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Personal Computer World

June 1996 £2.95

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VNU Business Publications

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Windows Accelerators
15 GRAPHICS CARDS

TOP 50 Utilities



Fast workers

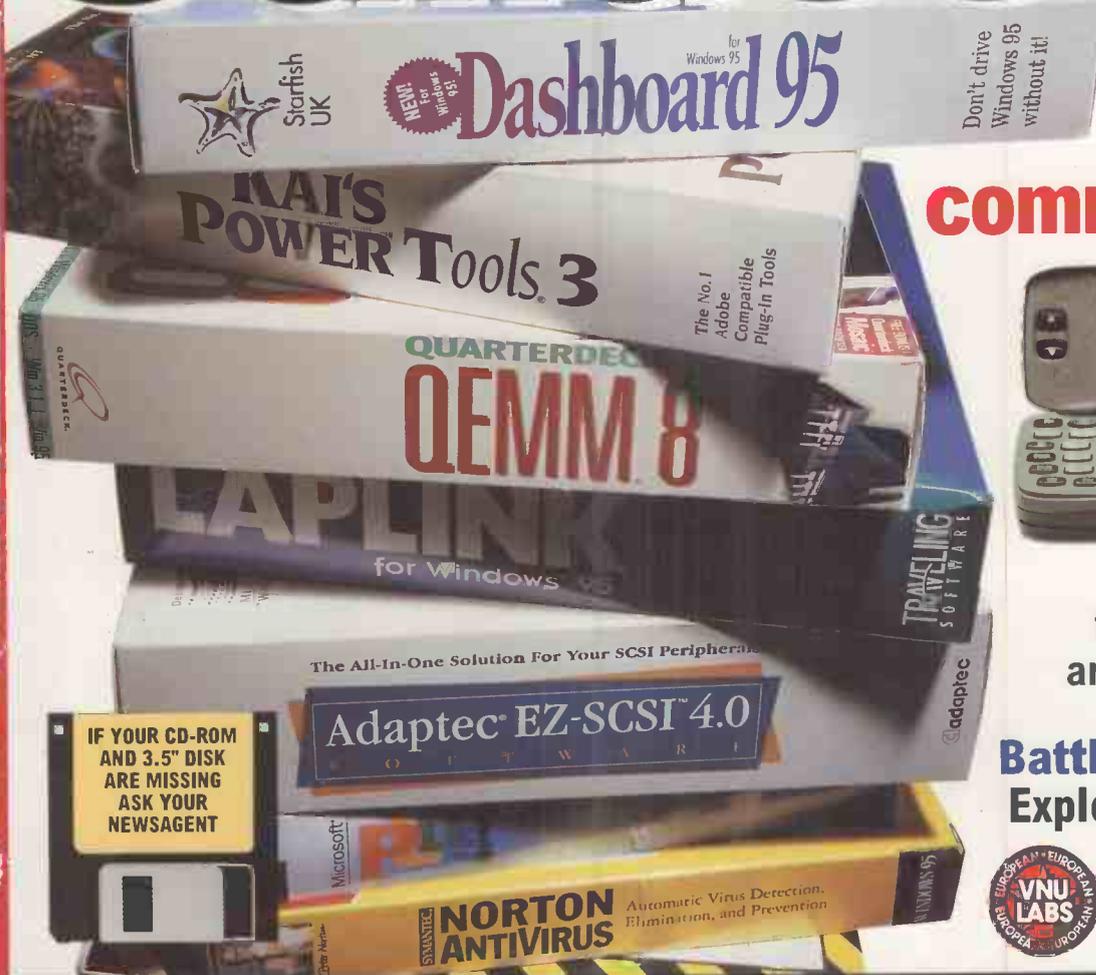
4 Pentium 166s

Super communicator



Nokia 9000
fax - web - phone
and organiser in one

Battle of the browsers
Explorer 3 v Netscape 3



IF YOUR CD-ROM AND 3.5" DISK ARE MISSING ASK YOUR NEWSAGENT



DOUBLE DISK PACK

PRAIRIE DOG HUNT PRO
12 of our top utilities

DIMENSION DESKTOP PCs

ALL DIMENSION SYSTEMS INCLUDE MICROSOFT WINDOWS 95 • 102 KEY SPACESAVER WINDOWS '95 KEYBOARD •

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- Intel 100MHz Pentium® Processor
- 8Mb EDO RAM
- 850Mb Hard Drive
- Integrated 64-bit PCI Local Bus Video with 1Mb Video Memory
- 15" Colour SVGA Monitor (13.57" Viewable Area)
- 4 PCI and 3 ISA Expansion Slots (1 shared)
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Dell Finance 3 year rental: £10.25 per system, per week, excluding delivery and VAT. (P100i)

DELL DIMENSION P100i

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(As above except 120MHz Pentium Processor)

DELL DIMENSION P120i

- Intel 120MHz Pentium Processor
- 16Mb EDO RAM
- 256Kb Pipeline Burst Cache
- 1Gb Hard Drive
- Integrated 64-bit PCI Local Bus Video with 2Mb Video Memory
- 15" Colour SVGA Monitor (13.57" Viewable Area)
- 4 PCI and 3 ISA Expansion Slots (1 shared)
- Mid-Sized Desktop Chassis

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- Intel 166MHz Pentium Processor
- 430VX 'Triton' System Board
- 16Mb High Performance SDRAM
- 256Kb Pipeline Burst Cache
- 1Gb Hard Drive
- STB PowerGraph 64-bit PCI Graphics Card with 2Mb Video Memory
- 15" Colour SVGA Monitor (13.57" Viewable Area)
- 4 PCI and 4 ISA Expansion Slots (1 shared)
- Integrated 16-bit Sound (Speakers Optional)
- Mid-Sized Desktop Chassis

NEW

Dell Finance 3 year rental: £15.00 per system, per week, excluding delivery and VAT. (P166s)

DELL DIMENSION XPS P166s

£1,499 (£1,790.70) INCLUDING DELIVERY & VAT

DELL DIMENSION XPS P133s

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(As above except 133MHz Pentium Processor and EDO RAM)

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DELL DIMENSION P100i

- Intel 100MHz Pentium Processor
- 8Mb EDO RAM
- 1Gb Hard Drive
- Integrated 64-bit PCI Local Bus Video with 1Mb Video Memory
- 15" Colour SVGA Monitor (13.57" Viewable Area)
- 4 PCI and 3 ISA Expansion Slots (1 shared)
- Mid-Sized Desktop Chassis
- Six Speed CD-ROM Drive
- Microsoft Office 95

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DELL DIMENSION P120i

- Intel 120MHz Pentium Processor
- 16Mb EDO RAM
- 265Kb Pipeline Burst Cache
- 1.6Gb Hard Drive
- Integrated 64-bit PCI Local Bus Video with 2Mb Video Memory
- 15" Colour SVGA Monitor (13.57" Viewable Area)
- 4 PCI and 3 ISA Expansion Slots (1 shared)
- Mid-Sized Desktop Chassis
- Six Speed CD-ROM Drive
- Microsoft Office Professional 95

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- Intel 166MHz Pentium Processor
- 430VX 'Triton' System Board
- 16Mb High Performance SDRAM
- 512Kb Pipeline Burst Cache
- 1.6Gb Hard Drive
- STB PowerGraph 64-Bit PCI Graphics Card with 2Mb Video Memory
- 15" Colour SVGA Monitor (13.57" Viewable Area)
- 4 PCI and 4 ISA Expansion Slots (1 shared)
- Mid-Sized Desktop Chassis
- Six Speed CD-ROM Drive
- Integrated 16-bit Sound (Speakers Optional)
- Microsoft Office Professional 95

NEW

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Windows 95



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ALL MOUSE • 3.5" DISKETTE DRIVE

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- Intel 200MHz Pentium Pro Processor
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- Mid-Sized Tower Chassis
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- Windows NT 3.51

Dell Finance 3 year rental: £27.13 per system, per week, excluding delivery and VAT.

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- Intel 166MHz Pentium Processor
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- 16Mb High Performance SDRAM
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- 9FX Motion 771 64-Bit PCI Graphics Card with 2Mb Video Memory
- High Performance TCO 17" Colour SVGA Monitor (15.65" Viewable Area)
- 3 PCI, 2 ISA and 1 PCI/ISA Shared Expansion Slots
- Mid-Sized Tower Chassis
- Six speed CD-ROM Drive
- AWE 32-bit sound capability plus Altec Lansing ACS31 Speakers with Subwoofer
- Microsoft Office Professional 95

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- Intel 100MHz Pentium Processor
- 10.4" 800x600 SVGA Dual Scan STN Colour Display
- 8 Mb EDO RAM Upgradeable to 40Mb
- 256Kb Level 2 Cache
- 2 PCMCIA type II slots
- 540Mb removeable Hard Drive
- Integrated 16-bit Sound Blaster Pro- Compatible Audio with internal microphone
- Headphone, Speaker & Microphone Jacks
- Extra high performance 128-Bit PCI graphics controller with 1Mb Video Memory
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Dell Finance 3 year rental: £16.83 per system, per week, excluding delivery and VAT. (P100SD)

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DELL LATITUDE XPI P100SD

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- 256Kb Level 2 Cache
- 420Mb removeable Hard Drive
- 2 PCMCIA type II slots
- 19mm trackball mouse
- Extra high performance Local Bus Video with 1 Mb Video Memory
- Advanced Intelligent Lithium Ion battery pack

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DELL LATITUDE XPI P75T

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(As above except with 10.4" TFT colour display)

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- Intel 133MHz Pentium Processor
- 11.3" 800x600 Super VGA TFT Colour Display
- 8 Mb EDO RAM Upgradeable to 40Mb
- 256Kb Level 2 Cache
- 2 PCMCIA type II slots
- 810Mb removeable Hard Drive
- Integrated 16-bit Sound Blaster Pro- Compatible Audio with internal microphone
- Headphone, Speaker & Microphone Jacks
- Extra high performance 128-Bit PCI graphics controller with 1Mb Video Memory
- Infrared communications port (IRDA 1.0 compatible)
- 19mm optical trackball mouse
- Advanced Intelligent Lithium Ion battery pack

Dell Finance 3 year rental: £22.87 per system, per week, excluding delivery and VAT. (P133ST)

DELL LATITUDE XPI P133ST

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DELL LATITUDE XPI P133ST

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PLUS

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Dell UltraScan 15TE monitor, (13.7" Viewable Area) DeskDock, 102-key keyboard and desktop mouse, 10 base T Advanced Port Replicator and attaché carrying case

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£349 + VAT

Attaché Carrying Case

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Extension to 3 year on-site next business day service

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**"A 120 MHz machine?
I'd love one, but it's
out of my league."**



**"Welcome to
the Premier
Division."**

IT'S TIME TO PROMOTE YOURSELF WITH DELL.

For the kind of price you used to pay for a 75MHz machine, you can now enjoy all the speed and power of a 120MHz Pentium® processor based system: the Ready-to-Run

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Since it comes **pre-loaded** with Windows 95 and Microsoft Office Profes-

sional 95, the Dell Dimension P120t is ready and eager for kick-off.

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Thanks to our close working relationships with Intel®, Microsoft® and other industry leaders, we have access to the most up-to-date technology. And because we build each machine to order, we can incorporate the latest advances as soon as they're tested. For example:

- Our **new Dimension XPS P166s** systems come with the latest 430VX 'Triton' chipset, incorporates new high performance **SDRAM** memory technology.
- The **NEW Dell Latitude™ XPi P100SD** and **P133ST** notebook systems incorporate faster processors, bigger screens and 'smart' Lithium Ion batteries.
- Even our **entry-level PCs** are now equipped with **100MHz Pentium** processors as standard. At **£949 (£1,144.45 inc. VAT & delivery)** the Dell Dimension P100t sets new price/performance standards.



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Turn the page opposite for examples of our acclaimed Dimension desktop and Latitude notebook systems and some of the many factory-installed options.

Then talk to us on 01344 720000. You'll find you're in an altogether different league.



*Source: IDC

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01344 720000

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PERSONAL COMPUTER WORLD

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PCW Cover Photography David Whyte

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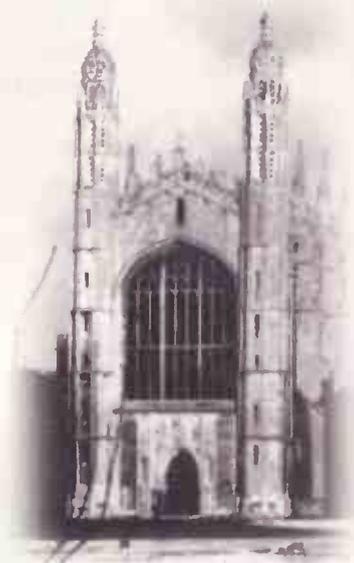
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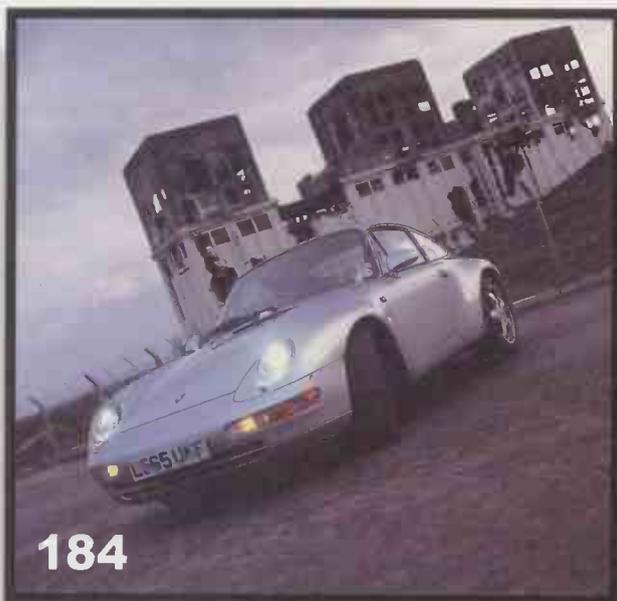
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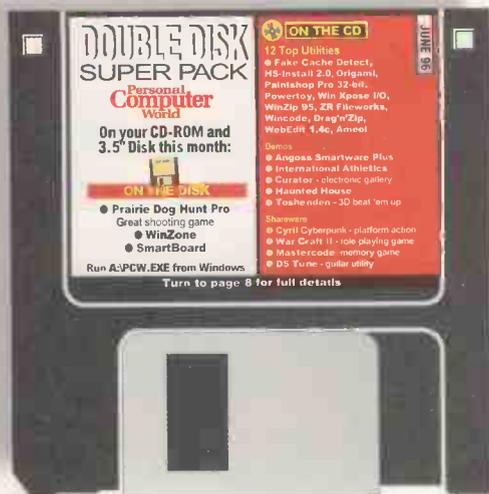
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PCW Cover Disk

A super shoot 'em up, a cute clipboard enhancement and a useful utility.

PRAIRIE DOG HUNT PRO IS THE latest sequel to Prairie Dog Hunt for Windows. This new version has a 360° viewable area, frame-animated Prairie Dogs, a zoomable gun sight and improved sound effects. Due to the game's intensive animation, a powerful PC is recommended for best performance. If your video card doesn't support image stretching you will be told, and the Scope Zoom feature will be disabled. A Small Font video driver should be used in order for the game to start. Check your video card documentation for more information.

You can play Timed, or Open Season games. Timed games consist of shooting as many Dogs as possible in a set time.

- Open Season: Unlimited game play; load up 30 rounds in the clip and click on the Welcome Sign to begin or end an Open Season hunting session.
- Game Options: Click on Settings to open the interface. Select the style of game and the amount of ammunition in your clip, the density of Prairie Dogs, and their speed; drag the sliders to adjust the levels. The Skill Level Indicator will display the current difficulty level. Select either Open or Timed Session for the style of game you wish to play. Select up to 30 rounds of ammunition for your gun's clip.

To begin playing, click the Welcome Sign in the playing area. Clicking on it again will end a game.

• Key Controls:

- 1 Set Sight Zoom to 1.5x
- 2 Set Sight Zoom to 2x
- 3 Set Sight Zoom to 4x
- R Reload / P Pause
- Z Zoom Scope toggle.

● *Minimum requirements:* 486 DX33 Processor, Windows 3.1, 4Mb RAM, 256 colour 640 x 480 VGA.

SmartBoard

SmartBoard is known as a "Clipboard Stack". The normal

Windows Clipboard is designed to keep track of a single piece of information ("clip-item") at a time, sometimes in multiple different formats but essentially the same basic data. If you copy a second piece of information to the Clipboard you lose what was there before.

SmartBoard enhances the capabilities of the Clipboard by enabling the collection of multiple items. It watches the Clipboard and automatically takes copies of any data which you have configured it to collect. By default, it only collects Text, Bitmaps and Metafiles if they are under a particular size, but you can reconfigure it to suit.

SmartBoard stores all the "clip-data" you collect across Windows sessions, too, so you can find and re-paste an item you copied yesterday, even if you've turned the PC off meanwhile. It can do a lot more, too. Full details are in the file SMARTBRD.HLP in the SMARTBRD sub-directory.

● *Minimum requirements:* 386 Processor, Windows 3.1, 2Mb RAM, VGA graphics.

WinZones

This is a feature-packed timezone utility for Windows.

To start a new clock, click the Set button (S) on the clock, then click on "Start a New Clock". You can double-click the clock face to show or hide its menu and resize borders, or click the Set button (S) on the clock to access all options.



To change the city or timezone, click the Set button, then click the "Configure This Clock" button. Choose the city you want and, check Daylight Savings Time. To customise the clock's appearance, click the Set button, then "Configure this Clock". To set an alarm, click the Set button, then "Set Alarm".

● *Minimum requirements:* 386 Processor, Windows 3.1, 2Mb RAM, VGA graphics.

Robin Nixon

PLEASE READ THIS

If you have problems with the Cover Disk such as receiving a "Cannot read from drive A", error, please return the disk to the duplicator: TIB PLC (PCW), TIB House, 11 Edward Street, Bradford BD4 7BH (who may be contacted on 01274 736990) together with a stamped, addressed, envelope and two 25p stamps. Where it is a duplication fault, the postage will be returned along with a replacement disk.

If your problem is not due to a faulty disk, and a phone number is shown for the publisher of the program in question, then it will probably be quicker for you to call them first as they will be able to provide direct assistance on their own programs, faster than might otherwise be possible.

Alternatively, ring our floppy cover disk hotline on weekdays between 10.30am and 4.30pm on 0891 715929. Calls are charged at 39p per minute cheap rate and 49p at all other times.

The PCW cover disk is virus checked at every stage of production. However, PCW will not accept liability for any problems arising from the use of the disk. Installing or running any of the programs on the disk indicates your agreement to this condition.

You are advised not to install any software on a networked PC before checking the disk. While PCW maintains a high standard of quality control, disks may be damaged in transportation. Check the disk's shutter before inserting it in the drive by sliding it to the left and allowing it to spring back.



PCW Interactive CD-ROM



This month we've gone all out to bring you the very best in PC and Mac entertainment, information, applications, utilities, movies and more.

MAIN FEATURES

Global Internet

The complete access software for Global Internet. This Windows 3.1x and Win95 software includes Super Mosaic, a browser supporting HTML 3.0 and news-reading capabilities, and Eudora email. Included is everything you need to get on-line and receive 14 days unlimited access ABSOLUTELY FREE — just install the software using the button on the CD-ROM's front end, sign up to the service and your first 14 days of usage will be free.

Included with the access software is a seven-day trial of Cyber Patrol, a clever Internet helper application which you can configure to prevent your children gaining access to sites you feel

J U N E 1 9 9 6



PCW INTERACTIVE: Entire Contents List

FEATURES

Tel-Me — On-line information service

DEMOS

Angoss Smartware Plus — Complete software suite

International Athletics — Multimedia demo

DIY PR — Public relations aid

Curator — Electronic gallery

Haunted House — For children

Toshinden — 3D beat 'em up

Cheltenham Computer Training — Learning guide

Winzones — Time and clock utility

Dragons — Childrens' interactive

Flying Fonts — Titling and animation

Top Gun — Flight simulator

Winnie the Witch — Childrens' demo



Personal
Computer
World

SHAREWARE FOR DOS

Cyril Cyberpunk — Platform arcade action

War Craft II — Role playing game

SHAREWARE FOR WINDOWS 3.1

Prairie Dog Hunt Pro — Shoot 'em up

Mastercode — Memory game

C O N T I N U E S O V E R

F O L D H E R E

SHAREWARE FOR WINDOWS 95

DS Tune — Guitar tuning utility

Powertoys — Microsoft's Windows 95 goodies

Widen — Windows enhancement

MAGAZINE

PCW Back Issues — Database

Cakewalk, Fakenum, Meters,

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Shareware — 12 programs from our magazine roundup

EXTRAS

Oakley Data Services — The complete shareware collection

REGULARS

Video for Windows — Version 1.1e (Win 3.x only)

CD Test — CD-ROM integrity checker

SVGA Drivers — Super VGA graphics drivers (Win 3.x only)

MACINTOSH

24 blistering shareware programs and demos

● **Minimum requirements:** 4Mb free RAM (some can be in a permanent swapfile), 386SX/33 processor, Windows 3.1. Users with less than this should be able to run all the DOS programs on the CD-ROM directly from DOS or Windows (rather than using the front-end). For best performance we recommend: 8Mb installed RAM, 486 DX/50 processor, Windows 3.11 or Windows 95.

would be unsuitable for them. Once set up, these sites are impossible to get to.

Cyber Patrol can also be installed using the second button on the PCWI front menu — if you already have an Internet connection and software to access it, you should back up any

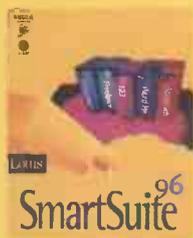
relevant files. The software will install a Winsock.dll file which may conflict with others in the Windows/System directory. Call Global Internet Support on 0181 957 1010 if in doubt.

Global offers one of the best Internet services currently available. It is fast and

CONTINUES ON PAGE 147



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*Buy Lotus SmartSuite and if after 60 days you are not completely satisfied return it to Lotus with proof of purchase for a full refund. © 1996 Lotus Development Corporation. Lotus, SmartSuite, Working Together, 1-2-3, Word Pro, Freelance Graphics, Approach, Organizer and ScreenCam are registered trademarks of Lotus Development Corporation. Products mentioned may be trademarks and/or registered trademarks of their respective companies. Pack supplied may differ from that shown.



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Personal Computer World



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For Lotus, its Notes groupware package has very quickly become the tail that wags the dog. Lotus never expected its once flagship product, Lotus 1-2-3, to become just a small part of the second best-selling (by miles) office suite.

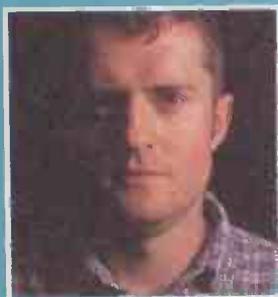
Almost unbelievably, only 25 developers worked on Release 3 of Notes. For Release 4, reviewed in last month's PCW, the number has grown to 100. It's still a tiny number considering that IBM's desktop software strategy (it acquired Lotus last year) and the whole future of Lotus depends on them.

The thing that's given Notes critical mass is Business partners. Just as Lotus Add-Ins boosted 1-2-3, the 10,000-plus Notes business partners have turbo-charged Notes. Although some people reckon that Intranets will give the Lotus product trouble, Notes has a significant edge in terms of security, robustness and commitment from corporate companies. And Lotus has been working hard to add Internet interoperability as quickly as it can. "We're aggressively focused on the Internet in everything we do," is the general Lotus line.

With its application component technology, due for release in the summer, Lotus also (for once) has an edge over arch rival Microsoft. The components will allow mini, cut-down spreadsheets, word processors and so on, fully compatible with the Office and Smartsuite file formats, to be embedded in Notes documents — or Microsoft Office documents come to that. Just the kind of object-orientated programming technology that Microsoft has promised for so long and not delivered. (See *News Analysis*, page 34.)

Notes has been a thorn in Microsoft's side for a while and it's getting bigger. Microsoft Exchange, Microsoft's latest stab at groupware, has much of Notes' messaging capability, but there's a whole lot of other stuff in the Lotus product that Microsoft is nowhere near.

Ben Tisdall
Editor



Next Month

Personal Computer World

Unavoidably detained last month, we reveal this year's winners of the most prestigious IT awards.

PCW AWARDS 1996



Monitors Group Test

PCW benchmarks more than 20 of the latest 15in and 17in displays



RAMifications

PC memory types explained



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• Multimedia: Pentium 133

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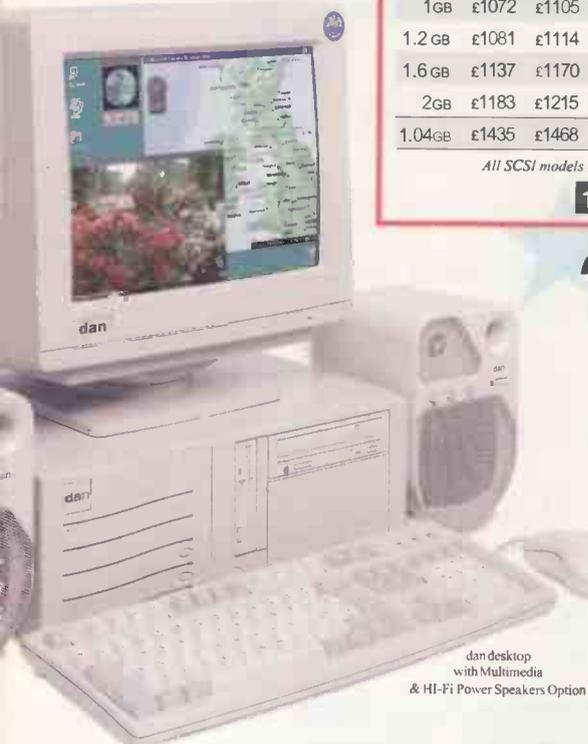
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- Windows 3.11 & MS DOS 6.22 or Windows 95

Software titles:

MS Encarta '96 US Encyclopedia,
MS Works & Lotus Organizer



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Newsprint

Compaq 120Mb drive joins battle of the superfloppies

The battle of the superfloppies intensified last month with the advent of Compaq's 120Mb drive, as 1Gb-plus removables from Iomega and Syquest hit the market.

Compaq's selling point is that its drive, using 3M-made 120Mb disks costing about £12, can also read and write standard 1.44Mb floppies. It will appear on several Compaq models this year.

Compaq was forced into a premature announcement of its drive last year when Iomega launched its low-cost Zip drive which takes 100Mb cartridges. Demand for the Zip quickly outstripped supply, revealing a market hungry for a high-capacity successor to the 1.44Mb floppy. Iomega's arch-rival, Syquest, countered with the EZ-

135, which takes 135Mb cartridges.

Both drives are available in internal versions, so they can be fitted into PCs as auxiliaries to the floppy. The newer drives, both claiming fast seek times of 12 milliseconds, are:

- The Jaz, from Iomega. Lists at £399. Takes 3.5in 1Gb cartridges costing £89 each and has a claimed sustained transfer rate of up to 6.73 Mb/sec.

- The Syjet, from Syquest, costs £349 and takes £40 650Mb cartridges, or £60 1.3Gb cartridges, with a claimed transfer rate of 4Mb/sec. These prices should be taken with a pinch of salt as they are likely to be adjusted to compete. The Jaz drive has an edge in that it is available now.

Syquest European VP,



Bernhard Schuh, doubted whether the Compaq drive would hit the market before autumn but admitted that it would challenge the EZ-135, as well as the Zip. "But before it appears, we will have on the market a drive falling somewhere between the Ez-135 and the Syjet. We will beat it on capacity." He said Syquest's Winchester heads would always be faster than the Compaq. The rival drives may mean that no

superfloppy will achieve the wide acceptance of the 1.44Mb disk, so there will remain no standard medium for swapping big files.

Joe Dura, at Dataquest, believes this need for a data interchange medium will maintain sales of QIC and Travan tape cartridges. Tape offers the lowest cost per megabyte.

The CD-erasable is on the horizon, and the multi-gigabyte rewritable DVD disk could be with us by 1999.

NEWS Highlights

RAM prices shorn 19
Memory prices level off after a big drop.

ISA death warrant 26
A new PC structure could kill off the ISA bus.

MacAcorn grows 31
New joint Apple-Acorn schools venture is named.

Comdex Stop Press

Ten-speed CD

Pioneer was due to announce a ten-speed CD drive at the UK Comdex.

Visit PCW's Web page at www.vnu.com/hc/pcw for this and other Comdex highlights.

At last... a return to the true portable

A new, slimline Thinkpad may signal a return to the truly portable notebook.

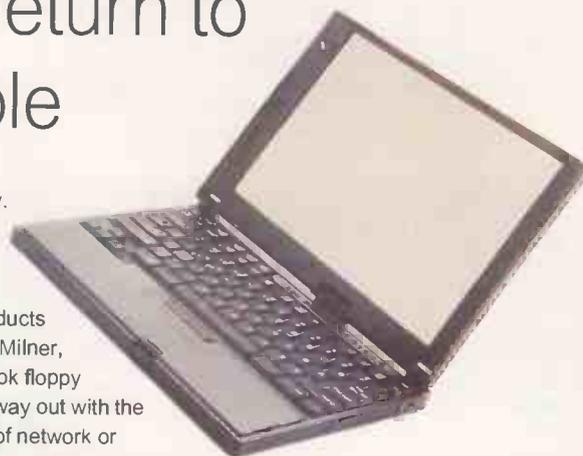
The size and design philosophy of the new 560 is similar to that of the early H-P OmniBooks: light (4.1lbs) and small enough to fit into a briefcase. But it comes with a choice of 12.1in active matrix or 11.3in dual-scan SVGA screens, and 100MHz or 120MHz Pentium processors.

A 13MHz model will be

available in July.

The floppy drive is detachable — IBM mobile products manager, Gary Milner, said the notebook floppy could be on its way out with the increasing use of network or wireless links to transfer information to a desktop.

IBM has also announced three new high-end Thinkpad 760s, with a 133MHz option and



a 365 X/XD desktop-standard business machine. All new models support the new 32-bit PC Card standard.

RAM prices level off after big fall

The price of RAM is expected to stabilise, having dropped by some 50 percent since the start of the year. Trade prices of a basic 4Mb 72-pin SIMM hovered at between £35 and £37 as we went to press.

This translates to a low of about £55 in the shops, although some dealers have been slow to pass price cuts to users.

Mark Leatham, of memory

maker Kingston, thought that the prices would rise by a couple of pounds and then level off.

He did not expect them to fall again drastically. "It would get so that there is no point selling — there would be no money in it," he said.

Memory prices tend towards a classic wave pattern, rising as demand outstrips production and then falling as new plants come on line. The popular idea

that production is deliberately kept low in order to push up prices is mistaken: a fab costs at least \$1 billion and has to be kept running 24 hours a day to recoup building costs of at least \$1 billion.

One reason for the recent glut was that fewer companies than expected upgraded to Windows 95, which is best run in at least 16Mb of RAM, and so companies had stocks to get rid of.

Short Stories

Net provider sued over subs

● Engineer Simon Rixon, of Cheltenham, has won a county court action for £109, plus £160.87 costs, against Brighton-based service provider Frontier Communications, which was the subject of a PCW investigation.

The money was for 11 months of a one-year subscription which Mr Rixon cancelled after receiving only 21 days service in six weeks, a judge at Brighton was told.

Mr Rixon had not got the money as we went to press. Bailiffs who went to Frontier Communications were turned away after the company said it would appeal.

It advertises for subscribers on its site at www.thenet.co.uk and boasts of massive bandwidth.



Diamond offers Stealth 3D

● Diamond claims its new Stealth 3D 2000 card offers photo-realistic 3D animation, fast 2D acceleration and full-screen, full-motion, video.

The Stealth 3D 2000 comes with 2Mb or 4Mb of DRAM, and supports resolutions from 640 x 480 in 16.8 million colours at a 120Hz refresh, up to 1280 x 1024 with 256 colours at 75Hz. Digital video formats include MPEG-1, Indeo and Cinepak. Details on www.diamondmm.com.

Diamond Multimedia 01753 501400

Cheap addressing

● Competition seems to be leading to long overdue price drops in addressing systems using the official Post Office Address files (PAF). Hot on the heels of Quick Address Lite (reviewed on page 84) comes Fast Address from Mere which claims to do much the same job at half the price: £50.

Mere 0161 929 8700



Accept no imitations — this is the only real Internet bible

The first issue of *Internet Advisor* is now on sale from WH Smith and John Menzies, priced at £2.95.

Internet Advisor is a new kind of Internet magazine straight from the publishers of *Personal Computer World*. It concentrates on giving business people the information they need to get online and make the most of the Internet and the World Wide Web.

Highlights of the first issue include tips on how to create great Web pages, a guide to searching the Internet, a case study on how the Manchester United football club Web site was created, and reviews of Internet Service Providers and HTML editors.

<http://www.vnu.co.uk/advisor>

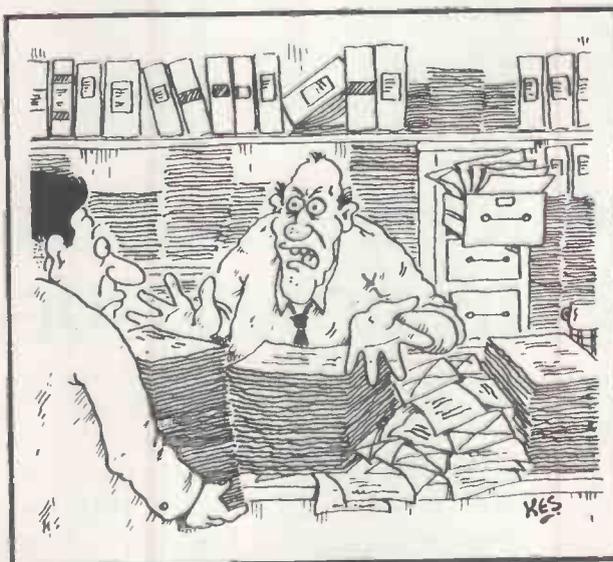
● See the advert on page 120

Four in ten companies lack a PC

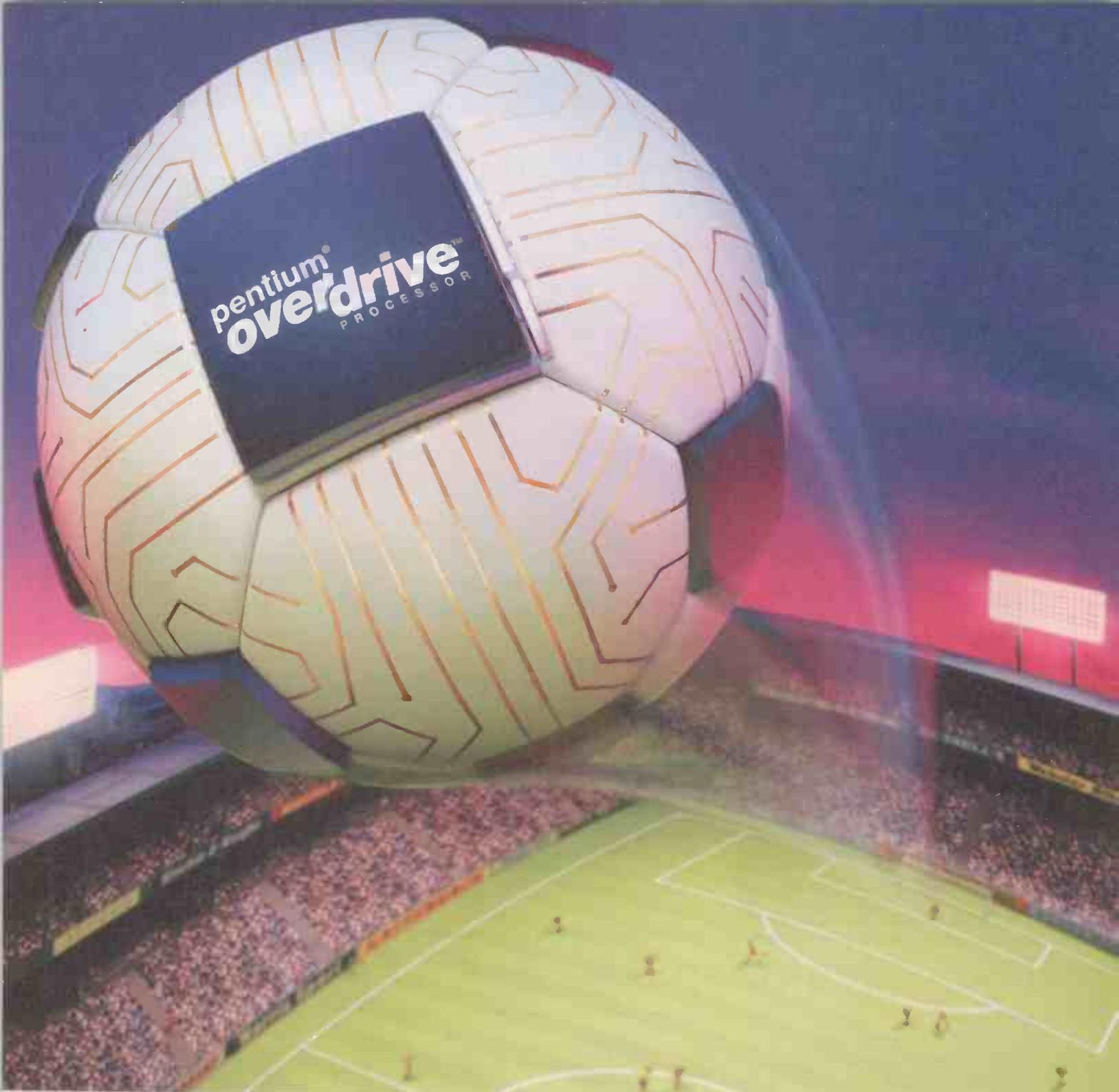
The growth of PC sales is slowing in the US, but there is a lot of slack left in Britain, according to the latest Banner survey. It reveals four out of ten companies with 50 staff or fewer do not have a computer.

Even more astonishingly, 1,213 of the 35,715 British companies with more than 50 staff have yet to computerise. Fewer than one in four one-person companies (self-employed people) use a computer; and the proportion rises to only one in three for five-person companies.

Software sales in Europe approached a record \$2bn in the last three months of 1995, according to the Software Publishers Association of Europe. Germany and Austria had the highest growth at 39 percent, with England and Ireland coming in at 28 percent. Sales in Greece dropped by 13 percent.



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IBM/Cyrix 6x86 performance gives Intel a run for its money

IBM and Cyrix appear to be increasingly buoyant over the prospects of the 6x86 chip, which they believe has a real chance of slicing off some of Intel's market share.

The two companies are both partners and competitors over the chip, which Cyrix designed and IBM makes and both sell. It got a "Best Technology" award at Cebit and IBM cites figures showing it to be consistently faster than equivalent Pentiums in so-called "real world tests", which run a mix of applications typical of most users.

One reason is that the Cyrix design copes with 16-bit code better than the 32-bit-optimised



6x86 P120+ rating means the chip performs as well or better than a 120MHz Pentium; but the P120+ chip is actually running at 100MHz. This slower speed has added advantages: it draws less power and produces less heat.

Pentium and (especially) Pentium Pro. Of course, the Pentium might well outperform the Cyrix at tasks for which it has been optimised.

Yet oddly, the new IBM-Cyrix P+ rating system, which uses the Pentium itself as a measure of the 6x86, actually downplays performance differences. Thus a

But Jim Dillon, European marketing manager for IBM Microelectronics Division, said that: "People see processor clock rate as a measure of performance. The P+ rating gives them a truer measure in a single, simple figure."

Amiga gurus launch TV presentation pack for PC

TV specialist, Scala, has entered the PC market with MultiMedia MM100 which it claims allows you to create multimedia presentations with the high impact of television.

It uses its own 32-bit object-orientated multimedia operating environment called MMOS, designed by the team who created the Amiga's operating system. But it will work with Windows or OS/2.

The £149 package, available later this month, looks totally different to Windows, and Scala says it breaks the pattern of traditional presentation packages.

Meanwhile, Strata has launched MediaPaint 1.0 for Windows 95 and NT, which it claims is the first workstation-class digital-video special effects and painting application for Windows.

Marketing manager Shelley Watson, said: "No other program in this arena has the special effects and particle systems

featured in MediaPaint."

You simply draw a path for an effect and MediaPaint produces it over a series of frames. You can control several variables, such as speed and density for time-based effects including lightning, fireworks, lens flare and bubbles. MediaPaint costs £449 + VAT (RRP).

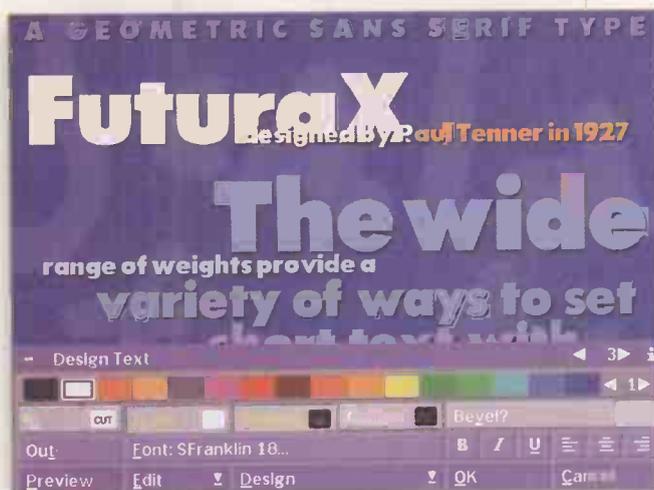
Strata has also released a multimedia authoring tool called

MediaForge 2.0 for Windows 95 and NT with an emphasis on Web page production and CD games. Its MediaBasic editor creates unique options.

MediaForge will cost £995 + VAT (RRP) but there is an introductory price offer of £595 + VAT until late July.

Joanna Scott

Scala 01920 484811;
Principal Distribution 01706 832000



Short Stories

Peer protests to Gates over "discrimination"

● Computer buff, Lord Avebury, has protested to Microsoft's Bill Gates that a student discount bundle discriminates against schoolchildren.

He said his 12-year-old grandson, Alexander Lubbock, had been keen to learn Visual Basic and C++ but could not afford the software.

"Then I saw in this month's *Personal Computer World* that the two were being offered together to bona fide students at a special educational price — but only to those over 16," he wrote in a letter to Microsoft's student marketing executive, Edna McKelvey, and copied to Gates.

He said there must be thousands of youngsters who would like to try their hands at the languages.

His letter added: "It also struck me as incongruous that a company founded by Bill Gates, who was famous for starting early himself, should discriminate against younger enthusiasts."

McKelvey told *PCW*: "He is perfectly right and we would like to extend the offer to younger people. We restricted it to over-16s for legal reasons to do with the licensing. We will reconsider the matter when we have sorted that out."

Fast inkjet filler

● Onyx is offering a filling station which, it claims, lets you refill inkjet cartridges up to eight times quicker and easier. A starter kit with ink costs £90.90, a saving of 60 percent on the cost of eight cartridges, Onyx says.

Onyx freephone 0800 393132

When homework time comes...

● A new £19.95 package called Times Up! allows parents to set time limits on the use of games and online services by their children.

Roderick Manhattan 0181 875 4444

Short Stories



Crammer's software blooms for exam season

● Time was when well-off parents would pack off a lazy child to a crammer college. Now, thanks to the PC, the crammer college can come to you.

Abbey Tutorial College, which says it is among the most successful, has teamed up with Screen Active to produce revision software for three of the most taxing A-levels: Pure Maths, Physics and Chemistry.

You get a choice of examination boards and sets of questions and answers, with tips and revision notes.

The software comes on floppies and costs £107 per subject, or £235 for the three.

And, with GCSE exams also on the horizon, Acacia has issued its £45 Revise CD, for biology, physics and chemistry students.

ScreenActive 0181 332 2132;

Acacia 01730 268463



Pereos netted

● Datasonix, which claims its Pereos tape drive is the smallest in the world, has released a model with full network support. It stores half a gigabyte in a stamp-sized cassette.

Datasonix 01865 883302

Parallel ISDN

● Electronic Frontier is selling a £239 ISDN adaptor that fits into a standard PC parallel port.

Electronic Frontier 01734 810600

Hewlett-Packard drops Adobe PostScript

From the second half of 1997, Hewlett-Packard plans not to incorporate Adobe PostScript software in its LaserJet printers. H-P will provide PostScript-compatible printers but from that date will use clone software rather than Adobe's own.

Licensing PostScript software to H-P LaserJet products accounted for about five percent of Adobe's \$762.3m 1995 revenue. John Warnock, chairman and CEO of Adobe Systems, said: "We are disappointed that we weren't able to reach agreement with some parts of H-P. However, we don't anticipate any revenue impact in

1996." Sourcing cheaper clone PostScript software will clearly result in a considerable saving for H-P, which it hopes will translate into retail price reductions, although this was not confirmed as an official reason for change.

H-P believes its own printer control languages are sufficient for the office environments where it sells in volume. PostScript clones will satisfy most others, while those in demanding publishing environments can buy official Adobe PostScript SIMMs from third parties.

The announcement, in Adobe's first-quarter results, came a month before H-P's

launch of its latest printer control language, PCL 6. To be implemented initially on the forthcoming LaserJet 5, 5N and 5M workgroup printers, PCL 6 is a complete rewrite, using object-orientated code. The more efficient code, combined with faster processors and hardware acceleration of the new LaserJet 5 printers, results in time-to-first-page speed increases of up to 32 percent over the LaserJet 4(M)+ printers, which they replace.

The new LaserJet 5s offer 12ppm engines and 600dpi resolution, but infra-red is an optional extra. H-P is part of the IRDA committee and IR is standard on the older but still current 5P and 5MP personal printers.

The LaserJet 5 costs £1,220 (RRP), the Ethernet-equipped 5N, £1,429, while the 5M with Ethernet and PostScript costs £1,659. See next month's *First Impressions* for a full review.

Gordon Laing

LanRover puts 100 in the box

This is the latest generation of the best-selling LanRover remote-access box (pictured below), capable of catering for over 100 simultaneous calls. The new LanRover Access Switch uses a single primary-rate ISDN link to provide up to 60 analogue or basic-rate connections over a single cable, cutting down the need for complex cabling. More than one primary-rate line can be fed in.

It is targeted at companies wanting to ramp up their remote capabilities. It could also be used by Internet service providers because a single box can house up to 36 modems (12 per add-on board) as well as ISDN connections. All the incoming data is digital but each port can sense whether the source is analogue or digital and route it appropriately. Prices start at £19,000.



Compaq slashes network costs

Compaq claims its new "Netelligent" networking range will slash the cost of network products by up to 50 percent.

Hugh Jenkins, systems group product manager at Compaq UK, said: "We can offer a far superior price/performance than is currently being delivered by current leading vendors such as Cisco, 3Com and Bay

Networks." The new product range will include network interface cards (NICs), hub and switch products, repeaters, desktops and servers.

Compaq's recent acquisition of companies Network and Thomas Conrad gives them access to specialist networking technology, but all the products will be manageable from one Compaq platform: the Compaq

Insight Manager.

Ian Whiting, internetworking product manager, said: "The marketplace up until now has been dominated by a large number of small players. This has led to a mystification of the technology used, and Compaq aims to demystify these processes."

Compaq 0181 332 3000

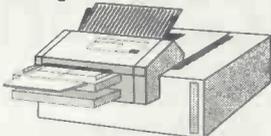
Jessica Hodgson

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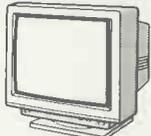
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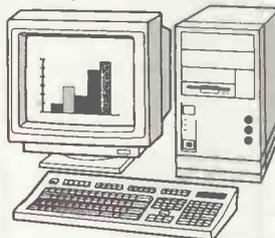
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- IBM Quiet Keyboard with integral TrackPoint
- 14" colour VGA, MS-DOS 6 & Windows 3.1 **£399.99**
- IBM fax/modem (not BT approved) **£29.99**

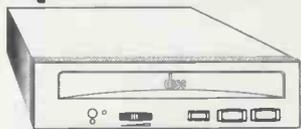


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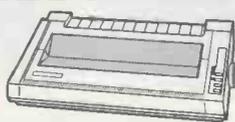


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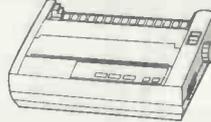
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**Tim Bjarin
reports from the US**



Bill Gates gave 4,500 developers in San Francisco a hilarious parody of what he called the Web's "gold rush mentality" with a mock ad inviting people to become publishers from the comfort of their homes. An actor said: "Mention the Internet in your business plan and you're sure to get funded."

Gates licensed his browser to AOL in return for sticking AOL's icon on the Win95 desktop (*Newsprint*, May). This will keep anti-Trust officials at the Justice Department off his back when he turns his own MSN into a Web service provider.

He will offer access from other providers as well as AOL. But he will make MSN access so simple that many Windows users will go for it. Gates may be late to the Internet party, but he is showing very quickly that he did not become a billionaire by sitting on his laurels.

Hurricane Heidi

Heidi Roizen, Apple's new VP of developer relations, became a multi-millionaire three years ago, having sold her T/Maker company. Having run one of the first Mac shops, she understands the trials of being a Mac developer.

Heidi was hired to stem the defection of developers from the Mac and get new ones into the fold. She told me she expected to get most calls from small developers needing Apple help; but the first to call were big companies planning to continue their support. She is determined to keep them happy while remaining responsive to the needs of smaller firms.

She also pulled off a major coup by setting up a full-page ad with glowing endorsements of the Mac by the likes of Bill Gates, Oracle's Larry Ellison, and Adobe's John Warnock. She is a one-woman tornado who will do a great deal to help Apple.

Fast US link heralds age of cheap communication

An announcement last month by Internet service provider, Demon, of a massive (by today's standards) new Transatlantic link could herald big changes in the price and scope of international communication.

Demon has leased a 45Mbit/sec line from British Telecom for three years at a cost of £15 million. That is more than the bandwidth available to all the UK Net service providers put together, according to Demon's managing director, Chris Stanford.

The move follows launches into the booming UK Internet market by two more big service providers, Europe Online and US-based Netcom, following in the footsteps of AOL, Microsoft

and CompuServe. Most of these companies offer membership services, in addition to access to the wider Net. Their charges are time-based.

Demon, which offers a few-frills connection for a flat £10 a month, aims to fight off the challenge by better and quicker connections. It virtually created the UK Internet boom by offering the first affordable service. However, Demon became the victim of its own success when it struggled to match demand in the face of a flood of complaints about connection problems.

Now it has a big new centre in London's Docklands, and local and continental connections have been boosted in line with the new

Transatlantic link. Stanford said: "To all intents and purposes, we are as good as in America. Our connection to the US is as good or better than the connections of any provider in the US itself."

The deal's wider significance is that it shows the first sign of a crack in the unofficial cartel which has kept the cost of Transatlantic calls artificially high.

A fall in prices would not only threaten lucrative leasing deals, but also international voice-phone revenues.

People are increasingly using the Internet to make international voice calls for the cost of a local call.

● *News Analysis* — page 36
Demon 0181 371 1000

BT opens window on to virtual world

So what are we going to do with broadband interactive communication, if and when we get it? British Telecom invited journalists to its Martlesham laboratories last month to take a look at some of the ideas being explored there.

The VisionDome (right) is a prototype virtual-reality space that can be shared by up to 15 people, giving a full-colour hemispherical field of vision.

The resolution is low and the design leaves a lot to be desired (the projector could clearly be tucked away, or even placed outside the sphere).

But the US-developed dome shows the feasibility of the basic technology. It could be used, for instance, to provide soldiers with simulated battle experience, or give technicians "telepresence" in danger areas such as a nuclear reactor. Future tourists could explore the world without leaving their homes.

Other experiments in what BT calls



"shared spaces" are subtler. One involves using anti-noise to give true 3D sound to videoconferencing. Another area of research involves getting the faces of avatars (virtual people, representing real online users) to appear as if they were talking naturally. Martlesham has put some virtual-reality demos on to its site:

<http://virtualbusiness.labs.bt.com/vrml/portal/home/>

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For distribution only with a new PC



1. Hologram
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of boy).

2. Light
Sensitive
Microsoft
Label.

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Number.

4. Bar-coded
unique serial
number.

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Short Stories



Hard worker

● SAIC claims this Fieldworks 5000 notebook can withstand a 100g impact and stay working, thanks to a rubber-covered magnesium frame. Options include 486 or Pentium processors.

SAIC 01276 675511

Can I quote you?

● The Collins Dictionary of Quotations is now available on CD-ROM, with around 18,000 quotes sorted into over 100 categories. At £19.95, the CD-ROM is better priced than the book and has the benefit of search tools.

GSP 01480 496666

Student offer on H-P printers

● Hewlett-Packard is bundling software packs with DeskJet 600 and 660C printers sold to students.

The bundles include Lotus WordPro 96, a 45-day trial CD version of SmartSuite 96 for Windows 95, and CompuServe software. An alternative offer includes Broderbund's Print Shop Deluxe and the adventure game, Myst.

Hewlett-Packard 0990 474747

TurboCAD hits top spot

● Sales of the latest TurboCAD 2D/3D have reached record levels, according to IMSI. The recommended price is £99.95 (RRP), but it has a street price of around £70 and has hit the number one position in Software Warehouse's Top 20.

• TurboCAD 2D/3D is reviewed in *First Impressions* (page 80).

IMSI 0181 581 2000

ISA bus could get lost in the great north/south divide

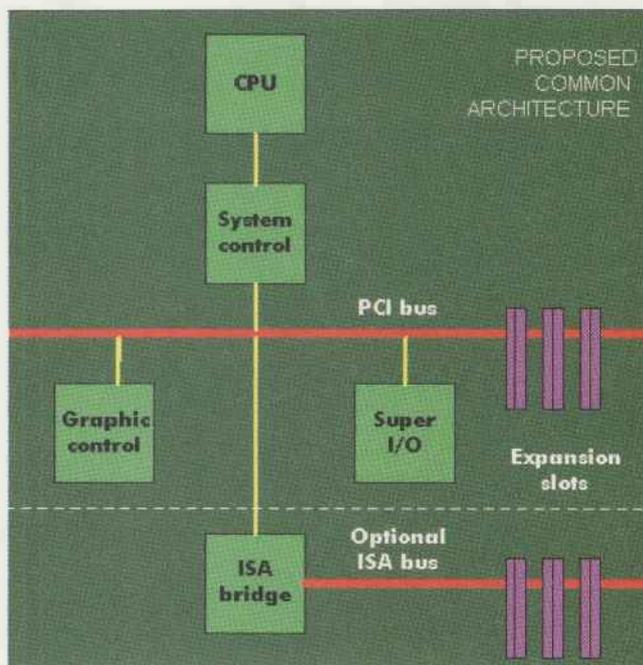
The antique ISA bus, a relic of the earliest days of the PC, would be phased out under proposals drawn up by a group of major chipset makers.

Their proposed new Common Architecture is independent of the main processor, giving a chance for non-Intel designs to find a market.

Backers of the proposals include National Semiconductor, Opti, VLSI, SMC, Texas Instruments and PicoPower. They say the plan will simplify PC design by enabling PC makers to mix and match components from any source, knowing they will be compatible.

The new design splits the PC into "north and south" components, straddling a PCI bus. North includes the processor (or processors) and a host controller that interfaces with the bus. Anything south of the bus, such as a graphics controller, does not need to know what is being used north, so long as it behaves in a standard way.

An ISA bus can be placed south of the PCI bus and connected to it by another controller. This allows for compatibility with legacy ISA devices, but it can be omitted. The first designs using the new



architecture are expected to appear next year.

Notable absentees among the backers include Intel, Apple, Motorola and IBM. The design has some similarities to the latter three's PowerPC platform. David Evoy, senior engineering fellow at VLSI, said the two designs could be reconciled and talks were under way to achieve that end.

He denied that the design was aimed at reducing the dominance of Intel chips and

insisted that Intel had been consulted about the design. "Whatever happens, most processors that go into these boards are going to be made by Intel. The way we see it, this architecture will do nothing but good for Intel, because it is providing a way forward for the PC."

But Intel spokesman Michael Sullivan said: "We have not seen the specifications. We could not make a comment until they have been fully studied."

Clive Akass

Intel keeps mum over Pro in the home

Intel is maintaining a discrete silence in the wake of stories of a cut-down consumer version of its top-of-the-range Pentium Pro processor.

The so-called P6 Lite chip, running at 233MHz, will power a new range of consumer PCs early next year, according to US reports.

The Pentium Pro was launched last year specifically for the demanding workstation and server markets. It includes,

uniquely, 512Kb of Level Two cache within the chip to speed up the data flow.

The P6 Lite chip is said to dispense with this cache to keep prices down to about \$800 a chip.

There is also no word on how it will cope with 16-bit applications, which run slower on the Pentium Pro than they do on the Pentium because the former is optimised for 32-bit operation.

Intel spokesman Michael

Sullivan said: "We are on record as saying that the Pentium Pro is the first iteration of P6 technology and in the future we would expect to have different products. We have not commented on members of the P6 family that are currently in development."

He said Intel had made it clear that it would eventually target P6 technology at the consumer market, but not until 1997 or 1998.

Tim Bjarin at the Technology for the 21st Century roundtable in Los Angeles

Now it's datacoms by handshake

A handshake may one day be used to transmit information such as that contained on a business card, the MIT Media Lab's Neil Gershenfeld told an assortment of luminaries here.

He pointed out that our bodies can conduct electricity. Gershenfeld said that the handshake with a message was just one of the ideas being explored by MIT for turning the body into a data channel.

Gershenfeld was speaking at the annual UCLA multimedia roundtable, now renamed "Technology for the 21st Century". This invitation-only event, which I helped start in

'We could use the human body to transmit data'
— Neil Gershenfeld,
MIT Media Lab



1990, has become a premier occasion for computer, consumer electronics, telecomms, entertainment, media and education executives.

Many of those invited are living legends. This year they included Intel co-founder Gordon Moore, who told the roundtable that he believed his

famous Moore's law (which states that the computer power you get per dollar doubles every 18 months) will hold true throughout this decade.

Artificial Intelligence pioneer Marvin Minsky, of the MIT Media Lab, said small cyberspace communities may become the

most effective way to discuss ideas without the pretensions often associated with face-to-face meetings.

Bob Lucky, formerly chief scientist at Bell Labs and now in the same post at Bellcore, the R&D lab for the Baby Bells phone companies, spoke about the continued problem of building a new broadband infrastructure. He believes it will take until well beyond 2010 for an optical-fiber network to reach into US homes.

