunately, you don't have to do it alone, as like every good RPG these days, Ishar 3 gives you a whole party of adventurers to take on the quest. Before the game begins you can construct your own gang of five, selecting race, face, skills and stats. If you've still got some saved games knocking around from Ishar 1 or 2 you can draft your favourite party into number 3. The third alternative is starting off with one character then recruiting as you play.



Below: Down the boozer with . . . Here, aren't you Christian Slater? No he's not, but buy him dinner anyway.

Party politics

Silmarils has tried to add something extra to the usual character management bit, by giving each character a personality which manifests itself like this: some races hate other races (Elves, for example, hate Dwarves) and certain character types, such as murderers and thieves, hate everyone. The upshot of all this is that if you have an Elf and a Dwarf in your party they won't get on well at all and should you ask the Elf to administer first aid to the Dwarf, he'll refuse point blank and will happily let him croak.

The other consequence is that nasty characters have a tendency to either assassinate their companions or run off with whatever valuables they were carrying. This sort of independence is an interesting idea but it turns into an annoying distraction when you have to keep recruiting replacements who have no weapons, no experience and therefore no appreciable skill in combat or spell-casting.

Almost any distraction would be welcome in this game though, as right from the off you find yourself getting lost in a huge 3D flick-screen maze of identical streets. There are about five things you need to do in the first half-hour of play and they're all interspersed with several minutes of dull wandering. If you persevere, as I had to, you eventually find the first gate into the past, and here the story gets really dreary.

The second part of the game takes place in a wood in which every location is a random jumble of foliage graphics. With no map available in this section, working out where you are is impossible and the graphics give no indication of which way to go. Consequently, you spend even more time wandering aimlessly.

If you're very lucky, after at least half an hour of this, you eventually find a racoon who hands you a document, and then the awful truth dawns on you... you have to find your way back to the gate. This sort of trudging around different worlds then trudging back to the start goes on all the way through the game, and I'm sorry, but it just isn't my idea of fun.

Silmarils is keen to promote the game's strong, convoluted plot, and when it was devised maybe it did seem strong and convoluted. The truth is that while you're playing the revelations are few and very far between, so the plot doesn't thicken nearly well enough to be engaging.

I haven't really mentioned other features of the game, such as the spell-casting and combat, simply because they hardly differ from the same routines in Eye of the Beholder or Dungeon Master or any of the other many similar games. In fact, if anything they're actually made quite clumsy because of the haphazard way in which command icons are arranged.

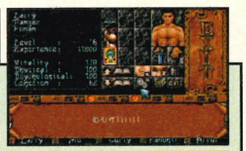
After this game I'm left wondering if the planets of our own solar system have been secretly conjoining, as Ishar 3 certainly seems to have fallen through a time gate leading to 1991.

■ Paul Glancey

TECHSPEC

4

RATING

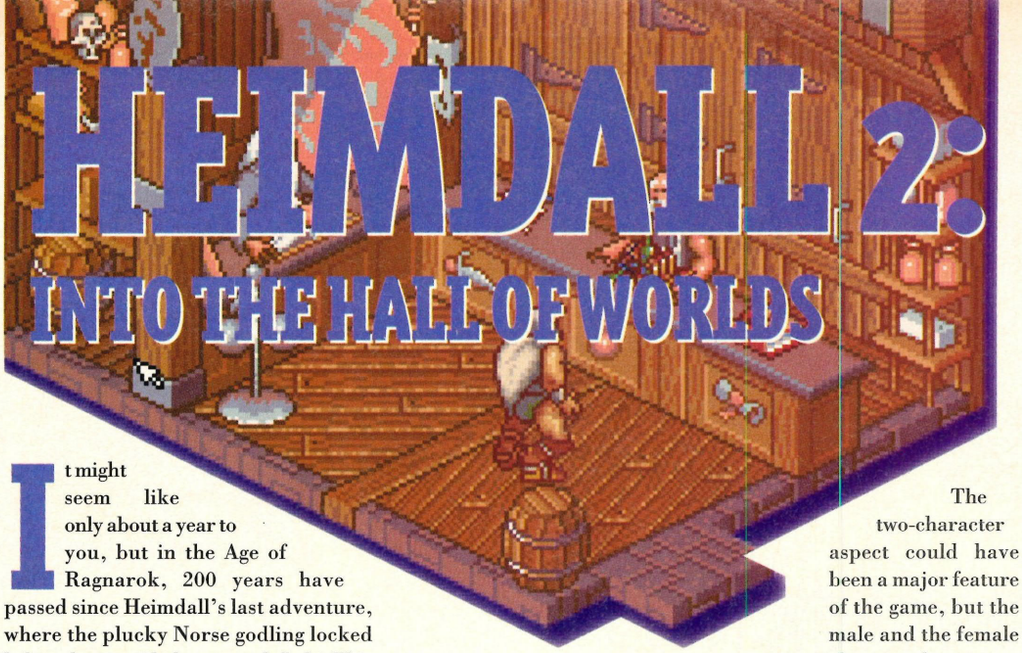


More of an ordeal than a game.

Publisher:	Silicon Daze
Price:	£39.99
Contact:	(071) 328 2738

Minimum PC:	33MHz 486, Mouse
Minimum memory:	4Mb RAM 8MbHard Disk
Minimum graphics:	VGA
Sound:	Sound Blaster(no PC speaker option)

HEIMDALL 2:
INTO THE HALL OF WORLDS





TECHSPEC RATING 5

Pretty enough, but the gameplay is half-baked.

Publisher:	Core Design
Price:	£39.99
Contact:	(0332) 297797
Minimum PC:	33MHz 386
Minimum memory:	640K
Minimum graphics:	VGA
Sound:	Roland, Ad Lib, Sound Blaster

DISK ONLY

It might seem like only about a year to you, but in the Age of Ragnarok, 200 years have passed since Heimdall's last adventure, where the plucky Norse godling locked helmet-horns with the renegade Loki. This being a sequel, Loki is abroad once more, causing all kinds of trouble in Midgard and Utgard. Not surprisingly, the gods want Loki back under lock and key.

Luckily Odin remembers a talisman he was once given, which could render a god powerless. But because it was so dangerous, it was broken up into four pieces and cast through the portals in the Hall of Worlds. The talisman is just what's needed to control Loki, so someone has to go and find the bits. You can guess who. Heimdall isn't on his own, though, Ushra, a combat-trained Valkyrie goes along to accompany him.

Heimdall starts at the Hall of Worlds, where several exits lead to different parts of Utgard and Midgard. The exits only let him pass when he is carrying a particular unlocking talisman, so these are something else he has to look for on his travels. The talismans have been drawn towards each world's Ro'Geld — a magical source point — so to begin with he must head for these.

As in the first Heimdall, the scenery is displayed isometrically, which would all work very nicely were the controls not so ghastly. Contrary to what the manual says you can't use the mouse to point at a spot then expect Heimdall to go there.

> "You get the feeling that it's half-day closing in Midgard – most of the locations are deserted."

Instead he walks in a straight line to a point adjacent to where you told him to go, and after he's got to the x co-ordinate you need to click again so that he walks to the y co-ordinate — hopeless! You can really only play with cursor keys, but even these aren't perfect; press left and he keeps walking left until you either change direction or press left again to stop him — not a system appropriate for a game that requires such precise movement.

Even if you use the keys for movement, you still need to keep a hand on the mouse to operate the icon-driven object menus and magic system, which, fortunately aren't so problematic.

Magic works on the familiar rune system, so once you've found the individual rune tablets you can string them together to construct a spell. Walking over objects adds them to the back-pack grid of goodies, so you can click on them and examine, eat or drop. You can pick up swords and axes for hand-to-hand fighting, shields and armour and knives and bows for ranged combat. Usually, though, once a monster appears, it will bash you randomly, and all you can do in reply is press the attack key as fast as you can. Rather poor really.

The two-character aspect could have been a major feature of the game, but the male and the female character have practically the same abilities. The characters' magic and fighting skills improve with practice, but running both of them and powering them up by alternating between them is pointless. It's easier to stick to one and charge him (or her) up to double strength in half the time.

One of the worst things about Heimdall 2 is that you get the feeling that it's half-day closing in Midgard — most of the locations are deserted, and there's only something for you to do every dozen screens or so. Character interaction is dull, leaving you with the feeling that they're holding up the proceedings.

As you can tell, there isn't really much that I liked about Heimdall 2. I suppose the graphics are quite good, and I liked the medieval harp-type soundtrack, but the rest of the game — well, it feels like it's only half there. And that's quite a disappointment for a Core Design title.

■ **Paul Glancey**



Below right: The ropy controls make it quite tricky to get Heimdall around this lava trap safely.

Below left: Nice night for a walk.





GAMES





Cardmania

Reviewed by Brian Paterson

"The exciting thing about Cardmania is that it really is different. Cards! I thought how can you possibly make anything that isn't just a dull electronic rip off of the real thing?

Well, The Jumping Bean Co. really have come up trumps with this one. Both games in the package are coin-op proven and once you get into the games (which incidentally is really straight forward) its easy to understand how players pay for game after game in the arcade.

You have a choice of two games called Quintoon and Pokio, the main objective in both games is to survive a 'round' and maximise the points you are given for making up the correct sort of combinations relevant to each game.

The really cool thing is that in Quintoon you have the choice of playing five hands at once, and in Pokio you try and make up three hands. This simple development totally transforms the standard games of Blackjack and Poker into something that is totally addictive. Just like shoot 'em ups and platforms you begin with a set of lives and can gain extra levels, and you can really rack up the points as you progress through the game as the unique 'progress points' system trips in. In layman's terms this means that the longer you survive the bigger the rewards for success.

There's humour and action as well, with a choice of sixteen of the most unusual dealers you are ever likely to come across! Enhanced with some really bizarre spot sound effects. This all adds up to a really neat gameplay, and the very strong likelihood you get the sack for playing too much in working hours, and total social rejection from playing it too much at home.

You could of course play in four player mode, keep your family, friends and business colleagues and compete for any strange side bets you may have in mind, like who takes the dog for a walk.

"Cardmania is a brilliant home version of currently the two hottest coin-op amusements in Europe!"

Wim Wouters: MD Elam Group Int. Coin-op distribution

Available on PC, from the 1st week in September.

Hidden Features

Hidden in the game are some bonus features. We would spoil your fun if we told you how to find them.

Hint: Name a card game to get the hidden features.

Hand Analysis: (Corner of the screen). This is a distribution analysis of the winning hands that have been achieved during the games you have played. This is displayed as a percentage of the hands played. In Pokio you will therefore be able to see the numbers of pairs, the number of straights or royal flushes etc. that you have achieved during your play sessions. In Quintoon you will be able to see the number of wins achieved at the 98 point level, and so on up to the 105 point level.

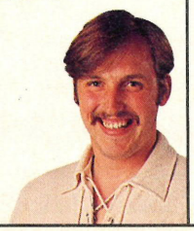
In this way you should be able to compare the effectiveness of aggressive or defensive play strategies.

THE JUMPING BEAN CO.

Critics Corner

"I play games for a living. Cardmania is to ordinary card games, what Tetris is to bricklaying"

Scott Howarth
coin-op games tester



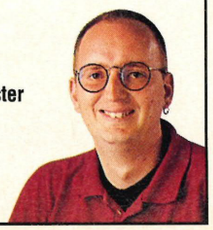
"Absolutely terrific. We'll have to ban this one from the office."

Colin Daniels
MD The Music Hire Group, leading UK coin-op operator



"Cardmania is really compulsive. This two game package is great fun and dead easy to play"

Gary Edis
coin-op games tester



GAME REVIEW



CARDMANIA

Publisher	The Jumping Bean Co.
Telephone	0602 792838
Price	£24.99
Format	3.5" high density disks

TECHNICAL DETAILS

IBM PC's 100% and compatibles

MS DOS 3.3 or higher, Windows OK

Min 640K RAM

Soundblaster & compatibles 386+

VGA 256 colour

Hard drive required

RATINGS

Graphics	★★★★★
Sound	★★★★★
Gameplay	★★★★★
Originality	★★★★★
Value for Money	★★★★★



OUR VERDICT

"What a superb deal, two great games for the price of one."

110%

Buzz Aldrin's Race Into Space

The review of Buzz Aldrin's Race Into Space (BARIS) on floppy disk appeared in Issue 20. This CD version is the same basic game with substantial video and audio enhancements. The action begins in Spring, 1957 and allows you to direct the American or Soviet space programs until 1977. The game is turn-based and the objective is simple: the first country to complete a manned lunar landing successfully and return to Earth wins. You can play alone or with a friend, select one of nine difficulty levels and choose between a basic or historical (more accurate) game.

BARIS gives you control over research and development, administration, astronaut recruitment and training, vehicle assembly, launching, budgets and over 50 missions. You also get intelligence reports, astronaut records, and a whole bank of information in the Space Museum.

The CD version includes speech and a full orchestral score, and replaces the grainy digitised graphics of the original with clearer, smoother video sequences (there are more of them, too). These are impressive cosmetic changes, but they don't affect the game's major appeal: the compulsion to reshape historical events. The attention to detail, the depth of research and the weighty documentation all prove infectious. If you have any interest in the space race, you shouldn't miss this.

■ **Gordon Houghton**



· TECHSPEC ·

Minimum PC:	386, MS-DOS 5.0, CD-ROM
Minimum memory:	1Mb
Minimum graphics:	VGA
Sound:	Ad Lib, Sound Blaster, Roland, PAS
Publisher:	Interplay
Price:	£39.99
Contact:	(0235) 821666

RATING **8**



· TECHSPEC ·

Minimum PC:	386, MS-DOS 5.0, mouse
Minimum memory:	4Mb
Minimum graphics:	VESA, SVGA
Sound:	Ad Lib, Sound Blaster, Roland
Publisher:	Sierra
Price:	£44.99
Contact:	(0734) 303322

RATING **8**

Police Quest: Open Season



Yes, it's another rerelease: this time Police Quest: Open Season gets the CD treatment. Open Season is the fourth game in the Police Quest series of adventures, and differs from its three prequels in that hero Sonny Bonds has been replaced by a new model, and ex-LAPD chief Daryl P Gates takes over from Jim Walls as the game's adviser.

Set in Los Angeles, Open Season is based on a real case. A serial cop killer is on the loose, and when your partner winds up dead in an alley, you're put in charge of the investigation. It's not as simple as tracking the killer down and giving him a bit of the old lead poisoning, though — everything must be done by the book. And that means arresting the felon and making sure you have enough evidence to get him convicted.

This game is atmospheric, challenging and visually pleasing. The CD has higher res graphics than the floppy version, plus speech, a video interview with Daryl Gates and a meaty enough plot to warrant an 18 and over recomendation from ELSPA. The game's biggest problem is that if you're expecting a lot of action, you'll be disappointed. The Police Quest games are true to life because you have to follow police procedure to the letter. For all that, if it's gritty realism you're after, buy it.

■ **Cal Jones**

Leisure Suit Larry 6: Shape Up or Slip Out





Like Police Quest: Open Season, Larry 6 has already been issued on floppy. Larry's latest adventure sees the balding, middle-aged and sex-starved hero marooned at a health resort where he must attempt to seduce nine beautiful women. To the get his wicked way, Larry has to find a way of pleasing each lady in turn, whether it's fixing the cellulite-sucking machine, or stealing a pair of handcuffs for a kinky bondage session. And more often than not, Larry gets a lot more than he bargains for.

Whether you enjoy the humour is really a matter of taste. On the minus side it's rather too obvious and definitely American, but on the positive side it's politically incorrect in the extreme (good). Puzzle-wise the game stands up fairly well. It's reasonably difficult, and some of the problems (which are of the wacky variety) require quite a lot of working out.

Compared to the floppy game, Larry 6 on CD is much better. In SVGA mode the game looks infinitely better than the original (and disappointing) VGA version. You also have speech, of course.

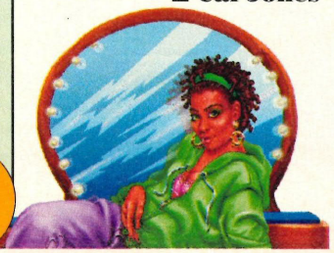
Dean Evans thought the game decidedly average when he reviewed the floppy version in Issue 28, but I have to say that I quite enjoyed it. It's hardly original, but it's as good a way as any of passing time. As I said earlier, it's down to taste. Try before you buy.

■ **Cal Jones**

· TECHSPEC ·

Minimum PC:	386, MS-DOS 5.0, mouse
Minimum memory:	4Mb
Minimum graphics:	VGA (SVGA reccomended)
Sound:	Ad Lib, Sound Blaster, Sound Blaster
Publisher:	Sierra
Price:	£44.99
Contact:	(0734) 303322

RATING **6**



Genesia





At first sight, Genesia looks an awful lot like Populous. You can't raise or lower the land, but the screen layout looks suspiciously similar: an isometric landscape in which little people run around building houses and so on. And yes, it is a God game. Or rather, a King game, which amounts to much the same thing.

You start the game with an area of rough land and a handful of people. In basic terms, you have to develop the land and expand your population, but there are two other kings who have the same goals so you can expect a bit of aggro along the way.

There are two ways of winning. One is to drive out your rivals and take over the land. The other involves seven gems which have been hidden throughout the land — find them all, install them in a temple, and you win.

The CD version doesn't differ too much from the floppy version reviewed in Issue 32 (June), but the graphics have been jazzed up somewhat. Another new feature on the CD is help. Click on the question mark and then click it over the icon you want more information on, and a soothing female voice tells you what it's for. Help is fairly limited: if you want to find out, for example, why you don't have enough troops, you'll have to look in the manual.

Genesia is enjoyable, but the addition of some fancy graphics doesn't turn it from a slightly above average game into a good one. Experienced strategists will find it undemanding of the old grey matter, and unless you're new to God games, you'll find it more fun in two or three player mode.

■ **Cal Jones**

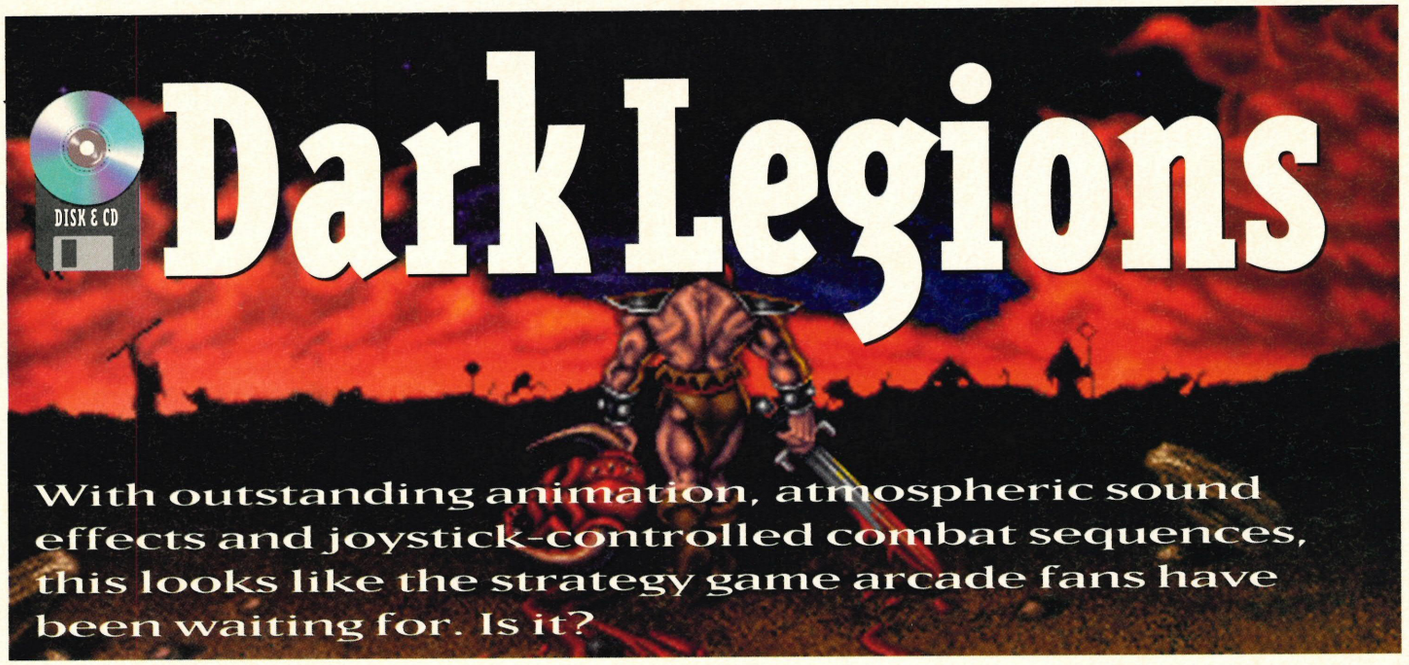
· TECHSPEC ·

Minimum PC:	386, MS-DOS 3.3, mouse
Minimum memory:	2Mb
Minimum graphics:	VGA
Sound:	Sound Blaster
Publisher:	Mindscape
Price:	£39.99
Contact:	(0444) 246333

RATING **7**

Dark Legions

DISK & CD



With outstanding animation, atmospheric sound effects and joystick-controlled combat sequences, this looks like the strategy game arcade fans have been waiting for. Is it?

As every arcade fan will tell you, strategy games are boring. All those tedious statistics, all those tactical options, all that planning in advance just for a few measly graphics to shift an inch up the screen. The worst fact of all is that you have to think before acting. It's sometimes too much to bear.

"Dark Legions is all about killing things. Maiming, burning. Watch it happen, in colour, in detail."

With the arrival of Dark Legions however, arcade fans are in for a shock. It's the latest in a growing series of games which combine in-depth strategy with impressive action.

Forget about the plot — it's the usual pseudo-Celtic rubbish featuring a silly old codger blathering on about orbs of power and getting done in for his pains. The basic fact is this: Dark Legions is all about killing things. Maiming them, burning them, ripping them apart, sucking their blood and biting them to death. You get to watch it happening, in colour, in detail. You can set traps, use rings, ambush people and gang up on your opponent.

The only thing you can't do is run away.

Below: Novice tacticians will see a lot of this screen. The computer is often a ruthless opponent who will wipe out every single one of your troops. There are two solutions: do better next time or turn off the power supply.

Preparing to kill things

You begin at the main menu, which offers a choice of starting a new game, loading an old one or establishing a modem link. You can play alone against the computer, or against a friend on a PC or a modem.

If you're not loading a saved position, you have a choice between Quick Start and Setup games. Quick Start offers you 10 pre-defined scenarios, mostly one-player only. These introduce you to terrain types, different character classes, positional tactics and computer intelligence. For example, 'Light-Dark' is a fairly simple struggle between power and strategy, in which the computer intelligence is set to easy; 'Toe To Toe', on the other hand, is a vicious, bloody battle against a merciless computer opponent.

Setup is for people who have exhausted the possibilities of the pre-set missions and who want to define their own challenge. It's not really an option you should consider until you're familiar with the way the game works. It allows you to customise everything from the composition of your army, the computer intelligence level, the number of moves per turn and the map size (20 kinds, ranging from tiny to huge).

Killing things

Once you've selected a scenario or created your own, you're taken straight to the combat zone, where the two opponents are lined up against each other, ready to fight. The battle progresses by turns, each consisting of an icon-controlled strategic stage often followed by arcade-style combat. Once you've completed your manoeuvres, the enemy launches a counter-attack. The aim is to seize your opponent's power orb.

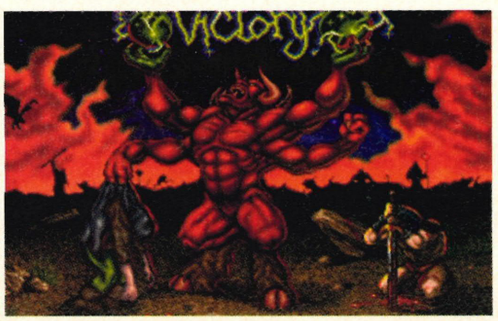
The action is portrayed in three ways. The scrolling map view gives you an overall view of the contest and is best used for studying formations and troop deployment. The 3D screen allows precise control over a character's movements and also reveals details such as whether the individual is poisoned, injured or still has moves left. The combat display shows a zooming, scrolling, 2D battlefield in which you and your opponent fight to the death.

This might not sound particularly interesting so far, but Dark Legions has plenty of surprises in store. For example, you can't fail to be impressed initially by the quality of the graphics. The animation, range of actions and detail are outstanding for a strategy game, and are ably supported by atmospheric sound effects.

However, it's only when you've played through several scenarios that you begin to appreciate the game's real appeal: its variety of characters. There are 16 in total, ranging from standard, inexpensive foot soldiers such as berserkers and orcs to costly magic wielders such as conjurors. Some have impressive strategic powers; some have unique effects on their enemies; and some, like the demon, are simply awesome fighting machines capable of ripping an enemy apart with their bare hands.

Additional objects and abilities accentuate this variety. Characters can make use of six rings which bestow qualities such as extra speed, power, stamina, protection, rejuvenation or life force on any individual who wears them. Traps are an even





ALTERNATIVELY



Ambush At Sorinor
Empire, £39.99
Rated 5, Issue 22
In Ambush you play a mercenary seeking cash rewards from six feuding clans: there are over 200 missions, dozens of different characters and a variety of landscape graphics. The action is icon controlled, with a battlefield map and zoom functions enabling you to combine tactics with sequences of arcade action.



Siege
Electronic Arts, £29.99
Rated 7, Issue 13
A decent strategy game where you command a variety of mythical and human forces to assault or defend a mediaeval castle. The command and control options are easy to understand, but the enemies are tough. There are 24 scenarios spread between four different castles, 54 troop types and a host of neat gadgets to play with, including boiling oil.

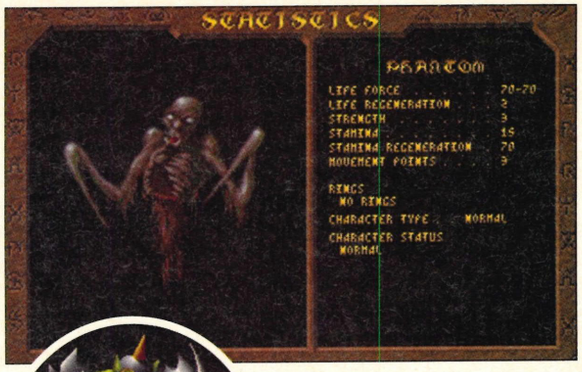
more sinister way of foiling your foes: void traps suck them into another dimension, insanity traps make them inaccessible to orders, teleports transport them to random places on the landscape, stone traps petrify them.

Further complications arise because there are many other conditions on the way characters interact and behave. For example, if you choose the Phantom as your Orb-holder, the Phantom cannot carry rings; Fire and Water Elementals are stopped by some traps but suffer no damage; a character's strength is strongly affected by the time of day — and so on. When you start the game it looks like a relatively simple case of deploying your strongest pieces in tactically-advantageous positions and testing your joystick-wielding skills on the field of combat. After playing, you begin to realise that the action has an awful lot more to offer.

Complexity makes Dark Legions a very strong game tactically. However, when it comes to one-on-one combat, reflexes and timing are much more important. The arcade-style depiction of battle is the most impressive I've seen in any strategy game. It begins with an overhead view of the combat zone, giving you a few seconds to manoeuvre your character into a favourable position, then quickly zooms in to a claustrophobic, single-screen display. It's genuinely unnerving to be stalked by opponents who are invisible (phantoms), physically terrifying (demons) or capable of assuming any form (shape shifters). All too often at the beginning you get petrified, pummelled, burnt or bashed to death.

The point of killing things

There are several levels of satisfaction in Dark Legions. The quality of graphics and the ability to launch straight into the action are an immediate hook. After that, you gain pleasure from the first time you annihilate a stronger opponent in the combat zone. Soon you begin to get a feel for the tactical elements of the game, positioning characters to make the most of their abilities, and the variety in terrain types and scenarios. Then you begin to appreciate the complexity of individuals' abilities and your opponent's strengths.





There are 16 characters, each with eight attributes, special powers, different attack strategies, and recommended uses. Some also have significant peculiarities.

Once you've taken all these progress markers on board, you can exploit the appeal of creating your own battles and setting yourself increasingly difficult challenges.

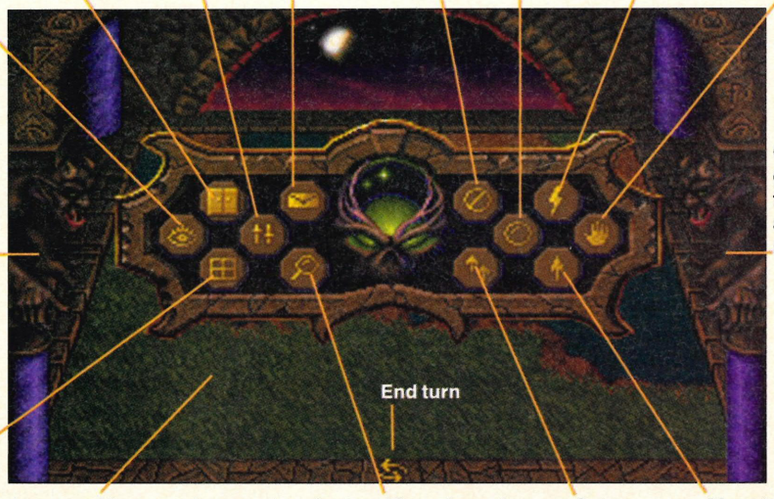
Seizing the enemy's Orb of power is almost incidental to the quality of strategy which precedes it, but it does provide a neat end to a great game.

I've only got a few minor complaints. In combat, for example, some of the sound effects are a little weak and some of the characters appear to move unrealistically or illogically. Similarly, the 3D tactical view can become slightly crowded and confusing in tight situations. Ignore these slight drawbacks: one of the best features here is that, unlike most games involving complex tactics, you can achieve limited success without having to plough through the manual and try out half a dozen different scenarios first. Just by swinging an axe at a weak opponent you can feel the satisfaction of the first kill.

Dark Legions won't appeal to everyone because of the need to think hard as well as fight, but as an introduction to the world of strategy games, you won't find better.

■ Gordon Houghton

GAME MENU



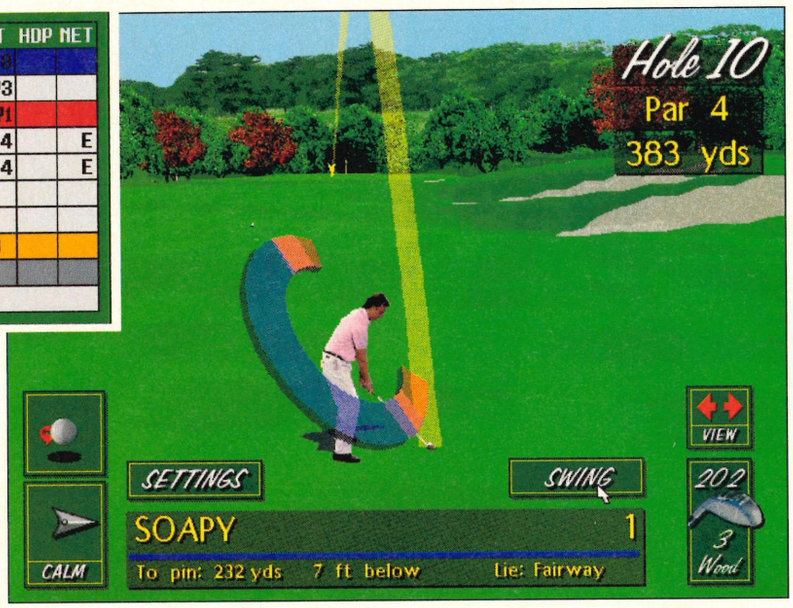


Strategy game, with arcade-quality effects.

TECHSPEC 8 RATING

Publisher:	SSI/US Gold
Price:	£35.99
Contact:	(021) 625 3388
Minimum PC:	386DX, MS DOS 5.0, mouse
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Ad Lib, Sound Blaster, Roland

HOLE	10	11	12	13	14	15	16	17	18	IN	TOT	HDP	NET
BLUE	[illegible]												
WHITE	383	126	358	470	384	247	140	334	373	2815	5873		
RED	338	103	319	431	305	226	86	249	321	2378	4871		
SOAPY	4									4	4		E
STADLER	4									4	4		E
PAR	4	3	4	5	4	4	3	4	4	35	70		
HANDICAP	2	18	8	10	12	16	14	4	6				
RATING	BLUE: 72.0				WHITE: 69.1				RED: 68.7				



Above: the scorecard never lies ...

Right: simple but effective controls make PGA Tour 486 a real pleasure to play.

Who is that guy who shouts "It's in the hole", and "You're the man" during major golf championships around the world? Why does he do it? Is it the same bloke every time, or is it a team effort? And am I the only person who ever wanted to see him hammered into the ground with a well worn 3-iron?

"I can't in all honesty say PGA Tour 486 blows Links out of the water – or even a shallow bunker."

If you're anything like me, you'll be extremely thankful that PGA Tour 486 has decided to give it a miss — although the game does have a strong line in sampled birdsong.

PGA Tour 486 is the latest incarnation of the popular, but ancient PGA Tour. You've got nine, rather talkative pros to play with or against in skins, match or stroke play. There's digitised footage of each of the courses, plus commentary and detailed sound effects throughout the game — and it's on CD-ROM only. It's light years away from the old PGA Tour.

That doesn't mean it's got things easy. The current king of golf sims is Access's Links 386 Pro. It's won that position by virtue of impressive landscaping, a massively detailed control system and the wealth of additional courses. Knocking Links off its perch will take some doing.

A full set of clubs

You've got a choice of three courses, from real life PGA tour courses of course, to swing your club at. The first, TPC Sawgrass, makes regular guest appearances on just about every golf game you'll ever see, and it's always a good, challenging course. The other two, TPC Summerlin and TPC River Highlands, have never appeared in a golf game before, according to EA. Summerlin is OK, with plenty of water hazards making it more than averagely difficult, but I'm not that struck on the scenery. My own favourite is River Highlands, though, with its twisty layout and awkward pin placements.

But let's get back on the fairway. For one thing, you'll find that the control system in PGA Tour 486 is refreshingly simple. Whether it'll prove more popular as a result I'm not so sure. Personally, I like it.

Basically, you click on the fairway to produce a marker arrow for distance and direction. Next, it's three mouse-clicks on an arc superimposed on the golfer's swing.

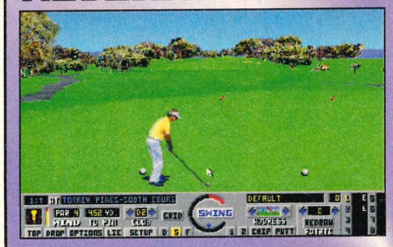
Below: is this player several irons short of a full set or what?



The latest incarnation of PGA Tour comes on CD. But how does it play? John Bennett tees off to find out.

PGA Tour 486

ALTERNATIVELY



Links 386 Pro
Access/US Gold, £44.99
Link has been the undisputed king of the golf games for so long that it's easy to forget there ever were any other golf games. Very much the 'techie' style of golfing simulation, though, with lots of fiddling about with stance options and swing corrections, and also unbearably slow at times. Mind you, it has umpteen course add-on disks to tickle the wallet of the hardened golf addict.



Jack Nicklaus Golf & Course Design
Accolade, £19.99
Rated 6, Issue 34
Getting rather dated — all right, very dated — when compared to the likes of Links and PGA Tour 486, but it comes at a budget price, it's very accessible and has an excellent course designer to provide a bit of much-needed variety. Best suited for the casual golfer looking for a fun hackabout rather than the serious stuff.

Timing this correctly (or otherwise) dictates the power of the shot, whether it skids off to right or left and so on. It's a familiar system, after all.

At the novice levels, the automatic caddie places an extra marker on the arc to show where you should be aiming for, power-wise. At pro level, you're on your own.

It's good to see that the swing setting is very unforgiving. A golf game where you can guarantee to hit the ball straight at maximum power every time is no fun at all. Thankfully the swing setting on PGA Tour 486 has enough variation and sensitivity not to allow this to happen.

All the things I normally expect to do in a golf game above and beyond the ordinary (ie, draw, fade or put backspin on the ball) are just as easy to get at on-screen, without having to go through lengthy contortions of the golfer's stance to achieve the effect.

There are also plenty of other options to play with, hidden neatly away in a single menu. So to me, the whole thing is much more friendly to play than Links, without losing anything essential to a good golf sim.

However, I can see why golf sim 'purists' may find that the system feels limited and artificial in comparison with the hyper-realistic options of a game like Links.

Against a blue background

In the looks department, PGA Tour 486 is staggeringly good.

As far as the players go, it's a chromakey job, I guess (where they film the person against a blue background and then cut out the blue to drop them into the game). And a very slick job it is, too.