Also present was Larry Roberts of ATM Systems, who designed and planned the development of ARPANET, the world's first major packet network and predecessor of the Internet.

Decade of the smart sensor

Paul Saffo, of the Institute of the Future, made perhaps the most profound prediction of the conference. He pointed out that each successive decade tends to be affected by a different technological invention.

During the seventies it was the microprocessor, which led to the PC revolution. In the eighties, laser technology impacted everything from printers to electronic communications. Saffo predicted that the next defining technology will be sensors — specifically, smart sensors on everything from packaging and toys to appliances and every sort of transportation system.

They will allow digital devices to interact in ways that control the time when a light goes on in your house, or use fuzzy logic to switch on a video camera when your child is about to score a goal in a football match.

Case for new metaphors

We may need to develop new metaphors to help naive users get into the interactive digital experience, according to Apple R & D chief Don Norman.

Norman, a world authority on cognitive science and author of many books on man/machine interaction, said the general belief was that TV, newspapers, magazines, and other media will move to a digital representation.

But he warned that the mechanism for delivering the bits and bytes could take many new forms. These may not immediately appeal to people who currently cannot afford a PC, or have no need of one.

He feared that if the old metaphors — such as Windows, menus and mice — were shoved down the throat of potential new users, they would never adopt technology that could truly impact the quality of their lives.

Faster Web links lead to Internet meltdown

Internet connections could get slower, even as people connect at higher and higher speeds, according to key participants in the roundtable, Bob Lucky and Thomas Freeburg.

They said ISDN and other fast-access methods will serve simply to speed up the meltdown of the Internet unless serious flow-control software and better switches are put into place.

They pointed out that US companies will soon be able to implement ADSL, a compression technology that can deliver over 1.5Mbits/sec through standard twisted pair lines. This will only increase the possibility that the Net will actually become a lot slower before it can become any faster.

Freeburg suggested that in the short term, solutions such as Direct Broadcast Satellites could be a good way to gain fast access to data. He cited as an example Hughes Network Systems' Insight system that can deliver entertainment and information via a set-top box.



Satellite links: could they be used to unclog the World Wide Web?

Short Stories



Psion PC buyer's guide and games

● Purple Software has launched versions of Backgammon and Chinese Chess (slightly different from the Western game) for the Psion 3a or Acorn Pocket-book, for £34.95 on floppy or £39.95 on SSD.

Psion has also announced PsiMail, which provides access to MS Mail and cc:Mail systems via a modem.

And Mobile Software has added a Psion 3a search engine to the CD-based Buyer's Guide from our sister magazine *What PC?*, with details of more than 3,000 hardware and software products.

Purple Software 0171 387 7777;
Psion 0171 282 5580

Lonely Times

● The online edition of *The Times* has 27,000 readers a week, 14,000 more than *The Sunday Times*. The average daily readership is 12,000. More than three out of ten of readers are overseas; 13 per cent of those using the classified ads look at the lonely hearts.

Set a thief...

● Screen Thief claims to "capture screens other programs can't reach". Screen Thief 95, a new 32-bit version, can be downloaded from www.nildram.co.uk.

Nildram 01442 891331

Tax package

● Europress claims that its latest addition to the Mini Office range, Tax Return '96, will assist PC owners to fill in their tax returns correctly and avoid paying too much — which three out of four people do, the company says.

Europress 01625 859333

Men get key message about RSI

Men are more conscious than women of the health problems associated with working at a keyboard, judging by the results of a new survey.

It shows that well-off males between the ages of 30 and 54 were predominantly buyers of the Microsoft Natural Keyboard (see box, right), which is sold as "ergonomically friendly".

Only four in 100 of these men were unaware of Repetitive Strain Injury (RSI) and three out of four had studied ergonomic guidelines.

But Richard Teversham, Microsoft hardware product marketing manager, said that the figures probably also reflect the fact that the keyboard had received most publicity in computer magazines, which have a predominantly male readership.

The Conquest Research survey of 330 MNK buyers found that more than 95 percent would recommend the board to others. "That is an astonishingly high figure for this kind of research," said Conquest's Jill Bowden-Doyle. She stressed that the research was independent, even though it was funded by Microsoft.

Teversham also cited US government research showing that users of the MNK, Apple's

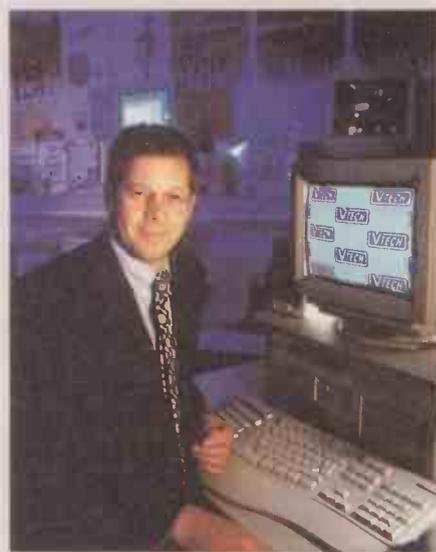
adjustable keyboard and another US "ergonomic" model reported reduced discomfort.

But he admitted that the preliminary findings were unreliable, and that a placebo effect could be at work — people believe that the keyboard is making work more comfortable simply because they have been told it is ergonomic.

The spectacularly curved Microsoft model, much copied in cheaper versions, certainly looks as if it should help.

Conquest said users reported benefits from the MNK, whether or not they were touch-typists. This contradicted my own experience as a non-touch typist: the MNK, curved to fit the "proper" hand position, seemed to be harder work.

Teversham agreed that



Crowning glory

The man with the Microsoft Natural Keyboard is Malcolm Jamieson, head of Crown Computer Products. He is showing off one of CCP's new PCs, which were designed via a satellite link by engineers in Hong Kong, Canton and Britain.

The VTech 586/133 uses an AMD 586 chip and costs £789 (plus VAT), with an 850Mb drive, 8Mb of RAM and a 64-bit Promotion graphics card.

CCP 01704 895815

posture and mouse use are of greater importance than keyboard design in reducing strain. He said: "Much more research is needed."

Clive Akass

Webbed Notes and pcAnywhere online

A Lotus package which lets you create and run Web sites using Notes 4.0 is available for download from www.inter-notes.lotus.com.

InterNotes Web Publisher 4.0 automatically publishes

Notes documents, views and forms for use on internal or external Webs.

Quarterdeck, which has moved into Web software in a big way, extended its reach into the wider comms market last month with the purchase of Procomm Plus publisher Datastorm.

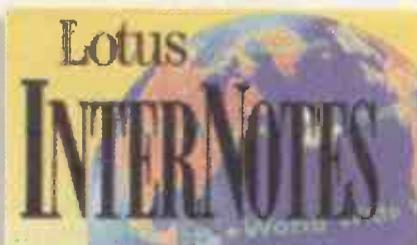
Procomm flourished long as a co-operatively developed shareware comms package. Its commercial incarna-

tion, Procomm 3.0, runs under Win95 and 3.1 and includes fax and Internet software.

Quarterdeck has also acquired Future Labs, developer of a package called TalkShow, which allows remote users to collaborate on a common document.

Meanwhile, Symantec has made the latest 32-bit version of its remote control package pcAnywhere available on the Web on a 30-day trial basis. pcAnywhere 32 costs £139, or £59 with a free parallel cable for registered users of competitive products.

Quarterdeck 01245 491190;
Symantec 01628 592222.



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Short Stories



● This £299 infra-red driven touchscreen is said to fit any 14in monitor.

Ellinor 01734 311066

The voice of V.34

● Digicorp has launched a V.34 PC Card fax-modem that includes an analogue-to-digital converter to enable voice messaging. The company says that with extra drivers, the £210 CCM48T can also be used with cellular phones.

Distributors:

Northamber 0181 296 7000;

Ideal 0181 286 5000

Write on

● If you think a computer can improve your letter-writing skills, you may be interested in PlanIT Letters, a £49 package by Clive Goodworth, author of the *The Secrets of Successful Business Letters*. It claims to help you write both personal and business correspondence.

PlanIT 0181 875 4420

CD juke box

● Alps is offering one of the cheapest CD juke boxes yet, at just £223 plus VAT. The quad-speed device takes four disks at a time and fits into a standard 5.25in bay.

Alps 01344 873853

Tax advice

● Coopers and Lybrand has posted a Web guide for the nine million taxpayers who start self assessment this year. The address is www.coopers.co.uk.

MSN million

● The Microsoft Network has enrolled more than one million users since its launch with Win95 last August, the company says.

Microsoft 01734 270000

Network computers could kill off the fun office PC, says IBM

The days of the fun do-it-all PC may be over for many people working in big companies, IBM believes.

The company has six pilot schemes going with big users using different models of cut-down network computers (NCs) along the lines of those proposed last year by Oracle's Scott Ellison.

There are three big advantages as far as companies are concerned, according to Michael Lunch, head of the UK PC division:

● The cost of the hardware is lower, because of the lower specification.

● The cost of ownership (reckoned at between three and five times the purchase cost) is lower. One reason is that the machines are more easily administered, and unauthorised software — the source of a large proportion of problems requiring costly support — can be weeded out centrally.

● There is no threat to security, because critical data is not sitting on the terminal.

Tony Santelli, IBM's European product and brand manager, added: "Don't forget training, which is a major cost for most companies where there is a large turnover of staff. If you

give people a fully-functioning PC they can easily get lost."

Lunch agreed that a move to an upgraded version of the old text-only dumb terminal, which flourished in IBM's mainframe heyday, would not be popular with power users.

"But they are not likely to be affected," he continued. "These machines will only go to areas where a fully-fledged PC is not needed."

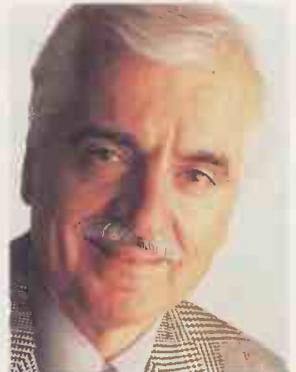
Another factor in the NC debate is political. It could reverse the drift of management power from back to front offices which happened when desktop PCs got more powerful.

IBM steps on to the Mac platform

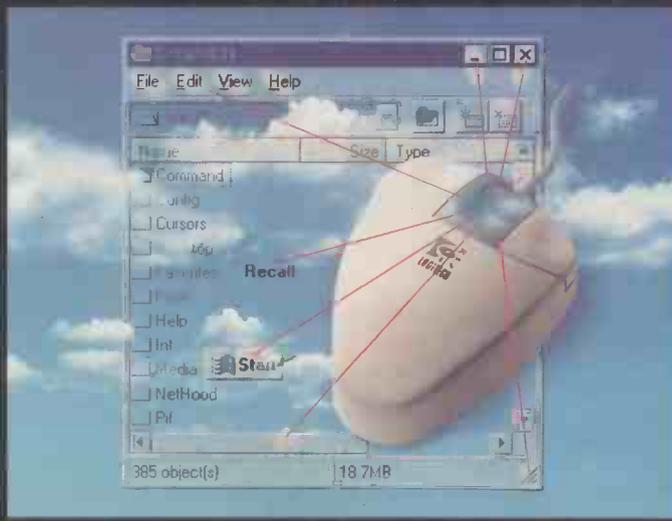
IBM could be selling machines running the Mac operating system early next year, European brand manager Tony Santelli predicted.

The machines will be based on the PowerPC platform, formerly called the Common Hardware Reference Platform, which will run NT, OS/2, Unix and the Mac OS.

Santelli said the IBM machines would be provided with a choice of operating systems. Asked whether IBM has licensed the Mac OS, he said: "You can take it that there are discussions going on about that."



Mighty mouse



This is the latest mouse from Logitech, specially enhanced for Windows 95. The middle button calls up a palette around the mouse cursor, providing access to the eight most-used Win95 commands: start, minimise, close open windows, vertical scroll, horizontal scroll, resize open windows, and swap application windows. The new mouse is available now, priced £39.

Logitech 01344 894300

MacAcorn poised for schools market

The company set up by Apple and Acorn to exploit the education market was launched formally last month under the name Xemplar.

It claims to have the greatest installed base of machines in British schools, though this takes into account antique BBC Micros still doing sterling ser-

vice after more than a decade.

Research Machines, which specialises in PC-based school systems, is ahead in sales. But Xemplar managing director Brendan O'Sullivan, former head of Apple Ireland, was optimistic about the new company's chances of regaining market dominance.

"People forget that schools are not the business world. They don't throw away old machines and they don't leave them in a corner, switched off. They keep using them on curriculum-based activities. So the first thing to recognise is that with our installed base alone we will be selling products for years to come."

He dismisses the argument, long thrown at Acorn, that there is no point teaching kids non-PC platforms. "All the major Microsoft packages are available on the Apple anyway. But Microsoft is not dominant in

schools. Apple has the lead in education worldwide."

Acorn's Risc OS will continue to be supported, eventually being ported to the PowerPC Platform architecture, due to appear next year, which will run all the major operating systems. O'Sullivan said: "We will be offering the widest choice."

Xemplar 01223 724724

Short Stories

PCI-based DOS on the cards

● Apple was due last month to announce PCI-based cards that will run DOS applications, according to US reports.

The cards would come with a choice of a 100MHz Cyrix 5x86 or 100MHz Pentium processor. But they will reportedly cost in the region of £500 and £700 respectively.

The cards will come with DOS rather than Windows 95 because of legal problems with Microsoft.

SoftWindows speeds up

● The latest version 3.0 of SoftWindows, which allows PowerMac users to run Windows 3.1 and DOS applications, is said to run 35 percent faster than version 2.0.

You can load Windows 95 into it, although the speed is reportedly not great. Chris Cain will review it in next month's PCW.

More details on Insignia Solutions' site at www.insignia.com, or freephone 0800 667706.

Newsprint welcomes feedback from readers. Send your news and views to clive_akass@pcw.cmail.com, compuserve.com, or call 0171 316 9317.



Chips off the old blocks

This is the kind of thing you can get up to with 3D objects and textures optimised by Ketiv Technologies for use with AutoCAD and Accrender ray-tracing software. They are on a \$199 CD called The Blocks and Materials Library.

Aztec (dealer) 0171 987 6543

Top 10 Peripherals		
Product	Manufacturer	Last month
1 Quad-speed CD-ROM Drive	Goldstar	1
2 Epson Stylus Colour Printer	Epsom	9
3 28.8 Sportster Vi Ext	US Robotics	-
4 Online Internet Modem	Motorola	2
5 850MB IDE Hard Disk Kit	Western Digital	3
6 PaperEase	Primax	-
7 SoundBlaster 16 Value	Creative Labs	10
8 MS Sidewinder Joystick	Microsoft	4
9 MS Home Mouse	Microsoft	-
10 Iomega Zip Drive	Iomega	6

Top 10 DOS		
Product	Manufacturer	Last month
1 WordStar v6.0	Softkey	2
2 Flight Simulator v5.1	Microsoft	1
3 MS DOS v6.22 U/G	Microsoft	3
4 Sterling Payroll	Sage	-
5 Sim City 2000	Maxis	-
6 FIFA Soccer 96	Electronic Arts	-
7 Norton PCAnywhere v.5	Symantec	-
8 Fun School Maths	Euopress	-
9 Fun School Spelling	Euopress	-
10 Fun School 4 Age 5-7	Euopress	-

Top 20 Windows		
Product	Manufacturer	Last month
1 Encarta 96	Microsoft	2
2 TurboCAD	IMSI	4
3 Pass Your GCSE Maths	Mathsoft	-
4 First Aid 95 for Win95	RMG	1
5 MS Office 4.2 U/G	Microsoft	5
6 MS AutoRoute Exp UK & IRE	Microsoft	11
7 QEMM 8	Quarterdeck	-
8 MS Office Pro 4.3	Microsoft	16
9 Cleansweep 95	Quarterdeck	10
10 MS Office Pro 95	Microsoft	11
11 MS Plus	Microsoft	15
12 Uninstaller v3.5	Microhelp	8
13 Dr Solomons Anti Virus Quarterly	S&S International	9
14 Dr Solomons Anti Virus Quarterly	S&S International	13
15 Quickview Plus	Inso	-
16 Page Plus Home/Office	Serif	-
17 CorelDraw 5 to 6 U/G	Corel	-
18 MS Office 95	Microsoft	7
19 MS Publisher v3.0	Microsoft	19
20 Corel Printhouse	Corel	12

Figures supplied by Software Warehouse and relate to bestsellers for March 1996.

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The rocky road to Cairo

Microsoft is not meeting the new technology challenge.

MANY USERS BELIEVE that Microsoft is innovative and a technological leader. This is far from the truth: Indeed, it is hard to think of a single significant innovation by Microsoft.

Despite having Apple's GUI as the basis for Windows, it took more than nine years between Gates' first announcement and Windows 3.1, the first usable version. Windows NT (which despite its name had no new technology) took five years to produce. Windows 95 took four years from announcement to delivery and turned out to be Windows 3.1 on steroids.

Despite Microsoft's black propagandist campaign against IBM's OS/2 Warp, IBM is as likely to drop its operating system as Microsoft is to drop Windows NT and 95. Microsoft is very concerned that OS/2 is outselling Win95 and NT at retail, particularly in Europe. Microsoft likes to present the debate as being about upgrading to Win95 or NT: the best approach to this is to consider alternatives such as OS/2 Warp, Unix, NeXTStep, or staying with Windows 3.x.

Further delays were recently announced to "Cairo" (supposedly the coalescence of Win95 and NT with object technology) which will make it at least eight years from conception to the first version.

The further delay to Cairo has been attributed to

Microsoft's Internet strategy U-turn, with staff being distracted to make existing products work with the Internet. They needn't have bothered: as users already know, the Internet is increasingly grid-locked, making it too unreliable for serious business use. A more likely reason for the delay has been the disappointing sales of Windows NT Server.

So far as Intranet applications are concerned, in the next couple of years few corporate users are likely to do more than have a front-end from their corporate databases to an Intranet server.

Microsoft encouraged expectations for Cairo to rise, but has found itself unable to deliver on its promises. Cairo has been recently de-scoped: it will no longer have a global directory service, nor an object file system. Instead, the distributed filing system is to be based on Exchange Server 4.0 (as it is being called, despite being the first version). Microsoft's competitors were delighted. The company has been forced to admit that Cairo will not now be delivered before late 1997 at the earliest, but no bets are being taken.

A couple of years ago, Microsoft's object technology strategy paper said that "object-orientated programming is a way to develop software by building self-contained modules that

can more easily be replaced, modified, and reused." So far, so good. But then, in the next sentence: "But object-orientated programming technology has failed to fully address the need to simplify application development."

It seemed that Microsoft either found object technology too difficult, or, more likely, did not like the idea of promoting a technology that would allow users to pick best-of-breed software that could work together under rules established by industry agreement and business needs, rather than proprietary specifications controlled by Microsoft.

To keep its proprietary control Microsoft is trying to add to OLE, functionality it was never designed to have: distributed objects, security and directory services. Even Microsoft's avid supporters are concerned that Network OLE cannot achieve this.

Another technology that Microsoft does its best to ignore is middleware — what comes between you and your data. The company could never dominate this growing sector and doesn't like to admit that Microsoft and non-Microsoft products can be connected in this way.

As a result of Microsoft's failure to deliver to schedule and its retreat from state-of-the-art technologies like object orientation, many smaller corporate users are joining the move by larger businesses towards object management standards — essentially an MS-free zone.

The new mood is towards software serving the needs of business. The days of sheep-like adoption of software produced by business-ignorant boys and girls in Redmond, and chancing a business to the ill-defined and ever-changing plans of a single vendor, are gone.

Graham Lea

● Graham Lea is an independent computer industry analyst. Email 100137.655@compuserve.com

ANALYSIS

In the light of Microsoft's disappointing track record in sticking to software-release schedules, and its bullish attitude to upgrading, alternatives like NeXTStep could be considered



IN SILICON VALLEY, A company with legendary status is Xerox's Palo Alto Research Corp. Unfortunately, Xerox PARC is best known for lost opportunities. Its most famous blunder was to create the graphical interface and then let it get into the hands of Apple, which turned it into the Mac interface.

The page description language was also invented at PARC, but the creators, John Warnock and Chuck Geschke, had to leave Xerox and start Adobe to make it a commercial success.

Now Xerox PARC has started a subsidiary, called dPIX, to help it capitalise on its creations, and its first product could be a big hit. It is a 13in flat-panel LCD screen with seven million pixels and a resolution of 3,072 x 2,240. This is the highest-ever resolution on a PC screen, cathode-ray tube, or LCD (SVGA starts at 640 x 480).

Initially these screens will be very expensive and targeted at the aeronautics and medical industries, to be used as navigational output monitors on planes and in various medical imaging products. They show us the future of display technology. Many believe that in a few years, flat-panel LCDs will

completely replace CRTs in desktop computers. But don't expect the Xerox models in the consumer market for a while yet. Xerox will be making them in limited quantities at first, but may later license them for larger production. I don't think we'll see high-definition colour, flat-panel LCDs for the mass market until 1999 at the earliest.

● On a similar note, you may have noticed that prices of notebooks with active-matrix colour LCD screens have dropped a lot over the past year. This is because more



Dr Charles M "Chuck" Geschke

factories, able to produce them in large quantities, are coming on line. Sharp, the biggest supplier, has opened two new plants. Toshiba has increased output too, and Korean manufacturers have started cranking out these screens in big volumes.

So, a 10.4in active-matrix screen that cost PC vendors \$950 in late 1994 was selling for just under \$500 last autumn.

However, now that we can get 10.4in active-matrix based notebooks at a reasonable price, these LCD screen makers are starting to deliver 11.3in and 12.1in screens for use in portables. I got a chance to see the new H-P OmniBook 5500 recently with the new 12.1in screen in it. Result: a bad case of techno-lust.

A 12.1in screen costs notebook makers well over \$1,100 today, so the new 11.3in and 12.1in models are going to be pricey. But you should take a look at them if you are thinking of buying a new notebook.



Talkin' about a resolution

The highest-ever resolution on a PC screen heralds the future of display technology, writes Tim Bajarin.

Japanese set to blot US notebook market

An interesting war is about to erupt in the US notebook market. Japanese vendors such as Fujitsu and Hitachi will enter the US with models in every category, with a potentially devastating effect on existing vendors.

The US market for notebooks grew at only 12 percent in 1995, according to the International Data Corporation, compared with 25 percent in 1994. With more vendors and a slowing of growth, a real shake-out could occur.

Players like Apple and Compaq, which have lagged behind in innovation, could get hurt if the

Japanese get aggressive with pricing in order to buy market presence and quickly gain channel acceptance.

When Fujitsu decided to aggressively enter the mainstream desktop market in Japan, it priced its systems so low that it almost killed Apple and prevented Compaq and Dell from getting a serious foothold there. My Japanese sources say that Fujitsu's pricing, which was as much as \$200 under cost on some models, was designed specifically to ensure Compaq and Dell did not gain ground in Japan.

The word is that Fujitsu will spend

close to \$21m to launch its portable line into the US this month, suggesting that the company has an ulterior motive. Many feel that both Fujitsu and Hitachi are using portables to open up new channels and strengthen their brands in a bid to make them household names by next year, when they will bring new digital access devices to the US consumer market.

In the short term, Fujitsu is bound to hurt the traditional notebook players if it undercuts their prices significantly. That could cause a real price war in which only the big players may survive.

ANALYSIS

Cranking up the bandwidth

BT is selling a faster Transatlantic link. It's good to talk about this as a pointer to the future, says Clive Akass.

DEMON INTERNET'S new 45Mbit/sec Transatlantic link merited its flash press launch at the Ritz. But to an outsider, the most surprising aspect was not how large was the capacity of the line about which all the fuss was being made, but how small.

British Telecom officials tell me that the entire Internet traffic that BT pipes between Britain and the US peaks, at the moment, at 8Mbit/sec. This does not include private business links. It is nevertheless at least a couple of orders of magnitude less than you might expect from two whole countries talking to each other.

Consider that the average office network chugs along at 10Mbit/sec and that can soon get clogged up if you throw in a bit of multimedia: 1Mbit/sec is considered about the lower limit to deliver acceptable MPEG video.

Clearly, if people could afford to download videos from Hollywood, or talk face to face on a see-phone with Aunt Fanny in Baltimore, or play network Doom with cousin Joe in

Peora, they would do so. Companies would have even more reason. Bandwidth would sell by the gigahertz if it were cheap.

And bandwidth *is* cheap — to the people who own it. That single 45Mbit/sec link is a fraction of a hair's breadth of a single strand of optical fibre. There are bundles of fibre going under the Atlantic: gigabyte upon gigabyte of bandwidth, much of it unused.

A 2Mbit/sec connection, by one measure, actually costs the providers more than a 45Mbit/sec one because of the need to multiplex down (i.e. divide the capacity into distinct channels).

Bandwidth is like diamonds. If you restrict sales, like the diamond cartel does, you keep up the prices. You can charge millions for a connection that costs you no more than a domestic phone line.

On the other hand, if you don't restrict sales, you could shatter the current revenue structure of the phone system. People with bandwidth to spare could sub-lease it for standard phone calls: at least one company is already offering Internet users Transatlantic calls for less than 10p a minute.

Clearly, there are some

tricky transitions to make on pricing structure, as well as on technology, before the fabled Information Superhighway (as opposed to the current dirt track) reaches our doorsteps.

BT took a first step earlier this year when it published prices for its ultra high-bit lines. These have been a hitherto closely guarded secret and their publication is expected to stimulate competition and price reductions. Demon's 45Mbit link, the first BT has sold, is a fruit of this more open climate and is thus a pointer to the future.

But there is a huge technology shift to come. BT researchers at Martlesham have set up a pilot network in which even the switching is carried out optically, photon by photon. A single channel can offer a bandwidth of hundreds of gigahertz: more than 1,000 times as much capacity.

There will be no more jerky video links with that setup. You're talking high-definition television, in spades.

Nerd regrets

An apology is due to the makers of Channel 4's "Triumph of the Nerds" for an unenthusiastic notice in last month's *Newsprint* (page 19). It was a result of my irritation at the way newspapers and television sneer at youngsters (and, indeed, oldsters) who are interested in computing, which is routinely associated with the word "nerd". Small wonder that Britain is not producing enough technologists.

But the first program (the only one screened before we went to press) was excellent and fully justified the title. It defined a nerd as someone who used a telephone to talk about telephones.

Thus myself, using my first aged word processor, deciding that what I was writing on was more interesting than what I was writing. So I am a nerd, and proud of it.

Cliff Stanford, managing director of Demon Internet: his company's 45Mbit/sec Transatlantic link signals a more open mood in Internet technology



On a natural note, Microsoft's still flat

Listening to Microsoft's spiel about the pros and cons of its natural keyboard (*Newsprint*, page 28), I was struck by the thought that the first change I would make to a keyboard would be to move the Caps Lock key.

Several times a day, and sometimes several times an hour, I hit this key by mistake yet I hardly ever need to use it. The key is absurdly

positioned and must be responsible for thousands of lost person-hours of work across the country each year.

My Gateway keyboard allows me to remap it out of the way, but there should be a remapping option within the operating system. Odd that Microsoft, for all its usability labs, could overlook something so simple.



1996. A space odyssey.



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38
PERSONAL COMPUTER WORLD
JUNE 1996

Computations

STATELLITE-PAK

→ Percentage increase since 1978 in information technology capital investment per white collar worker: 10,000. Accompanying percentage increase since 1978 in white collar productivity: 0.

● **Source:** Rebecca Rudd, Focus, *Carnegie Mellon Magazine*, January 1996.

→ If America's home computer screens were laid down flat together and used as a football field, all soccer's Premier League teams could play each other on a different pitch with at least 100 pitches to spare.

● **Source:** *Predicast/Fortune* (30m units in 31 percent of US households; 20 teams; 400 matches).

→ Boxes of personal computer units shipped by Japanese manufacturers in a recent year could have filled Wembley Stadium to the top of the terraces.

● **Source:** *Independent on Sunday* (2,309m units @ an average 0.5m³ / Wembley, 1million m³).

→ A police officer could examine a conviction filed on the Police national computer every ten minutes of the working day, for 373 years.

● **Home Office** (3,956,026).

→ One copy of each of the world's computer magazines would stack eight storeys high.

● **Source:** *Kaleida Labs* (1,900 @ 1.5cm).

→ A year's raw plastic pellets for UK-made computer casings could jam six lanes of the M1 motorway with nose to tail juggernauts for over a mile.

● **Source:** *British Plastics Federation* (19,200 tonnes).

→ In the eighties computer boom, the Ministry of Defence was spending more than £40,000 per working hour purchasing computers, or £232 a year per member of the armed forces.

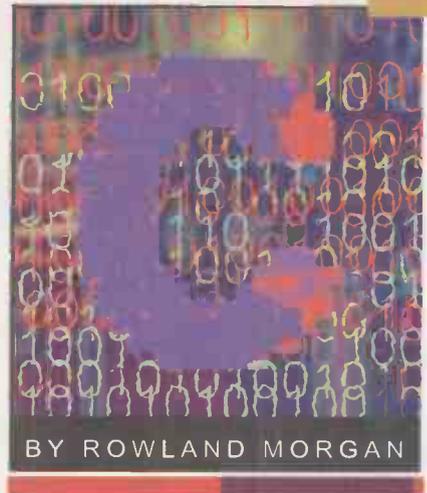
● **Source:** *UK Ministry of Defence* (£355.5m at 1986-90 prices).

→ Each American man, woman and child's annual electricity consumption could run about 100 personal computers. That of their African counterparts: two.

● **Source:** *The New Book of World Rankings* (19,955/369 kW/hr per year).

→ The clock speed of IBM's AT model, the leading-edge personal computer of 1984, was 27 times lower than today's 166MHz models.

● **Source:** *IBM* (80286 at 6MHz).



BY ROWLAND MORGAN

Solar computing

Between 150 and 200 million personal computers are working now, drawing at least 37GW, or the output of 15 major traditional power stations. As with all technology, the installed base is already obsolete, although critical mass of investment will yet drive it forward. All processing will go virtual, handled on central servers like telephone exchanges. Energy-guzzling PCs with hot memory banks requiring fans and their own monitors will be replaced by "toasters" costing little more than a telephone and there could be a saving of 34GW, or about 16 power stations — half the power produced in Britain.

Desktop computers in this country, say five million, currently capable of drawing at least half the output of a big station like Didcot A (its cooling towers are visible up to 15km west of the M40 on the Oxon/Bucks border), could be phased out and replaced by little appliances drawing one-tenth to one-twentieth the juice. In fact, a silicon

plate on the roof could easily power each network computer and, incredibly, disconnect all infobahn users from the grid.

Megawattage of a typical power station (Didcot A): 2,060MW. Wattage of the power supply unit of an Oracle Network Computer for corporate use: 15W.

● **Sources:** *Newsweek*, 21st February, 1994/*Oracle/The Electricity Association*.

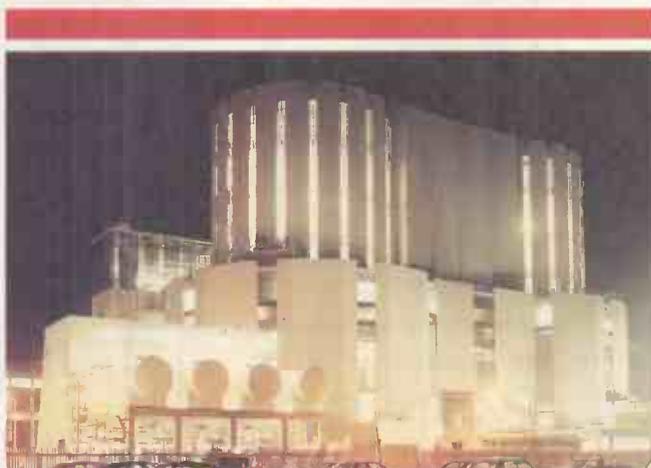
The Green-Gauge

Personal Computer — Oracle network computer

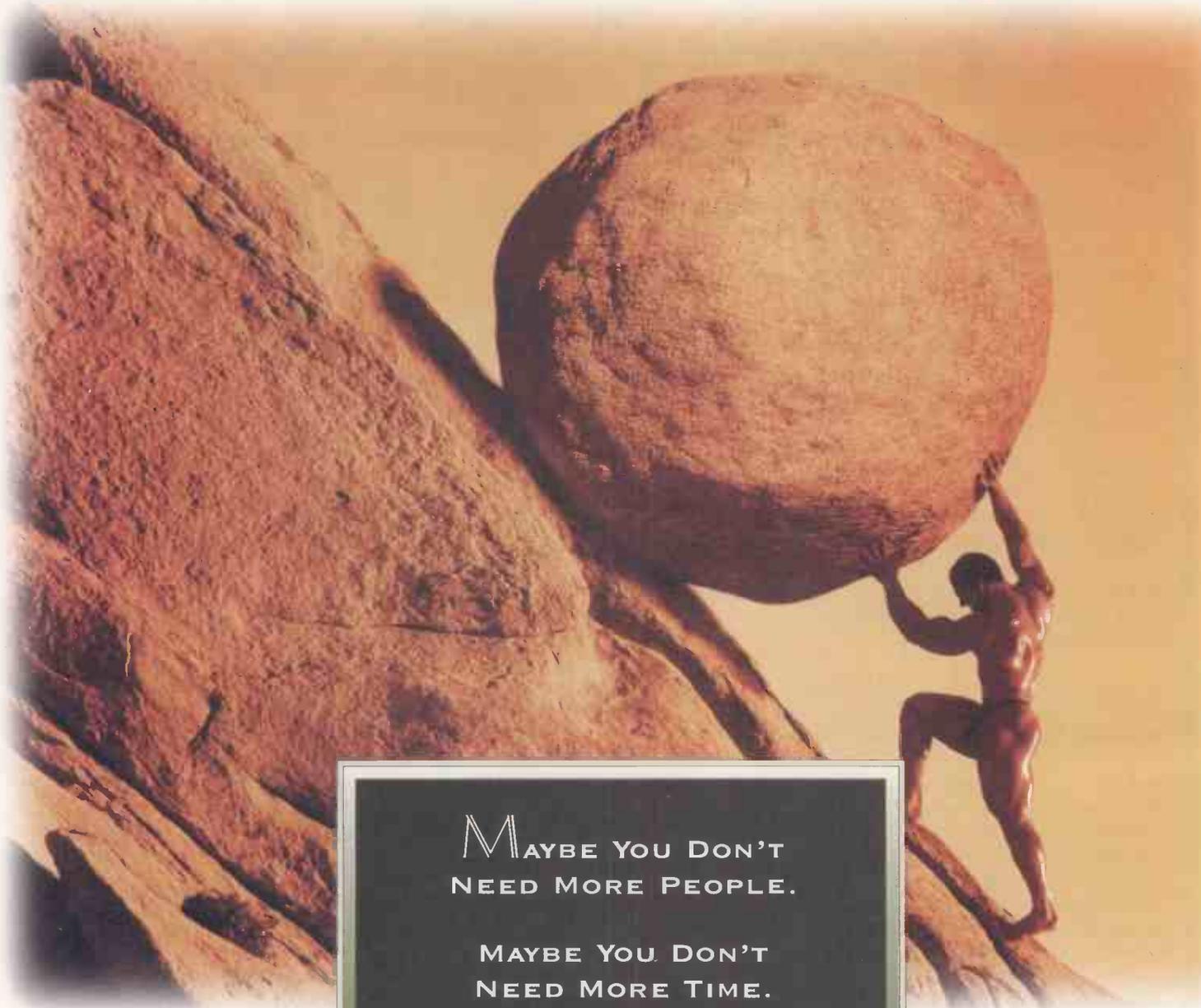
Energy Saving:	15W max draw
Take-Back:	No
Polymer Codes:	Yes
Packaging:	t.b.a.

Laser Printer — NEC Superscript Colour 3000

Energy Saving:	Power-down mode
Take-Back:	No
Wattage:	5
Packaging:	All cardboard
Recycling:	Plastic codes



Hungry PCs gobble half the output of a big power station



MAYBE YOU DON'T
NEED MORE PEOPLE.

MAYBE YOU DON'T
NEED MORE TIME.

MAYBE YOU JUST
NEED MORE MEMORY.



These days, you can sum up the human condition like this: too much work, not enough time. Computers, of course, are supposed to ease the burden. But

now, with all the new memory-hungry software out there, many computer systems aren't up to the task. Fortunately, there's a simple solution: add more memory. Recently, an independent study¹ revealed that by adding just four megabytes of memory, the average manager became 26% more productive. The average number cruncher improved by 12%. So, why Kingston memory?



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Sounding Off

I am a lazy bastard, of the "work fascinates me, I can look at it for hours" school of thought. If I can get someone else to do it for me, I will.

Unfortunately, I have so far been unable to extend this noble concept to physical exercise. This is a pity, because nine months ago a combination of sloth and fatalism induced me to resign my health club membership. Since then, impressed by my burgeoning, beer-induced bulk, lard companies have been pressing me to accept sponsorship deals.

The situation reached crisis point just after Christmas, when a second pair of trousers exploded, showering innocent passers-by with potentially lethal fragments of zip. I resolved to jog three miles each morning. There was a problem, though. Not with the jogging — I didn't get that far. The problem was in getting out of bed in the morning to do it.

Fortunately, it looks as if computer technology could soon come to my aid. While leafing through *The Spectator* the other week, I came across an advertisement for "The Bed". Although the accompanying photograph makes the thing look rather like a slug in traction, I reckoned it must be something special (after all, not even *The Guardian* underlines its italicised definite article) and I was right: further reading confirmed that the virtues of *The Bed* are many: "Flexible, versatile, and luxurious with the technology to meet your demands" boasts the blurb. "It could be the most comfortable bed you'll ever own."

What you get for your money is a custom-built rig, matched precisely to your personal height, weight and build. If there are two of you, you've got to supply the manufacturer with your partner's dimensions as well to prevent them dropping off the end or getting absorbed into the duvet.

There's a five-phase temperature control which heats the mattress to



MICHAEL HEWITT

your specifications. There are four, inbuilt motors which allow *The Bed* to be manoeuvred into any position you require. Then, when you get up in the morning it will automatically air itself, which must be quite something to watch.

Anyway, something like this could well be the answer to my inertia problems. At the moment, when the Psion goes off at 6.05am I perform a quick mental calculation, comparing my current temperature to the likely outside air temperature. If I reckon the street is going to be more than 20°F cooler (Celsius is for anoraks) and in my imagination it invariably is, I say "sod it" and go back to sleep. But *The Bed* will help overcome this.

An interface from the Psion will kick in at around 5.00am. The program will tell *The Bed's* thermostat to set itself to "cool". Not too cool, or I'll end up in cryogenic suspended animation, but just

enough so that, by 6.05am, the outside temperature should be a good deal warmer than the interior of my bed. This should provide sufficient inducement to get me up off my back and into my trainers.

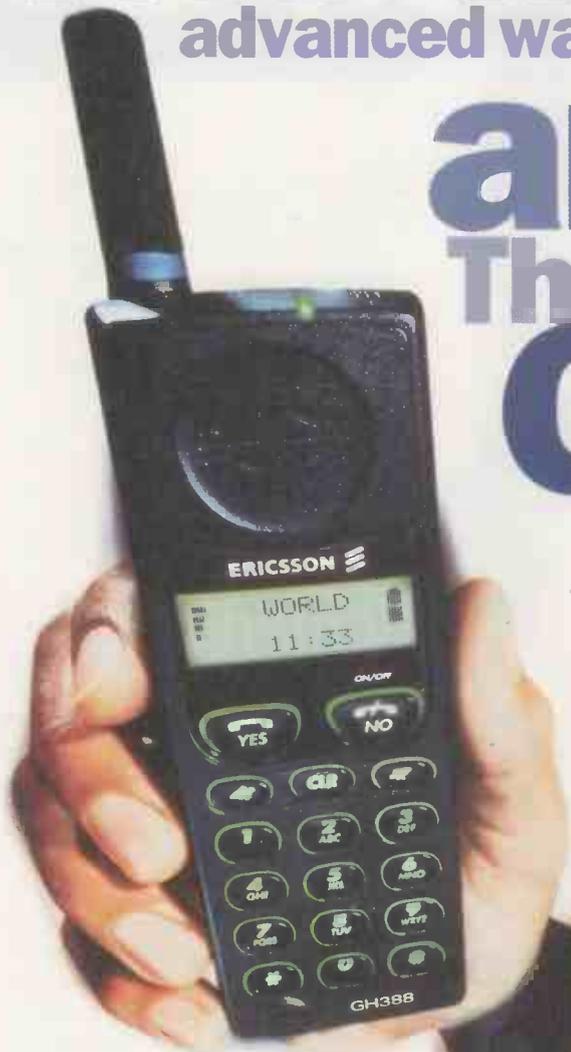
If it doesn't, Phase 2 of the wakeup program will be executed. This will operate *The Bed's* motors. Normally, these work in unison to gently lower and raise different sections of the frame. However, boosted by a powerful transformer, they could be made to emulate the pop-up action of my Rowenta toaster, tossing me through the air in a parabolic arc. Thereafter, a proximity detector built in to the bedhead will resist any efforts by me to get back in: the frame will snap at me like a pair of jaws. Indeed, if I automate my bed-settee as well, the two of them could combine to drive me out of the flat and see off any potential burglars in my absence.

Thinking further, I see no reason why other household objects couldn't be turned into useful, health-inducing computer peripherals. *The Fridge* is an obvious choice. At the moment, my frost-free Hotpoint will let me put in and take out any old stodge: ice cream, oven chips, pizzas — you name it. But an OCR scanner built in to the door could read the fat and calorie ratings of the outgoing foodstuffs and relay the information to my PC. Once the FlabScan software has decided that I've exceeded my daily calorie allowance, it will automatically lock the fridge door and blow a barrage of frozen peas at me if I try to force an entry.

Then there's *The Chip Pan*. An interface between this and *The Electric Oven* will keep watch on my fried food intake. More than two fry-ups a week, and the electric rings will automatically shut off and fire up servo motors in *The Salad Bowl*, which will load itself with chopped cucumber, tomatoes, and celery, and propel itself relentlessly...

Forget it. I shall just resign myself to going down the Orson Welles route. ■

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*The plus battery is available separately. The GH 388 comes with the light battery giving 33 hours standby and 115 minutes talktime.

Homefront

When April's *PCW* arrived, I turned first, as always, to read the wise words of our editor (*can I have that rise now?*). I was shocked to find he had written that Microsoft's Encarta cost £299

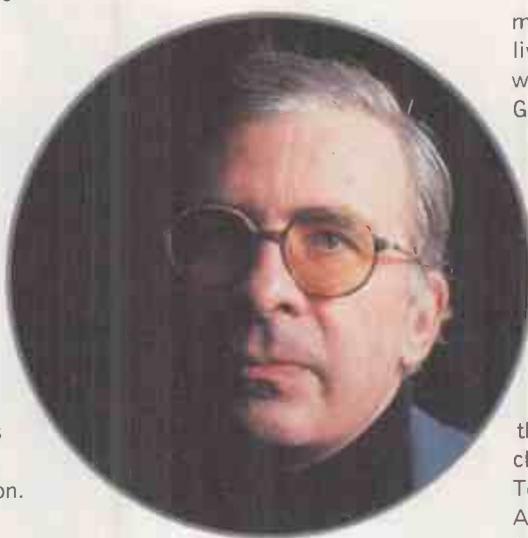
when it was first released. "Shurely some mishtake," I thought. Rummaging in the archives, I dug out the original *PCW* review from August 1993. And yes, there it was; £299. What's more, I'd written it, and nowhere in the text did the words "expensive" or "who do they think they're kidding?" appear.

Now, less than three years later, the latest "World English" version, in which some of the US-specific contents have been ditched to make room for really important things like cricket and the Archers, can be bought for less than £50.

It is certainly good value, but it was equally good value when it first came out. What has changed is our perception. In those days, when a new-fangled double-speed CD-ROM drive, soundcard and speakers cost around £400, CD-ROM held the status of small objects of desire. Now, we see CD-ROM for what it is — a cheap way of reproducing large amounts of data. Most computer magazines give one away each month, and it's getting increasingly difficult to find "home" titles of any description that come on floppy.

The market has matured. Much of the utter rubbish pushed out in the first wave of CD marketing has disappeared, and the sheer quality of some of the current titles is astounding. Those already in the business, such as Microsoft, Voyager and the Discovery Channel, continue to provide a stream of informative and entertaining products. Some of the traditional publishing houses have grasped the multimedia nettle in an extremely competent way: Dorling Kindersley's splendid, visually-rich, reference offerings such as *Stowaway* or the *Eyewitness* series, for example.

So, how are we doing in the world of fiction? Specifically, titles that are going to enrapture younger children. After all,



TIM NOTT

there's a wealth of creative talent, much of it British, in the field of children's writing and illustration just begging to be brought noisily leaping off the page via multimedia. Many parents and children are familiar with the wondrous versatility of the Ahlbergs, the brilliant anarchy of Tony Ross, the messy mastery of Quentin Blake, or the near-photorealistic surrealism of Anthony Browne.

So when a great British publishing institution, such as Penguin, hits the streets with multimedia titles, it should be time to get excited. When the catalogue (itself on a CD) landed on my desk it got priority treatment. For the adults there are Penguin-ish highbrow subjects — Arthur Miller, Jack Kerouac and opera. But for the tinies, out of the vast range of talent available, what do they offer us? Beatrix Potter and *Topsy and Tim*.

The first needs no introduction. Though it's brought up to date with animation and music, the pictures remain faithful to the original. Unfortunately, so do the attitudes. The guys get to do the fun things like fishing and growing things, while the gals are stuck with washing and sweeping.

Topsy and Tim's world is a rather more recent time-warp — the tiny twins live in an unblemished suburban Utopia where the most challenging event is Grandpa losing his glasses.

What both series have in common is that they are loathed by all the parents I know and unheard of by most children until, alas, they are bought by grandparents.

They're dull, insufferably cosy but "nicely done". So nicely, in fact, that it makes you wince at the lack of imagination. And the price?

£29.99. Sure, the story gets read out, there's some simple animation, things to click and games to play, but basically, *Topsy and Tim* is a 28-page story book. A far cry from the Dorling Kindersley or Microsoft value- and content-packed products.

Compare this with the products coming from US software houses, such as *Seventh Level*, whose showbiz approach to "tinies" products such as *Tuneland* features zany animation and singalong music recorded by real musicians. It's similarly depressing to realise that, on a (slightly) more adult level, it took this same US company to do justice to that venerable British comic institution, *Monty Python*.

The whole point of multimedia is imagination. And that is what is lacking on the UK storytime scene. There are a few notable exceptions, such as the Oxford University Press story books which combine the creative talents of John Bush and Corky Paul with the recitative skills of Robbie Coltrane and Sandi Toksvig.

But if major UK publishers such as Penguin want to appeal to today's "wired" families, they're going to have to dig a little deeper than the flightless fossils of *Topsy, Tim and Peter Rabbit*.





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Straight talking

Sincere thanks to the many dozens of readers who are still faxing me hints, tips and thoughts on Holy Grail fax software.

Sheer weight of numbers makes individual replies impossible.

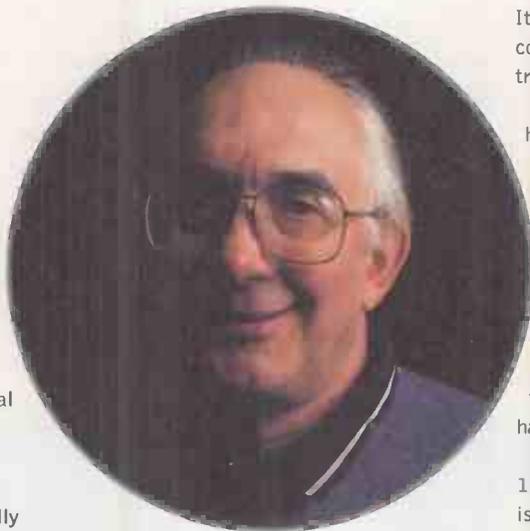
The exercise confirmed my suspicions that the companies who market fax software, and the PR companies who promote it, know zilch about what they are selling. This helps explain why the majority agree that virtually all fax software is flawed. "Couldn't agree more", "hit the nail on the head" and "hit the spot" you kindly wrote, suggesting: "the best of a bad bunch".

For those of you who missed the original question, a couple of months ago I asked whether anyone knew of a fax software package that is reliable and is not overburdened with daft features. Who really needs a disc full of cover sheets saying things like: "Here's your fax, dude"? More to the point, who even thinks we need them?

I asked several software companies for Holy Grail suggestions. Most of them ignored me. More than two months later, Shandwick PR, on behalf of Symantec, sent me a copy of Delrina's Winfax Pro Version 4. This was released before Windows 95 and carried an upgrade offer that expired last December. Are you really recommending people buy this outdated product?, I asked, but got no answer.

Two people from Text 100, who represent Microsoft, phoned separately to say they could not help, because Microsoft did not do any fax software. As several readers have pointed out, Microsoft gives away good fax software as part of Windows 95. The extraordinary diversity of opinion on what is good, bad and useless clearly shows that fax software which works well with one modem may fall down with other brands. There is no way to predict how anything will behave when sending to other fax software or standalone fax machines.

A couple of readers recommend the fax facility that came with WordPerfect for DOS. Remember WP? Likewise, several people



B A R R Y F O X

seemed happy with Fax Works, which apparently comes free with OS/2 Warp. Remember Warp? It's the operating system which IBM was going to make the industry standard. OS/2 now seems to have sunk without a trace, along with IBM's interest in communicating with the press.

One reader's comment made me quite glad I never sacrificed my PC to OS/2: "My son set it all up and he has forbidden me to change anything — on pain of being boiled in oil for three minutes while he thinks of something really unpleasant." Another reader suggests using the Psion 3a with 3Fax modem. Yes, it does work. I've fiddled with it from hotel rooms. But who could seriously do a day's work on a 3a keyboard?

A couple of people recommended Arcfax, but as it works only with an Acorn Archimedes, it must be of limited interest. Trans-Send has one devoted fan. So does Smartcomm Fax for Windows and Fax Now from Iconographic Systems. Several people

recommended Bit Fax and Bitware, from Cheyenne Communications. They had all got it free with various modems.

A similar number had got Quick Link II free and like it. One noted just what I found. It is choosy about modems, and fails to connect with some fax machines unless you try at least three times.

Likewise, many people seemed quite happy with Winfax Lite, which is also given away free with modems. But those who pay to upgrade are not so happy. "I got so angry with the stupid program," wrote one reader of Delrina's Winfax Pro and Commsuite 95, "that I've erased every particle from my hard disk. I daren't give it away, as I would be so embarrassed." Another who upgraded from Winfax Lite to Pro 7 is so unhappy he has asked Delrina for a refund.

But someone else reckons "Delrina 4 in 1" (whatever that is) is the bee's knees and is saving up to buy Commsuite 95. A colleague uses Winfax Pro, and tells me the only way to get good help is to bypass the UK operation altogether and phone Delrina's HQ in Canada.

A reader from Sussex has solved his software problems by buying a standalone fax machine with serial input for ASCII from a PC word processor. He, and others, share my concern over leaving a PC on all year round to receive faxes. Mr PT of what may be a Dutch address should check what he is using; his fax came over as garbled graphics. Mr PD and his son ND from Newry, should check what they are using too. Their fax came over the size of a postage stamp. Mr GH of Hull tried many times to send me a message, but the most I ever got was a cover page.

Several readers asked for advice. The only clear fact to emerge is that there is no such thing as a Holy Grail package. Nor is there ever likely to be, until the software companies and their PR representative take the time and trouble to ask customers what it is that they really want.

The best fax software often comes free, bundled with a modem or operating system. That way, at least you know it will drive the modem. And it may well be much better than an expensive upgrade. ■

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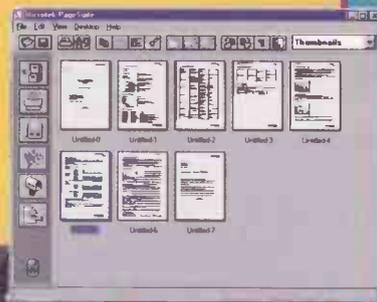
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Business matters

I have hazy memories of visiting a circus in the dark ages before Linda McCartney, when nobody worried about the ethics of animal acts.

I didn't enjoy it much, particularly when a sad-looking elephant was paraded around in silly clothes. This image surfaced when viewing the efforts of the business world to come to terms with the World Wide Web. Perhaps a more precise picture is a bunch of elephants attempting to ride bicycles. This combines the herd instinct with the sheer incompatibility of a large company bureaucracy and Internet communications. Let's look at the diary of a corporate enthusiast setting up a Web page:

May 2 — got the go-ahead for the Superco plc home page.

May 16 — Took a prototype to the working group. They were impressed — referred me to the head of department.

June 1 — Head of department back from holiday. Demonstrated the final version of our home page. Boss impressed with final version of home page, wants the detail okayed by the corporate design team. Hope to be live by the end of the month.

July 15 — Corporate design request that we make the pages less wordy.

August 1 — Corporate design engage a consultant.

October 16 — Design consultant reports. The graphics will be difficult to reproduce.

November 23 — Pages to new specification available. The home page takes half an hour to open with a 14.4 modem, but looks wonderful. PR department finds out about the Web site and demands a veto on all material.

December 24 — Pages reworked to PR department's specification. Discover that www.superco.co.uk has already been taken. Legal department instigate proceedings.

December 31 (11.59pm) — Pages go live.

January 15 — Advertising campaign in the papers. Unfortunately, the URL for our



BRIAN CLEGG

page is printed so small (the agency didn't realise it was important) that nobody can read it.

Unlikely as it sounds, this is entirely modelled on the experience of real firms. What went wrong? It started with that herd instinct. The company didn't think through the reasons why potential readers would want to look at the site, they just knew that they ought to be on the Net. The trouble is that apart from selling products or disseminating useful information — prices, timetables and technical help — the only reason for having a Web site is to "promote corporate awareness". Like Esso's unlikely association with tigers, they aren't pushing a product, they're merely imparting a warm glow.

On the TV, a warm glow may well be achieved by showing magnificent images, but there's a big danger in moving to the different medium of the World Wide Web without a

radical shift in approach. Most Web-users are struggling with the limitations of modems, and don't want a half-megabyte download each time they open a page. Marketing people have to deal with a world turned upside down. Until now, advertising has been tolerated because it subsidises the surrounding material. On the Web, glossy ads don't reduce viewer's bills, they *increase* them.

There are, however, at least four ways to improve your image via the Web. You can be cool, serving up the latest goodies. The hallmark of a cool site changes from month to month, but in the past this has meant animations, personalised pages and Java applets. You can simply entertain people, an approach that companies as diverse as Levi Strauss and Tango have taken. Perhaps the most effective approach is to supply a real information need — ideas range from sponsoring a popular utility such as a search engine to supplying up-to-the-minute stock market quotes. The most radical approach, which I'm not aware of happening yet, is not having a page at all, but paying a service provider to give free access to the Web — this would certainly boost the corporate image.

Even if the company successfully negotiates the content minefield, there's always the temptation toward graphics overload. The extent to which some companies police their corporate image is positively terrifying. British Telecom has a manual which describes exactly the way their logo should appear on a computer screen. While I enjoy graphics as much as the next person, I think they're over-used on the Web. I gave up story books with pictures a long time ago — they're often more of a limitation than a help. I've put together my own site which limits the use of graphics while getting a message across: see what you think at <http://ourworld.compuserve.com/homepages/BrianClegg>

It's not that business should stay away from the World Wide Web — far from it. But the marketers have a lot to unlearn. ■

Send your letters to:

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32-34 Broadwick Street
London W1A 2HG

or email

editor@pcw.ccmil.compuServe.com
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or fax **0171 316 9313**

Letters

Throwing stones

Hull isn't the first place to spring to mind when one thinks of ivory towers. However, Peter Styring (*Letters, PCW May*) has clearly been sniffing too many of the substances in his chemistry lab.

I am an engineering consultant who has to earn a living using computers, as distinct from just knowing how to use them. I can assure Dr Styring that the benefits of the Macintosh, to those of us who are not lucky enough to be paid regardless of whether they actually earn a living or not, grossly outweigh any benefit from the character-building aspects of struggling with the various (outdated, and constantly changing) PC operating systems. Because of the needs of my (unfortunate) customers, I run Macs and PCs side by side, and I am in no doubt which wastes more of my time and money.

I concur fully with his sentiments regarding the lamentable lack of arithmetic ability in today's students (and I speak as a physicist who failed two maths A-levels, so I should know). However, if Dr Styring seriously believes that the nation's prosperity relies on the abilities of its school-leavers to waste their employers' time on setting up computer systems, I would respectfully suggest that the

sooner he is relieved of responsibility for the education of even a small part of the nation's youth, the better.

I shudder to think of how much money is wasted in the Western economies as a result of poorly engineered operating systems and hardware which take hours to set up and learn to use. I fervently hope that "plug and play" will go some way to improving matters, but it still has a long way to go to catch up with the standard set by Apple over ten years ago.

One presumes that the washing in the Styring household is still done on the stones on the banks of the Humber.

Nick Williams
nick@confmnce.demon.co.uk

Straight to the source

Regarding John Steel's letter concerning sourcing batteries for portables (*Letters, April*), I have a catalogue from a company called GMK Services which has five pages of laptop/notebook battery packs. There are also many other types of battery including mobile phone batteries.

It will also refurbish battery packs where supplies of the original battery are scarce. Its address is: Venture House, Cross Street, Macclesfield SK11 7PG (tel 01625 511583) — it may well be worth a call. Hope this helps.

Andrew Paterson
101454.1250@
compuserve.com

Still the Gateway to hell

I recently sent a laptop to Gateway for servicing, having been told that its turnaround time was a week. After a fortnight I hadn't heard a word. I called, and was told that the motherboard needed to be replaced at a cost of £910, which by any standards is daylight robbery for a DX33 motherboard.

I reluctantly decided that it would be better to buy a new laptop, but in the meantime I tried to speak to the person in charge of the service department to discuss the options available to me.

Typically, for Gateway, she was never there when I called and never returned my calls in spite of the most ardent promises from customer services. After a week of trying to speak to her, I bought a new laptop from a different supplier. Two weeks later I received a pro forma invoice from Gateway for the replacement of the motherboard. The amount on the invoice was £225. You can imagine how I felt.

I called Gateway to ask for an explanation of this difference: the company accepted that I had been quoted £910, but said that it had received massive discounts from Microsoft and Intel and so were going to be selling replacement motherboards at the reduced price with effect from 1st April. As a favour to me, Gateway had decided to reduce the price of mine a couple of days early.

Dominic Farmer
74214.16@compuserve.com

PCW replies: Regular readers will have followed the correspondence about Gateway over the last few months. Despite the company's strenuous efforts to convince journalists that all

is now well, the complaints we continue to receive suggest that it still has some way to go.

AOL? Are you sure?

I was surprised and disappointed to learn of your choice of AOL for an online readership discussion area.

Surely a forum on CompuServe would have been the better choice? From what I've seen of AOL it's run by juveniles for juveniles — cool and funky, but hardly the place for a respected, and serious, British PC magazine.

You have only to consult your own Letters page to see the proportion of your readership which already has CompuServe accounts. I don't recall us readers having been

In the doghouse

I am compelled to respond to Ben Tisdall's *Editorial (PCW, April)*. It is crystal clear that the old days of "trade" magazines maintaining a properly doffed cap towards the establishment has long gone.

This is, in itself, most welcome as I am unfortunately old enough to remember having bought a costly (and non-functional) memory upgrade to my VIC-20 on the basis of an "Editorial" in the PC press.

However, what I find instead, in your own *Editorial*, is equally unwelcome: an opinion-forming pendulum that has swung totally in quite the opposite direction and which is therefore just as lacking in balance as its notorious forebears.

It demonstrates a regard to facts which can most kindly be described as scant, and a logic which defies rational analysis.

May I provide an example or two from your own text with my commentary to illustrate this?

1. "Aggressive pricing and marketing of MS Office helped it to over 80 percent of the suite market."

Shock, horror, gasp! What

consulted on the matter, which is a pity because I'm sure the majority would have chosen CompuServe.

For one thing, most people are unable to afford two online providers, and as six other British magazines already have a forum on CIS, you've put yourself a bit out on a limb.

I wish you luck with the venture but I regret that I shall not be seeing you on AOL. Nor, I suspect, will many other readers.

Eric Howgate
100407.2431@
compuserve.com

AOL — the sure thing!

I thought CompuServe was probably as fast as I could get when it came to online

services and Web access with my 14.4Kb modem. Then I tried AOL. "Wow!" is hardly adequate to sum up what I think of it.

The first time I tried it I was stunned at the speed and ease of the Web access — I can now check my favourite Web pages within a minute. It used to take at least five minutes to get to one page with CompuServe. I also like being able to log on in under 30 seconds — it takes over five minutes with CompuServe.

Well done, AOL. I cancelled my subscription to CompuServe within six hours of installing AOL and do not regret the decision. I also like having access to my favourite magazine just by using the

keyword PCWORLD.

Simon Ward
SimonJward@aol.com

Blue over Indigo

The staff at Indigo, my server, seem surprised that I should want to write offline. I sent them a request to tell me how to write letters offline and mail them at a time when Telecom was charging a more acceptable rate.

By way of a reply, I received a full page of "first you do this, then that, and then add this..." and on it went. Their excuse was that the program had to be tweaked because email was not designed to be written offline.

These people live in Dublin where cheap calls are

commonplace: I live 230 miles from Dublin and it's a trunk call most of the time.

I fail to see why it should be unusual to want to write offline and post at those times when Telecom is being less greedy and Telecom Eirean is extremely greedy. Surely it is a simple enough thing to do. Then, when it's cheap to send, go back in and "Send all queued mail".

Perhaps Telecom is giving backhanders to make sure we are all being duped into parting with as much money as possible?

John Slainte
eaglejr@indigo.ie

Dutch treat

I recently purchased a Hewlett-Packard Vectra and was astonished to find that when I needed help, I had to call a number in Amsterdam, which cost 45p a minute.

In an economy where free 0800 numbers are commonplace, this is the last thing I would expect, especially from a large, reputable company such as Hewlett-Packard. How any company can get away with having a technical support line which is effectively an 0891 number is beyond me and shows a distinct lack of value for its customers.

Andy Brook
Andy.Brook@ooh.dlrcon.
co.uk

Taking stock of the deliveries dilemma

I was surprised to read that you condone an unprofessional approach to deliveries by some PC and peripherals companies (*PCW replies to BN Whitely, Letters, May*). There is absolutely no excuse for goods being "out of stock".

Firstly, it is unethical (if not illegal) to advertise goods for sale when they are out of stock. Secondly, the customer should be made aware of such situations at the time they place the order.

In my business (selling hotels abroad) I would be in

Leader reader comment

should they have done instead? Perhaps set up a BBS, offered it as shareware and given 75 percent of the profits to Battersea Dogs' Home?

You redeem yourself only marginally by the use of the word "helped". In fact, it is very largely the sheer quality of MS Office that has brought it over 80 percent of the market.

2. "It's common knowledge that the US companies Dell and Gateway can buy Office to bundle for less than \$80, while the UK manufacturers pay around £140, well over twice as much."

"Patriotism is the last refuge of a scoundrel" said Dr Johnson in the days before even young William was a twinkle in Mrs Gates' eye.

Perhaps the real reason lies elsewhere? I say this as a proud British patriot and adoptive mother of three cats: go out and buy 10,000 tins of Kit-e-Kat. Then go out and buy five million. At such volumes even the most inept negotiator should be able to get a discount which brings the supplier rather closer to what he (the supplier) perceives as his marginal cost. A half-reasonable

negotiator might even be able to get 50 percent in such circumstances. Gateway can afford to pay good negotiators, even in these days of mad cow disease.

More balance and recognition of all the facts, and less appeal to what you may think your readers want to hear, if you would, Mr Tisdall.

Keith Miller
Luanda, Angola

A bad case of brainwashing

I was quite amused by your *Editorial (PCW, April)*. I think that you, your fellow editors and your contributors have only yourselves to blame for the Microsoft situation.

It was quite clear several years ago that allowing Microsoft to become so dominant would have the result of which you are complaining.

Rarely, however, have you or any other magazine given OS/2 the support that it deserves, or made it clear to readers that there was an alternative operating system. I know the stock answer — you only respond to reader demand.

The present mad rush to upgrade to the latest version of

that software, with all the attendant hardware upgrades it needs to perform even moderately well, is an example of the way that almost everyone in the industry has been brainwashed.

John Lewis
Bournemouth, Dorset

A crash course in the benefits of email

May's Editorial was excellent. I hope you mailed a copy to Janet Street-Porter.

As you can see, below, I work in a University. I am sure the whole system would now crash without email, as everybody relies on it as the main form of communication.

We have only just implemented it for our students but already it has become the lifeline of communication. This, together with resources such as course materials on the internal part of our Web pages, sees a whole shift to electronic communication and information.

Richard Eskins
r.eskins@mmu.ac.uk
Dept of Library & Information Studies,
Manchester Metropolitan
University

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The screenshot shows the 'AFD Postcode Plus' application window. It has several input fields: 'Postcode' (KA23 9BU), 'Organisation' (AFD Software Ltd), 'Property' (Meadowfoot Road), 'Street' (51), 'Town' (West Kilbride), 'County' (Ayrshire), 'STD Code' (01294), 'Delivery Pt' (T), 'Category' (Non Residential), 'Grid E' (22302), 'Grid N' (64836), 'Ward' (W. Kilbride), 'NHS Code' (SAS - Ayrshire and Arden Health Board), and 'Web.co' (11519). There are also buttons for 'Copy', 'Paste', 'Search', 'Print', 'Setup', 'Close', and 'Provider'. A small map of the UK is visible in the bottom right corner of the window.

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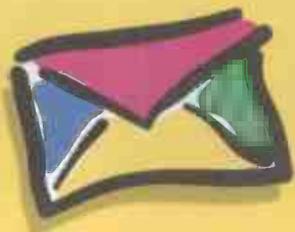
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deep trouble if my clients arrived at their destination only to find that the room they had booked had been sold to someone else.

Like your correspondent, BN Whiteley, my office is responsible for purchasing various supplies for the rest of the company. In my experience, the computer industry is the most unreliable when it comes to deliveries. Once I even lost money when a company, who advertised in *PCW*, went bust before delivering part of my order.

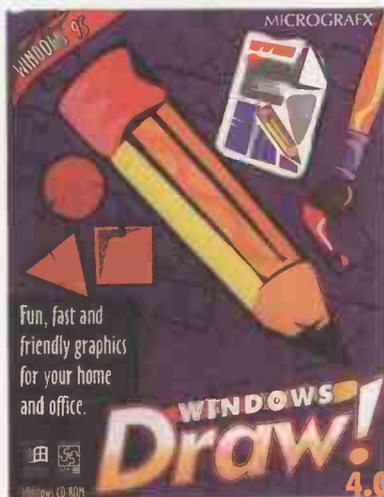
I have now adopted a strict practice: I do not re-order from any company that has let me down, even in a very minor or trivial way.

Joseph M Farrugia
JoeF@harlon.demon.co.uk

Drawing conclusions

Just a quick point about your review of Micrografx Windows Draw 4.0 (*Group Test, PCW April*). Firstly, the group test summary features table indicated that Draw 4 can't handle multiple pages (drawing files) open in the application (that is, MDI style). Well, that's not accurate. It can.

Secondly, if by the use of the



category "Convert text to paths" in the table it was implied that Draw can't convert text to drawn objects (curves) — wrong again. It can do that, too.

While mentioning (incorrectly) those two bad points, the article missed Draw 4.0's biggest problem — OLE. If a drawn object is cut and pasted into another application (such as Word) it gets displayed and printed as a raggy bitmap! So much for its claimed Office compatibility.

Graham Smith
100125.1730@compuserve.com

The curious world of written quotations

The advice offered in your *Buyer's Charter*: "On large orders obtain a written quotation", is no doubt sound. I wonder if you have tried to follow it in practice?

I offer my recent experience in purchasing a new system, when I decided to play it by the book. Faxed requests for written quotations went out to a short list of four companies: "Goaway" (Gateway 2000), "Dull" (Dell), "Big Len" (Viglen) and "The Computer Man" (Dan).

Big Len responded almost by return; unfortunately he did not read my specification at all carefully, offering a system that was over-specified (32Mb of RAM instead of the 16Mb requested) and way over my budget. He didn't mention the size of monitor being offered.

I asked Len to revise the quotation but got no response. When I telephoned, Len said: "If you can't afford what we offered, we'll send you a price list and you can work it out for yourself." I did receive two copies of the price list but did not feel like a valued potential customer.

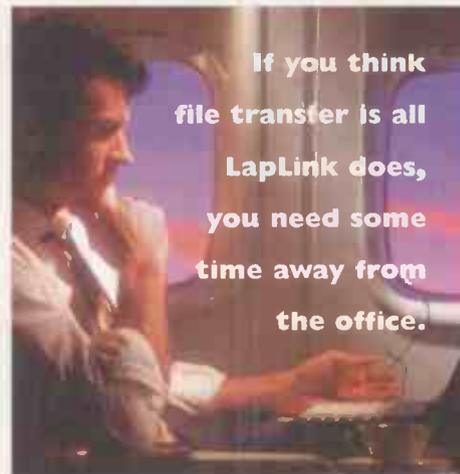
Dull didn't respond to the fax but I felt I owed the suppliers of my existing system a second chance — after all, it had given me over three years of trouble-free use. I telephoned and quickly ended up talking to a charming lady in Ireland who had all my details on her system and promised to send the quotation out immediately. The Irish Sea must have been unusually choppy, however, because several weeks later it has not arrived.

My feelings towards Goaway were less charitable, because of what I had read about its customer service in your magazine. I never heard anything from them and dropped them from my list.

The Computer Man's response took several days to arrive but was exemplary: it spelled out all the components offered, even the options I had asked for. The price was reasonable, so making the decision was what the Americans call a "no-brainer". I placed the order, the system arrived when promised and, although it's early days yet, it seems to work fine.

I do find it surprising that leading industry suppliers can afford to toss away an order for over £2,000 so casually. Perhaps I should have expected no better in today's intensely competitive market.

Julian Morgan
wmethod@cix.compulink.co.uk



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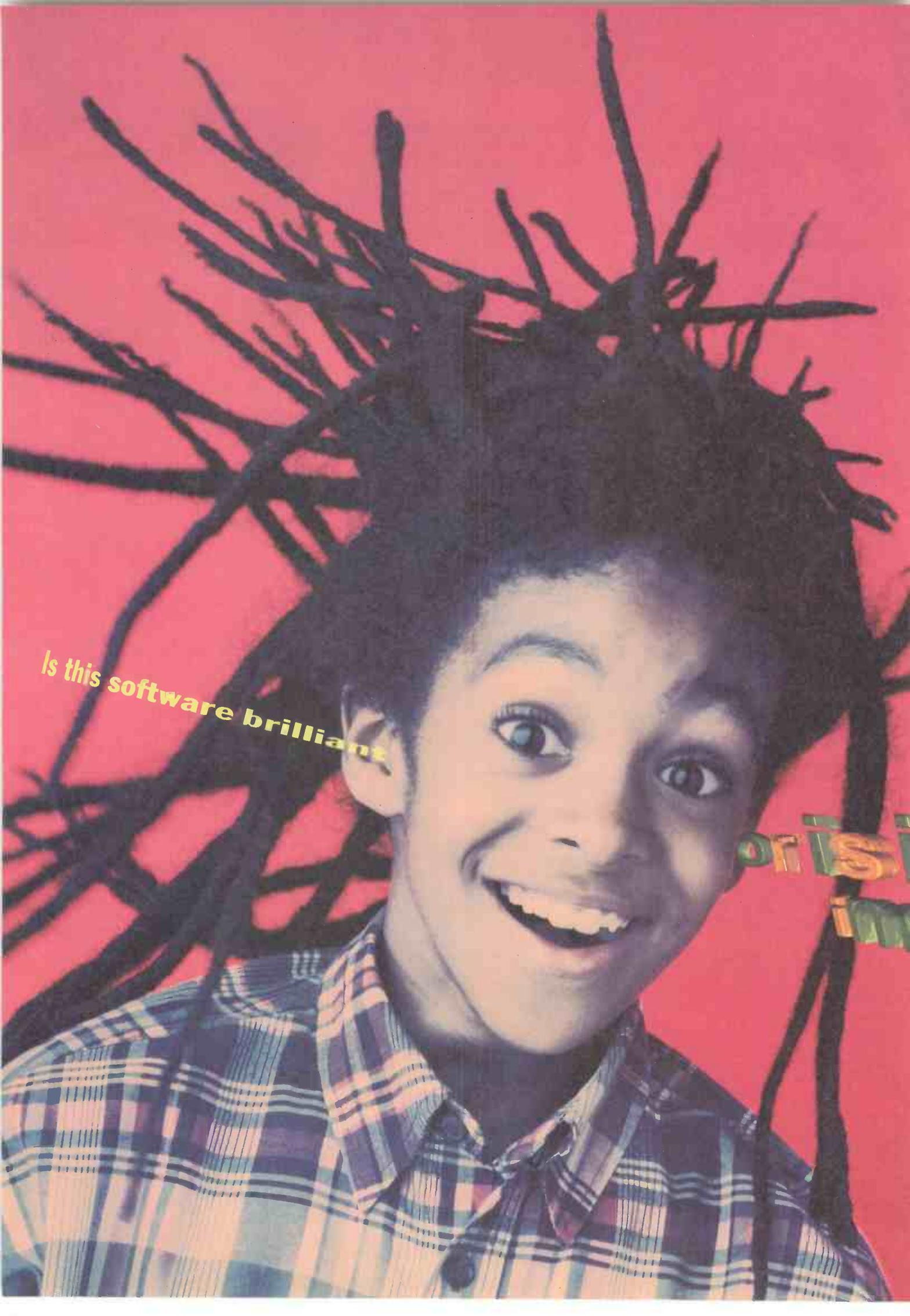


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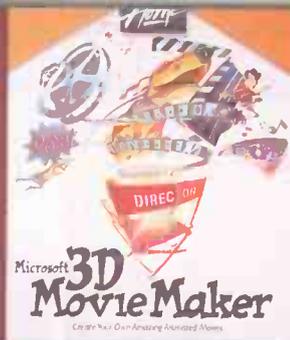
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(Buy Creative Writer and Fine Artist on one CD-ROM and one other specified children's title between 1st November 1995 and 30th April 1996 and claim a third title free.†)

Now luvvie, if you'll excuse me, the romantic sub-plot of Return of The Exploding Chicken needs some work.

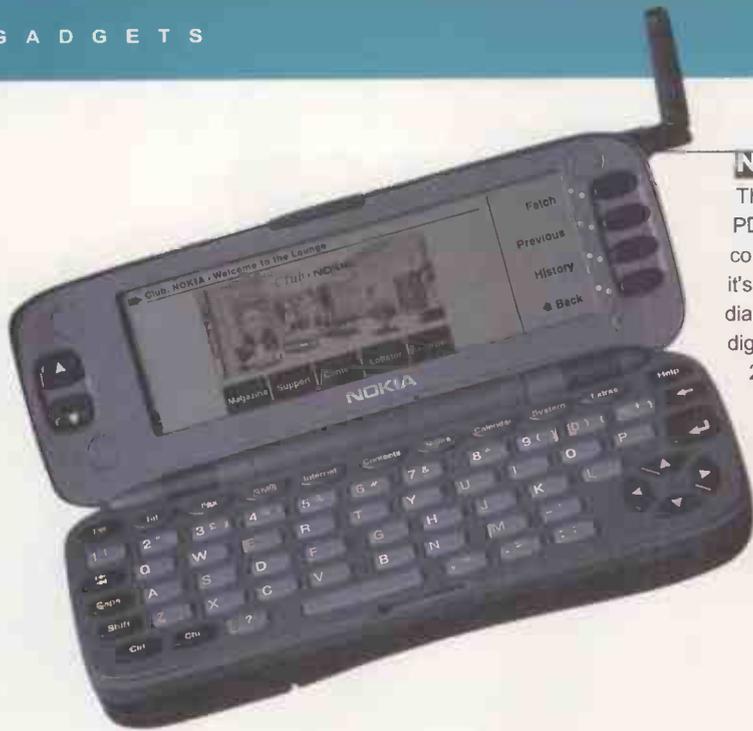
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Nokia 9000 Communicator

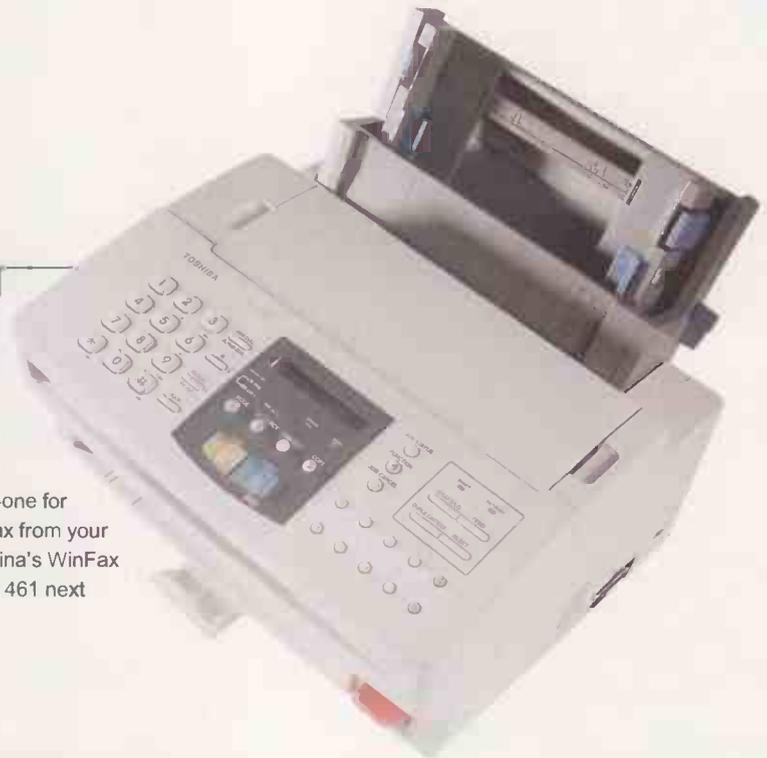
There are many who believe that personal digital assistants, PDAs, are the way forward. One look at Nokia's 9000 communicator will have everyone convinced. On the one hand it's a conventional modern organiser with address books, diaries and simple office applications. On the other hand it's a digital GSM mobile telephone, based on the popular Nokia 2110, capable of sending and receiving computer data on the move at 9600bps. Put them both together with some cunning software and you've got a PDA with email, fax and, most impressive of all, Internet Web browsing facilities. Quite easily the most exciting 397g we've seen for ages. For a full review see page 56.

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Contact Nokia 09 9000 2110

Toshiba TF 461

Multifunction devices are all the rage, and why not? Fax machines can double up as scanners and printers, so it makes sense to combine all three in a single computer peripheral. The latest to land at PCW is Toshiba's TF 461, a colour inkjet, greyscale scanner and fax machine all-in-one for £649. You'll need additional software to fax from your PC, though — Toshiba recommends Delrina's WinFax Pro for an extra £99. Full review of the TF 461 next month.

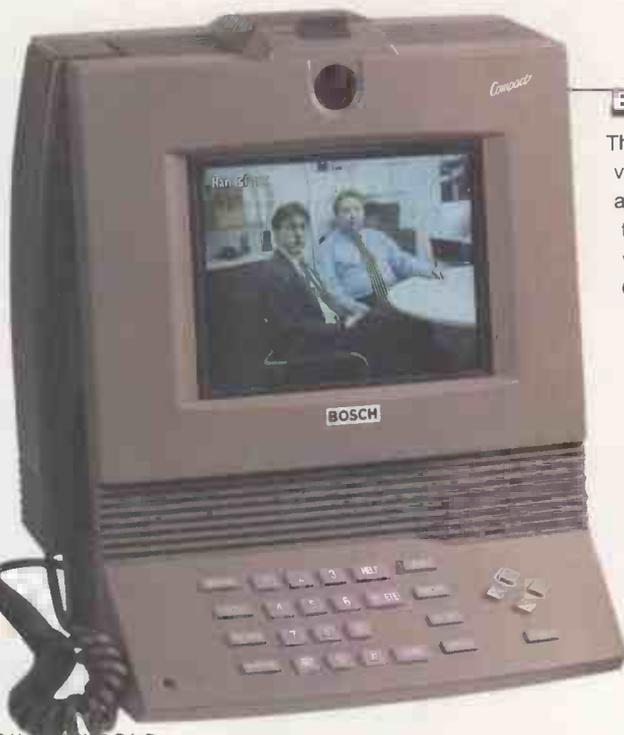
Contact Toshiba 01932 825052

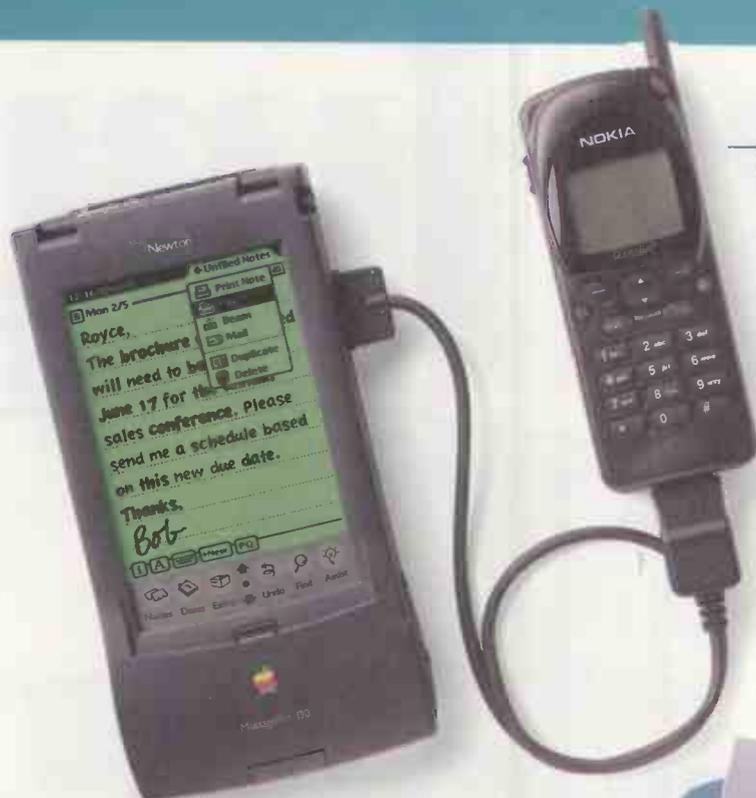


Bosch CompactVision

Those who feel naked without their office-bound video conferencing systems should take a look at Bosch Telecom's CompactVision. Claiming to be the UK's first high-quality ISDN portable video conferencing system, the CompactVision boasts a 6in LCD colour display, integral handset and directory dialling capability. The CompactVision supports 128Kbit/sec via two ISDN B-channels or 64Kbit/sec via one channel. The unit itself costs £2,990 and you can plug it in to your PC, using its RS232 port. Options for larger screens and multiple ISDN connections, for faster link-up, are also available.

Contact Bosch Telecom 01895 834466





Apple MessagePad 130

Apple's MessagePad 130 is the latest in its line of handwriting recognising PDAs. Based around the current Newton 2.0 operating system, the big new and thoroughly welcome feature of the 130 is its user-controllable backlit display. It is possible to communicate with other MessagePads using the built-in infra-red port, or to send email and faxes using an optional GSM digital mobile phone such as the Nokia 2110 pictured here.

Price £549. **Contact** Apple 0800 127753

Dual LCD-PC

Best known for its notebooks, Dual Technology has released its interpretation of the all-in-one PC. The LCD-PC boasts a 12.1in SVGA TFT LCD screen rather than the usual tube-based monitor, allowing the designers to create a smaller, less power-hungry box. £1,699 (excluding VAT) gets you the following configuration: Pentium 75, 8Mb RAM, 1Gb hard disk, six-speed CD-ROM drive, SoundBlaster 16 compatible card and a pair of ear-like powered speakers.

Contact Dual Technology
01223 576622



Nakamichi SP-3d

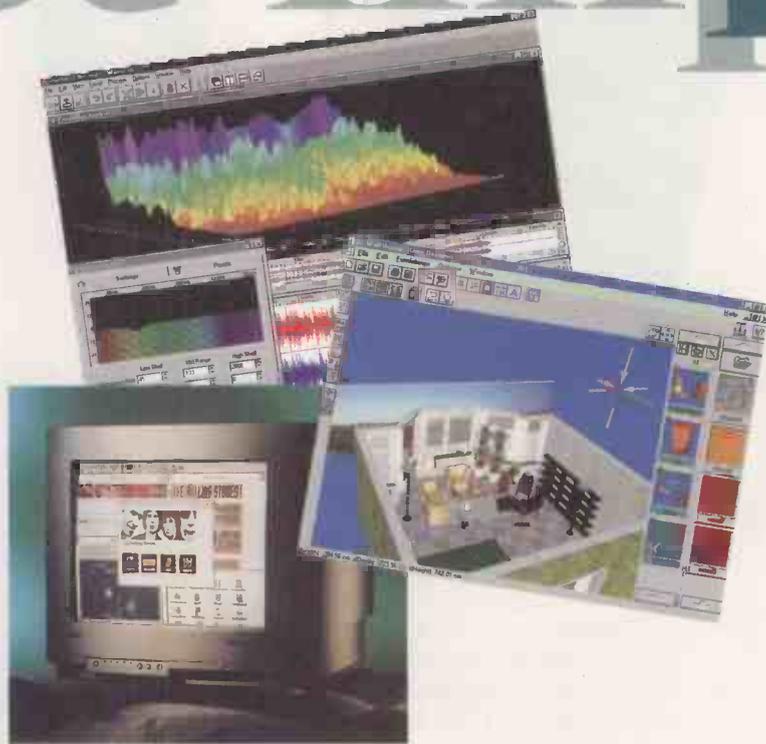
In the world of high-fidelity, Nakamichi is a highly respected name. In recent years the company has entered the computer market with particularly innovative CD-ROM changers. Featured this month are its new powered multimedia speakers. The SP-3d speaker system uses the cunning trick of leaving the largely non-directional deep bass sounds to a single sub-woofer unit. Pop this out the way, and leave the medium-to-high frequency stereo work to a pair of small, magnetically-shielded satellite units. You can attach these to the side of your monitor or sit them on their adjustable stands. Available in black or white from around £120, they'll significantly enhance your multimedia experience.

Contact AGP Distribution 01264 336991



First Imp

Get that wallpaper right with 3D Home Designer. Get Net-wise with new versions of Navigator and Explorer, and Borland's C++ 5 is the latest thing for Windows developers. Hype-up your editing skills with VideoCraft 3.0. Two pairs of printers go head to head: two inkjets and two big colour lasers.



HARDWARE

Nokia Communicator 9000

An impressive, multi-functional, communication combo.

The Nokia 9000 is a combination of mobile phone, mobile email device, portable access terminal and personal organiser. If email is as important to you as being able to

receive a voice call, then this is the mobile phone for you.

The device is based on the Nokia 2110 GSM mobile phone and has up to 200 memories depending on the capacity of the small smart card SIMM fitted. In the UK your SIMM is likely to be from Cellnet, which is working closely with Nokia.

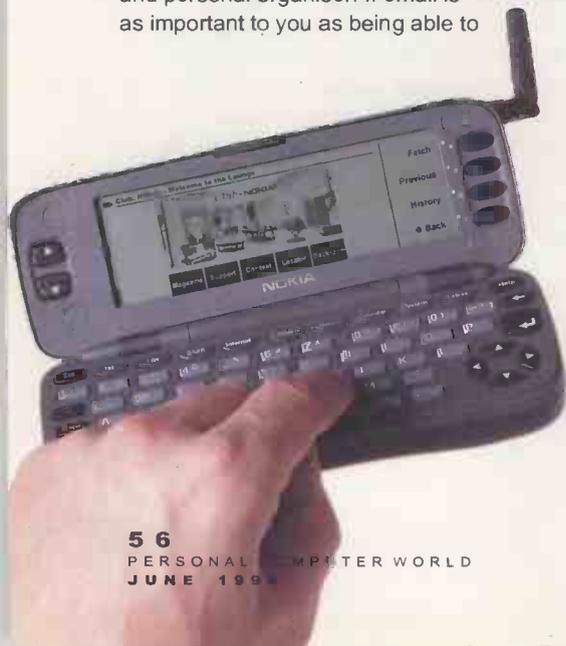
On the phone side, there's a full keypad with two function keys, a good screen showing battery and signal strength and a full range of features including the ability to send and receive SMS short text messages. The lithium ion battery gives a standard 30 hours on standby and two hours talk-time, although in the case of the communicator 9000, "talk" could mean computer data or facsimile.

Inside, there's an Intel 386 running at 24MHz, and 8Mb RAM — 4Mb for the operating system and applications, 2Mb for program execution and 2Mb for user data storage. There is no additional storage. The IRDA-compatible infra-red port can beam information to another computer or a printer.

The 9000 is bulky by most mobile phone standards at 174 x 65 x 36mm and tipping the scales at 397g — around twice the weight of most upmarket phones.

The main LCD screen is not backlit but has a resolution of 640 x 200 pixels in eight grey levels. It measures 115 x 35 mm and is surrounded by four soft buttons on the right and two scroll buttons on the left. These are supplemented by nine application buttons including one labelled "Internet" and a help key which gives access to the context-sensitive help. The 55-key Qwerty keyboard is remarkably usable.

Software runs to an address book,



Reviews

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VNU European Labs



VNU Labs tests cover every kind of hardware and software including PC hardware, printers, network products, modems and software applications. The tests are continually developed and enhanced to reflect hardware and software developments.

Our tests closely simulate real-world use. For example, our suite of PC benchtests uses complete versions of industry-standard Windows 95 applications — currently Word, Excel, WordPerfect and FoxPro. We also run a graphics redraw test using CorelDraw 6, and a Doom 2 frame rate test which is a good indication of games performance.



Application tests are the backbone of all the VNU Labs system evaluations but it's nearly impossible to pin an application result to a specific machine component. Only system-level tests (also known as low-level tests) can reliably tell the difference. VNU Labs' system-level test suite is called Euromark. The tests, which are mainly Windows-based, are used to isolate specific components like hard disks, graphics cards and CD-ROM drives.

● To make them easy to read at a glance, all graphs in PCW are drawn so that the

bigger the bar, the better the result. Normally we'll also include the original data we worked from: for example, the time in minutes and seconds to print a page in a comparative test of printers.

calendar and note editor (ASCII only), to-do list, calculator and world clock. There is no spreadsheet (expect that from a third-party company) and no pen input — a design decision made after Apple had launched the Newton.

Sensibly, the Communicator 9000 can be used as a speaker-phone — handy, since when you're using the organiser to check a time for a meeting you can't hold the device to your ear. The musical composer program allows you to compose your own tune, which will play in place of a ring.

The computer keeps track of your phone calls and of course the contacts program can be used to manage the phone memories but it is the greater levels of integration which are most impressive.

Anything you type using the notepad program can be faxed directly from the phone. You can use the device as a mobile terminal to log into computer systems, although this is a little limited by

the GSM speed of 9,600bps. A system which uses an inbox and outbox allows the Communicator to control when the data is sent, so you don't need to have a signal to use email. Unlike H-P's OmniGo 700 there is no cc:Mail client software or built-in programming language but Nokia is promising a comprehensive developer support programme.

The most spectacular piece of software is the World Wide Web browser. The Web is a great way to look up information — a kind of electronic Yellow Pages for the whole world, and with the Nokia 9000 you can carry this in your pocket.

The standards for Web software are changing all the time as new techniques are developed. The communicator has the ability to download upgrades into its flash memory but Nokia is being exceptionally secretive about work which is going on in conjunction with Sun Microsystems.

Thanks to the GSM specification you can send and receive mail, faxes and SMS messages pretty much anywhere in Europe — although in some places the data facilities are still a little crude. The unit is supplied with PC backup software and an RS-232 cable and there is a comprehensive range of accessories including a hands-free car kit.

This is the most exciting device we've seen in a long time. It won't be available until the middle of August but despite the high price tag there are already people counting down the days.

Simon Rockman

PCW Verdict

Price £1,350 (expect it to be less than £1,000 with a line)

Contact Nokia 09 9000 2110

Good Points It does everything.

Bad Points It costs more than a Pentium PC.

Conclusion Anytime, anyplace, anywhere; you can be online.

SOFTWARE

Navigator 3.0 vs Internet Explorer 3.0

Close combat between the two leading Web browsers.

Microsoft and Netscape have both gone into beta on version 3.0 of their browsers. We do not normally publish beta software tests but in this case anyone with Internet access can download and try them for themselves.

Navigator is beginning to resemble Quark XPress' way of thinking. What made XPress so successful in DTP was the XTension technology which could

Microsoft has decided that the browser should be fully integrated with the OS (Windows 95, NT 4.0) and all multimedia extensions built into it. Netscape is happy to let third parties develop plug-ins which it then chooses to support. The extent of such plug-ins means that Navigator is fully functional: witness the new CoolTalk plug-in which allows data conferencing in Navigator 3.0. But this has a cost: already

Navigator takes nearly 3Mb of hard disk space. The program group, with only three plug-ins, takes 11.7Mb. So the trend is set. By comparison, the IE 3.0 executable file is still only 743Kb.

There are some things that Netscape will never be able to do such as exploit

Both approaches need work.

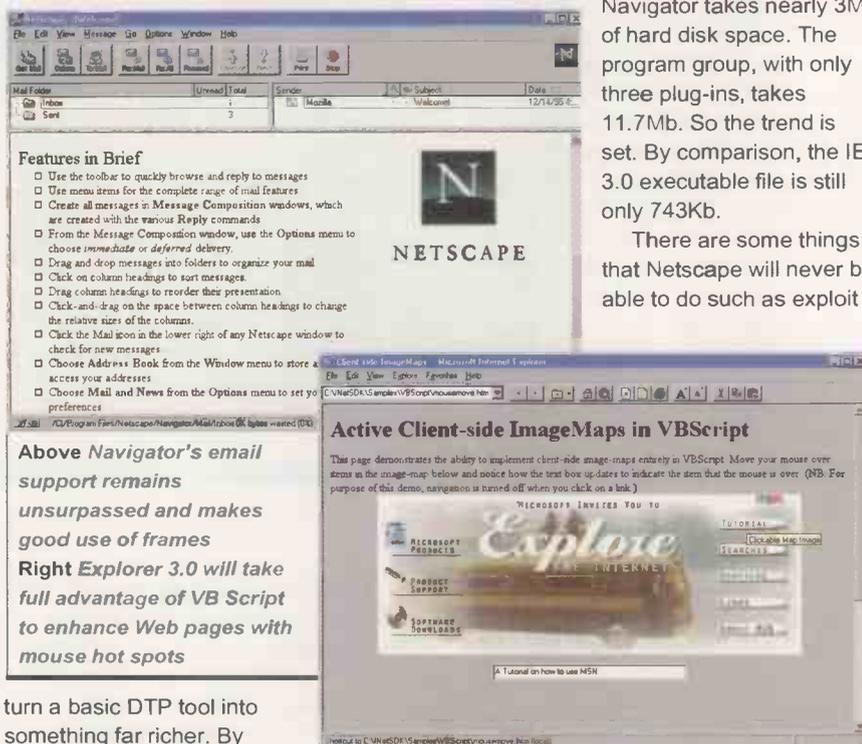
Navigator 3.0 still can't match IE 2.0's inline TrueType font support and Microsoft is busy extending this in version 3.0. Netscape fans may scoff: "Alright, so IE can do fonts but it can't do frames, or Java, or ShockWave or Amber." Well, sorry, it can now.

Thanks to Microsoft's new ActiveX technology (an extension of OLE) Explorer 3.0 can do everything Navigator can and more. Although Microsoft has licensed Java and JavaScript it is busy promoting VB Script (based around its own Visual Basic) to extend Explorer further. VB Script will enable more functionality to be built-in to Explorer: for example, mouse hot spots which work like balloon help on Web pages.

It's hard to make definitive comparisons of efficiency due to variances in bandwidth, but downloading an HTML file from a local server took 10.56 seconds in Explorer and 8.65 in Navigator. Beta against beta perhaps but it confirms that IE still suffers a speed problem compared with Netscape.

So which is better? — Navigator. Just. But as long as both vendors keep leapfrogging each other with such a vengeance it will be a long time before either opens up clear blue water. It remains a fascinating battle to watch.

PJ Fisher



turn a basic DTP tool into something far richer. By encouraging and supporting third-party plug-ins, Netscape seems to be doing the same.

Stung by Internet Explorer 2's support for inline video (.avi) and sound (.wav and midi), Navigator 3.0 now supports .avi files, but only through a plug-in — not HTML. Internet Explorer (IE) 2.0, supported video and sound in the form of simple HTML tags, such as `<BGSOUND src="*.wav">`. The simplicity of adding sound and video to Web pages in this way gave IE 2.0 a significant edge over Netscape. It still has it with version 3.0. Why use Java when a simple tag will do? Navigator still cannot match other simple tags such as `<scroll>` tag, but it does now allow background colours in table cells.

A definite trend is now emerging.

right clicks to save gifs as wallpaper, or paste active IE shortcuts into word documents and email. But, of course, you need Windows 95, too.

IE 3.0 fails miserably when it comes to moving beyond the Web. Netscape has the finest integration of mail, newsgroup and Telnet access: so good, you need never leave the browser. Not so with IE 3.0 which relies still on clumsy interaction with MS Exchange and its Telnet application.

The Gold version of Navigator lets you edit Web pages within the browser but is unintuitive and inaccurate. Explorer 3.0 has a new Edit button which works in conjunction with Internet Assistant for Word but is equally confusing to use.

PCW Verdict

Netscape Navigator 3.0
 Price n/a
 Contact <http://www.netscape.com>

Good Points Frames. Superb mail and newsgroup access.
Bad Points Relies on plug-ins for simple tasks and is in danger of becoming flabby.
Conclusion Still the world's best browser for all platforms but its lead has shortened.

Microsoft Internet Explorer 3.0
 Price n/a
 Contact <http://www.microsoft.com/ie>

Good Points Fonts support. Easy multimedia support in HTML. Works well with Win95.
Bad Points Still too slow.
Conclusion If you use Windows 95, this browser makes perfect sense.

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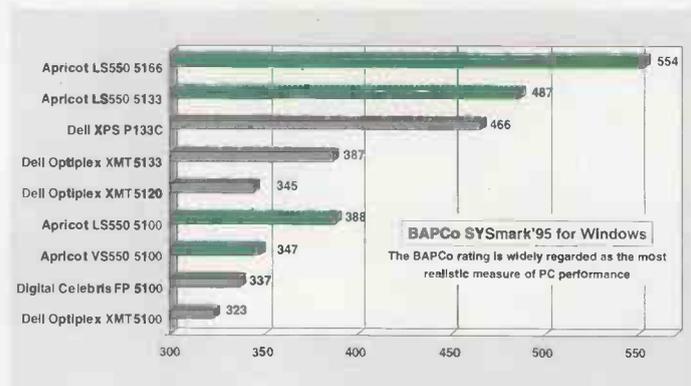
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Hardware

Citizen Printiva 600c vs Canon BJC-4100

Two inkjet printers: one glitzy and glamorous, the other more down-to-earth.

The colour inkjet is currently the most popular printer on the market. For a reasonable price you can snap up a printer that offers good quality output and will be reasonably cheap to maintain.

Both the Citizen and Canon printers come in at around the same price but are very different in terms of ease of use and print quality. The most fundamental difference between the two is in the print technologies they use.

The Citizen has a series of tape-like cartridges (a dry ink system). Four cartridges allow proper CMYK printing, or you can swap to metallic ink cartridges to add a bit of spice to your documents. The cartridges simply snap into place in the lid of the printer and lift easily in and out. Since the ink is dry there is never any danger of getting your fingers dirty.

The Canon has only one cartridge and prints using bubblejet technology. The colour cartridge contains cyan, magenta and yellow ink — black is made by mixing these three. When the colour cartridge is swapped for a dedicated black one, black text printing is considerably improved. This is reasonably easy, but not quite as flexible as the Citizen's arrangement.

Both printers were easy to set up under Windows 95. The Citizen can be installed using the Add Printer utility in the Windows 95 printer panel, while the

Canon was automatically sensed by Windows on boot-up and the installation process was complete before Windows was fully launched.

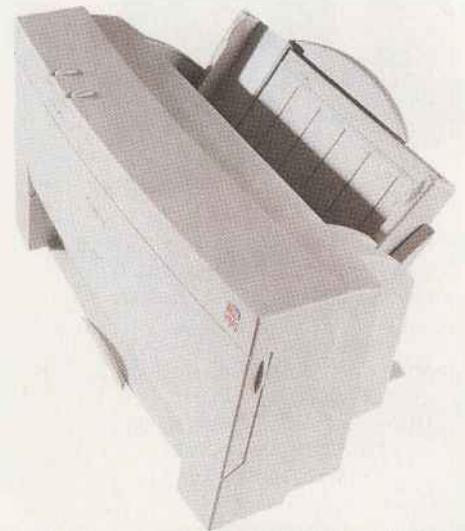
Once installed, the controls for each are entirely software-based. The Citizen has a slightly more complicated yet more sophisticated set-up which allows greater flexibility in the way you print. This is due mainly to the presence of four cartridges which allow you to print in a greater variety of ways than the Canon.

The Canon has a more user-friendly interface. It allows you to adjust your print requirements for a dozen different paper types; the quality of print you want; and the resolution. It is also intelligent enough to know when you are asking the printer to do impossible things. If you set too high a grade of printing on, say, standard paper then a window will pop up and offer to fix the problem for you.

Each handles the physical printing process in a very different way. The Citizen does a four-pass shuffle, putting down one colour in turn: the single head shifts over and takes each of the colours in turn; the result being that full-colour printing takes some time. In comparison, the Canon fairly zips away as it needs only one pass for all three inks.

The quality of the output reflects the different technologies. The Citizen produced clear, sharp images. But even at 600 x 600dpi, the black type had tiny pinpricks of white in it where the ink had not taken properly (even on high quality paper). The Canon, however, had much better type at its maximum resolution of 360 x 360dpi for the same quality paper. But when using a colour cartridge instead of dedicated black, the ink appeared a muddy grey.

However, it was when printing in colour that the Canon indisputably held the upper hand. The colours produced were outstandingly vibrant and rich. We have two particular favourite images that we like to benchmark: one is fruit and the other is a backdrop advertising a combat game. The sharpness and accuracy of the Canon was very good and the colour



matching was truly excellent.

Sadly, the output from the Citizen looked jaded in comparison. None of the colours were particularly bright and the overall effect of the printed images was dull in comparison to the Canon — even the fruit looked unappetising. However, the trump card in the Citizen's favour had to be the metallic ink. The gold was stunning and the metallic magenta was frivolous — it's the kind of colour of which children are fond but you'll soon grow out of it. Surprisingly, the black cartridge was probably the best of the lot, creating good solid monochrome images.

Overall, despite the Citizen's flash and sophistication, it was the more conventional and cheaper Canon that won the day. For text and colour images it definitely held the trump card.

Adele Dyer



PCW Verdict

Citizen Printiva 600c

Price £399 (street)

Contact Citizen 01753 584111

Good Points Cartridges are easy to change. Metallic ink.

Bad Points Dull colours.

Conclusion Adaptable, but not outstanding.

Canon BJC-4100

Price £300 (street)

Contact Canon 0121 680 8062

Good Points Great colour

Bad Points You need to change cartridges to get a dedicated black.

Conclusion A splendid printer

SOFTWARE

Corel Graphics Pack

Even good value and varied utilities can't compensate for the lack of integration in this package.

The CorelDraw Suite has dominated the PC professional graphics market for years but it has gradually become too complex and expensive to attract those all-important new users. Recognising this, and the competition from other players like Windows Draw, Corel has brought out a new mid-level suite called Corel Graphics Pack. This does not mean that it is a cut-down product. The program arrives on five CDs and even the minimum install will eat up over 80Mb of your hard disk.

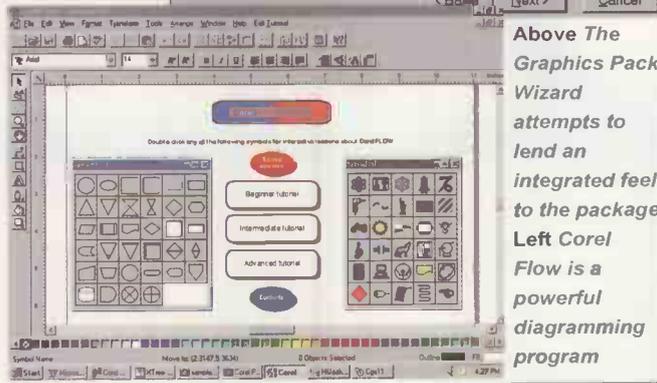
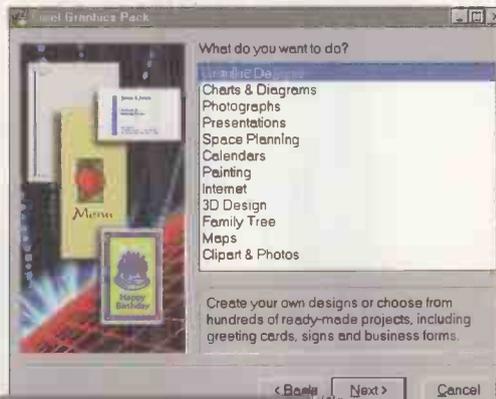
For your money you get two main drawing applications: Corel Print House and Corel Flow, a bitmap editor, PhotoPaint and various other utility programs.

Connecting them together is the Corel Graphics Pack Wizard. This is a task-driven interface that allows the user to choose what they want to do (painting or producing a family tree for example) and then loads the best-suited

program. If you choose to produce a graphic design, for instance, the central Print House program is loaded and further options are offered for producing banners, brochures and so on, along with the overall approach; whether classic, casual or creative.

For projects such as calendars or certificates, this could well be all you have to do but for most work this is only the beginning. Although some features of the Print House interface such as the toolbox are reminiscent of Draw, this is very much a new program. In particular, down the left-hand third of the screen is the Notebook. This can be used for conveniently selecting clipart and colouring styles but it normally displays help. This is of the most basic "how-to-change-things" variety, which has its place for the absolute beginner but will

soon irritate the experienced user — that is, if you ever become an experienced user. The whole philosophy behind Print House is that you should not expect to spend too



Above The Graphics Pack Wizard attempts to lend an integrated feel to the package. Left Corel Flow is a powerful diagramming program

much time on it: just make a few choices and print out the result. In fact, this is probably a good idea as the limitations of the package, in text handling and formatting for example, soon become apparent. For bolting together a quick design, Print House has its place but it should certainly not be the centrepiece of a graphics suite.

Corel is, presumably, aware of the limitations, so for more serious design work it offers Corel Flow. This is another drawing program but aimed at the production of diagrams such as flow charts and room plans. Objects are dragged onto the screen from a floating palette, then linked with different line types. If the shapes are then moved, their connector lines move with them, automatically

avoiding existing objects.

The power is impressive but for the majority of mid-range users, too intimidating.

Between the over-simple Print House and the over-technical Flow, Corel has pulled off the difficult trick of completely missing the central ground of basic drawing. For bitmap editing, Corel has taken the easy option of bundling its full PhotoPaint program. This is a dedicated, standalone, application that offers just about everything from scanning to artistic special effects. It might seem harsh to complain about too much power but the emphasis on advanced features such as masking, merging and object handling actually detracts from the basics offered by PhotoPaint.

By this stage it's become pretty clear that Corel Graphics Pack is not a united graphics solution. The half-hearted attempt at integration via the central Wizard and task-based approach soon collapses between such different applications. At best, Corel Graphics Pack is a mixed bag. Looking at it as just a collection of programs, what else do you get for your money?

Corel Presents is a reasonable PowerPoint clone for creating business presentations; Corel Depth allows simple text and graphics to be given a 3D effect; Corel Motion is a very basic animation tool; Corel Capture is a screenshot utility and Corel Multimedia Manager is a cataloguing system for controlling the vast collection of clipart. Finally, and for little apparent reason, there is a collection of basic Internet utilities.

With so much included in the price, there is no question that Corel Graphics Pack is good value. But unfortunately that's not good enough. The sheer quantity, variable quality and lack of consistency and integration across the package affects its usability throughout. When the essential drawing power is not there either, the result is a bit of a mess.

Tom Arah

PCW Verdict

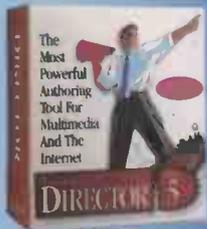
Price £99

Contact Channel Marketmakers
01703 814142

Good Points Value for money.

Bad Points Unfocused and poorly integrated. No central drawing program. Kitchen sink philosophy.

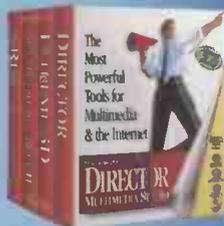
Conclusion A missed opportunity.



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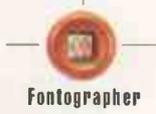


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SOFTWARE

Borland C++ 5.0

Windows developers and Java junkies, take note.

The majority of shrink-wrap applications are written in C or C++, the native language of Windows and the best choice for performance and flexibility. Once the market leader, Borland's C++ lost ground to Microsoft's Visual C++, a product which has made great strides in terms of usability and features. Borland C++ 5.0 now answers back with several advantages for

language based on C++, cScript is reminiscent of Java in that awkward features of C++ are omitted. There are no pointers, variables are un-typed, and cScript uses strings rather than character arrays. The language supports inheritance, can call DLL functions and is an OLE automation client. Since the Borland 5.0 IDE is exposed as a cScript object, the possibilities for customisation go well beyond the competition's.

Borland C++ 5.0 supports VBX (Visual Basic Extension) controls for both 16-bit and 32-bit applications. VBX controls are commonplace and not all have been converted to the OCX format that Microsoft now prefers. Most other development products, including Visual C++ and Visual Basic cannot use VBX controls in 32-bit applications. Borland C++ 5.0 gives you VBX

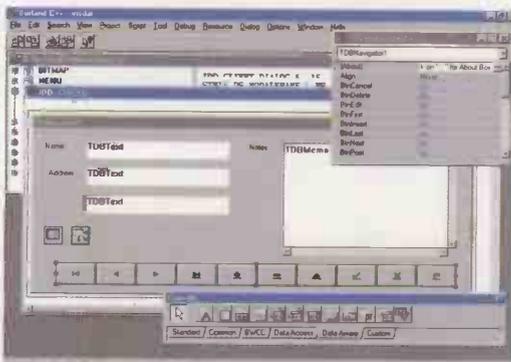
class library which simplifies programming, especially the complexities of the Windows API. Borland has its own class library (ObjectWindows, or OWL) now at version 5.0 with new classes to support the Windows 95 common controls. Borland supplies 16-bit versions of most Windows 95 controls, too, excluding the rich text control for added cross-Windows compatibility.

OWL is technically excellent with a better object model than Microsoft's Foundation Classes (MFC). But MFC is the industry-standard and some prefer its thinner wrap over the Windows API. Borland 5.0 does not include MFC, but will compile it, up to a point. The problem is that MFC has to be patched for Borland's compiler and the patches are specific to particular MFC releases: in this case, the versions supplied with Visual C++ 2.0 and 4.0. So there's no support for 16-bit MFC and future versions will need additional patches. Borland's MFC support is for occasional use only.

Borland is hitching up to the Java bandwagon. Sun's Java Development Kit is bundled and the Borland IDE can handle Java code, complete with syntax highlighting and a simple Java debugger. This is, itself, written in Java which accounts for its lethargic performance. It's early days for Java tools and although the integrated support is rudimentary, this is better than nothing.

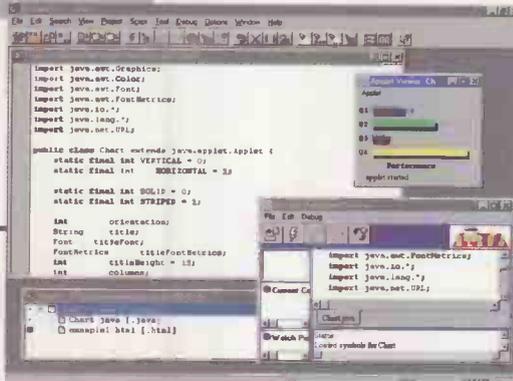
Borland C++ 5.0 now comes with the database engine and visual database tools as standard. The premium Development Suite bundle adds Codeguard, a debugging tool for catching memory leaks and other intransigent errors, the PVCS version control manager, InstallShield Express for creating install programs, and a just-in-time Java compiler for dramatic speed-up of Java code. This Java AppAccelerator is great but it's not distributable, which limits its usefulness.

Tim Anderson



Above Visual Database tools give a quick start to database dialogues

Right We do Java: support includes syntax highlighting and a basic Java debugger



Windows developers.

The first of these is support for different Windows versions. Developers using Microsoft tools need to run two versions of Visual C++ to support Windows 3.1, Windows 95 and NT. Borland C++ 5.0 requires Windows 95 or NT to run but targets DOS, 16- and 32-bit Windows from a single, integrated, development environment (IDE). It's not the first compiler to accomplish this trick since Watcom's C++ does all that and OS/2 as well. But few developers are willing to put up with Watcom's crude IDE for the sake of its cross-platform tricks. By contrast, Borland C++ 5.0 combines a sophisticated IDE with a rich bundle of tools.

New in this version is ObjectScripting: a way of automating the development environment. For this, Borland has created a new language. An interpreted

support both in code and in the visual dialogue editor, even hacking the version 3.0 data-aware VBX format so that controls can be hooked to database tables for automatic data display. This feature uses the Borland Database Engine and simple database applications can be built, visually, in the dialogue editor. OCX controls are supported, too, but only in code. You cannot load OCXs into the dialogue editor and there is no easy way to create an OCX since Borland has not licensed Microsoft's OCX development kit.

A modern C++ product is really several products in one. There is a compiler engine, C++ editing tools and a

PCW Verdict

Price £225; Borland C++ Development Suite 5.0 £315

Contact Borland 01734 320022

Good Points Cross-Windows compatibility. Visual database tools. Java support.
Bad Points No help with OCX development. Hassles with MFC.

Conclusion Enough to keep Borland developers in the fold.



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SOFTWARE

Quarterdeck HiJaak 95

Allows you to create thumbnail icons of almost any picture format — one less reason to be jealous of Mac users.

Long time ago, Adobe provided Photoshop for the Macintosh with the facility to create thumbnail previews for graphics files, then use them as the icons for the files themselves. When browsing through windows, you could see straight away what the file was from its thumbnail icon.

When Windows 95 arrived, one of my first questions was whether it could do the same, either as a built-in facility or one developed by a third party. Microsoft stated it would not, blaming the lack of suitable resource forks in the DOS FAT file system. During the lengthy Beta test period, some consolation was found in the Quick View option when right-clicking a file.

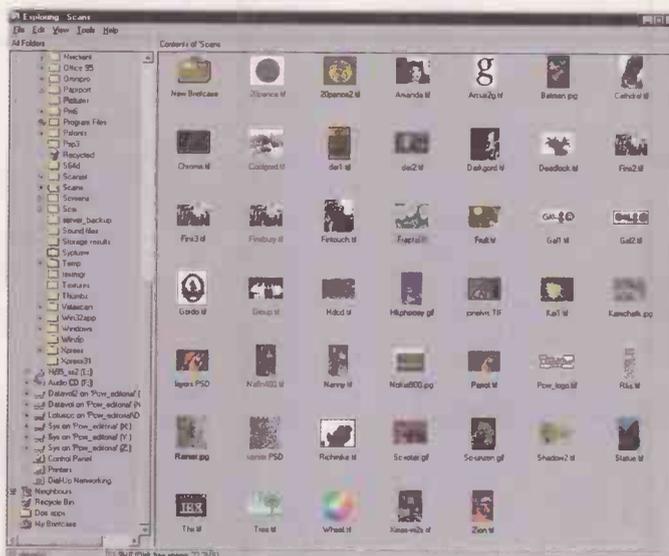
Almost all graphics file formats could be opened with Quick View and displayed at a decent size. The only trouble was that this could be quite time consuming, depending on the file size. While these were much bigger and clearer than the Mac thumbnail previews, they just didn't offer the same instant identification. Worse still, Quick View for graphics files was removed for the final release of Windows 95 and popped into the optional Plus Pack.

Last September Quarterdeck acquired Inset Systems, developers of HiJaak, a highly fluent graphics file format converter. The latest version, and first under Quarterdeck's wing, is HiJaak 95 which promises to "extend the Windows 95 shell to enhance, view, convert, capture, print, find and manage all your graphics."