The pro players are immediately recognisable from their swings alone, and the detail and movement in things like clothes, divots and shadows is better than any golf game I've ever seen. What really carries the whole thing are the little personal touches to the digitisations — like the different ways certain players react if they miss a crucial putt, the way Craig Stadler's shoulders slump after a wayward tee-shot, and so on.

The landscaping isn't quite so remarkable — but it is beautifully done all the same, and you get a good feeling for the contours of the course amid all the detail. There are places where it doesn't work quite so well: the water is pretty grim, for starters, and I'm not overly struck by how heavily things pixellate up close.

More importantly, though, you pay a heavy price for all this gorgeous detail. First off, you need at least a 486DX, 4Mb of RAM and a good double speed drive to get the game running passably. Even then, the waiting time between screens is still irritatingly long.

I have to admit I find this surprising. The biggest drawbacks to Links 386 Pro were the hardware requirements and the appallingly slow screen updates. I'd have thought that anyone wanting to produce a genuine Links-beater would have gone for smooth, uninterrupted gameplay as a matter of priority.

> "In the looks department PGA Tour 486 is staggeringly good"

While PGA Tour 486 is certainly easier to play than Links, it isn't a great deal faster. Looks like EA is programming on Pentiums again . . .

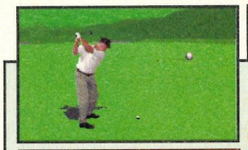
The 19th hole

"Thoroughly enjoyable. Very playable. Great looker". These are the phrases rattling through my head as I ponder my verdict on PGA Tour 486. But, "is it good enough?" is another phrase.

I can't in all honesty say that PGA Tour 486 blows Links out of the water — or even a shallow bunker, come to that. It's a hell of a better game in several respects — notably general playability and the marvellously digitised golfer animations. Had the game been a notch or two faster to play on a solid, reasonably specified 486DX with an average double speed CD-ROM drive, I'd have definitely given PGA Tour 486 an extra mark, possibly even a nine.

But as it is, I still think many people will see Links as the definitive golf simulation. And with Access working on a follow-up (the CD-ROM based Links 486, funnily enough), the competition is going to get even tougher.

■ John Bennett



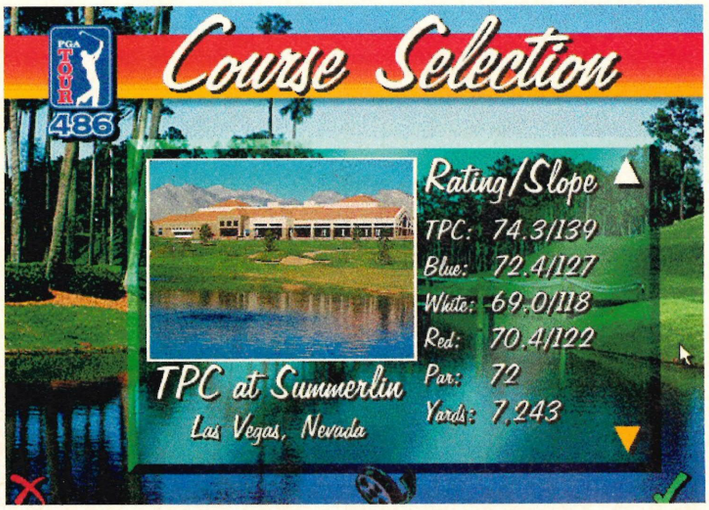
Looks wonderful, and easy to play too.

TECHSPEC RATING 7

Publisher:	Electronic Arts
Price:	£39.99
Contact:	(0753) 549442
Minimum PC:	486 DX with CD-ROM drive
Minimum memory:	4Mb
Minimum graphics:	VGA
Sound:	Sound Blaster

Below: Tee off with an old favourite amongst golf games, the TPC course at Sawgrass, then move on to all-new courses like Summerlin (below, right) and River Highlands.



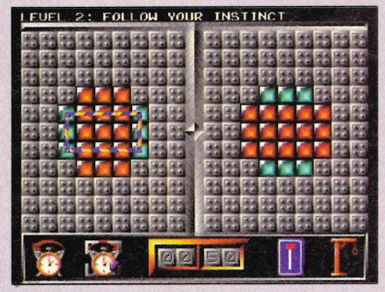


Clockwiser



Until Tetris came along, the puzzle game genre was seen as the province of nerds and egg-heads. After Tetris conquered the globe, no one was ashamed to admit playing puzzlers any more. We all came out of the closet and exercised our brains with pride.

Clockwiser takes advantage of this post-Tetris world without adding anything significant to the genre. Put simply, it's all about blocks. Lots of them. Blocks with different properties, blocks of different colours. Blocks everywhere.



Let's go back to the beginning. The basic premise is this: you have to rearrange the blocks on the left-hand side of the screen so that they reproduce the pattern on the right-hand side. By creating a 'frame' for the blocks to move in, you can shift them clockwise or anti-clockwise.

It sounds easy enough, but isn't. This is because each block has different properties; some blocks can be moved and some can't; some are affected by gravity , others aren't and so on. There's a time limit, too and 100 stages of this torture, with a nasty surprise at the end. The first dozen levels are dull and predictable, but after that the program gets unpleasant. Add to this a level editor which allows you to create new challenges for your friends (if you can be bothered), and you should be guaranteed long-term fun.

Unfortunately, it doesn't quite work that way. Clockwiser lacks the random element of a genuinely long-lasting puzzle game, and it would have been considerably enhanced by a two-player mode. As it stands, it's cheap, cheerful and frustratingly addictive — but there just isn't enough incentive to return to levels you've already completed.

■ Gordon Houghton

It's deceptively simple: arrange the blocks on the left so that you reproduce the pattern on the right.

As well as over a hundred levels of its own, Clockwiser includes a level editor to help you create your own puzzles.

· TECHSPEC ·

Minimum PC:	386SX, MS DOS 3.0
Minimum memory:	1Mb
Minimum graphics:	VGA mono option
Sound:	Ad Lib, Sound Blaster Gravis Ultrasound
Publisher:	Rasputin/Kompart
Price:	£19.99
Contact:	(0438) 840004

RATING **6**

Pinball Dreams Deluxe



· TECHSPEC ·

Minimum PC:	286 MS DOS 3.3
Minimum memory:	640K
Minimum graphics:	VGA
Sound:	Ad Lib, Sound Blaster
Publisher:	Bluebyte
Price:	£49.99
Contact:	(0727) 868005

RATING **7**

At the time of its release, Pinball Dreams was the best and most realistic pinball simulation available on PC, and has since been bettered only by its successor, Pinball Fantasies. Dreams, together with its add-on disk, Pinball Dreams 2 (basically four extra tables) is now out on CD. In addition to the eight tables, you also get a few extras — you can increase the number of balls from three to five, alter the angle of the table and change the screen resolution from VGA to SVGA. Oh, and no copy protection. Hurrah!

Dreams was a great game when released in 1993, but the tables are noticeably inferior to those included in Dreams 2, which appeared almost a year later. When I originally reviewed Dreams, I said that it was almost as good as the real thing.

Now that I've had the chance to refresh my memory, I have to say that the original is, perhaps, not quite as good as I thought it was at the time. The boys at Digital Illusions obviously did quite a bit of tinkering with the game engine between Dreams and Dreams 2.



If Nightmare, together with the other originals, Beatbox, Ignition and Steel Wheels, disappointed second time around, the same cannot be said of Dreams 2's selection. Revenge of the Robot Warriors in all its tacky glory (the table depicts a hugely endowed blonde bimbo being pursued by toothy robots), but it plays beautifully and has by far the best music of the bunch. Safari, Stall Turn and Neptune aren't too shabby either — and all play as a real table should. The earlier tables are still playable enough — it's just that they don't measure up to the later four.

Is it worth having, then? If you own Dreams already, there's not much point in buying this — the enhancements are too few to warrant spending money on it a second time. On the other hand, if you don't own Dreams, you have the choice of this, which includes all eight tables and comes on a nice, convenient CD, or Pinball Fantasies, which comes on floppy, has only four tables but is (in my mind, anyway) a much better game. Oh, and if you're prepared to wait a few months, there's the third game in the series, Pinball Illusions, which includes a multi-ball feature. The choice is yours.

■ Cal Jones

Above: eight tables feature on this CD, including Stall Turn, originally released on Dreams 2.

Left: now there's a snazzy ray-traced intro for each of the eight tables.

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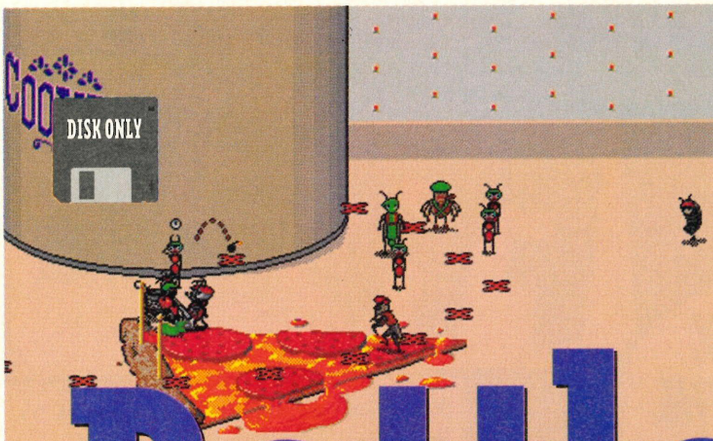
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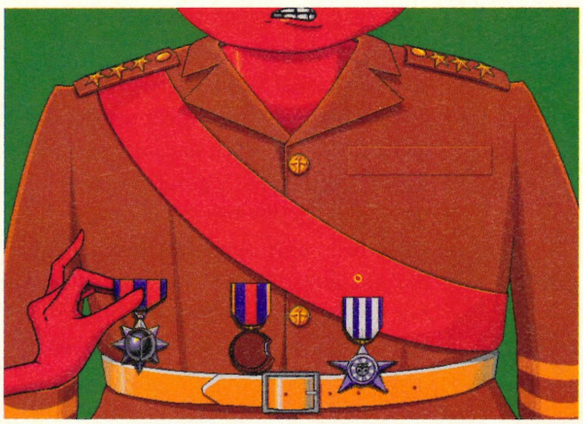
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Paul Glancey once jumped six feet at the sight of a spider under his duvet, so reviewing Sierra's game of war in the insect world was a sort of therapy.

Battle Bugs

Bloody insects. They either chew holes in my favourite sweater, or tread fragments of cow-pat into my chocolate eclairs. I guessed that this game might be my chance to strike back at the little invertebrates, but far from being a fly-swatting simulation, Battle Bugs is a strategy game, in which the parts of the tanks, planes and amphibious landing craft are taken by 22 species of cutesy creepy-crawly.





Below: Victory is rewarded with this medals ceremony.

Bottom: In two player mode, the player moves when he likes, but the thinking time ticks down on the 'chess clock' at centre-screen.

Each breed of bug has its own specific abilities: some are armed; some are fast; some are slow; some fly; some jump; some swim: some have strong attacks; some have thick skins that make them tough to kill. You have to learn how best to employ all 22 if you're to beat the 50 pre-programmed battle scenarios.

In each scenario the situation is pretty much the same. A mixed assortment of enemy insects is trying to capture some sweetmeat left lying at a picnic site or on the bottom rack of a refrigerator, and the objective is for you to guide your own bug-squad into battle, annihilating the enemy and claiming the food for your side.

"Battle Bugs is a true '90s strategy game, eschewing the old play-by-rounds for real-time action."

Both you and the enemy are given a pre-defined selection of bugs to do the job, say, three ants and a cockroach to fight two bees and two mosquitoes, so there is always at least one definite winning strategy waiting to be hit upon. I guess you're supposed to either think very hard about it before the fighting kicks off, but I usually found myself working things out as I went along, playing and replaying battles until I got it right. It's a bit like Lemmings, insofar as you get a free rein over how you use the different abilities of your troops, but there are only one or two 'solutions' which will definitely beat the level.

"Attack my bug warriors"

Battle Bugs is a true '90s strategy game, eschewing the old-fashioned play-by-rounds in favour of real-time action.

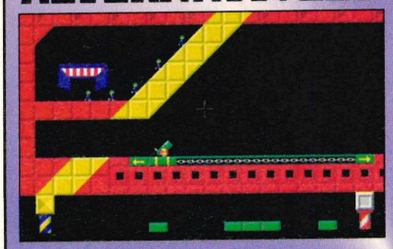
At the start of each battle all the troops on the battlefield are in position and waiting for orders. Clicking on one of your troops displays a nine-icon command menu with which you can tell him to march to a particular spot (via the most direct route or one you specify), track down a particular enemy, and do his own specialised trick — like switching between flying and walking, and lobbing bombs and stones.

Once you've given your orders to all of your troops you can set things in motion. Of course, because everything's going in real-time, and all the bugs on the field are moving at the same time, you need to be able to issue new orders at any time. Again, all you have to do is click on your chosen bug and the action freezes while he's redirected.

Bug hunter

When bugs collide, it's a fight to the death so it's important to weigh up the relative attack and defence ratings of the two combatants and a bug's energy level before you send him to his fate. The basic combat tactic you learn is to send two of your guys to fight one enemy. Yeah, obvious I know, but the way it works is as follows.

ALTERNATIVELY



Lemmings 2: The Tribes
Psygnosis
Rated 8, Issue 19
Plays surprisingly similarly to Battle Bugs insofar as you need to work out how to use your different resources to reach a goal, and it demands reactions as well as strategy. About the same level of complexity, too.



Dark Legions
SSI/US Gold
Rated 8, Issue 36
This one uses classic fantasy figures rather than cute bugs, but the principle is similar: each game has a different objective and a different set of characters to play with. It's also turn-based instead of real-time.

Start by waylaying your chosen foe, a mantis, say, with an insect with strong defence abilities, such as a cockroach. Once the mantis is tied up attacking the cockroach — and not doing much damage — you can follow up with a strong attacker, like a grasshopper. Each bug can only fight one other bug at a time, and while the cockroach is keeping the mantis busy the grasshopper can really get stuck in, with no risk of retaliation. Doing it this way usually means that the mantis buys it, and both the cockroach and the grasshopper live to fight again.

The key thing is timing, though. If you time your move wrong and the grasshopper ends up starting the attack, he also ends up taking all the hits (very bad because he has poor defence) and the cockroach ambles up later to jump the mantis from behind (not very effective because the cockroach has a low attack score and can't do as much damage).

Bug bother

It's this absolute dependence on extremely precise timing that fouls up Battle Bugs. It isn't too much of a problem in the first dozen-or-so battles when you have, at most, five or six bugs to command. But as you advance you have to handle more and more bugs, and although coming up with the strategy may not be too difficult, getting 11 bugs to the right place at the right time is practically impossible, so things never seem to go to plan. Sometimes a fight blocks up an opening so your bug can't pass. Sometimes a sticky surface slows down a bug more than you anticipated and he arrives at his target too late. Sometimes he wanders too close to an enemy bug and he ends up in an unforeseen fight. All these unpredictable occurrences result in dead bugs, and since losing just one bug can scupper your chances, winning a battle is usually down to a stroke of luck. I suppose that's true in a real battle, of course, but it makes for an annoying element in a strategy game.

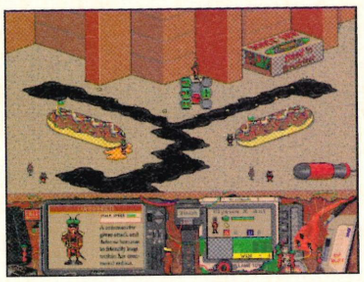
So, while Battle Bugs is a clever concept, pleasantly and even amusingly presented, it's let down somewhat by this sizeable gameplay flaw.

Admittedly, it's not such a problem if you have the patience to play and replay a level until random chance goes in your favour, or if you're prepared to use the level skip option that lets you move on after three failures, but somehow this smacks of dodgy game design and I don't think I'd care to pay big bucks for that.

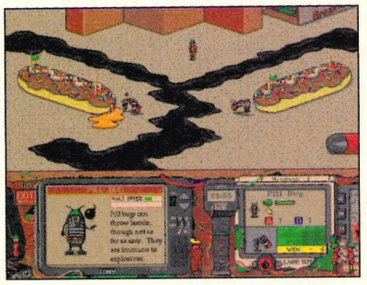
■ Paul Glancey

THE POWER OF COMMAND

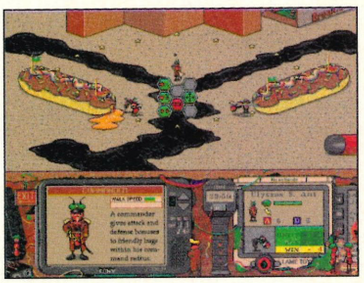
In certain battles you're provided with an on-site leader who can rally his troops, boosting their skills while they're under his influence. To demonstrate, here's one I fought earlier. The two pill bugs have to defend a pair of Mr Wiggiz (those are the cakes) from two enemy squads consisting of a mosquito and a bee. The pill bugs are strong defenders, but they're outnumbered and outgunned here, and only Commander Ulysses S Ant can help them!



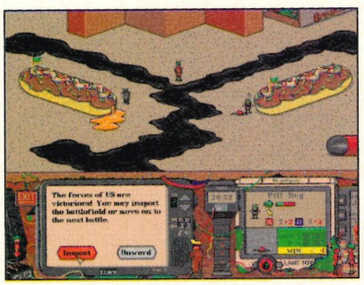
The range of the Commander's influence is denoted by the ring of stars. He has to be moved down the field so that he can rally our brave boys.



The battle begins and the Commander's on his way. Meanwhile our heroic pill bugs are taking a battering! Will Commander Ant make it in time?

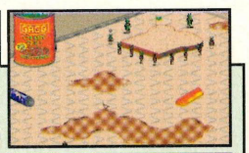


Don't worry boys, the cavalry's here. Both bugs are within the Ring of Confidence and it seems the tide of battle is about to turn!



Ha! Victory is mine. All arthropoda will kneel before the might of my forces! Today, the Mr Wiggiz — tomorrow, the pimento loaf!

Each morsel of grub is worth a certain number of points, and to win food fights you need to capture your quota of food points. So it's worth paying attention to these briefings.



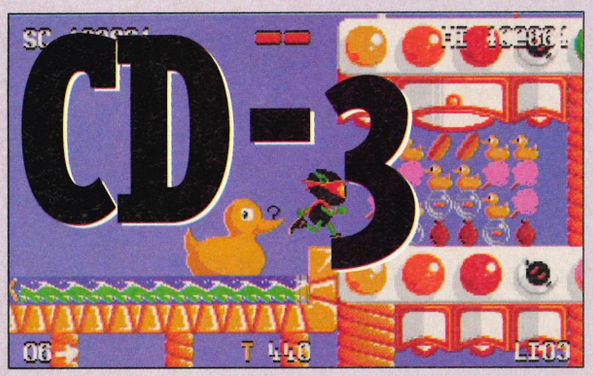
TECHSPEC

6

RATING

Good idea, but still needs a few bugs knocked out.

Publisher:	Sierra
Price:	£34.99 disk/£39.99 CD
Contact:	(0734) 303322
Minimum PC:	386 with mouse
Minimum memory:	2Mb
Minimum graphics:	VGA (SVGA supported)
Sound:	Ad Lib, Sound Blaster, Pro Audio



Above: Zool is one of the best games on the compilation.

CD ONLY

Almost every compilation contains three types of game: those you wanted to buy last year but didn't, those you wouldn't touch with a ten foot pole, and those you thought you would probably play if they came out on a compilation. In this respect, Gremlin's three-game package is typical.

Zool is the pick of the crop. It's a first-rate arcade game with impressive full-screen graphics, eight-directional scrolling, smart animation and bags of colour. It consists of 18 levels spread over six worlds, with a boss waiting at the end of each world. Apart from the range of options (including three difficulty levels and four music tracks), Zool impresses with its overall design. As well as the standard arcade features such as enemies, platforms and time limits, all of the worlds have secrets to be discovered. For all its variety, effects and polished presentation, Zool is well worth a lingering look.

Nigel Mansell's World Championship, on the other hand, isn't. Based on the 1992 F1 World Championship season, it fails to impress from the very start. The graphics are bland, the gameplay is repetitive and the effects are weak. However, the 3D is reasonably believable (if lacking in detail), the statistical base is comprehensive, and a range of difficulty levels and control options sustain short-term interest.

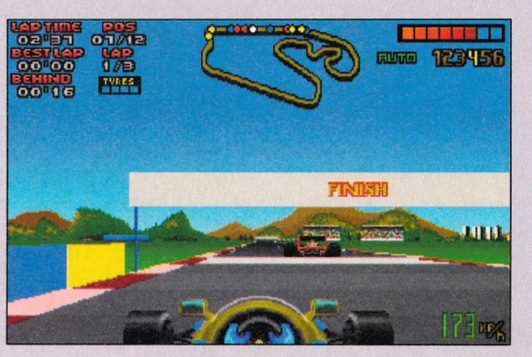
Lotus: The Ultimate Challenge is a slightly better driving game, but is no more realistic, because the car can't crash and it handles like a dream even at high speeds and in a variety of weather conditions. On the positive side, the racing is fast and pits you against computer or human opponents.

There are also 64 pre-defined courses, to master, plus a course designer should you feel the need to create more.

This is a mediocre collection. Zool is a good, solid arcade bash, but there are many driving games which better either of the racers here (MicroProse's Formula One Grand Prix and Virgin's IndyCar Racing, for example). As a package, CD-3 is cheap but not entirely cheerful.

■ Gordon Houghton

Below: Nigel Mansell's World Championship fails to impress when compared to Zool.



· TECHSPEC ·

Minimum PC:	386, MS DOS 5.0 with CD-ROM
Minimum memory:	1Mb
Minimum graphics:	VGA
Sound:	Ad Lib, Sound Blaster, Roland
Publisher:	Gremlin
Price:	£29.99
Contact:	(0742) 753423

RATING 5

The Even More Incredible Machine



Faced with a cat, a stick of dynamite, a boxing glove and a bowling ball, what would you do? Of course, get the cat to kick the ball on to the boxing glove, which punches the dynamite plunger, which blows up the brick wall and releases a mouse just in time for Pokey the cat to trap it in his paws.

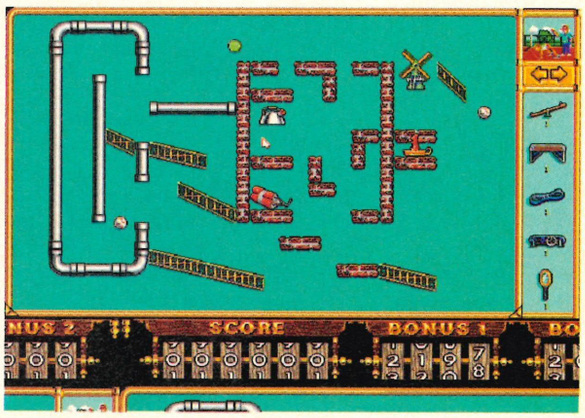
Part of the charm of the puzzles contained in The Incredible Machine is that you can't help feeling that there must be a simpler way of doing these things.

There are 170 puzzles in all, and over 50 different items which you can place on-screen, connect, ignite, galvanise, or bounce in order to create the convoluted 'machines' that will solve each puzzle. Only a limited number of these items are available for each screen, which makes it even more of a test for your ingenuity.

Even when you get through all the preset puzzles in the program, you can turn to the Make a Machine module and design your own Heath Robinson style puzzles for others to solve.

Those already familiar with the two Incredible Machine programs will notice there appears to be little different in this CD-ROM version. And they'd be right: lots of jazzy tunes and spoken instructions on each level to accompany the on-screen text, but otherwise it's the same as the Even More Incredible Machine disk release. However, if you usually find puzzle games beneath your contempt, or the disk releases have somehow passed you by, check it out; it's a delightful idea and thoroughly well implemented.

■ Christina Erskine



Above: Work out how on earth the kettle and the dynamite might be linked to the windmill.

CD ONLY

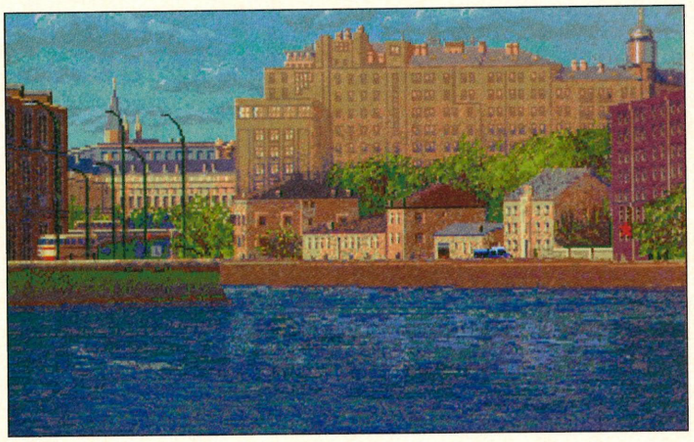
· TECHSPEC ·

Minimum PC:	386SX
Minimum memory:	1Mb RAM
Minimum graphics:	VGA
Sound:	Roland, Sound Blaster
Publisher:	Sierra
Price:	£39.99
Contact:	(0734) 303322

RATING 8

Budget Games

From great sporting victories on the playing fields of England, to the outer reaches of the galaxy and back to the wilds of Russia. And all for a bargain price.



KGB
The Hit Squad/Virgin
£14.99

Amusing post-perestroika adventure in which you play newly-promoted agent Maksim Mikhailovich in the KGB's anti-corruption outfit, Department P, investigating the murder of a former agent, Golitsin and a bigger, wider conspiracy to overthrow President Gorbachev.

Actions, questions, responses are selected from point-and-click menus. Intriguing and tricky, KGB — designed by French software team, Cryo, — is an absorbing half-serious, half-comic mystery romp.

✶✶✶

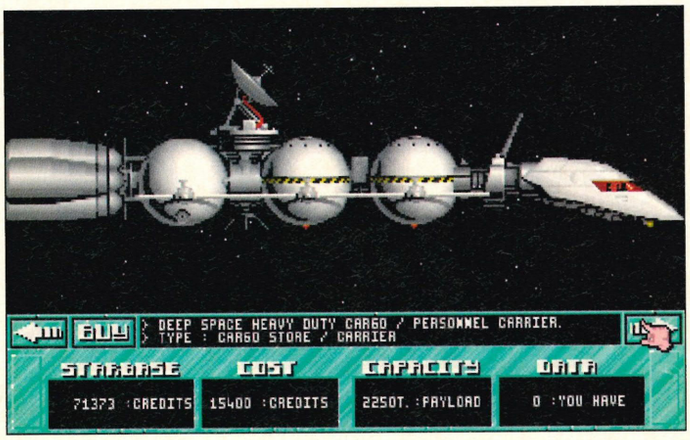


Summer Challenge
The Hit Squad/Accolade
£12.99

Archery, cycling, equestrian, high jump, 400 meter hurdles, javelin, kayaking and pole vault — probably not the most obvious collection of summer sports, but varied enough to keep most 'sporting types' happy.

It's a tried and trusted formula with up to 10 people being able to train and compete in tournaments by turn. The videoing of real athletes on which the animation is based gives Summer Challenge a visual boost, lifting it out of the run-of-the-mill.

✶✶

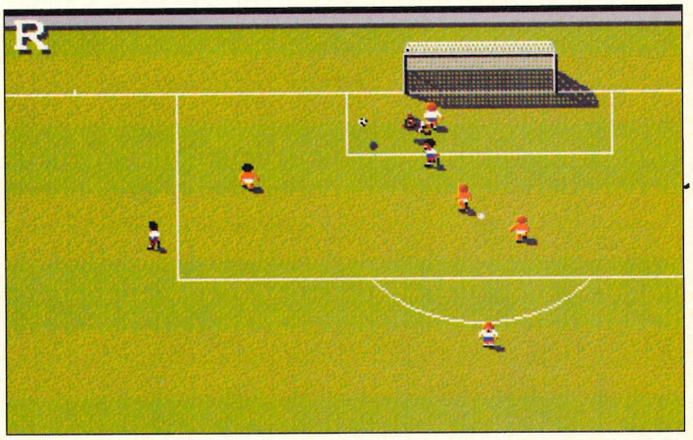


Supremacy
The Hit Squad/Virgin
£12.99

Single-player space strategy and trading game similar in concept to Elite. Here, economic and military domination of four planetary systems is the goal and you do this by governing, organising, controlling farming and production, training troops, developing military strategies, planing battles and carrying them out.

But in the other three planetary systems are alien commanders plotting your downfall. To conquer these intergalactic opponents you will need to carry your people with you. The number of control icons at first appears to be a little overwhelming, but they soon make sense. It's a vast arena to display aspirations to grandeur and world domination. And reasonably priced too.

✶✶✶



World Cup Year '94
Empire/Various
£34.99

Goal (Virgin Games), Striker (Rage Software), Sensible Soccer (Sensible Software/Virgin) and finally Championship Manager '93/'94 (Domark) all good games and all in one package.

All are enjoyable, fast action,out-for-kicks fun. Sensible Soccer has been incredibly successful and is similar in style to Goal and Striker. Championship Manager '93 is the odd one out of the four, a football management simulation, giving control over team selection, transfers, team training, tactics and boardroom in-fights.

Overall the package does offer good value for money, but do you really need three samey soccer sims?

✶✶✶



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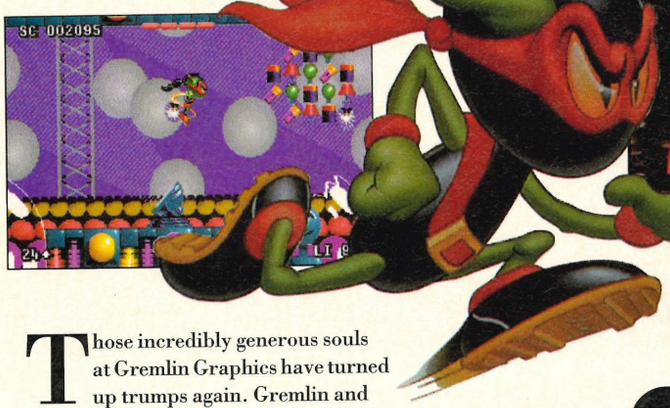
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WIN!





A CD-ROM drive!

A copy of Zool 2!

Those incredibly generous souls at Gremlin Graphics have turned up trumps again. Gremlin and PC Review have joined forces to offer you another chance to win not only a copy of Zool 2, but also the Addup CD-ROM Sound Card Solution, the CD kit which includes a Panasonic CR-562B internal CD-ROM drive, all the interfaces and cables you need and an instruction manual. For sound cards, it includes interfaces suitable for the Gravis UltraSound, Sound Blaster Pro (and higher), Sound Galaxy, and Media Vision boards. (Please note that a sound card itself is not included in the kit.) The Panasonic 562B is a popular double speed drive, fully MPC-compatible and will take up a 5.25"drive bay in your PC. If you're looking for a simple CD solution, this could be the answer.

If you don't win this special first prize, don't despair as you could still be in with a chance of winning one of the 10 runners-up prizes of a copy of Zool 2. In Zool 2, you can play either as Zool or his female counterpart Zooz in six worlds of platforms, bonuses to collect, baddies to blast and visual puzzles to solve.

RULES

- **Employees of EMAP Images, Gremlin Graphics, and Zye Technology, and their families and associates are not eligible to enter this competition.**
- **No multiple entries, please.**
- **Entries received after the closing date will not be accepted.**
- **No cash equivalent to the prizes is available.**
- **The editor's decision is final, and no correspondence will be entered into.**

HOW TO ENTER

Nice and easy, this one. All you have to do is look carefully at the two screen pictures taken from Zool 2 printed here, marked A and B. You will see that although they look superficially similar, there are 10 differences between them.
All you have to do is draw a circle around each difference in picture B.

When you think you have found all the differences, fill out the rest of the coupon and complete the tie-breaker question. Then send the form (or a photocopy if you don't want to spoil your copy of the magazine) to:

Spot the Zool difference
PC Review
EMAP Images
30-32 Farringdon Lane
London EC1R 3AU

Your entry *must* reach us by October 15th, 1994. This is the closing date and any entries which arrive after that will not be eligible for the prize draw.

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

Tie breaker

Zool is cool because .....
.....

(Complete this sentence in not more than 10 words in a way that you feel is witty or apposite to the subject matter.)

❒ Data protection: tick this box if you do not wish to receive further information or other offers or services in the future
❒ I am under 18. ❒ I am 18 or over.

Closing date October 15, 1994 PC Review Issue 36 October 1994.

SPOT THE ZOOL DIFFERENCE





Outpost



Simon Shaw takes a look at the ins and outs of Outpost.

Outpost is one of the most frustrating strategy games on the market. The manual is next to useless and, due to the inclusion of features not actually in the game (black mark, Sierra!), confuses more than it helps. Just how do you get your colony started? Then what are you supposed to do? Here are the answers to some of the most commonly asked questions.

Q. *How should I pack my starship?*

A. Take one extra colonist only, plus lander. Take one of each kind of probe, plus solar satellite and two receivers. Take two life supports, as much food as you can and an extra cargo lander to carry it all.

Q. *Which star system should I aim for?*

A. The one with the highest habitable planet probability. Ignore the AI Select option, which looks superficially attractive but makes a dog's dinner of its task.

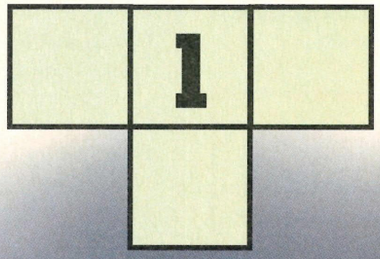
Q. *How do I choose a landing site?*

A. You want the one with the most mines (red dots). You won't be able to build on rough terrain, either above or below ground, so find an area that's relatively clear and close to as many mines as possible. The four air tubes on your seed factory should be adjacent to clear terrain.

Q. *What do I do with the robots?*

A. Put the miner on the nearest mine, the digger next to one of the tubes, and the dozer next to another. You need to build as quickly as possible, but it's not cost-effective to connect up a surface structure directly to a tube. Use the dozer to make inverted-T patterns, thus:

Air tube



If you build a tube intersection on square one, you can connect it economically to three surface structures. Note that terrain types which require only two turns to bulldoze on the surface take three underground.

Q. *How do I build?*

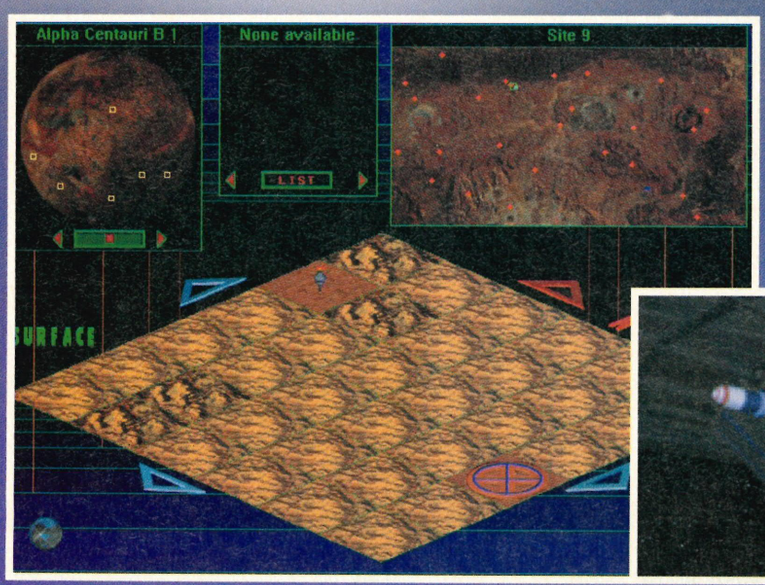
A. In order, Agricultural Dome, CHAP, Storage Tanks. Keep an eye on the generator unit in your seed factory which produces 50 units per turn. When you start approaching capacity you'll need to build another, but you can afford to wait a bit. Go underground next and start on residentials. You need one per 25 colonists. After you've got one residential, pop back up and build a SPEW — *this is vital*! Once your people have got air, food, and a roof over their heads morale will start to recover. NB: You don't need more than one colonist lander at the beginning. If you have a second, leave it in orbit until you're ready. The colonists won't like it, but the second life support you packed at the beginning should keep them alive.

Q. *What about the seed factory?*

A. A nice little surprise of which you have no forewarning is that the seed factory, less the command centre, will self-destruct round about turn 150. You'll have alternative power long before then, but you must remember to build a smelter. Once you've got everything in place, bulldoze the seed factory before rather than after the event (remembering to keep the tube network connected). If you've brought the Tokamak down from the starship, this too is unstable and may explode. Solar power is better.