To be fair, HiJaak 95 isn't just a standalone application or utility, but a

genuine extension to the Windows 95 shell. A complete installation requires 12Mb after which a new control panel is added, along with an addition to the task tray at the far right end of the task bar, next to the clock.

The complete viewing, conversion and manipulation application can be



Above Wow! Mac-style thumbnail icons for graphics files

Left HiJaak 95 adds these options to a right mouse-click

launched by hand, but mostly you'll be accessing the whole thing, or aspects of it, from a right mouse-click. Yes, HiJaak 95 adds six new options to the pop-up menu when you right-click a graphics file, and offers additional functions on the properties.

Most exciting for this writer is the facility to create thumbnail previews of graphics files and use them as their icons, as you would on the Macintosh. HiJaak runs in the background and waits for a new graphic file to be created, at which point it creates a thumbnail preview for the icon. Even on a quick machine this can take some seconds, during which your system slows a lot.

This is reasonable when you first set HiJaak off creating thumbnails for all

your graphics files, but later it can prove inconvenient. Fortunately, the new addition in the task tray, which indicates HiJaak's activity, may set the priority of updates. You can also adjust this from the control panel, along with the icon size and the number of colours allowed.

HiJaak View, accessed from a right-click of a graphics file, offers what Quick View always should. It still takes a few seconds to open and display each image but is compatible with virtually every graphics file format, and additionally offers considerable colour adjustment, brightness and resolution. It is also possible to convert from one format to any other within HiJaak View, or even from another right-click option.

Properties of graphics files can now include additional text information describing any aspect you desire. Subsequent searches can then be made, not just on file type, location and size but also any key words you've attached.

HiJaak 95 supports 35 raster bitmap formats, 19 vector formats and 19 fax devices. I threw everything I had at it: HiJaak coped with CorelDraw files (CDR), Macintosh Picts (PCT), Photoshop 3 documents with layers (PSD) and just about every flavour of EPS and TIFF files, including CMYK or LZW compressed TIFFs. It did fall over at the obscure Lab format TIFF and a couple of curious non-standard EPS descriptions but don't hold that against it.

HiJaak 95 does virtually everything you could fairly ask of it, including the remarkably successful and welcome creation of thumbnails for icons. Add compatibility and conversions of almost every graphics file format, along with superb integration with Windows 95 itself, and you've got a winning product.

Gordon Laing

PCW Verdict

Price £49.95

Contact Quarterdeck 01245 496699;
<http://www.qdeck.com>

Good Points Creates thumbnail icons, views and converts almost any graphic.

Bad Points Microsoft didn't build it into Windows 95.

Conclusion The Windows 95 utility for which I've been waiting.

HARDWARE

NEC MultiSync XV15+

NEC's latest is an excellent performer with a great picture.

Big names such as Sony, Philips and NEC are selling decent monitors at street prices of around £300 for a 15in or £500 for a 17in version. Next month sees our annual monitors group test but as a taster, here's NEC's latest and cheapest 15in model.

The MultiSync XV15+ was forced out of the group test by NEC's forthcoming multimedia M500 15in model, which



boasts the company's brand new ChromaClear tube technology. We do know that the M500 will be more expensive than the XV15+, which remains the cheapest NEC 15in monitor at just under £300 on the street.

The V in XV stands for Value, the cheapest of NEC's monitor ranges, set below the mid-range Efficiency, XE, and high-end Professional, XP ranges. The XV15+ is a significant improvement over the earlier XV15, now boasting digital controls and NEC's anti-glare OptiClear surface.

The controls are not on-screen, but cover image size, position and barrel/pincushion adjustment. The case measures 372 x 389 x 414mm and has a viewable image size of 13.8in (35cm).

The horizontal scanning frequency range of 31 to 65KHz is capable of a maximum non-interlaced resolution of 1024 x 768 at 80Hz. NEC recommends

running at 75Hz, which is sufficiently high on a 15in monitor to eliminate flicker.

At this resolution the image is extremely sharp, with very fine details perfectly resolved. There are no discernable colour casts or geometric distortions to speak of. All in all, this is an excellent performer.

The XV15+ is supposed to be Windows 95 plug-and-play compliant, but certainly didn't want to reveal its personals to my Number 9 graphics card, which had to be configured manually. The monitor's Intelligent Power Manager did kick in on the appropriate instructions of Windows 95 and my VESA DPMS-compliant card. In this state, the monitor consumes less than 30W. Safety on emissions meets the MPR-II standard.

Gordon Laing

PCWVerdict

Price £399 (street price £299)

Contact NEC 0181 993 8111

Good Points Great picture. Cheap price.

Bad Points Plug'n'play not infallible. Good 17s are only £200 more.

Conclusion Excellent 15in at a low price.

SOFTWARE

VideoCraft 3.0

VideoCraft's
Project Editor

Video effects with speedy editing, easily achieved.

VideoCraft is the Windows 95 32-bit re-incarnation of a program originally called PhotoMorph. What started as a simple morphing program was developed to offer so many other video editing features and effects that it rendered the "morph" part of its name misleading. The program has now been renamed.

VideoCraft accepts various types of source material, including most of the popular still image file formats (PCX, BMP, JPEG and so on.) and video files (AVI). It includes a screen capture facility, in case you have an image in a format that VideoCraft can't import.

Once the source material has been loaded into the program, it can be edited. There are tools for cropping, scaling, rotating and correcting colour characteristics as well as basic filter effects for still images. With video files, you can mark in and out points and

change sampling options.

After basic editing, special effects can be created. The command centre of VideoCraft is its Project Editor, where the source material is loaded for editing. There are seven groups of effects: Colourise, Distort, Morph, Overlay, Stylise, Transition and Warp (providing over 200 individual effects and more if you include the sub-options). Additionally, up to three effects can be applied simultaneously.

Sequential effects can be chained together using a storyboard. In combination with the video editing options, the Storyboard can be used to perform basic, non-linear, digital video editing. But for this you'd be better off using Video Action; a track-based video editing program included on the second CD-ROM in the VideoCraft pack. It provides lots of example projects to help you get started. Video Action offers sound dubbing to video

clips as VideoCraft itself does not handle sound. Included in the pack is a 3D graphics program (Arena Design 3D) and articles on digital video.

You'll find it hard to find a type of video effect currently in use on TV which VideoCraft can't reproduce. We've included several AVI files demonstrating VideoCraft on this month's free, cover-mounted, CD-ROM.

Panicos Georgiades

PCWVerdict

Price £119

Contact LTS 01386 792617

Good Points Easy to use. Relatively fast.

Bad Points Does not handle sound.

Conclusion Provides a rich set of video effects.

NOTE BOOKS

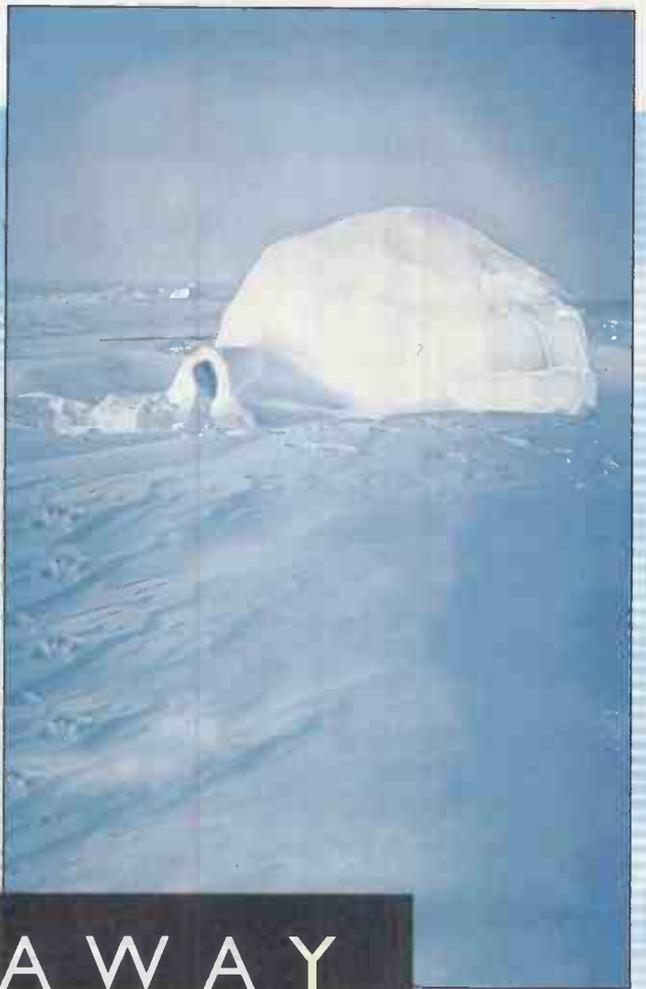


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SOFTWARE

Steinberg WaveLab

This new, easy to use, 32-bit audio editor provides quality results.

The frequency graph doesn't just look good; it's invaluable for comparing mixes

WaveLab is the first 32-bit digital audio editor designed for Windows 95 and NT. It is supplied on CD-ROM and, once installed, uses the CD as a copy protection device.

Although WaveLab is geared towards the high end of the market, it's happy to run on any system with 8Mb RAM. Our test machine was a 486 DX50 with 8Mb, running Windows 95.

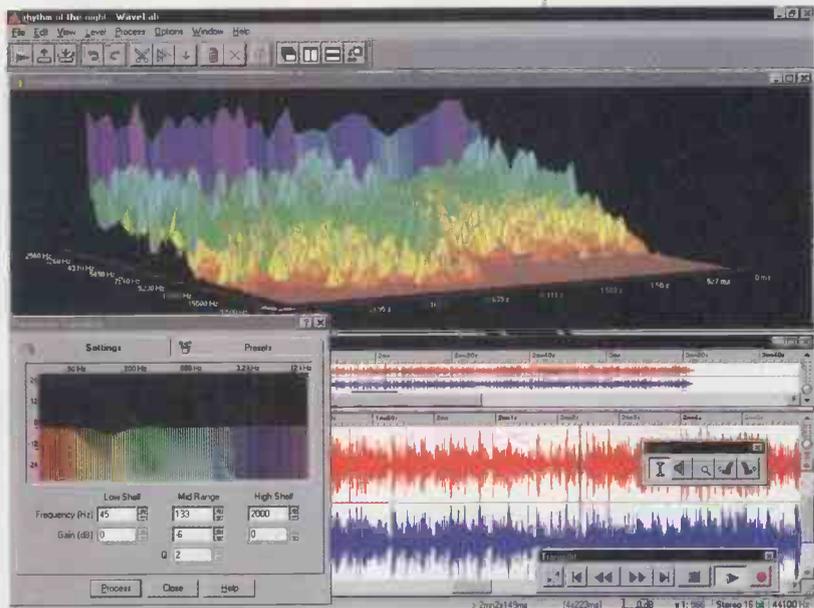
Surprisingly, WaveLab requires less than 5Mb of hard disk space for installation. Occasionally you will be asked to insert the master CD for verification but after four days of use I've yet to be asked. Running under Windows 95, you're advised to make changes to the virtual memory settings to optimise WaveLabs' performance. It is recommended that you set aside at least 20Mb for the swapfile and a maximum of 40Mb.

At first glance, WaveLab looks no different to any other sound editor. It's only when you import a 36Mb file that it comes into its own. Once the software has built a peak file, the file is loaded before you can say "Phew! that was quick."

WaveLab makes the most of multitasking in a 32-bit environment. While playing a file, you can zoom in or out, perform any operation from copying a section to changing the EQ (equalisation) without noticing a glitch. When the processing has finished you hear the altered wave, not the original. This also applies while looping a section of audio.

Depending on the hard disk space available, you can perform unlimited undos. This is a valuable tool, since you can perform several EQ changes and instantly cross-reference with the original while the file is still playing.

The EQ dialogue box provides high and low shelving filters and a parametric mid-band equaliser with adjustable width (Q). For each processor, WaveLab provides several predetermined settings, or presets. For example, EQ presets include high cut, mid and bass boost. Because of the sheer amount of processing the PC has to do to work out EQ changes, it took over five minutes to complete a three-and-a-half minute song on our test machine. In a post-production



setup, where EQ settings are finalised before producing the master CD, a Pentium system with fast disk and at least 16Mb is recommended.

You can view the harmonic content of a file by producing a frequency graph, sometimes known as an FFT (Fast Fourier Transform) plot. You can specify plots for any frequency range, or for the entire audible spectrum: 20Hz to 20KHz. The graph can be viewed from any angle and drawn on either a linear or logarithmic scale, allowing to compare your mixes with any reference material.

Time stretching is another high-end feature on offer. It allows you to stretch or compress the length of a file without changing pitch. You can apply changes by specifying the original and required tempos, or by specifying the new length for the track. Again, time stretching is another highly processor-intensive feature. The results are very accurate and without glitches.

Several effects can be applied to part, or all of the tracks. These include pitch correction to 100th of a semitone, choruses and harmonies. The harmoniser allows you to use up to 16 separate voices and apply pitch, level and pan settings for each. The results, when used subtly, can be quite good with a vocal. Apply a harmony above a third, however, and your

track begins to sound like a recent TV advertisement for Levi's jeans.

Batch processing is a new feature in sound editing and a Godsend for many. It allows you to select several files and apply the same processes to them while you make yourself a cup of coffee, or go for lunch. One example would be to normalise and eliminate DC offsets for each track on an album. You first select the files, choose which processes you require, hit run and then leave it unattended. To do this manually might take three or four hours, with regular prompts from the program.

You also get a simple database with the package that scans all media for audio files (WAV and AIFF) and quickly locates them when needed by entering key words. If the file is on a CD-ROM, it prompts you for the correct disc.

Steven Helstrip

PCWVerdict

Price £299 (incl VAT)

Contact Harman Audio 0181 207 5050

Good Points Batch processing. Ease of use. Quality results.

Bad Points Certain tasks could be faster.

Conclusion A very capable package that gets any audio job done quickly.

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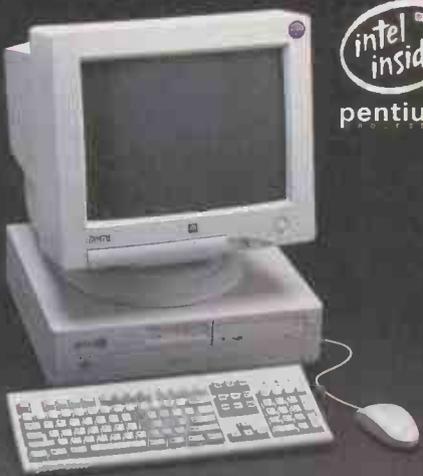


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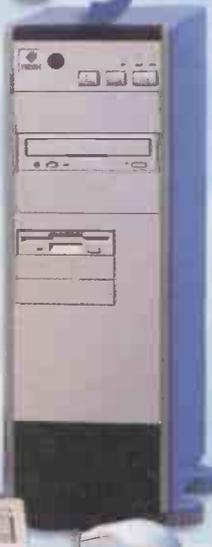


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- 1.44 Mbyte 3.5" Floppy Drive
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- MS Windows 95 c/w CD & manual
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- Joystick add £15

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 - 80W Power Speakers
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- £195 + VAT**
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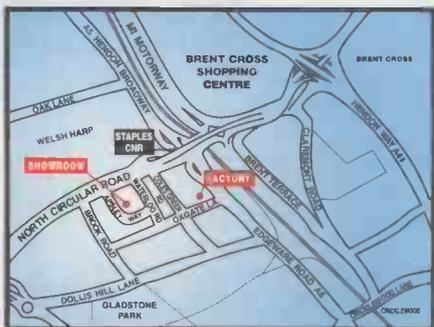
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Technology Update

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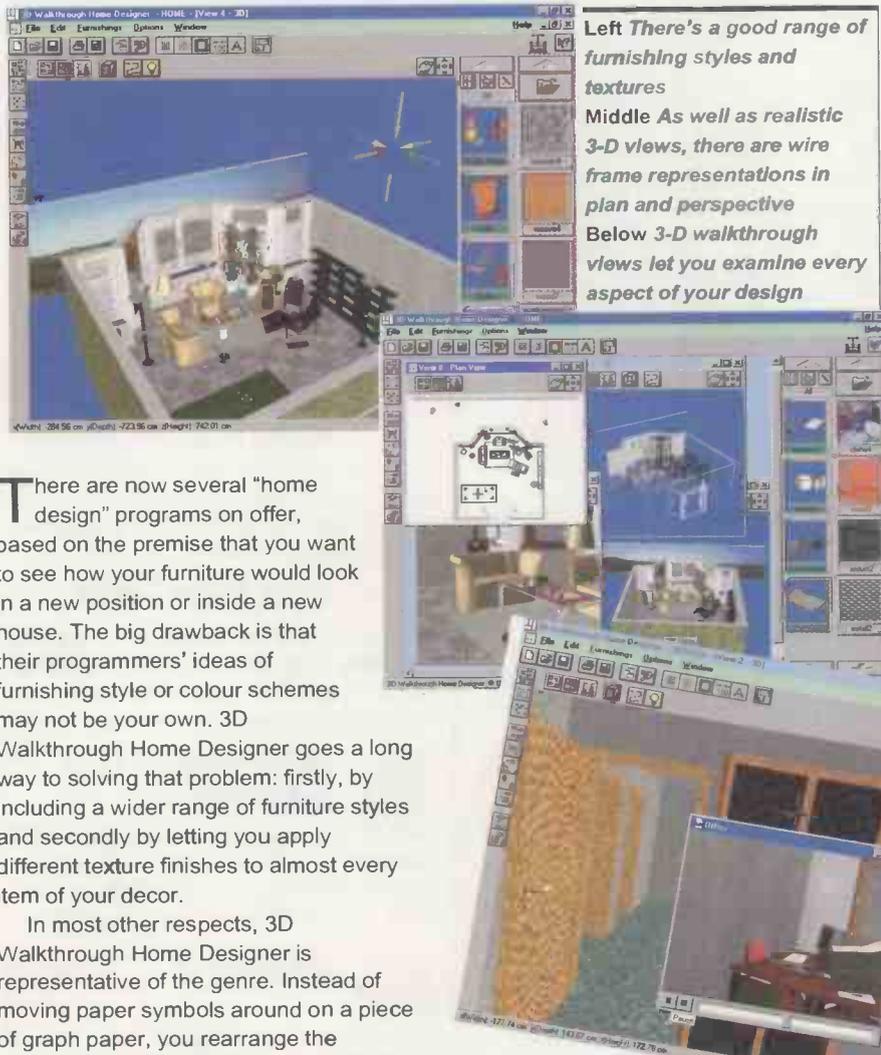
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SOFTWARE

3D Walkthrough Home Designer

The inside story for interior designers.



Left There's a good range of furnishing styles and textures

Middle As well as realistic 3-D views, there are wire frame representations in plan and perspective

Below 3-D walkthrough views let you examine every aspect of your design

There are now several "home design" programs on offer, based on the premise that you want to see how your furniture would look in a new position or inside a new house. The big drawback is that their programmers' ideas of furnishing style or colour schemes may not be your own. 3D Walkthrough Home Designer goes a long way to solving that problem: firstly, by including a wider range of furniture styles and secondly by letting you apply different texture finishes to almost every item of your decor.

In most other respects, 3D Walkthrough Home Designer is representative of the genre. Instead of moving paper symbols around on a piece of graph paper, you rearrange the furniture (and change the colour scheme) by moving computer graphics around on-screen. To do so, you first need to have laid out your rooms' shapes and sizes so the program lets you do that, constructing your floorplan together with an abstract view of walls, windows, doors and furniture.

The various items of furniture are then selected from a catalogue, claiming to contain over 1,000 objects, and arranged around the room in either 2-D or 3-D views. Moving furniture around is simple because the program automatically detects collisions between objects. You can then add textures to almost everything, using the bitmaps provided or your own scanned fabrics, wallpapers, and so on. The program boasts a special

Walk-Through-Mode, too, where you "wander through" your finished design, hopefully getting a realistic impression of the finished layout.

There is a snag, of course. The speed of 3D Walkthrough Home Designer depends to a great degree both on the processor's power and the number of colours displayed. To run properly, 3D Walkthrough Home Designer requires 486 DX2 66 or, better still, a Pentium. Additionally, it wants a minimum of 8Mb RAM, together with either a VESA Local Bus (VLB) or PCI graphics card. Anything less in any of these departments and it runs like treacle.

One way of speeding the program up is to forego textures, which take a long

time to assemble during the basic construction and preliminary viewing operations. Plain, untextured, colours still show approximate decor and are faster. But faster still is wire-frame representation and you can work in this way, too.

In 3-D mode you would expect to be able to view your work from different angles so these can be adjusted almost infinitesimally: both side-to-side and up and down. Two other options increase realism: the first allows you to view from inside your rooms and the second lets you set your angle of view so that it matches your own physical height. Finally, there's the eponymous Walkthrough feature, whereby you can control the direction and position of your view by cursor so as to simulate movement within and between your rooms. But this is a largely irrelevant feature if you haven't got pots of

processor power and masses of memory.

A program as powerful as this isn't learned in a day and you'll need to set aside plenty of time to familiarise yourself with it. In this sense, it's not for the casual user.

Such operational criticisms aside, 3D Walkthrough Home Designer is a flexible and potent program for the dedicated designer.

James Taylor

PCW Verdict

Price £49.95 (incl VAT)

Contact Data Becker UK 01420 22707

Good Points Impressive range of features, especially textures and furniture styles. Low price.

Bad Points Slow. Not at all intuitive. Long learning period required.

Conclusion Not a program for the casual browser, it will nevertheless repay careful familiarisation as a specialist and dedicated tool.

SOFTWARE

OfficeTalk

A comprehensive PIM software package for workgroups.

OfficeTalk's style — big buttons and red and blue coloured type for the contacts — make it look like something designed for children. But don't be misled, this is a sophisticated Personal Information Manager (PIM) designed for workgroups.

The core feature is the Contact Manager. It has a rich set of contact management features, but isn't over-fussy. Contacts are displayed either by company or by individual. In Company View the contact card is split into two windows. The top window contains address and phone number details for the company; below it are the contacts within that company.

There are fields for all reasonable contact material, including the business and home addresses of individual contacts. OfficeTalk will also dial the phone for you. I would have liked to have seen an automatic timer to record the duration of the phone call and for this,

along with the date, to be automatically inserted in a call log. If you charge by time, this is a Godsend.

Each user can have a personal diary for recording appointments, to-dos, and background activities. The Diary has daily, weekly and monthly views. Colour coding is used to show the status of the task: red shows a task which is overdue and green shows one which has been completed. If you have the appropriate access rights you can view and even update other users' diary information. One especially useful feature is the ability to keep diary information for resources such as meeting rooms, pool cars and other bookable items like overhead projectors, say.

The Where button in Diary mode shows you where other people are, or shows other people where you have gone and when you will be back. It will also tell you whether somebody is in the office and whether they are logged on to

business trips. A workgroup planner can show when all members of the workgroup are committed, or otherwise away from the office. Project mode makes it easier to plan and monitor projects and Meeting mode not only provides an area where you can organise meetings but also check the availability of other users and resources, write meeting agendas, send out meeting invitations and monitor the replies.

Meeting mode works closely with the OfficeTalk mail system. This is an easy to use mail facility with most of the features you would expect from a standalone mail package. OfficeTalk mail is MAPI and VIM compliant (which means it will interface with Microsoft Mail, Lotus cc:Mail and other popular email packages) and can be used to send mail to individuals and groups of users.

OfficeTalk can also be linked to CompuServe, enabling users to send and receive Internet mail directly from OfficeTalk. Windows 95 users can connect to MS Exchange via MAPI and send/receive Internet mail through their service provider. However, there is currently no direct connection between the OfficeTalk and the Internet.

Another useful feature is Working Remote which lets you copy certain portions of the OfficeTalk database onto a local disk and continue using OfficeTalk as if you were connected to a shared database. This is extremely useful if you have a portable computer and spend a lot of time away from the office. I particularly liked OfficeTalk's ability to link to any major word processor to create documents and will archive those documents against the contacts in OfficeTalk's central database.

Overall, OfficeTalk is a powerful, simple-to-use contact manager with the added advantage of being available for workgroups. Despite the minor deficiencies, I liked it a lot and recommend that any workgroup should take a long, hard, look at it.

Paul Begg



OfficeTalk or not, or if that person is in a meeting, where it is and when the user is due out. The When button tells you when you booked a particular task or meeting.

Other features include the Planner mode — an electronic wall-planner for scheduling long-term projects, holidays and

PCW Verdict

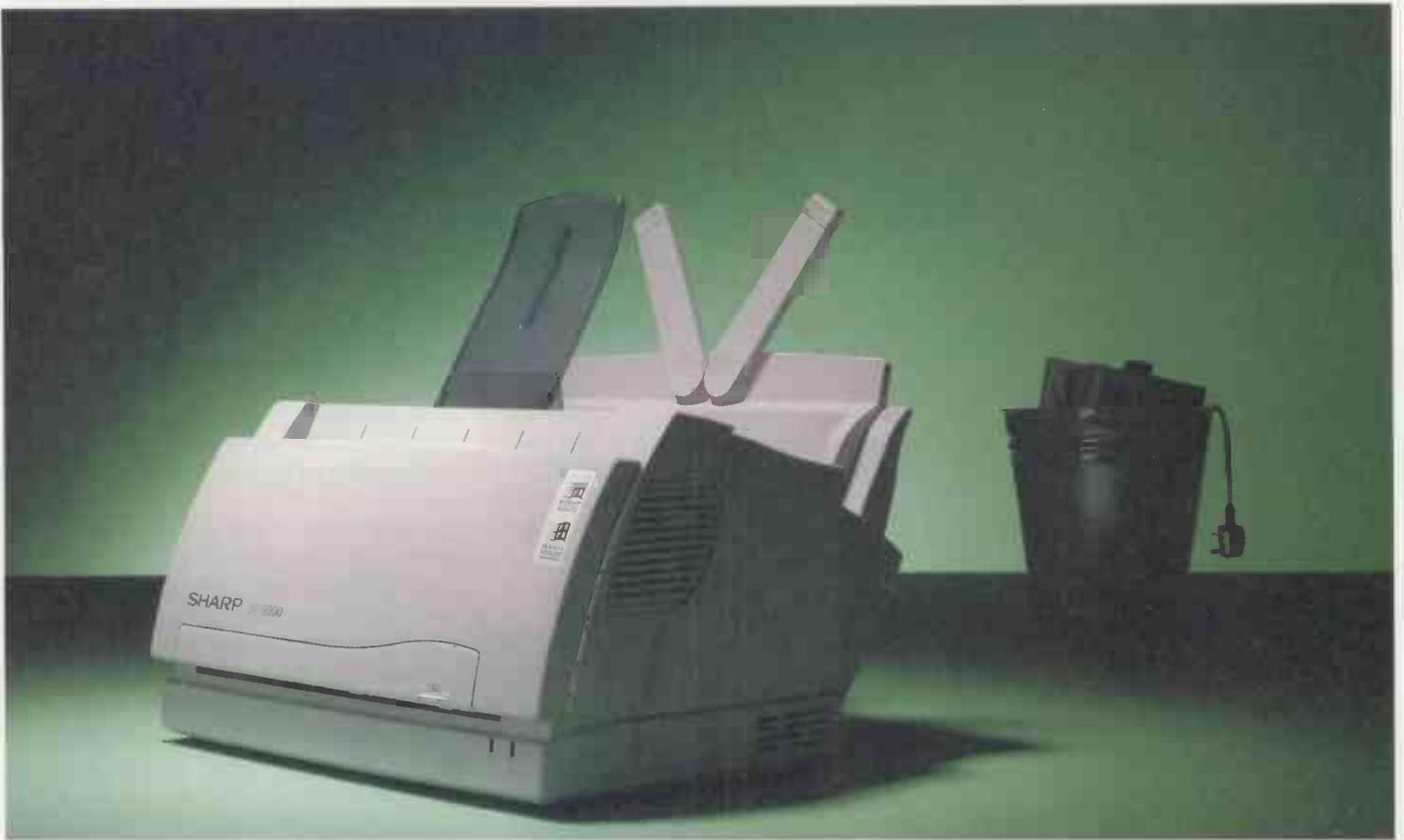
Price £58.75 per user

Contact Saren Software 0181 423 9434

Good Points Easy to use but powerful and with good workgroup features.

Bad Points Doesn't automatically record contacts such as phone calls.

Conclusion A nice PIM. Well worth taking a look at.



The Sharp JX-9200 laser printer. Good for business. Bad for inkjets.



DECEMBER 1995



DECEMBER 1995



JANUARY 1996



REVIEWER'S
CHOICE
JANUARY 1996

Laser printers have always been good for your presentation, but not quite so good for the annual budget. The new Sharp JX-9200 is set to change all that. After all, at only £299* (£351.33 inc VAT) you can now have a laser printer for the price of an inkjet.

What's more, we've lowered its operating costs by creating a new system that doesn't use any developer and continually recycles the toner. Because there's no waste, the cartridge lasts longer.

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it's better than ever. (Especially the JX-9210 which has 600 x 600 DPI.)

With its fast print speed of 4 pages per minute and a rapid first page print out of only 28 seconds, the JX-9200 will save you time as well as money.

That's not all. The JX-9200 is compatible with all versions of Microsoft Windows™ software, including Windows 95™.

Combine this with the 'Graphic User Interface' and you've got a printer that'll actually talk you through the entire printing process. So even if something goes wrong, the

problem and the solution immediately appears on your PC screen. What's more, the JX-9200 also happens to be the smallest laser printer in the world. Not only can it print on a sheet of A4, it can actually sit on one.

So if you're a growing business, why not invest in the JX-9200? At £299* (£351.33 inc VAT), it'll certainly look good on paper.

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SOFTWARE

Raydream Studio

Get tweening with this easy-to-use drawing and animation package.

Fractal Systems liked Raydream so much it bought the company — quite a compliment. The Studio package ostensibly consists of four components: Designer, Animator, Extensions Portfolio and Dream models but they all work as a single program which allows you to model, render and animate scenes using ray-tracing techniques. Since this is what has made Steve Jobs rich again through the new Disney film, *Toy Story*, it's worth a second look.

The hardest part of creating a scene is drawing the shapes — the 500 model comes with software help but eventually you will have to learn to draw in 3D. The modeller has a good Windows interface and makes it easy to construct simple shapes but the single view makes complex work more difficult. Some packages allow you to design in 2D and view in 3D, which is less intuitive but ultimately more successful. You can switch between top, side and perspective views but it's easy to lose the thread along the way.

To attempt to alleviate the problems of doing 3D designs on a 2D screen, the software allows you to edit each object separately but it takes a long while to get the hang of the user interface. This is exacerbated by the changing viewing angles.

Conversely, the animation is a doddle to use. You just move the objects you want to change, which can include lighting, lighting effects and backgrounds, and the software works out the in-between frames for you. This process is known as "tweening". Long animations are both disk and processor intensive so there is a selection of wireframe, flat-rendered and bounding box views.

For many people with a latent desire to see their name spinning in chrome letters, Raydream is the ideal piece of software to fulfil their wish. There is full support for TrueType fonts which can be used to produce simple logos. Chrome can be easily added because textures are held in a special palette.

Glass effects are also possible but you have to roll your own by typing in the characteristics. Reflections can be set to show the same colour as the background:



one of a number of custom combinations, such as the clichéd sky and grass effect or a sunset, or even an AVI movie which is played back through an animation.

There are none of the advanced features like gate and motion tracking but the system does support different rates of tweening and cameras move on dollies. There is a good selection of alignment tools, although this can sometimes work the wrong way and an object ends up moving to the camera when you actually wanted it to move away. There's also the incredibly useful "point at" command which centres the attention of a camera, or light, on a particular object.

It is possible to achieve atmospheric effects such as fog and mist which give a tremendous degree of realism to images. With persistence, patience and a Pentium you'll be able to produce some convincing animations.

Simon Rockman

*Top PCW gets rendered
Above it's a doddle to create 3D
animations with Raydream Studio*

PCW Verdict

Price £375

Contact Raydream 00 33 1 69 41 97 22

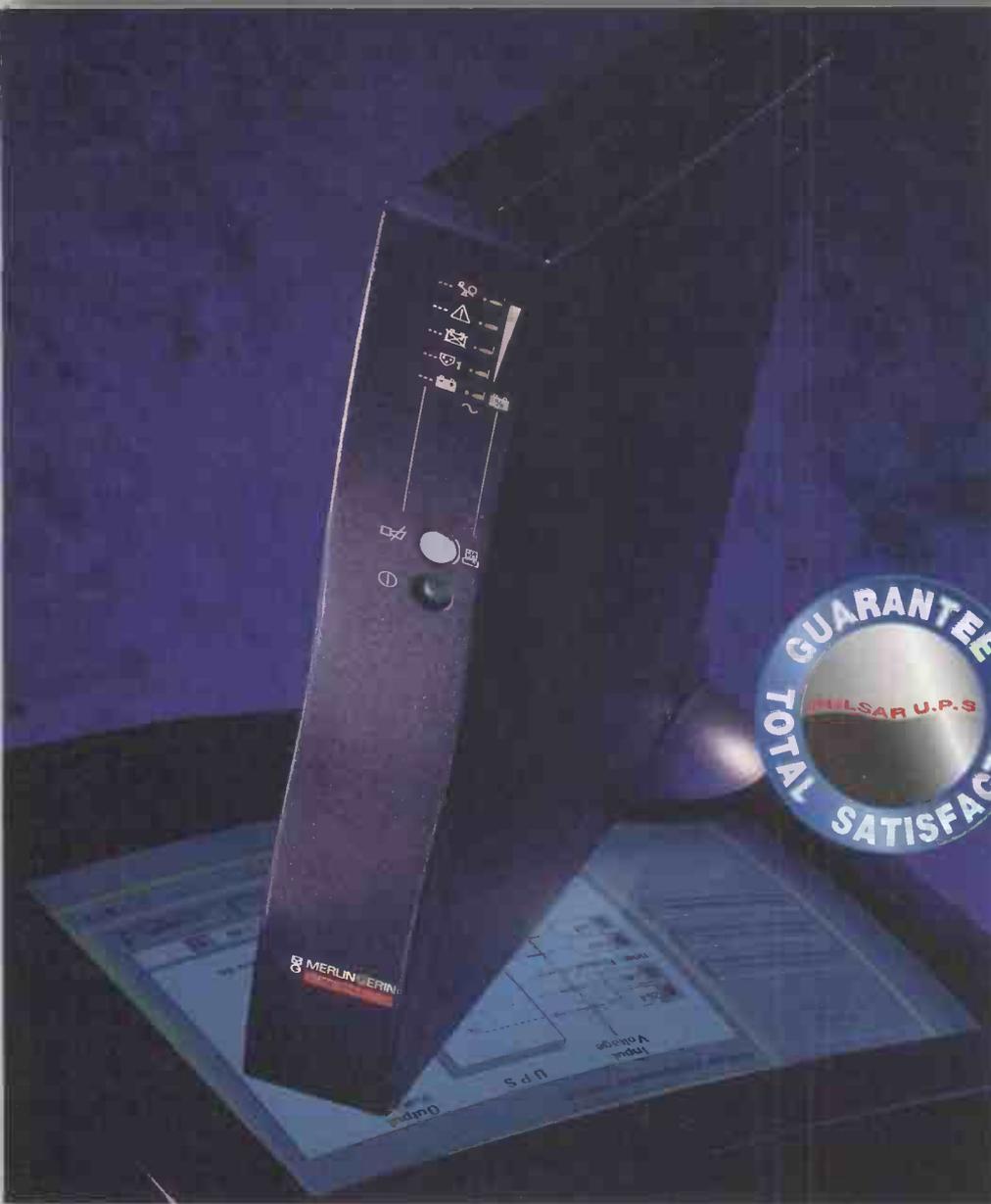
Good Points Quick and easy to use.

Bad Points Views are sometimes difficult to set up.

Conclusion Has the potential to absorb all your spare time.

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- Pulsar ES7: Unix workstation recommended retail price: £253 + VAT,

- Pulsar ESV 3: designed for PCs running under Windows 95 recommended retail price: £218 + VAT,
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SOFTWARE

Fanfare! Presentations

Strut your stuff, on a budget.

With the emphasis on whizz-bang sound, graphics and video technology, Softkey is aiming Fanfare Presentation at everything from corporate presentations, through software and on-line catalogue demonstrations, to interactive courseware and kiosk applications. This is quite a claim for a product that only costs 40 quid.

The installation program is extremely easy and takes less than a minute from CD-ROM. Users installing the package can also read the online documentation, which provides them with basic information on constructing presentations and using the media features. The online documentation is provided in a presentation format.

The program is backed up by paper-based manual which goes into more depth. This is not too indigestible, though, providing an easily-chewable 34 pages of instruction. The conventional Windows Help menu provides further backup for knowledge-hungry users.

Probably the first good thing about the package is that the user gets to choose whether they want a Windows 3.x or a Windows 95 installation. This is impressive, as many programs don't offer such a distinction.

When installation is complete, firing up the program presents you with a swirling mass of objects as an introduction screen — this is an animation, and is stored in one of the many file formats that the program accepts including FLI, AVI, MOV and WAV. Sixteen file formats covering video, sound and image data are supported.

The multimedia facilities are demonstrated using several example presentations which use a host of images and sound clips. The multimedia "events", as the program documentation calls them, are all supplied on the CD-ROM and can be used within the user's own presentations.

For such an inexpensive product, there is a reasonable amount of functionality but there are some gaps that could do with filling. One of the main gaps is in the program's lack of OLE or DDE support, which means that you cannot launch applications directly from presentations by

clicking on embedded documents. There is a separate application launcher button in the presentation toolbar but this is not as useful as it doesn't allow you to launch specific documents with just one button click, as OLE objects do.

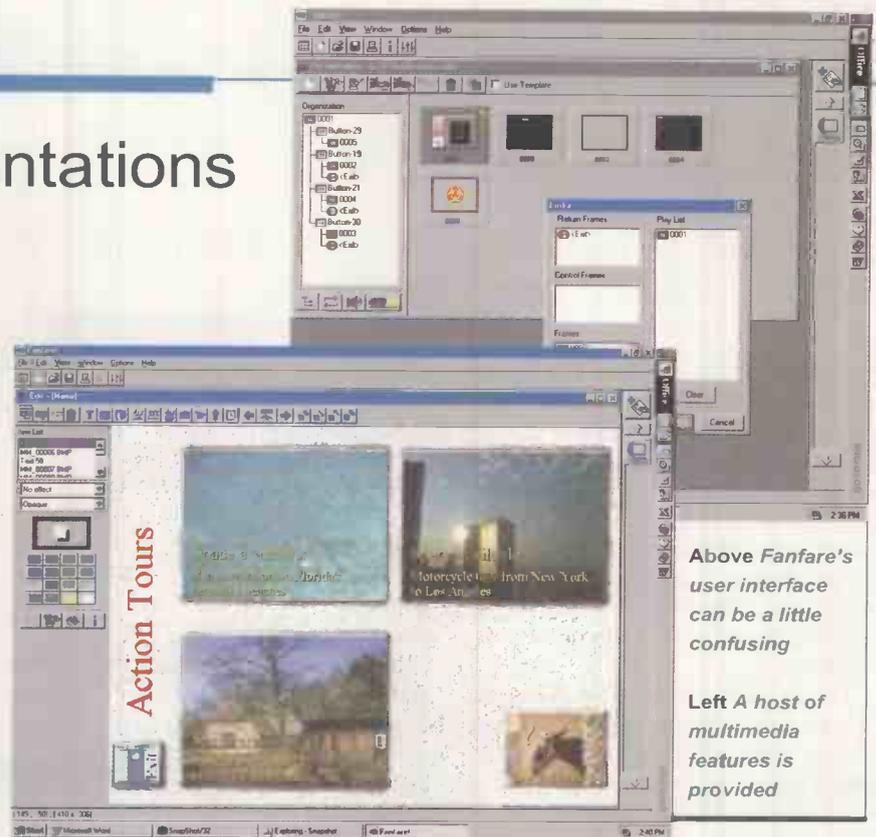
Fanfare, like other presentation packages such as Microsoft Powerpoint, enables users to show thumbnails of their slides. However, unlike Powerpoint, Fanfare includes an organisation box which is separate to the slide thumbnail window. This enables users to make links between the slides, making presentations interactive. You can insert buttons directly into slides, directing users to other slides so that they can take different paths through presentations. This means that you have to separate out buttons into "control" slides and "non-control" slides but the program makes this easy by painting symbols onto the sides of the control slides in the thumbnail box.

This interactive functionality is the most powerful aspect of the product as it enables users to design presentations which will appeal to different types of people, simultaneously. The down side is that, at first, configuring the links between the different slides is a complex business. It takes a good hour or two to get the hang of it, although once users understand what they are doing they will be able to quickly build presentation structures.

The button functionality is useful but the way in which it is implemented can be irritating. Like Powerpoint, the product works on a layering system with different media events being layered behind or in front of other events. This means that to implement a button with a logo on it, you have to make the button transparent and move it in front of the logo, rather than behind. If you fail to do this, as I did, you can spend hours trying to work out why the button doesn't work when you run the presentation.

The other features of this product, including the runtime compiler, the encryption software (which stops presentations being edited later) and the intuitive file-finding software, all add to its value and make it a useful addition to anyone's software library. These functions are a sign of high power, but sadly take a while to get to grips with.

Danny Bradbury



Above Fanfare's user interface can be a little confusing

Left A host of multimedia features is provided

PCW Verdict

Price £39.99

Contact Softkey 0181 789 2000

Good Points Highly functional. Good multimedia and interactive capabilities.

Bad Points Slightly confusing interface; it takes some time to really get to know the program.

Conclusion A must-buy for presenters on a budget.

SOFTWARE

Turbocad 2D/3D V.3

This all-in 2D / 3D package with a new interface provides hours of fun but needs better integration.

Turbocad 2D/3D V.3 is not a single 3D computer aided design program but rather two separate applications. The review sample came on two CDs and floppy disks, and included Windows 3.1 and 95 versions of Turbocad 2D, a single version of the 3D program and some symbol libraries (the CAD equivalent of clipart). Extra libraries and utilities can be "unlocked" from the CDs via phone and credit card.

Taking the 2D side first, the Turbocad interface has been drastically redesigned, and has a very "Office 95" feel to it, with tabbed dialogues, multiple button bars and even a tip of the day. A series of online tutorials takes you from line-drawing basics to the finer points of dimensioning. By default, you get four toolbars. Top left are the usual file, clipboard and undo buttons, with the drawing tools alongside. Left of screen is the "snap" toolbar and right of screen are the view controls.

Snaps are a CAD essential, and restrain the position of points. Snapping allows you to connect new lines exactly to the ends or mid-points of existing ones, to the centres or quadrants of circles, or restrict lines to 90-degree steps. These remain effective until you cancel the snap but you can now activate or override a snap from the "local" right-mouse menu on a one-off basis. Another great improvement is the introduction of active multiple snaps, so you can snap to the end or mid-point of a line, depending which is within range of the snap "aperture" (range).

Dig in to the menus and you'll find many more toolbars. Each drawing tool has a "flyout" of sub-options, which can be displayed as a free-standing bar. The circle tool, for instance, offers various means of creating circles and ellipses such as centre-radius, or passing through three points. Though you can't create or modify toolbars, you can drag them around the screen or dock them at the edges.

The drawing tools themselves are excellent, and include a double line tool for drawing walls or pipes. At any time you can activate the edit bar for precise

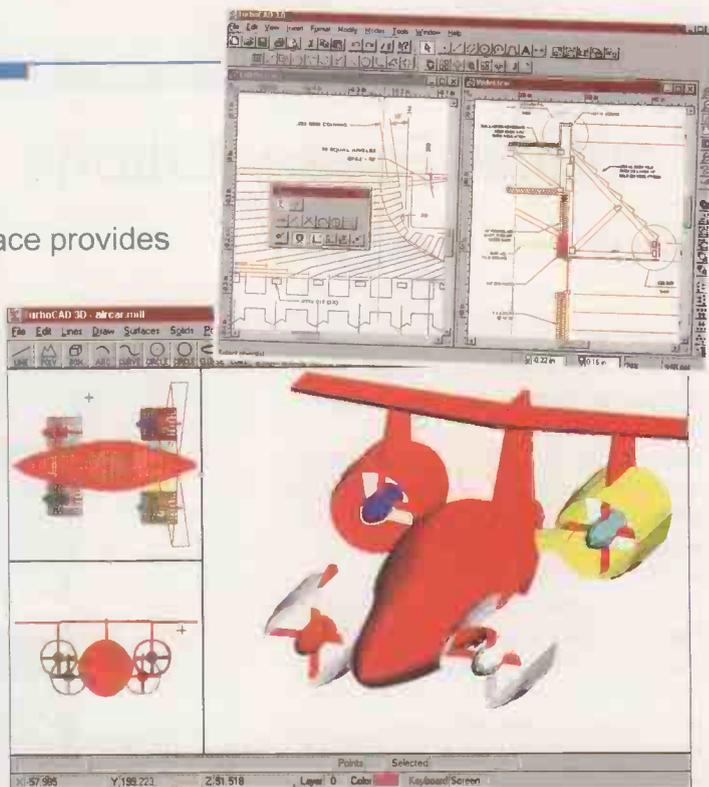
numeric input of co-ordinates. Though spline and Bézier curves are both supported, precise editing of these is poor but this probably won't be an issue with most engineering or architectural drawing.

The local menu offers context-sensitive choices: if you're drawing shapes made from multiple lines, for instance, you can end or close the shape, erase the last segment or cancel the entire thing. Object-editing tools are good, with well thought-out trimming, filleting and chamfering and a lovely tool for cleaning up the intersections of double lines. There are also excellent array tools for making multiple copies either in a grid (windows on a skyscraper) or a circle (teeth on a gear).

There's a generous selection of symbols included, which can be dragged-and-dropped from a "library" palette, but the snag is that these aren't sized in real-world units but rather in the scale of the drawing they were taken from. So you get anomalies such as a kitchen sink one-third of an inch long, or a washer four feet in diameter, and you have to scale these manually. Finally, there's a Basic-style script language and some sample macros.

Turning to the 3D side of things, Turbocad 3D bears an uncanny resemblance to a program formerly known as 3D Design Plus. IMSI has clearly made some deal or acquisition along the way, taken 3D Design Plus and thrown it into this package, renamed as Turbocad 3D.

IMSI has left it virtually untouched so, unsurprisingly, the interface bears no resemblance to the genuinely new 2D Turbocad product. The drawing tools are located in a fixed row across the top of



Top A vastly improved interface with buttons wherever you want them Above Modelling and shading from the artist formerly known as 3D Design Plus

the screen, while the drawing area is split into three viewports. Each can be rotated to any angle, giving you three different views of the model. You work in 3D either by specifying X,Y and Z co-ordinates or by rotating the view.

There's a range of 3D objects such as cones, boxes and cylinders and you can create more complex shapes by "extruding" 2D forms along a straight or curved path. You can shade views, apply basic ray-tracing and textures and even create animations. It's fun, but not really serious 3D CAD. There's also minimal integration between the two modules, but you can build on a 2D drawing in the 3D module, or edit a single view of a 3D drawing in the 2D one.

Tim Nott

PCW Verdict

Price £69.95

Contact IMSI 0181 581 2000

Good Points Brand new 2D interface is a vast improvement on previous versions.

Bad Points 3D is not integrated, and has a totally different interface.

Conclusion The 2D package is worth it on its own. The 3D is something of a curio, but fun.

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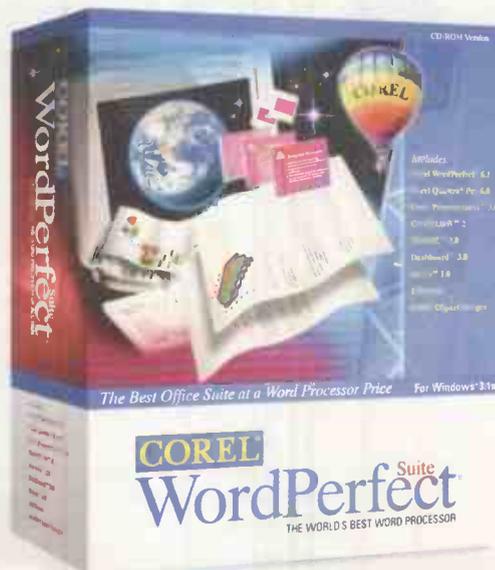
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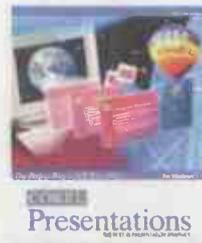
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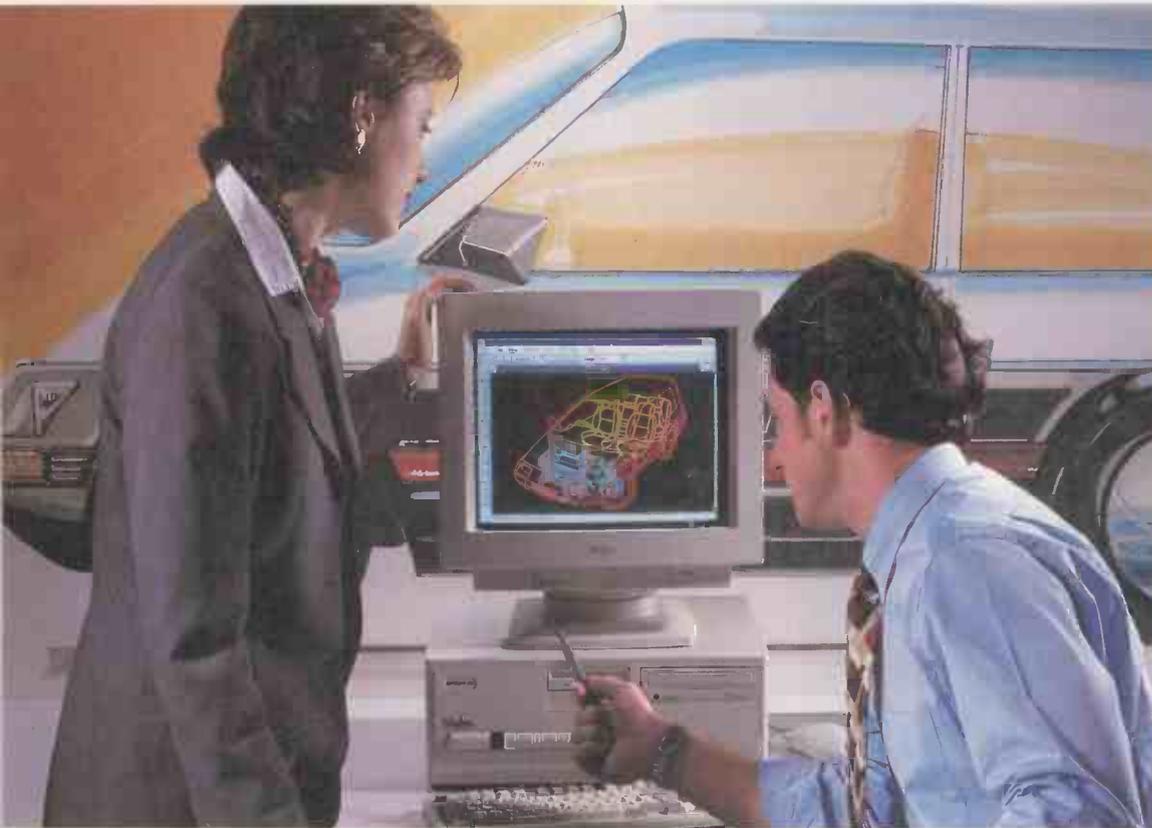
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HARDWARE

Digital Colorwriter LSR 2000 vs Hewlett-Packard Color LaserJet 5M

Two second generation colour lasers with very different characteristics but both are departmental printers with excellent connectivity options.

The first wave of sub-£10,000 colour lasers to hit these shores came in 1995 and the second generation has now begun to appear. Hewlett-Packard (H-P) has released a Mk II version of the best-selling Color LaserJet, subtly renamed the Color LaserJet 5/5M while computer giant Digital has now entered the colour laser fray with the high-end Colorwriter LSR 2000. Both printers are squarely aimed at the departmental end of the printer market and so feature excellent connectivity options. They also support PostScript Level 2, but that's the limit of their similarities.

The Colorwriter LSR 2000 is based on the 600dpi P320 Canon engine used in Apple's Color LaserWriter 12/600 PS and the Lexmark Optra C. Unlike its close rivals, the LSR 2000 uses a very powerful RIP controller: the new Fiery XJE RISC controller developed by colour printer specialist Electronics for Imaging (EFI). The printer can output 3ppm in colour or 12ppm in black and white.

In contrast the Color LaserJet 5M is outwardly identical to its predecessor but uses an upgraded controller featuring a

40MHz AMD 29K RISC processor. However, the printer's resolution and print speeds remain the same as before — 300dpi and 2ppm colour/10ppm mono. Hewlett-Packard has sought to play down the importance of resolution as a measure of print quality, presumably because so many of its rivals offer superior colour resolution but it then contradicts itself by emphasising the Color LaserJet 5M's latest image-enhancement technology: ImageREt 1200, which claims to deliver 1200dpi-like print quality.

The LSR 2000 comes with 32Mb of RAM as standard, expandable to a maximum of 48Mb. It ships with a 545Mb Quantum internal SCSI hard disk that can be used to store fonts and forms and used for spooling — you can even store print jobs there as well. The Color LaserJet comes with slightly more RAM (36Mb) but has no hard disk option. Three interfaces are supplied as standard on the LSR 2000:

Centronics/parallel, twisted pair and thick Ethernet. The Color LaserJet comes with the excellent JetDirect MIO network card, which additionally offers Apple LocalTalk as top of the usual Ethernet

connections. Both printers can auto-sense incoming print jobs between the various interfaces and automatically switch between them. The H-P came with the excellent JetAdmin network printer management

package — none was supplied with the LSR 2000 but it will ship

with Digital's management tools.

Both printers offer PostScript Level 2 and the H-P offers PCL5c as well. They are both Pantone certified devices and are compatible with a number of colour management standards such as ColorSync 2.0, ICM, Kodak and others. The LSR 2000, however, has the edge in the colour management stakes and comes with comprehensive calibration software for the Fiery RIP supplied on CD-ROM.

All colour lasers are physically large, heavy, devices and these are no exception. Both weigh in at around 50Kg and are supplied on a wooden pallet. They require plenty of space, too, as all-round access to the printer is desirable, certainly in the case of the Color LaserJet 5M. Neither printer is particularly well-endowed in the paper capacity department — both can take 250 sheets with a further 250 via an optional paper tray, which, given their intended departmental roles is a little light. The LSR 2000's tray conventionally and conveniently fits underneath the printer but the H-P's second paper cassette fits, somewhat bizarrely, vertically, at the rear of the printer which makes refilling it slightly awkward. But this is compensated by its ability to print in mono on A3 paper. The LSR 2000 is strictly an A4 printer.

Ergonomically, the LSR 2000 wins over the H-P. The Digital has four conventional toner cartridges (one for each colour plus black) and these are easy to install. H-P has seemingly taken a step back with the Color LaserJet as it eschews toner cartridges in favour of toner reservoirs which must be filled with toner from a bottle. Thankfully, the system is clever enough to avoid the possibility of toner spillage. Commissioning the H-P is a protracted affair, though.

The Digital and the H-P both delivered output at their claimed print speeds. The H-P is by normal standards a fairly fast colour printer, taking 253 seconds to output an A4 page of 24-bit colour, but





Color LaserJet is a vast improvement over its predecessor. But as the predecessor's print quality was unexceptional this is no big deal. Its black output isn't bad but when you compare it with the sub-£600 LaserJet 5MP, I'd have to say it's the cheaper printer that's better. Its performance on colour is better, too, particularly on solid colours — the sort used in business graphics. But when it came to 24-bit colour, its output was less acceptable despite the best efforts of H-P's ColorSmart software.

the LSR 2000, with its superior RIP, was faster: it took 184 seconds to do the same job. Thereafter, both printers could churn out subsequent colour copies at their rated speeds of 2ppm and 3ppm respectively. On the print quality front, the new

The LSR 2000 produced better overall print quality, on both text and colour. In 24-bit colour it's output was near photo-realistic quality, certainly distinctly better than the Color LaserJet 5M's. The LSR 2000 is capable of laying down true continuous tones and when magnified,

the printed image resembles a series of densely-packed, fine coloured lines. It's ability to reproduce gradient fills without banding or visible artefacts was also impressive. The LSR 2000 costs about £1,500 more than the LaserJet 5M, but despite this price gulf, I'd recommend the LSR 2000 over the Color LaserJet 5M every time.

Roger Gann

PCWVerdict

Colorwriter LSR 2000

Price £8,600
 Contact Digital Equipment 01734 203111
Good Points Excellent colour quality. Fast first page.
Bad Points Only 90 days on-site warranty.
Conclusion Dearer, but the best overall.

Hewlett-Packard Color LaserJet 5M

Price £7,180
 Contact Hewlett-Packard 0990 474747
Good Points Wide range of solid colours reproduced.
Bad Points Average graphics quality. Weak ergonomics.
Conclusion Better than the first Colour LaserJet, but beaten by Digital

SOFT WARE

Quick Address Lite

Pop in a postcode and up pops the address, with this budget-priced utility.

These are hard times for the Post Office, which is facing a threat from email on the one hand and politicians bent on privatisation on the other. So there is little point in complaining about the double standard by which it begs you to make your addresses as accurate as possible and then charges you through the nose for a list of correct addresses.

But Post Office accountants seem to have lifted their eyes from the bottom line for long enough to realise that the money gained from flogging Post Office Address files (PAF), for hundreds or thousands of pounds to junk-mail firms, might be more than offset by the cost of sorting out the mail from the rest of us who, not unnaturally, resent paying for our own addresses.

The result is that software firms have been licensed to make PAF files available at a more reasonable price.

Quick Address Lite is the cheapest yet, at £99. This buys you only limited access — you can look up an address from a postcode, but not vice versa — but it is still extremely useful.

Imagine you are typing up an address, either from a list or from dictation. You need only type the postcode and the rest pops up for you, saving you time and effort and ensuring accuracy. Staff taking down a customer's address over the phone can first ask for a postcode and then double check the rest against the PAF file.

Its developer, QAS systems, has managed to pack 26 million UK addresses and 1.6 million postcodes, with access software, into just six disks. The files unpack into just 7Mb of hard disk.

The utility will work with your system without the need for heavy-duty



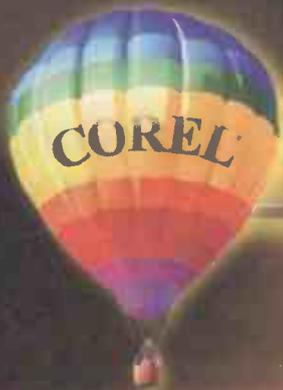
The Quick Address dialogue can pop up within any application

customisation. A QAS dialogue box can be summoned from within any application. The address, once accepted, is pasted automatically into the application (a word processor, say, or a database) in a format or your choice.

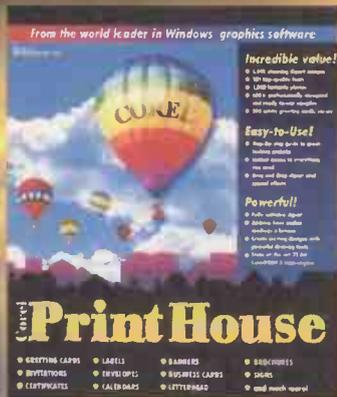
Clive Akass

PCWVerdict

Price £99
 Contact QAS 0171 498 7777
Good Points Good value by the standards of its predecessors.
Bad Points Address from postcode only.
Conclusion Good starter system.



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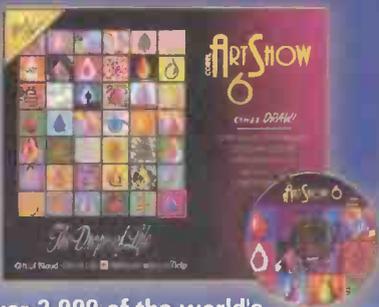
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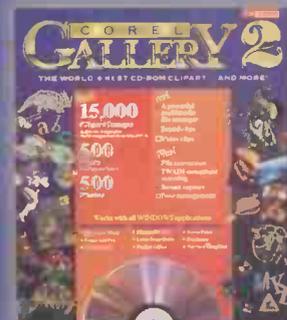
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PCW How You Can Contribute To The Long Term Tests Section

We welcome contributions from readers for our Long Term Tests section. If you've been using a piece of hardware or software intensively for some time, just write a 450-word article (for hardware) or a 750-word piece with screenshot — GIF format — for software and send it on disk, in MS Word (Mac or PC) or ASCII format, to: The Editor, Personal Computer World, VNU House, 32-34 Broadwick Street, London W1A 2HG. Mark your envelope clearly "Long Term Tests". We'll pay for any contributions we use.

HARDWARE

Star LC-200

5 YEAR
TEST

Small, fast and cheap to run. And very noisy. It's worth its weight in cotton wool.

Five years ago I bought my Star LC-200 for £200, which is quite a sum for a dot-matrix printer on a teenager's budget. At first I had it hooked up to an old 128K Spectrum, which sent it basic ASCII codes but no graphics. When a year later I moved on to IBM PCs, the Star coped admirably, even with the dodgy emulation sent at it.

It is compatible with nearly every software and hardware combination you can think off. Adjusting its setup is child's play. There aren't any DIP switches to break your fingernails, or any jumpers. It's all done with a system called EDS, Electronic Dip Switches. Very fancy, I hear you cry, but does it work? Well, I can give you a resounding yes. The buttons on the panel control everything you could possibly think of, without

opening up the printer. Everything from paper size to emulations can be adjusted via the EDS.

The printer has been cheap to maintain: I go through one black and white ribbon every three months, and a colour one every six. Soon I will have to replace the printhead, because it's getting worn.

This is quite easy, involving just two

screws and a small ribbon connector.

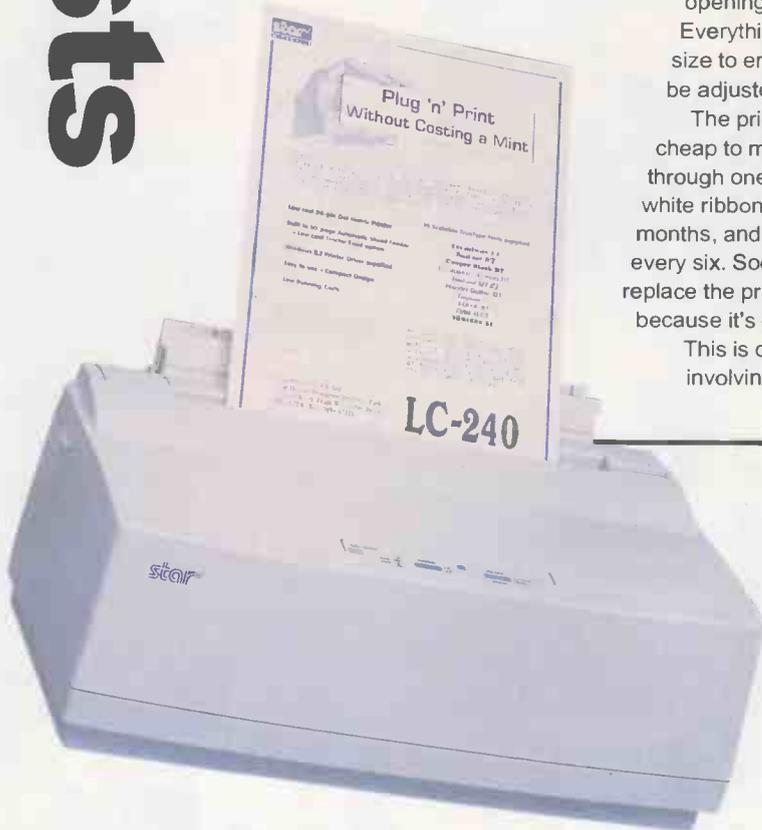
It has proved very reliable too — nothing has gone wrong in the past three years. Many of my friends have bought other printers, and have been caught out when these have broken down. It's at about this time they come round my place with a floppy, and start to eat humble pie as their work comes out of the Star at warp speed, looking better than ever.

I can't fault Star's documentation and manuals. They are well written, clear and concise, with chapters specifically devoted to PCs and MSDOS. Each time I've written to the company for help, they have responded quickly with the correct information. The latest set of drivers are such an improvement with Windows — the output looks dense and black. With a new ribbon, the colours are vibrant. The Star takes every sort of stationery available, including labels, without a single paper jam.

Dot-matrix printers are generally under-rated; most people disregard them as a nuisance, but if looked after, they will produce good output. As a bonus they are cheap to run, although you will go through a couple of boxes of cotton wool because the noise they generate is quite diabolical.

I would urge anyone looking for a small, fast, cheap printer to take a long hard look at the Star. There isn't much chance of you buying a new one, though, as it has been superseded by the LC-24 and XB professional range.

Mark Lakhani



If well maintained, small dot-matrix printers like the Star LC-200 are an excellent investment

PCW Verdict

Good Points Reliable, adaptable, cheap to run

Bad Points Very noisy.

Conclusion An excellent investment

Price Nearest current equivalent LC-100, £151 RRP

Contact Star Micronics 01494 471111

3 YEAR
TEST

SOFTWARE

FastMap OS Sheet Manager 3.2

Pinpointing the areas of outstanding interest in FastMap, used in a professional environment.

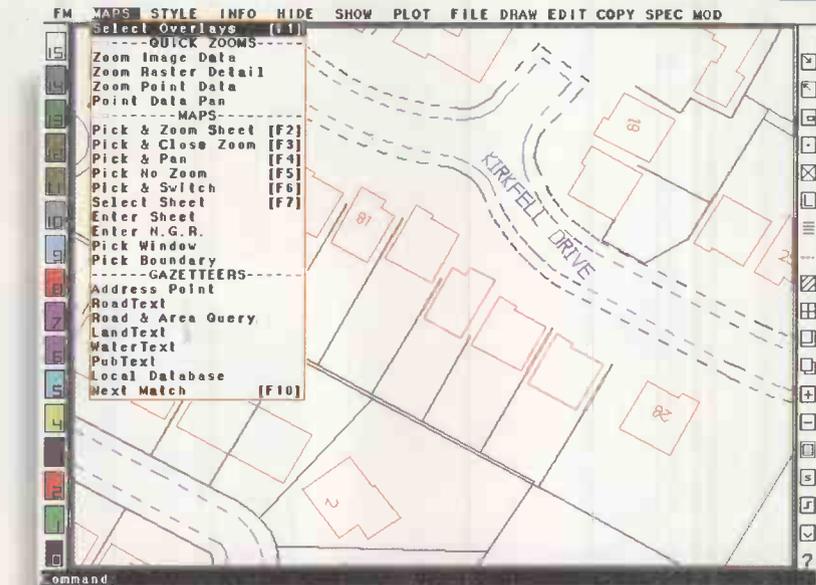
Following my local authority's decision in April 1993 to use Ordnance Survey digital mapping as a replacement for paper maps, the search was on for a software package to handle the data and provide the output required. At that time, the choice was not as wide as that available today, but the package we chose still remains at the head of the market.

FastMap is based on the widely acclaimed FastCAD draughting package, a DOS-based program which it uses for its screen and graphics handling routines. This has a number of advantages, but also one fairly restrictive disadvantage. On the plus side, the program is what it says — fast. Compared to other software that purports to handle maps, it is streets ahead in loading and redrawing data. Typically a load, zoom and redraw can take ten to 15 times as long under AutoCad r12 for Windows.

It runs on "standard" hardware (486DX recommended) and the sizes of the converted OS data files are also a fraction of some other packages. The easy-to-use menu system uses script files which can be easily customised to a user's requirements, and title blocks and outlines can easily be designed using the extensive CAD facilities. These can also be used to add drawing entities to maps.

As well as vector data, FastMap supports both mono and colour raster data, OS Address Point and a variety of external databases. It is also possible to incorporate scanned images or other drawings into the map. This can be used to superimpose, say, a layout of a development onto a vector or raster image, which never fails to impress.

On the down side, FastMap's reliance on FastCAD can cause problems. FastCAD imposes a limit on the amount of data that can be loaded before the system gets brain-fade. This is approximately 4Mb, probably enough for even the largest mechanical engineering



drawing but it soon gets used up when loading large-scale digital map data. It is possible to reduce the level of detail displayed, but this still means that we cannot load all 640 sheets in the borough, even at the lowest detail. (Although, it must be said, only a few sad cases would want to.)

Within my department, FastMap has been the catalyst to the widespread acceptance of desktop computers and their benefits. Those whom I had considered rabid Luddites took to the system like a small boy to a muddy puddle and rapidly began to see the uses and advantages of the other systems we have in place. This can only be put down to the ease of use of FastMap and the short learning curve required for competence.

Survey Supplies, which writes and markets FastMap, has a policy of listening to its users both by direct contact and at well-attended user group meetings. This is borne out by the numerous improvements incorporated into the system since we took a copy of version 2 on trial about two years ago. The most significant of these include dynamic rotation and scaling of title blocks, the reduction in memory requirement, the restructuring of the system files to improve networkability, major improvements to the GIS (Geographical Information System) facilities, and a vast improvement in the

Breaking the speed limit: FastMap is just that — fast, and full featured

quality and content of the manuals.

GIS functions are well catered for, especially if all data is to be captured via FastMap itself, which uses a dBase format internally. There are a number of links to proprietary database systems (such as the Hilight street lighting database among others), but occasional problems can occur when attempting to incorporate external databases which are not directly supported. We had enough difficulty linking to DataEase that we decided to use another GIS, but we have since found out that this problem has been rectified and was not all down to FastMap. I have set up a number of small "one-off" databases using FastMap for other Departments, and these have proved very successful.

Steve Hubbard

PCW Verdict

Good Points Fast, easy to use, fully-featured.

Bad Points Only 4Mb of data can be loaded at a time.

Conclusion As a map-handling package it cannot be bettered

Price £2,500 (single user; multiple users on sliding scale), £1,250 for 2 to 10 additional copies

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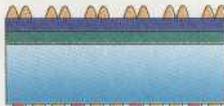


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The latest C4 version of AutoCAD is fully compatible with Windows 95. There are some new features and enhancements, too. But will it win new friends?

SINCE MAKING ITS DEBUT 14 years ago at Comdex, in Las Vegas, AutoCAD has established itself as the world leader in high-level Computer Aided Design (CAD), with a user base of over a million on PC and Unix platforms.

From the original two-dimensional drawing software, it grew and grew. Wire-frame 3D capabilities and the AutoLisp programming language were added in 1985. In 1990, Advanced Modelling Extensions offered proper, solid modelling with shading and Boolean operations such as "drilling a hole" in a cube with a cylinder. Then, in 1993, version 12 brought AutoCAD to Windows, and in the following year version 13 brought a whole raft of interface and feature improvements including 70 new commands, a spelling checker and TrueType support.

Although CAD uses the same vector geometry and click-and-drag drawing techniques as illustration software, the

resemblance is only superficial. For a start, it offers a much higher degree of accuracy. Secondly, high-end CAD offers true 3D modelling, though the screen display is as flat as a traditional drawing board. It's like a camera — you can view the model from any direction, work inside it, apply perspective, shading and so on.

Custom solutions

AutoCAD is used for designing items as diverse as oil-rigs and micro-surgical instruments. The challenge lies,

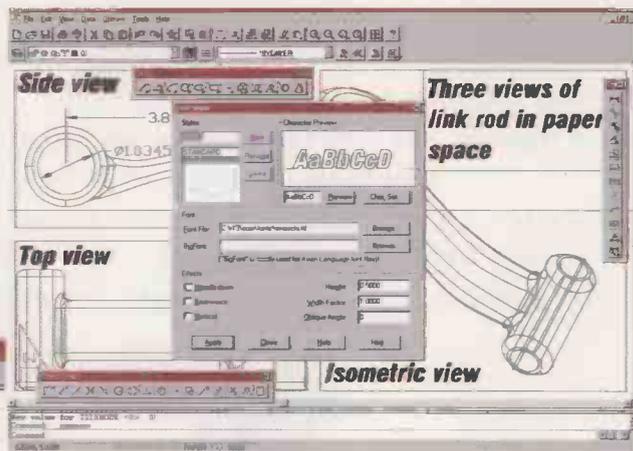
therefore, in producing a core product that can be tailored to suit all designers. To this end comes AutoCAD's fabled customisability and open architecture. Practically any aspect of the interface can be changed: you can design your own menus, use a mouse, keyboard or digitising tablet. You can program routines as scripts of commands, or in the more complex AutoLisp macro language.

So while Autodesk continued to develop its product, the open architecture and provision of various programming

tools made it possible for third parties to develop "vertical" solutions, so now over 4,000 third-party add-ons are available.

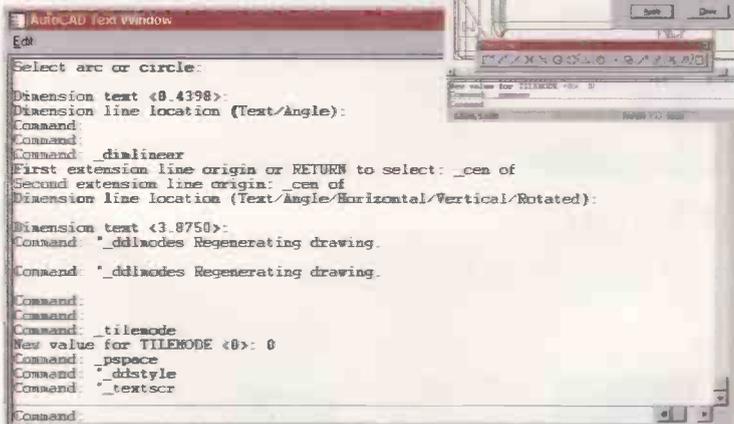
After AutoLisp came the AutoCAD Development System which was added in version 11. Version 12 brought Advanced Visualisation Extensions, for third-party C-compiled add-ons and SQL extensions for

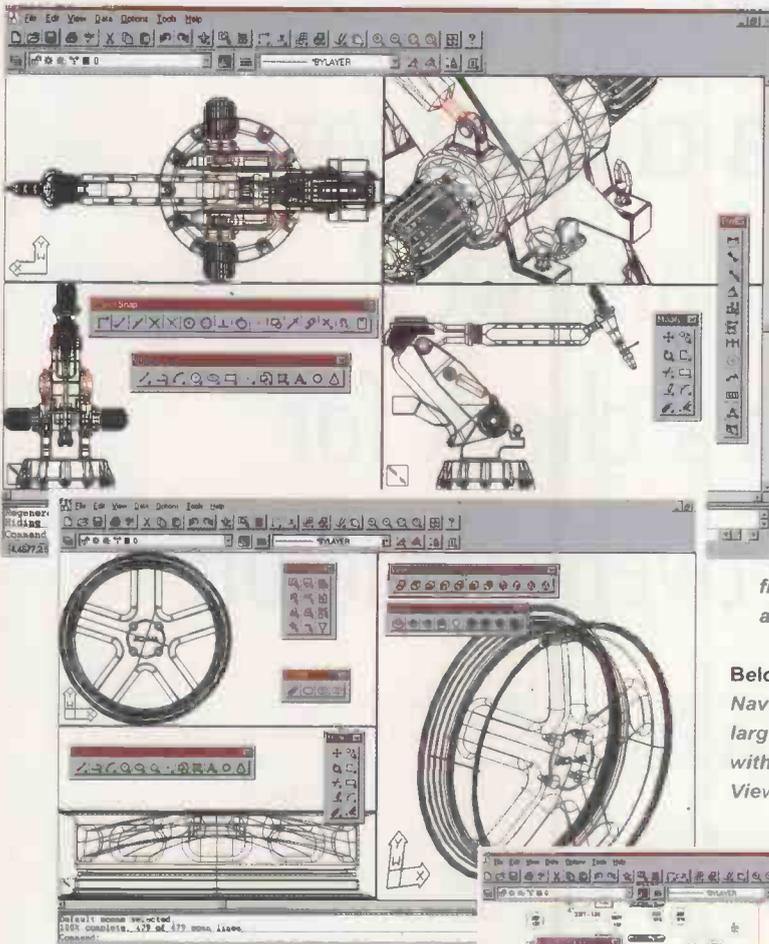
database connectivity. The Windows version also brought Dynamic Data Exchange (DDE) to the drawing board. A sample application showed a shaft modelled in AutoCAD, with the engineering parameters calculated in an Excel worksheet — as you changed the latter's load, speed or material properties



Above *In paper space — arranging views for plotting and adding text*

Left *The command-line text window provides a history of all your actions*

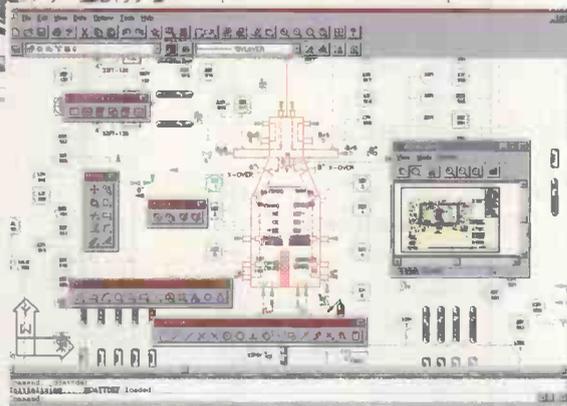




Left
A robot arm model — four views with "hidden lines" removed top right

Below left
Working in model space — three wire-frame views of a car wheel

Below
Navigating a large drawing with the Aerial View



the former's dimensions were dynamically adjusted, and vice versa.

Getting in a GUI mess

Though version 12 ostensibly brought AutoCAD to Windows, it wasn't a happy match. The chief GUI enhancements were an "Aerial View" window, which let you zoom or pan the working area via a miniature overview of the entire design, and a single floating toolbar.

This latter could contain up to 36 user-defined buttons in one large, disorganised pool. Version 13, launched in November 1994, made a much better

job of the Windows challenge with multiple, configurable toolbars grouped by task — drawing, dimensioning, modifying and so on, each with "flyouts" offering related options. ToolTips, online

tutorials and thumbnail previews also made their debut in the first major attempt at civilising the harsh AutoCAD environment. Yet another programming interface — the object-orientated AutoCAD Runtime Extensions (ARX) — was added.

Commanding presence

This release, 13 C4, offers a handful of new features, minor enhancements and one major change — full Windows 95 compatibility.

A single CD contains versions for DOS, Windows 3.1, 95 and NT as well as copious online documentation to complement over 2,500 pages of printed manuals.

To understand AutoCAD, it's important to realise that at the heart of the interface, the product is still command-line driven, just as it was in 1982. You can still type "c <enter> 3,2 <enter> 1 <enter>" and produce a circle whose centre is at the X,Y co-ordinates 3,2 and which has a radius of one unit. As you enter a

command, various options or prompts for further information appear. With the circle command, for example, if you type "2p" after the first <enter> you will now be drawing a circle defined by two diametrical points and be prompted accordingly.

It's easy to knock the Command Line Interface (CLI) as being woefully old-fashioned but it does have one tremendous advantage. In technical drawing, much

of the input needs to be made numerically — you don't draw a wheel that "looks right" but a wheel that is exactly 600mm in diameter. The CLI means you can type in those figures

Hardware: have you got what it takes?

The official hardware requirements for AutoCAD R13 for Windows 95 are a 386 with a co-processor (or 486 DX where the latter is built-in), 16Mb of RAM (32Mb for NT), 48Mb of disk space for the program, another 64Mb for a swap file, plus a pointing device and Windows-supported display adaptor.

But with an application costing over £3,000 it's foolish to stint on hardware. In practice, CAD is intensely number-crunching so the faster the processor, the better. More memory is always helpful, especially with large models if one is to avoid the delays caused by swapping data out to disk.

The other big demand is display. A resolution of 1,024 x 768 and a 17in monitor should be regarded as the bare minimum for serious work — and if you're not serious, you don't need AutoCAD. The program itself only supports 256 colours, so a display card with 2Mb

of memory will take you up to a comfortable 1,280 x 1,024 pixels. If you're using built-in or add-on rendering you really need 24-bit colour — 8Mb of video memory will take you up to a luxurious 16 million colours at 1,600 x 1,280 pixels. What's really important is redrawing speed, and here it's the processing power of the graphics chip that counts.

Autodesk, as a matter of policy, doesn't endorse hardware products but the distribution channel has no such qualms: AutoCAD dealer, Force 2, recommends and supplies the Elsa series of CAD-specific graphics cards. All have AutoCAD drivers, and range from the Winner 1000 (up to 1280 x 1024 x 256 colours) to the flagship, Gloria, a 3D specialist with both S3 968 and GLINT 300SX processors, which offers 24-bit colour at 1600 x 1280 resolution.

● Force 2 is on 01844 261872

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left.
Render
output from
a car wheel
drawing



below.
Render
output
from a
robot
arm
drawing

planes while drawing on a fourth; plus it poses problems such as where to put text.

If you place this on the ground plane, it will be invisible when viewing from the side, or distorted when viewing in perspective. To cope with this, AutoCAD introduced the concept of "paper space" in release 12. Working in paper, rather than model space, you can combine multiple resizeable views on a single "sheet" with all annotations in the plane of the paper. To complement this come three new commands for extracting 2D profiles and sections from 3D objects.

Putting on the styles

There's a new dialogue box for managing text styles. Unlike most Windows applications, AutoCAD doesn't use the typefaces already installed on your

system, and you don't get a drop-down list of fonts available when you want to add text to a drawing. The reasons for this are historical: AutoCAD uses its own vector fonts designed for fast output on pen plotters and it was only in version 13 that TrueType was supported at all. The new dialogue provides an easier way to create font styles — similar in principle to word processing but with added options such as mirrored, slanted or upside-down text.

Although several AutoCAD own-brand .SHX and TrueType typefaces are included, you can access

fonts elsewhere on your hard disk. There is a problem, however: browse to your Windows\Fonts folder and you'll find you can't select any of these because Windows lists the font names, such as "Times New Roman", whereas AutoCAD expects filenames like "TIMES.TTF", so

you have to find out the filename and type

directly, without having to switch to an input box on the screen.

If you want to use the Windows way of doing things, then you click on the circle tool in the "Draw" toolbox. Six ways of drawing a circle appear as flyouts: choose one and it becomes the new default, the "home" button on the flyout, saving time if you want to draw a series of circles by the same method.

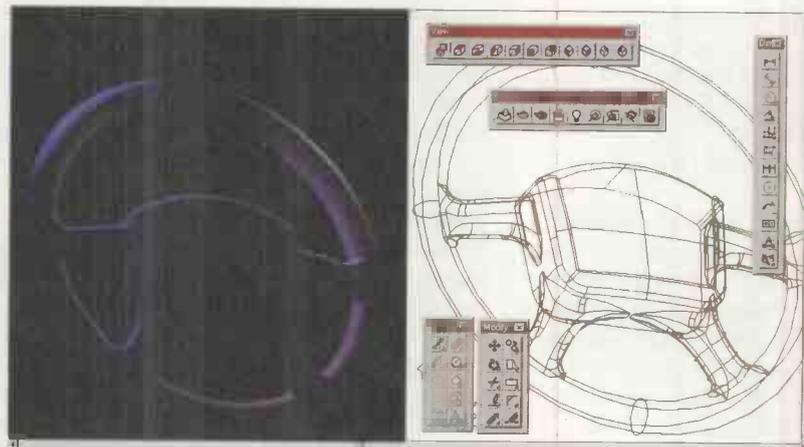
The beauty of the system is that you can mix and match: click on the circle tool, say; click on a point on the screen to position its centre; then type "5" for the radius. This version provides a new variant on this approach, called "direct distance entry", where you drag the pointer to set the direction of an action and enter the distance with the keyboard. This is an especially neat time-saver when working in "Ortho" mode, with lines constrained to a rectangular or isometric grid.

At other times, it's annoyingly inconsistent. When you finish a drawing command, AutoCAD goes back to "select" mode or waits for a new command — it doesn't assume you want to keep on drawing circles.

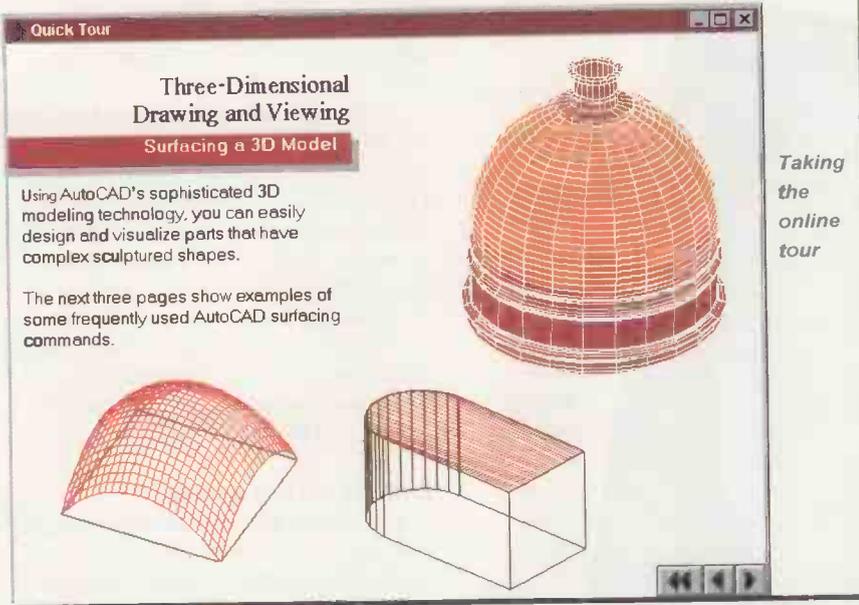
This is fine, especially as a right click repeats the last command. Except it doesn't work properly. Draw a three-point circle using the buttons and, as we saw earlier, next time you choose the circle button it's already set to three-point, so you don't have to wait for the flyout to appear. But if you press the right button (or

<enter>) to repeat the command, it returns to the AutoCAD default of centre-radius. It's the sort of anomaly that should have been corrected in a maintenance release, but wasn't.

3D drawing is complicated. You may be viewing a model in several different



Just
the
thing
for
your
XR3



it in manually.

There are two new SQL drivers, for Informix (DOS) and Oracle (Windows). "How to..." cue cards now supplement the tutorials to cover the drawing and editing fundamentals. C4 also provides base support for the AutoCAD Runtime Extension (ARX) with new commands for loading, unloading and providing information on ARX applications. The programming interface itself is included but development tools, including documentation, libraries and sample code will be distributed separately as the ARX Software Developer's Kit.

ARX provides "powerful facilities that support the development of a new generation of design automation solutions based on object-orientated technology." In plain English, this means that you can create drawing "objects" that behave in a more object-like way rather than being just "dumb" sets of vectors. ARX modules are implemented as Windows DLLs (Dynamic Linked Libraries), rather than being added to the core code of AutoCAD itself.

Coming alive with 95

Undoubtedly, the big news is Windows 95 compatibility and the benefits it brings. Performance should be, according to Autodesk, around 20 percent faster, thanks to the elimination of the 16-bit bottleneck.

Certainly, the subjective impression was of far smoother multi-tasking than in previous versions. OLE2 implementation has now been improved (you can drag and drop objects into AutoCAD) though you don't get "in-place" editing.

There's a Windows 95-compliant "Uninstall" routine, support for UNC

pathnames and integration with Microsoft Exchange for sending drawings as email attachments. In terms of sheer preservation of sanity, the introduction of long filenames is bound to be universally welcomed. With the profusion of drawings in a design practice, GHLFPR2A.DWG might mean something to the originator, but for everyone else it would take an inspired cryptographer to realise that this means "Grand Hotel lobby floor plan — revision 2a"; a name that is otherwise perfectly acceptable.

Some way to go

Nevertheless there is still a lot of room for improvement, as Autodesk itself is only too aware. The company still hasn't cracked the Windows Multiple Document Interface so it's still not possible, amazing as it may seem, to load more than one drawing at a time.

However, what you can now do under Windows 95 or NT is to run more than one instance of AutoCAD, each with a separate file. This was actually a feature of release 12 but disappeared with the initial Windows 3.1 version of release 13.

Other smaller but annoying lapses show lack of attention to detail: buttons don't "stay down" to show when they are active; and similarly, some menu options don't stay "ticked".

The multiple configurable toolbars of R13 are a vast improvement over R12 and have both ToolTips and a hint line to show what each button does. Button bars can be customised by dragging, in a Microsoft Office-like manner — select a category, then drag buttons from the available commands on to the bar of your choice. This would be fine except the explanations dry up here — you have to

drag the button on to a bar before you can find out what it does.

In view of the awesome might of AutoCAD these may seem like niggling complaints, but I disagree. This is, after all, a drawing program and the whole point is to make things as speedy and seamless as possible for the electronic draughtsman.

AutoCAD has come a very long way since its DOS-only days. As late as release 10, if you wanted to do something as trivial as changing the size of dimension line arrows, you had to remember what DIMASZ meant, as well as the names of the other 30-odd system variables governing dimension parameters. Now it's all done in a civilised manner from dialogue boxes.

If you wanted to open a file you had to jot down the name as it was impossible to view a directory listing from the same screen as the "Open" command unless you used third-party file management utilities. Now we have standard Windows "File/Open..." dialogues with thumbnail previews, and long filenames. However, as a Windows application, AutoCAD still has a long way to go — to create a custom line type or hatch fill you still have to edit a text file, you can't just draw it and "save as".

To buy or not to buy?

Anyone running Windows 95 using the earlier Windows version of Release 13 should undoubtedly upgrade — it costs nothing and you get the immediate Windows 95 benefits, mentioned earlier, as well as the other enhancements. Those with the Windows version of Release 12 should think seriously about upgrading, too. The increase in productivity brought by the vast improvements in the R13 interface should repay the upgrade cost in a very short time. For new users, the decision is tougher. The complexity and rough interface edges still make for a long and hard learning process.

Autodesk may be able to count on the loyalty of its installed user base, many of whom learnt, and are happy with, the keyboard CLI. But to make new friends, it needs to go further down the path of Windows compatibility.

Tim Nott

PCW Details

AutoCAD Release 13 C4
 Price £3,150; upgrade from release 13 1s free; upgrade from any previous version is £495
 Contact Autodesk 01483 303322



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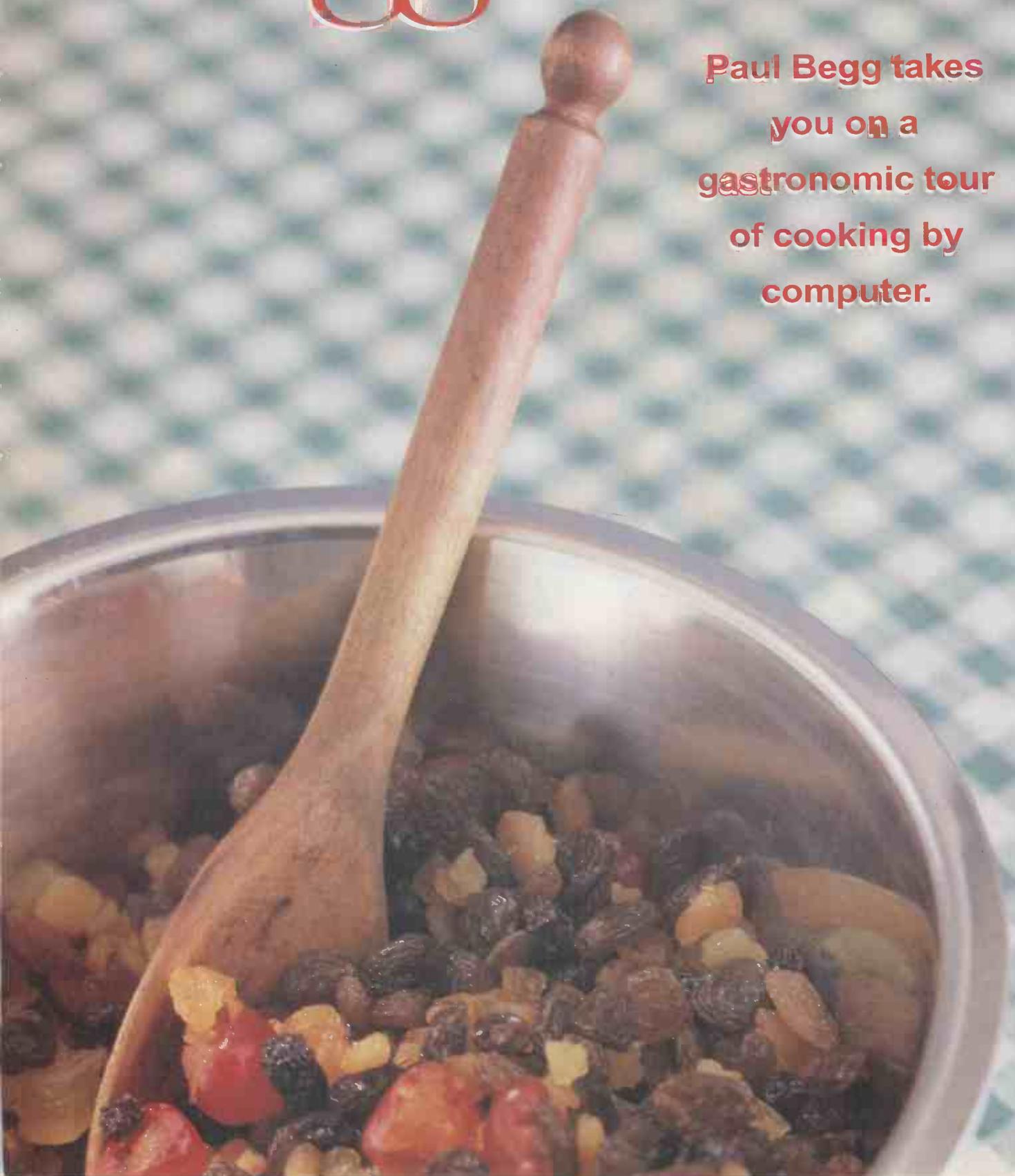
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Serving *suggestion*

Paul Begg takes
you on a
gastronomic tour
of cooking by
computer.



"I thought my mother was a bad cook, but at least her gravy used to move about." —
Tony Hancock

IT WAS FRIDAY LUNCHTIME IN the *Sugar Loaves*. A group of us were winding down for the weekend. Suddenly it struck me that we had spent half an hour talking about food and were now actually exchanging recipes and cooking tips. That evening, I popped into the *Windmill* (for medicinal purposes, you understand), and lo and behold the conversation was about food in there as well.

I mention this because a few years ago you could have been forgiven for thinking that we were living in a pre-packaged age. Hardly anybody baked anymore. Preserving and pickling was almost a dead art. And if it wasn't in a foil dish to cook for 25 minutes in the oven or in a bag to boil in water for a similar duration, it wasn't recognisable as food.

How things have changed. Not only do a bunch of men discuss cooking along with football over a pint, the supermarket now offers real bread, loads of fresh vegetables and herbs, exotic fruits, proper cheese. Cooking programmes on television seem to proliferate, headed by Delia Smith, with BBC's Food Programme, Lloyd Grossman, and a host of shows on satellite TV. In fact, a few months ago a speedy finger on the remote control could get you over two and a half hours of food programmes on a Thursday afternoon — for me, that's pretty close to heaven. (Actual heaven would be two and a half hours in a good Italian restaurant.)

I also like cookery books almost as much as I love cooking, which comes a close second to my love of eating. But cookery books are special. They look nice on a shelf, have a nice feel, promise delights, can be read purely for enjoyment, and the food stains on the pages bring back memories of great meals and old friends. I never thought I could give up a cookery book for a cookery book on my computer. Today, I can't imagine looking for a recipe without my computer to hand.

There are several reasons. Have you ever wanted to find a recipe,

but not known in which recipe book it is? When you use a computer recipe database, finding just the recipe you want is the work of a moment. You can also search for recipes which contain ingredients you have in your store cupboard. With some packages you can also add your own recipes, so say goodbye to that scrapbook full of cuttings from the Sunday colour supplements and those magazines you buy while waiting in the supermarket queue. And those stains on the cookbook pages may bring back memories of culinary delights, but they can be unhygienic. With a computer you can print out the recipe afresh every time you use it or keep it in a wipe-clean plastic envelope. You can also print out a shopping list.

There's also the sheer number of recipes you get on a CD-ROM. Some of the titles reviewed here contain hundreds of recipes. A couple contain about 10,000 — that's a whole library of recipe books. These are the reasons why the computer in my home is as important as the cooker.

You find electronic versions of almost every type of cookery book you can

discover in book form. We've looked at just a small selection across three broad categories, from master chefs through to international cuisine to recipe databases.

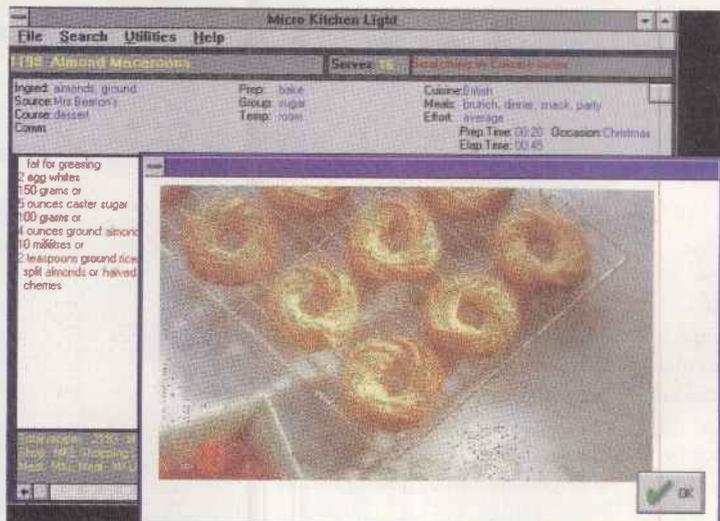
Cooking with the masters

Mrs. Beeton's Book of Cookery and Household Management

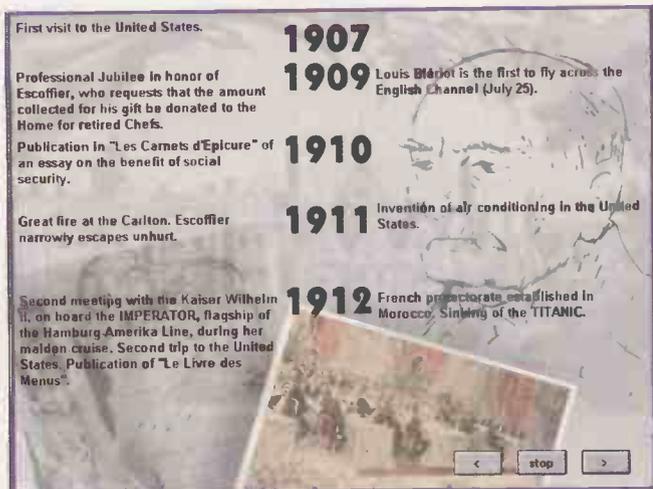
Even someone whose culinary abilities don't extend beyond burning water has heard of Mrs. Beeton. Isabella Beeton (1836-1865) was 24 years old when she wrote the *Book of Cookery and Household Management*, the most successful European cookery book ever published. She revised the book once before dying in 1865, following the birth of her fourth child. The fortunes of her husband and publisher, Samuel Beeton, declined dramatically thereafter and he was eventually forced through bankruptcy to sell his copyrights to the publishers Ward, Lock and Tyler. These publishers continued Mrs Beeton's revisions, adding and deleting from the book as times and tastes changed.

The book was unique in many ways. It was the first cookery book to list the quantities of ingredients and the approximate season for each recipe (an interesting reflection on the industrial age, people being born in towns and having no idea when certain vegetables and fruits were in season), and the book, though now bearing little resemblance to the original, is still published. This edition takes Mrs Beeton into an electronic age she would never have imagined, but still gives useful information on all manner of household management, from budgeting to choosing a microwave.

There are over 2,000 recipes, and you can search this huge database by all manner of criteria. Once you have found a recipe that fits your needs, you are provided with a list of ingredients and cooking instructions. There is also assorted information such as the main ingredient, the source for the recipe



Mrs Beeton — lots of great recipes with a winning database



Escoffier — relive the best food at the best tables in Europe

muddle checking your handwritten lists.

MKC has been refined over many years and the latest version has limited multimedia capabilities. It can display photographs of dishes and preparation methods and there's pronunciation guidance (American, unfortunately).

Good Points Superb database. Good range of add-on recipe databases.
Bad Points None.
Conclusion Inexpensive. Give it a try
Contact One Stop Direct
Tel 0181 947 1001
Price £19.99 inc. VAT
Rating ●●●●●

(usually Mrs Beeton), the dish's position in the course (starter, main course, dessert), whether it is presented hot or cold, whether usually eaten for lunch or dinner, what country it comes from, the preparation time and cooking time. Some recipes also have attached nutritional information and sound, and a few are accompanied by a picture.

You can create a shopping list, but if you want to add your own recipes or annotate those provided, you will need another software program called the Micro Kitchen Companion (see below).

Good Points Huge database of delicious recipes.
Bad Points Needs the Micro Kitchen Companion for full functionality (recipe adding).
Conclusion Good, solid database of recipes. Excellent Micro Kitchen Companion.
Contact One Stop Direct
Tel 0181 947 1001
Price £24.99 inc. VAT
Rating ●●●●○

Micro Kitchen Companion
 Mrs Beeton belongs to the Micro Kitchen Companion range. This is an extensive collection of standalone recipe packs which use the Micro Kitchen Companion (MKC) database. Each comes with a cut-down version of the database, but to get the full functionality you need the MKC Premium version, which actually comes jam-packed with recipes itself.

The trouble with Micro Kitchen Companion Lite is that it keeps all the recipe collections separate. With the Premium edition you can merge the various databases to produce a single, massive cookbook. You can search this monster with ease, discovering delicious recipes in a way impossible with conventional cookbooks. And, of course, you can add your own.

The MKC has extended search

ingredient list of the currently displayed recipe or selected recipes. You can also print a shopping list, and because you'll have some of the ingredients you can just choose to print selected items. You can add items to the shopping list so your printed list includes everything you want to get from a trip to the shops, even cleaning materials such as a bottle of Domestos.

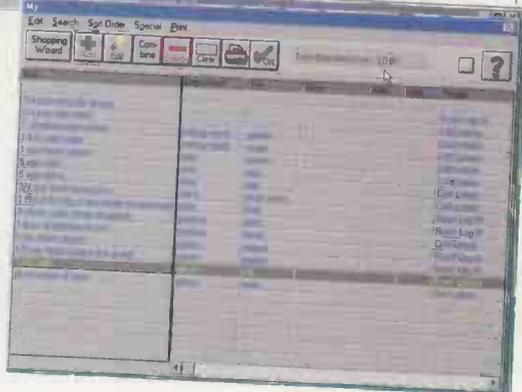
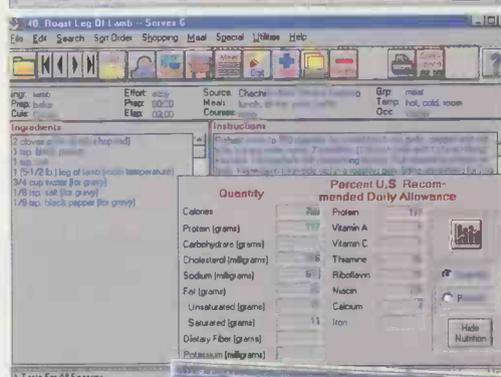
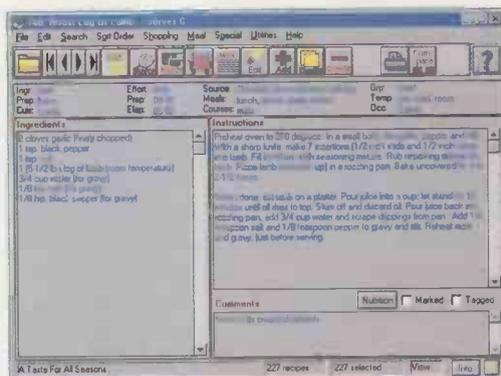
There is a nifty little Shopping Wizard which is great. As well as printing out the recipe, it looks for a keyword. For example, it would take half a pound of cauliflower florets, note the keyword "cauliflower", then associated that word with where to find it — i.e. the vegetable department of the supermarket (you can specify your own stores if you sensibly buy from local shopkeepers).

The program lets you sort your shopping list by store or department. For example, you can have the program automatically do its best to list all the ingredients by type, so it will take cheese, butter, milk and so forth and put it under "dairy". You can combine several recipes, so that you are never getting into a

features. You could, for example, find a recipe by its country of origin, its method of cooking, that will be ready in a given time and has less than a specified number of calories. You can print the

Escoffier
 This is probably the classiest cookbook on CD-ROM you are likely to see for some time. Over one hundred of Auguste Escoffier's celebrated recipes, selected for the home chef and rewritten by a number of authors, among them the

master's great-grandson, Michel Escoffier. These are not recipes for the faint of heart — though

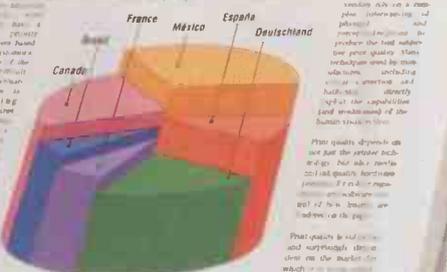


The Micro Kitchen Companion range has everything you could ever want from a recipe database

THE POWER OF COLOUR

THE POWER OF COLOUR

Print Quality
 Print quality is a multi-faceted term. It is not just the resolution of the printer, but also the quality of the paper, the ink, and the way the printer is used. A printer with a high resolution can produce a high quality print if the paper and ink are of good quality and the printer is used correctly.



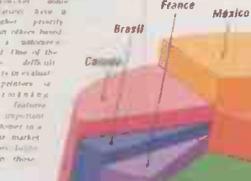
Black And White, Spot Colour, Or Full Colour?

When choosing a printer, it's important to consider the type of work you will be doing. If you need to print a lot of text, a black and white printer might be the most cost-effective. If you need to print occasional color documents, a spot color printer might be a good choice. If you need to print a lot of color documents, a full color printer might be the best option.

Print quality depends on many factors, including the resolution of the printer, the quality of the paper, the ink, and the way the printer is used. A printer with a high resolution can produce a high quality print if the paper and ink are of good quality and the printer is used correctly.

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Black And White, Spot Colour, Or Full Colour?

When choosing a printer, it's important to consider the type of work you will be doing. If you need to print a lot of text, a black and white printer might be the most cost-effective. If you need to print occasional color documents, a spot color printer might be a good choice. If you need to print a lot of color documents, a full color printer might be the best option.

Print quality depends on many factors, including the resolution of the printer, the quality of the paper, the ink, and the way the printer is used. A printer with a high resolution can produce a high quality print if the paper and ink are of good quality and the printer is used correctly.

Print quality depends on many factors, including the resolution of the printer, the quality of the paper, the ink, and the way the printer is used. A printer with a high resolution can produce a high quality print if the paper and ink are of good quality and the printer is used correctly.

Print quality is subjective and depends on the market for which it is being printed. For example, very bright colors will be highly valued in the market for high quality presentations, but not so much in the market for low quality presentations.

Print quality is subjective and depends on the market for which it is being printed. For example, very bright colors will be highly valued in the market for high quality presentations, but not so much in the market for low quality presentations.

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But what about yours? The fact is, for any business that needs accurate, affordable network colour, there's nothing that really stacks up like Tektronix laser class colour printers.

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And with the New Phaser 550, you don't just get the first 1200 x 1200 dpi desktop colour laser that prints in colour up to 5 ppm (14 ppm mono), but you also get Tektronix PhaserLink - Web ready printer control software for total management control on almost any network.

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Real colour printers

Editor's Choice



This is practically an impossible task. The recipe collections we looked at differ in so many ways, from simple video-like step-by-step instructions to huge recipe databases containing thousands of recipes. And the deficiencies were equally varied. Some offered poor search criteria, others won't let you add recipes; a few didn't even let you print out the recipe, let alone a shopping list.

We were delighted by Escoffier, which had class, though the accompanying music grew irritating, but to use it almost demands that you shift your computer into the kitchen. We also thought Cooking with Dom DeLuise was a lot of fun, had some great recipes and made a good, functional recipe database. But how long will it be before even Dom's infectious enthusiasm gets you down?

The Editor's Choice award has to go to the Micro Kitchen Companion series, which includes Mrs. Beeton and Cook It Light, and a host of other titles. Despite being very American, it is far and away the best recipe database and probably does everything you could want it to. The range of titles you can use with it is extensive and it is possible to combine the recipes from several titles, which makes it even better than a pile of paper cookbooks. The number of recipes in each title, as demonstrated by Mrs. Beeton, isn't bad either. Finally, the price was, for the most part, highly favourable.

you'll find a host of basic recipes for stocks, sauces and creams — but if you fancy trying your hand at some exotica you'll find over 1,000 pictures to take you step-by-step through the preparation, techniques, ingredients and utensils for every recipe.

Auguste Escoffier (1846-1935) was called "the king of chefs and the chef of kings". He headed some of the finest kitchens in Europe, achieving international fame through his partnership with hotelier César Ritz (they ran the London Ritz together from 1889) and revolutionising cooking in a number of ways. This CD-ROM conveys a little of the grandeur you would have experienced at dining tables in the finest restaurants at the turn of the century, but modified for the home kitchen.

The recipes here are for those very special dinner parties: noisettes of lamb with tarragon, braised duckling, saddle of roebuck; chocolate soufflé or Pears Helene. But, as said, there are a lot of basic foundation recipes too. Want to know how to make a real custard? Or how about a puree of fresh raspberries to accompany a simple ice cream?

The disk contains "Le Chef", a unique tool which takes you by the hand through cooking even the most difficult of menus, showing you what you should be doing and when, and even giving you an idea of the time you should be doing it, so that everything comes together perfectly as your guests shake out their table napkins. You can also print out menus and shopping lists and get some suggestions about the best wines to accompany each course. There's also a biography of Escoffier.

"Never eat more than you can lift."

Miss Piggy

- Good Points** Oozes quality from every pore.
- Bad Points** It's not a database to which you can add recipes, but was never intended to be, so how can one be critical?
- Conclusion** A celebration of one of the giants in the history of world *haute cuisine*.
- Contact** Interactive Ideas
- Tel** 0181 447 9288
- Price** £34.99
- Rating** ●●●●○

Healthy Cooking

You might go to bed and dream about fat-filled, salt-packed, cholesterol-crammed food. From time to time it is good to have a thorough blow-out, but the fact is that these days you should have a balanced diet of good, nutritional and healthy food. The trouble is that I am more your suet pudding and a pint of Caffrey's kind of person than a lettuce leaf and bottle of Perrier. I don't really want "healthy food". I want the sort of food I like, but cooked in a healthier way. There are several CD-ROMS designed to do exactly this.

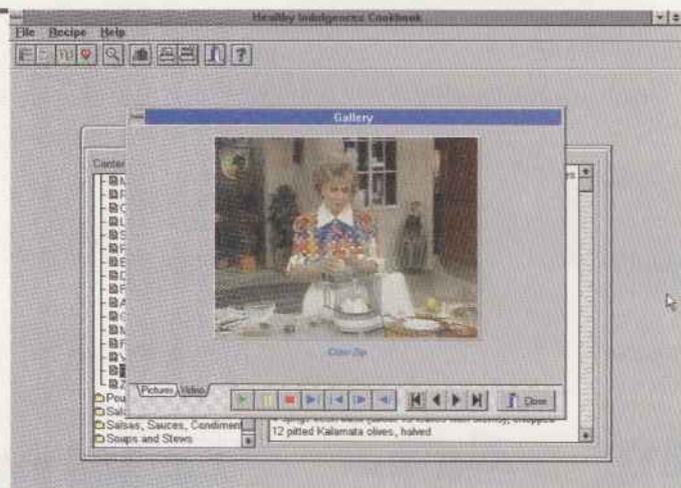
Healthy Indulgences

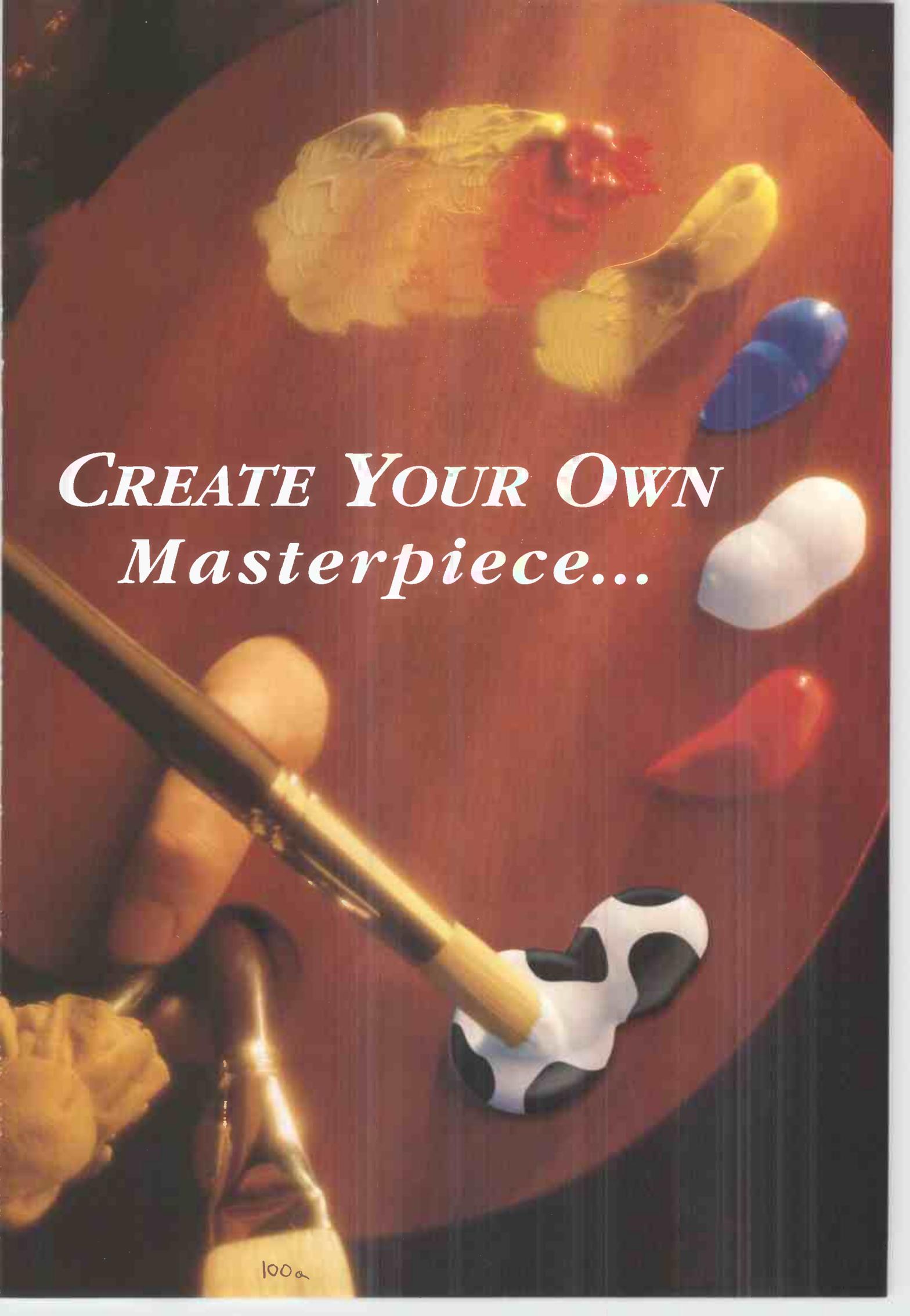
Lynn Fischer hosts a TV series on Public Broadcasting in the States called Lynn Fischer's Healthy Indulgences and this CD-ROM is the electronic version of her Healthy Indulgences Cookbook. The idea is that these are recipes for the kind of luxurious and sophisticated dishes which would send you to confession just for looking at them, yet they have been designed to be low-fat and healthy.

They are over 260 recipes and about one hour of full motion video — irritatingly, Ms Fischer never wears the same clothes twice. Also irritating is her habit of calling everything from a pan to a potato a "guy". But these quibbles aside, the video is very useful. The recipes, however, cover a range of foods from around the world. You'll find plenty here to tickle your tastebuds.