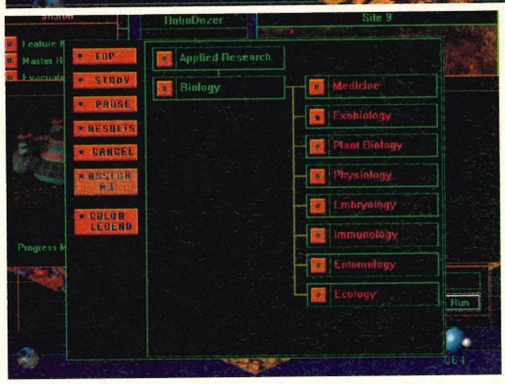
Q. *Why's everyone dying?*

A. Most commonly because they're starving. Get that agri dome built! You'll need one dome per 100 colonists, so build another when your population grows. A medical facility may also help.









Q. *So what do I build next?*

A. If you're approaching generator capacity, a solar receiver. Now construct a robot command and a warehouse. Instruct your seed factory to build miners. Mines and miners are the key. This is the single most important point to grasp in the early stages of the game.

Q. *So why all the fuss about mines?*

A. Mines produce the resources needed to build and maintain structures. Unfortunately, the way this works is very poorly explained in the manual. What happens when you build a mine is that one robotruck is automatically assigned to it. This truck will only head back to the colony when it has a full load, but you won't see it — trucks are one of the features that didn't make it into this version. This explains why buildings can suddenly become non-operational for lack of a mineral which you KNOW you have plentifully stocked. You just have no way of knowing when your invisible trucks are going to deliver their invisible loads, hence the need to have an abundance of mines. My mine-construction technique is as follows: I use the first miner as a 'prospector' to excavate the first level only of the nearest mines. By the time it's prepared four mines I'll have four additional miners ready through having built a robot command and a warehouse. Now I use these, in tandem, to excavate the deeper levels of mines 1-4, while the prospector moves on to prepare the surface levels of mines 5-8. When the deep miners have finished excavating the lower levels of mines 1-4, it'll be time to bring them, en masse, to 5-8, while the prospector moves on again to the next area. The point about this system is that after the initial hiatus only one mine is being built at any one time, though four more are being dug out.

Q. *What about labs?*

A. This is where you have to go carefully. Click on any half-finished structure, highlight 'resources' and you'll see a list of metals and minerals and the quantity required per turn of construction. Once built, many of these structures (eg residentials) have no further resource requirement, but others (eg agri domes) do, and if you exhaust your stocks, your vital structures will simply become non-operational. laboratories, as you can see from the chart above, are resource-hungry.

Other structures, such as DIRT & hot labs are even more resource-greedy. You must build slowly, where possible one structure at a time. Over-consumption of resources will kill your colony. I've found that I can get by with only two underground labs and one surface hot lab.

A word about the SPEW: this attractively named facility is probably the single most important structure in your colony. It recycles waste from the residentials to make a multi-purpose goo which substitutes for scarce metals and minerals. The more residentials you have, the more goo in your SPEW. It follows, then, that you should keep your population well-housed — overcrowding effectively costs you resources. In the middle stage of the game, it is actually possible to strike a balance whereby a colony can practically sustain itself on its own waste.

Now before we come to the last question, a word of warning: Don't look unless you're desperate!

Q. *What should I study in the labs?*

A. Basic research and mathematics. Medicine to bring up the hot lab facility. Quantum chemistry to build a better SPEW, but the crucial research path (don't look unless you *really* want to!) is as follows:

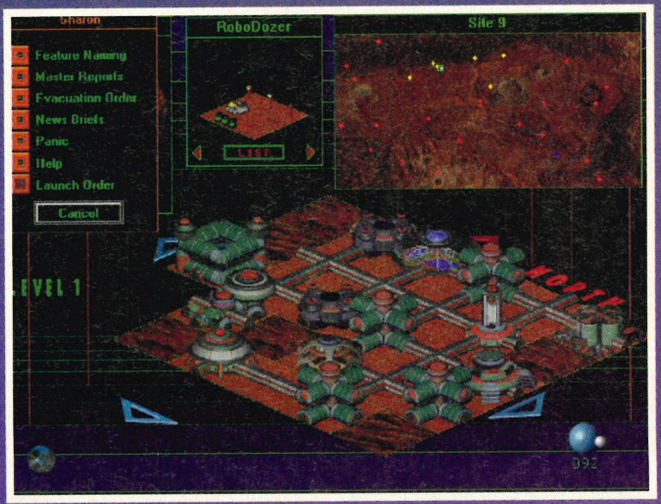
Physics, theoretical physics, quantum physics, physics (hot lab), nanotechnology 2, nanomachines etc.

Once you've got the Nanotechnology facility, you can do just about anything you want...

Resource requirement per return

Structures

	Min A	Min B	Min C	Prec A	Prec B
Laboratory	1	1	1	1	1
CHAP	1		1	1	
SPEW & Agri Dome	1	1	1		
University & Medical					1



TIE Fighter

Christopher Hales of Milton Keynes has been hacking around with TIE Fighter, so if you want to be a force to be reckoned with, follow his instructions.

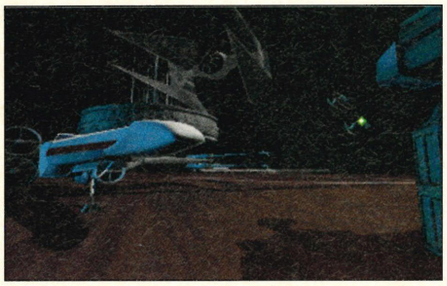
Start a new pilot at the registration desk. Exit to DOS and load your file (back it up first) into a hex editor. Change the values as follows:

Health

STATE	BYTE	CHANGE TO
Alive	01	00
Killed	01	01
Captured	01	02

Rank

RANK	BYTE	CHANGE TO
Flight Cadet	02	00
Flight Officer	02	01
Lieutenant	02	02
Captain	02	03
Commander	02	04
General	02	05



Training simulator. Change the Hex to 04 to get the Training Patch: the higher the value, the higher the simulation level (eg 09 is level 10).

SHIP	BYTE NUMBER	CHANGE TO
TIE Fighter	5A	04
TIE Interceptor	5B	04
TIE Bomber	5C	04
TIE Advanced	5D	04
Assault Gunboat	5E	04
TIE Defender	5F	04

Combat simulator. There are four bytes for each ship: change each byte to 01 to complete that mission.

SHIP	BYTE NUMBER	CHANGE TO
TIE Fighter	208-20B	01
TIE Interceptor	210-213	01
TIE Bomber	218-21B	01
TIE Advanced	220-223	01
Assault Gunboat	228-22B	01
TIE Defender	220-233	01

For battle missions, enter the New battles/Change battles room and select battle one. Then enter the hex editor and change the hex depending on how many missions there are in the battle. To complete the other battles you have to assign them in the New battles/Change battles room. But please remember, you can only cheat in a battle if you are already assigned to it, otherwise it will not work. This cheat gives you all the main medals and cut scenes.

BATTLE	BYTE NUMBER	CHANGE TO
1	27D	0 — 06
2	27E	0 — 05
3	27F	0 — 06
4	280	0 — 05
5	281	0 — 05
6	282	0 — 04
7	283	0 — 05



Theme Park

We knew it wouldn't be long before the Theme Park cheats started to roll in, but Andy Hayton of Lincolnshire has the honour of being first.

Start a new game with the nickname "cheat" and borrow as much money as you can. Save the game in slot 0 and exit. Now go into the save directory and, using a hex editor open file cheat.g0. Change the offset hex positions 12 to 16 to zeros. Reload the game and your loan will have been written off. You can use this cheat as many times as you like to get more money, but if you're not confident about editing files, make back-ups first.

Alternatively, according to G W E Russell, you could try this instead, and it doesn't involve any tricky file hacking. When you start up, just enter your nickname as "demo" and your park comes ready built. If you have any objections to being called Mr Demo, copy the demo file into one of your save game slots and start the game with your usual nickname.

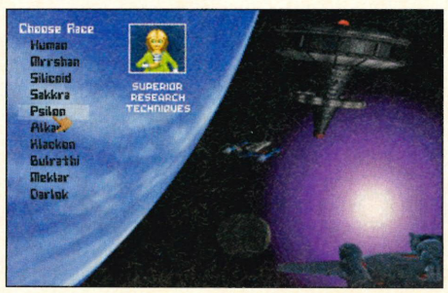


Master of Orion

Jonathan Hooper has uncovered a couple of user-friendly cheats for MicroProse's Master of Orion. Hold down the Alt key and type the following to get the following results:

MOOLA on the planets screen gives you 100BC;

GALAXY on the main star map reveals all planets and ships.



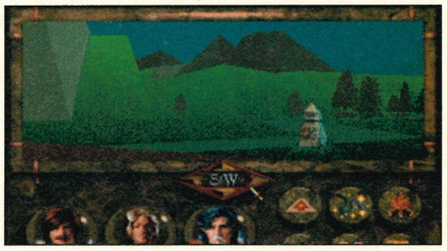
Betrayal at Krondor

Stu and Nourie from Coupar Angus in Scotland have discovered a way of bumping up your inventory in Betrayal at Krondor. If items come in more than twos and can be split between the party, you can increase the amount. First, find somewhere to place items, such as your bag (although it takes a lot to fill it). Alternatively, you can use trees, holes, chests, corpses (yuk!), scorpions *(Eh? Ed)* and so on.

Fill your chosen receptacle with as many items as possible. Then remove an item worth one space (swords take up two spaces, armour, four) and replace it with one of the items you wish to increase. Split one item between the party, click on the number of chosen items in the bag and the number will then increase.

To get money, go to a shop and buy the most expensive item, double it several times as above and then sell the surplus items back again.

If you need to get past a trap, buy a skin of the Dragon spell (you can use the money you've made selling doubled items) and cast it onto the fastest member of the group. He should then be able to walk past the trap without getting hit.



Raptor

Edd Wakeman of Gloucestershire has found a way of boosting your bank balance in Apogee's shoot 'em up, Raptor. First make a back up of your save game (save game files are called something along the lines of CHAR0000.FIL). Then open the original file using a hex editor and change bytes 24 25 26 near the start of the file so that they read FF FF FF. Reload the game and you should have enough cash to buy all the best weapons.



Warning

Do not attempt the cheats marked with the Danger icon, unless you have access to a file editor such as Norton or PC Tools and you are confident you know what you are doing. PC Review will not accept any responsibility for damage to data caused by trying out these cheats. Remember: always back up your files before editing so that you can restore the originals if you need to.

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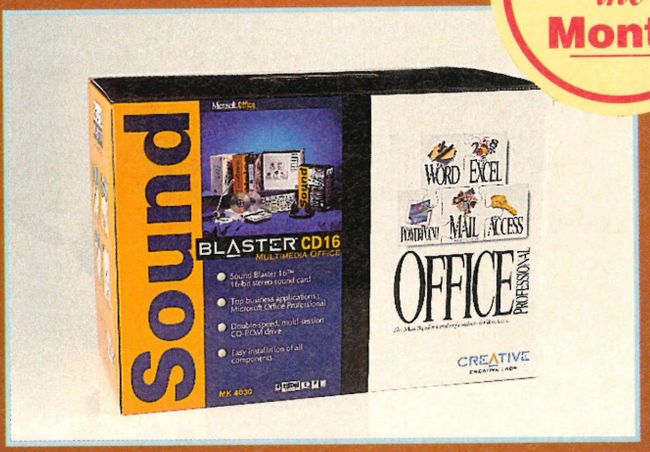
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HELP WANTED

I am stuck in Ultima Underworld 2. I had been finding the game highly enjoyable but I've now reached a dead end in Killorn Keep. Firstly, I tried to step past the pentagram in the oubliette where I found the blackrock gem. This put me in another dimension with a floating skull and lots of lava. I eliminated lots of imps but could find no exit which didn't deposit me in the oubliette. Secondly, a secret door in the barracks lead down to a door with a guard in front of it. After killing the guard I opened the door to find a room with two brain creatures in it. I destroyed the brains but found out after that they had been keeping the castle in the air, so I returned quickly to Lord British's castle. On returning to the keep I found everyone dead.

Tony Humphreys, Leeds

Answer: You're not going to like this one little bit, Tony. Basically, killing the brain creatures was a bit of a no-no and means that you'll find it extremely difficult to finish the game. The only thing you're meant to do in this room is use Altara's wand. Restore, if you can, to a game saved before you killed the brains. You have to return to the keep several times during the game, so destroying it early on is not a good thing, especially if you don't have Altara's wand yet. Incidentally, none of the imps you've encountered is the one Altara told you to kill — he is located in Lord British's castle, level 4. The room you found is a deathtrap, but you can escape by leaping into one of the fire holes on either side of the pit. It doesn't take you anywhere new.

I'm playing the Secret of Monkey Island and I can't work out how to beat the sword master. I've had training and have fought about five million pirates but I still can't beat her. Also, is there an Australian PC hotline to ring if I am ever stuck in a game again?

Reis Adamson, Australia

Answer: If you've fought all the pirates you should have a list of snappy replies for the sword master. What's probably stumped you is that her insults are different — all you have to do is find a suitable reply from the ones you've already learned. Which basically translates as use your logic, in other words.

As for Aussie helplines, I'm afraid I don't know of any, but perhaps one of our readers Down Under might be willing to help. Please write to PC Review with a phone number and a list of games you've completed if you'd like to volunteer.

Two questions on Betrayal at Krondor. Where is the Rift Machine? And secondly, where can I purchase a staff of Macros or a crystal staff? Oh yes, say Hi to Debbie and Amanda, please.

Nourie, Coupar Angus, Scotland

Answer: Oh all right, if I must. Hi, Debbie and Amanda. There. Happy now? Right, we don't actually know the answer to your question.

If anyone does know, please write in and put us out of our misery.

I am running out of cash in Strike Commander (CD version). Is there cheat code for increasing funds or getting infinite weapons (Sidewinders, Mavericks and so on)?

Shawn Tooryani

Answer: Dunno, mate. Hack Commanders, please send in your replies.

I'm playing Monkey Island 2 and have got to the bit where I've blown a hole in the ground and found LeChuck. He keeps transporting me to different rooms. So far I have the ticket from the treasure chest, syringe, root beer, balloon, gloves and doll.

D Ryan

Answer: Go to the room with the Grog machine. Wait for LeChuck to enter. When he bends over to pick up the coin, grab his underwear. Go to the first aid room and get the skull. Go back to the room with the Grog machine and fill the balloon and gloves with helium.

Go to the lift, press the call button and go inside. Use the lever when LeChuck appears. Then take his beard.

When he arrives, give him the hankie you got from Stan. Put the hankie, beard, skull, underwear and Voodoo doll into the JuJu bag. Take the doll out. When LeChuck attacks again, use the syringe on the doll, then follow him and use it again. Finally, pull the leg off the doll and unmask LeChuck.

Send your tips to: QED Tips at PC Review, Priory Court, 30-32 Farringdon Lane, London, EC1R 3AU. Your cries for help should go to Help Wanted at the same address as above.

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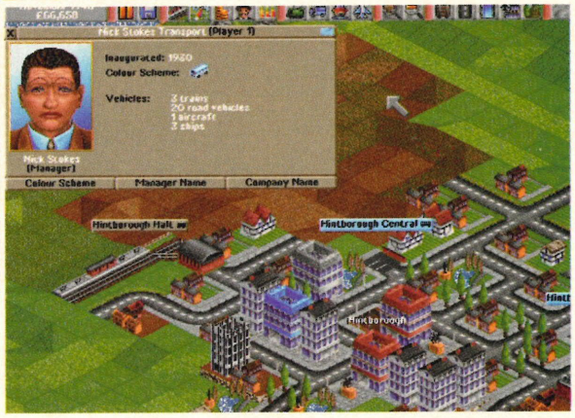
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Transport Tycoon

Is it SimCity with wheels, or Railroad Tycoon in 3D? Either way, Transport Tycoon will be big at Christmas.





DISK ONLY

With much of the attention of sim fans being centred on MicroProse's Civilization sequel, Colonization, Transport Tycoon has appeared on the scene rather quietly. But even though it's still only at early beta stage, this game already has the makings of being *the* big seller this Christmas.

There are all sorts of easy comparisons to make: the visual appeal and activity of a game like SimCity 2000, plus the depth of Railroad Tycoon and so on. And if everything has gone to plan, you've already loaded up this month's cover disk and tried the demo out for yourself.

On the road

The idea is that you start building your transport empire against computer opponents in 1930 (the game will most likely have a time limit of 2030AD) with a piffling start-up budget.

You have to maintain the complex balance of supply and demand between towns (wanting goods, passenger travel and mail) and the likes of coal mines, saw mills, farms, oil wells and so on. As your transport links improve, the towns grow and their needs change.

While all this is going on, you have to build new routes, manage your rolling stock, set up a bus system, refit lorries and wonder whether you can afford to move into air and sea traffic.

As the years pass, new vehicles become available to you — at a price.

At the moment, the choice includes trains (steam, electric and diesel), lorries, buses, helicopters, oil tankers, passenger ferries, turboprops and jets.

There's even the possibility of a monorail being added eventually ...

Behind the scenes ...

Chris Sawyer started games programming on the Memotech MTX in 1984 doing simple arcade games. He moved on to PC conversions back in 1988, and has since worked on a number of well-known projects, including Frontier: Elite 2 (doing the texture-mapping in double-quick time), Goal, Campaign and Elite Plus.

Transport Tycoon is his first big, original PC game and he hopes that it will be the start of a series of PC strategy games.

Chris is quite forthright on what he considers to be the right way for games to develop. He is less than impressed by the production values of many modern games.

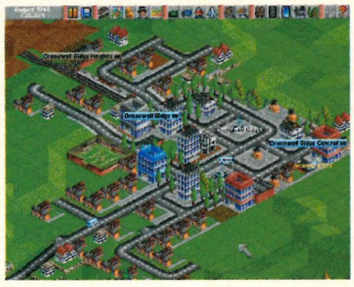
"To me, Transport Tycoon proves that you can produce a game with only one programmer and not a lot of cash. It isn't graphically led — like so many games now — in the sense that I pay the artist out of



Across right: It all starts like this — including the £100,000 overdraft. Below right: You can zoom in on the furious activity with these tool windows. Below: A transport tycoon, programmer Chris Sawyer.







— in the sense that I pay the artist out of my own pocket and employ him to do what I want. You'll never get the best out of a game if it's all about graphics and nothing else.

"That's why I'm not a fan of full-motion video games — FMV is too linear. If everyone jumps on that bandwagon we'll just end up with games that are all the same in three to four years time. The larger games are all getting a bit ridiculous, too. I don't like to spend longer than a year on a game."

In the beginning

With the obvious similarities both in terms of subject matter and gameplay, I asked Chris how much of a link there was between his game and its namesake, Sid Meier's venerable Railroad Tycoon.

"The name is largely coincidence. I liked Railroad, of course. I bought it three years ago, and after playing it for six months I thought I'd like to try and do it better.

"I wanted to do it in 3D for a start. Then, there are things like the fact that in RT the competition tend to cheat — I wanted to make sure they play by the same rules as the player.

"In Transport Tycoon you can look at everything — player and computer controlled — and they've all got the same amount of detail. You can see whether they're making a profit and how they're doing it."

Railroad Tycoon was — and still is — a MicroProse game, but the company didn't commission Chris to produce a sequel, it was shown to them as a three-quarters finished, standalone game.

"The game has always been my own work, and it was already well under way before I took it to anybody. I started with the graphics system — because I'd already been working with isometric 3D for some time. I think that the graphical impact of the game was responsible for a large part of the interest initially, but then the companies have realised that there's a very good game underneath that. The agreement with MicroProse was finalised a couple of months ago."

Polishing it off

The game has only just moving from Alpha to Beta status (in game developer jargon). Which means that there is still a fair amount to be done before it is ready for its final commercial release.

But according to Chris, it is unlikely to slip beyond the predicted release date of November 19th — which makes a pleasant change these days.

"I'm pleased at how stable the game is already. There's still a month to go before it's finished, but I'm mostly sorting out the loose ends — bankruptcy, takeovers, some of the graphics, relationships with the towns, music and sound effects, nasty things to do to your competitors, that sort of thing. The two-player link up is still to be decided." The finished game promises to be one big, beautifully detailed and constantly evolving train set.

■ John Bennett

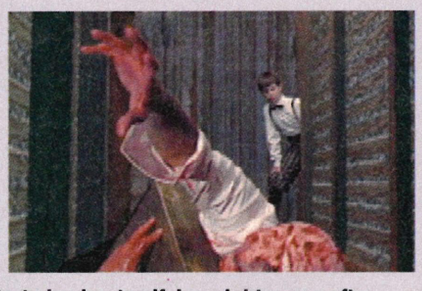
FAXBOX

TRANSPORT TYCOON	
Developer:	Chris Sawyer
Publisher:	MicroProse
Release date:	November
Genre:	Strategy/Simulation
Price:	£44.99

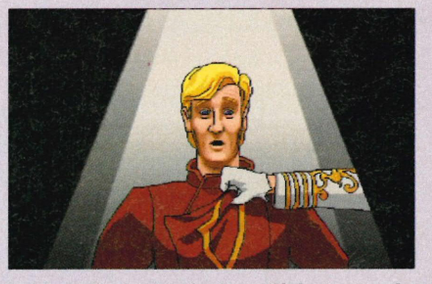
Coming Soon



Sierra has a number of interesting games for release this winter. Roberta Williams' King's Quest series reaches its seventh instalment in January with The Princeless Bride. The good news is that it has a strong new storyline, engaging new characters and superb Disney-style graphics (created by over 100 animators and artists). The bad news is that it needs a 486 and will come on two CDs — better start saving for that upgrade!



Roberta Williams shows the not-so-cute side of her character in her new game, Phantasmagoria, also slated for a January release. This gothic horror thriller could well be the scariest game we've ever seen: a special effects team was drafted in from the film industry to provide the gore. You play heroine Adrian, who starts having terrifying nightmares after she and her husband move into their dream home. Can you stop them from coming true?



The third game from Sierra is Space Quest 6, due for release in February. Roger Wilco is back, but having been stripped of his captaincy of the SCS Eureka he's back to working as a janitor. In this episode, Roger gets up to some Innerspace/Fantastic Voyage-style antics as he is miniaturised and injected into the body of a beautiful woman. A new interface, SVGA graphics and speech have been added — oh, and it's CD-only, of course.

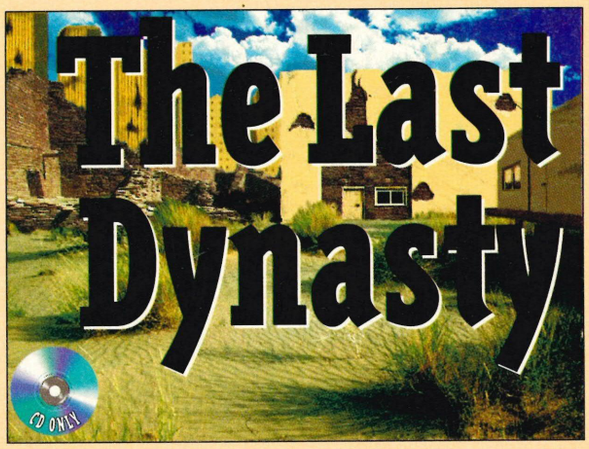


Coktel Vision is following up its Goblins trilogy with Woodruff and the Schnibble of Azimuth. This daft-titled game is best described as an interactive cartoon, and follows hero Woodruff, a goblin-style creature called a Boozook, on his quest to avenge the murder of his teddy bear. The game will be available this December in VGA and SVGA versions, but once again it's CD only.



Remember D-Generation, the isometric action-puzzle game from Mindscape? Space Academy is the follow up, and this time you control a space cadet (that's a real space cadet, not a loony) on his final mission to graduate from Space Academy. Like D-Generation, it's a 3D isometric puzzle game, and will be available in October for DOS and Windows.

The Last Dynasty



FAXBOX

THE LAST DYNASTY

Developer:	Coktel Vision
Publisher:	Coktel Vision/Sierra
Release date:	November
Genre:	Space combat/action/adventure
Price:	£TBA



Washing the spaceship was always a hazardous task.

What would you do if an alien turned up on your doorstep claiming to be your long-lost father? And not only that, but just so happens to be the Emperor of a huge alien civilisation? If you're anything like me, you'd probably run into the garden and search the bushes for Jeremy Beadle. But not our hero. Mel is a normal Earth lad who enjoys the odd bit of science fiction, so he happily swallows the whole story — and ends up fighting for his life.

What Mel hasn't bargained for is that, unbeknownst to him, he has somehow been entrusted with something that is known to most as the Ultimate Knowledge. Unfortunately for Mel, he doesn't know what the Ultimate Knowledge actually is, or how he can get at it, but he must do everything he can to protect it from his father's arch-enemy, Iron.

The Last Dynasty is an unusual game in that it attempts to combine space combat with adventure sections.

Coktel Vision tried to mix the two genres previously in Inca and Inca II, but didn't quite manage to get the balance right — both games looked superb but the pace of the combat didn't marry well with the slower adventure sections.

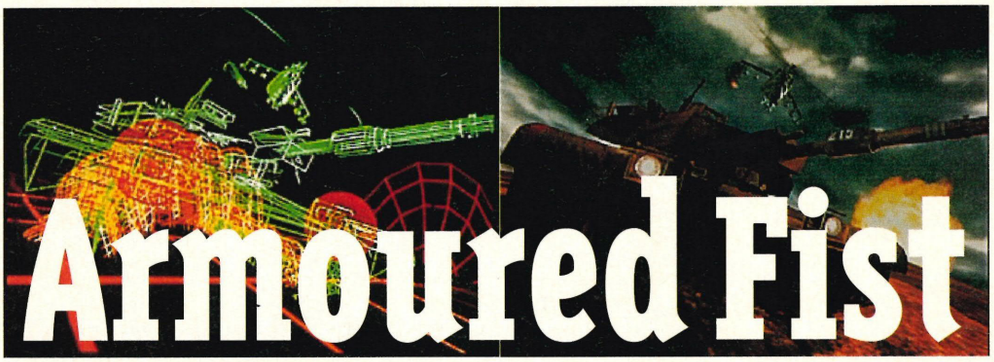
Fortunately, Coktel appears to have cracked it this time. There's enough combat to keep any action fan happy, and the actual puzzle bits — which involve setting traps on a base within a time limit — are fast-paced enough to be exciting.

And does the game live up to Coktel's high graphic standards?

Visually the game is superb, with 3D rendered landscapes, digitised photographs and — yes, you guessed it — video footage of a number of actors. Not famous actors, though, but then again, you can't have everything, can you?

■ **Cal Jones**

Armoured Fist





Above: some of the wireframe graphics in Armoured Fist are quite staggering.

There's a great, gaping chasm among the ranks of PC games for a *good* tank simulation. I'm struggling to think of anything that has managed to improve on the ancient M1 Tank Platoon in the past couple of years.

Novalogic's delightfully-named Armoured Fist was supposed to be the game to put this right as far back as last year. But when the company — now in the process of setting up a new UK development office in north London — completed the unique Voxel Space technology for it's Comanche: Maximum Overkill helicopter sim, some bright spark pointed out that the system would also suit Armoured Fist. Back to the drawing board, guys.

FAXBOX

ARMOURED FIST

Developer:	Novalogic
Publisher:	Novalogic
Release date:	November
Genre:	Strategy/simulation
Price:	£TBA

The game is now due to ship on floppy disk and CD-ROM in November. The highly detailed Voxel Spacing is all in place and has been modified to take into account tank moments and ground combat views, plus a number of new features — such as translucent smoke and explosions.

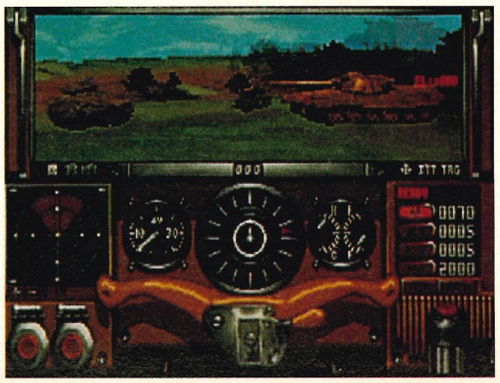
Where Comanche was an out and out action game with a helping of simulation thrown in, Armoured Fist goes for a strategy element to partner the tank simulation role. There's nothing particularly suspicious about this, it's to do with the nature of the subject matter. Tanks aren't usually noted for swift, suicidal strafing runs through enemy airbases . . .

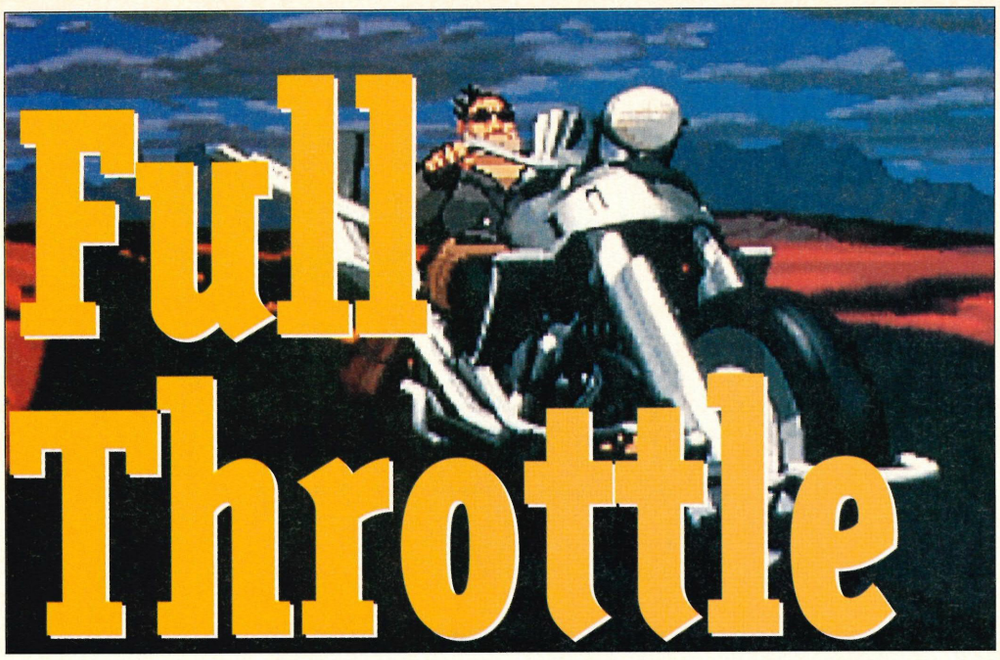
To that end, the Armoured Fist is designed to do far more than simply dump you into a massive armoured firefight. Along with realisticly-modelled American and Soviet hardware, and the ability to swap from tank to tank, the game is structured into preset missions and campaigns which take you through an array of platoon manoeuvres and ongoing objectives.

For hardcore warfare strategists, the game will also include a comprehensive campaign builder, so you can build your own battlefields — from the essentials like unit deployment, air support and artillery fire, right down to the landscape style and where you put the trees.

Novalogic is currently putting the final touches to the artificial intelligence of support helicopters and artillery as well as tweaking the mission building section. By November we may have a new champion among tank simulations.

■ **John Bennett**





Full Throttle

FAXBOX

EMPIRE SOCCER '94

Developer:	Lucas Arts
Publisher:	Lucas Arts/Virgin
Release date:	March 1995
Genre:	Graphic Adventure
Price:	£TBA

With The Dig back in development hell, the next adventure to appear from LucasArts is Full Throttle, a more action-based and less self-consciously wacky game than predecessors such as Sam & Max or Day of the Tentacle. Sure, your on-screen hero is a caricature of lantern-jawed, taut-muscled masculinity, and in a typical piece of LucasArts' bathos, he's called Ben, but the scenery isn't keeling over this time, and it's not being played solely for laughs.

"It's not a gag-orientated adventure at all this time round — it's darker, it's serious, even though the characters are so exaggerated that it can't take itself too seriously," explains Full Throttle's project leader Tim Schafer.

Schafer, along with lead animator Larry Ahern, artist Peter Chan and a cast of around 20 have created a game about bikers and bikers' gangs in which you (as Ben) have been unjustly accused of murder. You must clear your name and, of course, get the girl.

Schafer worked on both the Monkey Island games and Day of the Tentacle but has long wanted to write a game about bikers, while Ahern and Chan wanted to make it more visually interesting with slightly futuristic vehicles. As Ahern comments, "That way we didn't have to be accurate with the motorcycles, so we wouldn't have people ringing up saying, 'That's not a Harley', so we could just design them to be cool in their own right."

While LucasArts hasn't gone in for any of this digitised video malarkey in Full Throttle, the overtly cartoony nature of the graphics has been toned down and smoothed out. Using 2D animated characters on 3D rendered backgrounds, Peter Chan has managed to create a sophisticated look without trying to pretend that's anything other than a hi-res PC screen.

> "It's not a gag-orientated adventure at all this time around – it's darker, it's serious."

This isn't an entirely new effect for LucasArts: "They did that a little bit in Sam & Max, in which a lot of the objects were 3D, because it actually saves animating time.

"We did a little bit of work at the beginning of the project trying to figure out how to get the two to have a consistent look. You know, a lot of products that have 3D look really over-rendered and plasticky, and we're trying to limit the palette and give it a graphic look and integrate everything together. For instance, you have a background artist doing the background and a 2D animator doing the road, and the bike is moving in 3D but the guy sitting on it, that's in 2D, and I think it all works together successfully in that shot."

The gameplay is designed to depart somewhat from the Sam & Max and Tentacle models as well. Schafer says that he wanted to make the game more action orientated than many graphic adventures in order to remain true to the bike-riding theme.

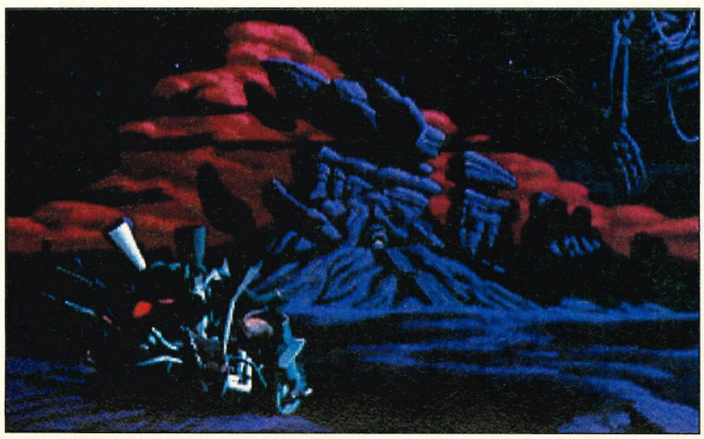
"A lot of the game is spent actually on the bike. You get on the highway and you will control the bike as a 3D object moving down this 3D roadway. You'll be shooting down these canyon roads, meeting other bikers and maybe trying to talk to them, or getting into some little roadfights.

"Well, we couldn't do a game about a biker and have him just go to the library and check out books and do research. He had to get on the bike and he had to punch people. But it's still a typical adventure game; it's really about picking the right weapons to use. It's not so much about reflexes, it's about strategy."

Full Throttle is currently speeding towards completion, but the release date has been set at March 1995 — start practising those wheelies right now.

■ **Christina Erskine**

Above: hero Ben, biker extraordinaire, has the squarest jaw in gaming history. Will it help him get the girl? Below: don't be misled by the cartoon-style graphics, Full Throttle is darkly atmospheric rather than boasting Monkey Island or Sam and Max-style humour.





PC REVIEW Recommended

We don't give PC Review Recommended awards to many games, but you can be assured that those that do get this accolade will be, in our opinion, outstanding in all areas. A PC Review Recommended award is a guarantee of excellence.

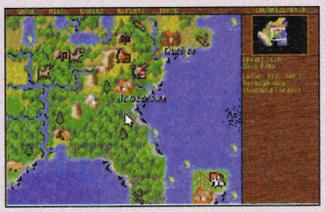
The Recommended scheme

Not only do you have the advantage of knowing that Recommended games are currently the best in their class, but we give you the chance to win a copy of each PC Review Recommended title. We have five copies of each newly Recommended game to give away to the winners of this competition.

WIN COLONIZATION

Answer the questions below and send this form (or a photocopy if you don't want to spoil the magazine) to PC Review Recommended, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU, to reach us by October 10, 1994, and your entry will be placed in the prize draw.







Q: Which of the following games was *not* written by Sid Meier: Civilization, Covert Action, Railroad Tycoon, Fields of Glory, Pirates Gold?

A: .....

Name .....

Address .....

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

How to enter

If you'd like to win a copy of Colonization, this month's Recommended game, simply answer the questions printed on the entry coupon and send your entry on the back of a postcard or sealed envelope to PC Review Recommended, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

The closing date is October 10, 1994, and any entries received after this date won't be eligible for the draw. The winners will be the first five correct entries drawn at random after the closing date.

All normal competition rules apply — particularly the one about not sending in multiple entries.

THE PC REVIEW PLAYLIST

We've ranted about a fair number of games this month, and raved about a very select few. But what are the titles currently taking pride of place on our hard drives, and keeping us at work late into the evenings?

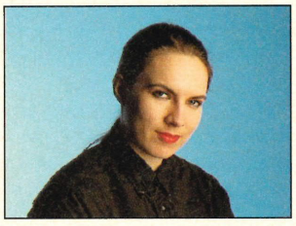
Christina Erskine
Christina managed to visit Westwood Studios when she visited CES in Chicago — check out her in-depth profile on page 44. She also jaunted off to LucasArts' to look at Full Throttle (page 94).



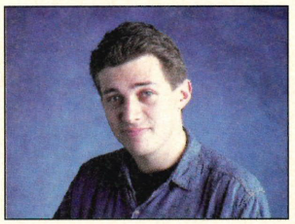
John Bennett
John likes shooting things, so he was more than happy to review Desert Strike, and spent hours playing with his chopper. Unfortunately, he never managed a hole in one when reviewing PGA Tour 486.



Cal Jones
Cal has been wandering around the office in her rubber tights and mask — she insists it helps her get into the mood to play Superhero League of Hoboken (page 64). Oh, and she's been at Pinball Dreams too — on CD.



Dean Evans
This is Dean's last appearance on this page as he has moved to our sister mag PC Games. But we did manage to persuade him to review Inferno (page 56) for us — we threatened to set Cal on him if he didn't comply.



Simon Shaw
Simon, our strategy expert, was delighted to get the chance to review Colonization, Sid Meier's follow-up to the classic Civilization (page 52). He also worked hard providing a guide to Sierra's Outpost.



REVIEWED THIS ISSUE

ON DISK

Colonization	MicroProse	9
Dark Legions	SSI/US Gold	8
Desert Strike	Gremlin	7
Battle Bugs	Sierras	6
Clockwiser	Rasputin/Kompart	6
Manchester United	Krisalis	6
Superhero League of Hoboken	Accolade/Legend	6
Heimdall 2	Core Design	5
Ishar 3	Silmarils/Daze	4

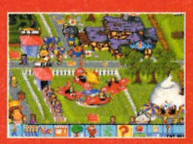
ON CD-ROM

Incredible Machine	Sierra	8
Inferno	DID/Ocean	8
Police Quest: Open Season	Sierra	8
Buzz Aldrin	Interplay	7
PGA Tour 486	Electronic Arts	7
Pinball Dreams Deluxe	21st Century	7
Ultimate Domain	Mindscape	7
Leisure Suit Larry 6	Sierra	6
CD-3	Gremlin	5

PC REVIEW RECOMMENDS

THE BEST OF THE LAST THREE MONTHS

Theme Park
Electronic Arts, £44.99



Ever fancied owning your own fun fair? Theme Park lets you do just that, but it isn't just about building rides. You have to keep the punters happy, settle pay disputes, wheel and deal on the stock market and even eject vandals from your park. Bullfrog's chronically addictive sim will keep you playing into the wee small hours.

1942: Pacific Air War
MicroProse, £44.99



Probably the most comprehensive and absorbing World War Two flight sim around, Pacific Air War features Gouraud-shaded aircraft, a virtual cockpit and an extensive campaign option that allows you to control the movement of your aircraft carriers and to plan your own air strikes. An imminent add-on disk soon to be made available, will also enable you to play the game over a network, serial link or modem.

Myst
Electronic Arts, £44.95 CD only



Cyan's refreshingly different adventure combines breath-taking, ray-traced graphics with original and fiendish logic-based puzzles. The game takes place in five beautifully surreal worlds, and the object is to explore, unravel mysteries and find your way home. Myst has a uniquely tranquil atmosphere, and is suitable for all ages.

CIARÁN'S RANT

I know that, strictly speaking, this is the wrong time of year for a Spring clean, but domestic circumstances (that is, the inability to open the door of my office) and an unstoppable wife forced me into carrying out just such a vile act this weekend. Still, when I'd finally extricated myself from the pile of antique press releases and spare cables, I did feel that the Saturday afternoon of hard labour had not been entirely wasted.

For, there in my hands was a treasure beyond compare ... an almost pristine copy of PC Review, Issue 1 (from way back in November of 1991).

Before I'd even made it to the contents page, I was already stopped in my tracks by the enormity of the platter taped to the cover. Sure, PC Review, until very recently, published a limited number of copies with 5" disks attached, but the fact that one of the two disks offered on that debut issue was missing suggested that as recently as three years ago I was still sufficiently badly-equipped to be able to make use of one.

Moving quickly along, I was almost immediately struck by the juvenile nature of most of the games featured in the adverts. WWF Wrestlemania, The Simpsons, Spot (The Computer Game)... did software companies really try to fob that stuff off on us back in '91?

Luckily, the standard of games featured in the editorial pages was significantly better: Monkey Island 2, Wing Commander 2 and Eye of the Beholder all made appearances in one form or another.

Software aside, it was the hardware coverage which was the biggest eye-opener of all. Amstrad's PC5286 Games Pack hogged the main review — imagine, a 286 PC sporting 1Mb of RAM and a 40Mb hard drive being touted as a games machine ... and for a quid less than £900 (exclusive of VAT of course!). A machine with that spec would hardly run 10 per cent of current software. And £900 ... it doesn't even bear thinking about, does it?

However, when I'd finally managed to calm myself down and stop looking for amusing antiquities, it began to dawn on me that there were also an uncomfortable number of similarities to be taken into account.

Firstly, the number of Windows-compatible games was roughly the same — ie, none at all. This was probably forgivable back then. But times have changed. So what's their excuse now?

Even ignoring the Windows situation, there were other remarkable similarities. The price tags attached to most of the featured games for example. Some brave souls had opted for £29.99 (and even, in one case, the near-shareware £24.99), but the majority stuck to a steady £39.99.

By today's standards this is hardly remarkable. But if my failing memory serves me correctly, software prices in those days were pitched roughly £15 higher than those for comparable packages for the then in-vogue 16-bit home computers, notably, of course, the Amiga.

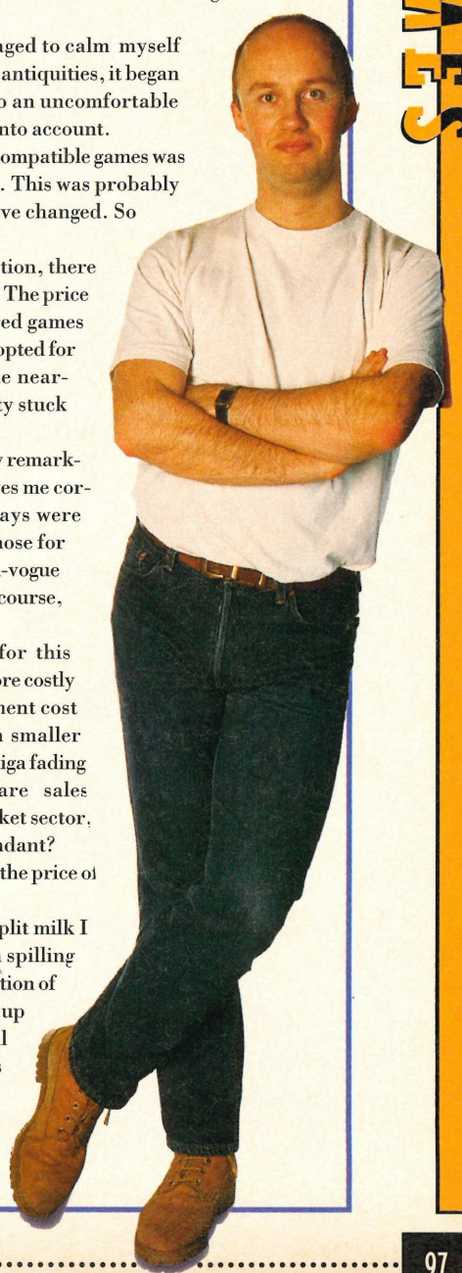
At the time, the reason given for this anomaly was that PC games were more costly to develop, and that this development cost had to be recouped from a much smaller market. Now, however, with the Amiga fading into obscurity, and PC software sales amounting to the largest single market sector, hasn't this argument become redundant?

And, more to the point, shouldn't the price of PC games have fallen by now?

Still, there's no use crying over split milk I suppose, especially when it's been spilling for three years. Maybe the proliferation of CD software, which is bound to pick up over the next 12 months or so, will finally bring the software companies to their senses. Or maybe not.

What is it the French say? Plus ca change ...

■ **Ciarán Brennan**



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Slam In The RAM!

We tell you how to turn your PC from a 1Mb dunce into an 8Mb super-brain. Don't be scared — it's easy!

HOT!

Disk-tastic!

Two high-density disks, packed with excellence! Their contents are so Top Secret, that if we told you what was on them we'd have to kill you. Rest assured, however, they're pretty fab.

HOTTER!

Previews A-Go-Go!

We take a in-depth look at a whole heap of forthcoming goodies, including:

- NASCAR Racing — The crash-'n'-smash sequel to IndyCar Racing!
- Sim Tower — Can Maxis out-sim its own SimCity 2000?
- Wing Commander 3 — Origin goes movie mad *again*!
- Colonization — Sid 'Civilization' Meier returns!

HOTTEST!

Inferno

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PC Plus Magazine February 1994

Personal Computer World EDITOR'S CHOICE April 1994

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PC Magazine (US) EDITORS' CHOICE February 22, 1994

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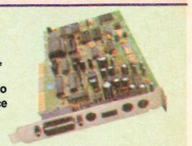


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PC Magazine EDITORS' CHOICE February 1994

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"Monkey Island 2 Le Chuck's Revenge" is a registered trademark of Lucasfilm Games

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3C £79.00+VAT – Pack 3a with genuine SoundBlaster PRO card

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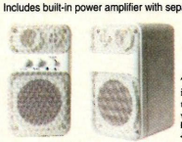
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the
PRODUCT
directory
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Reviewed this month PRODUCTS

It may not be on the scale of a house or a new car, but the home PC makes a sizeable dent in 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 good 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 and offices. In a company, you don't chose 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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The rating system explained

The products in the following section are marked out of five:
★ Dreadful. Don't touch with a barge pole.
★★ 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.

Product directory

Speakers' Corner

PC speakers come in all shapes and sizes, from tiny two watt throw-aways, to pairs bigger than the computer itself. Martin Klimes sounds off.

Last month PC Review took a peek at the top notch sound cards for games players, showing you where to put your hard earned moolah. This month we follow up with a look at the speakers that make or break that very card.

For starters, forget the ten quid bargain basement set that got thrown in with your bundle. That's the fast way to turn all that lovely wavetable technology into noises as poor as the internal speaker pushed out. No siree. If you want your jets to roar, your aliens to scream, and your engine to purr then you're going to have to lay out a bit more cash and invest in serious speakers.

The four pairs we're looking at below all have excellent pedigree. Each one would bring fine reproduction of your various effects and music, but each is different and thoroughly distinct.

Alternatively, there's the 'Alternatively' box, for all you alternative sorts. Take your pick.



Sony PC 50

Sony PC-50

Supplier: Sony
Telephone: (0932) 816650
Price: £79.99

For a company that's synonymous with audio, Sony do a surprisingly small range of PC speakers. Perhaps it's because you can use any of its portable hi-fi varieties to achieve the same effect.

That, in fact, is the history behind the PC-50s, which are based upon the popular SBS-58s. Although the components are essentially the same, you get a pair of speakers that are ivory coloured, instead of the rather out of place black. They are also better shielded, and are mountable on either side of your monitor, all for the same price.

With space always at a premium, monitor mountings are a welcome thing, particularly if the speakers themselves sound as good as the PC-50s do. When tested on a well-recorded effect of breaking glass, the sound came out perfectly clean and in no way muffled. Close your eyes, and you could almost see the milk bottle shatter.

If anything, the sound that came out was a bit too soft for my liking. Not actually muddy, but mellow. Screams work less well than howls.

Admittedly, at high volume there was a fair bit of distortion over a range of tests, but they pump out a decently loud sound for their five watt rating, the lowest of any of the models reviewed here. You can't run a house party off them, but for everyday use this isn't going to be a real problem.

As for controls, they stretch to bass and volume, but not treble. Functional, but not overly user-controllable you might say.

Compared with the others, the small size and monitor mounting option make the PC-50 very handy indeed. The sound is competent and colourful in all ranges, and if only they weren't in the same market as the CS-1400s below, they'd be a clear winner at the price.

Unfortunately, as they stand, they have to take second place to the new kid on the block . . .

★★★★

Labtec CS-1400/CS-900

Supplier: Optima
Telephone: (0844) 345406
Price: TBA/£34.99

Labtec is a company which does a roaring trade in speakers over in America, although here its range is not quite as well established. The new flagship, the CS-1400 speaker, hasn't quite made it over to England yet, but the cheaper CS-900s have, and show the way.

Both sets are solidly made and carefully designed. Both pairs, like the other speakers tested here, have one active amp speaker hooked up to the other through a connecting cable, leaving one control for both halves. Both are moderately sized to fit onto a desk without intruding into your workspace. Internally, though, they're like chalk and cheese.

While the 900s get the job done without much feel or magic, the 1400s offer a truly spectacular sound. The overall sensation is of a crisp result that never suffers from tinny treble and has a wonderfully rounded bass.

In short, they're a joy to listen to, something I can't say about many full hi-fi speakers, let alone such a compact product as this.

I felt the 900s, for all their good construction, didn't have the necessary kit fitted inside to do real justice to the high level music and effects we are seeing now. For the cost, they aren't a bad deal, but a little more investment would see a far better return for your money.

As for the 1400s, the Labtec quality is backed up by some stunning hardware internally. There are full bass and treble controls rather than just a bass boost button, and a head-



phone socket for those quieter amplified moments. The sound produced is clear as a bell up to gratifyingly high volumes, only distorting substantially at the very loudest settings. For desktop use this is more than adequate. Wait for their release, or beg Optima to rush you a pair. You won't regret it when you hear the results.

☆☆☆☆☆

Quickshot QS 807

Supplier: Quickshot
Telephone: (081) 365 1993
Price: £59.99

These speakers are called, perhaps over-hopefully, the 'Sound Mate Ultra'. Over-hopefully, because they weren't any mate of mine, ultra or otherwise.

The problems stem from several places. For starters, these are absolutely massive speakers in all three dimensions. Just about big enough for a pair of speaker stands of their own, perhaps. They certainly couldn't fit on my desk, that's for sure.

Secondly, the quality of construction is poorer than could be expected for sixty quids' worth of equipment. The plastic felt decidedly flimsy, the controls grinding and weak, there was a rumble inside when they were used, and the wiring linking the speakers was upsettingly sub-standard. Fuse wire at best.

Most importantly, though, these were not speakers that sounded like they believed they cost that much. The CS-900s put in a far better showing as far as the sound quality went, for half the money. The bass was weak, even with the slider over full, and for a 40W speaker they didn't get very loud at all before the sound stopped gelling.

That said, sounds at the high end were well represented, and they are still half the price of the Rolands. Not that it's an excuse for shoddy workmanship from a company that generally delivers decently built goods at the excellent prices they charge. Nor is it an excuse to produce a speaker that could be turned into a tenement block when you're finished with it, it's so huge. Well over double the size of the Sonys. Not impressive. I can't even say that this made me interested in seeing the cheap and cheerful end of their range. Quite the opposite, in fact.

☆☆

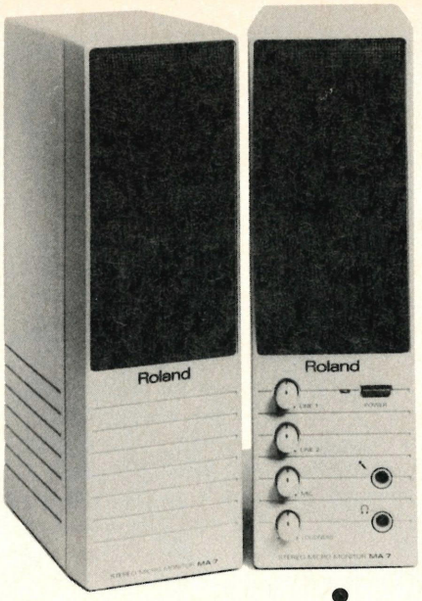
Roland MA-7

Supplier: Roland
Contact Number: (0252) 816181
Price: £129.99

The Roland MA-7s are the heavyweights among the speakers tested, literally as well as figuratively. However, good styling has stopped them looking like a pair of breeze blocks and, more importantly, has made them tall but narrow. They felt completely out of the way sitting either side of my monitor.

Roland has long been associated with professional musicians and high quality audio, so it is hardly surprising that the sound produced is very good indeed. We got as faithful a rendition of Chicago blues out of the MA-7s as from any of the other speakers.

If anything, however, it was a bit surprising how little difference in overall sound there was between these and the others. The notes



meshed nicely across the whole range, no solo instruments went woolly, and there were no significant distortions even at the very highest volumes, but in the end they didn't feel quite as lively as the CS-1400s and were only of comparable quality to the £50 cheaper Sonys.

In the finishing department, the Rolands have a pair of line-in volume controls and a loudness control, a headphone socket much like the CS-1400s, and were the only ones with a microphone socket.

Remarkably for such sturdy speakers, the wiring from one to the other was disappointing. Like the Quickshots, the Roland's wiring consisted of fuse wire rather than speaker cables. A poor touch on an otherwise excellent, if overpriced, pair of speakers.

☆☆☆

To round up . . .

Of the four types of speaker looked at above, only the Quickshots really disappointed. The Rolands were expensive, but sounded good. The Sonys were convenient, and would have been better still had it not been for the distinctive sound, which you'll probably take to, but then again just might not.

Overall, though, the CS-1400s came out as the best of the bunch. But because they're not yet available in this country (although they should make their debut over here in less than a month's time) we considered the CS-900s as well.

In the present company their price may make them look like they fit into the cheap and cheerful end of the spectrum, but they're really more mid-range speakers at a good price; outshone by their partners, but competent all the same.

One thing's for sure, though. If you want to get anything like realistically reproduced and pleasant to listen to sound then these are some of the best bets you will hear this year.



ALTERNATIVELY....



Of course, stand alone speakers aren't the only option if you want better sound.

If space is at a premium then you might want to plump for the increasingly popular stack system approach. There are several speaker sets available that have been shaped to fit in a flat box between your monitor and computer.

This saves space, but beware. Generally the quality of the speakers is fair but not outstanding.

Labtec do one such component, called the CS-1000, for £54.99. The Quickshot offering, which doubles as a useful CD holder, is called the SoundStor and retails at £44.99. As for Sony, it is just about to release the CSS-B100T in this market at £89.99.

If space isn't a problem, and you have mid-range speakers already, then why not up-grade instead of replacing them?

Separate bass bins are available that will add extra punch in the area most often badly handled by such speakers. Quickshot do one which, although large for an add- on bin, could make a substantial difference for its £39.99 price tag. It's worth a thought.



PRODUCTS

HARDWARE

YAMAHA QY8

- **Supplier:** Yamaha
- **Contact:** (0908) 366700
- **Price :** £208

Batteries are, of course, an essential if you're going to use the QY8 on the move. It comes supplied with a mains adapter for normal use.

Portable music sequencer

Ask any non-keyboard playing musician what they think about sequencers, and they'll tell you they're the work of the devil himself. I mean, other than by witchcraft, how else could an average keyboard player suddenly give a performance, quantised to within a nanosecond of perfection, devoid of even the slightest fluffed note, and all without having touched a key apart from the start button?

Well, things have just got worse — Satan has become portable!

To refer to the QY8 simply as a sequencer is unfair, as this is only one of the number of ways in which it can be used. The manual refers to it as a 'complete pocket-sized music production tool', and considering it's the size of a video box yet still packs 40 voices, a 58-piece drum kit, 50 accompaniment styles and a 20-song memory holding approximately 6,400 notes, you'll not find me arguing.

The QY8 is an extremely user-friendly toy, and by paging through the available options — each living in a specific 'field' of the impressively well thought-out LCD display — you can very quickly program a pattern of chords, to be played back with drums and automatic bass, thus utilising the QY8 as an advanced practice tool (ie, a metronome with brass knobs on).

The QY8 also works as a Tone Generator, allowing access to all its voices through any MIDI keyboard, though its main selling point remains as a tool for composing and arranging — boasting an eight track sequencer, complete with an on-screen score display for the four programmable 'lead' tracks.

Anyone familiar with sequencing software will feel right at home here, very quickly disappearing into the world of measures, parts, and BPMs. To be honest, the QY8 lacks just slightly here, and while the accompanying tracks are a doddle to create, programming the four 'lead tracks' is a painful and time consuming job. Perhaps that's where you might need to take a look at the more sophisticated (and more expensive) QY20s.



I would still instantly recommend the QY8 to all and sundry, but would warn anyone familiar with Cubase and the like not to expect the same level of control — you'll also need to know your G#7sus4ths from your A7(#11)ths.

Still, with toys like this, you can at the very least have instant Karaoke anywhere in the world!

Matt Broughton

★★★★

Radio FX

Radio tuner card

Supposedly this FM radio card can handle up to 100 preset stations. I say supposedly because getting the the software to do anything even remotely resembling a scan was such a chore that I never got beyond sorting out a couple of channels.

Not a good start.

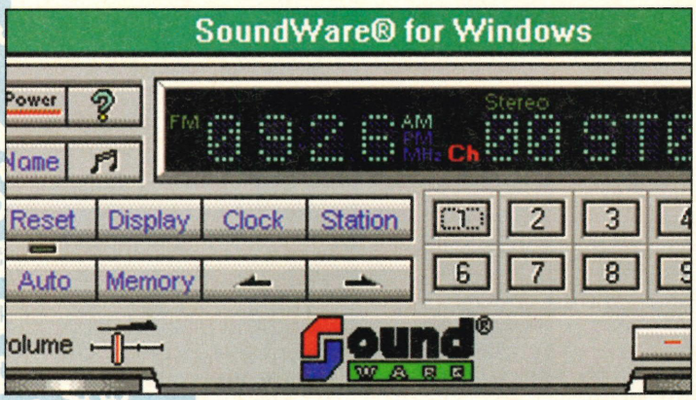
After that it never really got off the ground. Decent radio reception depends on where you happen to be, but for whatever reason, it was a real fiddle to get a decent signal (and that was after installing the card in PCs at several different locations, too).

And that about sums it up really: it's arguable why anyone would want one of these in the first place — a portable radio is cheaper and more convenient — but if it's going to be even slightly problematic then the limited benefits of a PC radio card are just not worth the bother.

Maybe as a Christmas present for someone ...

John Bennett

★



- **Supplier:** Zye Technology
- **Contact:** (0293) 538666
- **Price:** £58.40

FM tuner capable of storing 100 preset stations. Has a clock. Needs a 386 PC, Windows 3.1, VGA, a mouse, and somewhere to tape the aerial.



MJN Blue Lightning

486 desktop PC

MJN is shipping the Blue Lightning as an IBM-made machine, housing the exceptionally fast Blue Lightning chip and some interesting internal architecture.

Externally this is a standard mini-tower setup, with uninspiring keyboard and mouse controllers, and an acceptable (but no better) monitor. Inside, once you give the case a shove to dislodge it, it's a whole new world.

A cursory glance inside reveals a piggy-back board arrangement that has been superglued onto the main motherboard, or so it seems. This allows plenty of space for expansion slots, and I certainly found that it was a cinch to put in even the longest and most stubborn cards.

The motherboard itself has easy to get at SIMM sockets, should you wish to upgrade to more memory, and a wonderfully strange pagoda-like structure on the processor chip, presumably as the Blue Lightning's cooling mechanism.

Still, the PC comes with some useful software pre-installed (although I'm beginning to have a personal dislike of PC-DOS), and a large enough hard disk for most people's immediate needs. It's fast too, as is the whole system, giving the impression of good speed on a range of applications.

The only real niggles that kept coming back to me were the poor quality of the keyboard and the flickery performance of the monitor running high-resolution screens.

Otherwise, the MJN Blue Lightening PC is a solid, dependable piece of equipment — given the price tag — that is unlikely to date as rapidly as some so-called performance PCs.

Martin Klimes

★★★

- **Supplier:** MJN
- **Contact:** (0282) 777555
- **Price:** £999

It's a 486/66 with 4Mb of RAM and a 250Mb hard disk. The 14" SVGA monitor can run at 1024x768 resolution in 256 colours.

Mini Mouse 2

Mouse

When the time came for me to buy a PC, there were few reasons I could think of not to go for a notebook.

In the end I shied away, despite the amount I travel, because the overall technology at the time was not advanced enough.

That, and the fact that I really loathe trackerballs. I'm just hopeless at moving a pointer around with that ball and, even worse, the buttons are always in such an obscure place that I end up playing a demented version of twister with my fingers. Ho, hum ...

Basically I'm a mouse man at heart. I can see the value of not needing a flat surface for a trackball, but I'd rather use a mouse on my knee thank you very much.

That's why I'm celebrating the decision by Quickshot to bring out this new pocket mouse. The software comes as any full-sized mouse would, with an option to resensitise the travel on the pointer. In all respects it behaves like any normal mouse. It's just that the actual mouse is physically smaller.

I have big hands, and the good news is that the mini mouse is no more tiring or uncomfortable than any other mouse.

The buttons are responsive, and the ball rolls freely on most surfaces. All in all it's a truly wonderful, thoroughly inexpensive, addition to any portable if, like me, you find the trackerball irksome.

Martin Klimes

★★★★

- Supplier: Quickshot
- Contact: (081) 365 1993
- Price: £12.99

Comes with its own DOS installation disk. The Mini Mouse 2 itself plugs into a standard PC or notebook COM port.

Goldstar GCD-R420

Double speed CD-ROM drive

- Supplier: Gallant
- Contact: £129.00
- Price: (0525) 383228

250m/s average access time, transfer rate of 300kbp/s, double speed MPC compliant internal CD-ROM drive.

CD-ROM isn't going to go away. I'm sorry, but if you haven't got a drive yet, then you may find it very hard to get by in the next twelve months without one — especially if you want to play anything resembling an up-to-date game. Programmers have got to the stage where they presume that a CD-ROM is standard for most home users.

The single speed is dead. RIP. Just a transitional thing.

Quad speeds, for their part, aren't really necessary at the price just yet. So it's in the field of the double speed that the battle lines have been drawn among CD-ROM drive manufacturers.

As an average performer all round in the access times and data transfer stakes, the GDC-R420 has two great weapons and a huge Achilles Heel to help and hinder it in this battle. The weapons are its price and its easy installation. Its downfall may be its construction.

Unfortunately for Goldstar, £129 may be a good price, but it isn't hugely cheaper than the competition any more. Give it a month from now and the going rate for a double speed drive is going to be under £100, with a bit of luck.

Worse, with the arrival of several IDE CD-ROM drives in the past couple of months, installation has been made easier still than even this drive can hope to match. As for construction, well this really is a bit of a bugbear. The opening/closing mechanism is truly abysmal. It half spits the discs out at you with a mighty lurch, and that's when it doesn't jam altogether, refusing to return your CD at all. Should Goldstar get this solved then they have a real contender on their hands. Otherwise, it's a fair to middling bet at best.

John Bennett

★★★



Toshiba 1910CS

Notebook PC

Inevitably, notebook PCs aren't a cheap way of getting a computer. Compared to their desktop counterparts you are distinctly paying a premium for the job of fitting all that hardware into a smaller space than it wants to go in.

There are both advantages and disadvantages to the portable, of which price is only one. However, once you have made the choice to go notebook, the options are still as wide.

Among these options, Toshiba is a very stable bet. They are world market leader in portable computers, and the T1910 represents its entry-level product to replace the ageing but popular T1900 range. If you want to go the whole hog with a notebook, Toshiba will cheerfully sell you a machine well in to the £4,000 price bracket.

But there is growing interest in more reasonably priced notebooks to compete with desktops — and this Tosh is a good alternative (you can find one at very good discounts if you hunt around) to a standard 486 PC.

The technology is not state-of-the-art by a long chalk. The screen is not the best, although not unwatchable. The keyboard can get sticky at times, but at least never feels cramped.

Importantly, the Toshiba 1910 comes with a type III PCMCIA slot for your expansion, and an option to buy it with a 200Mb hard disk instead of the standard 120Mb.

Most noticeable, I found the hard disk slow to access which made Windows look sluggish, and the screen conspired to make Windows a doubly bad idea. However, in DOS it's was a very competent performer.

Over time you can expect the four and a half hour battery life to drop to three hours or even less, but buying spare batteries can help stop this being a problem.

As a portable it acquits itself fairly well at the price, but I have to admit that maybe I expected something more from the likes of Tosh.

Martin Klimes

★★★



- Supplier: Toshiba
- Contact: (0932) 845995
- Price: £1,799

SL-enhanced i486SX processor at 33MHz, 4Mb of RAM, 120Mb hard disk, a type III PCMCIA slot, and 16-colour dual scan STN LCD display.

AT THE MOVIES

Movie Select

B-movie database/clips

As a collection of fingertips facts and background trivia on a wide selection of films, Movie Select is first rate. The cross referencing is excellent, enabling you to browse through the genres and concentrate on anything from directors, actors, re-makes and so on.

But then what? There are no video clips to speak of (I don't count the dozen or so 'previews' on offer. If you replace the word 'preview' with 'advert' you'll understand why) even though there is plenty of room for something along these lines because the CD is only one-third full anyway.

Surely there has to be something more — otherwise this would be nothing more than a catalogue list with captions. Well, there is, I suppose. This month's award-winning gimmick is Movie Select's 'intelligent' movie recommendation function.

Quite simply, you pick three of your all-time fave films from the database and the computer pops you up a list of movies, and then you go through that list, and so on. Nice idea ...

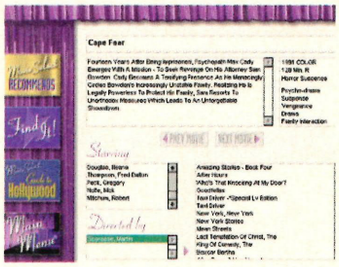
OK, the actual recommended list does pop up some interesting ideas for your next late night video-watching stint, but the act of selecting favourite movies makes you realise just how many are missing even with 44,000 on offer. Time after time, people's favourites failed to appear on the selection list: Runaway Train, Strictly Ballroom and Falling Down to name but a few.

Out of preference, I'd recommend Microsoft's Cinemania rather than this. Movie Select has got its good points but you'd have to be one hell of a couch potato to get more than passing usefulness or interest out of it.

John Bennett

★★★





- **Supplier:** Computer Manuals
- **Contact:** (021) 706 6000
- **Price:** £42.25

Minimum requirements: 386PC, with double speed CD-ROM drive, Windows £.1 and a mouse. Contains info on 44,000 video titles.

Midnight Movie Madness

B-movie database/clips

Most of us have a favourite movie that goes through that 'so bad it's good' transformation. The Midnight Movie Madness CD is full of them. From cult howlers like The Blob, to gems like Plan Nine from Outer Space and Raquel Welch in her finest fur-bikinied moments, it's packed with all those thoroughly cringeworthy, ketchup-splattered, zero-budget no-hopers that somehow — God knows how — found their way to the silver screen.

So, this CD ought to be a corker. Sadly, it's not.

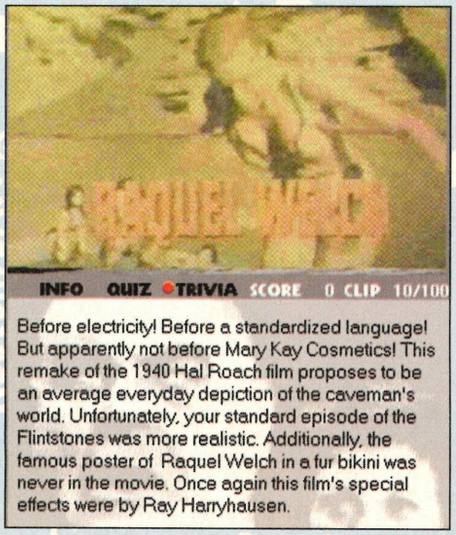
The presentation is average, the video quality is poor (even given the age and quality of the originals), the clips are way too short, the background info on each film is pitifully thin, and while the trivia and quiz features are laughable, the comedy isn't. And that's a shame, because with this sort of material to draw from it could have been a belter. Instead, it falls solidly into the 'only a total movie nut would be daft enough to spend £35 on this' category.

John Bennett

★★

- **Supplier:** Computer Manuals
- **Contact:** (021) 706 6000
- **Price:** £37.59

Minimum requirements: 386 PC with double speed CD-ROM drive, 5Mb hard disk space, Windows 3.1 and a mouse. Contains 100 video clips.





MATCH



he plays computer games...

WORLD OF PHARAOHS

Supplier: Software Partners
Contact: (0480) 497622
Price: £29.99

Will run on just about any PC with VGA graphics and a mouse. You will also need 3Mb free on your hard disk but I wouldn't recommend wasting the space.

Pyramidal reference

It must have been one hell of a place, ancient Egypt. Dog-headed gods and cat-bodied women making it onto every monument along the majestic Nile. Its mystery and allure has never failed it in thousands of years.

Perhaps it's something to do with the hand-writing, but people have been having a tough time figuring out the Egyptians since the first hieroglyphs were uncovered among the shifting sands.

So you'd have thought that I would applaud something like World of Pharaohs, which is effectively an attempt to bring the secrets of this race to the lay-man like me. Well, may the crocodile god swallow me whole for my outrage, but there are some things that I simply cannot forgive, And World of Pharaohs is one of those things.

It might be something to do with the very limited information available on each subject, or perhaps the fact that the subjects don't link in too well. Mostly, though, I reckon what really got my goat spirit was the fact that in the current trend towards multimedia reference, using CD-ROM technology to store full sound clips and video footage, World of Pharaohs doesn't even try for a decent library of still photos. If your PC doesn't have the processing gumption to handle the demands of a full multimedia experience, then buy a hard-back book on ancient cultures. You'll get more out of it for much the same dosh.



With all the good will in the world I just couldn't like this package. It suffers very heavily, like World of Dinosaurs and Amazing Journeys, also from InfoWare, from lack of depth and sloppy presentation.

World of Pharaohs is more an asp in the bed than a bath full of asses' milk. Be warned.

Martin Klimes

★★

The Discoverers

Historical Exploration

For many people the names Galileo, Marco Polo and Cortes were last heard in school. Well, the history lesson's over. Long live The Discoverers.

Knowledge Adventure, the company behind many a good educational program, has brought their programming guns to bear on the field of human discovery and misdiscovery.

The whole thing is based around an IMAX film of the same name, covering some of the great assumptions and theories of the ancient world. Knowledge Adventure has reproduced the film as a video around which there are various database sections.



The film can be stopped at any time with a click of the mouse and then options on related issues accessed. The control bar is easy to use and the games and auxiliary parts are fun and well presented.

If I had one major criticism it would be that there wasn't enough to it all. I wished that it had gone on for longer, with more to do. However, all in all I found The Discoverers to be quite a pleasant experience.

Martin Klimes

★★★★

Supplier: Guildsoft
Contact: (0752) 895100
Price : £44.95

Minimum 386 PC with VGA graphics, a CD-ROM drive, 2.5Mb of disk space, and a sound card. Discovery runs under DOS and Windows

Crossword Cracker

On-screen conundrum solver

Unica, who are you kidding? Is this a serious ploy to take control of the bargain bins of every computer retailer in the land, or are there darker motives afoot here?

I have to admit that I couldn't figure out the reason behind bringing out Crossword Cracker. It's a package of two programs, both of which could be programmed by the most brain-dead dunce given a dictionary and Microsoft Qbasic.

First up is a crossword utility in which you tell the PC how many letters the word has and insert the letters you've already got. It then spits back all the available words which fit the blanks. The second program, Margana, works out anagrams of the letters you feed into it.

Neither utility takes the clues into account, and neither helps you learn *how* to solve crossword clues. An opportunity missed, perhaps.

What worries me most, however, was the complete silliness of the whole idea. Most people do the crossword on the bus or train, or maybe at breakfast, but certainly not at their computer. I can't see it catching on, somehow.

Martin Klimes

★★

Supplier: Unica
Contact: (061) 429 0241
Price: £14.99

Anything from a 286 upwards, with a double speed CD-ROM drive and a following wind is enough for Crossword Cracker.



Maniac Sports

Cult sports reference (ish)

It's totally, like, narley Dude. It's a hangin'-with-the-bros, way-ta-go thing. Excellent!

Maniac Sports, the reference for the Pepsi Max generation. If you're too cool to groove, then check this out. Nine dangerous sports in wild day-glo graphics, all introduced by Scott, who's just the bitchin'est. He's awesome, dude.

Now, I've lived in California's beach scene and I'm sorry but *nobody* talks like that. Not unless you're from the Valley and a total airhead.