You can search for a recipe by name or ingredient and scale a recipe to serve any number of persons, including just one. You can check the nutritional value of each dish. You can create and print a recipe or shopping list. There are pictures of the finished dish and video footage of the preparation. The shopping list feature, however, is nowhere near as good as you get with the Micro Kitchen

Healthy Indulgences — Lynn Fischer takes you step by step to some healthy and great-tasting food





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Some great artists never gain recognition in their own lifetimes, but not so with Gateway 2000®. Since our 1985 birth on a cattle farm in the American Midwest, we've become a Fortune 500 company and the No.1 direct PC supplier in the United States. Now we're one of the fastest growing direct marketers of PCs in Europe as well.

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Or you could choose one of our two Sovereign PCs, armed with the power of Pentium processors – 166MHz for the

P5-166 and the 150MHz for the

P5-150 – and Windows 95.

Both come with an amazing 2.5GB hard drive and eight-speed CD-ROM drive,

giving you outstanding power and performance for all your multimedia requirements.

There's also a whole spectrum of favourite software to inspire you, including the Microsoft Encarta 96 encyclopedia on CD-ROM. Truly the work of a master!

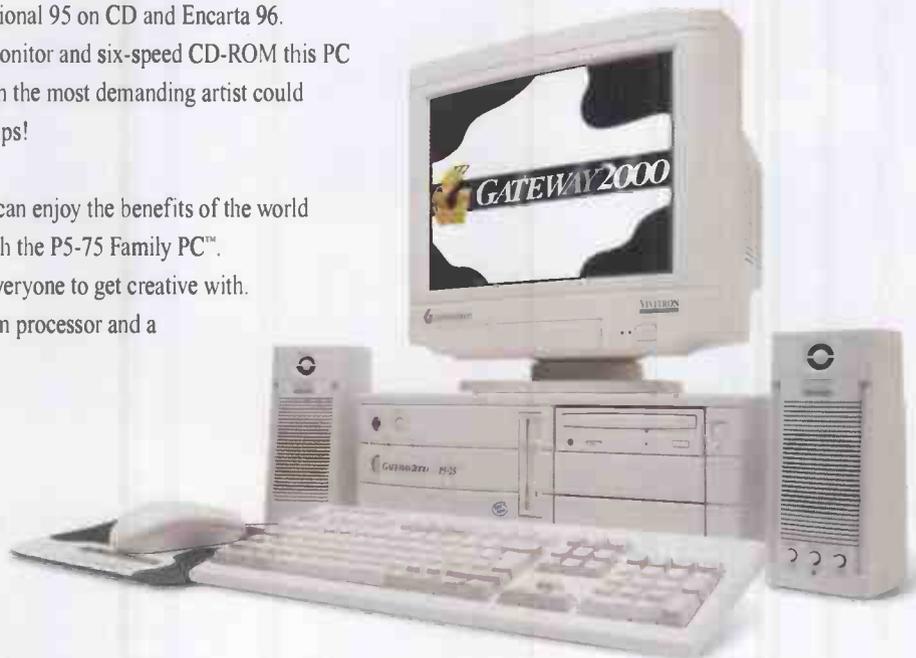


OPEN UP NEW VISTAS WITH OUR MULTIMEDIA SYSTEMS

Gain a whole new perspective on computing with Gateway's multimedia PCs. Here's a brief portrait of the range. The power packed P5-100 Multimedia will dazzle you with its 100MHz Pentium processor, 16MB EDO RAM – expandable to 128MB – and 1.6GB hard drive. This system will certainly bring colour into your life, with its speedy access times and quick redraw abilities. It comes with MS Windows 95, a special Windows 95 105-key keyboard, MS Office Professional 95 on CD and Encarta 96. With a 17" Vivitron colour monitor and six-speed CD-ROM this PC certainly puts everything even the most demanding artist could wish for right at your fingertips!

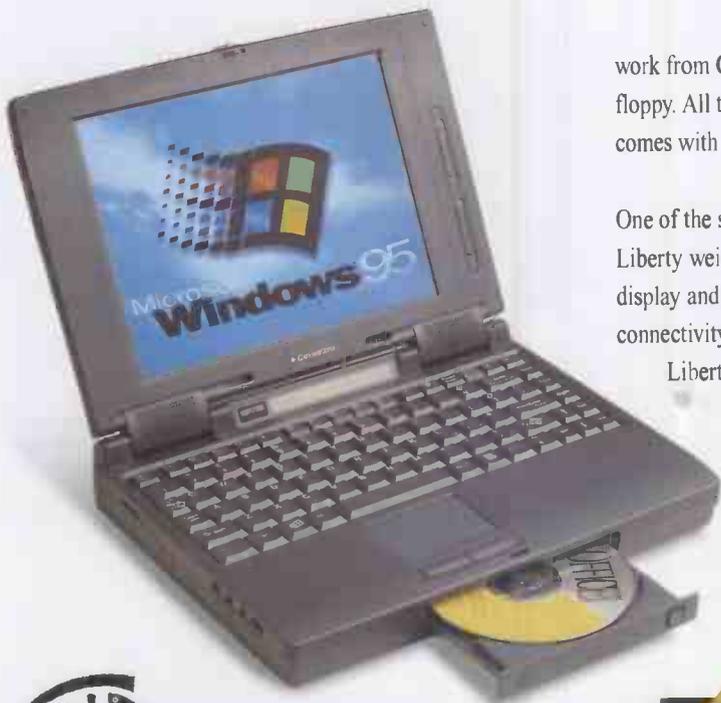
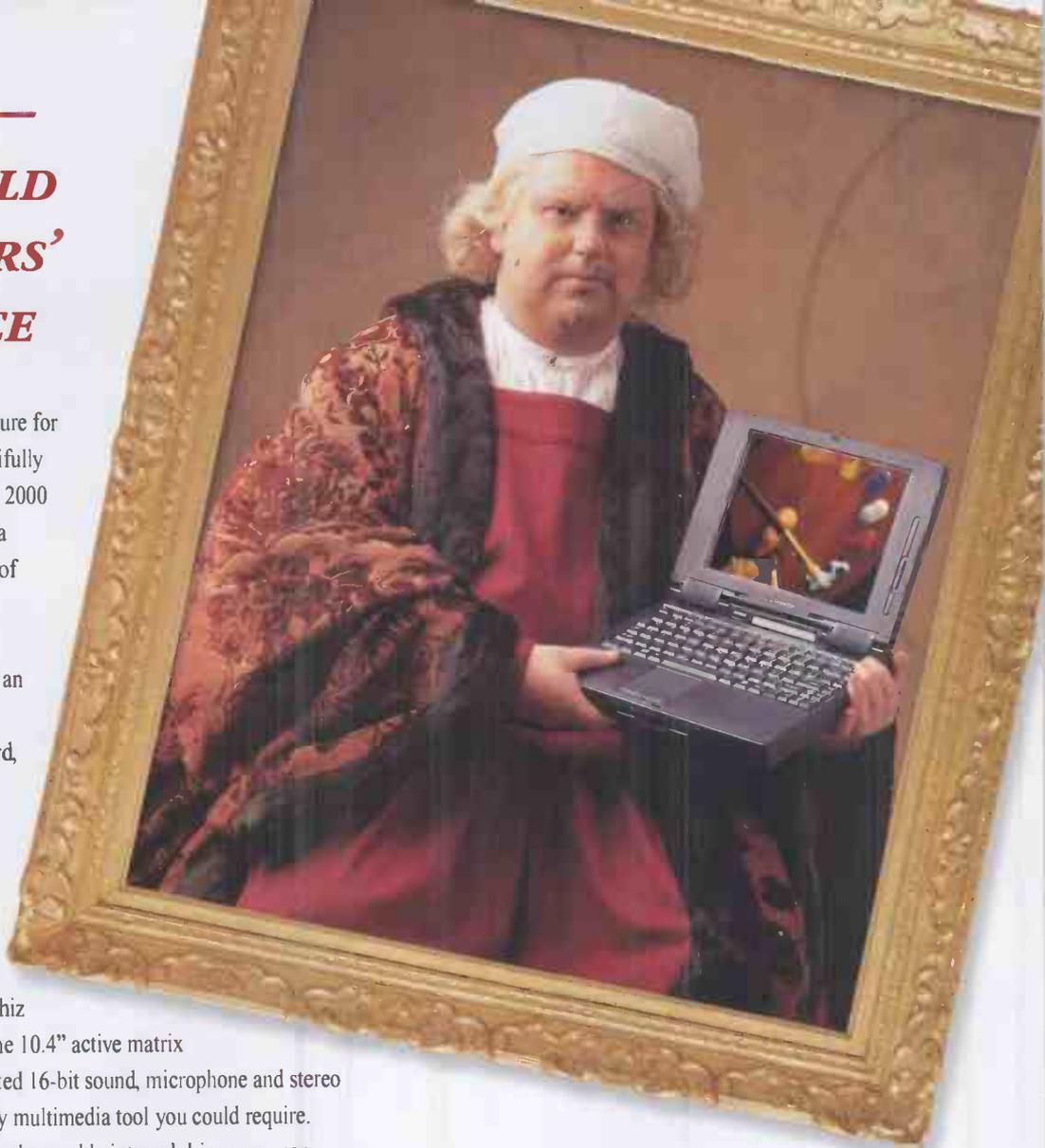
And now your whole family can enjoy the benefits of the world of multimedia computing with the P5-75 Family PC™. There's something here for everyone to get creative with. Powered by a 75MHz Pentium processor and a

six-speed CD-ROM drive, it comes with a truly amazing spectrum of multimedia software ready to plug and play. Everything you need for work, education and entertainment at a price that won't leave you starving in a garret!



SOLO – THE OLD MASTERS’ CHOICE

Here's a classic miniature for your travels, the beautifully proportioned Gateway 2000 Solo®. This multimedia portable has a gallery of features. A full-size keyboard, custom Windows 95 keys and an EZ Pad™ pointing device, plus as standard, huge removable hard drives and minimum 8MB of RAM, all powered by a 90MHz Pentium processor with 256KB L2 cache to whiz through your work. The 10.4" active matrix colour screen, integrated 16-bit sound, microphone and stereo speakers provide every multimedia tool you could require. And thanks to the interchangeable internal drives, you can



work from CD-ROM and back-up from your hard drive onto floppy. All this portable power weighs in at under 6lb and comes with Windows 95 and Microsoft Office Professional 95.

One of the slimmest colour notebooks on the market, the Liberty weighs in at just over 4lb and has a 10.4" colour display and a mighty Intel 100MHz DX4 processor. Infra-red connectivity lets you download without wires. Naturally the Liberty comes complete with software including Windows 95, so you can get started straight away!



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0 8 0 0 - 1 7 2 0 0 0

100a



GATEWAY 2000 PUTS IT ALL IN PERSPECTIVE

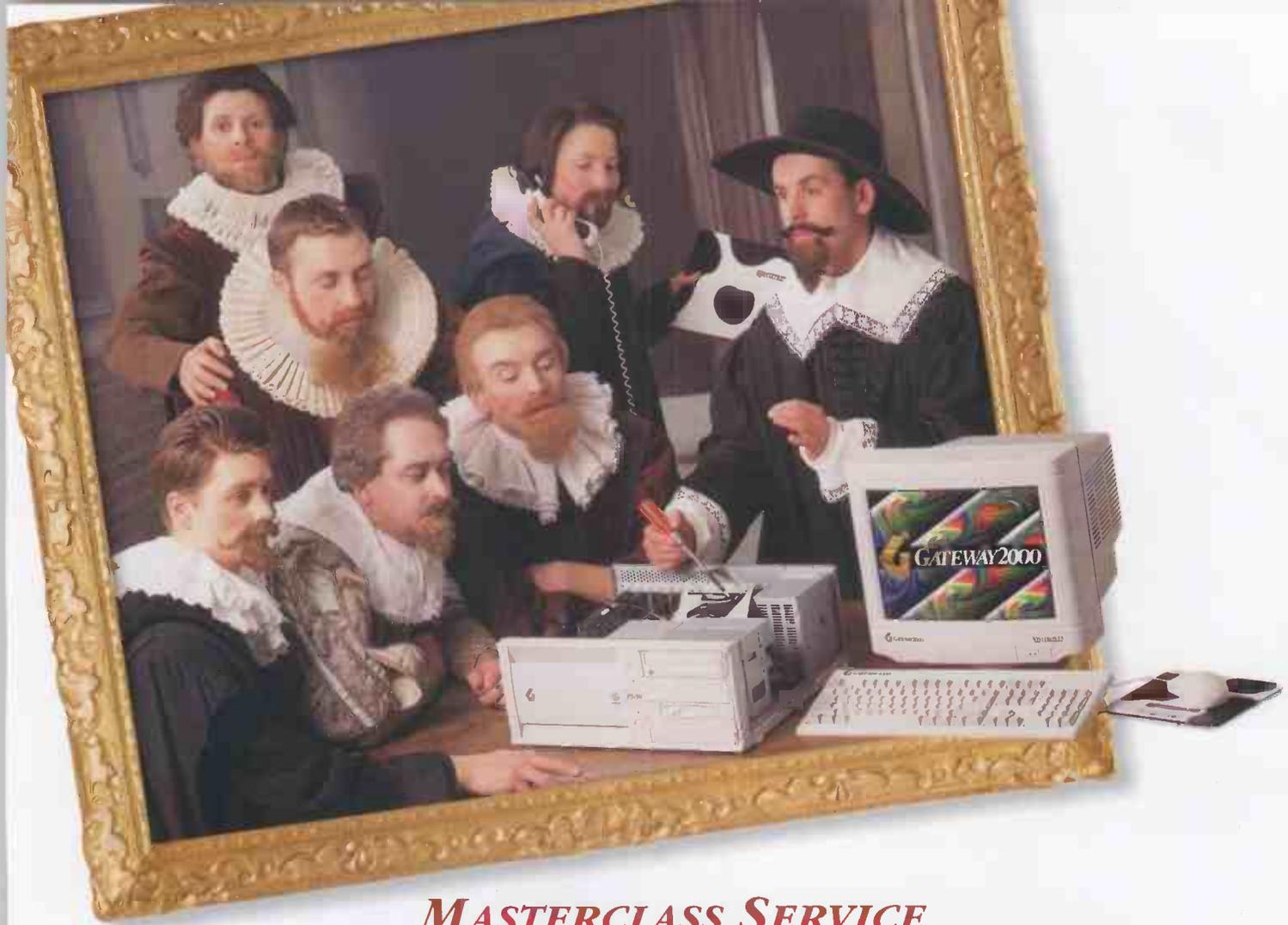
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Our support is touched with the stroke of genius. All major components of Gateway 2000 desktop and tower PCs are backed for a full three years - portables include a one-year back-to-base warranty. During the warranty period we will replace all parts free of charge and pay for

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■ Microsoft® Works™ 95 for Windows™

All the tools you need to run a business: word processor, spreadsheet, database and electronic communications.

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Many of our systems now include Microsoft's Office 95 on CD-ROM as standard. This is the very latest version of one of the leading application software suites. Microsoft's most popular applications: Word, Excel, PowerPoint and Access.

■ Generations Software Bundle

This Bundle, standard on all Family PCs, is packed with Microsoft titles for all the family. In addition to MS Works, MS Golf, MS Publisher and MS Encarta 96, it contains:

- MS Cinemania 95, the film buff's dream.
- MS Julia Child, an extensive culinary guide, full of recipes and useful hints.
- MS Music Central, bringing the world of music into your home.
- MS Bob, a comprehensive, easy-to-use package comprising eight essential programs:

Letter Writer, Calendar, Cheque Book, Household Manager, Address Book, EMail, Financial Guide and Geo Safari.

■ Games Bundle

A standard offering on Gateway Family PCs, and available as an option for **£50 (£58.75 inc. VAT)** on other systems. It includes the following exciting options: **FIFA Soccer**, the most realistic soccer simulation ever created. **PC Descent**, set in the mines of the moon, is a game of survival. Players battle against menacing robots and other terrors, trying to escape alive. **Hi-Octane** puts you in the 21st Century, racing your armour-plated Hov-Car at speeds faster than a Ferrari. **Bioforge** is set

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- Rosetta Stone**, total language learning software for beginners and intermediates in English, French, German, Russian and Spanish.
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Now a virtual reality software package that works with standard PC hardware. Explore and experience virtual 3-D worlds in real time!



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■ 28.8 Data/Fax Modem

£159 (£186.82 inc. VAT)

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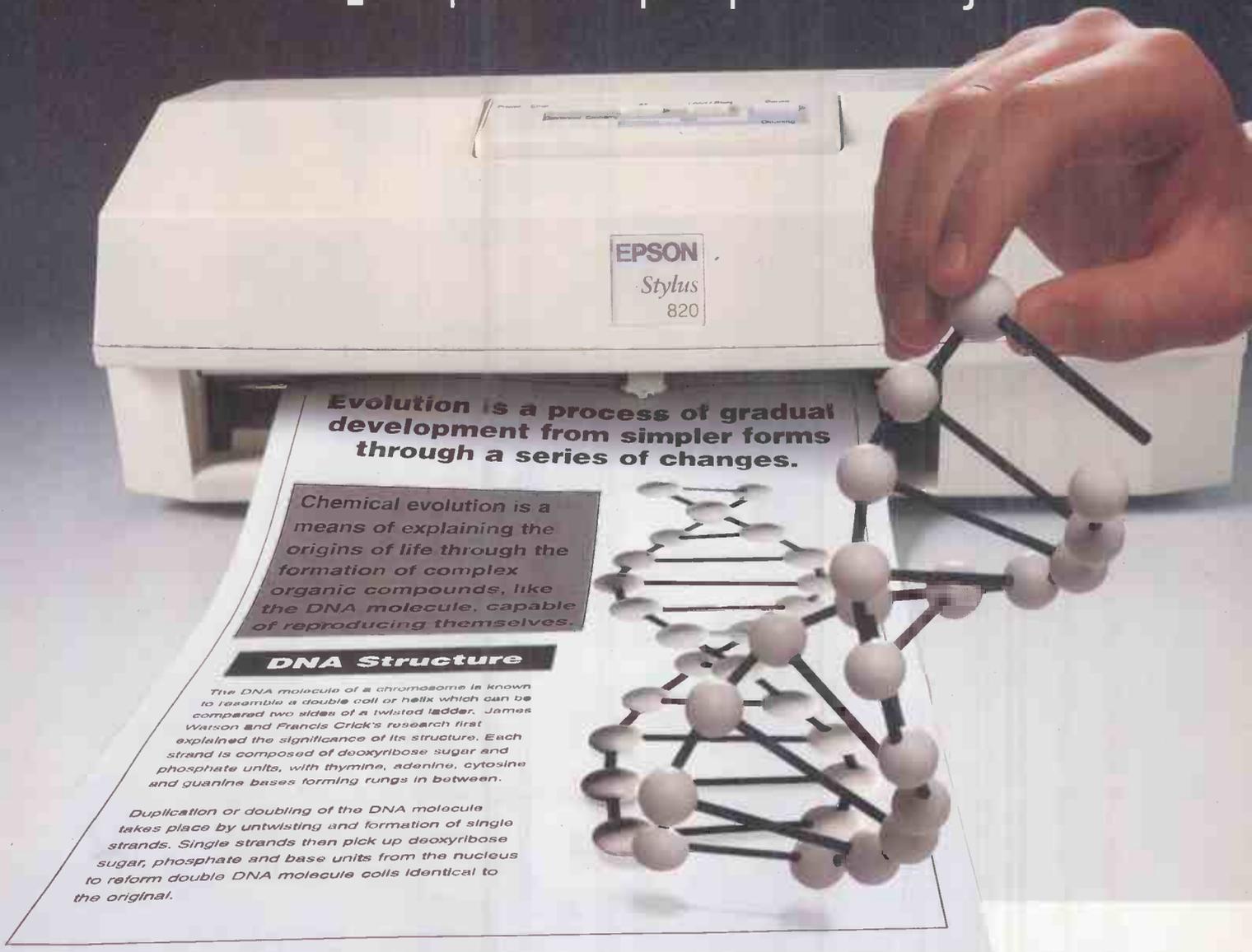


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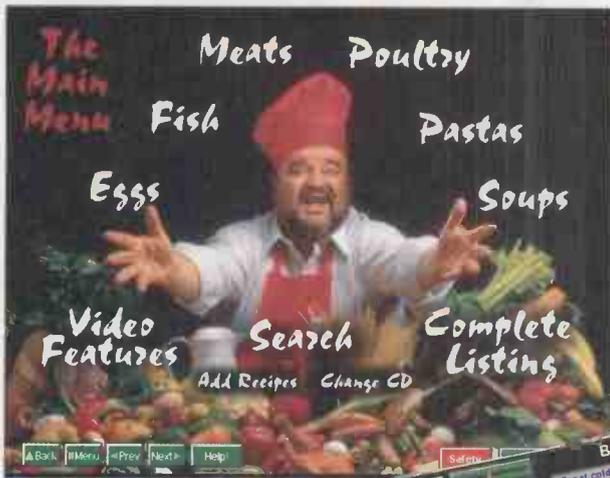
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Left *Cooking with Dom DeLuise* — food and fun

Below *Dom DeLuise* again — don't use your CD-ROM drive as a food slicer!



Companion. It simply transfers the ingredients of a recipe so you can print it out. It doesn't combine quantities of the same ingredient required for different recipes, and it doesn't sort the ingredients into types such as pasta, herbs or vegetables. Nevertheless, it beats having to copy out a lengthy recipe by hand.

Good Points Lots of video instruction. Excellent price

Bad Points The tools could be better.

Conclusion Don't look at the recipes if you drool easily.

Contact Softkey International

Tel 0181 789 2000

Price £19.99 inc. VAT

Rating ●●●○○

Cooking with Dom DeLuise

You might not know him, but Dom DeLuise is a popular American comic actor whom you'll immediately recognise from *Blazing Saddles*, *Silence of the Hams*, *Burke's Law* and a great little food movie called *Fatso*. He's also a great cook, the author of a series of cooking books and videos, and if he doesn't make you think pasta is better than sex, there's something wrong with you.

This is a two CD-ROM package with recipes accompanied by a huge side-dish of laughter — check out how Dom uses his computer around the kitchen: the mouse as a pestle, the CD-ROM drive as a juicer, the keyboard to crack walnuts.

These recipes don't shove healthy eating down your throat, but as Dom says, the recipes have been "fine tuned to use less butter, oil and red meat. I've included lots of wonderful vegetable, soup and salad recipes. Okay, there are some deserts, too. And pasta, don't forget the pasta." In fact there are two hundred recipes here, so this is no slouch

when you need some delicious meals for yourself or when entertaining. But *Cooking with Dom DeLuise* isn't really about the recipes. It's a fun database where you can store all your own recipes. More, it provides a useful set of tools. The Shopping List feature lets you print out a list of the ingredients in your favourite recipe. You can add all the ingredients or just some, and edit the list to double or half the quantities to suit the number of people for whom you are catering. You can add notes and make changes to Dom's recipes too.

There is a useful converter to convert American measurements into UK measurements — six teaspoons equal one ounce; that sort of thing. And there is a feature which lets you scale quantities, but it only doubles the quantity. You can also search the database by any word imaginable to find just the recipe you want or one which fits the ingredients in your store cupboard.

Good Points Dom DeLuise is great. The recipes are great, the database is good.

Bad Points Even with two CDs this is expensive. Some of the video shows more of Dom than the food.

Conclusion Fun database, good recipes, desperately needs a price cut.

Contact Comput-Ed

Tel 01626 889955

Price £58.69 inc VAT

Rating ●●●●○

International Cuisine

One of the best aspects of cooking is discovering the cuisine of foreign countries. You'll find computer recipe books for almost every type of food. Here's one I liked.

Schwartz World Cuisine Recipe Book

Schwartz are the people who make those distinctively bottled herbs and spices you probably have in your store cupboard and this is an unpretentious collection of recipes of dishes from around the world. There's no video, no sound and no pictures to speak of. Naturally, everyone uses herbs and spices and Schwartz's are recommended. I'm quite happy to live with that.

All the recipes are listed alphabetically, along with the type of dish, the preparation and the cooking times. You can list all the recipes on the database or only those of a specific type, such as the main courses. You can also modify the recipes or add new ones.

You can search for a recipe by entering its name or part of its name. If you just type in "chicken", you'll get a list of all the chicken recipes on the database. Some of the searching methods are presented as special features. For example, "What do I have in my fridge?" lets you specify one or more ingredients, then produces a list of dishes in which those ingredients appear. Great if you have a few leftovers in your fridge and you want to use them in a creative way. "Cook in less than ... minutes?" gives you a list of recipes which can be prepared and cooked in a specified time, which is useful when you get home after a busy day and don't want to spend too much time in the kitchen.

If your food bill seems to go up with every visit to the supermarket, you'll love the "Eat for less than £..." feature. Just specify what you can afford to spend and you'll be presented with a host of recipes for great dishes that won't cost you the earth! I was particularly taken with the "What to serve with a bottle of ...?" feature. Most recipes suggest wines to accompany the chosen dish. This feature suggests a dish that would accompany a wine you already have.

Good Points Plenty of recipes, add your own, searching is made easy.

Bad Points No pictures of the finished dishes.

Conclusion Inexpensive recipe database without frillery.

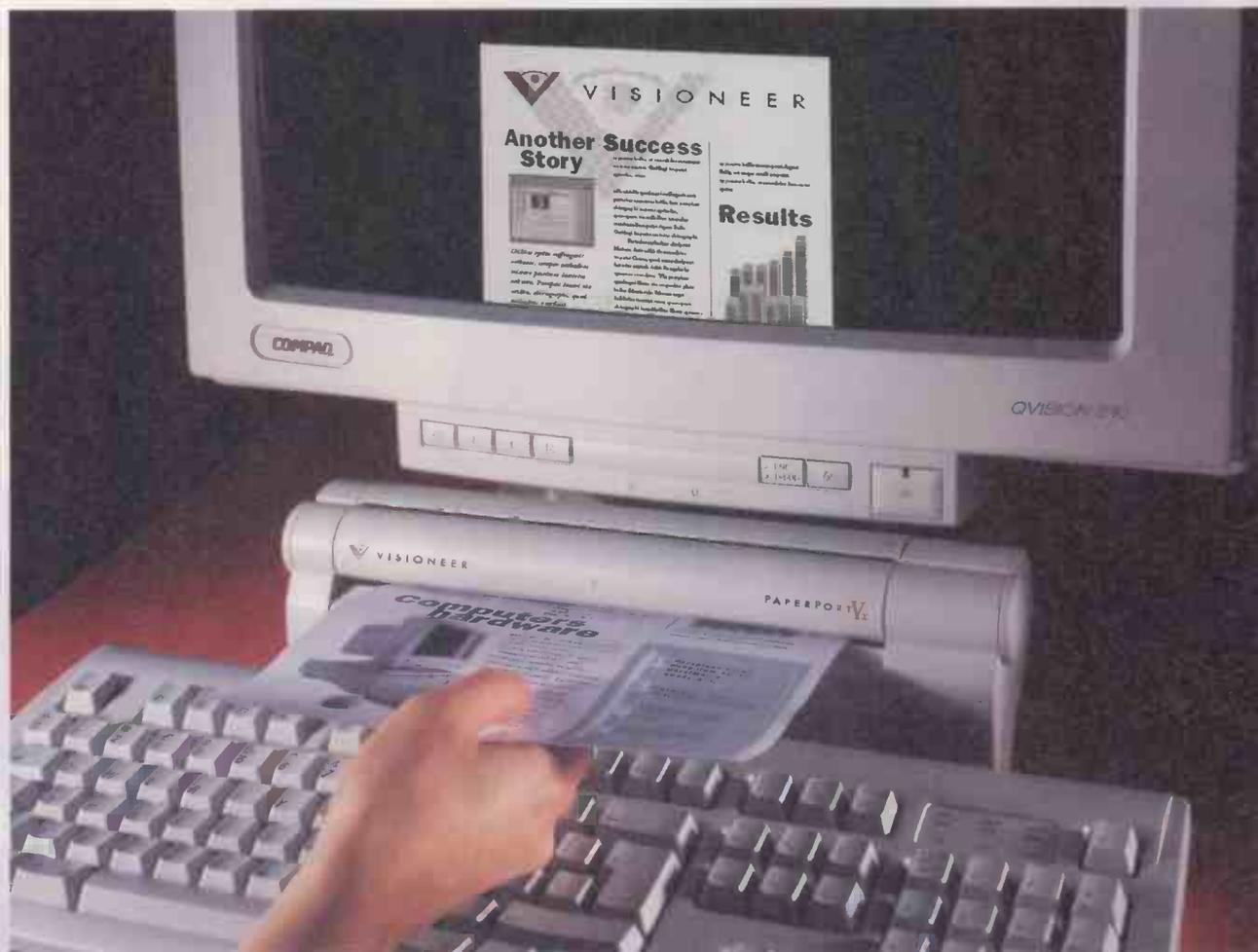
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Points ●●●●○

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*Electronic
Gourmet Guide
on AOL*

*Eleanor's
Kitchen — Czech
food on the Net*

*Internet Food
Channel —
great cooking*

Best of the Rest

There are several cookery titles, and it has only been possible to scratch the surface with these reviews. We haven't looked in detail at the really BIG recipe databases such as Great Gourmet from Expert Software or Key Home Gourmet from Softkey. Both contain a staggering 10,000 recipes and the latter adds 100 classic drink recipes, complete nutritional analyses of over 4,500 food items, a wine list manager and a glossary of over 500 cooking terms. And whatever the deficiencies of these products — no multimedia, American measurements

be), the budget price of either disc simply cannot be beaten.

Shareware, too, offers some interesting recipe titles. Most come with a few recipes — you get more when you register — and we particularly liked A Jewish Mother's Cookbook and the Mardi Gras Cookbook. But shareware excelled when it came to herbs, an area strangely neglected by commercial software.

Cooking online

All the online services have food and cookery sites, and the Internet is a

foodie's paradise. On AOL you should check out AOL Cookbook, Dinebase, Food, Fitness and Travel, Good Morning America Recipes and Health Diets. CompuServe offers several sites for the *bon vivre*.

The Cooks Online forum is excellent, offering loads of recipes from the basic to the unusual and cannot be recommended more fervently. You can also get help from or just chat with other food-minded folk. The Vegetarian forum is self-explanatory. Plus AA Restaurant Guide and the Good Pub Guide.

The Net is positively teeming with sites that demand a visit. In particular, the Electronic Gourmet Guide (also accessible on AOL) is a must. But to start off, just try the sites listed below. They will lead you to others and still others — oh, heaven is a modem. (Actually it's an Italian restaurant, but I've just eaten and I want to plan my next meal.)

● **Food** — More recipes than chefs to cook 'em. A must-stop-by-and-stay-a-while kind of a site:

<http://www.cs.cmu.edu/afs/cs.cmu.edu/Web/People/mjw/recipes/>

● **Internet Food Channel** — don't waste time, just visit.

<http://www.foodchannel.com/home.html>

● **Epicurious** — Just food; bliss and more.

<http://www.epicurious.com/>

● **The Dinner Co-op** — for cooks and food-lovers; recipes & more.

<http://gs216.sp.cs.cmu.edu/dinnercoop/home-page.html>

● **Rec.Food.Recipes** — about 21Mb of recipes.

<ftp://ftp.neosoft.com/pub/rec.food.recipes>

● **La Comida Mexicana** — Mexican food; hot and spicy.

<http://www.udg.mx/Cocina/menu.html>

● **Eleanor's Kitchen** — Czech food; just don't count the calories.

<http://www.columbia.edu/~js322/eleanor/eleanor.html>

● **Galaxy** — a guide to almost everything that's food.

<http://galaxy.einet.net/galaxy/Leisure-and-Recreation/Recipes.html>

● **Food Sites** — brilliant, albeit unfortunately named.

<http://www.spew.com/food.html>

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Gateway 2000® has grown, from modest beginnings in the USA's Midwest, into America's largest direct PC manufacturer* and a Fortune 500 company with an annual turnover of nearly \$4 billion and over 8,000 employees worldwide. Since our 1993 European launch, we've become one of Europe's fastest growing PC companies too.



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You're Never Alone With The Solo

The Solo™ from Gateway 2000 is an amazing portable which gives you everything you could ever ask from a desktop multimedia system in a package weighing under 6lb and packed into a stylish and compact frame.

It's Like Carrying Your Office With You Wherever You Go

Choose from a 75MHz or a 90MHz Pentium processor. The removeable 720MB hard drive and the huge 10.4" SVGA screens, combined with



Gateway Solo models feature two integrated stereo speakers.

With the large screen, modular Quad-Speed CD-ROM drive (interchangeable with the 3.5" floppy drive), integrated 16-bit sound card and built-in stereo speakers, presentations have never been so good. You can also listen to music while you work, or, dare we say it, run your favourite games! You can surf the Internet, send and receive e-mail, transfer data using infra-red technology and connect to external kit such as keyboard, mouse and monitor, should you wish to. The lithium-ion batteries give you hours of computing power on the move.

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*Source: IDC

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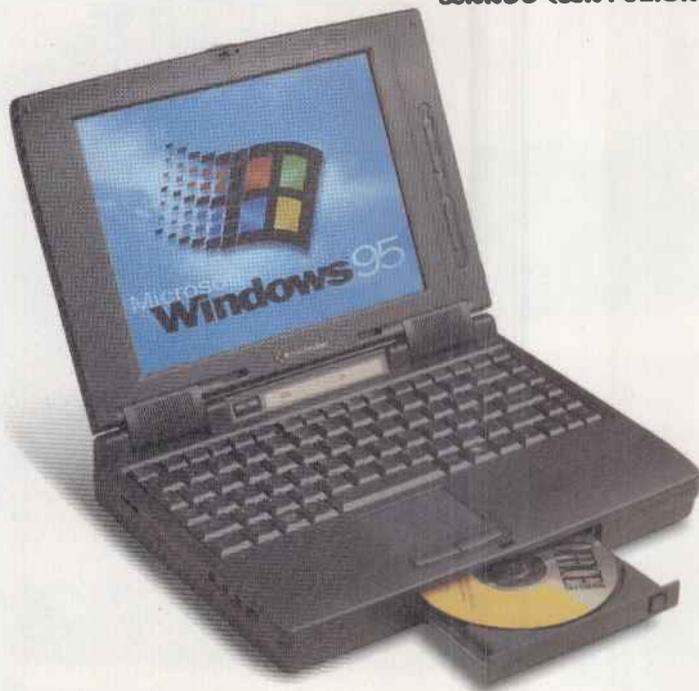
- 10.4" SVGA (800 x 600) Active Matrix Colour Display
- 90MHz Intel Pentium Processor
- 8MB RAM (expandable to 40MB)
- 256K L2 Pipeline Burst Cache
- 1MB Video RAM
- Lithium-Ion Battery and AC Pack
- 2 PCMCIA Type II Slots
- EZ Pad Pointing Device
- 720MB Removable Hard Drive
- 3.5" Modular Floppy Drive
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- Integrated 16-Bit Sound with Stereo Speakers
- Headphones
- 86-Key Keyboard
- Parallel, Serial, Keyboard, Mouse, VGA and PS/2 Ports
- Built-in Mic, Headphone, Line-in Jacks and External Volume Control Dial
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- Microsoft Windows 95
- MS Office Professional 95
- Classic Case

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Gateway Solo S90 Best Buy

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- 90MHz Intel Pentium Processor
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- Desktop IR Receptor
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Peripheral Options

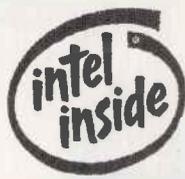
- Desktop IR Receptor **£40**
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(£351.32 inc. VAT)
- 3.5" External Floppy Drive **£79**
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- Solo Lithium-Ion-Battery **£99**
(£116.32 inc. VAT)
- 3 Com Etherlink III Combo PC Card **£129**
(£151.57 inc. VAT)

Call for Memory & Hard Drive Options

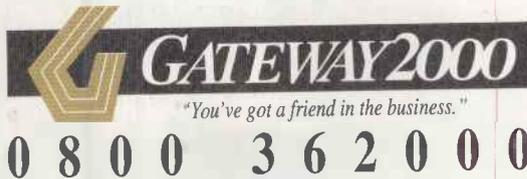
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- Lifetime freephone service and support
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pentium
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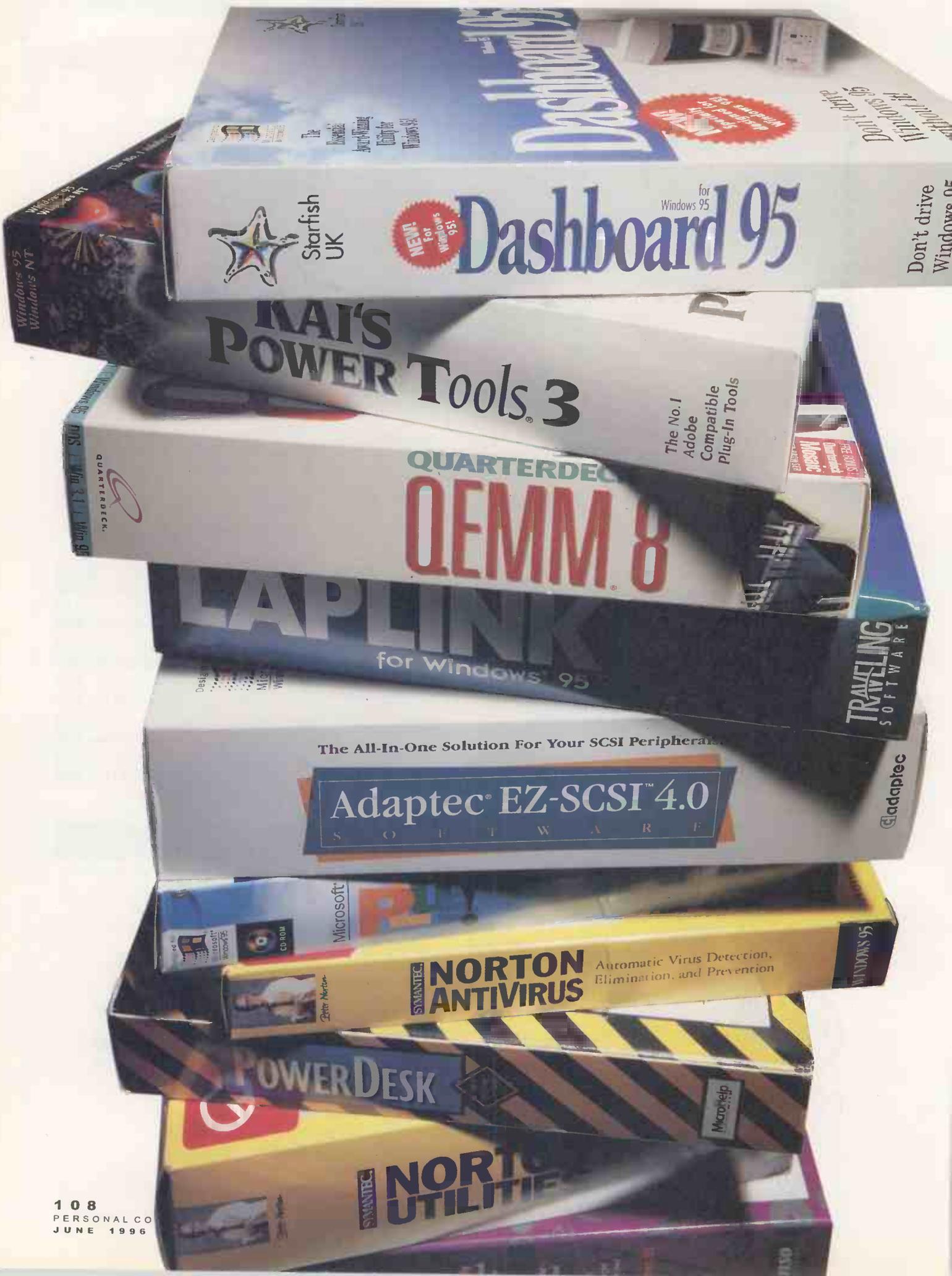


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At *your* service

FOR WHATEVER PURPOSE you buy your PC in the first place, it's only a matter of time before you discover the wonderful world of utilities.

These are the handy, often life-saving, little programs that everyone comes to depend on day-in-day-out. They do everything from data compression and encoding to advanced memory management and after a while you just can't imagine how you used to work without them.

While there are literally thousands of utilities available on the market, the majority can be split into six main categories: archive and compression, graphics and multimedia, diagnostic and system, communications and Internet, applications and file management and programming. Each of these areas is filled with a positive horde of useful products.

Particularly well-known utilities include the Internet browser Netscape Navigator, Laplink for Windows, Quarterdeck's QEMM memory manager and the king of diagnostic applications; Norton Utilities from Symantec. But it's not always the commercial products that are the most

powerful — there are several amazing programs of which some are shareware which let you try before you buy, while others are totally free of charge. Paint Shop Pro and WinZip are great examples of successful shareware titles and Aladdin System's freeware, Stuffit Expander, has saved lives in the PCW office on a number of occasions.

In this wide-ranging group test, the PCW team guides you through nearly 50 of the leading PC utilities, complete with contact numbers, prices and, where relevant, URL addresses on the World Wide Web. In addition, for all our Macintosh readers, we have reviewed the best five products in the Apple world. And as if that weren't enough, much of the shareware and freeware can be found on this issue's free cover-mounted CD-ROM and on the PCW worldwide website at <http://www.vnu.pcw.co.uk/>.

Contributors: Clive Akass, Dylan Armbrust, Paul Begg, Chris Cain, Adele Dyer, PJ Fisher, Steven Helstrip, Gordon Laing, Simon Rockman, Ben Tisdall, Eleanor Turton-Hill, Nigel Whitfield.

Utilities are the computer user's tool bag. Some are just handy, while others are indispensable. We review over 50 of the leading PC and Mac products.

UTILITIES CONTENTS

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- 118** Programming
- 122** Internet and comms
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- 128** Application and file management
- 132** Top Mac utilities



Adobe Acrobat Reader



From CD-ROM to the Internet, electronic publishing is big business. You can easily and efficiently distribute your information to anybody you wish. But with all these different platforms, systems, configurations and often severely limited bandwidth, which format is best for electronic documents?

Most clued-up companies realised an early foot in this door would be an endless money spinner. Adobe didn't hang around, and came up with the Portable Document Format (PDF), and the accompanying Acrobat series of products.

The PDF format is based on Adobe's PostScript page description language. The clever part is that PDFs contain information about the look of the document, which is retained wherever it's viewed or printed.

Acrobat cannot conjure up missing fonts, but will intelligently substitute to match their spacing, avoiding undesirable reflow.

Retaining the look of a document across platforms is one thing. Another is the size of a file. PostScript files can get pretty huge but Adobe has employed varying degrees of compression with the PDF format. You wouldn't use PDF files for outputting at magazine quality but it's certainly good enough for a laser printer and on-screen use.

What about usefulness? PDF documents may be searched on, while wads of text may be copied to the clipboard for further editing. The Acrobat Reader is an excellent navigator. The final problem is distribution. Applications to create PDF files cost money, but the 1.5Mb Acrobat reader itself is free of charge, and downloadable from Adobe's Web site.

Price Free ● Contact Adobe: 0181 606 4000; <http://www.adobe.com>



CD Grab Audio for Windows



There are two ways to get audio from a compact disc onto your hard drive. The most obvious is to use a digital audio editor to record the material you require. Regardless of the quality of your sound card, though, there will be some loss of quality. For most

users this will not be a problem. Within a professional environment, however, the copy needs to be 100 percent perfect. This is where CD Grab Audio comes in.

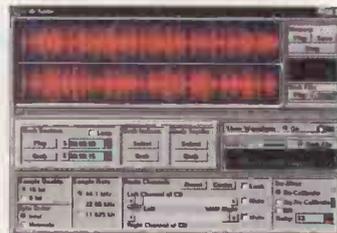
CD Grab copies audio in the digital domain by reading the zillions of 1s and 0s on the CD and writing them to disc or memory. This can result in a perfect copy of the original data. The file can then be saved in .WAV format for further manipulation in a sound editor.

As well as doing a good job of copying data, CD Grab can access low-level information contained on the CD such as sector locations, number of channels and length of tracks. The TOC (table of contents) display allows you to select the tracks you need to copy.

Alternatively, you can play the CD and press buttons to mark the start and end points of the sections you require. Audio can be grabbed in 8-bit or 16-bit at 11, 22 or 44.1KHz. After the copy is finished, a waveform is drawn for reference.

CD Grab works with any CD drive that supports audio extraction and is compatible with Windows 3.1 and 95.

Price £99 ● Contact A. L. Digital 0181 742 0755



QuickView Plus



Inso's QuickView Plus is a great little utility that enhances the features of QuickView, the file viewer built into Windows 95. With just two

clicks it lets you instantly view almost any type of data from a word processor document to a Photoshop masterpiece.

Supplied on just two floppies, QuickView Plus provides viewers for over 200 file formats, including Microsoft Word, WordPro, MacWrite, XLS, EPS, TIFF and JPEG. It can also deal with HyperText Markup Language (HTML), needed for development with the Internet, and various compression formats such as Zip, uuencode and Unix.z.

Installation takes just under two minutes and involves little more than a double-click and a disk swap. Once this is finished, clicking any file with the right-hand mouse button brings up the option to display it. While viewing you can scroll around, copy data to the clipboard, search for a string, extract from or add to archives, and print. You can even turn images into Windows wallpaper without a lot of messing about.

Perhaps the only thing missing from QuickView Plus is the ability to edit data directly, but the appropriate applications can be launched at the touch of a button. If you choose, the program can also attach itself as an option to Explorer or any other application.

Apart from that, there's not much else to say about QuickView Plus, except that is a shining example of what a utility should be. It's brilliantly simple and simply brilliant.

Price £39 ● Contact Software Compatibility Centre 01344 885224

HiJaak 95



HiJaak began many years ago as a fluent graphics file converter. Cries of: "Can anyone open a dot-wotsit file?" were frequently met with "pass it over

here, and I'll run it through HiJaak" — handy stuff but a product has to move on to survive. Recent versions of HiJaak have seen it mature with image manipulation facilities and even more file filters. Last September, Quarterdeck acquired HiJaak's developer, Inset Systems, and has just released HiJaak 95 which promises to "extend the Windows 95 shell to enhance, view, convert, capture, print, find and manage all your graphics".

A complete installation requires 12Mb, after which a new control panel is added, along with a status indicator in the task tray next to the clock. The complete viewing, conversion and manipulation

application can be launched by hand but most of the time you'll be accessing the whole thing, or aspects of it, from a right mouse-click.

HiJaak 95 adds six new options to the pop-up menu when you right-click a graphics file and offers additional functions on the properties. From here, you can view, print, convert and manipulate the graphic file to your heart's content. Best of all, though, HiJaak 95 creates thumbnail previews for the file icons themselves, just like a Macintosh.

When QuickView was removed from the final release of Windows 95, the need for a competent graphics utility became all the more important. As a standalone product QuickView is okay but it's HiJaak 95 that truly cuts the mustard. Great facilities and tight integration with Windows 95 make this a top utility.

Price £49.95 ● Contact Quarterdeck 01245 496699; <http://www.qdeck.com>

Screen Thief 95



Screen Thief has been sitting on our network server since its release in 1993 and since then has captured thousands of screens which have appeared in these very pages. The first version was a DOS TSR that utilised a hot key setup to "dump" screens to disk. It was often easy to get carried away when grabbing screens because files were automatically named and saved. On returning to Windows you would regularly find 20 more than you actually needed.

This latest version for Windows 95 has a truckload of features and like its predecessors, uses hotkey setups to grab screens, individual windows or user-defined areas. The program sits quietly in the background until you hit the correct combination of keys. Depending on how you configure Screen Thief, screens can be automatically saved to disk, or viewed in the application for trimming, or cropping. Screens are automatically named according to the application from which they come. For example, a screenshot of the Control Panel would be saved as Control Panel #01, making it easy to identify files.

Screen grabs can be initiated from the application with a delayed capture, giving you plenty of time to hide the cursor and arrange windows. If, on the other hand, you want to include the cursor (or animated cursor), ST95 is currently the only utility that will do this reliably. Eight common file types are supported, including PNG (Portable Network Group).

Price £19.95 ● Contact Nildram 01442 891331

Adobe Type Manager 3.02

A popular three-letter acronym such as ATM can be read as many things. For instance: Automatic Telling Machine, Asynchronous Transfer Mode or even Anti-Tank Missile. But in this case, it's Adobe Type Manager, a valuable utility for those using PostScript Type-1 fonts.

Not so long ago there were separate fonts for printer and screen. The printer font was an outline vector description of the character shapes themselves, which could be scaled to any size.

Screen fonts consisted of pre-scaled characters for use on-screen at specific sizes. But at other sizes you would get jagged edges and a poor representation of the final printed output.

Enter ATM, which takes the outline vector descriptions of PostScript Type-1 fonts and renders them on-the-fly at any size for smooth on-screen use. What you see on screen is really what you get on paper, whether you're using a PostScript printer or not.

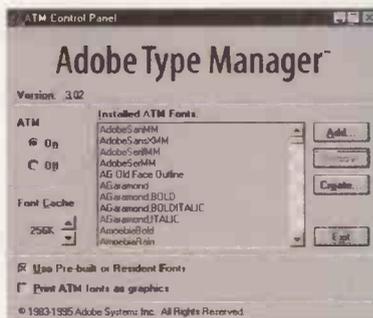
Of course, the Windows and Macintosh operating systems have had the facility to do much the same with TrueType fonts for some time. But if you want access to the larger and more professional Type-1 font libraries, you'll need ATM.

Currently, in version 3.02 for Windows, ATM is a relatively small utility which runs transparently as part of the operating system (it's built in as standard to OS/2).

It is available for £40 with 13 common

Type-1 fonts, and is additionally included with many Adobe products, including Photoshop, Illustrator, Premiere, and Type on Call. The latter is also bundled with most Adobe applications.

Price £40 ● Contact Adobe 0181 606 4000; <http://www.adobe.com>



Paint Shop Pro 32



Installed on just about every PC in the PCW office, Paint Shop Pro is the most popular shareware paint package for Windows.

This new, 32-bit, version 1s designed with Windows 95 in mind, and comes complete with support for long filenames.

Paint Shop Pro offers all of the basic tools you would expect to find in a paint program, including geometry functions and different kinds of fill patterns. It then goes further to provide functions normally found only in expensive high-end bitmap editing applications such as Photoshop.

Typical examples include lasso and magic wand selection tools, as well as colour histogram adjustment, varying levels of zoom and filters, and also facilities such as Add Noise, Despeckle, Emboss and Sharpen.

The user interface is well laid out, and anyone

familiar with other Windows graphics programs will feel at home in minutes. Tool palettes can be turned on or off as required and rearranged on screen to suit individual taste. All tools are accessed using a traditional left-click.

Other notable strings to the program's bow include its support for over 40 different file formats, a browser that lets you quickly scan through thumbnail images of graphics files on your hard drive and an incredibly handy Batch conversion facility.

Batch conversion allows you to select batches of files in one format and then automatically convert them to another. And if that sounds complicated, you can always use the on-line help.

At £49 Paint Shop Pro is a bargain, providing most of the tools you'll ever need for non-professional bitmap editing work.

Price £49 ● Contact Digital Workshop 01295 252355

Kai's PowerTools 3



Adobe wrote Photoshop with future expansion in mind. Plug-in technology allowed Adobe and third parties to write easily installable extensions to the program. All Macintosh scanner drivers are supplied as Plug-ins, and a wealth of filters and special effects is also available in this format.

The graphics industry standardised on Photoshop compatible Plug-ins, and most paint and photo retouching apps, including Corel PhotoPaint, can use them.

Perhaps the most famous Photoshop compatible Plug-in of all is Kai's Power Tools (KPT) now at version 3 for both Macintosh and Windows, the latter enhanced for Windows 95 and NT. Incidentally, the company name has recently changed from HSC to MetaTools.

KPT, like the host retouching applications, likes fast hardware. It will run on a 486 or non-PowerMac but particularly complex filters will benefit from a Pentium or PowerMac machine. The 16Mb of RAM and 16-bit or 24-bit colour displays come highly recommended, too.

Once specced up, you can look forward to one of the most unusual and attractive user interfaces ever. Ranges and options are enormous, but plain mucking about often produces the best results.

The most famous filters include the Fractal explorer, Texture and Gradient Designers, while new to version 3 and sure to become classics are the Spheroid Designer and the superb Lens f/x.

Within minutes of using KPT, you begin to realise just how many times you've seen examples of its work. There are few professional graphic artists that don't have KPT installed. Photoshop has never been so much fun! Price £129 ● Contact Principal Distribution 01706 832000; <http://www.metatools.com>



DisplayMate for Windows



Ever thought your monitor isn't working as well as it could be? An educated eye can spot basic geometric distortions but can easily miss other aberrations. The result is

a monitor not operating at its best resulting in possible eye strain for the user.

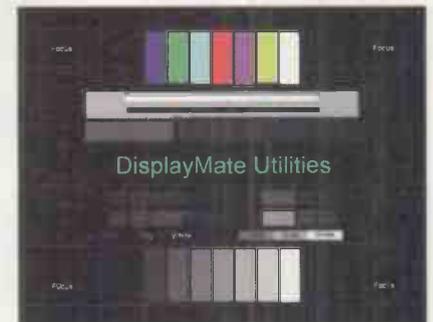
There are common images which reveal certain nasties straight away. Virtually all geometric distortions (where the image is anything other than a perfect rectangle with straight sides) can be spotted by displaying a spreadsheet. All those straight lines crossing the screen immediately show up problems.

Discolourations are another bane: that beautiful pure white image spoilt by a darkened patch in the corner. There's not a great deal you can do about

discolourations other than remove offending nearby magnets, such as unshielded speakers. It is, however, very handy to be able to check out a monitor before you buy. Try maximising a window with a plain white background and the stains will show up.

This is all very well, but ever-so-slightly Heath Robinson. If you want a complete suite of images that will really test your display to its limits, look no further than Sonera Technologies DisplayMate. After two highly successful DOS versions, DisplayMate is back; this time for Windows. It was designed for Windows 3.x, but works fine under 95. DisplayMate for Windows comes on one disk and occupies just over half a megabyte on your hard disk.

DisplayMate tests for focus, geometric distortion,



interference, registration, resolving power, and as the cliché goes; much, much more. A totally invaluable utility used by virtually every computer magazine for monitor testing.

Price £69 ● Contact Meko 01276 22677; sales@meko.co.uk



INTERNET

MONEY TO BURN?

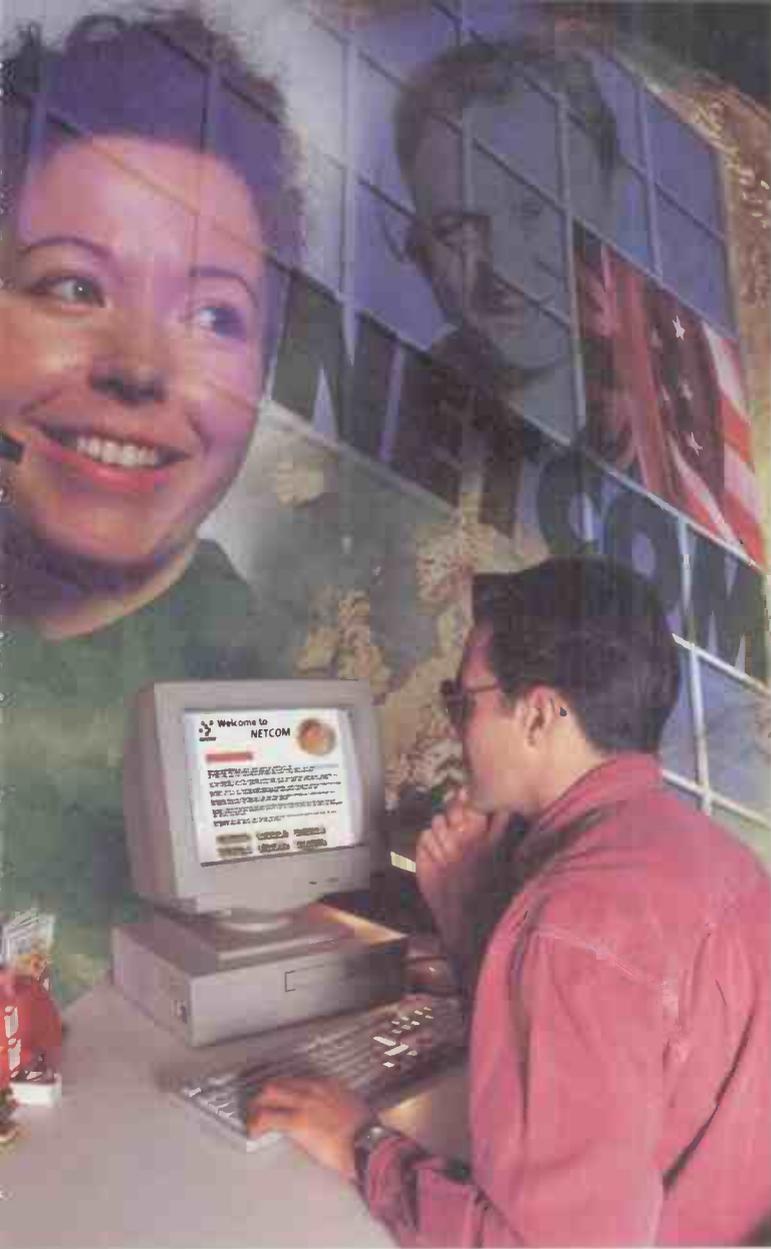


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SYSTEM REQUIREMENTS

- IBM compatible PC with a 486 or greater processor • VGA graphics card, colour monitor recommended • Mouse or other pointing device
- 9600 baud Modem or greater • Microsoft Windows 3.1 and MS-DOS 5.0 (or greater) or Microsoft Windows 95
- 8Mb recommended Random Access Memory (RAM) • 10Mb free hard disk space

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B 1 2 3

FREE SOFTWARE PLUS FREE 1 MONTH TRIAL

WinProbe 4



WinProbe 4 is another systems performance and analysis package, designed to show graphically how your PC is performing and how you can improve it. It tackles both hardware and software problems, looking at what is and is not working in your

configuration. The information is presented in the form of a series of graphs, dials and figures, making it easy for you to see the most important information about your systems, at a glance.

Some of the tests are similar to those offered in DOS and Windows, including a scandisk-type utility for looking at the surface of your hard and floppy disks as well as at their performance. It will test your soundcard, too, with a positively ear-splitting noise.

Certain of the tests are extremely revealing: for example, the chart showing exactly what is taking up how much space on your hard disk, or a detailed breakdown of your printer capabilities.

Other lists, such as those including which interrupts and addresses are currently being used, are invaluable if you are trying to slot in a new device but suffering from conflicts.