Maniac Sports is more about wannabe beach lifestylers than real sportsmen. It's a cash-in on non-Californians watching Point Break and Baywatch and wishing they were there instead of Croydon on a wet Thursday morning.

To decide whether it's the sort of program for you, answer the following question:

How do you decide which wet-suit to buy?

a) Its thickness and functionality — is it suited to your needs?

b) Its materials — will it last ten year mucking around in the delightful conditions of the good old North Sea?

c) Its style and colours — does it show off the body tone you've been building up at the gym?

If your answer was c) then get Maniac Sports. Otherwise, spend your money on a day's wind-surfing at your local reservoir.

In fact, even if your answer was c), do the wind-surfing thing anyway. No babe's going to be impressed by you showing her your computer program of way out sports.

Live them for real.

Martin Klimes

★★

Supplier: Software Toolworks
Contact: (0444) 239600
Price:: £39.99

You'll really need a 486/33 with 4Mb of RAM to experience Maniac Sports. You also need Windows, SVGA graphics, and a CD-ROM drive.

Business Library Volume 1

Business bookshelf

Business books are very expensive things indeed, and there are hundreds on every conceivable topic. Picking one to suit your needs can be tough.

Unica, by tying up the exclusive European distribution deal for Allegro, has got itself several library packages, among other things. Business Library 1 aims to bring the best of a range of business fields to your PC in an easy-to-read format.

Their success is partial, but laudable none the less, if only for the fact that if you bought the books on this collection separately you would doubtlessly pay far more than the £45 being asked for.

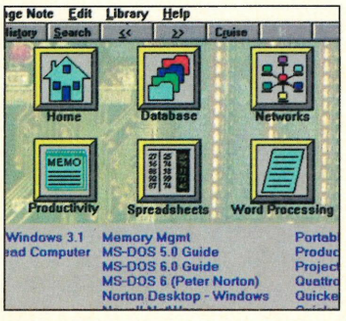
A dozen titles are included on Volume 1, with such names as Successful Telemarketing and Meetings — Rules and Procedures. Overall I felt the general business skills and knowledge books work better on a compilation such as this than books on the more specific business areas.

Not everybody needs or wants a full book on the commercial real estate market, but a business travel guide to Europe and one on global strategy are more likely to be of general value. They are far more useful to those who ply their own trade, run a household, or whatever occupation that doesn't fall into the 'big business' category.

The interface, for its part, is easy to use, and the ability to put post-it notes on the pages is very handy. I'm still not convinced about reading books off a computer screen, but for reference, where you're searching for little bits on particular topics, it is useful as long as, like here, the search function works well.

Martin Klimes

★★★



- Supplier: Unica
- Contact: (061)429 0241
- Price: £45.83

You'll need a 386 PC with Windows 3.1 or higher and a double speed MPC CD-ROM drive to run the Business Library

How MultiMedia Computers Work

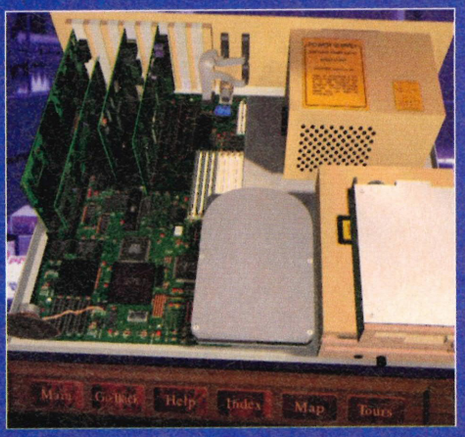
Layman's PC reference

Admittedly the world of computers is a confusing one, shrouded in jargon by experts protecting their expertise with ever-more inventive and obscure jargon. The nightmare of seemingly infinite and incompatible standards doesn't help. Now we have whole multimedia malarkey to make matters worse.

HMMCW is here to debunk some of the mystery around the PC you load it up on. It's a multimedia product itself, full of animated illustrations showing the insides of each piece of your computer and how they actually function.

If you never finished your degree in microelectronics then fear not. HMMCW will explain what's going on under the hood of your PC in a thoroughly pleasant way. It's not something you need to know to run the software, but if you are interested at all in what makes a PC tick, then this is just the thing.

It's wonderfully presented, easy to use, and genuinely interesting. Next time you come to do a processor upgrade or replace your video card, it might just have made your life a whole lot easier too. Great stuff all round.



- Supplier: Software Toolworks
- Contact: (0444) 239600
- Price: £39.99

You won't get far without a 386/33, although a 486/33 is heartily recommended. 4Mb of RAM, SVGA graphics, a sound card, CD-ROM drive and Windows 3.1 are also needed.

John Bennett

★★★★★

InPrint Art Library Volumes 1 and 2

Graphic image collection

There are many sources of imaged art available. If you go on-line there are infinite images on bulletin boards, CompuServe forums, and the such. Shareware catalogues inevitably hold a few CDs of this sort of thing. Alternatively you can buy them commercially.

The imprint art libraries hold 202 images each on two separate CD-ROMs, each one with a different theme. Volume one, for instance, has 101 files in the 'textures' theme, and 101 cartoons illustrating famous sayings. Volume two is split in a similar way.

The images come in both PC and Macintosh formats, sub-directoried into sub-themes. The textures disc is further divided into wood, high-tech, marble, etc.

The PC files are both colour and greyscale. The colour version is 24-bit colour giving 144dpi at 3x3 inches. Greyscale is 256 shades of grey, but at 170dpi at 3x3 inches. This is fine for small boxes, but I wouldn't go blowing them up too big, or they get horribly grainy.

If you are planning something special that requires one of the themes on offer, then InPrint Art Libraries aren't bad.

However, for random messing about with images in Windows, letters, or your everyday documents it's a lot of money to part with. You can find similar stuff of similar quality for much less, probably for free if you're willing to hunt around on bulletin boards and in shareware collections and the like.

Martin Klimes

★★

- Supplier: Unica
- Contact: (061)429 0241
- Price: £45.83each

Windows 3.0 or higher and a CD-ROM are required. Other than that it depends on the package you're importing the images into.

Key CAD Complete

Affordable design software

CAD is a lucrative area for programmers. The CAD market is growing every year, as manufacturers convince more people in the office and at home that they can use £500 of professional design package to see how their living room would look after a face lift.

I've never actually been convinced that this is strictly essential or even healthy, much as with the DTP boom. Folks went out to buy packages for huge sums, which they used for pretty letters, leaflets from their local society, or whatever.

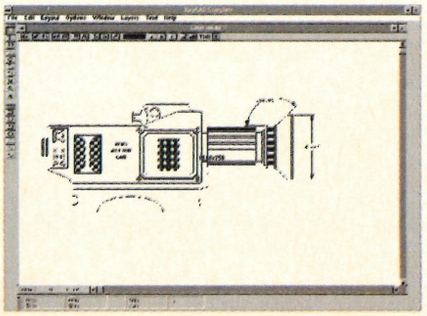
But they weren't trained designers, and many an Arts Council funded magazine suffered the fate of in-house type-setting and design.

Similarly with CAD. No matter how easy the programmers make the package to use, unless you have training in design you are unlikely to make the most of it.

Key CAD Complete is very easy to use and fairly powerful at a price that puts the likes of AutoCAD to shame. It's still worth thinking twice as to whether you really need a CAD package at all, but if you do, Key CAD Complete is a fine all-round program which I couldn't fault beyond a few small niggles.

John Bennett

★★★



- Supplier: SoftKey
- Contact: (081) 789 2000
- Price: £39.95

386SX PC, 4Mb of RAM, a CD-ROM drive, and Windows 3.1 or higher are all that's needed for Key CAD Complete.

SOFTWARE

AMAZING JOURNEYS

- **Supplier:** Software Partners
- **Contact:** (0480) 497622
- **Price:** £29.99

Amazing Journeys is more demanding than World of Pharaohs or World of Dinosaurs, requiring 7Mb of hard disk space to install.

Historical reference

There are two things I noticed straightaway when loading up Amazing Journeys for the first time: the Amazing Journeys time line starts up at 800AD, and there are no women in the database.

This in contrast to the blatant fact that many an amazing journey took place before the 800AD mark. And no matter how much the programmers wanted to irk feminists all over the world, there really have been some women explorers and travellers over the centuries. They've even made it up Everest and into space. Yes, they have.

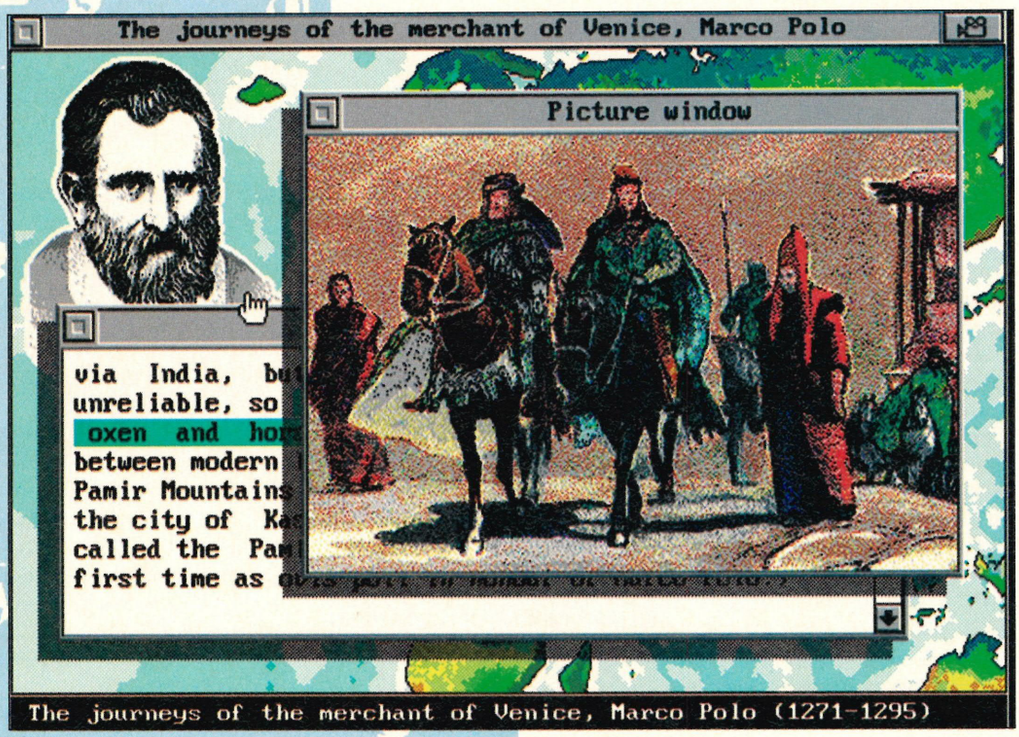
The quality of the graphics in the program is really pretty basic by 1994 standards, and the sound is equally disappointing. It's a piece of software which, like its partners out of the InfoWare stable, doesn't stir you to keep reading, to keep exploring the hidden recesses of the database.

Perhaps this is just as well, because the database isn't particularly full of interesting facts either. The journeys that are covered are good enough, with spot graphics and mini descriptions of the people and places, but there weren't enough to keep you going beyond a casual glance or two.

Personally, I'll sit by and let this particular lump of tripe fall on to the ever-growing pile of dreadful reference CD's, where it can take up its place among its brothers. I suggest you do the same.

John Bennett

★★





World of Dinosaurs

Jurassic reference

Hold on a second, here. Hasn't this one been done before somewhere? Let's see now ... there's the Microsoft version, and here's the MDI one. Oh look and isn't that Knowledge Adventure's own reference-saurus over there?

Well, it looks as if we already have a positive herd of prehistoric material on our PCs. However, hats off to InfoWare for this coup: none of the others manage to look quite so prehistoric in their presentation, despite them all being substantially older software.

How I laughed. From the moment the Tyranosaurus Rex turned up on the opening screen and gave its B-movie roar I knew this was something special.

To be completely fair, WoD was the first of the InfoWare products I loaded up, and for all its dreadful qualities it is somewhat better than the other offerings. The data covers quite a lot of creatures through three ages, although not in any particular depth.

Where it falls down is the basic fact that this isn't exactly ground that reference software compilers haven't covered before, and much much better at that.

Sorry guys, you missed the bandwagon. It gathered speed about two years ago, when that Dickie Attenborough fellow opened up his theme park. All of which puts a damper on what's already a rather wet piece of software.

Martin Klimes

★★

- **Supplier:** Software
- **Contact:** (0480) 497 622
- **Price:** £29.99

World of Dinosaurs isn't very demanding: a 386 PC with 2Mb of RAM, VGA graphics, and an optional sound card are all that's needed.

Expert Personal Roots

Geneology program

At the price, I believe the Expert range are a pretty good set of products. By and large, that is. Personal Roots goes a long way towards reversing my opinion.

If you want to trace your family back, Personal Roots is here to help out, supposedly. You can store the details of all the relatives for generations back, including any close family links — parent, child or spouse. Roots then goes and sets up the family tree for you.

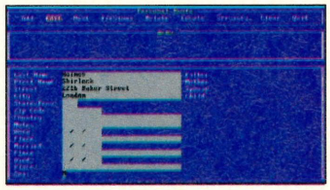
What Roots is, then, is a database to help you out in your quest for a full family. However, I can heartily recommend getting a general database package such as Dbase and putting all the details into that. The search and sort features will be far more useful than the ability to print out a sketchy family tree.

For me, when tracing my family back, I am doing it with some interest and pride in my search. Producing a poor quality piece of print-out doesn't satisfy me. If Roots asked for things like addresses with postcodes and not state and zip code I might have been more inclined to say that it's useful for a specific purpose.

PC Review will be covering genealogy in some detail in a forthcoming issue, so hang on for that before parting with your cash.

Martin Klimes

★



- **Supplier:** Software Partners
- **Contact:** (0480) 497 622
- **Price:** £14.99

Any common or garden PC will run Personal Roots, although an HP LaserJet printer is recommended to make the most of it.

Panasonic Multimedia Panasonic



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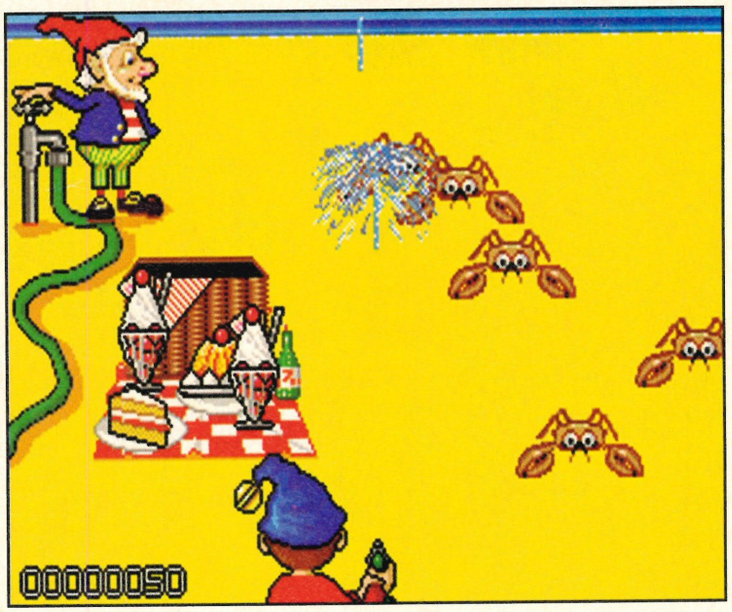
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Noddy's Big Adventure

Pre-school education



Noddy, it seems, is still a firm favourite among the very young along with Bert the Monkey, Mr Wobbly Man, Mrs Tubby Bear and Big Ears. One of his great attractions has always been his yellow and red car and so this collection of games aimed at developing skills in three to seven year olds includes a driving game as well as relying on Noddy's car as a link between the different locations used.

The program includes a pictorial word processor which, in common with the games, can be used at three levels to accommodate the very wide range of abilities in the age range. At all levels it aims to increase vocabulary and to develop word recognition using a collection of pictures. A number of picture stories are supplied and children can create, save and even print out their own picture stories. Spelling ability is covered at the two higher levels.

As you would expect from Noddy there is a good deal of mischievous humour within the program. Our young testers were delighted by the way Noddy's deck chair collapses on the beach and insisted on returning to this scene to see it happen again. Their favourite game was Picnic Attack where they had to squirt crabs and lobsters with water pistols to prevent them devouring Noddy's cakes and lemonade. This game is included just for fun while others, like Noddy's Scales an exercise with a balance and weights develop skills with numbers, shapes and investigation. There are also sorting and matching games involving pictures, colours and musical notes which develop memory and sequencing. The games were successful both in appealing to the kids and teaching relevant skills.

Although there are sound effects and 'musical' introductions to individual games there is not a continuous sound track. The point where this is most noticeable is when Noddy is driving between locations. The manual provides a story line which is suggests should be read aloud as Noddy goes to each new place. So you need to think of this as being human assisted software and be prepared to do your bit.

Sue James

★★★★

- **Supplier:** The Jumping Bean Co.
- **Contact:** (0602) 792838
- **Price:** £29.29

Will run on just about any PC and while it is SoundBlaster compatible this is not essential. Requires MS-DOS 3.3 or higher and VGA.

EDUCATION SOFTWARE

TuneLand

Childrens' edutainment

- **Supplier:** Longman Logotron
- **Contact:** (0223) 425 558
- **Price:** £38.29

A 386 PC will run TuneLand. You'll also need, however, a 256 colour SVGA display, a sound card, and Windows 3.1

Starring Howie ... That's the justification for TuneLand, really. Howie comes along to add some real talent to what is otherwise another multimedia farmyard childrens' book.

Through a cartoon bear alter ego called, unoriginally, Little Howie, we get the American tour of several screens depicting different parts of a farm. You get the horse in the stable, the farmer's wife in the kitchen, and other similar cliches.

Each location is packed with 'clickability'. Point the mouse at any one of a dozen or so seemingly background details on any given screen, and you'll be treated with a little cartoon animation, sound bite, or full song. There's plenty of new versions of old sing-along favourites like Old MacDonald to keep the youngsters happy, and the animations aren't always the same when you click on the same object twice, making for a longer life in TuneLand.



TuneLand is designed for young children, and so goes heavy on the cute angle. There isn't any technical jargon or intrusive interface to get in the way — just click and watch what happens.

As soon as they can work a mouse, it's worth loading up Little Howie for hours of enjoyment.

Sue James

★★★★

The Great Computer Adventure

Children's edutainment



This program is for the eight to 11 year-old age group and is intended to impart some useful information to aspiring computer users while they play an adventure game.

The story line is almost irrelevant — a volcano is about to erupt and in order to save a family from being buried in hot molten ash you have to find all the parts of a computer and reassemble it.

To rescue each part first you have to find a hidden envelope — this involves a trial and error search with skill and logic being of little help. Then you are presented with a cryptic clue as to which element of the computer you have uncovered.

This is where understanding of computer jargon and the role of different parts of a system come into play. Once you have solved the clue there is a game to play.

There are eight games in all — nothing new or marvellous but a reliable mixture that kids of this age seem content to tackle. Each of these games has some relevance to the overall theme — in the hidden words puzzle you are asked to find "chip", "resolution" and so on.

The entire adventure is played

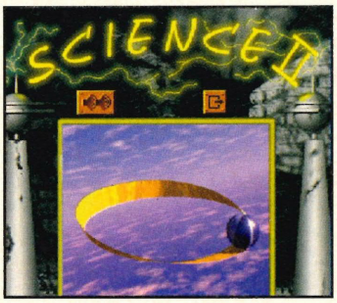
- **Supplier:** Europress
- **Contact:** (0625) 85933
- **Price:** £25.99

Needs at least a 286 with VGA or better graphics, running DOS 3.2 or higher but only requires 640K of memory

against the clock — with time being lost for incorrect guesses to clues and the time span is pretty short so it needs a good deal of luck and skill to complete the mission. For this reason kids will need to play and replay the games.

Sue James

★★★



Science Adventure II
Multimedia edutainment CD

Science Adventure 2 is an earlier title in the same Knowledge Adventure series as The Discoverers (see full review on page 110), with an amazing breadth of coverage.

Rather than one long movie it includes over 100 video clips and has 1,000 items of reference. These were written by Isaac Asimov — whose style is clear and informative and you can read then by choosing the adult level option in the science reference section.

Younger users — or lazy ones — can opt for 'kids' text and hear a simplified version of the same material spoken aloud.

The main menu in this program is the Science Lab. Here you can browse around 'exhibits' which range from the relatively small — like a mobius strip — to ones on a grander scale — like Stonehenge.

Then there's the blackboard option, which is used to demonstrate some fundamental principles, and you can always learn more by 'meeting' Albert Einstein or Madame Curie.

As usual there are games including Dr Zoom's Game of Bogus Science where you arrest the scientists who tell you false facts — but as fact is sometimes stranger than fiction we made quite a few false arrests.

Sue James

★★★

- **Supplier:** Guildsoft
- **Contact:** (0752) 895100
- **Price :** £44.95

Minimum 386 PC with VGA graphics, a CD-ROM drive, 2.5Mb of disk space, and a sound card. Discovery runs under DOS and Windows

PC REVIEW TRIED & TESTED

Some software gets deleted from the hard disk the minute a review is written — some hardware we wish we'd never laid eyes on. But there are products we see every month which we wish we could keep.

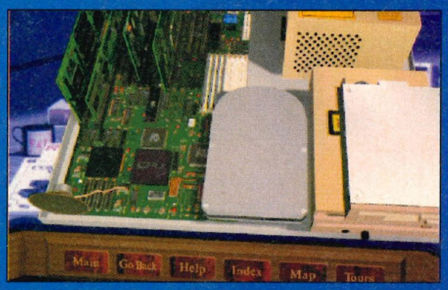
It is these programs, devices and systems — those which we've worked with and found enjoyable, reliable and, above all, genuinely useful above and beyond the call of duty, that rate an appearance on this page. Any of the products which feature here we recommend as worthy of inclusion on anyone's shortlist.



QY8
Yamaha, £208
Marvellously fun —— and sophisticated — portable music sequencer you can link up to your PC or keyboards.



GenSys Blue Lightning Performance PC
GenSys, £1,149
A powerful combination of clock-tripled performance and 486SX pricing.



How Multimedia Computers Work, Software Toolworks, £39.99
Enthusiastic and informative guide to the mysteries of the modern PC.



PC Paintbrush Plus
Softkey, £29.99
Not only wins the 'most original packaging award', but also provides the easiest, most fun route to painting on the PC.



CD2
Bluepoint, £99.99
Unique first IDE CD-ROM drive combines hassle-free use — no card, no IRQs — with a rock bottom price.

Recommended so far: Gateway 2000 486/33SX, Fauve Matisse, Microsoft Art Gallery, Microsoft Fine Artist, Media Vision Double Fusion LX, Orchid GameWave, Bluepoint Sound FX Classic 3000, Micrograph Tabby, Dan Vantage Multimedia PC, KidDesk, NEC 3Xi CD,WordPerfect InfoCentral, Mitsumi FX001D

PRODUCTS

Shareware reviews

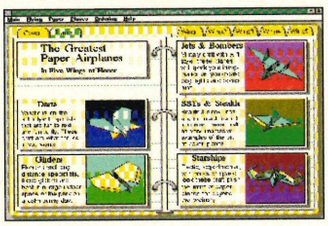
This month Alan Clark rabbits on about the latest release from Epic Megagames, makes a few paper airplanes and finally looks at a few pieces of classic shareware that should be a part of anyone's collection.

The Greatest Paper Airplanes

Everyone's made paper airplanes at some point in their life; I certainly have. And what fun they are too. So imagine my pleasure at discovering a Windows program that shows you exactly how to make them. Not only that, but one that also treats you to a history of paper planes and the types of paper used to make them.

The main program is divided into five areas, although only one — Darts — is available in the shareware version. Each section then offers you five different variations on the main theme. Once you've selected the plane you wish to make, you're treated to a step-by-step animation with accompanying instructions on exactly how to fold the paper to make your chosen paper plane; if that isn't enough you can even print out a template containing all the various fold marks. A thoroughly enjoyable, well presented program that will provide hours of fun for all ages.

Available from After Hours BBS Telephone 0785 228214



Paper Airplanes can be fun to play with, but some of these designs require a black belt in Origami to help complete them!

Price $29.95 — PC REVIEW RATING 8

Jazz Jack Rabbit

The latest release from Epic Megagames is a fast-paced platform romp featuring a hot-footed bunny by the name of Jazz Jack Rabbit. Along with Jazz comes assorted friends such as Devan Shell, a turtle and notorious leader of the turtle terrorists and Eva Earlong, Princess of the planet Carrotus, and Jazz's bunnyfriend. As for the plot, it goes something like this:

Devan has bunnynapped Eva in an evil attempt to take over the world and rule Carrotus. But Jazz, armed with an array of weapons has vowed to rescue his beloved and save the entire rabbit world. The action is fast, the graphics are great and the music and sound effects are stunning; great fun to play. This is one 'hopping' game.

Available from After Hours BBS Telephone 0785 228214



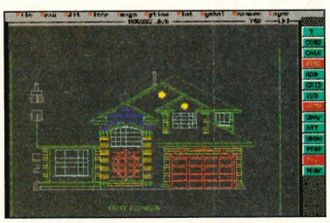
Price £29.99 — PC REVIEW RATING 8

Draft Choice 2.0

Draft Choice is a 2D drawing/technical illustration package for DOS that offers the user a good range of tools and options, including bezier curves and other drawing tools, up to 256 layers with definable colour schemes, a built-in macro language, all in an easy to use package.

And although Draft Choice is just a 2D package, by using complex calculations 3D images can be produced from the 2D original. On the whole this is a good choice for an entry level user wanting to sample drawing packages.

Available from After Hours BBS Telephone 0785 228214



Draft Choice 2.0; an easy to use, powerful 2D drawing package.

Price $57.58 — PC REVIEW RATING 7

File Express 5.1

Anyone who's ever used a database will know that they aren't one of the easiest applications to get to grips with. Most seem to need you to have a degree in some obscure programming language before they'll even sort through your address book.

File Express is for everyone that would like to have a database, but can do without all the complexities involved. Through the use of clearly defined menus and help prompts, it lets you create whatever type of database you need quickly and easily. You can design your own forms, print out labels, and import and export from a variety of formats including Wordperfect and Dbase files. There's also a wide range of more powerful options for the experienced or even adventurous user.

Access and Paradox have got nothing to worry about with File Express, but for the novice user this program is good breaking ground.

Available from After Hours BBS Telephone 0785 228214



File Express; a user friendly database for 'data-phobics'?!?"

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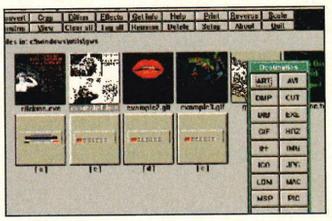
Graphics Workshop 1.1m.

This is the latest Windows version of this versatile image conversion utility. It comes with a number of additional features, including the ability to read Kodak Photo-CDs and improved JPEG handling.

Support is also provided for 24 different file formats, with a variety of control options for specific file types; with this many formats you shouldn't have any problems with 'obscure' file types. And this latest version of Graphics Workshop can also create thumbnails.

A range of effects, including soften, sharpen and colour balance have also been added for retouching images after conversion. It's a 'must' utility for people working with different image types and file formats.

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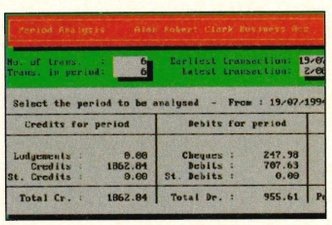
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TOP GAMES

RISE OF THE TRIADS (3) - APOGEE BLOCKBUSTER Game of the year. Doom beating game - big improvement in all that Doom tried to achieve.
WACKY WHEELS 3D (2) - New 3D car racing game from Apogee.
JAZZ JACK RABBIT (2) - New from Epic, Sega Sonic beating platform game - superb.
MYSTIC TOWERS - New from Apogee.
NITEMARE 3D (2) - New 3D Hugo adventure.
DOOM EXTRA LEVELS VOL 1 (5 DISKS - £10) - 50 new levels for the registered version of Doom.
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DOOM EDITOR UTILITIES v5.21 - Latest version.
DOOM SURVIVORS STRATEGIES & SECRETS HINT. BOOK - Excellent 300 page book on Doom £11.50.
DALEK 3D FOR DOOM - Play against Daleks.
WOLFDOOM - Play against Wolfenstein soldiers.
DOOM WADPAK 1 - Complete 24 level game.
DOOM FRONT END - Useful menu system for Doom.
DOOM 3D (2) - Best ever virtual reality wargame.
DOOM EXTRAS - Cheats, maps, hints, etc.
DOOM PATCH DISK TO v1.4 - Fixes mouse problem.
HOCUS POCUS (2) - Apogee Duke Nukem type game.
BATTLECHESS - The original monster chess game now released as shareware.
REVENGE OF THE MUTANT CAMELS - Wacky shoot em up from the author of Llamatron - excellent.
CYBERCHESS - Super new chess with robots.
SUPER ANDROID - Brand new version of Epic Pinball.
RAPTOR (2) - New Apogee best ever shoot em up
MVP BRIDGE - Best ever bridge card game & tutor.
DR RIPTIDE - Superb underwater submarine adventure
TRAFFIC DEPT 2192 (2) - Huge car race & kill game.
ONE MUST FALL (2) - The best street fighting game.
SPECTRUM EMULATOR (2) - Play those old games.
SIM SPACE (2) - Spaceship dlight and combat sim
COMBAT ZONE - Good new strategy war game. 2mb
ELECTRO MAN - NEW from Epic - platform game.
XARGON - NEW from Epic. Follow up to Jungle Jill.
JASON STORM in SPACE CHASE - One of 93's best.
6 CARD GAMES - Bridge, Poker, Patience, Rummy.
WORLD CUP CRICKET - Cricket game simulation.
FORD SIMULATOR 3 - Car racing game
ZONE 66 - 91% review in PC Format, Epic games.
POWER CHESS - The best chess game.
XMAS LEMMINGS - Dressed as Santa Claus.
PC PRO GOLF - Play a round of golf.
MAHJONG - The original and the best!
BLAKESTONE (2) - Good Wolfenstein sequel.
HALLOWEEN HARRY (2) - Best ever platform game.
DUKE NUKEM 2 (2) - Much improved follow up.
BIO MENACE - Great new game from Apogee.
SPEAR OF DESTINY - Follow up to wolfenstein.
WOLFENSTEIN 3D - Virtual Reality shoots the Nazis.
WOLFENSTEIN EXTRAS - maps, cheats, pacmen.
MONSTER BASH - Ghouls & ghosts adventure.
COSMO'S COSMIC ADVENTURES - Best platformer.
KEEN DREAMS - The last Keen game.
COMMANDER KEEN 4 & 6 - 2 top Apogee games.

MUSIC

SCREAM TRACKER 3 - MOD music composer.
UNTITLED - Best ever 3D demo - by Dust.
GOOD BAD & THE UGLY - Top Gravis demo.
CARDIAC by INFINY - Superb demo - third at Assembly 94. Not for Doublespace users, 4mb.
2ND PHOBIA - Brill Gravis demo. 5th at Assembly.
DEJA VU DEMO by SYNERGY - Good music/gfx.
TECHNOLOGY DEMO by EXTREME - Good 14 part demo with many variations. Rave music.
JOURNEY (2) - Music collection by Purple Motion.
CHAOTIC MIND - Music collection by Skaven/FCrew.
INFERNO - New Gravis demo.
PANIC - Brill Futura Crew demo with gfx.
UNFEAL - 386 top Future Crew demo.
2ND REALITY (2) - Ultimate Future Crew demo, 4mb.
CRYSTAL DREAMS (2) - Triton demo - excellent!
CATSPLAY FOR WINDOWS - MIDI/WAV player.
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MIDI FILES (5) - Rock and pop Midi files.
SOUND EFFECTS VOC FILES.
WINDOWS WAV FILES - Mainly sound fx.

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SEA SCHOOL - Superb kids maths game.
TALKING TEACHER FOR SOUNDCARDS.
BERIS DINOSAURS - Colouring book.
PICTURE PUZZLE - Jigsaw fun.
HENRIETTA'S BOOK OF SPELLS.
ANIMATED ALPHABET for infants.
ANIMATED MATHS for infants.
ANIMATED WORDS for infants.
ANIMATED MULTIPLICATION & DIVISION.
SENIOR PHYSICS FACIS Ago 15+
FRENCH TUTOR - Learn French.
GERMAN TUTOR - Learn German.
EDUCATIONAL ATLAS 1994 - Superb.
PC TUTOR - All about computers.
PC FASTYPE VGA - typing tutor

GENERAL

EASY MENU - Best menuing system.
MACAFFEES ANTI VIRUS - Latest version.
FILE COMPRESSORS - ARJ, PKzip etc.
QUIK MENU 3 - Icon front end menu system.
MAGIC DESK - Best new icon menu system.
PHANTOM - Collection of 20+ screen savers.
SCREEN THIEF - bBest DOS screen captures.
AS EASY AS 5.5 - Top spreadsheet.
PC FILE 7 (2) - Top selling database prog.
EASY BASE - Easiest database - good.
EASY WORD - Best WP system.
FREEWAY LEDGERMASTER (2).
FREEWAY PAYEMASTER - 1994 version.
NOYES SIMPLE ACCOUNTS.
FORMGEN II - Superb form generator.
625 BUSINESS LETTERS - For your WP
ASTRO (2) - Best astrology program.
KITH N KIN FOR WINDOWS - Geneology.
BROTHERS KEEPER 5.1 (2) - Best geneology.
FAMILY TREE JOURNAL - Make history books.
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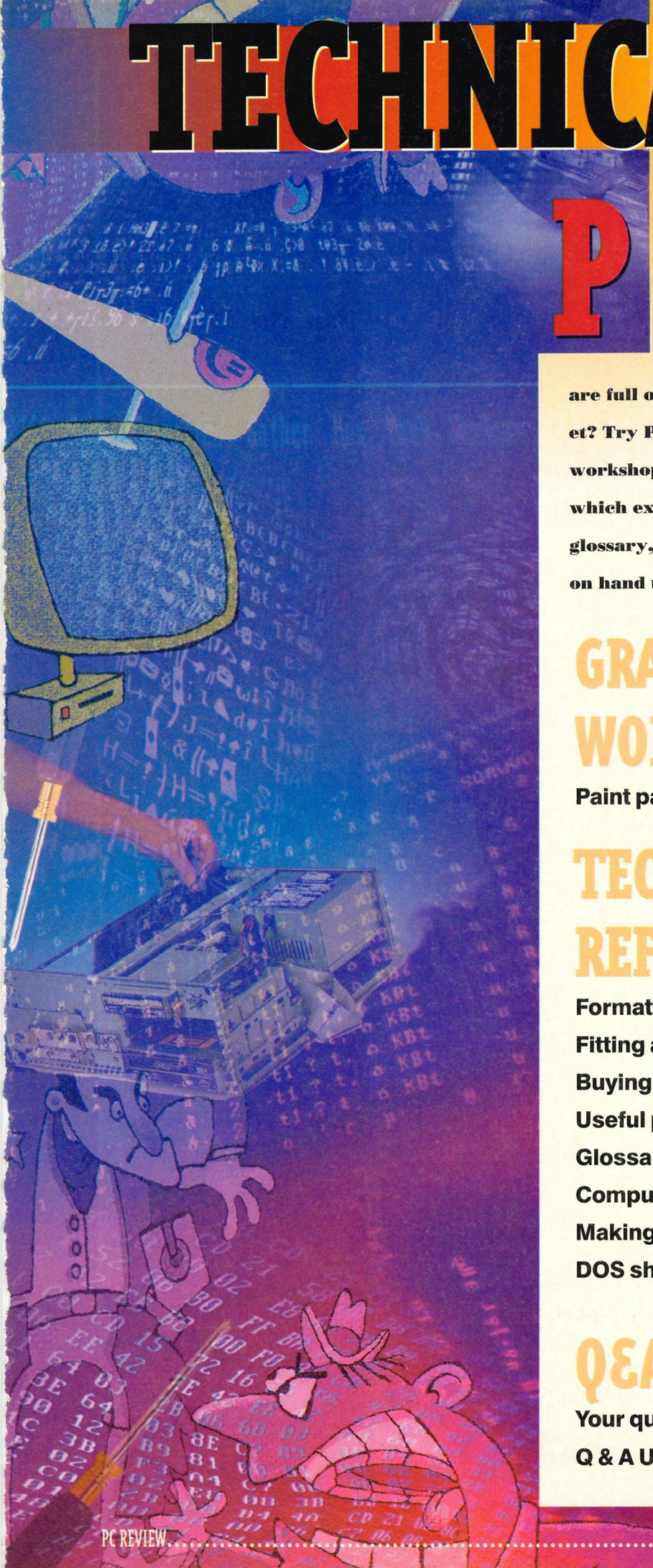
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TECHNICAL HELP



PCs are great — most of the time. But when they're not being great, they can be the most irritating, frustrating, downright incomprehensive machines you ever tried to use. So where can you go for help, when the manuals are full of jargon and books weigh a ton and cost a packet? Try PC Reviews's Technical Help section. We run workshops on popular applications, a regular help section which explains common procedures, a jargon busting glossary, and if you're still stuck after that, Mike James is on hand to solve your problems on our Q & A pages.

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TECHNICAL HELP

Graphics Workshop

Painting by numbers

Last months Graphics Workshop spotlighted Corel Draw 3 and explained some of the concepts behind drawing packages. This month Alan Clark shows you some of the painting packages available on the PC.

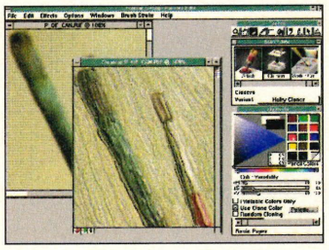
Paint packages are totally different to drawing packages. Whereas a drawing package is vector-based and lets you pick objects up and move them about, a paint package is, as the name suggests — a package that allows you to 'paint' a picture as you normally would in a real world environment.

The newest generation of paint packages can realistically reproduce a variety of artists mediums and paper textures, producing very realistic artwork. This month we'll take a look at four such paint packages.

Fractal Design Painter

Fractal Design Painter was the first package available on the PC to simulate true artists' mediums.

It's a good way to learn about painting packages, as all of Painter's functions are simple to experiment with. There are various tools and options; such as penetration and concentration of the chalk. Painter also gives you a great deal of control



over brush strokes; for example you can change the size and shape of the brush, sharpen a pencil for more defined strokes, etc.

All the various tools are arranged into floating palettes that can be displayed on the screen as you wish. The Brush Palette contains all the painting tools and their variants; for example from the brush option you can select such variants as hairy brush, or an oil brush or even a multiple bristle brush. Painter also allows you to paint in the style of certain famous painters; you could accurately recreate a Van Gogh, or neo-impressionist Georges Seurat.

An interesting feature of Painter is its Cloning option.

With this you can scan in an image and recreate it in any of the wide range of mediums available, or you can take a short cut and use the auto clone function. Either way you can take a plain simple photograph and transform it into, say, a water-colour masterpiece.

Suffice to say Painter contains a whole wealth of tools each with further options giving the user a great deal of control over each brush stroke. It's the most expensive package here and is clearly aimed at the experienced/professional artist.

FRACTAL DESIGN PAINTER

Supplier	Letraset
Contact	071 928 3411
Price	£381.88

FOR: Wide range of tools and control options. The first package to simulate real artists mediums. Uncluttered user interface. Well thought-out arrangement of tools and options.

AGAINST: The price.

PC REVIEW RATING 7

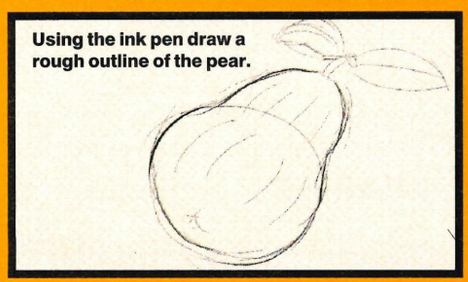
Fractal Design Dabbler

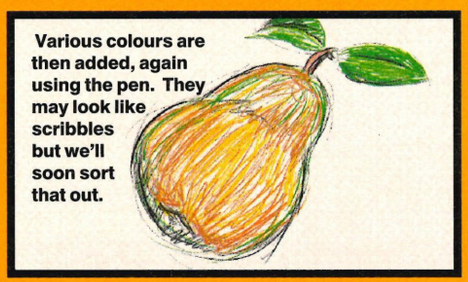
Dabbler could really be considered the younger brother of Fractal Design Painter; it has a selection of artists mediums ranging from a simple pencil or crayon to oil paint or airbrush and it also provides you with a selection of paper textures.

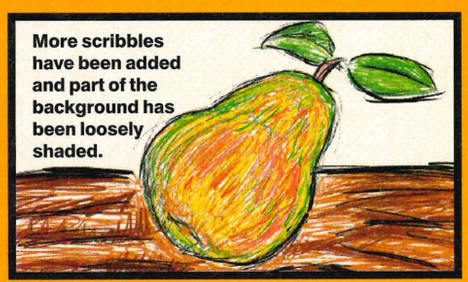
All the various tools are arranged into drawers that open up when selected. There are four of these drawers; one contains any options appropriate to the painting tool in use whilst the next contains the painting tools themselves, effects, and special tools (magnify, rotate page, etc.). The five most used tools are displayed on the drawer front for easy access when the door is closed. The colour drawer contains



SIX EASY STEPS TO THE PERFECT PEAR







a variety of predefined palettes for your use and a colour wheel for creating your own colours. The last drawer contains the various paper textures that can be applied to your painting to create different effects with different medium.

A useful feature of Dabbler is the notebook. This is effectively an artist's sketch book for roughing out ideas and experimenting with various techniques or colour schemes before committing it to the final painting. These sketches, rough ideas, etc, can then be copied as you like to your 'canvas'.

Dabbler contains a lot of tools and functions similar to Painter, including the interesting Clone function, but without all the various control options.

Therefore, Dabbler is more accessible than Painter, but you should remember that Painter is a much more professional package. That said though, Dabbler is still capable of producing some stunning results. And to help you create your masterpieces, the well written manual also contains reprints of two art tutorials written and published by famous American artist and art tutor Walter Foster.

Dabbler does suffers from a few limitations. More adventurous and experienced users might miss the variety of options found in Painter.

They may also miss the range of variants within each tool that are also present in Painter and they'll probably miss the various brush controls too.

But there is a plus side; Dabbler isn't as processor hungry as the likes of Fauve Matisse and others and so will therefore probably appeal to users with lower spec machines.

FRACTAL DESIGN DABBLER
- Supplier: Letraset
- Contact: (071) 928 3411
- Price: £88.13

FOR: Good range of tools. Simple user interface. Not as hardware hungry as Fauve Matisse. Effectively a cut-down Painter at a cut-down price.

AGAINST: Doesn't have as many tool variants as other packages features, limited brush control.

PC REVIEW RATING 8

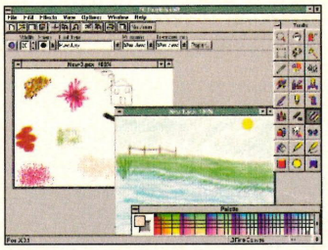
PC Paintbrush

Since its freebie debut with Windows, Paintbrush has grown up. In fact it's changed so much you'll hardly recognise it. With an interface reminiscent of PhotoMagic, from Micrografx, yet developed by the same people as PhotoFinish, Paintbrush now joins the league alongside Dabbler and Fauve Matisse, but at half the cost.

For your £39.99 you get a pretty competent little package. A variety of medium are available to paint with, much the same as its direct rivals, but within each is such a variety of options it even puts Painter to shame: for example, select the paintbrush then scroll down the tool type list and see such things as Jitter Rainbow and Neon and Seurat, soft, two tone and wash; there's also a wide variety of paper options, curve and line tools and even tools for creating rectangles, squares and ellipses.

With Paintbrush you can also apply special effects to your picture; the effects available are very similar to those found in photo editing packages such as PhotoFinish or PhotoMagic. A variety of options are also available for creating cut outs; freehand, rectangular and magic wand. Another option is the cloning tool. This isn't like that found in Painter or Dabbler, instead Paintbrush's clone will copy a selected part of the painting to another area as you paint; an interesting tool for creating multiple images but not nearly as useful as Painter, or Dabblers version.

A definite improvement over the Paintbrush supplied with Windows and it does contain a wide range of tool variants. It's value for money at just under £40 and it is simple enough to use. The manual's claim to be "the ultimate in PC creativity" is a little far out, but Paintbrush is certainly a good place to start.



PAINTBRUSH
- Supplier: Softkey International
- Contact: (081) 789 2000
- Price: £39.99

FOR: Good range of tool variants and paper. Simple user interface. Includes variety of effects normally confined to photo editing software. Simplicity.

AGAINST: You know, for the price and considering Paintbrushes simplicity. I can't really find anything to whinge about.

PC REVIEW RATING 8

Fauve Matisse

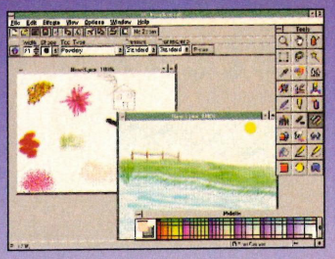
Taking its name from a group of French Impressionists, nicknamed Fauves, and led by some chappy by the name of Matisse, this painting package bears many resemblances to the likes of Dabbler and Paintbrush.

Thus Fauve Matisse continues the trend of offering a range of natural medium and paper textures for creating realistic artworks as well as vector drawing tools for creating squares, rectangles and ellipses, along with a variety of filters for applying effects to images with such options as emboss, edge detection, blur and various colour control filters to highlight but a few.

But there's one impressive feature that sets this paint package apart from all the others; layering. Yes, Fauve Matisse allows you to build up your paintings through the use of a layering system much the same as that found in drawing packages. This means that you can arrange the various layers one in front of the others, work with just one layer at a time and even blend between layers and then when everything is finished, the layers can be fused together to create a single picture.

Why this function hasn't been adopted by other paint packages I really don't know, because it makes everything so much easier; just draw all the elements of your picture separately and then build up the layers. If you mess up, just remove the particular layer, no need to scrap the whole image.

Unfortunately for Fauve Matisse, there is a proverbial fly in the ointment. Fauve is rather hardware hungry; 16Mb of RAM is recommended, but it can do tricks with



8Mb and a virtual swapfile. And if you want some resembling decent performance you're going to need a fast 486. That said, the results are stunning and the ingenious implementation of layering really makes life a good deal easier.

FAUVE MATISSE
- Supplier: CGS Computerbild
- Contact: (081) 679 7307
- Price: £98.70

FOR: Layers.

AGAINST: Hardware hungry.

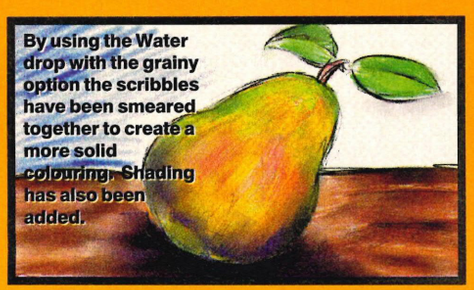
PC REVIEW RATING 8

POINTING THE WAY

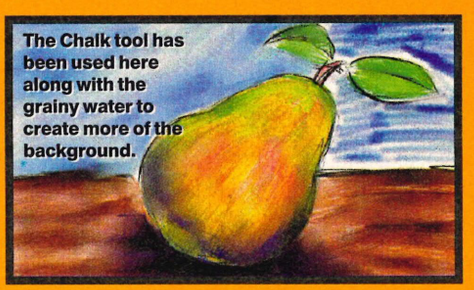
Using a mouse to draw is like using a table tennis bat to play lawn tennis; it can be done but it will also give you more hassle than it's worth. You may find it easier to draw on a flat surface, such as a graphics tablet, with some form of pen-type tool.

The Micrografx Tabby, which comes in at around £43, is perfect. The tablet is about the size of a mouse mat and the drawing stylus is comfortable to use, although its clicky tip may take a little getting used to. Micrografx is on (0483) 747526 if you want more details.

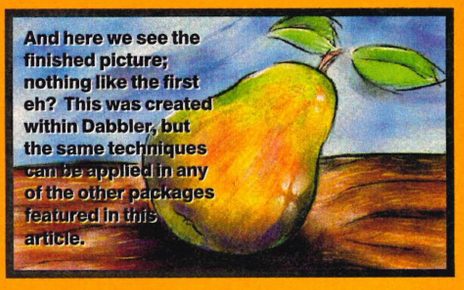
But if you're really taking this seriously, consider the Drawing Slate from Calcomp. Other slates are normally thick and bulky, but with the Drawing Slate, Calcomp has produced a sturdy, durable tablet that's just 3mm thick. Combined with a cordless pen this really is the ultimate in painting accessories. OK, so it's £295 for an A4 model, but that's still cheaper than a lot of other tablets on the market. Contact Calcomp on (0734) 320032 for more information.



By using the Water drop with the grainy option the scribbles have been smeared together to create a more solid colouring. Shading has also been added.



The Chalk tool has been used here along with the grainy water to create more of the background.



And here we see the finished picture; nothing like the first eh? This was created within Dabbler, but the same techniques can be applied in any of the other packages featured in this article.

Help!

Don't Panic-

check the PC Review technical reference guide (then panic)

This month we guide you through the perils of formatting floppy disks, list the golden rules of buying a PC, show you how to fit a CD-ROM drive and assess the true risks from computer viruses.

FORMATTING YOUR DISKS

Blank disks that you buy from the shops will almost always be unformatted: that is, they are truly blank. In order to use them on a PC, you will need to format them. Formatting imposes a structure on the disk, marking the disk magnetically into areas called tracks and sectors, which makes it easier for the operating system to keep track of files when you store them on the disk. If you format your blank 3.5" disk in an Apple Macintosh, it will be formatted for use only in an Apple Mac; if you format it in a PC, the tracks and sectors will be marked specifically for use in a PC.

Where formatting gets a bit scary is that, a) you can reformat disks with data already on them, and the process of formatting also erases any information already on the disk, and, b) you can format hard disks as well as floppy disks.

We defy anyone who has used a PC for any length of time to claim that they have never formatted the wrong disk by accident. However, while it can be agonisingly easy to reformat the wrong floppy disk, current versions of DOS will warn you in capital letters if you try to format the hard disk by mistake.

If you do accidentally wipe out the wrong data with the Format command, and you have version 5 or 6 of DOS, try running the Unformat program immediately (type Unformat at the C:\DOS prompt). Failing that, you need a program such as Norton or PC Tools to try to recover your data.

How to format a high density (1.44Mb) floppy disk in a high density drive A:

1) Put the disk you want to format into your floppy disk drive A:.
2) At the C:\ prompt, type FORMAT A: /F1.44 (don't hit Enter just yet)
3) Check that it really does say A: in the line you've typed.
4) Press Enter.
5) You will be prompted to insert the correct disk into drive A:. This you have already done, but you do have a chance to double-check that it's the right one now.
6) Press Enter to confirm the format.

The formatting process should now start. Note that if the disk is write-protected, you will get a message saying "Write-protect error" (write-protected disks cannot be (re)formatted). You can simply take the disk out, move the write-protect notch down, re-insert it and start again. First, however, you should try to remember why you write-protected it in the first place.

The PC should make a regular ticking noise as it marks the tracks and sectors.

However, if this gives way to a distinct grinding sound, then the format program has found some bad sectors – areas on the disk that are damaged. Don't worry. The format program will mark these sectors as 'bad' and henceforth, your programs will not attempt to write data to these areas, although you will lose the space that the bad sectors take up. Your 1.44Mb disk will only hold 1.43Mb of data if there is around 10K in bad sectors.

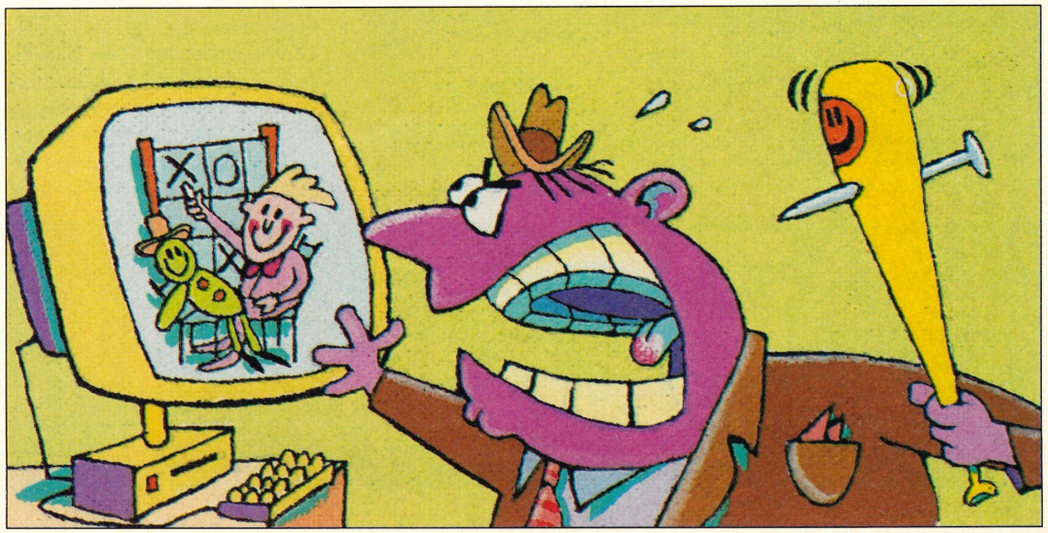
Once complete, you will be prompted to enter a 'label', or name for the disk and whether or not you wish to format another disk of the same type as the original.

Hit Y for yes and have the second disk handy, or N for no, and exit the format program.

If you want to format a low density (720K, or 'double density') in a high density drive, you should specify it at the C:\ prompt:

FORMAT A: F:/720

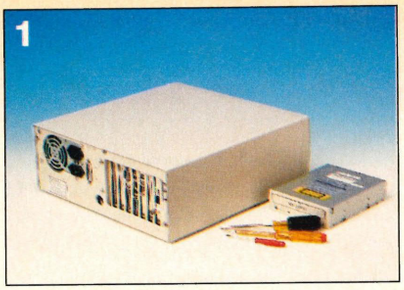
Don't try to format disks at the wrong density. As for formatting hard disks, DON'T, unless you absolutely have to.



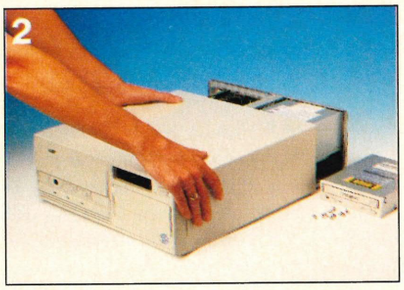
FITTING AN INTERNAL CD-ROM DRIVE

The majority of CD-ROM drives available these days are internal models which need to be fitted inside your PC. Not only are internal CD-ROM drives cheaper than the equivalent external device, but they take up much less space on a crowded desktop. However, for a new PC owner especially, the idea of opening up the machine and fitting the new drive can be a daunting prospect. It needn't be. It's not that difficult an operation, and there's surprisingly little that can go wrong. And if you do feel nervous, just follow our simple step-by-step guide.

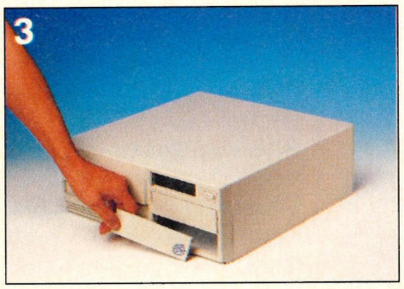
Nine steps to CD heaven



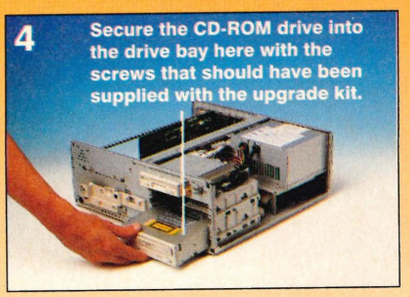
1. Switch off the PC, disconnect it from the mains and remove all cables. Clear space around it, and look for the screws at the back of the PC (and sometimes also the underside) which secure the lid to the main casing. Dig out an appropriate screwdriver.



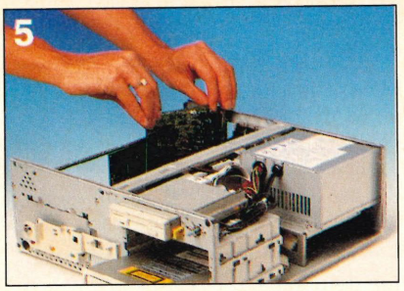
2. Undo all the screws necessary and remove the lid, exposing the PC's innards. Keep the screws together somewhere safe. You may well find that some of the screws actually attach the power supply or expansion bus rather than the lid: just tighten the screw back up again and go back to the others.



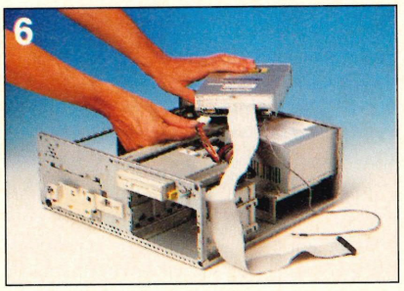
3. Have a look at your free expansion slots and determine which one you plan to use for the sound card (if fitting). Make sure your cables are long enough to reach between the CD-ROM drive and sound card. Remove the panel in front of the drive bay where you plan to place the CD-ROM drive — this will either just clip off or you may need the screwdriver.



4. The drive will probably need to be inserted from the front of the PC. Once in place, you'll notice that it's loose in the drive bay. There should be a set of screws in the packaging to use for securing the drive in its bay. If you are fitting a sound card at the same time, go to step 5; if your sound card is already in place, go to step 6.

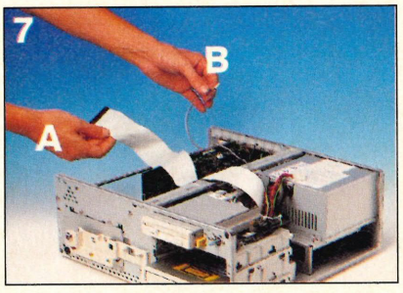


5. Select a free expansion slot for the sound card. Unscrew the corresponding thin vertical metal plate at the back of the PC. Then take your sound card, and push it firmly but gently into place until the connectors are fully inserted into the socket. Now screw the backplate of the sound card to the back of the PC.

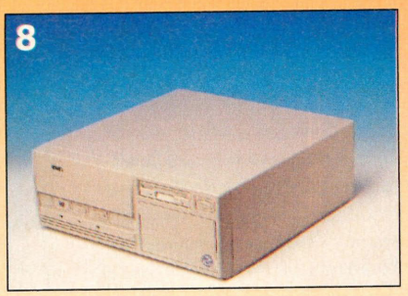


6. You now need to connect the CD-ROM to your power supply.

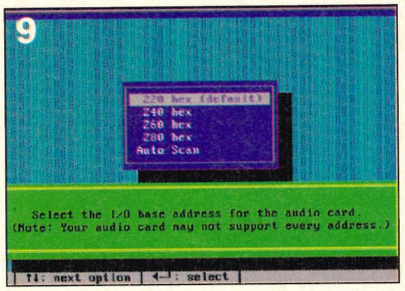
There will be a big bunch of cabling coming out of the power supply unit, with a free end somewhere. Fit the free cable into the socket at the bottom of the CD-ROM drive.



7. The drive also needs to be connected to your sound card with cables A and B. Take the fat ribbon cable (A) and note where there is a small notch on the sockets. This needs to be lined up with the notch on the interface on the sound card. Push gently into place. Now take the thin cable (B) and carefully attach to the socket on your sound card.



8. Check all the connections are secure, and try to tidy up the cabling inside the PC a bit so that nothing will snag when you put the lid back on. Slide the lid back on carefully, but at this stage, don't rescrew: if, for any reason the CD-ROM doesn't work, you'll want to get back into the PC again.



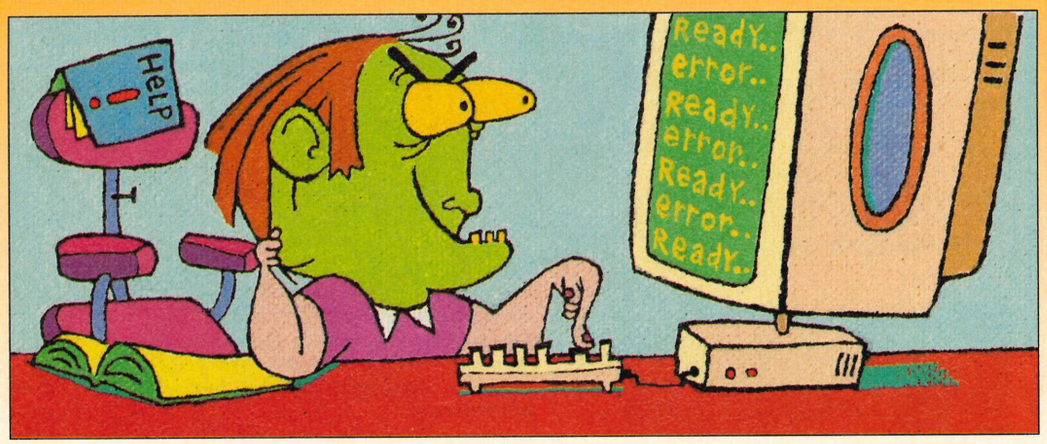
9. Reconnect your PC to the keyboard, monitor, mouse, etc, and to the power supply. Switch on, and insert the installation disk into your floppy disk drive. Type the starter command — probably A:\INSTALL [Enter], or a variant of this. Follow the program's prompts to install the necessary drivers for your CD-ROM. Unless you *know* that your PC is set up differently, stick with the suggested default setting. For example, if you had a sound card already in place and you know it uses IRQ 5, rather than IRQ 7, you'll need to change it. Otherwise, leave everything be.

After installation, restart the machine. Your start-up files (Config.sys and Autoexec.bat) should have been changed to incorporate the lines which load up your CD-ROM device driver. If you get an error message, you will need to investigate why it hasn't installed properly. If the message is to the effect that DOS cannot find the CD-ROM drive, switch off, disconnect the power lead again, and check that all the connections inside the machine are secure, cables are the right way round, that the drive is definitely connected to the power supply unit, etc.

If the message implies that the CD-ROM drive has been detected, but that the driver won't install properly, try re-running the install program. Then restart, and check again. If it still won't work, you probably have a conflict with another peripheral in the PC. Check the manual/instructions to see if it covers this sort of eventuality (bet it doesn't). The install program may be a generic one: check you have chosen the correct CD-ROM driver at the beginning.

BUYING A PC

Let's face it, buying a PC is no simple matter, whether you're a first time buyer or upgrading from your current model. With a vast number of manufacturers, selling a wide variety of configurations, wildly differing prices, and everybody telling you that theirs is the best buy of the century, it's all too easy to end up with something that won't quite match your needs. What follows is not intended to be the definitive 'this is what you do to ensure results', but hopefully, it will help you to come to the right decision about exactly what you need and the best outlet for you to buy the machine. Forewarned is, after all, forearmed.



THE GOLDEN RULES

Before you do anything, you should ask yourself two key questions:

● What will I use a PC for? Business, games or a combination of both?

● How much can I afford to spend? Set an upper limit as an optimum price (say, £1,000, but of course it depends on your budget) and a top limit, above which you will not (cannot) go, no matter what's on offer (say, £1,200). This gives you a bit of flexibility, but also ensures you don't feel pressured to go over your absolute budget limit.

Next, you need to work out some details of the type of PC you want. If you do want to use the PC for anything processor-heavy, such as games, or graphics packages, you'll need to make sure that the PC you buy is up to the job and won't slide into obsolescence within six months. The following list of specifications comprises PC Review's minimum recommendations for an all-round PC which will cope with entertainment software, and other leisure utilities such as graphics, or music. Remember — we said *minimum*.

ESSENTIALS

Processor: 486 SX, running at 25MHz. Go for 33MHz if you can, and 66MHz if the budget will stand it. Pentium technology — essentially the 586 chip — is now available, but it is still expensive. Warning: "Pentium Ready" or "Pentium technology" are nice pat phrases to be seen on an increasing number of PC adverts. It means the manufacturer claims the machine is capable of being upgraded with a Pentium chip. If you see "Intel Verified" it means that Intel — the manufacturer of the Pentium chip — has tested it with this PC.

● Memory: 4Mb minimum. This is the standard amount which most PCs sold in the high street are fitted with. It is fast becoming inadequate. Eight megabytes really should be the minimum you acquire — if you can afford to pay the extra.

● Operating system: MS-DOS v6 (should be v6.2). DOS gets upgraded with great regularity, and sometimes you will find machines aren't being supplied with the latest version.

● Graphics and display. Go for SVGA (Super Video Graphics Array). VGA is still common and most programs still use it, but SVGA-only is becoming increasingly common.

● Hard drive: minimum of 120Mb.

● Sound card: should be Sound Blaster Pro-compatible. Make sure you get speakers.

● Floppy drive. A single 3.5", 1.44Mb (high density) will do just fine.

● Mouse. A two-button, Microsoft compatible mouse should be included in the package.

● Expansion slots. The clever question to ask here is how many *free* expansion slots there are in the machine you're considering, and 'free' means with unrestricted access. We've seen far too many machines with, say, six expansion slots, two of which are in use, and with another two blocked by cabling — or even by the power supply unit — so that in fact only two are free. Your sound card and graphics card will probably take up two slots, so it really is worth checking.

● Serial and parallel ports. One parallel and two serial ports is a good standard to look for. The parallel port is where you'll want to plug a printer; one serial port can take a mouse (the mouse might plug into a dedicated socket next to the keyboard socket), the other you can add a modem to later.

● Software. It is quite common to get a bundle of software with your PC in addition to MS-DOS. Windows 3.1 (at least) should be included and there is often a business utility and a piece of entertainment software.

If not, why not ask? You may get a dealer who is feeling particularly generous. Nothing ventured, nothing gained.

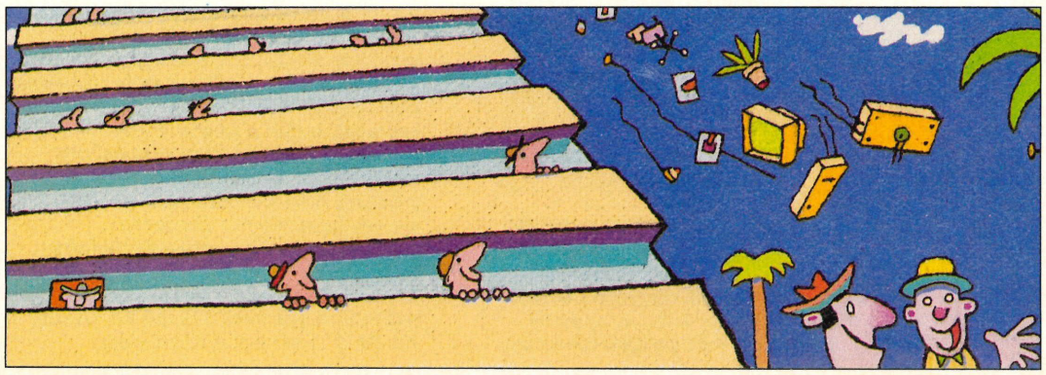
● Warranty details. It is important that you know what cover your PC has. If it goes wrong or you have a technical problem, what do you do? Who is responsible — the dealer or manufacturer? Or both. Find out if there is a telephone hotline you can call. Our survey of the principal hardware and peripheral manufacturers (PC Review Issue 33) gives a good indication of what is available.

● Delivery date. Do not let your supplier be vague about when you can expect your PC to arrive at your home. Get a specific date. And find out in advance who pays for the delivery charges.

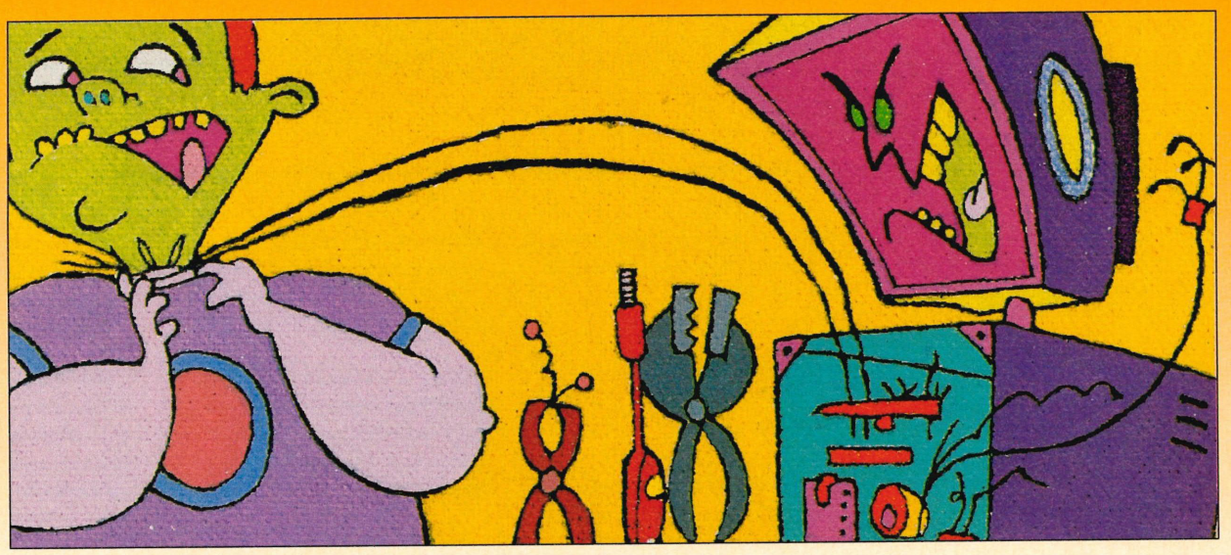
DESIRABLES

● Joystick. Two-button analogue model. Check that the PC you're going to buy has a game port, or buy a game card as well (takes up a free expansion slot).

● Double speed CD-ROM drive. Some software houses have already stated they will have switched to CD-only product by next year. Others will almost certainly follow. If you buy a PC with one we would recommend a minimum running speed of 33MHz and 8Mb RAM. It seems 25MHz, 4Mb machines are already



beginning to struggle with the latest multimedia products. We'd suggest that while a CD-ROM drive is currently highly desirable, this is something you could leave until you find you need one , but prices for double-speed are pretty good at the moment. One reason for holding off might be to wait for prices of triple speed drives to fall.



And how much will this 'minimum' PC cost? We reckon you could get this set-up for around £1,200, including VAT, after comparing prices from the shops. And if you were to scour all the adverts and mail order pages in computer magazines, searching for bargains, you could probably get it cheaper.

WHERE TO BUY

1) The High Street multiple outlet

For most people this will mean Dixons, Currys, or a 'superstore' such as PC World.

Dixons has 200 outlets which incorporate in-store Business Centres and plans to expand this to 350 within three years.

In addition to its high street stores, Currys has about 150 Curry Super Stores. There are eight PC World outlets, in Croydon, West Thurrock, Brentford, Staples Corner, Cardiff, Bristol Parkway, Leeds, and Northampton, with another four planned this year.

Now it may come as a surprise to you to know that Dixons, Currys and PC World are all owned by Dixons itself.

PC World stores are targeted at the second or third time-buyer. The staff receive training direct from the PC manufacturers so they should be able to answer the most technical of questions. The stores have an area dedicated to installation and problem-solving.

And, perhaps more importantly, you have more flexibility in buying a PC which matches your desired specifications. You can have your machines configured to your own standards. But maybe the first-time buyer may find it a little daunting.

2) Independent dealers

Virgin Megastores has 24 outlets throughout the UK with another six planned this year. It is eventually planned that all these stores will sell a "Virgin" branded 486 PC packages. But at the time of writing they are not on sale yet and customer choice does not seem to be the main priority. You buy the Virgin brand or nothing.

Makro, the cash and carry warehouse chain, also sell PC hardware in its 23-strong chain of stores. But you cannot just turn up at these outlets and buy. You have to register with the store and the qualification for that is you run a business or buy on behalf of a business.

Silica has been a well-known name in computer retail and mail order since 1978. Now it is set to raise its profile further by setting up 20 outlets throughout the country specialising in PCs, peripherals and software with the promise of "understanding advice and assistance and unconditional after-sales support," There will also be on-site service teams to "evaluate and fix any technical problems."

Many of these Silica outlets will be found in Debenhams stores. There are also many independent high street dealers and chains operating throughout the land, who at their best, should have a detailed knowledge of product and be willing to discuss your individual needs and construct a system to suit you.

Armed with your set of PC requirements, you can ask the retailer some simple questions about the machines you are being shown. Do not be rushed into buying. Take your time and think about it. Today's bargain offer will more than likely still be available tomorrow.

MAIL ORDER

A flip through the pages of any of the business-orientated computer magazines will reveal a bewildering number of mail order companies, appearing to sell a myriad of PC s — both with known brand names and some with names that you have probably never heard of — plus every conceivable peripheral, gimmick or gizmo. Then there are the manufacturers selling directly.

Mail order remains popular, despite the fact that a number of mail order outfits have gone out of business in the last few years. So is there any way of making sure that you pick one of the good ones?