The other tests it carries out are a little more esoteric. You will need to be quite technical to reap



the full benefit of much of the information. For example, the lists of address ranges under ROM area information may be beyond the ken of the average home user.

Included in the deal is a CD which can be used to diagnose any problems you may have with your CD-ROM drive and this also includes Cleansweep and Mosaic.

Price £49.95 ● Contact Quarterdeck UK 01245 496699; <http://www.quarterdeck.com>

Ram Doubler for Windows



During the past six months we've seen a lot of programs that claim to double your system's RAM without the need for extra hardware. Understandably, these have generated a great deal of interest but when it comes to the crunch, most fail to live up to the hype. RAM Doubler, from US-based Connectix, is the exception.

Currently available only for use with Windows 3.1, RAM Doubler actually does what it claims to do on the packaging. It allows you to have more applications open simultaneously as if you had a load of extra memory to play with. The program can be installed in just a few minutes and when you restart your machine you're ready to go.

The secret behind RAM Doubler is an advanced data compression algorithm that works in conjunction with Microsoft's own virtual memory system. The program compresses data in memory and concentrates its efforts on increasing the available System Resources.

Windows' System Resources are several small blocks of 64K which hold things like window text, dialogue information and so on for each program you have opened. Applications are supposed to clean out their stuff after use, freeing memory ready for the next program — if they don't, then resources can run out and you can't load any more applications.

Connectix is working on a Windows 95 version but concedes that Microsoft has done a splendid job with the basic set up. But for Windows 3.1 users, RAM Doubler is a must.

Price £59.95 ● Contact Partners In Europe (Connectix) 0171 622 3355; Web www.connectix.com

Powertoy



Powertoy is a collection of small but perfectly formed freeware enhancements to the Windows 95 interface. Written by Microsoft's Win95 team, although not officially supported, it provides a series of features that should really have made it into the OS as standard.

Possibly the most useful feature for the average user is QuickRes, which provides the ability to change both resolution and colour depth on the fly. When this is running, you can right-click on the bottom right of the taskbar and up will pop a menu of all available graphics modes. If you select a new mode, Windows will automatically update itself without restarting. QuickRes worked with all graphic cards tested when using bona-fide Windows 95 drivers.

Another handy gadget is FlexCD, a replacement for the standard audio CD-player controls. Again, accessible from the bottom right of the task bar, it provides a pop-up menu that lets you Play, Stop and Pause CDs. You can select individual tracks and display CD properties. It doesn't provide as many features as Microsoft's graphical version but it's a damn sight quicker and easier to use.

Other key parts of PowerToy include Xmouse, which instantly activates the window under the mouse pointer *à la* Xwindows, and Shortcut Target which lets you access the properties of a real file or folder from its shortcut. Very handy.

PowerToy is constantly being updated and may have improved further by the time you read this. The current version is available, on our free cover-mounted CD-ROM this month, for you to try.

Price Free (at present) ● Contact www.msn.com

Properties for Display
About QuickRes

640x480 256 color
800x600 256 color
1024x768 256 color

640x480 HiColor (16 bit)
800x600 HiColor (16 bit)
✓ 1024x768 HiColor (16 bit)

640x480 TrueColor (24 bit)
800x600 TrueColor (24 bit)

Pccheck



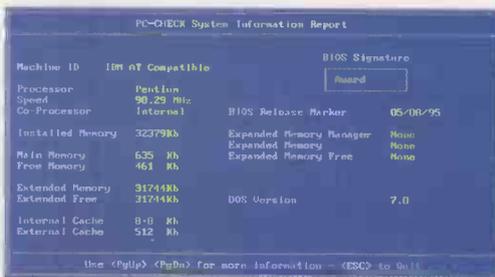
Regular PCW readers will remember our story on fake cache which first broke in the March issue. It all started when PCW News Editor, Clive Akass, suspected fake cache on a motherboard which he had bought in a computer store on the Tottenham Court Road. The final proof was provided by our two X-ray pictures: one showing a real cache chip with all its internal circuitry and the other showing a blank, fake, cache.

It may seem a little extreme to X-ray the chips on your motherboard but fake cache is not easy to spot. A machine fitted with the fake stuff will lie to you on bootup, declaring its 256K of cache, just like any other PC, and if you take the lid off and look at the motherboard, you'll see a cache chip just the same as any other. The one thing you may notice is that your machine is running a wee bit slow — but then your machine could be running slow for all sorts of reasons.

So if you are looking around your local computer dealers for a new personal computer, how do you test the machine of your dreams for fake cache? The answer lies in this simple utility, pccheck.exe. Merely run the executable file from the a: drive and it will analyse the hardware on the machine and tell you exactly how much cache it has.

This is an essential utility if you're about to buy a new machine and easy to get hold of from our PCW Web site.

Price Free ● Contact <http://www.vnu.co.uk/hc/pcw/>



Quarterdeck QEMM 8



So you thought all your memory problems were over when you installed Windows 95? Not so. DOS applications still need to run in conventional memory — the area between 0 and 640K — but much of this can be swallowed up by programs loaded from your autoexec.bat and config.sys files. Additionally, different applications require different types of memory — upper, expanded and extended memory — and unless you fully understand memory management it's likely that your system is not running at its optimum.

This is where QEMM comes in with its collection of memory management programs. By analysing your system, QEMM can determine its optimum memory configuration, freeing up conventional and first megabyte memory essential for running DOS and Windows applications.

In addition, QEMM automatically handles all your applications and makes different types of memory available when required.

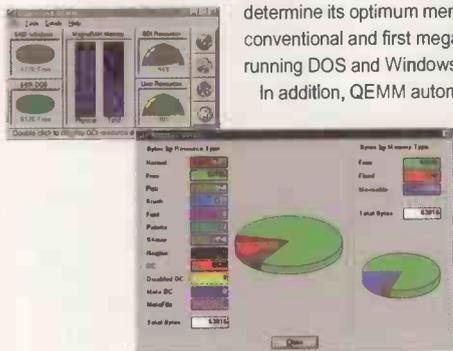
This latest version includes new features for Windows 3.1 and Windows 95 including MagnaRAM, a memory compression utility, and FreeMeg.

Windows 3.1 uses the first

megabyte of RAM to load applications but if other programs are running, "Not Enough Memory" error messages are often reported. FreeMeg prevents this by making this memory available. Once the program has been loaded, data which needs to reside in the first megabyte is returned.

MagnaRAM provides you with more available Windows memory so that you can run more programs and open larger files. By compressing data, both in RAM and on your hard disk, your system runs faster by minimising the need for slower virtual memory.

Price £79.95 ● Contact Quarterdeck UK 01245 496699; <http://www.quarterdeck.com>



WINCheckIt 4.0

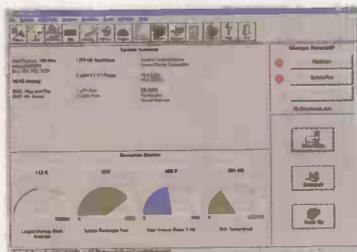
If you're brave enough to delve into the belly of your PC beast then you may need a trusty partner to help you along the way. Now you can team up with TouchStone Software's newest release, WINCheckIt 4.0, designed for Windows 3.1 and Windows 95, to help you out of any quandaries you might get into.

This "All-In-One Windows Problem Solver" is there to help you collect extensive data on your PC, troubleshoot problems, track system performance, test various sub-system components and more. One of the key features of WINCheckIt 4.0 is its ability to scan, compile and diagnose your system setup. Everything from IRQ settings, to TSR memory assignments, to BIOS data, is accessible through this utility.

WINCheckIt can also run benchmarks on your whole system, or a component such as your CD-ROM drive and give you a value for comparison. You are then able to save this information, along with any other system details gathered, for future comparison if you decide to change any of your PC system setup.

Another handy aspect of WINCheckIt 4.0 is the Uninstall and Clean and Zip functions. Both features are there to help you free-up drive space. Uninstall lets you select any program and delete it. Clean and Zip allows you zip (archive), move or delete unwanted files from your drive. Both these functions are particularly useful for those with older, lower-capacity hard drives. There is also Setup Advisor which gives you advice on device and adaptor card configurations, be it for current or future system setups.

Price £39 ● Contact TouchStone Europe 0181 8754444



Win '95 Advisor



The Touchstone organisation has a long track record in diagnostic tools but most of its products are aimed at the professional market. Win '95 Advisor, on the other hand, has been designed with the everyday user in mind. What does it do? It checks out your hardware to see if it's up to coping with the demands of Windows 95.

The program runs under Windows 3.1 and when launched proceeds to check your system from top to bottom. It tests various components and even performs a few multimedia benchmarks for good measure. If the program has anything to say, it comes back with a list of recommendations and compiles a report for you to read.

Win '95 Advisor has a well thought out design, with the overall score for your machine represented on a graphical dial. This is backed up by a one word evaluation such as Fail, or Wow! and oversized buttons on-screen make for easy navigation and the kind of interface that is unbreakable by idiots.

You can also run this program with Windows 95 installed and use it to fine-tune performance, although that's not really what it's designed to do.

There are some far more comprehensive diagnostic utilities around and the best of the rest are also in this round-up but Win '95 Advisor offers a cheap way to check your system before splashing out on a new operating system. In addition, TouchStone offers WinCheckIt 4.0 which provides a more complete solution.

Price £29.99 ● Contact Touchstone Europe 01442 862612



Norton Utilities '95



Norton Utilities became an essential for early PC users when it offered an easy way to undelete a file. Microsoft soon added an Undelete to DOS, and Norton — now owned by Symantec — had to find added attractions such as comprehensive system testing and repair.

Curiously, Win95 has brought Norton full circle because the new operating system's Recycle Bin will allow you to recover only files you personally delete, as opposed to what an application deletes. This means that there is no easy way to recover, say, a Word document that you close without saving — even though an automatic backup may be sitting on your disk.

Norton's bin purports to keep track of all deleted files and though it is not infallible it usually saves you from attempting a hairy DOS Undelete in the context of Win95's schizoid 16/32-bit filing system. Another bacon-saving feature is a rescue disk on which Norton records all your set-up data, which is normally held in your PC's CMOS memory. The loss of this information, perhaps because of a run-down battery, can lock you out of your machine. The Norton disk will instantly restore your data; it stores other system information, too.

These features alone are worth the price of the package, even if you only use them once. But there is a lot of useful icing on the Norton cake including system information and diagnostics, extended help, and disk repair.

Price £129 ● Contact Symantec 01734 814230; <http://www.symantec.com>



Norton AntiVirus for Windows 95



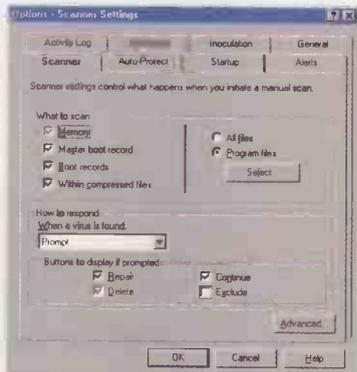
If you are using Windows 95 and need up-to-date virus protection for your home or business PC, check out Norton AntiVirus for Windows 95. The Windows 3.1 version of Norton AntiVirus wouldn't work in Windows 95 so Symantec went back to the drawing board and came up with a full 32-bit version.

It's an exhaustive anti-virus utility that will take up 6Mb of your hard drive but if you use a lot of floppies, or download information from outside sources, this could prove to be invaluable. It will automatically scan your memory and files on start-up and run in the background while you're working away. But that's not all it'll do. First off, you can use the Scheduler to run a virus check at specified times, either as a one-off event or on a regular basis. An additional bonus is that the Scheduler will launch a program at whatever specified time you may choose.

Then there is the extensive Settings menu that allows you to completely customise the scanning. You can select one, some, or all files for scanning; choose to autofix any problems; or track and record any activities that Norton performs.

If you find yourself in the unenviable position of having an infected PC before or after you've installed Norton AntiVirus you can use its Rescue disk to remove the virus and if necessary repair any damage. Symantec provides monthly updates, too, via BBS, Web and on-line service sites such as America On-Line and CompuServe.

Price £79 (upgrade from Win 3.1 version is £29) • Contact 01628 592222; <http://www.symantec.com>



Microsoft Plus Pack



If you have Windows 95, the Plus Pack is a tempting buy. It's probably best known for its many and varied desk top themes which transform your desktop.

Not only do you get plenty of interesting backgrounds, but in addition each has fitting icons, cursors and sounds to go with it. You are able to combine any elements to your liking and even have a theme selected at random each time you load Windows.

But that's not all. In the Plus Pack you'll also find an Internet browser, a couple of pinball games, the System Agent and a splendid new welcome screen for when Windows is loading.

Getting onto the Internet couldn't be easier than with the Plus Pack. A Wizard guides you through each step and if you don't already have a service provider, you can sign up with the Microsoft Network. All you need is a modem.

The System Agent is a handy utility that loads each time you start Windows. It checks for low hard disk space and takes care of housekeeping chores by defragmenting your hard disk and running Scan Disk at set intervals. You can schedule programs to run during your lunch hour, every day, or just once a year. If you have a virus checker installed, or any other utilities, they can also be scheduled to run whenever you see fit.

When you get fed up with the Internet and animated cursors, you can try and beat my high score of 22 zillion on one of the two pinball tables!

Price £32
 • Contact 01734 270000;
<http://www.microsoft.com>



Adaptec EZ-SCSI 4

The Small Computer Systems Interface (SCSI, pronounced scuzzy) was developed in the early eighties. SCSI, like IDE, is a bus which controls the flow of data (I/O), between the computer's processor and its peripherals, the most common peripheral being the hard drive.



There was a time when SCSI was considered a black art, with nightmarish installations and configurations. But Adaptec changed all that a long time ago with its range of SCSI cards and innovative EZ-SCSI software. You would just slot in your Adaptec SCSI card, connect all your SCSI peripherals and let EZ-SCSI do the rest. So long as there weren't any hardware conflicts, EZ-SCSI would seek out and correctly identify all SCSI devices, then install drivers for them and the card itself.

Time passed and faster, more sophisticated, SCSI standards arrived along with a wider variety of devices, local bus cards and 32-bit operating systems. Here, now, to meet these demands is

Adaptec EZ-SCSI 4, ready for Windows 95, NT, and 3.11, and the first from Adaptec to be optionally sold as a separate shrink-wrapped product. All Adaptec SCSI cards currently ship with EZ-SCSI 4, while the 1505 and 1515 cards have a light version.

EZ-SCSI 4 doesn't just install drivers — it is, in fact, no less than a full suite of 32-bit applications, tools and utilities that will manage and optimise all your SCSI hardware.

From backing up, to playing or writing CDs, from power management to read/write disk caches — even an online tutorial and performance benchmark — EZ-SCSI 4 really is the all-in-one solution for your SCSI peripherals.

Price £75 • Contact Adaptec 01276 854500; <http://www.adaptec.com>



Inoculan for Windows 95



Virus protection for your PC is a good idea, especially if you regularly connect to the Internet and download files. Peace of mind can be obtained inexpensively with the new Inoculan for Windows 95.

It offers three forms of virus protection. An automatic checker, Wimmune, runs in the background looking for suspicious activity whenever you insert a floppy or download files.

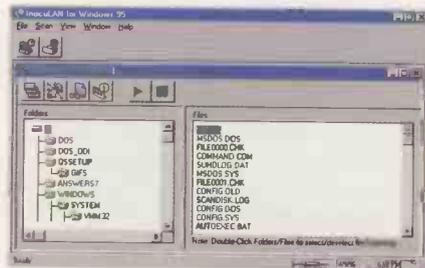
Additionally, Inoculan allows you to check individual files, folders or whole drives on your PC or across a LAN via an Intuitive File Manager-style window.

When you first install Inoculan it checks the memory to see whether any viruses are lurking there to give you trouble and it continues to do this every time the PC is booted. Any that are found are swiftly dealt with.

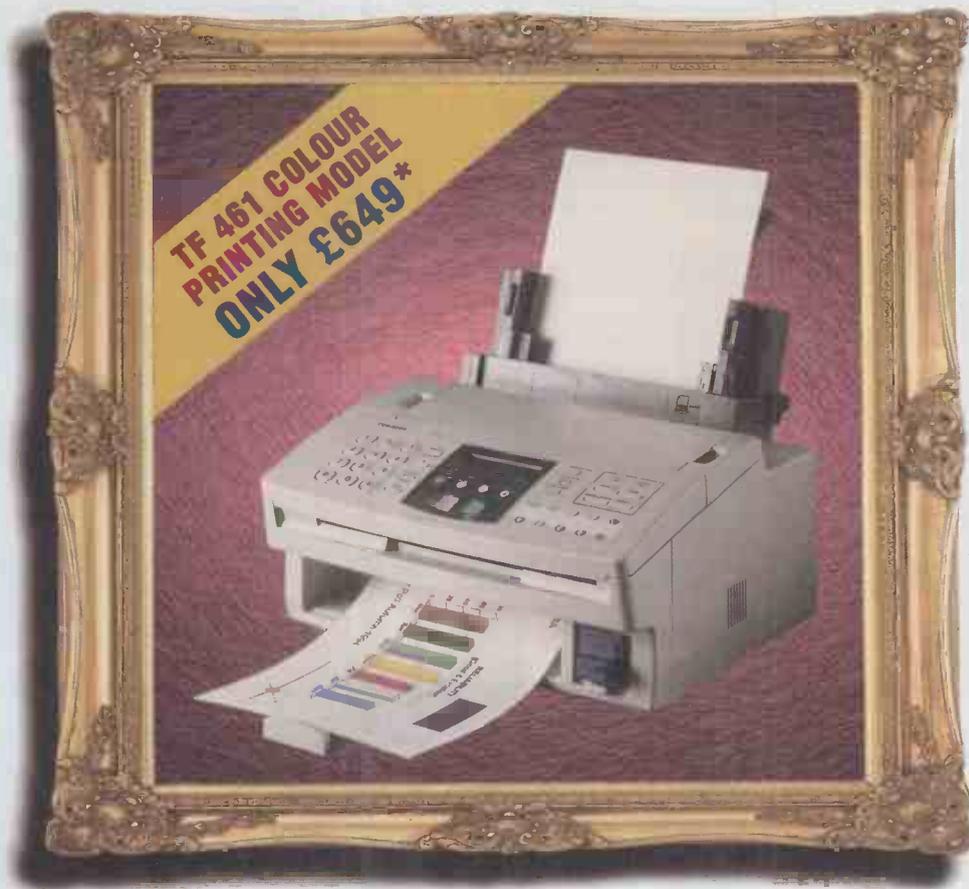
Despite its low price, Inoculan gives users a useful level of configuration. There are six methods of dealing with infected files. New, compressed, file extensions can be added to the list for checking and Inoculan can additionally be configured to work with Windows 95's System Agent — with this, you can set Inoculan to check for viruses overnight, for instance.

Right-clicking on individual files and folders will enable an instant virus check without having to open the file directory. In effect, this replaces Windows 95's own virus checker with Inoculan's superior level of diagnosis. Those whose PCs form part of a LAN (local area network) will appreciate being able to look at any file on the network and check it before accessing it.

Inoculan is an essential buy for those who wish to run virus-free PCs without hassle. Price £45 • Contact Cheyenne 01737 775500



A Multi-Function Fax Masterpiece ...



... And It's A Superb Colour Printer

Toshiba has launched a superb new range of fax machines for 1996. Most of them are PC connectable, including our star performer the TF 461, a high quality personal image processing system. It's an ink-jet plain paper fax and it connects to a PC to become a superb colour printer - all for just £649*. With the addition of optional software, it's a scanner and it can send or receive faxes directly to/from a PC.

TF 461's Advanced Features

As a multi-functional plain paper fax, the TF 461 has a dual access, multi-file memory, which can be expanded to a total capacity of 165 A4 pages**.

As a printer, the TF 461 can be connected to a PC to produce monochrome documents at 600dpi† and it can also produce superb colour documents at 300dpi with a range of 12 fonts.

By adding optional software, the TF 461 can also scan pictures or graphics into a PC and it can send or receive faxes directly to/from a PC.

Superb Fax Range

Toshiba also offers advanced fax technology with other machines in our range covering all the plain paper printing technologies currently available.

Most of the plain paper models are PC connectable, transforming them into printers as well as faxes and our top-of-the-range machines also offer scanning and sending or receiving faxes directly to/from a PC.

*£649 Ex. VAT (£762.57 Inc. VAT) **ITU test chart no.1
† Monochrome resolution is 600 x 300 dpi using print quality enhancement technology

On 3 of our models (TF P25, TF P100 and TF 461), we offer a 24 hour express warranty exchange service, with further support and assistance available via our authorised dealer network.

Find out more by calling us FREE on:

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In Touch with Tomorrow
TOSHIBA

Find out more about Toshiba's TF 461 personal image processing system by returning this coupon to: Copier/Fax Marketing, Toshiba Information Systems, FREEPOST TK842, Weybridge Business Park, Addlestone Road, Weybridge, Surrey KT15 2UL (Fax: 01932 852 755/E-mail: 101573.2774@COMPUSERVE.CO)

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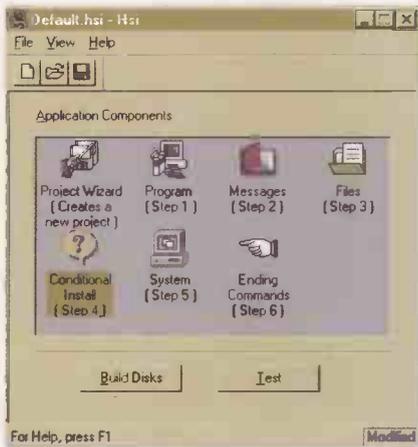
Signature: _____

HS-Install



This shareware program is a mini development tool to help programmers put together simple functional setup programs. All the elements have been provided in this utility to make standard Windows 95, and Windows NT, install Wizards. Using Win32s, it will also work in Windows 3.1.

HS-Install is an interactive tool which is made easy to use by including its own set of Wizards which guide you step-by-step through the design process. First a Project Wizard asks for a title, a default directory, a directory for your files and a Desktop folder. As you work with the program, all your work is saved in a project file with an .HSI extension.



A series of icons labeled Steps 1 to 6 then guides you through the creation of your setup program, allowing the inclusion of a readme file, as well as your own customised logos, bitmaps, and help files. HS-Install will also allow you to configure your application to install as "Typical", "Minimal" or "Custom", and any alteration which you need to make to system files can be specified so that the autoexec.bat, config.sys and any .INI files will be modified accordingly.

The resulting setup program can take up as little as 80K, depending

on your chosen options: a small overhead if you are trying to keep the number of installation diskettes to a minimum. Another useful function is the "uninstall" feature, which you can build into the setup program.

Price Free • Contact <http://www.dnh.mv.net:80/ipusers/harrisoft/>

SocketSpy



SocketSpy is a tracing tool for programmers of PC COMMS systems and comes in both 16-bit and 32-bit versions, so you can use it under Windows 3.1, and Windows 95. It

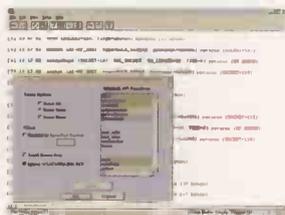
monitors Winsock API references between an application and the Windows sockets DLL.

SocketSpy/16 and SocketSpy/32 are both capable of monitoring and displaying all socket calls from an application under test in real time.

SocketSpy is easy to use. All you have to do is load it up and it will secretly tap into the messaging interaction between a user application and winsock.dll. As protocol messages are exchanged, they are duplicated and routed to a Trace Window for your perusal.

The great thing about SocketSpy is that it allows you to

debug any Winsock API calls which you have made in your code, without you having to explicitly link it with the application under test. The resulting data on the SocketSpy display can be printed out or saved to a file. There's also a trapping facility which allows the display to toggle between the trace buffer and a trap buffer.



In addition, SocketSpy allows you to filter the resulting data by selectively enabling or disabling individual API calls — in other words, data can be restricted either to a specified socket or to only those API calls which result in an error condition. This works by accepting API calls from an application and forwarding control to the installed Winsock.dll while at the same time transferring copies of all passing data to the SocketSpy application for monitoring and display.

Price Free • Contact <http://www.windows95.com/apps/program.html>

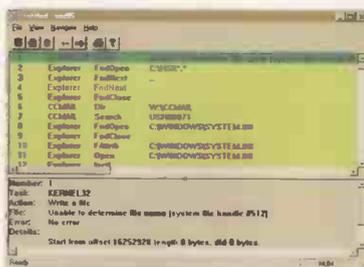
WinExpose I/O



This is a Windows 95 shareware utility which allows you to examine, in real time, which files each running application is using or trying to use. For troubleshooting, this applet is extremely useful. All file activities in each application and each different VM are traced, even those

running in DOS boxes. So when you get an error message complaining that a particular .INI file is missing, you'll be able to locate it.

A collection of Input/Output filters allows you to specify exactly which operations you want to be traced so that you can narrow down the recorded activity when trying to solve a specific problem in Windows. The program is easy to operate: simply load it up and leave it running in the background while you perform other operations around the



desktop. Every file operation that you perform in another application will be traced and logged in real-time on the Win-eXpose-I/O application screen. The resulting file can then be printed out and examined in detail.

If you're installing Windows software or just trying to make your current software work correctly, this utility could save you a lot of time. It can also give you some valuable clues if you're trying to improve the performance of your system. Leave it running in the background and it will let you know all the file seeking failures, allowing you to alter system settings to boost the performance of specific applications.

A valuable tool for experts and novices alike, and available for free download from the Web.

Price Free • Contact <http://www.windows95.com/apps/program.html>

Origami



Over time, computer programs grow larger and the more complex they become, the more difficult they are to maintain. Even if your code is structured, or to some degree object orientated, you will still have this problem.

Origami is designed to help you avoid scrolling through pages and pages of code. It is a folding editor. Its purpose is to allow long pages of code to be folded into sections so that programs can be made easier to understand and maintain.



It extends the principle of tree structured directories into a text file.

Once a program has been carved up in this way, large amounts of text can be folded away behind the scenes under a descriptive heading and brought into view only when necessary. Using this technique, it is possible to ensure that

no display exceeds a single screen at any time. Using descriptive headers for each section, this system eliminates the need for seemingly endless paging through long files of code to find the required section. With a tree structure in place it's easy to find your way around small sections of large, complex, programs while simultaneously maintaining a coherent picture of the whole.

Like most utilities of its kind, Origami can save you a lot of time but only if you use it intelligently. It's not an instant solution to unwieldy code but rather a tool which will help you to work more efficiently if you spend the time to use it well.

Price Free

• Contact <http://www.windows95.com/apps/program.html>

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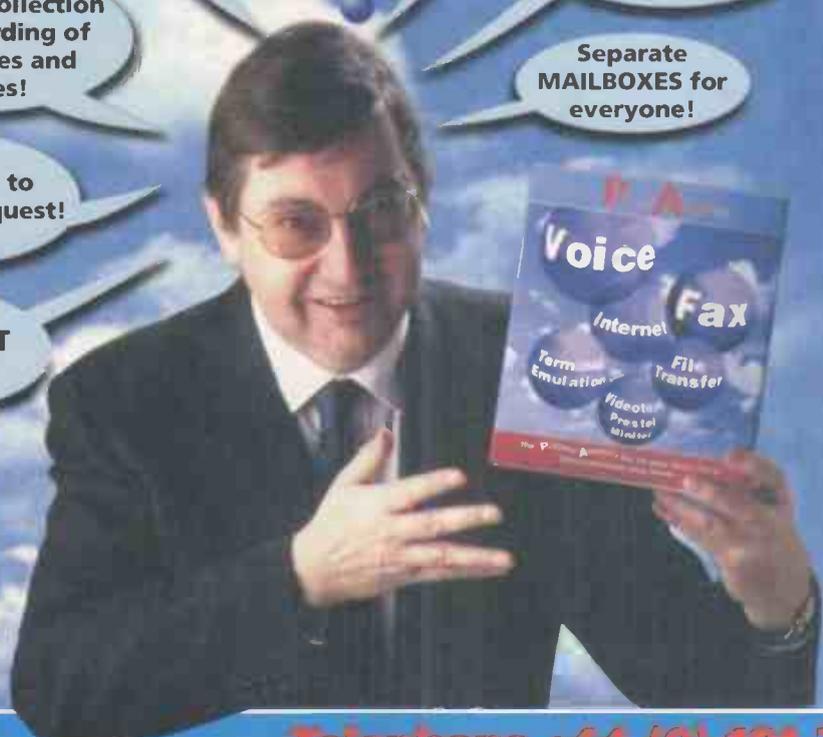
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Ameol



Ameol is an extremely useful utility if you're a member of the CIX online conferencing system. It helps you to cut your phone bills by automatically dialling up CIX, logging on using your CIX name and password, capturing all unread messages and logging you off again.

Within the CIX system there

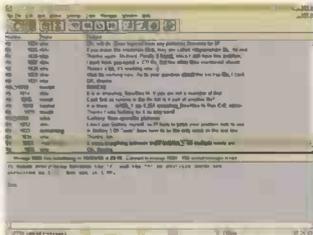
is a wide range of topics and conferences from which to choose, and if your interests are diverse it's easy to spend many hours online, running up huge phone bills in the process.

As well as being able to update all your conferences and mail messages in a flash (or in a "blink", to use Ameol terminology), the package also serves as a simple database manager. All unread messages are organised by topic and conference, allowing you to read each message one at a time or skip ahead to another conference. Topics can be arranged in order of interest so that Ameol always displays the unread messages of your favourite topic first.

Ameol helps you to use CIX more intelligently. Every function which you can perform using CIX online can also be performed from Ameol. Downloading files, for example, is done by specifying the name of the file and the topic in which it is located, or by downloading the file list which provides an Index of all files in the topic. The next time you "blink", all the specified tasks are performed automatically.

You can download a copy of Ameol from the Web site below.

Price Free • **Contact** Web site
<http://www.computlink.co.uk/cix/support/ameol/>
 CIX support line 0181 296 9666



Cyberspell



There are sections of cyberspace where misspelling seems to be *de rigueur*: a way of declaring how cool and unconventional you are. But what goes down well in alt.anarchy is not necessarily going to land you a job or a contract.

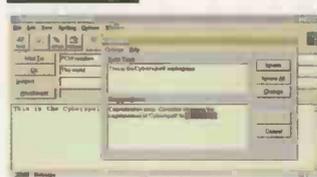
And as email tends to be dashed off and sent without pause for reflection, mistakes can easily creep in even if you're a good speller.

Cyberspell, which comes in Win 3.x and 95/NT versions, brings spellchecking to the Netscape mailer. It loads itself, no messing, straight into Netscape from two floppy disks. The only sign of its presence is a Spelling option in the Message Composition box.

You are given a choice on the level of detail provided by the spell-checker: the most basic level flags unusual capitalisations, doubled words and hyphenation errors, as well as misspellings. A Powerspell option handles number formats and punctuation, as well as certain grammatical errors.

You can refer to a custom dictionary, too, and a standard Word dictionary is included. Cyberspell monitors how you respond to flagged words and if you leave one unchanged more than three times, it suggests that you add it to a custom dictionary.

Cyberspell lets you specify how many spaces you want to leave between sentences and you can tell it to ignore words with numbers, such as 455Mb. It is available for download on a trial basis.
Price £17.95 • **Contact** Inso 0181 947 1122; Trial download www.inso.com



LapLink for Windows 95



If you're a road warrior, constantly on the move and with a need to keep in touch with the office, then LapLink for Windows 95 could be just about the most useful utility you'll come across.

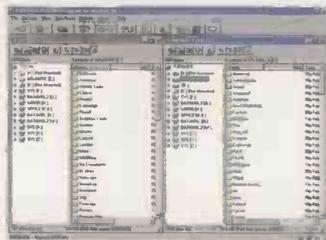
LapLink gives you three services for working with remote computers: Remote Control, File transfer, and Chat. Remote Control allows your PC to tap into and operate a remote computer as if it were in the same room as you. File Transfer allows you to exchange files from PC to PC. Chat provides you with an online communication tool for direct communication with someone working at another computer.

There's no real limitation on how the computers communicate with one another. You can link up via direct cable, infra-red transmission, modems, and networks. New to the Windows 95 version is computer-to-computer Internet accessibility, allowing the user almost unlimited alternatives for link-up.

But LapLink sophistication doesn't stop there. Features such as SpeedSync and Compression are what make it unique.

SpeedSync allows the user to cut file transfer times (and hence save time and money) by comparing files before they are copied from one location to another and detects differences between them, if any. It then automatically updates the target file by sending only the changes that have taken place rather than send a whole replacement file. The file compression utility is additionally helpful in keeping communication costs down by minimising the time and size of file transfers.

Price £149.95 • **Contact** Traveling Software 01793 818282; Web www.travsoft.com



Microsoft Internet Explorer 2.0



Windows 95 users now have a Web browser which is almost as good as Netscape Navigator and adds a few tricks just for them. Internet Explorer (IE) has come on in leaps and bounds since it was bundled pretty much as an afterthought as part of the Windows 95 Plus! pack, and has outstripped its Mosaic-based origins.

Using IE, you can enjoy multimedia Web sites without having to download plug-ins. These include inline movies, inline sounds and scrolling text — all supported by Microsoft's extensions to HTML. You'll need plenty of bandwidth, of course, but that's the Internet.

With IE 2.0, Microsoft additionally supports TrueType display fonts within the browser, coloured text and coloured backgrounds for individual cells in tables. All are achieved through

Milktruck Delivery



Without doubt, exploring the Web for information is becoming an invaluable part of our lives, especially if you are in business or education, but it costs time and money to keep returning to the same sites just to find they haven't changed.

Milktruck Delivery works with most popular browsers, including Netscape Navigator and Internet Explorer, by checking the sites you visit most for new material. This saves time and money. With Milktruck you only have to connect for the time that it takes to download new Web material from your favourite sites and then browse the full site offline.

Milktruck saves you the bother of having to trawl through the entire site to see whether the new information is worth reading. It also means that Web sites can be read on laptops or any PC that doesn't have a connection to the Internet.

Even if you have the luxury of a fast link to the Internet, Milktruck offers a better way of organising your bookmarks beyond that offered by most browsers.

Milktruck acts as a proxy server. The first time you launch you must choose which browser you wish to use. Milktruck launches the browser and serves up a number of HTML pages held in its own directory. All you do then is follow the onscreen instructions to organise your favourite sites and put them into pre-designated categories. These can be continually updated.

Once this has been done, you are ready to go onto the Internet for fresh delivery of new information.

Milktruck is a sophisticated yet simple way of getting the best from the Web without inflating your phone bill. There are similar packages available but none do the job as well or as stylishly as this.

Price Free (still in beta) • **Contact** <http://www.milktruck.com>

Netscape Navigator 2.0



Right now, this is probably the most famous piece of software in the world, and with good reason. Due to its enormous popularity (said to be used by around 70 percent of Web surfers worldwide) it is the browser in which third party

Web developers are interested. This is why Netscape 2.0 users can enjoy real-time animations and sounds thanks to plug-in technologies such as ShockWave from Macromedia.

Additionally, support for Java makes Navigator the most extendible browser around.

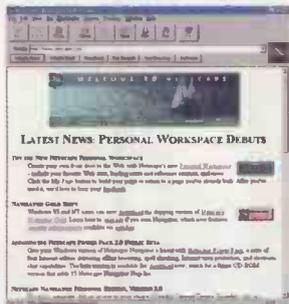
But other areas are probably more important. Navigator has unrivalled support for mail and newsgroup access through the browser window. With Navigator you can send email and browse newsgroups without ever using another application. And if you want to Telnet to somewhere else, well, you can do that too.

Navigator's use of Frames within the browser are unique. This makes viewing multi-page sites easier as the first page can be viewed as an index and second or third pages brought up within different panes in the browser window. Many Web sites are now taking advantage of this.

Another plug-in, Amber from Adobe, will make Web sites even richer by allowing full Acrobat PDF files to be displayed within the browser, complete with original fonts and images and live links to other Web sites. Using this, online magazines will come alive.

Still the king of Web browsers despite being pushed hard by Microsoft's own Explorer software, the only black spot is Netscape's ambiguous distribution and pricing policy. But if you like the Web, Navigator 2.0 is essential.

Price \$49 (Free to non-profit organisations) ● Contact <http://www.netscape.com>



Norton PC Anywhere 32



If you have a portable and a desktop, or two computers in different places, PC Anywhere is an indispensable tool. It's much more than a simple remote control facility — you can use it to transfer files between two systems, or as an invaluable aid on a help desk.

As well as the modem and direct cable connections that you'd expect, PC Anywhere can connect to another system over a range of networks, including the Internet, potentially saving you a fortune in international phone calls.

It can also be used as an ordinary communications program for calling services such as CompuServe — though on a slow system you'll probably be better off using the Windows 95 HyperTerminal program.

Setting everything up is easy thanks to a comprehensive selection of Wizards that walk you through all the stages needed, but it's worth paying a little more attention to security because the defaults won't be suitable for people leaving their computers connected to a public network, such as the Internet.

Performance is pretty good on the whole, although not as impressive on a network as the performance on a serial link might lead you to expect. Even so, you can very quickly transfer files between two machines, and when you're doing remote control there are clever tricks that help speed things up, like the automatic replacement of wallpaper on the remote machine with a blank background.

If you need 32-bit remote control, you really can't do better than this. Price £139 ● Contact Symantec 01628 592 320

WebEdit 1.3



Perhaps it's a slight misnomer to include WebEdit in a survey of 50 top utilities, because it does a lot more than most of the programs which masquerade as such. It's an HTML editor and, by general agreement, the best currently available. Many people despairingly resort to

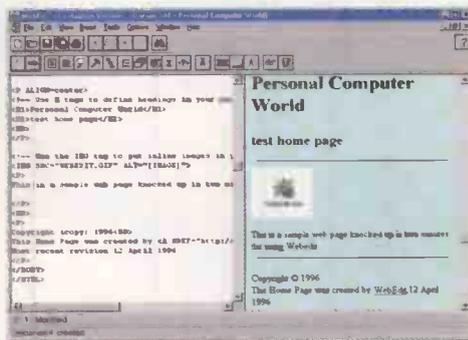
text editors like WordPad in order to write HTML because most of the commercial HTML editors are so clunky.

WebEdit, by contrast, is easy to use. If you prefer, you can still manually type in your tags, but you probably won't want to. For beginners, or part-timers, there's a Wizard which will churn out basic pages in double-quick time and includes support for background colours and additional features. Once you've generated the code, you can edit it or preview how the final page will look from within the program. For more advanced users there's support for form, table and maths tags.

The viewer in WebEdit can't guarantee to keep up with the latest stuff in the ever-evolving browsers. The programs preview gives it its best shot but you can also configure any other browser as a viewer. Thereafter, clicking on the spectacles icon lets you view your page.

WebEdit, like Netscape, uses the Internet as its means of distribution — it's extremely up-to-date. It was already implementing some of the features of HTML 3 before they'd reached Netscape or Internet Explorer.

The version we reviewed is 1.4C but beta versions of the 2.0 32-bit standard and professional versions are already available for downloading from Ken Nesbitt's most excellent Web site. Price Free 30-day evaluation, then £26 ● Contact Grey Matter 01364 654100; <http://www.nesbitt.com/>



simple HTML tags.

Windows 95 users also enjoy one or two fancy tricks: right click any GIF Image you like the look of and save it instantly as desktop wallpaper. Perhaps more useful is the way you can embed Web pages as shortcuts in Office 95 documents and click on them to open a connection to that Web page. These can also be saved in Exchange email files.

It's still a bit slower than Netscape Navigator and it can't yet do Java or ShockWave, but IE will only get better now that Microsoft has made the Internet its top priority and it looks like remaining free for the foreseeable future.

It is now also available for Windows 3.1.1, Windows NT and even Macintosh. Watch out for version 3.0, arriving soon.

Price Free ● Contact <http://www.microsoft.com/ie>

Secret Agent



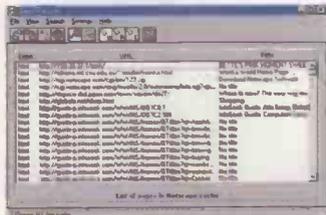
Here's another Web utility designed to make life a lot easier and less expensive. It performs a similar task to

Milktruck Delivery in that it allows you to cache Web pages without reading them fully and then return to them offline and view them within Netscape.

Like Milktruck it uses a proxy server by storing the HTML on a local drive which is accessed, rather than the Web itself. It certainly saves money by keeping online time to a minimum, because you don't need to activate a TCP/IP link to the Web as normally happens when you launch Netscape. Instead, you cache sites to your bookmarks and read them from there. Links that have been cached within the site will work, too, but any external links will not.

This very compact package uses only one window and can be picked up in seconds, but there is an online help button if you get stuck. Your cached pages can

be viewed in alphabetical or access order. A built-in search engine makes life easier if you are looking for an individual site, but it will only find keywords listed in cached URLs and not individual elements on those pages.



Unlike Milktruck, it will only work with Netscape but that shouldn't be a problem for many people and it can't update pages automatically. Other browsers may be supported.

For those who like to wander the Web yet still like to keep an eye on online charges, this is a good choice.

Price £24.95 ● Contact <http://www.ariel.co.uk/sagent>

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Winzip95



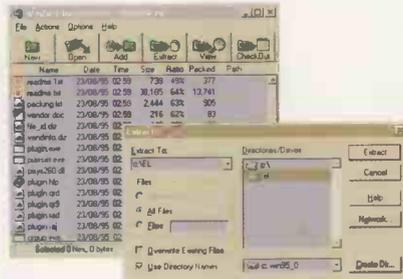
PKzip is the most widely known and used compression utility for DOS, and its Windows equivalent, Winzip, has become equally popular. Not surprisingly, there's now a new version of the program for Windows 95.

This new incarnation of Winzip comes with the usual Windows 95 attributes. It's a fully 32-bit application, and it can handle long filenames. But the real improvements are in the integration with the Windows 95 interface. This version allows you to extract files from an archive by dragging and dropping them to a directory in the Windows Explorer, and you can view files by dragging them to an application on the desktop. Menu options have also been incorporated into the Explorer itself so that when you right-click on a zip file an "Extract To" option comes

up in the context menu. Extra files can be added to an already existing zip file directly in Explorer without having to go back to Winzip and create the archive again.

On installation, Winzip searches for the virus scanning utility on your system and makes it available from the Actions menu, so that any zip file downloaded from the Internet can immediately be scanned before it is extracted. Virus scanning is an important function in Winzip, as one of the major uses for compressed files is for speeding up their transportation over the wires. This version is compatible with Windows NT as well as Windows 95. It's one of the most useful utilities you can have on your desktop.

● Contact http://www.winzip.com/winzip/winzip_x.htm.



ZRFileworks

Sending files across the Net is best done after they have been compressed. No-one wants to spend more time online than they have to, downloading files from the Internet.



The problem is that many email packages cannot handle compressed files on their own, and need a little extra help.

That's where ZRFileworks comes in. Simply select the file within the application, choose the compression format and hit open. Then save it to the directory of your choice. Unusual or little-used file formats can be added to the list of files that ZRFileworks can deal with — the popular formats such as ZIP and UUEncoded are already built-in.

But there is more to ZRFileworks than just compression and uncompression. Files can be deleted, moved across networks and renamed. You can even run an anti-virus check on downloaded files.

The best part of ZRFileworks is that it is very easy to use, and even newcomers to the wonders of file compression should have little difficulty in expanding and compressing files ready for the Internet. Add to this the fact that you can view graphic files within the package, and even manipulate them before saving, and you have a powerful little application that far belies its shareware status.

Keep a copy of ZRFileworks on your PC and you need never be caught out by a compressed file again. Plus, if you register your copy you get two more modules to extend ZRFileworks still further.

Price \$22 ● Contact jared10@aol.com or www.jumbo.com



Stuffit Expander for Windows



There are two kinds of Windows 95 user. There are the ones who stick obstinately to the laborious Win 3.11 way of doing things, using file open dialogue boxes and Explorer, or even File Manager, wherever possible.

Then there are the ones who embrace drag and drop with a vengeance. The second group spend most of their time using My Computer and open documents by dragging document icons onto application icons. This group will love Stuffit

Expander. It's a stormingly successful Macintosh utility that's now been ported to the PC. It supports all the standard compressed file formats including .sit (which is the Mac stuffit format), .zip, .arj, .arc, .gz, .uue and .hqx.

If you put a shortcut to Stuffit Expander on your desktop, you can decompress files just by dragging a zip file onto it. Expander creates a directory with the name of the zip file (minus the Zip extension) and unzips all the files into it. You normally use Expander as an icon on your desktop. There's no need to preload the program unless you want to use some of the more advanced options such as configuring the destination of your decompressed files or deciding whether you want files to be decompressed into Windows or MacBinary format.

The only thing that Stuffit conspicuously doesn't do is create compressed files. I noticed that the author, Aladdin, is currently advertising for a Windows software ace on its Web site, so presumably it has such a product in the pipeline. In the meantime, you're still going to have to use something like Winzip.

Price Free ● Contact www.aladdinsys.com/



Wincode

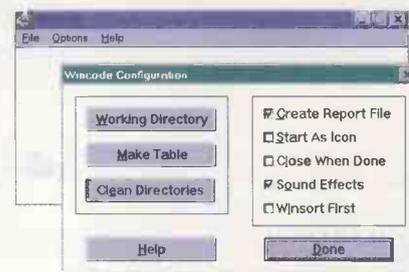


Computers use 8 bits to a byte. They want to communicate using numbers up to 255 the whole time. Thanks to the history of the ASCII code, email only uses 7 bits at a time, allowing the computers to communicate with numbers of up to 127. With only 26

letters in our alphabet you can easily cater for codes for the full alphabet with room for numbers, upper and lower case, punctuation and a few other symbols within the 127 character limit. This is fine for sending text, but when pictures or programs have to be transmitted, or something which isn't raw text such as a spreadsheet or document file, the software will need to restrict itself to values below 127, making up for the missing

information by sending one extra character for every eight of the small ones. The protocol for doing this is called uuencoding.

Wincode is a simple Windows utility which translates back and forth between



7-bit and 8-bit values. It understands the codes within a document. You use the Windows interface to select the file which needs to be converted, all with sensible browsing options, and Wincode turns files into their native format from .uue files and vice versa. You don't need to read any documentation, just know what you want to do. If you want to send files by email, particularly if you use the Internet, and your software doesn't automatically handle uuencoding, you need Wincode.

Price Free ● Contact www.wlyn.com/stroud/auxx/html#wincode

"Don't get an overdraft – get Quicken!"

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We used to spend hours juggling our money

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It's the quick and easy way to really get to grips with your finances once and for all. Now we don't need to sort through piles of statements and receipts, or ask ourselves "where does all our money go?" Quicken is definitely what we needed.

It really puts us in control

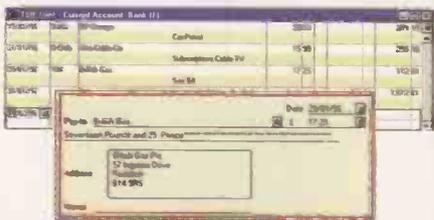
Organising your finances with Quicken is fast, accurate and simple. With all your details in one place, you can see the 'big picture' of your finances anytime and really take control of your money.

Learning Quicken is really easy

To get started, you simply follow step-by-step interviews. It couldn't be simpler – the screens look just like your cheque book and bank statement. And with Quicken Deluxe on CD-ROM, real Quicken experts appear on screen to show you what to do – it's just like watching a video!



Quicken organises all your finances in one place – it's easy to access all your information.



Quicken looks and works like your cheque book and bank statement – it's that easy.

Simply click for reports and graphs that show you where your money is going.



Multimedia on-screen Quicken experts make learning even easier in Quicken Deluxe.

It saves you time...

You enter your regular bills and income just once, then simply add your spending as you go. Type the first letter of a transaction and Quicken fills in the details for you. Your account balances are updated automatically – it's like having a bank statement you never have to wait for (and never get a nasty surprise from).

...and ends your money hassles

Quicken makes your everyday financial chores easier. It'll print cheques for you, and with all your account details to hand, it's easy to check your bank statements and make sure the bank have got it right. Quicken even reminds you what bills to pay and warns you if you're likely to go overdrawn.

Quicken shows you where your money goes

Quicken automatically categorises your spending. To find out where your money really goes, simply click on the question you want answered and Quicken summarises your spending in colourful graphs or reports. Click again and it gives you every detail of your spending.

Helps you make better decisions and choices

Best of all, Quicken takes the uncertainty out of decision making. You know exactly where you stand financially at any time. With Quicken, it's much easier to plan your spending and decide how much you can save. No more arguments over who has been stretching the credit card limit!



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AFD Address Software



Just over a year ago, the Royal Mail made a complete listing of UK addresses and postcodes available on CD-ROM. It contains 600Mb of data in the form of 25 million UK addresses, 1.25 million business addresses and 1.6 million postcodes.

This is all useful stuff for the average business, but it costs a hefty £445 for the basic version with an added yearly charge of £275 for annual updates.

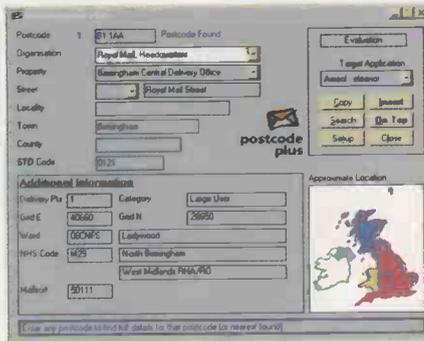
The AFD Address Software utility uses the data from the Royal Mail's Postal Address File and puts it into a usable form at an affordable price. The great thing about this software is that it's not just a great big file of data; it actually comes with a whole host of application and development interfaces which allow you to link search routines into existing applications.

There's a whole load of sample code, too, written in various languages to help you integrate address-checking functions into applications built using Access, dBase, Paradox, Visual Basic and Delphi.

The basic standalone program will return most of an address when you enter any given postcode and it will perform the same routine in reverse. Enter an address or even a partial address, and all the valid postcodes will be returned for that street in that town.

AFD postcode software is available for DOS and Windows and you can get an evaluation copy of the software from AFD's Web site.

Price £154 ● **Contact** AFD 01294 823221;
Web <http://www.afd.co.uk/index.htm>



After Dark



After Dark, from Berkeley Systems, is a collection of weird and wacky screen savers which has passed through the PCW office on many occasions. The latest version, The Totally Twisted After Dark Screen Saver, is compatible with Windows 3.1, Windows 95 and the

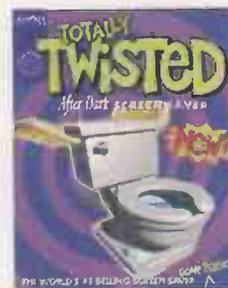
Macintosh, and is being marketed as "the sickest, most wacked out and absolutely outrageous screen saver you could imagine!"

This update to version 3.0 includes 13 extra animated modules with dozens of custom options, including the ability to combine six displays at once. Although I've always been impressed with the animations in After Dark, I have to admit that this latest instalment is a little on the sick side. One option, Frankenscreen, allows you to build grotesque faces, while another shows a stream of bungee jumpers plummeting to their deaths. If this isn't weird enough for you, try taking a spin with a manic lawnmower man in a field full of cute cuddly kittens! Whatever happened to the innocent humour of a few flying toasters?

One of the more useful features in After Dark is its built-in power manager which will automatically shut down any Energy Star compliant monitor, saving you energy and money. It also includes a password protection facility which allows you to keep your PC safe while away from your desk.

Despite After Dark's recent psychopathic turn, this is still the best collection of screen savers on the market. The full product is available from most major software vendors.

Price Around £20 ● **Contact** Softline 0181 401 1234;
Web <http://www.berksys.com/www/promotions/freeupdates.html>



AskSam 3.0



AskSam is a lovely little utility, designed for those who get a sick feeling in the pit of their stomach each time they even think about building a database.

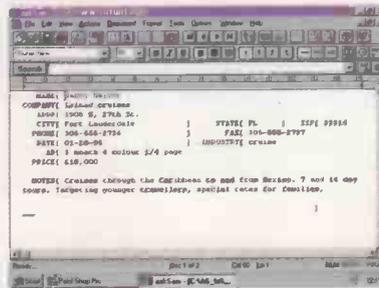
As it's a freeform database, there's no need for you to understand complicated structures or have a degree in computer science: you can begin to create a database as soon as you have loaded the product. You define your fields by typing in what looks very much like a word processing document. You enter the name of the field and follow it with a square bracket.

Allowing enough room for the data is just a question of keeping your finger on the space bar until you have sufficient characters. Data is then entered by typing in the spaces. As a freeform database the fields can be as short or as long as you want, including plenty of room for lengthy notes to yourself.

Searching a database you have created is just as simple. You hit the control key and type in any words for which you want to look. Searches can be boolean or multiple, which allows you a certain flexibility. You can then use the searches to compile reports.

AskSam is compatible with dBase, so for easier handling you can import other databases into AskSam. It has the usual mailmerge facility as well, so you can create form letters to send to all your clients at the press of a button.

It is available both in single-user and network versions.
Price £99.95 ● **Contact** Guildsoft 01752 895100



Avery Label Pro



Avery Label Pro is a utility designed to remove the angst from label printing. All the tools are provided for designing professional labels with text and graphics. Data can be imported from a variety of external sources including WordPerfect, dBase, Paradox, Word for

Windows, Microsoft Word, and any other program that can export a delimited ASCII file. You can also create your own database from within Avery Label Pro using the List Manager provided.

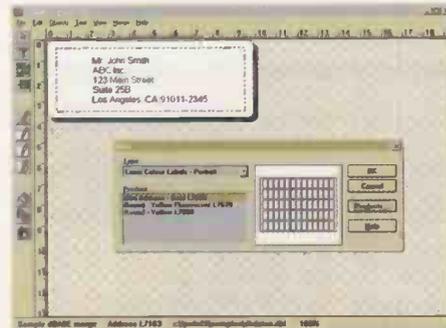
If you do a lot of label printing you'll appreciate this utility. The Designer screen gives you full control over the positioning of fonts, allowing several horizontal and vertical positions as well as rotation. You can add your own bitmaps, too, in all sorts of formats including bmp, wmf, pcx, tif and gif.

There are a few basic line-drawing tools for producing circles, squares and ellipses, and there's another utility for printing bar codes.

This is by no means a sophisticated program, but in a way that's its attraction. It's easy to use because it's not packed full of unnecessary functions and anyone can quickly get to grips with it. All kinds of label formats are supported on a wide variety of paper sizes, and if you're ever unsure of what to do, there's a plentiful supply of well-presented online help.

Thoroughly recommended if you do a lot of label printing or print on A5-size paper, as there's an excellent variety of templates.

Price £49.95 ● **Contact** Avery Dennison Consumer Centre 0800 805020; Fax 01628 764040



Gamma Unitype World



For typing in a foreign language, this utility is simplicity itself. Instead of requiring a dedicated word processor Unitype allows you to type in a number of different languages and typefaces, using your existing applications.

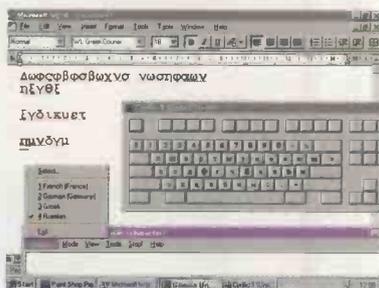
We looked at the World version which has 60 languages. This includes all the European languages in addition to many others, such as Tongan and Macedonian, but not Arabic or Oriental languages. There are other versions available which include more languages, as well as versions for specific language groups such as classical, biblical and scholarly.

The advantage of this package is that the chosen languages and typefaces can be imported into any kind of application so you can not only use it with your normal word processor, but also in databases, spreadsheets, drawing and DTP packages.

Unitype is very easy to use. It can be launched when you are in an application and used for all, or part, of a document. So if you only need it to fill in half a dozen cells in Russian, you launch Unitype, choose the correct language and the right keyboard map, and the characters you type appear in Cyrillic script. You can then close down Unitype and continue, or leave it running quite happily in the background but reset to the typeface and language you are using in the rest of the document.

The advantages when using unusual typefaces are self-evident, but even when you only want to type, say, a few German characters it is worthwhile having to avoid the Alt and a three-figure number nightmare.

Price £99 • Contact Lingua Language Services 01484 689494



Norton Navigator



Norton Commander was a popular and useful DOS product created in an era when any kind of GUI file management system was gratefully received. These days, the concept is harder to justify but the company has nevertheless released Norton Navigator, a file management system and alternative front-end for Windows 95.

Navigator is more than just a tool for copying, deleting, and moving files. It also contains utilities for zipping and unzipping, uuencoding and decoding, and encrypting files as well as a Fast Find searching tool which allows you to locate documents by searching for text strings. The File Manager provided with Navigator is a tabbed dialogue box providing a selection of file views, a default view in Explorer format, an old-style File Manager-type view, and an icon view. The fourth tab displays deleted files.

Despite a few useful features, the main thrust of Navigator is not to provide new tools. Most of the functionality in the software serves merely to duplicate already existing features in the

operating system but more annoying is the way in which Navigator arrogantly takes over your desktop, promising to provide you with an easier way of working. Both of my working folders disappeared on installation, thus denying me access to all of my day-to-day applications and forcing me to use the new, "better", Norton method.

Eleanor Turton-Hill

Price £72 CD-ROM; £66.95 Disks; £40 upgrade from Win 3.1 (all street prices) •

Contact Symantec 01628 788580



PowerDesk



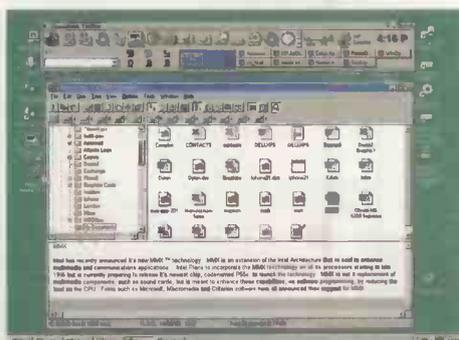
PowerDesk is one of those utilities that some people say they can't live without. It's not just an ordinary Windows 95 add-on, but "the ultimate desktop enhancement" for Windows 95.

PowerDesk is actually two utilities rolled into one. The first part is made up of the PowerDesk Toolbar. This utility places your entire desktop, as well as many other features, into one location that allows you to have quick access to almost all facets of your PC. PowerDesk allows you to configure the toolbar to suit your needs. You can place applications, files, startmenu items and any kind of shortcut onto the toolbar. This helps you to avoid the seemingly endless layers of cascading menus when looking for an application or a feature. PowerDesk lets you just point and click to launch the program. You can also monitor your system CPU, memory or disk space on a second-by-second or minute-by-minute basis.