There is the Personal Computer Direct Marketing Association, an embryonic organisation, which aims to ensure its members operate to the highest standards. It has a code of conduct, strict membership rules, a seal of approval which appears on the advertisements of members. You can contact the Personal Computer Direct Marketing Association at PO Box 48 Royston, Herts SG8 6JS, tel (0763) 262987.

If the worst comes to the worst and things do go wrong and you don't get satisfaction, then you could be in for a long battle to get things put right. You should contact the Mail Order Protection Scheme, at 16 Tooks Court, London EC4A 1LB, as soon as possible.

Buying direct from manufacturers with worldwide reputations may inspire more confidence. Many of the manufacturers operate pre-sales telephone advice services helping to put together the system you desire. They are also very good at supplying information about new developments and upgrades.

The main drawback of this approach is that you somewhat lose the mix 'n' match ability to put together hardware from various sources.

The advice which appears above is an extract from the article "Help! Finding the perfect PC partner", PC Review, Issue 33. The original article contains more details about types of PC and where to buy.

USEFUL PRODUCTS

Dr Solomon's Anti-Virus Toolkit
from £99 (price varies according to number of updates required
S&S International
(0442) 877877

Norton Anti-Virus
£149
Symantec (0628) 592222
Price includes a year's subscription and updates.

McAfee Virus Scan and Clean
£2.50
Shareware version
Popular shareware checker and repair program.

Datasave
£128
International Data Security
(071) 631 0548
As well as virus protection, includes other security programs such as access control and back-up.

Norton Utilities
£139
Symantec (0628) 592222
Disk housekeeping utilities, that come complete with file and disk repair.

PC Tools v8
£139
Central Point Software
(081) 848 1414
Disk housekeeping utilities, file and disk repair.

QEMM 386
£80
Quarterdeck
(0245) 496699
Memory manager for increasing conventional memory.

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 specific to the software the file was created with.

Autoexec.bat: this is a file that you create on your PC which is acted upon every time you switch on the machine and which tailors the PC's configuration.

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 data 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, thus then leaving the PC free for work on some of its other applications.

Bus: the software, hardware and wiring that enables the different parts of your PC to communicate with each other. The expansion bus connects the PC to external devices.

Byte: a unit of data equal to eight bits; more understandably, one character in ASCII (plain text) takes up just 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 rapidly rather than being called up from the hard disk, floppy, 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.

Chkdsk: Useful, but not foolproof, DOS command which when used regularly, will check your hard disk for file errors.

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: this is 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 the place 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 is 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

Premier Mail Order

Please send cheques/PO made out to Premier Mail Order. Access/Visa No and expiry date to :

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Most titles are despatched same day, But can take up to 28 days"

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7th Guest (OEM) ..... CD ROM ..16.99
11th Hour -7th Guest 2 ..... CDROM ..39.99
1942 Pacific Air War 27.99
A320 Airbus Europe 27.99
A320 Airbus USA 27.99
A Train 12.99
Aces of The Deep ..... 3.5/CD ROM ..27.99
Aces of The Pacific ..... CD ROM ..32.99
Aces Over Europe 26.99
Across The Rhine ..... 3.5"/CD ROM ..27.99
Addiction ..... 3.5" OR CD ROM ..22.99
Aegis Guardian of The Fleet ..... CD ROM ..32.99
Alien Breed 19.99
ALIEN LEGACY 26.99
Alone In the Dark 2 ..... 29.99
Al Qadim ..... CD-ROM ..24.99
Ambermoon 22.99
Arcade Pool ..... 3.5"/CD ROM ..12.99
ATP 22.99
ATP California Scenery 24.99
ATP +East & West USA Scenery ...CD ROM ..56.99
ATP Great Britain Scenery Disk 24.99
ATP Hawain Odyssey Disk 16.99
ATP Japan Scenery Disk 16.99
ATP New Facilities Locator 12.99
ATP Scenery Disk 9 Chicago/St Louis/Cincinatti 13.99
ATP Scenery Disk 11 Detroit/Lake Huron 13.99
ATP Scenery Disk 12 New York/Montreal/Halifax 13.99
ATP Western European Tour 16.99
Battledrome Metal Tech 26.99
Battle Isle 2 ..... 26.99
Battle Isle 2 ..... CD ROM ..27.99
BENEATH A STEEL SKY ..... CD ROM ..32.99
Beneath a Steel Sky 22.99
Betrayal At Krondor ..... CD ROM ..26.99
Beverley Hillbillies 16.99
Big Sea 19.99
Bioforge 29.99
Black Hawk 26.99
BLOODNET ..... 3.5"/CD ROM ..29.99
Breach II 26.99
Breach 3 ..... 26.99
Bridge Olympiad 27.99
Burning Rubber 19.99
Burntime 26.99
Buzz ..... CD ROM ..29.99
Buzz Aldrin's Race Into Space ..... CD-ROM ..29.99
B Wing Mission disk 13.99
Campaign ..... CD ROM ..29.99
Companions of Xanth ..... 3.5"/CD ROM ..26.99
Cannon Fodder 27.99
Captive 2 ..... 22.99
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GLOSSARY

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, 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, 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. This interface is for use in 386 and 486 PCs and 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 can be used to enable 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 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 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, 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.

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.

Laser printer: printer which outputs 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 used to carry out mathematical functions by programs which support them.

MCA: stands for Micro Channel Architecture. An expansion bus developed by IBM, originally designed to bring the bus in line with faster 386 processors.

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.

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COMPUTER VIRUSES: HAVE I CAUGHT SOMETHING NASTY?

Without wishing to sound blasé on the subject, viruses are not nearly as common as people think they are.

With reasonable care, you should go through life without ever acquiring a computer virus, although a lot of machine errors do superficially look like viruses to the uninitiated and beginners.

A virus is simply a program which will copy itself from one disk to another (from a floppy to your hard disk, for example) without your consent.

Most commonly, it has been designed to alter the contents of other files, with mischievous or even malicious intent.

There are two main types of virus: firstly, there are those kinds of viruses which copy themselves to your PC's bootstrap loader, a small program in the space on your hard disk called the boot sector.

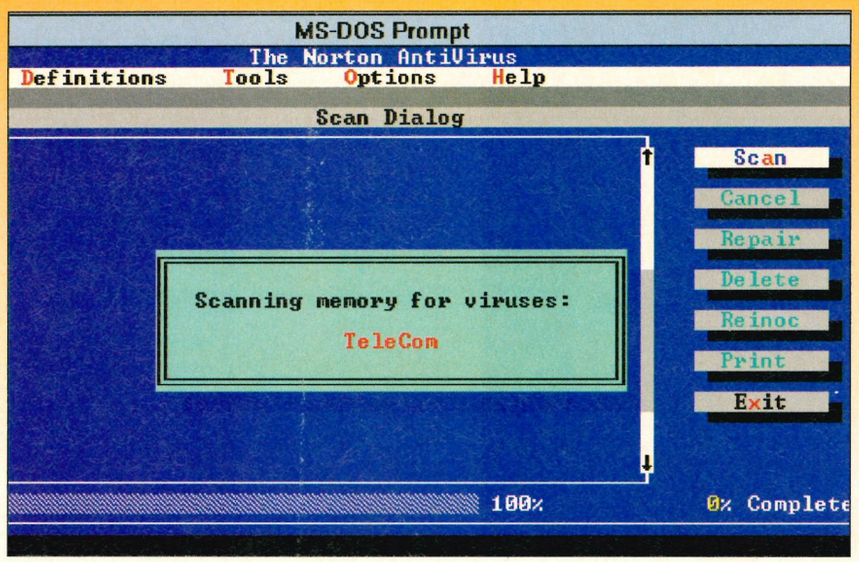
The bootstrap is the program which calls the operating system when you switch the PC on. Floppy disks also have a boot sector as well.

Secondly, file viruses attach themselves to 'executable' files on the PC, ie, files with names ending in .EXE, or .COM. These viruses are activated when you run the infected program.

So, your machine cannot suddenly develop a virus all on its own. You need to have actually copied the file which contains the virus to the machine at some stage, albeit unwittingly. The obvious external sources for a virus to be transmitted to your hard disk are from an infected floppy disk, from an infected file on a bulletin board (rare these days, since any half-decent bulletin board will run its own virus checks), or over a network.

What viruses actually do varies. Early viruses were often more mischievous than malevolent: so for example a message might appear on-screen ("Your PC is now stoned" was the on-screen notification for one of the very first computer viruses, which became known as the Stoned virus), or perhaps the display would go wonky.

Unfortunately, the majority of viruses will try to damage youir PC's system in some way, deleting files, or reformatting part of the hard disk, or even overwriting one of its sectors with garbage.



PREVENTION IS BETTER THAN CURE: HOW TO PROTECT YOURSELF FROM VIRUSES

● Write-protect all program disks so that no files can be copied on to them. On a 3.5" floppy, you write-protect the disk by moving the notch at the top left hand corner on the back of the disk upwards. You should now see a square hole where the notch was previously.

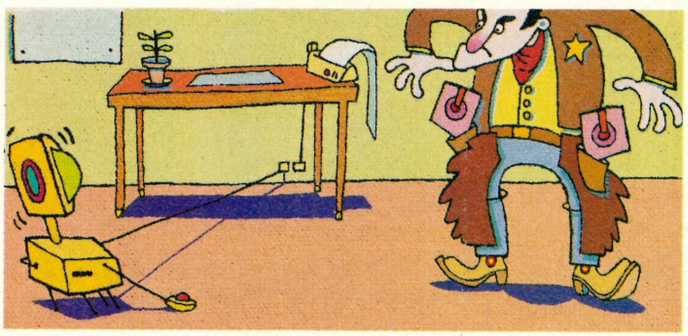
MAKING A BOOT DISK

If you're having difficulties freeing up enough memory to run a program and you're fed up 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 clearly label the floppy as a boot disk.

Because the Sys and Format/s 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 can load these separately from the C:> prompt, after using the boot disk to start up, but it's probably easier to make Autoexec.bat and Config.sys files on the boot disk itself. And the easiest way to do this is to copy over your standard Config.sys and Autoexec.bat files from your hard disk and then remove all the lines except the ones you need for the program to run, such as the mouse driver, sound card settings, or expanded memory manager lines. This at least guards against typing errors when you try to create the new Autoexec.bat and Config.sys on the floppy disk.

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 manual's recommendations override your existing con-

● Keep all important data backed up, so that in the event of an attack, you do not lose everything beyond retrieval.

● Make a system disk (see the panel on Making a Boot Disk elsewhere on these pages), ideally immediately after installing the operating system on a new PC. Write-protect and label it, so in the event of an attack, you have a way to 'clean-boot' your PC.

● Exercise reasonable caution over the floppy disks you use in the PC. There's no evidence that games software is more likely to be infected than business applications, but every reason to suspect that pirated software is more likely to carry viruses than bona fide commercial disks ('real' disk duplication companies have their own virus checkers, and pirated software is more likely to have travelled about from machine to machine).

● Buy a virus protection program — see the Useful Products panel for details of some of the packages available. There are programs which will just scan for viruses without being able to repair them, but you are better off with a more expensive package which will also repair and which is updated regularly to take account of new viruses, particularly so-called stealth viruses which are designed to evade detection. Note also that DOS 6 includes a virus scanner and repair package checker. Use it!

There is probably also a variant of Murphy's Law in operation which states that if you spend a lot of money in an anti-virus program, it will never detect a virus, but if you decide not to buy one, then sooner or later you'll use an infected disk.

If you think you've picked up a virus, or your scanner has announced a virus alert, here's what to do:

● Stop whatever you're doing.

● Switch off the PC.

● Put in a write-protected boot disk – one that you know is clean, see above – in your floppy disk drive.

● Switch the PC back on.

● Run your anti-virus program to repair the damage.

● Now take all your floppy disk drives and run each one through the virus checker.

NB When you clean up after a virus attack, take care to scan *all* your floppy disks. Any disks that you have used while the virus has been dormant in the machine may still have an infected file on them — and may not be the original source of the virus.

After cleaning up the hard disk, you will only re-introduce the virus if you then use an infected floppy disk.

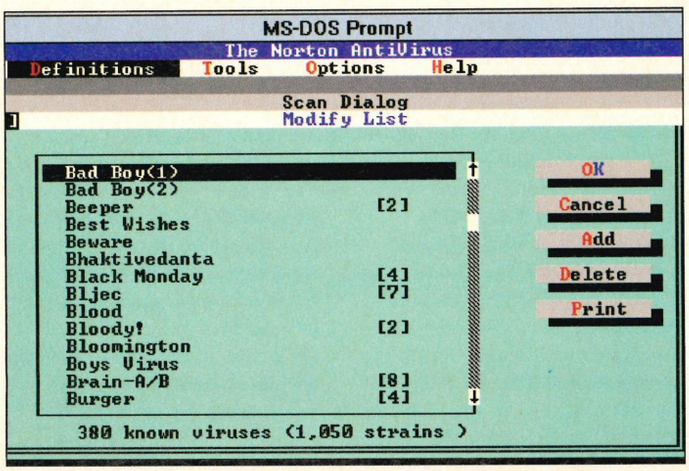
Don't worry unduly. Viruses are not lurking around every corner. Strange, inexplicable things happening on your PC are far more likely to be the result of hardware or software faults, poor configuration, or loose connections. Viruses are rare.

For example, all PC Review's machines are equipped with memory-resident virus checkers which are upgraded monthly.

We use disks from all sorts of places in the course of each day, and in nearly three years, we've only had one virus scare.

Finally, magazine cover disks are generally safe to use.

Any magazine worth its salt checks, rechecks and then checks again for viruses on the cover disk at each stage of production — PC Review certainly does.



GLOSSARY

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 which enables you to connect your PC to the telephone line and send and receive data through it.

Motherboard: the main board for a computer circuit.

MPC: stands for Multimedia PC. A standard 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 run 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 graphics, sampled speech, music, text, etc. Often sloppily used to refer to any CD-ROM program.

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 usually 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 original 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: this is a chip which controls the connection of external devices to the computer. It can often be used loosely to mean the socket, the interface, the back of the PC, etc.

EASY FILE VIEWING

Rather than laboriously typing out 'change directory' commands every time you want to move around your hard disk, there are a number of short cuts you can use which will cut down the amount of keying in needed, and therefore minimise typing errors.

The backslash key, \ (which should be at the bottom left of your keyboard, next to Z), on its own is shorthand for the root directory. Thus,

- **CD** [Enter] takes you to the root directory, no matter where you are currently.
- **DIR** [Enter] gives a file listing of the root directory, no matter where you are currently.
- Two dots (full stops) indicates the next directory 'up the tree'. Let's say your prompt currently reads c:\wordpro\files\letters:
- **CD ..** will take you to the path c:\wordpro\files.
- **DIR ..** will give you a file listing of c:\wordpro\files.

Now, suppose you have another directory under c:\wordpro\files, called 'reports'. Still in c:\wordpro\files\letters, type

- **CD ..\REPORTS** to move directly to the reports subdirectory
- **DIR ..\REPORTS** for a file listing of the reports subdirectory, without moving out of the letters subdirectory.

Incidentally, that space between CD/DIR and the two dots is optional — we have included it here for clarity, but you could omit it.

Moving between directories in the root directory is even easier. From c:\wordpro, typing

- **CD \GAMES**

takes you to the GAMES directory.

- **DIR \GAMES**

gives you a file listing of the games directory.

EASY FILE VIEWING

Typing DIR to see a list of files in a directory is all very well, but if there are more files than there is space on-screen, they will whizz past you too fast to read. There is an unusually vast number of 'switches' (letters coupled with the forward slash key) you can use with the Dir command to get a more sensible file listing, (see the Easy File Listings panel opposite for a complete list).

And you can combine these. For example

DIR /W/S/P/A:r/O:n

will display, in wide format, all the read-only files, in alphabetical order, in the current directory and all subdirectories, and it will pause at the end of each screenful.

Of course you can use wildcards:

DIR /W/S/P/O:s *.bat

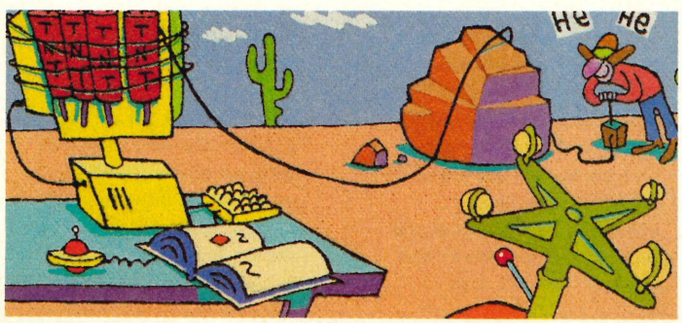
will display all the files with the extension .BAT (batch files), in wide format, pausing after each screenful, with the smallest batch file appearing first and the largest file last, then going through subdirectories as well.

If you find one of these types of display invariably useful, you can set this as your default way to view file lists after the standard DIR command. You can add the following command to your Autoexec.bat file, in which case it will determine the way Dir behaves every time you use the PC, or you can type it in at the C:\ prompt for use in a single session with the PC:

SET DIRCMD=/W

This means you'll get a wide format list every time you type DIR. Correspondingly, SET DIRCMD=/S means you see subdirectory listings as well every time you type DIR.

You can also do this with wildcards (such as SET DIRCMD=*.bat), but I'm not sure why you might want to actually do this.



EASY FILE LISTINGS

DIR /W	**Displays files in 'wide' format, in five columns across the screen.**
DIR /P	**Pauses at the end of each screenful. You press a key when you're ready to see the next screen.**
DIR /S	**Displays all files in subdirectories as well as the current directory.**
DIR /O	**Displays first the subdirectories in alphabetical order, then the files in alphabetical order.**
DIR /O:N	**Displays files and subdirectories together in alphabetical order.**
DIR /O:E	**Displays files and subdirectories together alphabetically by extension (the three letters after the full stop in a filename).**
DIR /O:D	**Displays files and subdirectories together by date and time, earliest first.**
DIR /O:S	**Displays files and subdirectories together by size, smallest first.**
DIR /O:G	**Displays directories first in MS-DOS order (see below), followed by files in MS-DOS order.**
DIR /O:-N	**Displays files and subdirectories together in reverse alphabetical order.**
DIR /O:-E	**Displays files and subdirectories together in reverse alphabetical order by extension.**
DIR /O:-D	**Displays files and subdirectories together by date and time, most recent first.**
DIR /O:-S	**Displays files and subdirectories together by size, largest first.**
DIR /O:-G	**Displays files first in MS-DOS order, followed by directories in MS-DOS order.**
DIR /A:H	**Displays only 'hidden' files, not normally visible in a directory listing.**
DIR /A:S	**Displays only 'system' files, not normally visible in a directory listing.**
DIR /A:D	**Displays only 'directories, rather than files. DIR *. is less long-winded, but this will also display files which do not have a three letter extension.**
DIR /A:A	**Displays only files which have changed since lasted backed up using MS-DOS's Backup command, ie, if you don't use the Backup command, this will be all your files.**
DIR /A:R	**Displays only 'read-only' files.**
DIR /A:-H	**Displays all files except 'hidden' files. Although these wouldn't normally be displayed anyway, the point here is that *all* other files are displayed.**
DIR /A:-S	**Displays all files except 'system' files, not normally visible in a directory listing. As above, this means that hidden files that aren't system files will show up on this listing, where they wouldn't with plain old DIR.**
DIR /A:-D	**Displays only files, not directories — and will display *all* files, including hidden and system files.**
DIR /A:-A	**Displays only those files that have not changed since they were last backed up using MS-DOS's Backup command.**
DIR /A:-R	**Displays all files except read-only files.**
DIR /B	**Displays simply the name of the file or directory — no date, no size, no info.**
DIR /L	**Displays files and directories unsorted and in lower case.**

HOW DOES MS-DOS USUALLY LIST FILES?

MS-DOS looks as though it saves your files by date, but it doesn't — quite. If you create a directory, then create some new files and save them, when you type DIR you'll find the file list arranged in the order in which you created them. However, DOS order starts to look confusing when you delete one or more of those files and create and save new ones. Now, DOS, puts each new file into a slot made vacant when you deleted files earlier.

If it runs out of 'slots', then the next files it saves will go at the end, as you would expect normally.

Illustrations: Stephen McFarlene

GLOSSARY

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 being worked on.

Read-only: a file or disk whose contents can be read or copied, but cannot be changed.

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.

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 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.

The SCSI is 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.

Shareware: Shareware is actually software designed to be used and distributed freely on a trial basis, but for which users are expected to register and pay if they wish to use it regularly.

Shareware is subject to copyright.

Silicon: the most common semi-conductor material used in the manufacture of electronic solid state devices or chips.

SIMM: stands for Single Inline Memory Module.

Board with a set of memory chips for comparatively easy RAM upgrades.

Smart card: a plastic card about the size of a credit card which incorporates a micrporocessor and a ROM chip and will store data and programs.

Sound card, soundboard: a soundcard or soundboard is an item which plugs into a spare expansion slot and enables programs to play music and sound effects through it, coupled with a set of speakers.

SVGA: stands for Super VGA (Video Graphics Array, see below).

A general standard describing graphics modes of 800x600 and up to 1024x768 pixels with at least 256 colours on-screen.

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 it will stand on the floor.

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 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.

Virtual Reality: a much abused term for computer technology which aim to simulate real life.

Typically, this involves kitting out the user in a surround vision helmet with headphones and sensor equipped gloves.

Virus: a program which has been specifically designed to alter the contents of other programs, with differing effects but usually rendering the programs unusable.

Virus checker, virus scanner: a program that will check files for the presence of a virus, usually by looking for unexpected patterns in the file contents.

Virus killer: a virus killer is a program which will remove the virus elements from an infected file.

Once installed the result of running a virus killer is that — optimally — it repairs 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.

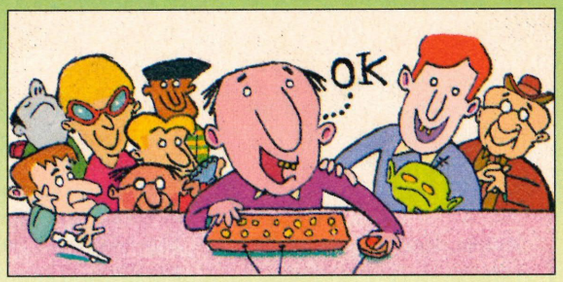
XA, CD-ROM XA: stands for eXtended Architecture. CD-ROM with additional video capabilities.

XGA: 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.

Q+A



Is your hardware making your head ache? Is DOS driving you dotty? If you've problems with your PC, share them with Mike James. He'll do his best to help you.

Automatic mouse?

Q I would like to install my mouse into my Autoexec.bat file so I can use it with some games. My mouse is installed in its own file, so if you can let me know how to shift the file to the Autoexec.bat it would be very much appreciated.

I also have an SVGA monitor. Do you think that I should be able to get 256 colours through it, because I recently bought a CD-ROM and I heard that if you set your colour setting from Windows WinSetup, you will get better colour for your CD-ROM. I have tried a few settings but when I reboot and start Windows the screen goes black or the writing is far too small to read properly.

John Miller
Australia

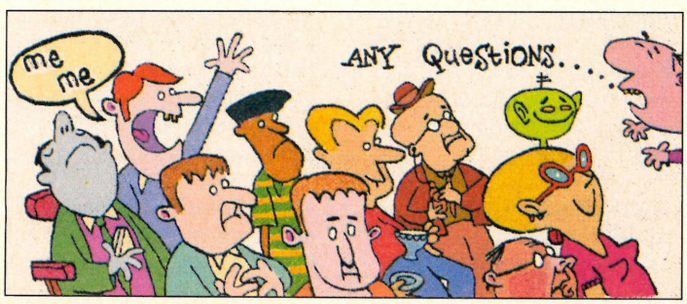
A *The mouse part of your question is fairly easy to solve — but it does depend on exactly what you type to get your mouse started. Most users simply type MOUSE at the DOS prompt, but it can be PCMOUSE, MSMOUSE or almost any variation on the word "mouse". As long as you know what it is, then all you have to do is add it to the Autoexec.bat file. As long as you have MS-DOS 5 or later you can use the Edit command to add the line*

MOUSE

or whatever to the batch file.

The whole point is that the Autoexec.bat file is processed by MS-DOS as if it contained lines that you were typing on the keyboard. So, yes, you really can add anything to it that you normally type manually and want to happen automatically in the future. For example, if you always start Windows by typing WIN after your machine has started, then add that to the end of the Autoexec.bat file and Windows will run automatically.

Sounds good doesn't it? There are some problems, though. Many users find that adding the mouse command to their Autoexec.bat file isn't a good idea because it reduces the amount of conventional memory available and interferes with programs that supply their own mouse driver. So be on the look-out for such problems and be prepared to take the command back out of the Autoexec.bat file if necessary.



The last part of your question is fairly easy too. The number of colours that a monitor supports is infinite! You can attempt to show any number of colours that you like. Of course, beyond a few million they get difficult to distinguish but that's a minor problem.

The number of colours actually displayed is determined by the video card in your system. If this supports a 256-colour mode then the monitor certainly will.

Now when it comes to resolutions, the story is very different. All monitors have an upper limit on the number of dots and lines they can display. Unfortunately, describing a monitor as SVGA doesn't mean that it can make use of all of the common SVGA modes. For example, your monitor might support only 640 x 480 at 256 colours and it could just about describe itself as SVGA even though this is one SVGA mode that all VGA monitors can support! The standard SVGA resolutions are 640 x 480, 800 x 600 and 1024 x 768 and all of these can be used with 256 colours. My guess is that you are selecting a higher resolution mode than your monitor can cope with. Try 640 x 480 at 256 colours — if that doesn't work there is something very strange going on.

Where's the Overdrive?

Q I have a 33MHz IBM 486DX, with 4Mb RAM. I would like to upgrade it via the new Overdrive chip. I have looked inside the PC for the chip to be removed, but I have been unable to find it. Could you give me an idea of where it is and if I can use the new Overdrive chip with my PC? Could you also tell me where I can purchase the Overdrive chip? (Forgive my ignorance, I've only had the PC two years!)

Also, I have £800 and I would like to purchase a sound card. I currently have a Sound Blaster and a CD-ROM drive. So I would appreciate it if you could please give me some advice on what to buy and whether it would be compatible for my make of computer?

Philip Sanderson
York

A *Firstly to your overdrive query. The reason you can't find a chip to remove is that there isn't one! The whole point of the Overdrive idea is that it was a planned upgrade and an empty socket was provided for the purpose. All you have to do is plug the new processor into its waiting socket and off it goes. You don't have to remove the existing processor because it just sits there on the motherboard doing nothing at all. The overdrive socket is usually easy to find because it is big, usually a bright colour and looks different from the other sockets that chips are sitting in. Often it also has a small lever at the side which locks the new chip into the correct place.*

You can buy Overdrive chips from a number of sources specialising in upgrades — try Memory Direct on (0252) 316060.

Personally, I still think that the price of Overdrive chips is unreasonably high. For example, you can

buy a complete replacement motherboard for the same cost — surely there is something wrong here?

Finally — with a budget of £800 there is certainly no problem in finding a good sound card and CD-ROM if that's what you want. The trouble is that you don't say what you want the sound card for.

If you just want to use it with games, multimedia and generally playing around, then there probably is little wrong with what you've already got. But if you wished, you could move to 16-bit sound cards which offer CD quality sound. Mind you, the only time I can notice the difference between 8-bit and 16-bit sound cards is when I am listening to one or two good multimedia presentations. Most users with 16-bit cards don't get the best out of them anyway because they connect a pair of small cheap speakers which miss the higher quality sound.

To hear a real difference connect a pair of full size units, preferably through a hi-fi amp, and stand by to be amazed.

If creative music is what you are interested in, then the traditional solution is a Roland sound card, but these days the Sound Blaster AWE32 takes some beating or a WaveBlaster added to a Sound Blaster 16. Both of these will drive a CD-ROM and you can get matching drives or complete multimedia upgrade kits based on them. Check the comparative review we did on high-end sound cards in the last issue (September 1994) for specific details and comments.

Lemmings true to form?

Q I seem to be having a slight problem with Lemmings 2, I say slight as I am trying to remain calm whilst writing this letter. The problem is that when I run the game by typing L2, then click on the map and play the first level of each island successfully, when I next click on "Replay level or Next level" the game sends me back to the menu. Doing the same with "Practice, Intro, Load" also does the same. Please could you help, I am using a 386SX and a 486DX. The problems are on both. I desperately wish to see the intro and the next 98 levels of the game. I have read in other magazines of people with the same problem.

D Sutherland, Swansea

A *There does seem to be a problem with Lemmings — they keep committing suicide. I have no idea why but every now and again the Lemmings program becomes corrupt. This has happened on machines that haven't been used since the last time the program ran correctly. I even suspected for a little while that this must be some sort of copy protection as the only cure seems to be to reinstall the program from the original diskettes — but that would be paranoid.*

Does anyone know any more on this subject?

VESA driver problems

Q I bought Theme Park on CD-ROM not too long ago and I'm having a bit of trouble with it. I want to be able to toggle the screen mode to high resolution, but no matter how hard I try I can't seem to be able to do this. It is probably a simple thing to do, but it has got me baffled. I have Cirrus Logic 5422 Windows Accelerator and I think it may have something to do with it. I've tried lots of different resolutions from the set-up program inside the file manager and this works in Windows but not in Theme Park.

Also I keep getting the message "Cannot load high quality 8-bit sound. Trying lower quality 8-bit sound". In the manual it says it could be down to the fact that I haven't got 8Mb of RAM. I've tried different sound set-ups but nothing seems to make it work.

Alexander Cartlidge Buckinghamshire

A *To set up a graphics mode for Theme Park you have to run its install program again. Don't worry, it doesn't install the entire software over again unless you ask it to! While in the install program you simply select the SVGA resolution mode and when you next run the program it will make use of this mode — as long as your video hardware can support it. Now, it is at this point that you probably tell me that of course it can support it, because you can use SVGA modes in Windows. For Theme Park this isn't enough! It needs a VESA standard driver to make use of SVGA modes — and not all video cards have a VESA driver built into their hardware. It sounds as if your card doesn't, because if it did it would just work. What you have to do is go back to the diskettes that came with your machine or video card and search for driver with VESA in its name. When and if you find it, copy it to your hard disk and type its name before you start Theme Park.*

Theme Park does need a lot of memory to run its high quality sound and the estimate of 8Mb of RAM is reasonable.

I'm afraid the only solution is to add more memory.

A new way to run out of memory!

Q I can't seem to run Doom v1.2 on my 386DX40 with 4Mb of RAM. After installing the game and trying to run it, the following strange lines appeared on my screen.

V_Init: allocate screens.
M_LoadDefaults: Load system defaults.
Z_Init: Init zone memory allocation daemon.
DPMI memory: 0xef000, 0xdf000 allocated for zone
Insufficient DPMI memory!

Needless to say, I don't have a clue what's going on or even what DPMI memory is! I've tried a boot disk to free up as much memory as possible but I still got the same message. This DPMI memory is the only thing holding me back from regressing into a mass of mindless violence and carnage, so what do I do now?

Steven Carr Edinburgh

A *Congratulations — you are the first person to write and ask me about running out of DPMI memory! First I have to tell you a little bit about what DPMI memory is — don't worry, it isn't difficult. In fact it isn't as difficult or as technical as the error message you quote!*

There are a number of different sorts of memory that you can make available to programs. Conventional memory, ie, the first 640K or so, is the only sort that all programs can get at without doing special things. After that programs have to make a choice between using expanded memory (EMS) or extended memory. In the old days most games would ask for EMS expanded memory, but these days they are increasingly asking for extended memory (XMS).

The standard way of allocating extended memory is called XMS and this is implemented by the Himem.sys driver that is usually loaded at the start of the Config.sys file. Once this driver is in place, you can opt to load Emm386.exe which can convert some of the XMS memory to EMS memory for programs that need it.

Don't worry we're nearly there! DPMI is a slightly more advanced standard for using extended memory. It stands for DOS Protected Mode Interface and it is the memory management option used by Windows, for example. The important point is that DPMI is an extension of XMS and this means you have to have XMS memory for it to operate. In other words, running out of DPMI memory is caused by not having enough XMS memory in the first place.

So why are you getting an "Out of DPMI" memory error with a 4Mb system? The most likely reason is that your clean boot disk doesn't load Himem.sys in an effort to save conventional memory, and this means that there isn't any XMS memory. Add a line that loads Himem.sys to the Config.sys file and see if that works. Other possibilities are that too much extended memory is being used for other things — such as a Smartdrv cache, or loading drivers into upper memory and so on.

To find out, all you need do is use the MS-DOS Mem command and see what it tells you about the amount of XMS memory available before you try running Doom.

Configuring Windows

Q I own a Commodore Powerline 486SX 25 with 4Mb RAM, 512k VRAM and SVGA monitor. I recently bought a CD-ROM drive to run MPC programs and I need to configure Windows to run in 256 colours. Could you please tell me how to do this?

Steve Sheppard Cornwall

A *You need to get the Program Manager to run the Windows Setup program which is in the Main group. Using this and the command Options, Change System Settings you can select any video mode you want to use.*

The only "but" is that you have to have a suitable graphics driver for the video card that your machine has installed. And as you only want to go to 256 colours, you should be safe in selecting the standard SVGA 480 x 350 256 colour driver which works with most of the standard video hardware.

If you wanted to use higher resolutions then you will almost certainly need a specific driver for the card. Often such drivers are pre-installed by the manufacturer and do appear on the list of possibilities by default. If you find that you have selected a video driver that doesn't work, all you have to do is start your machine in DOS, change to the Windows directory, ie, CD\WINDOWS, and use the command SETUP which allows you to reconfigure Windows from DOS.

Can you tell me why my mouse dies?

Q After your comments about problems that old mouse drivers can cause, I bought a special offer mouse to get the very latest in hard-

Q&A UPDATE

Lightning never strikes twice . . . or does it?

The heavy thunderstorms back in July/August may seem a long way off as you are reading this, but for some readers the memory may be painful. We rely on the fact that the power supplied to our machines is always 250 volts and nothing but 250 volts. But lightning storms are not the only cause of power fluctuations. There are times when the voltage can fall 10 percent or 20 percent below the usual norm for half a second, and sometimes more. If the voltage dips for more than half a second you can generally see the effect as a dimming of the lights.

A voltage drop of this type is generally referred to as a "brown-out" as opposed to a complete loss of power which is a "black-out". How often a brown-out occurs depends very much on where you live. In rural areas with lots of local overhead wires they occur on windy days. In cities with large factories connected to the same local distribution grid they occur at times of peak load. The point is no matter where you are there is usually something that can cause such power losses to occur.

What effect does a brown-out have on your PC? This is a difficult question to answer and there is a lot of folk law concerning the matter. In principle the power supply unit in the machine should be capable of compensating for quite large changes in the input voltage range, but there are lots of reports of strange machine behaviour going away as soon as brown-outs were eliminated.

As well as low voltage there are other problems with the mains input. In particular, there are high voltage spikes. These are generated by motors, radio transmitters and all manner of electronic hardware. Your computer is even responsible for injecting quite a lot of noise into the mains supply. If you don't believe me try using a wireless intercom — the sort that uses the mains cabling to communicate. Of course the absolute killer of a pulse — and I mean this literally — is caused when the a mains cable is struck by lightning. In this case the mains voltage can rise to thousands of volts for a few milliseconds and sensitive equipment, such as your PC, generally doesn't like this sort of treatment.

So what's the solution? The lightning risk can be minimised by the simple act of disconnecting your machine from the mains supply. Of course this assumes that you know that there is a lightning storm nearby and remember to do it. An easier solution is to buy a surge suppression plug or adapter. These protect your PC by blowing themselves should the voltage get above a reasonable level. Of course if the worst should happen then you will have to replace the surge protection plug or adapter and they are not cheap (£10-£15). If noisy mains supply is likely to be a problem then you need a filter plug or adapter. These contain components that remove the noise and spikes from the mains supply, but they may not include surge protection, so you will need to check this fact. If your machine does strange things like locking up or rebooting at random times and you have tried everything else then it is worth thinking about fitting a filter plug.

Surge suppressers and filter plugs are handy, but they do absolutely nothing about the brown-out problem. The only protection against brown-outs is to fit an uninterruptible power supply (UPS). This contains a battery that is normally kept charged up by the mains and if the mains voltage drops or is cut off completely, then the unit uses the battery to take over and restore the normal working voltage. A UPS is usually a separate unit and all you have to do is plug your machine into it.

Although I have my doubts about the value of surge protectors and filters I am very clear about the value of a UPS. The worst thing that can happen to a PC is to be switched off while it is being used — and a UPS protects against this and all other manner of voltage problems.

Until recently, I wouldn't have bothered you with this information because a suitable UPS would have cost £200 or more and frankly this is too much. However the price has now dropped to £100 or so and it might be worth considering one if your mains supply is in any way doubtful or if you just want to be sure. UPSs are sold in different powers and in most cases all you need is a 250 watt unit. This is enough to power a PC with the usual complement of drives and its monitor. If you have a lot of extras connected to your PC you can still use a 250 watt unit — just don't bother connecting the monitor to it! A unit of this size will keep your machine running for five to ten minutes in the case of a complete black out and take over during any number of brown-outs. Worth thinking about . . .

■ Mike James

ware/software. It usually works very well, but for no reason that I can discover, sometimes simply stops working. I have tried cleaning it and generally plugging and unplugging it. I have restarted the machine and reinstalled software all to no effect. The strange thing is that it always starts to work again for no apparent reason after about 30 minutes or so. I have also noticed that the time of day it stops working is always about the same, irrespective of whether I've just switched on or have already been working for hours, although some days it works fine. Just what is going on?

Janet Wilson, Cardiff

A *I am fairly certain I know what the problem is, but you might not believe the answer. Your mouse is light shy! Most mice have an optical sensor that counts the rotation of a wheel as the mouse is moved. The optical sensor works in the infra red, but it is still effected by visible light. Some low cost mice have very thin plastic cases which let the light in if they are used in direct sunshine. The reason your mouse stops working at the same time is all a matter of when and where the sun shines.*

The solution is either to shield your mouse behind something on the rare days when the sun is shining or take its cover off and paint the inside with black paint — the type used on plastic models.

PS This isn't a late-running April Fool's joke! Honestly.

Slow joysticks

Q I have recently upgraded my computer from a 386SX-16 to a 486DX-33. Ever since I have upgraded I have found that whenever I plug in my joystick, the programs I am running slow down to around half the speed they are running without the joystick plugged in.

My present joystick is a Quickshot Warrior 5 Plus and the joystick card that I plug it into is the original one that came with the computer when I first bought it.

Please can you help, because I am having a lot of trouble playing Rebel Assault with a mouse.

D Clutterbuck Australia

A *I have heard of this problem before, but never been able to get a close look at a machine that behaves in this way. I think why this problem occurs is because the joystick interface works via a timing mechanism. The program sets a position measurement going and then waits for it to complete. The length of time it has to wait tells it where the joystick is.*

Why this causes a problem is because the first PCs couldn't do anything very quickly and so the time period had to be relatively long for it to be timed accurately.

When faster machines became the norm the longer time period became unnecessary and it fooled programs that used very simple methods of measuring it.

To get around the problem, joystick card designers added a switch that could be used to increase or decrease the average time that the program had to wait.

If your joystick card has such a switch then try altering it and see if that speeds things up again.

Given that you moved the card from a 386SX-16 to a 486DX-33 the overall speed-up should be by about a factor of four.

The joystick shouldn't slow it down by any noticeable amount unless the software is doing something odd or the joystick interface is broken. If you can't adjust the speed of the interface card then I would suggest trying a new one.

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Straight paper path for all media	YES	-	-	-	-
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PCMCIA card slot	YES	-	-	-	-
Scaleable resident fonts - in HP LJ III emulation	8	13	26	8	-
Resident bit-mapped fonts	14	18	-	7	7
AGFA Intellifont scaleable font technology	YES	-	YES	YES	-
HP LaserJet III emulation included	YES	YES	YES	YES	-
EPSON FX emulation included	YES	YES	-	-	YES
IBM ProPrinter emulation included	YES	YES	-	-	-
Standard tray capacity	100	150	100	100	150
Cost per copy**	1.65p	1.80p	2.40p	2.10p	1.95p
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Able to print on OHP film	YES	YES	YES	YES	YES
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Printing - noise level	<48dB(A)	<50dB(A)	<48dB(A)	<46dB(A)	<45dB
PC independent plain paper fax option	YES	-	-	-	-

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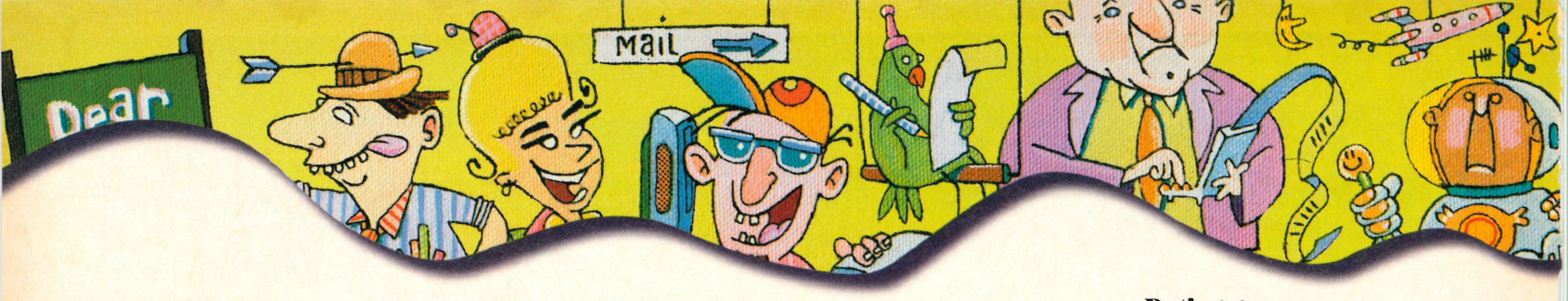
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Letters

PC Review welcomes your opinions on just about any PC-related subject. We reserve the right to edit your letters, and we'll also assume correspondence is for publication unless you state otherwise.

The sweet smell of PC

My friend and I have just thought of a completely new and revolutionary add-on for the PC — the smell card.

Our smell card would enable your PC to produce different smells according to your situation and location in a computer game.

For example, you would be able to smell the sweet perfume of a young princess as you held her in your arms in Defender of the Crown. You would be able to smell the pleasing scents of the flowers and the plants as you wandered through the woods on Meele Island in The Secret of Monkey Island. You would be able to smell the nauseating aroma emanating from the public lavatories you have just built in SimCity.

As you can see the smell card would greatly enhance the atmosphere produced by games and would probably become an essential add-on for all PC owners.

One word of warning though, be careful when you're playing the final part of Monkey Island 2. LeChuck's underwear doesn't exactly smell as sweet as roses.

Steve Martin
Bearsden, Glasgow

Have you considered seeking professional advice?

The long wait

I am just writing to say a huge thanks for your July issue.

Why? Because I have decided that that particular issue receives the most coveted accolade of "Most Exciting PC Magazine Ever Read By Me" because of a simple paragraph on page 46 previewing a new Cryo game, Commander Blood.

I've had to wait six years for the sequel to my favourite game ever to appear and now it looks like the long wait is almost over. Well, except I will have to hold my breath until Christmas.

I await a preview in a later issue, and continue to enjoy reading your excellent magazine.

Sam Jeffreys
Poole, Dorset

Join the Eire force

The PC Pilots Club of Ireland was formed in October 1993 by Terry McGee and Ian Broni. As we have been flying serious flight sims for over three years we decided to form a club and get to know other PC pilots. The club is for non-combat flight simulation users, who would like to share ideas, views, flight modes, aircraft scenery files and get free upgrades, demos and help on system and software problems.

We issue a newsletter every quarter in which we give news on products, software houses, upgrades, and we also review new products. We also include a disk with the newsletter on which are scenery files, aircraft, demos and upgrades amongst other things.

As I am a dedicated reader of PC Review (my first was Issue 6, April 1992) I would like to ask you to mention the PC Pilots Club of Ireland in you magazine. I know you have many readers in Ireland and we would welcome new members from anywhere, not only Ireland.

For any interested, the address to write to for details is: PC Pilots Club of Ireland, 1(B) Birchdale Close, Kinsealy Court, Swords, C. Dublin.

Terry McGee
C. Dublin

Dating game

Firstly, I would like to congratulate you on a brilliant magazine which covers all aspects of PC gaming. But I would also like to point what I can only assume is a mistake.

In the recommended section (page 98) of the August issue, you had a competition to win the game Theme Park. In it you said that all the entries had to reach you by July 10 1994. Now I got the magazine on the 20th of July, which was the first day it was on sale in our local newsagents. So I assume that you meant August 10 1994 which would be a much more reasonable time to close the competition.

Uchendu Nwachukwu
Den Haag,
The Netherlands

There's just no fooling you, is there, Uchendu? I can see we'd have to get up very early in the morning to catch you out.

Answers, please

I'm confused. Dates on competition forms don't agree with those in the

COMPETITION WINNERS

We've been getting a bit behind with announcing winners of late, so this issue we're doing a bumper batch of competitions to catch up a bit. (There are more over the page.)

Sound FX competition (Issue 32)

The Sound FX Classic uses both wavetable and FM synthesis (answer C), GM stands for General MIDI in this context and Gloria Estefan sang with the Miami Sound Machine. The Sound FX Classic 3000 card goes to B Allen, of Burton on Trent; the Sound FX 16 to Sue Martin, of Bishopston, Bristol, and the Sound FX 8 to Andrew Watson of Stockton-on-Tees, Cleveland. Thanks to everyone who entered.

Divil's Delight (Issue 32)

"Brownie — because it's the only one that's edible" ... "Puck — he's an elf in Twelfth Night" *(surely Midsummer Night's Dream? Ed.)* ... "Brownie — the others are not eligible to join the girl guides" ... "Buggane — no such word". No, no, *no*. The answer is Pan, because he was a Greek God, while the others were all fairies or sprites. Well done to the following winners (although some of the wrong answers were vastly more entertaining):

First prize of an Addup CD-ROM Sound Card Solution: T Johnstone, Blaydon, Tyne and Wear. Five second prizes of Gremlin's Litil Divil: Darren Rimmer, Warrington; Ben Gannaway, Bridgwater, Somerset; J Whithouse, Lyndhurst, Hants; Mr D Heath, Coalville, Leics; Ian Toal, Craigavon, Co Armagh. Ten third prizes of a Gremlin T-shirt: Christopher Debrevil, Emsworth, Hants; L Surridge, Harlow, Essex; David Foster, Basingstoke, Hants; David Bird, Frenchay, Bristol; Mr M Butcher, Birkenhead, Merseyside; Frank McEvoy, Drogheda, Co Louth, Eire *(Thank goodness, an overseas winner at last. Ed.)*; Peter Skelhorn. Reading, Berks; Charles Williams, Coventry; Richard Knight, Maidstone, Kent; N Curl, Coventry.

accompanying blurb. It says send the answer on a postcard, then it says send the form. Competition page numbers aren't listed in the index. The July issue said you could send all entries in one envelope. No mention this issue.

C.M. McDowell,
St Lawrence, Jersey

Point one: see the above letter. Point two: ideally, we'd like you to cut out the entry form, stick it on a postcard or the back of a sealed envelope and send that. You may photocopy the form in order to keep the magazine intact. You may reproduce your own version of the form unless it specifically states otherwise. You may enter via e-mail. You may enter via fax. You may enter on tablets of stone, or send your entry in via winged messenger if you wish. All we do is make some helpful suggestions. Point three is a fair cop, and consider it remedied. Point four: all we're suggesting here is that you can save money on stamps and every couple of months or so, we remind you of that. Hope that clarifies it.

Cooke's humble pie

Software prize WINNER

After reading your feature is issue 34 entitled Very Seedy ROMS? I felt I had to write to say Steve Cooke was a bit hard on CD.

He commented on CD-ROMs being around since 1988, but they were only just starting to take off in terms of software support. He also said that in 1988 they were nowhere near as advanced, popular or affordable.

I think it was also unfair to say that soon people could be after a 600Mb hard disk instead, after all that would mean only one game is available at a time and installation would take ages.

Sure, hard disks are faster but CD-ROM drives are getting faster all the time and games developers have been quoted as saying that CD-ROM games will be developed to get round the problem.

As for compatibility problems, this is nothing new to PC users. And not everyone has them. I haven't yet.

I do agree that CD-ROMs are not the perfect format, at the moment anyway, because most drives are currently relatively slow and I hate the idea of going back and swapping disks. I thought I had left that behind with my trusty Amiga.

I do agree with Steve regarding the fact that most of the encyclopaedia and edutainment CDs are useless.

However, I am very satisfied with my CD drive, a Toshiba 3401 which I have had for six months and I do prefer CD games such as Sam and Max, Rebel Assault and Theme Park where you can go on the rides.

This year looks like the one where releases use more of the format's potential and I can't wait for Inferno CD or Doom 2 CD.

Simon Flannery,
Coventry

Unbalanced

Having just read Steve Cooke's Very Seedy ROMs article I feel a couple of points should be addressed.

1) He states that most CD software is "unmitigated crap" and that "there hasn't been a single one I would buy that couldn't have been published on floppy." Does this mean he would rather not play the talkie versions of Dune, Sam 'n' Max or Day of the Tentacle, but the floppy versions instead, or does he think the talkie versions could be put on to 200 1.44Mb disks?

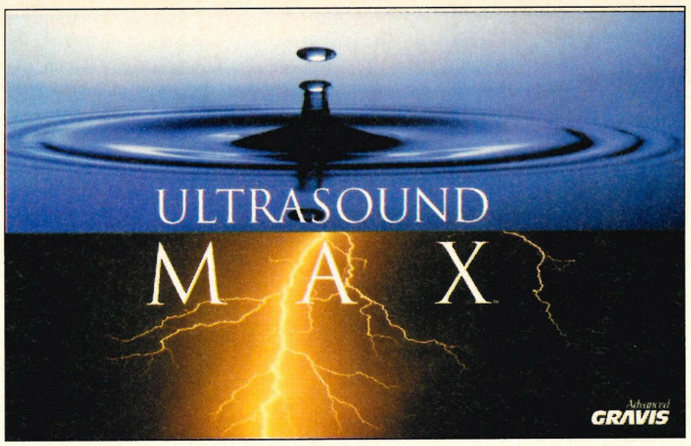
2) He compares a CD-ROM drive with a 600Mb hard drive — granted these hard drives are becoming affordable, but surely the point of CD title is that it can take up all 600Mb of space.

I don't think Steve would be too pleased if he bought a 600Mb hard disk and titles started to appear using his entire hard disk (not to mention the number of floppies that would also be needed!)

The point of CD is that of getting 600+ Mb of data one one convenient disk. It is a completely different means of storage to a hard disk.

3) Judging by his selection of CDs in the So You Think I'm Joking section (no games, I notice), it appears that all he had ever seen on CD was poor products. All this means is Steve has been unfortunate enough to miss some of the better titles.

Mark Topping
Bath, Avon



DisGUSted

I have a complaint. Over and over again it seems you have chosen to neglect Ultrasound. Of course, you are not alone in this. It seems that most of the English mags have left out information on Gravis UltraSound support many times. This is very unfortunate and can cause people not to buy GUS because of the belief of lack of support.

Something much worse is that TIE Fighter supports AWE32, which was released only a few months ago, and not UltraSound which has been on the market for over a year.

It seems to me that there are more people who own an UltraSound card than an AWE32, so it doesn't make sense to give TIE Fighter AWE32 support and no GUS support. If both cards were supported it would have made perfect sense. But to prioritise a card with a smaller user base over a card with a larger user base seems really stupid and will upset a lot of people.

In addition the AWE32 is fully compatible with Sound Blaster and can be used with TIE Fighter , GUS and SBOS will probably sound awful or slow it down — if SBOS works at all, that is. I used to regard LucasArts as the best software house around, but not after this.

Frank R Børresen
Moss, Norway

Seems a little unfair. PC Review has been a hotbed of discussion over the Gravis UltraSound over the last few months, and we did include UltraSound patch files and support files for various games on our first cover-mounted CD-ROM (Issue 31, May 1994).

Right of reply

First of all, a compliment! Allowing readers to respond via e-mail is great. It's always amazed me that more computer publications who claim to follow the leading edge (or bleeding edge as the industry calls it) do not follow suit.

I just wanted to raise a couple of points about the Q&A and Letters in the August 1994 issue.

In the Q&A section, Nick Mae of Surrey ("On becoming a games programmer") asks about the best way of learning to program games. I just wanted to say that his thoughts of using AMOS when it's available on the PC *(the AMOS follow-up on the PC will be called Klik and Play. Ed)* were pretty correct.

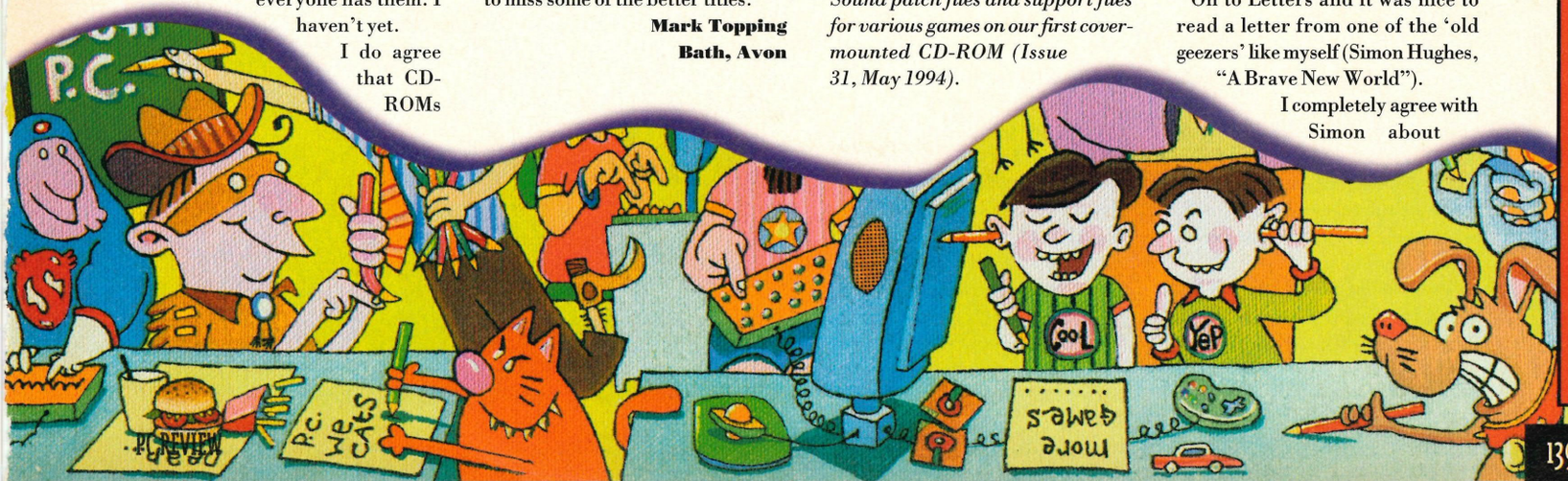
For me, games programming has always focused more on the design aspects rather than the coding. I've also found this to be the case for all programming. Games developers such as AMOS will enable people such as Nick to play around with programs and designs.

You also stated that fully produced games are produced using C and C++. How true, but for these languages, especially C++, design also becomes vital to the overall development of the product.

While not wanting to dampen people like Nick's enthusiasm for this area of programming, I do feel that it's time magazines like PC Review started pointing out the basics of programming so as not to send people head-on into using languages such as C and C++.

On to Letters and it was nice to read a letter from one of the 'old geezers' like myself (Simon Hughes, "A Brave New World").

I completely agree with Simon about



the thought that the smaller developers may not get a look in in the very near future. But, I am also of the opinion that a vast majority of games today cannot hold a candle to some of the simple games of the past.

What ever happened to the simple, but addictive, gameplay of games such as Dropzone on the Commodore 64, Sabrewulf on the Spectrum, or even Paradroid, again on the Commodore 64? These games may not have had startling graphics or sound, but they had great gameplay and could be played for ages, were much cheaper and lasted far longer than many of today's games.

I'm not totally down on today's games, I'm currently playing Sim City 2000, Frontier, TFX, Flashback and Doom. But I feel that a lot of today's games producers have missed the point.

Pat Byrne
pat@doofer.demon.co.u

Board games

I'm a complete newcomer to the PC communications scene, and it strikes me that there must be more to log on to out there than just the Internet, CompuServe and CIX. But where are they? Looking through back issues of your magazine, and copies of its ancient ancestor PC Leisure, I could find only one new Bulletin Board Service, and this had an 0898 access number (too expensive). I know that there must be others.

Another magazine suggested I log on to some BBS that had a list of other BBSs. I logged on, looked for other BBSs, and found access numbers for some further north, and a couple in California. I live in Oxford, and would prefer to log on to an Oxford BBS, for the sake of the telephone bill. We pay enough for CompuServe as it is.

How do these places survive when nobody has ever heard of them? Some newspapers and TV programmes would have us believe that they survive because people log on to them to get Nazi propaganda and/or pornographic images.

I personally believe that that's just an excuse that the authorities are making up for monitoring everything we do online. Anyway, for Nazis and generally disgusting people to log on to these services, they must have heard of these places from somewhere.

To sum up my communications message: do you know of any Oxford-based BBSs? Or a good place to find out access numbers? I's appreciate it if you could let me know. Thanks.

Also, I'd like to say very quickly that I think your magazine is perhaps the best PC magazine ever created, and that I think your new design is very good.

I also think that it's great that you write your reviews more seriously than the other computer magazines, although what's not so great is that you seem to have started to cut the size of the magazine.

I have read PC Review since Issue 1 of PC Leisure, and think that it has improved a thousandfold since then. It even seems that you use a spell checker now.

Ben Werdmuller
100411.3722@compuserve.com

We hope you'll now be innundated with BBS news, Ben, and no we haven't cut the size of the magazine.

Up and under

It has always bewildered me that there are no rugby league simulation games on the PC market.

OK, occasionally a rugby union game may come along, but they are often out of date and not very good.

So why rugby league has not been taken up as a bona fide simulation is beyond me. You see, rugby league has a great advantage over rugby union from a gaming point if view. In rugby league when a player is tackled, the play temporarily stops, giving the gamer time to set up his attack. Rugby league, therefore, would be similar in gaming terms to American football, and not like the fast action, non-stop soccer sims that are so plentiful.

After soccer, rugby league is the most supported sport in this country, so I'm sure there would be a call for such a game. So-called 'minority' sports, such as ice hockey, have games that prove popular, so why not rugby league?

EA Sports has the right idea with NHL Hockey, which takes something that is not a major sport and combines excellent game play, with the depth of statistics, and produces a thoroughly enjoyable game.

There is no reason why a rugby league game should not be brought out using up-to-date, colourful, clear graphics and good game play etc to ensure that it is popular with the game player as well as sports fan. Rugby league has action, excitement, drama, speed, skill and violence. What more do you need?

James Hollis
Wakefield, West Yorkshire

Yes, but the most popular participatory sport in the UK is angling and all the angling programs we've seen are even worse than the rugby union games.

EA Sports is based in the USA, and thus unlikely to try its hand at rugby league — you only have to look at the trouble it had getting its head around "soccer". After all,it is a largely American company

COMPETITION WINNERS

Myst: PC Review Recommended (Issue 32)

Cyan is the name of the team which designed and developed the very excellent Myst. Copies of the game go to Mohammed Sohaib, of Riyadh, Saudi Arabia *(Hah! another overseas winner)*; M McIvor, of Nairn, Scotland; Neil Williamson, of St Neots; Matthew Thomas, of Ammanford, Dyfed; Nutter Andrew *(well, that's what it says here)*, of London W11.

Fly Me! (Issue 33)

The two islands which featured in the pictures were a) Guam, and b) Guadalcanal. The winners of the MicroProse aviators' pack are: Nicholas Combellack, of Helston, Cornwall; Mr A Carter; of Hornchurch, Essex; Mr I F Perry, of Rothwell, Northants; Martin Wisbey, of Hitchin, Herts. Winners of F14 Fleet Defender are: William Totterdell, of Ruthven, Scotland; C M Teoh, of Edinburgh; C McCann, of Wokingham, Berks; Colin Matthews, of Houghton le Spring; Steven Shapland, of Hockley, Essex; Graham Ewen, of Alford, Aberdeenshire, Kevin Fleming, of Witham, Essex; Mr S L Bush, of Witham, Essex; Andrew Woodvine, of Burnley, Lancs; K P Whitehouse, of Cleator Moor, Cumbria.

Take Me to the Max (Issue 33)

MIDI stands for Musical Instrument Digital Interface; Wavetable synthesis means using sound created from samples of actual musical instruments (the 'wave table' matrix, I'm afraid, was pure fiction); and 3D holographic sound is Gravis's own proprietary technique for making sound appear projected all around you.

And the winners of the Gravis UltraSound Max are: Julian Callinan, of Kingswood, Surrey; Abel Blackmore, of Penistone, Sheffield; Andrew Jakins, of Grimsby, S Humberside; M J Warwick, of Grantham, Lincs; C W Frenzel, of Reading, Berks.

Pacific Air War: PC Review Recommended (Issue 33)

Answer: Pearl Harbour. Winners: Barnaby Gray, of Guildford, Surrey; Dave Wenn, of Hayes, Middx; Graham Tong, of Maidstone, Kent; Tom Hartman, of Selly Oak, Birmingham; Timothy English, of London SW19.

Sam & Max CD: PC Review Recommended (Issue 33)

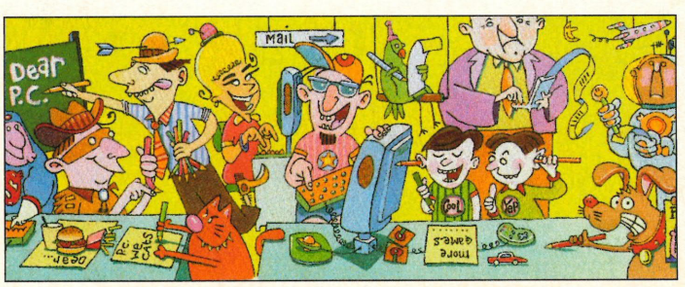
Answer: Max is the rabbit, and Sam the dog. Winners: Alan Lam, of Bishop Stortford, Herts; Mr D Sedman, of Castleford, W Yorks; Andy Cresswell, of Slough, Berks; Gary Kirk, of Kingston, Surrey; P Canavan, of Orpington, Kent.

Syndicate CD: PC Review Recommended (Issue 33)

Answer: 21 new missions. Winners: Dave Young (snr), of Aberdeen; John Crowder, of Stockport, Cheshire; Tom Hall, of Whitchurch, Hants; Paul Harsum, of Epsom, Surrey; Mr S P Izatt, of Thetford, Norfolk.

Theme Park: PC Review Recommended (Issue 34)

Answers: a) a water splash; b) the haunted house; c) keep the park clean. Winners: Iain Macdonald, of Ayr; Mr James Harper, of Bath, Avon; Becky James, of Mold, Clwyd; Joe I R Williams, of Petersfield, Hants; Andrew Rowley, of Arbroath, Scotland.



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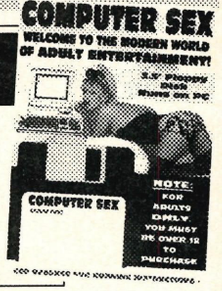
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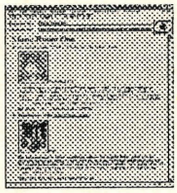
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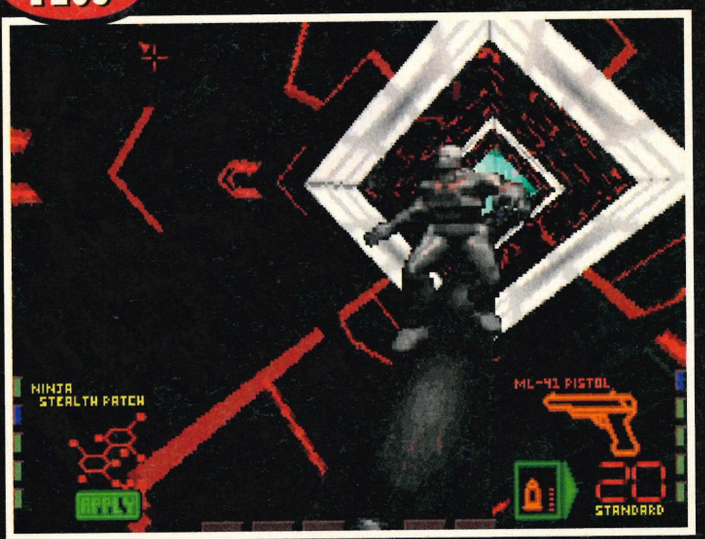
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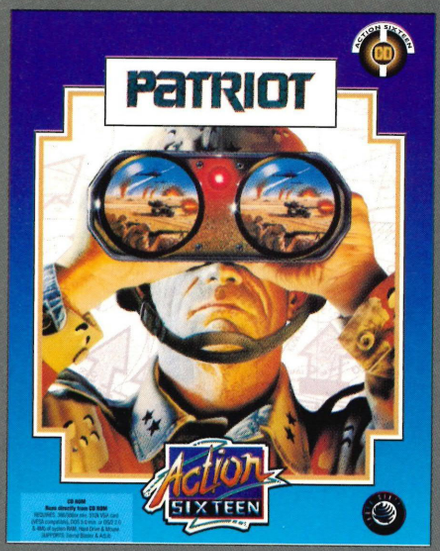
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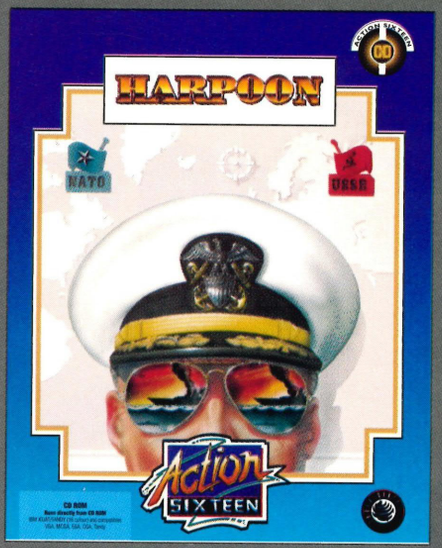
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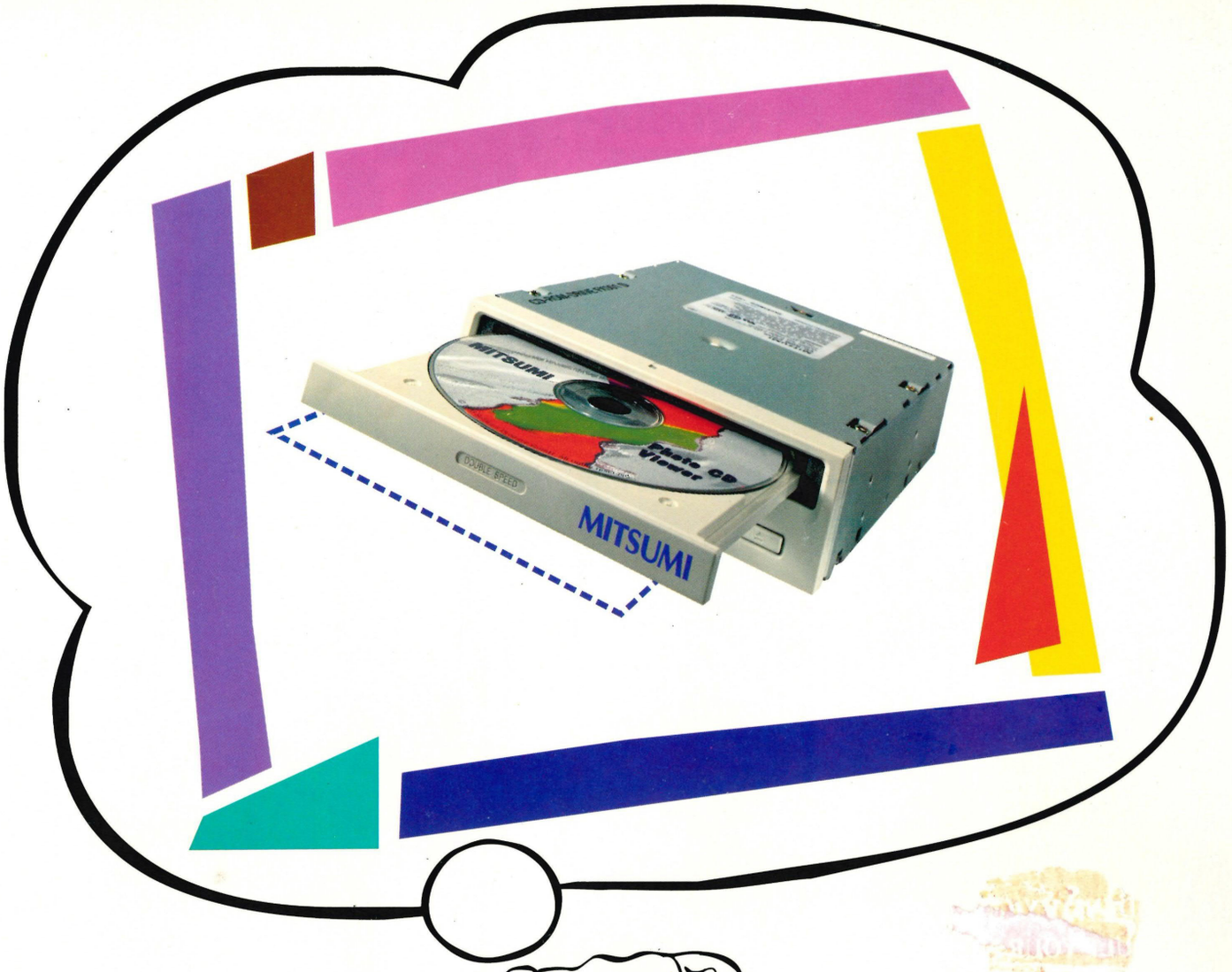


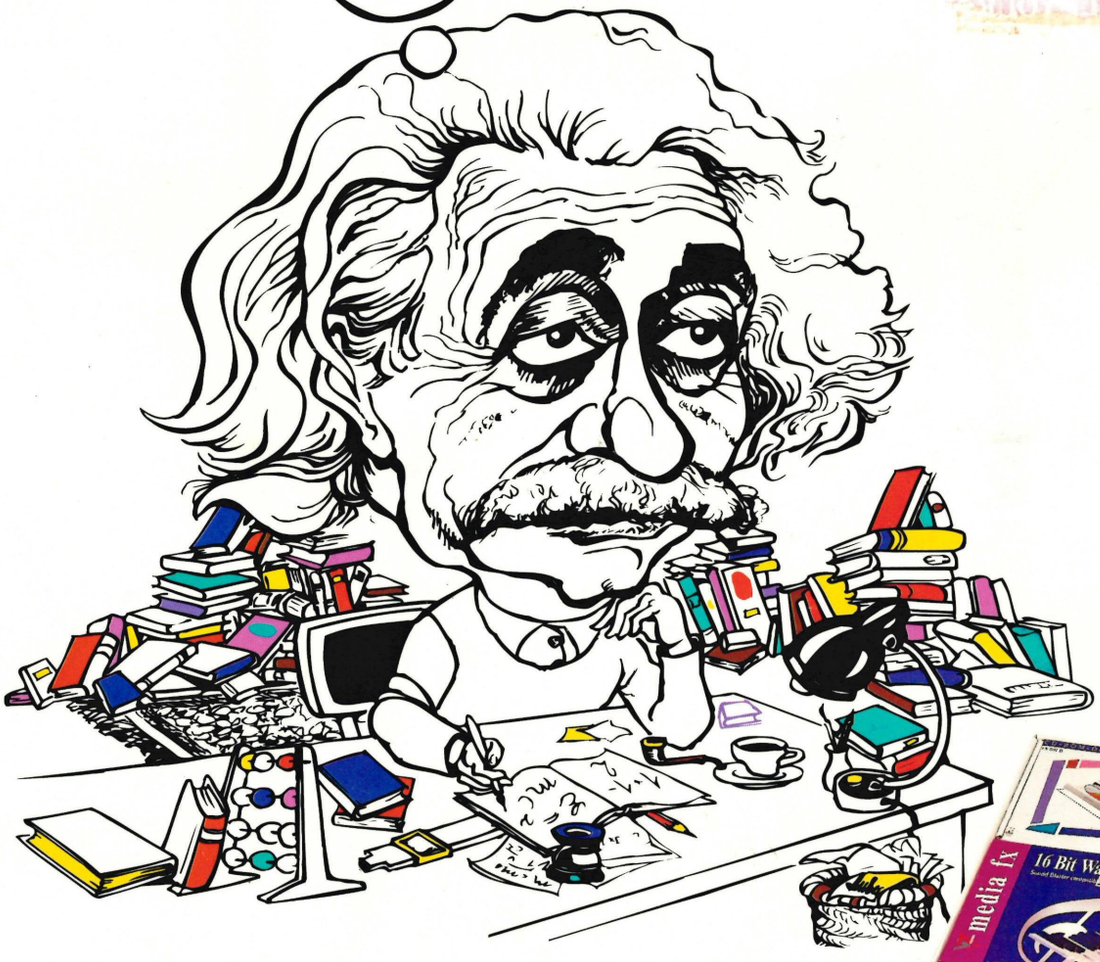
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