The second aspect of PowerDesk is ExplorerPlus. It is similar to Windows 95 Explorer in look and feel but is more versatile. It enables easier navigation through your drives, folders and files. Elements like the Drivebar remove the hassle of navigating through complex trees to get to your drive, which is very useful in a networked environment.

It also has a PkZIP-compatible archiving/extracting utility as well as a File Viewing utility for easy viewing of file contents without the need to open the related application. This is a versatile utility that does, indeed, make using Windows 95 easier.

Price £49.95 • Contact MicroHelp 01703 814822; Web <http://www.cmm1.com>



Sidekick 95



There is a difference between a Personal Information Manager (PIM) and a Contacts Manager. The latter is essentially a database for contact details, whereas the former relates to you, the address book being only a part of several utilities including a diary, to-do list and appointments

scheduler.

Although Microsoft Schedule+, which comes bundled with Windows 95, will do everything most people (and especially home users) will want, Sidekick 95 is the best PIM for the more demanding user.

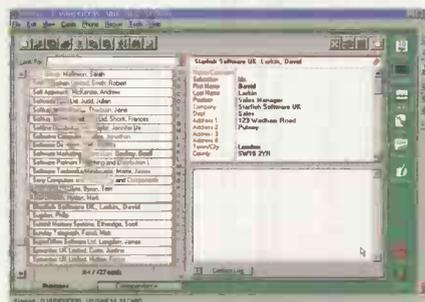
The address database is simple and excellent. You can easily modify part or all of it to suit specific needs and it is easy to copy address details across to other documents, such as a letter, in your word processor. You can also insert them directly into a prepared letter template in Sidekick's own "write" module. This is now a mini word processor, allowing you to select any of your installed fonts, employ bold and italic text effects, underlining and bulleting, and even change the text colour. There's also a spell-checker.

Apart from the address database, Expense View provides a simple yet powerful way of recording and organising your travel expenses and printing an expense report.

There is a full graphical map with real-time clocks for any eight of 370 world capitals and commercial centres. And there is a reminder page for scheduling appointments and listing to-do items.

Sidekick can dial the phone for you and provides an area for you to log conversations and documents, yet it isn't top-heavy and takes up less hard disk space than Lotus Organiser.

Price £39 • Contact Starfish 0181 875 4455



Uninstaller '95



You would expect computer journalists to recommend Uninstaller, given that we so frequently load and unload packages for review. But any long-time PC user has faced the problem of watching a hard disk become clogged by bits and pieces of long-forgotten packages.

Even worse, drivers lurk unused in scarce memory, loaded by obscure lines placed in your configuration files by some shareware program you tried and discarded back in 1965.

Uninstaller is not an instant solution to this problem. It is meticulous in tracing which files and configuration lines relate to which packages, and obsessive in its precautions against deleting necessary files.

It demands from you the same detailed attention: you are allowed a veto on each deletion and have the option of making a compressed backup which you can eliminate when you are sure that files are not needed, which is all as it should be.

The basic uninstall functions have been much copied in rival packages but developer, Microhelp, provides a number of added features. A particularly useful one lists duplicated files, such as drivers, sitting in both the application and system directories.

Uninstaller also allows you to move applications between disks. This is not a trivial task with most Windows packages because of the need to update file pointers.

The feature may encourage piracy (easier to download that office application to your laptop) but it is legitimately helpful when you are shuffling files after a hard-disk upgrade, say.

Price £49.95; upgrades £19.95 • Contact Microhelp 01703 814822



Dashboard 95



It's fair to say that Dashboard appeals to the kind of people who add extra headlights to their cars, or titanium bottom brackets to their mountain bikes. It's not strictly necessary but it does give your desktop a distinctive look. It adds controls, gauges and

accessories which, although not helping you to work more efficiently, at least allows you to have the illusion.

For example, there's a graphical display of CPU usage, a readout of how many concurrent execution threads are operating and the number of VMs (virtual machines). There's a clock/calendar panel which, in addition to giving you a permanent readout of the time and date, lets you set alarms that can launch programs or remind you of appointments. And there's a games panel with a choice of a fruit machine, poker, or a slide puzzle, although the concept of playing for notional money dished out by Dashboard quickly palls.

The real heart of Dashboard, though, is its management of programs and document files. Along the top of Dashboard, tabs represent program groups from Windows 3.1 and programs in the Windows 95 start menu. Click on one and they drop down as menus. At the bottom, Dashboard organises your programs by category into Finance, Utilities, Multimedia and so on. Documents can also be launched straight from Dashboard.

The program makes extensive use of drag and drop. Documents can be dragged straight onto the printer icon and the tabs at the top can be rearranged in the same way. The whole program is fully customisable and makes extensive use of the right mouse-click to do so.

Price £39 • Contact StarFish 0181 875 4455



Xtree Gold 3.0 for DOS



DOS lives, whatever Microsoft says about Windows 95 and the graphical interface. Millions of DOS-only PCs are still in use, because they are perfectly adequate for the purposes for which they were bought.

So there remains a demand for Xtree, the most successful of the packages that evolved to facilitate PC housekeeping under DOS. Significantly, it is a favourite among professionals, who still do much of their development work in a DOS environment.

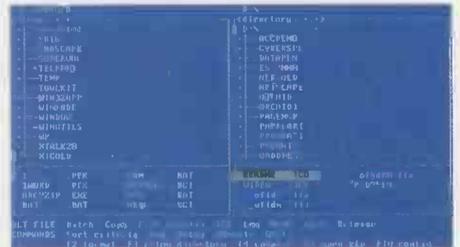
Its features are too many to detail here but even its basics make life with DOS more bearable. It allows you to easily copy, move, undelete and view files, or change their attributes (from read only to read/write, say).

A comprehensive viewer includes a hex mode which allows you to read a file byte by byte.

A split-screen mode shows two disks or directories at once, allowing you to shuffle files between them, and you can search a

set of tagged files (which can extend to an entire disk) for a text string.

XTGold 3.0 is used even by Windows 3.x users because it is faster than the Windows version (having no graphical



overhead) and more versatile than File Manager.

You can run it under Windows 95 but at your peril: 32-bit systems don't like 16-bit file managers digging too deeply. In truth, there is no point: Windows 95 does just about everything XTG does and more elegantly. But to a DOS user, XTG can become well-nigh indispensable.

Price £74.64 (£326.53 for five users) • Contact Symantec 0171 835 1001

Telepower Pro



This is among the cheapest of a new breed of programs providing an affordable national phone directory on disk — a form which has long been outrageously overpriced by British Telecom.

Actually, Telepower Pro is only a business telephone directory but that means it will cover most official needs of most small businesses. At the price, a single-user version could quickly pay for itself in saved DIR calls.

The data sits on a CD which installs an access program on your hard disk. When summoned, this throws up a dialogue box which allows you to narrow your target area to a county, or district, or postcode. A countrywide search is possible and particularly useful for businesses as you are less likely to know where they are based — you would be hard put to get a DIR operator to perform one.

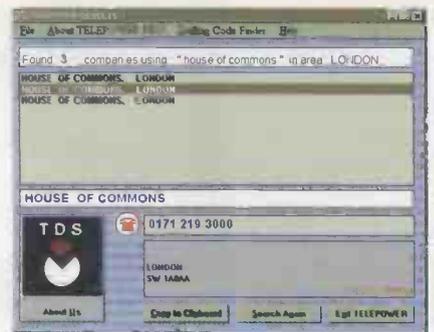
Telepower Pro also gives you a useful national and international dialling-code directory. You cannot dial from within Telepower Pro but a number can be pasted into a dialler, including the one supplied with Win95.

The package also comes in a networked form. You load it onto a networked CD drive and are allocated a password allowing access by however many users you have bought licences for.

If you anticipate very heavy usage you can transfer the files to a hard disk. But the speed from a quad-speed CD drive is acceptable and certainly quicker than phoning DIR.

Price £39.99; network prices start at £399 for ten users.

• Contact TDS 0345 697630



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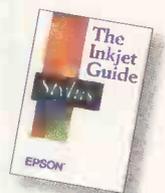
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RAM Doublor

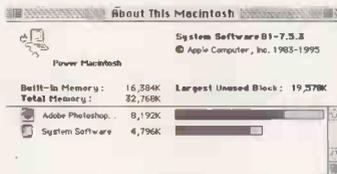


RAM Doublor has become something of a legend in Apple circles. It works with both 68K and PowerPC-based machines and is considered a must-have by just about everyone using a Mac on a day-to-day basis.

As with the Windows version, RAM Doublor does exactly what it says it's going to do on the packaging: it lets users have more programs open simultaneously by using advanced data compression techniques to squash data in memory when it's not in use. This on-the-fly compression has a processor overhead, but the overall difference in system speed is barely noticeable in all but a few applications.

Another benefit specifically for PowerMac users is that RAM Doublor decreases the amount of physical RAM needed to run fast, PowerPC native applications. This is because the PowerPC can then load code written in its own RISC instructions in fragments as and when it is needed. The difference in memory requirements can be quite dramatic — RAM Doublor reduces the amount needed to run the PowerPC version of Microsoft Excel by over six and half megabytes. Turning on Apple's Virtual Memory in the Mac's Memory Control Panel will have the same effect, but the drop in system speed is ridiculous.

Price £59.95 • Contact Partners in Europe 0171 622 3355; www.connectix.com



Stuffit Expander



In the same way that PkWare's ZIP has become the standard method of file archiving and compression on the PC, the Mac world has adopted the Stuffit format. Written by Aladdin Systems, Stuffit Expander lets you quickly uncompress these and other files.

To use Stuffit Expander you just drag your archived file and drop it onto the application's icon. Simple. If all goes well, a few seconds later, a small dialogue box appears and a progress bar fills up as the files are decompressed. On its own Stuffit Expander supports the popular Mac formats .SIT, Compact Pro and MacBinary, but when used in conjunction with Aladdin's DropStuff with Expander Enhancer, will also deal with .ZIP, .ARC, Applelink PKG, BinHex HQX, and Unix Gzip. In



addition, you can use Stuffit Expander to join together files that have been split over several disks with Stuffit.

Stuffit Expander is pretty much automatic, but has a few preference options that allow

you to do things like automatically delete archives after expansion, and continue to expand a set of nested archived files. You would use the later to expand a Stuffit file that has also been uuencoded, for example.

Stuffit Expander has become a godsend in the PCW office, and once you get hold of a copy you'll never want to be without it again. Price Free • Contact Aladdin Systems www.aladdinsys.com

Speed Doublor



Another award-winning product from Connectix, Speed Doublor improves the overall performance of your Mac or PowerMac. It's available on its own, or as a bundle with RAM Doublor for £99.

Speed Doublor comprises three system extensions: Speed Emulator, Speed Access and Speed Copy. The first is perhaps the most interesting, but is designed only for use with PowerMacs. Speed Emulator is Connectix' own version of Apple's Motorola 68LC040 emulation software, the part of the Mac OS that allows PowerPC machines to run software written for older models. Connectix claims its emulator is twice as fast as Apple's because it uses pre-compiled instruction techniques rather than interpreting

Norton Utilities



When it comes to system maintenance and diagnostic tests, the Norton Utilities from Symantec has no equal. Packed with features, it's definitely the best first aid kit you can get for the Macintosh. Period.

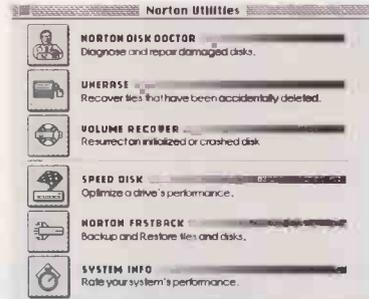
Norton's on the Mac comprises six main programs: Disk Doctor, UnErase, Volume Recover, Speed Disk, Norton Fastback and System Info. There are a few other useful bits including Disklight, which shows when the hard drive is being accessed, and the disk duplicating program, Floppier.

By far the most important is Disk Doctor, which functions identically to the Windows version and has averted many a hard disk disaster in the PCW office. UnErase is obvious and Volume Recover deals with drives that have really gone to pieces.

The two parts most likely to be used by everyone are Speed Disk and Fastback. Running Speed Disk every month is a great way to keep your hard drive fighting fit, unfragmented and ready for those essential Doom sessions.

Fastback is what you need to back up those all-important saved games. Backing up your work is also a good idea.

Finally, System Info can be used to check your system's performance against various standard configurations. Price £99 • Contact Symantec 01734 814230



ResEdit



Utilities that let you poke around the innards of an application aren't something the average Mac user wants to get involved in. Most Mac types like to use programs productively, rather than delve into what makes them tick. ResEdit is the

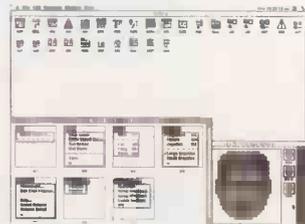
exception to the rule.

Designed by Apple and now on version 2.1.3, ResEdit is an application resource editor. It lets you open up anything, from Adobe Photoshop to System 7.5, and peer inside at the bits that make it work. Resources are shown as categories depicted by icons, and double-clicking on these brings up various editing screens. Resources range from icons and dialogue box contents through to actual code and internal preference settings.

ResEdit can be used with Aaron, the shareware extension that makes the MacOS look more like Apple's up-and-coming Copland operating system. If you open Aaron in ResEdit you can adjust its display settings to suit your own taste. ResEdit can also be used to fix a bug in the current version of Adobe Photoshop which prevents drag and drop operations with non-Photoshop files.

ResEdit isn't something you'd use every day unless you're a programmer, but it's a damn handy thing to have on your hard disk.

Price £13.50 with the ResEdit Reference, or free download from the Web site shown • Contact Full Moon Software 01628 660242; http://www.bekkoame.or.jp/~ykray/



and converting 68K code into the PowerPC code every time it sees it.

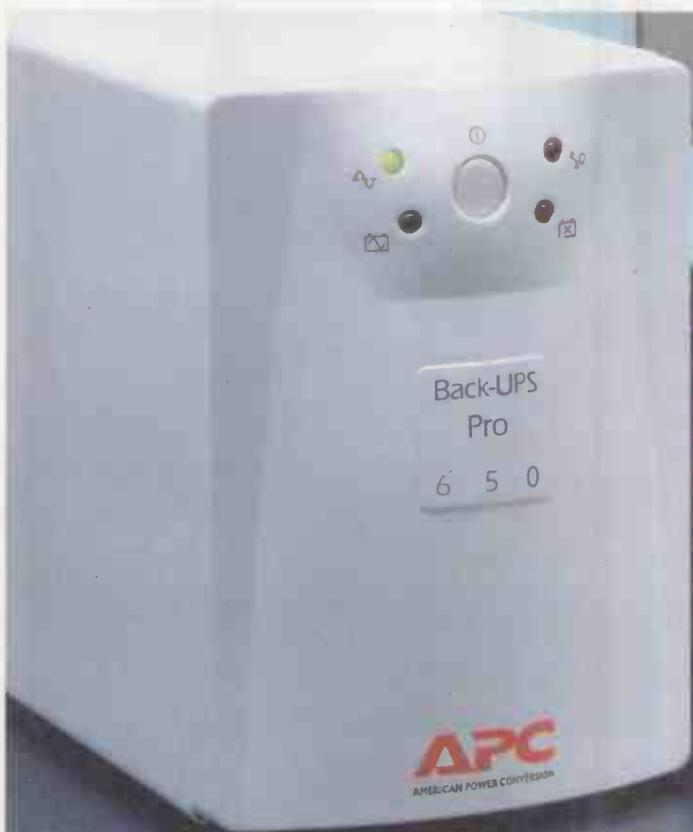
Speed Access is an improved disk caching system which greatly increases the speed of applications that constantly access the hard disk, including the Finder and Doom2. Speed Copy is an enhanced file copying routine that can work in the background.

It got off to a shaky start, but Speed Doublor is now another must-have Mac utility. Be warned — you should use only Version 1.1.2 or higher, as earlier copies of Speed Access had a bug that could result in hard disk corruption. Users of older versions can download a patch from the Connectix Web site. Price £59.95 • Contact Partners in Europe 0171 622 3355; www.connectix.com



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Multimedia station	Back-UPS Pro PnP 420	9 minutes	BP420i PNP
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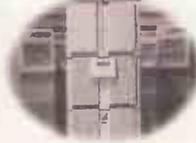
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The best *of* both worlds



The Apricot IS550: a good business machine that clocked up a very respectable Doom2 score

The 166MHz chip is the fastest of the non-Pro Pentiums and will cope better with both 16- and 32-bit code. We review the first batch to hit the market.

LAUNCHED JUST SIX MONTHS ago, the Pentium 166MHz has quickly become the chip everyone is after.

The Pentium Pro is wonderful for 32-bit applications, but stalls badly over 16-bit code. The day we all swap over to pure 32-bit applications on the PC is still a long way off. Meanwhile, for as long as most people are still running a mixture of 16-bit and 32-bit applications, buying a fast Pentium now is still the way to prepare yourself for the demands of any future applications.

In this test of the first wave of P166s to hit the market, we did not specify a hard-and-fast configuration to the manufacturers concerned; we just requested the processor and left the rest up to them. As a result, we received machines which

varied from the consumer-orientated Dell to the high-end dual processor machine from Olivetti, running NT.

The results nevertheless give a good indication of exactly what a P166 is capable of and the kind of performance you can wrench from it. The other specifications are more subjective — it is up to you to decide what you want from a machine. We have therefore judged the machines purely on a price/performance basis.

Apricot IS550

The Apricot was certainly built as a business machine: the first thing that caught our eye when we took the top off was the very well-regarded 3Com Fast Etherlink PCI card, obviously intended for the network user.

Apart from the network card, all adaptors have been done away with. Instead, the sound and video operate from chips directly on the motherboard.

The video chip is from Cirrus Logic and the sound chip is the Vibra 16 from Creative Labs. This frees up valuable space in an otherwise rather small case. For serious multimedia purposes you might want to opt for a better sound card, but if you are looking for a consumer PC then this particular product is probably not the right choice.

Graphics performance does not suffer from being on the motherboard, and the Apricot clocked up a very respectable score at Doom2. This is a test we carry out as a performance marker for the graphics card and hard drive, as well as a test of how a machine copes with low-level applications.

The slots in this machine were all located on a riser card coming from the centre of the motherboard. This is a common design in machines of this nature and can be achieved either very cleverly or very badly. On this occasion, the Apricot seemed to have got the balance right. There was enough space to get at the single 3.5in free bay and full-length cards would be easy to fit in to the space available.

On the performance front the Apricot did well all round, clocking up healthy scores in all our tests. The Windows tests results were slower than those of the Dell and the Gateway, but were more or less in line with what we would expect to see from a P166.

There is no software included in the deal, just the basic operating system, which means added expense for the home user. But the only big disappointment was the monitor. This was a 15in model which could be pushed to 1,280 x 1,024 pixels at a pinch but it flickered like mad. Even running at 800 x 600, the resolution at which we run our tests, the picture was blurred and indistinct. It had very poor colour separation and jumped about badly as you came in and out of a full DOS screen.

PCW Details

Apricot IS 550

Price £2,474

Contact Mitsubishi Electronics
0800 212422. Fax 0121 7173549

Good Points Good low-level performance.

Bad Points Poor monitor. No bundled applications.

Conclusion A solid machine, but it didn't quite match the others in the test on either performance or price

Dell Dimension XPS 166S

When we received the new XPS 166S with a caution from the manufacturer not to expect great performance, we decided to take Dell at its word. With a new motherboard, new Triton 2 chipset and an Alpha BIOS, it was expected to do poorly. But it didn't. In fact, it outperformed the Apricot in our Windows 95 test.

The XPS 166S is Dell's latest addition to its Dimension line of PCs. Based on the Intel Terminator motherboard, it comes with the Intel 82430 VX chipset. As a result of this move to the new motherboard, much of the interior of the



The Dell comes complete with SDRAM and Triton 2

machine has changed. There are still three PCI, three ISA and one ISA/PCI slots for expansion cards, but there's a dramatic change in the make-up of the memory slots. Instead of the usual four 72-pin SIMM slots, there are now only two 168-pin DIMM slots which hold 16Mb of SDRAM. The use of SDRAM is a departure from Dell's normal use of EDO-

PCW Details

Dell Dimension XPS P166S

Price £2,149

Contact Dell 01344 720000;
Fax 01344 723699

Good Points Nice new case, lots of interior room for expansion slots.

Bad points Still in Alpha BIOS stage, so it under-performs in DOS.

Conclusion Early indications look positive and they seemed to have beat their competition to market with the Triton 2 chipset.

RAM for its high-end PCs.

The sub-system was composed of a whopping great Western Digital Caviar AC32500 2.5Gb HDD, a Number Nine Imagine 128 (although it will come with a Motion 771) graphics card, a Teac CD-56E six-speed CD-ROM drive, 512Kb pipeline-burst cache, and an on-board Creative Labs Vibra 16S sound chip.

Externally, the case is different from earlier tower models. There are two spare 5.25in and three 3.5in front-facing expansion bays. To the rear, you'll find the expected PS/2, serial and parallel ports with the extra bonus of a joystick port and audio in/out jacks.

Because the Dell we reviewed was a prototype, it had an Alpha BIOS that hindered certain aspects of its performance, particularly in DOS. This can be seen in the Doom2 result. Otherwise, its better-than-expected performance bodes well for the XPS 166S and we look forward to seeing the finished product in June when Dell expects to begin shipping.

Gateway P5-166 Sovereign



True to form, the Gateway came in a huge case. The amount of free bays you get as a result is amazing: six 3.5in internal and two 5.25in front-facing — no problems if you want an extra hard disk, or two, or three.

On the Intel motherboard there was a CELP socket with 256Kb of cache and 16Mb of RAM in two of the four SIMM sockets. The slots were surprisingly limited considering all the free bays: just four PCI and three ISA (one is shared).

One of the PCI slots is occupied by a Matrox Millennium graphics card with a hefty 4Mb of WRAM. The Matrox is



The Galloping Gateway

regarded as one of the best video cards around today. It is fast, powerful and does not suffer from the compatibility problems associated with some other graphics cards.

The monitor, which has a 17in screen, is a Sony Trinitron, rebadged by Gateway as a Vivitron. It coped remarkably well, running at 1,280 x 1,024. It was stable, flicker-free and had good colour separation.

The multimedia functions were well catered for. There was a six-speed drive from Wearnes and an Ensoniq sound card (a reliable brand).

Performance-wise the Gateway fairly raced away. The Doom2 score was extremely good and the Corel score right up there with the best of them. It could not be faulted on the office applications. All in all, this machine was a performer.

Included in the deal is MS Office Professional 95, the last word in office software. There are no multimedia CDs included, but then, their value is always debatable.

Add all this together and you've got an extremely competitive package. Considering its staggeringly low price, you can't really go far wrong.

PCW Details

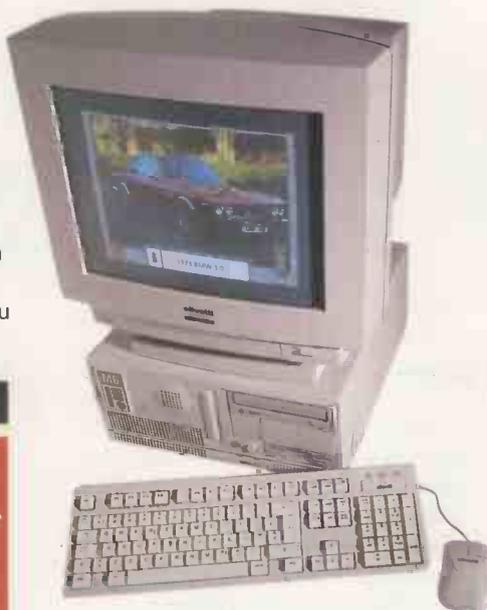
Gateway P5-166 Sovereign
 Price £2,029
 Contact Gateway 2000
 0800 552000; Fax 00353 1848 2022
Good Points Excellent performance and monitor.
Bad Points Limited expansion slots.
Conclusion A good deal all round.

Olivetti M6-690 DP Suprema

The Olivetti machine was just a little different from the others in the test. For starters, it was a dual-processor system with 32Mb of RAM, 512Kb of cache and a 1Gb SCSI-2 hard disk. This configuration is more suited to running an operating system such as Windows NT than Windows 95 and so that's how we tested it in the VNU Labs.

While the case is unlikely to win any prizes — our labs tester commented that it looked like the vented side of his microwave — Olivetti has crammed a lot inside. The dual processors sit on the edge of the motherboard with a Voltage Regulator Module. The RAM is in two SIMMs (one ordinary and one extended) which are underneath the bays. Included on the motherboard is an SMC chip and the machine can be hooked up to a network via a twisted pair connection.

A Matrox Impression video card and an Adaptec SCSI card, which connects the hard disk, project from a riser card and take up the only two PCI slots. There are two free ISA slots and two shared with the PCI slots. A Mozart sound card is located behind the riser card in a separate ISA slot. There's plenty of room for a full-size card in any of the free spaces.



The dual-processor Olivetti wins no prizes for its looks, but there's a lot on the inside

Editor's Choice

Choosing between these machines was no easy matter: each was quite unique. The Olivetti is obviously a machine which should be considered separately as it was the only dual processor and the only machine tested with NT. Its performance and build quality was a little disappointing.

Of the remaining three, two stand out. Firstly, the Dell for being an innovative product. It is the first machine we have seen with a Triton II chipset and SDRAM. There are still teething problems with the BIOS, although these should be sorted out by the time it is in full production. Notwithstanding, it performed admirably and the price is hardly outrageous considering the new technologies that were included.

Secondly, the Gateway had to come out on top for pure speed and excellent price. If you are looking for a P166, you are looking for a fast mover, and the Gateway more than matches this criterion. It was a clear winner both in the Windows and Doom tests, suggesting good all-round component performance. Finally, its price is not to be sneezed at, and so the Gateway wins our Editor's Choice.

The bays were tightly-packed. A Sony 6x IDE CD-ROM drive sits on top with one free 5.25in bay beneath it and then the floppy drive and the hard drive at the bottom. Don't even think about trying to get down to this to replace it — we had to squint in at obscure angles just to find it.

When you consider that this is a dual-processor machine, the performance was disappointing. We had problems with it when it first came in and had to wipe the hard disk and reinstall NT from scratch. The performance results were compared with an Olivetti Pentium Pro 150 with 32Mb of RAM and running Windows NT. It is interesting to note that it did best on the Excel 7 tests, where the structure of the code is best suited to the dual processor architecture.

Adele Dyer & Dylan Armbrust

PCW Details

Olivetti M6-690 DP Suprema
 Price £4,459
 Contact Olivetti 0800 447799.
 Fax 01908 203464

Good Points Fast on the Excel 7 tests.
Bad Points Crammed-in build quality, ugly case.
Conclusion Overall, not as fast as we had hoped. Slightly disappointing.

Enterprise Executive '95

Look through the vast portals of this magazine and you realise just why those Brazilian Rainforests are disappearing so fast! Page after Page and Advert after Advert all much the same, or are they?



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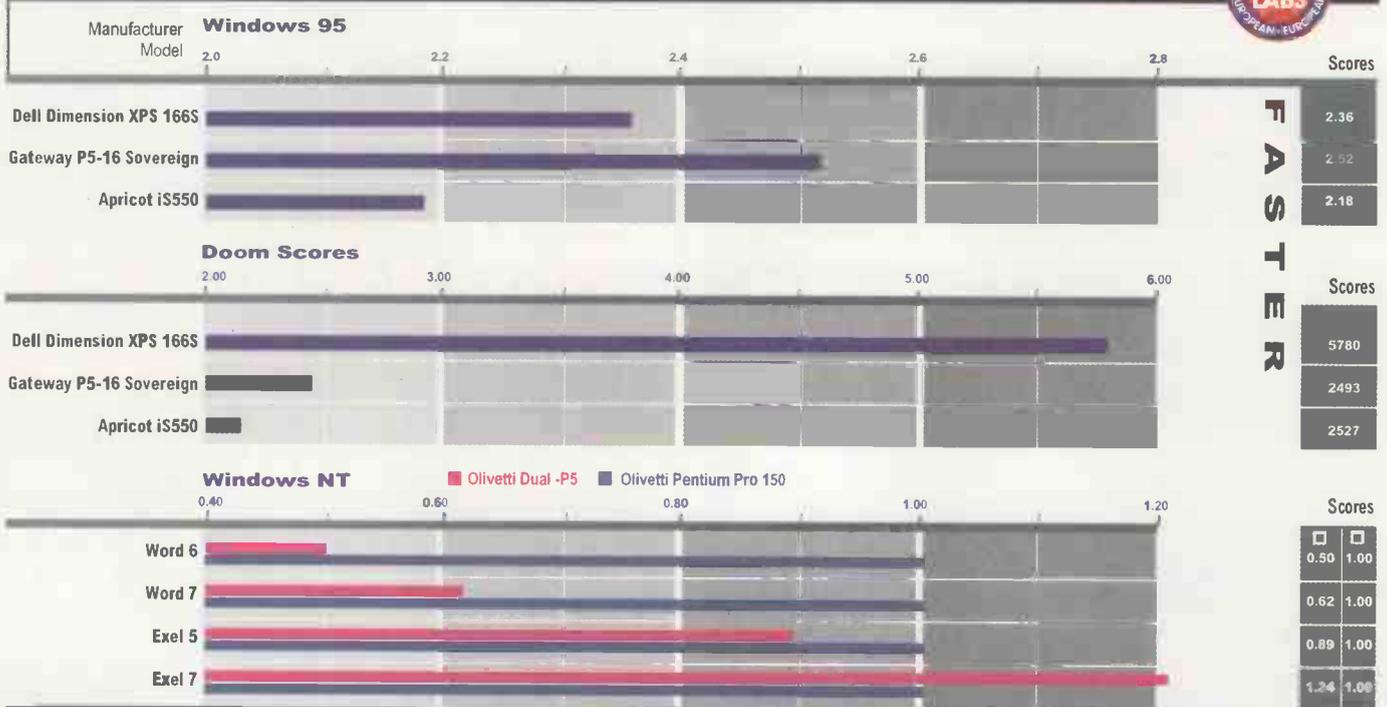
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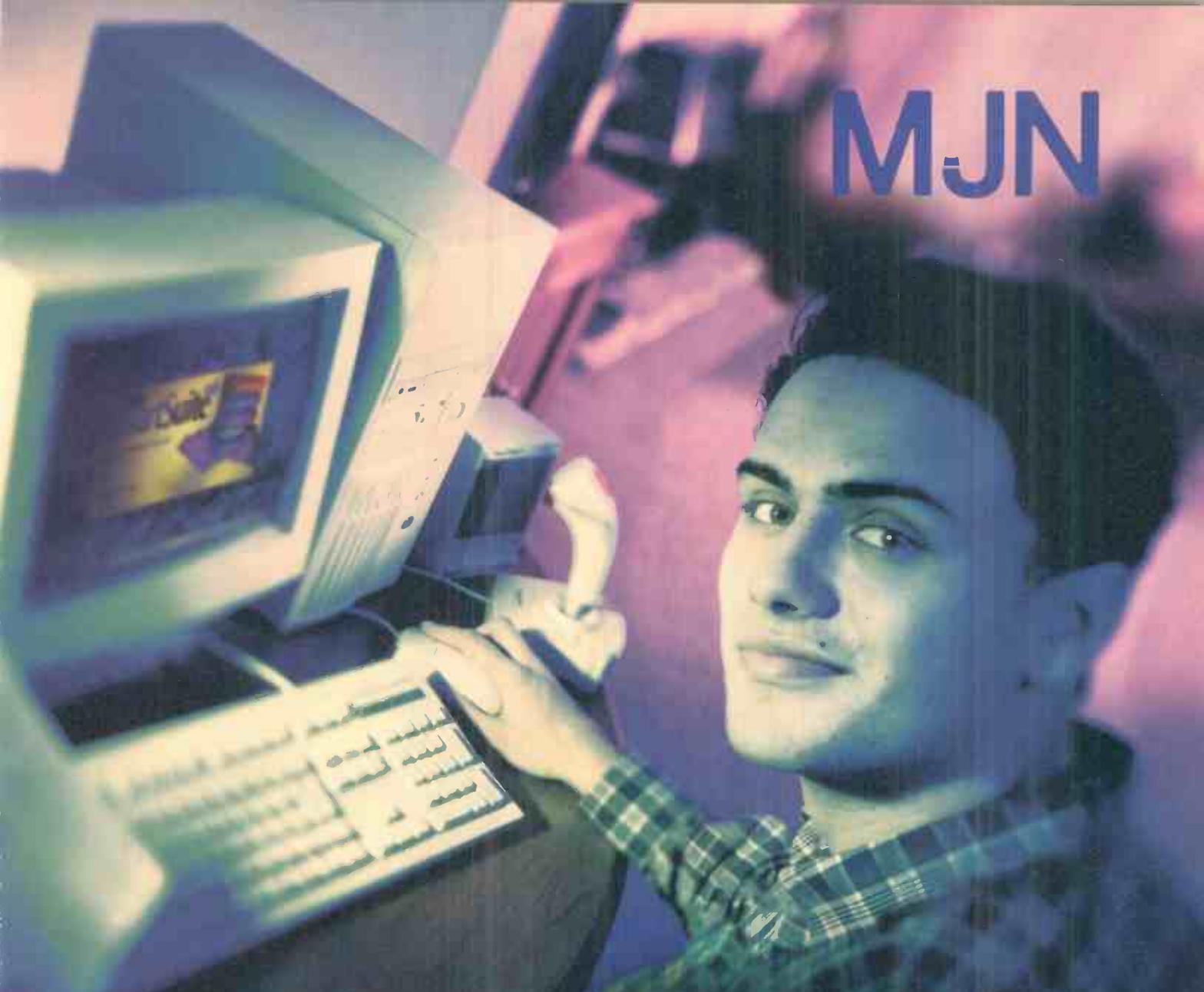
* 3 year warranty - first year parts/labour, BTB, then RTB labour only. E & OE. Prices and specifications subject to change without prior notification ** Offer applies to above models only (without Multi Media). All offers subject to availability - all prices exclude VAT at 17.5% and carriage. The cosmetic appearance of some models may change due to ongoing improvements. The model illustrated has multi-media upgrade option.

PENTIUM 166MHZ CHIPS TABLE OF FEATURES

Manufacturer and model	Apricot IS 550	Dell Dimension XPS P166S	Gateway P5-166 Sovereign	Olivetti M6-690 DP Suprema
Tel no	0800 212422	01344 720000	0800 552000	0800 447799
Fax no	0121 717 0132	01344 723699	00 353 1 848 2022	01908 203464
Price (excl VAT)	£2474	£2149	£2029	£4459
Local bus architecture	PCI	PCI	PCI	PCI
Free local bus only slots	1	3	3	1
Free ISA only slots	3	2	2	3
Free shared local bus/ISA slots	1	1	1	1
Motherboard manufacturer	Apricot	Intel	Intel	Olivetti
Chipset	Triton	Intel 82430UX	Triton	VCSI
No of spare 3.5in bays	2	3	3	1
No of spare 5.25in bays	0	2	3	1
Hard disk manufacturer	Quantum	Western Digital	Western Digital	Seagate
Hard disk size	1.2Gb	2.5Gb	1.6Gb	1Gb
Hard disk interface	EIDE	EIDE	EIDE	SCSI-2
Main/Max RAM	16Mb/128Mb	16Mb/64Mb	16Mb/128Mb	16Mb/128Mb
RAM type	EDO	SDRAM	EDO	Parity Memory
SIMM type (pins)	72-pin	168-pin DIMM 3.3 volt	72-pin	72-pin
L2 cache/max cache	256Kb/512Kb	256Kb/512Kb	256Kb/512Kb	512Kb/512Kb
Cache type	Pipeline Burst	Pipeline Burst	Pipeline-Burst	Pipeline-Burst
CD-ROM	Sony CDU-77E	TEAC CD-56E	Wearnes	Sony CDU-76E
CD-ROM speed	4X	6X	6X	4X
Sound card	Creative Labs Vibra 16	Creative Labs AWE32	Ensoniq SoundScape	Mozart
Graphics card	Cirrus Logic GD 5434	Number Nine Motion 771	Matrox	Matrox Impression
Graphics card RAM/max RAM	2Mb / 2Mb	2Mb VRAM	4Mb	2Mb / 4Mb
Graphics card max non-interlaced resolution	1280x1024x256 @ 75Hz	1600x1200x256@60Hz	1600x1200x256 @ 70Hz	1280x1024x256 @ 75Hz
Monitor	Apricot XJ54748	Nokia 447W D1728-TCO	Sony Vivitron	Olivetti DSM50171
Monitor size (in)	15	17	17	17
Monitor max refresh rate (1024x768)	75Hz	75Hz	80Hz	75Hz
Software supplied	Windows 95 or Windows 3.11	Windows 95, Office Pro 95	Windows 95, Office Pro 95	Windows NT 3.51 Workstation
Standard warranty	3 yrs — 1st on-site,	1 yr collect and return	1 yr on-site, 3 yrs parts (back to base)	3 yrs — 1 yr on-site
Warranty options	2nd and 3rd return to base	Up to 5 yrs collect and return, upgrade to on-site service available	2nd and 3rd yr on-site	2nd and 3rd yr return to base
Telephone support	No	Yes	Yes	Yes
Fax support	No	Yes	Yes	Yes

Performance Results





MJN

**MJN P133, 16Mb Multimedia
Performance System
with x6 CD-ROM at**

£1199 + VAT

£1403.83 inc. VAT

Telephone

MJN on

01 282 777 555



MJN P100, 16Mb CD Business System at £1069 + VAT

£1256.06 inc. VAT

MJN High Performance CD Business Systems incorporate the latest technology and advanced features that are demanded by today's business users. These systems include Intel® Pentium® processors, fast CD-ROM drives, business sound and come ready to use with Windows® 95 and the entire suite of Lotus high end applications as standard. Our Best Buy P100 CD model is available with 16Mb RAM and quad CD-ROM for a remarkable £1069+VAT!

A Range Designed By You

We asked our customers for the most important features they wanted in their PC. We listened to their suggestions which included more choice, higher performance, quality components, easy upgradeability - and all these at a competitive price with top service and support. All these features are incorporated in the MJN range of personal computers.

Choice Of Expandable Case Styles

MJN systems feature a choice of ergonomically designed cases with small footprints and massive expansion potential. These include a seven bay desktop, eight bay midi tower and nine bay full tower with heavy duty CE approved power supplies.

Highest Performance Components

The motherboards, graphics adaptors and hard disks used in these systems are amongst the highest performance components available. Our high performance systems feature the latest Intel 430HX chipset with 512k burst mode cache,

“The best performer of the review group”

PC User

MJN P100 CD

- Intel 100MHz Pentium processor
- 16Mb RAM (Max 128Mb)
- 1.08Gb enhanced IDE hard disk
- 256K Pipeline burst cache
- Quad speed IDE CD-ROM
- 16-bit sound card
- 3.5" 1.44Mb floppy drive
- Parallel and 2 serial ports
- 64-bit PCI integrated graphics
- 14" SVGA 0.28dp NI colour screen
- 105 Windows 95 keyboard and mouse
- Expandable desktop case with 7 drive bays

Software

- Microsoft Windows 95
- Lotus SmartSuite 96 for Windows 95
Lotus 1-2-3, Lotus Freelance 96, Lotus Word Pro 96,
Lotus Approach 96, Lotus Organizer, Lotus ScreenCam,
Lotus SmartPics graphics
- GSP Pressworks, Designworks and Money

Other MJN CD Business System

MJN P100-8 CD desktop

with 8Mb RAM, and 850Mb hard disk

£899 + VAT



Every MJN CD Business System comes with a complete range of software from Lotus including Lotus SmartSuite 96.

MJN P133 CD midi tower

with 16Mb RAM, 256k pipeline burst cache, six speed CD-ROM drive, business sound and 1.08Gb hard disk

£1169 + VAT

Options

- 4w stereo speakers.....plus £10+VAT
- 15w stereo speakers.....plus £30+VAT
- 70w stereo speakers.....plus £60+VAT
- 28.8 External modem.....plus £140+VAT
- 15" .28dp NI screen upg.....plus £70+VAT

2MJNBS9A

Business user prices shown. All prices exclude VAT at 17.5% and delivery

Photograph taken at Portland Tower, Manchester

EDO RAM and fast 64-bit PCI graphics cards with VRAM. Many of our most popular models feature the latest Intel shared memory bus architecture which allows powerful 64-bit integrated PCI graphics to use 1Mb of fast 64-bit main RAM as graphic memory. This can be increased to 2Mb to give higher resolution / more colours, using the software setup at no extra cost - particularly useful with 16Mb systems.

Optimised For Windows 95

Most of our Windows 95 systems feature 16Mb RAM and all the components are optimised for smooth and fast running of Windows 95. We strongly recommend 16Mb RAM

Designed for



Microsoft®
Windows® 95

Future-Proof Upgradeability

All Intel® Pentium® processor based systems are upgradeable to the next generation of processors. Our system design allows easy upgradability of RAM, graphics and storage devices.



Quality Is The Key To Our Success

MJN manufacturing is certified by BSI to ISO 9002 (BS5750) quality standard and all our new PC systems are designed to comply with CE safety and emission standards. Our service, support and quality systems are also certified to ISO 9002.



Certificate No. FS 28122
BS EN ISO 9002:1994

Wider Range Of Software Options

As well as the superb Lotus software suite (Lotus Smartsuite 96 for Windows 95) which comes as standard with many systems, we also offer you a superb range of bundled multimedia titles with our multimedia systems.

Backed By Superb Service And Support

Our knowledgeable sales staff can offer advice on your requirements and are backed by teams of technical support staff to quickly resolve any problems.

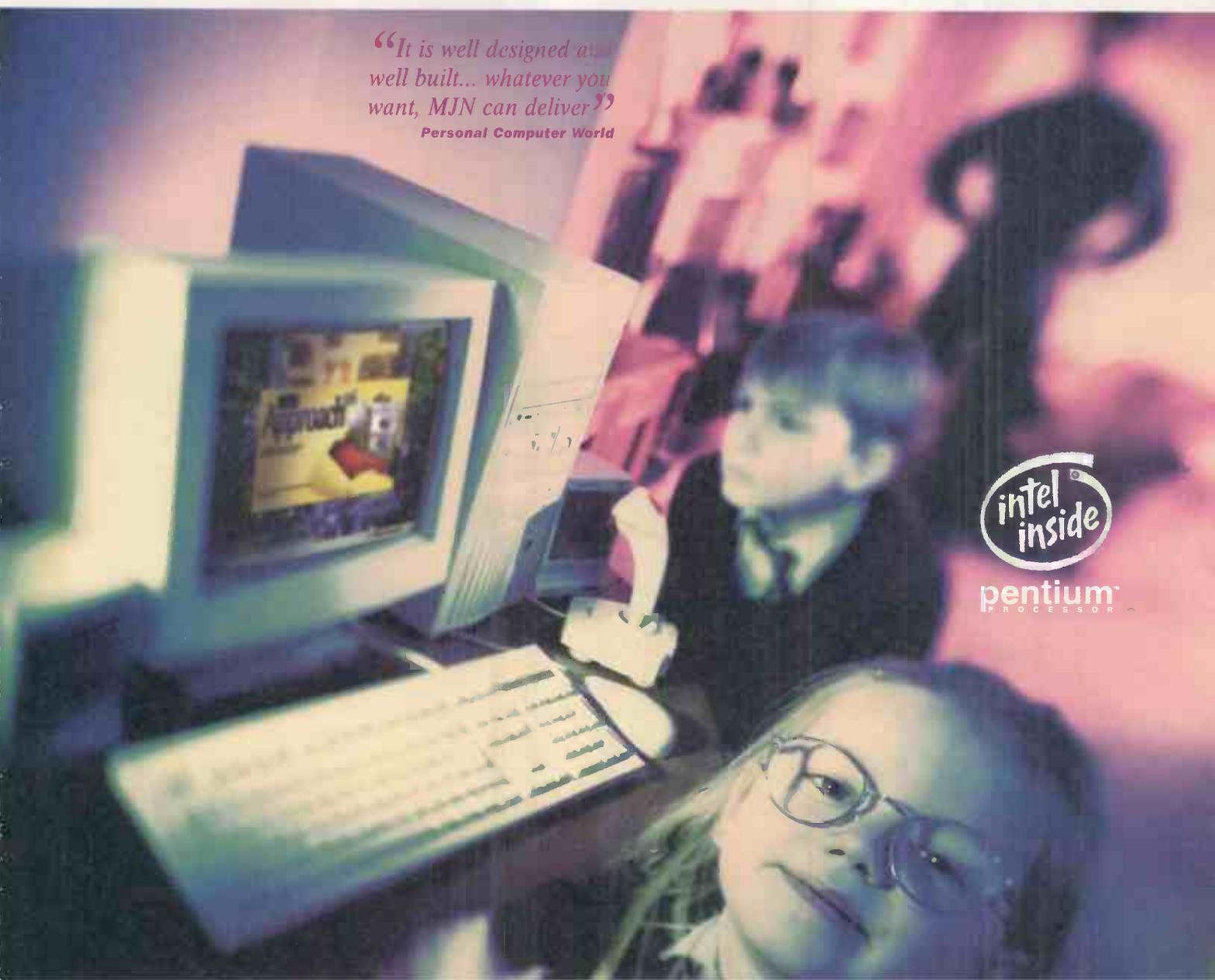
The Best Value in the UK

Our manufacturing strength, direct relationships with the world's leading component manufacturers and direct supply to our customers without any dealer outlets allows us to offer these top quality systems at unbeatable prices. Compare our specifications, quality and performance with any other manufacturer and we are confident that you will be impressed by our value.

Buy with Confidence from MJN

MJN is one of UK's leading PC manufacturers with group turnover over £100 million in the UK alone. MJN systems have been a favourite amongst corporate buyers, government departments and educational users over many years and have received Best Buys and Recommendations from all of the UK's leading PC publications. Call us today for the best value in the UK.

"It is well designed and well built... whatever you want, MJN can deliver"
Personal Computer World



Telephone **MJN** on
01 282 777 555

MJN Technology Ltd, Granville House, Blackburn Rd, Simonstone, Burnley, Lancs, BB12 7GT.



MJN 486DX4-100P
September 95



MJN P75P/CD
August 95



MJN P90P/CD
May 95



MJN P90/CD
May 95



MJN P60P/CD
February 95



MJN P90 MM
December 95

Business user prices shown. End user enquires welcome. All prices exclude delivery and VAT. UK mainland courier delivery is £25 +VAT (£29.38). Software applications are provided on CD or pre-loaded with on-line documentation. Intel® inside and Pentium® processor logos are registered trademarks of Intel® corporation. The peripherals and upgrades listed are sold only with the purchase of an MJN system. E&OE.

3MJNINBA

MJN P100, 16Mb Multimedia System at £1099^{+VAT}

£1291.33 inc. VAT



MJN multimedia desktop systems are available in an ergonomic seven bay desktop case. All systems feature latest Intel® Pentium® processor based motherboards with socket 7 upgradeability, ultra fast 64-bit PCI graphics, large enhanced IDE hard disks and fast quad speed CD-ROM drives with full-feature multimedia.

These systems also include superb multimedia titles such as Infopedia multimedia encyclopaedia and BodyWorks together with the best business software suite from Lotus. Our popular P100 desktop system comes with an incredible 16Mb RAM, large 1.08Gb hard disk and full-feature quad speed multimedia.



“The best performing machine of the lot... blisteringly fast hard disk performance with one of the highest ratings ever recorded in Shopper”

Computer Shopper

Screen and Speaker Upgrade Options

- 14" .28dp NI to 15" NI screen.....plus £70+VAT
- 15" NI to 17" NI screenplus £230+VAT
- 4w to 15w speakers.....plus £20+VAT
- 4w to 70w speakers.....plus £50+VAT
- 28.8 BABT external fax/data modem.....plus £160+VAT

Other Options

Please call for details

Quickshot PC microphone, MJN mouse mat, MJN total cover 3 year warranty, Lotus back-up CD

Printers

HP DeskJet 600, HP DeskJet 660C, Epson Stylus Color 2S, Epson Stylus Color 2, NEC Laser Printer

Business user prices shown. All prices exclude VAT at 17.5% and delivery

Tel. 01 282 777 555. Fax 01 282 77 08 44. Business user prices shown. Consumer enquiries welcome. All prices exclude delivery (£25+VAT=£29.38) and VAT (17.5%). Software applications are provided on CD or pre-loaded with on-line documentation. Screen sizes shown are CRT sizes as per industry practice. Pack shots shown for purposes of illustration only. Goods are normally despatched within 7 to 14 days. All orders will be fulfilled within 28 days unless otherwise notified. Specifications, prices and availability are subject to change without notice. Products sold subject to our conditions of sale copies of which are available on request. The peripherals and upgrades listed are sold only with the purchase of an MJN system. Intel Inside and Pentium logos are registered trademarks of Intel Corporation. E&OE.

4MJNDT9A

MJN P100-8 CD desktop

- Intel 100MHz Pentium® processor
- Plug & play motherboard with Intel socket 7
- 8Mb RAM, (7Mb free; max 128Mb)
- 850Mb enhanced IDE hard disk
- 256k Pipeline burst mode cache
- Quad speed IDE CD-ROM drive
- 16-bit stereo sound card
- 3.5" 1.44Mb floppy drive
- Enhanced parallel and 2 high speed serial ports
- PCI 64-bit integrated graphics with video acceleration (uses 1Mb of system RAM)
- 14" crisp sharp 0.28dp NI SVGA screen
- 105 Windows® 95 keyboard and mouse
- Expandable desktop case with 7 drive bays

Software

- Microsoft® Windows 95
- Lotus SmartSuite 96 for Windows® 95 including, Word Pro 96, Freelance 96, Approach 96, 1-2-3, Organizer, SmartPics graphics
- GSP Pressworks and Designworks drawing and DTP suite
- GSP Homewise and GSP Money

£899^{+VAT}
£1056.33 inc. VAT

MJN P100-8 MM desktop

With joystick, speakers, and five CD multimedia titles

£939^{+VAT}
£1103.33 inc. VAT

MJN P100 MM desktop

- Intel 100MHz Pentium® processor
- Plug & play motherboard with Intel socket 7
- Massive 16Mb RAM (max 128Mb)
- 1.08Gb enhanced IDE hard disk with 256k cache
- 256k Pipeline burst mode cache
- Quad speed IDE CD-ROM drive
- 16-bit stereo sound card
- Twin stereo speaker system
- Quickshot joystick
- 3.5" 1.44Mb floppy drive
- Enhanced parallel and 2 high speed serial ports
- PCI 64-bit integrated graphics with video acceleration
- 14" crisp sharp 0.28dp NI SVGA screen
- 105 Windows 95 keyboard and mouse
- Expandable desktop case with 7 drive bays

Software

- Microsoft Windows 95
- Lotus SmartSuite 96 for Windows 95 including, Word Pro 96, Freelance 96, Approach 96, 1-2-3, Organizer, SmartPics graphics
- GSP Pressworks and Designworks drawing and DTP suite
- GSP Homewise and GSP Money
- Infopedia multimedia encyclopaedia CD
- BodyWorks v5 CD
- WinTutor 95 CD
- Shareware games pack CD

£1099^{+VAT}
£1291.33 inc. VAT

MJN P100 MM best buy

With 28.8 external modem, 15" NI screen and 15w speakers

£1299^{+VAT}
£1526.33 inc. VAT



All the MJN multimedia systems come with the best CD multimedia titles and Lotus SmartSuite 96 business software

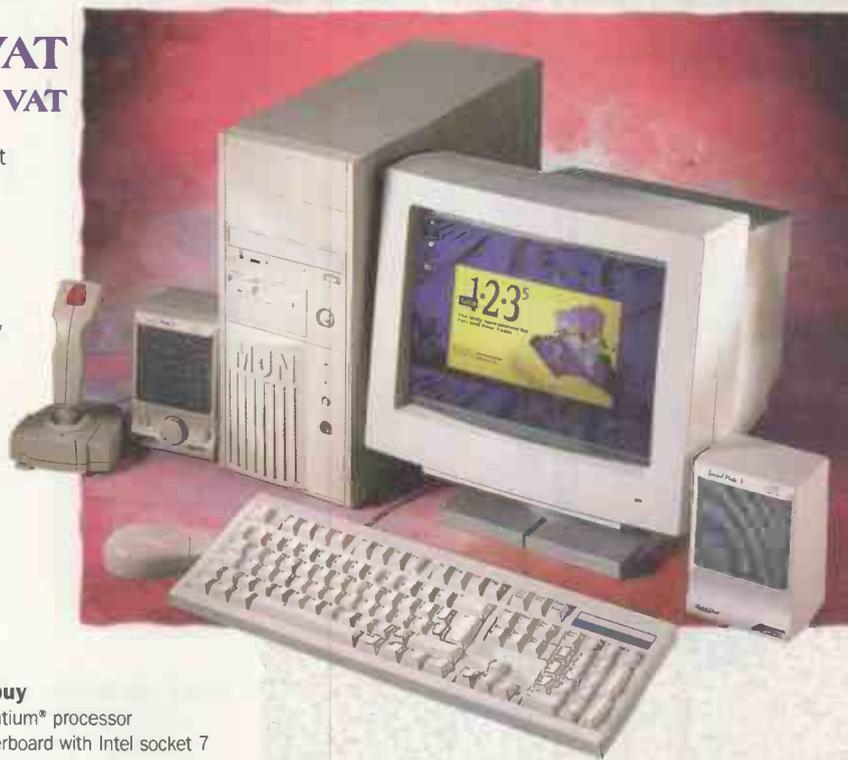
MJN P133 16Mb Multimedia System with x6 CD-ROM at

£1199 + VAT

£1403.83 inc. VAT

MJN multimedia midi tower systems feature the highest quality high performance components and come packed with features at prices that provide you with incredible value. All systems feature latest Intel® Pentium® processor based motherboards with Socket 7 upgradeability, ultra fast 64-bit PCI graphics, large enhanced IDE hard disks and fast six speed CD-ROM drives with full-feature multimedia. Our best buy performance P133 midi tower system includes 16Mb RAM, six speed CD-ROM drive, massive 1.08Gb hard disk, 15" screen and a fast 28.8 fax and data modem and associated fax and Internet software at just £1399 +VAT.

Also included are superb multimedia titles such as WinTutor 95 tutorial, Infopedia multimedia encyclopaedia, BodyWorks and the best business software suite from Lotus. Compare the specification of our systems with any other and we are confident you will agree that when it comes to multimedia, MJN is your best choice.



MJN P133 MM midi tower

- Intel 133MHz Pentium® processor
- Plug & play motherboard with Intel socket 7
- 256k Pipeline burst mode cache
- 16Mb RAM (max 128Mb)
- 1.08Gb enhanced IDE hard disk
- Six speed IDE CD-ROM drive
- 16-bit stereo sound card
- Twin stereo speaker system
- Quickshot joystick
- 3.5" 1.44Mb floppy drive
- Enhanced parallel and 2 high speed serial ports
- PCI 64-bit integrated graphics with video acceleration
- 14" crisp sharp 0.28dp NI SVGA screen
- 105 Windows® 95 keyboard and mouse
- Expandable midi tower case with 8 drive bays

Software

- Microsoft® Windows 95
- Lotus SmartSuite 96 for Windows 95 including, Word Pro 96, Freelance 96, Approach 96, 1-2-3, Organizer, SmartPics graphics
- GSP Pressworks and Designworks drawing and DTP suite
- GSP Homewise and GSP Money
- Infopedia multimedia encyclopaedia CD
- BodyWorks v5 CD
- WinTutor 95 CD
- Shareware games pack CD

MJN P133 best buy

- Intel 133MHz Pentium® processor
- Plug & play motherboard with Intel socket 7
- 16Mb RAM (max 128Mb)
- 256k Pipeline burst mode cache
- 1.08Gb enhanced IDE hard disk
- Six speed IDE CD-ROM drive
- External 28.8 BABT fax/data modem
- 16-bit Stereo sound card
- Twin large 15w stereo speaker system
- Quickshot joystick
- 3.5" 1.44Mb floppy drive
- Enhanced parallel and 2 high speed serial ports
- PCI 64-bit integrated graphics with video acceleration
- 15" crisp sharp 0.28dp NI SVGA screen
- 105 Windows 95 keyboard and mouse
- Expandable midi tower case with 8 drive bays

Software

- Microsoft Windows 95
- Lotus SmartSuite 96 for Windows 95 including, Word Pro 96, Freelance 96, Approach 96, 1-2-3, Organizer, SmartPics graphics
- GSP Pressworks and Designworks drawing and DTP suite
- GSP Homewise and GSP Money
- Infopedia multimedia encyclopaedia CD
- BodyWorks v5 CD
- WinTutor 95 CD
- Shareware games pack CD

"Best Buy, we can thoroughly recommend the MJN"

PC Plus

Buy MJN with confidence

Fast processors

All systems use fast Intel Pentium® processors with speeds from 100MHz to 166MHz

Advanced motherboards

Latest plug & play motherboards with Intel socket 7 for future upgradeability

Advanced 64-bit graphics

Many of our systems feature advanced 64-bit integrated graphics with fast windows acceleration and video acceleration. The 64-bit graphics use 1Mb of system RAM and can be BIOS selected to use 2Mb RAM in 16Mb system to give higher resolution and colours at no extra cost.

16Mb RAM and burst mode cache

All our multimedia systems now include 16Mb RAM (8Mb on P100-8) and pipeline burst mode cache to give superb performance when running Windows 95. Windows 95 runs slowly on all 8Mb systems. Remember burst mode cache is far superior to having just EDO RAM.

Fast CD-ROM drives

Fast quad, six speed or eight speed CD-ROM drives with top quality sound cards are now standard

Top quality business software

Lotus SmartSuite 96 for Windows 95 is the latest and best version of this superb software suite that includes everything you are likely to need for business use. We also include top quality educational and leisure software.

Personal Finance

All systems are available on Personal Finance APR 19.8%. Please call for details. Be sure you can afford the payments before entering into a credit agreement.

5MJNMT9A

£1199 +VAT
£1403.83 inc. VAT

£1399 +VAT
£1643.83 inc. VAT

Telephone **MJN** on
01 282 777 555

All the MJN multimedia systems come with the best CD multimedia titles and Lotus SmartSuite 96 software

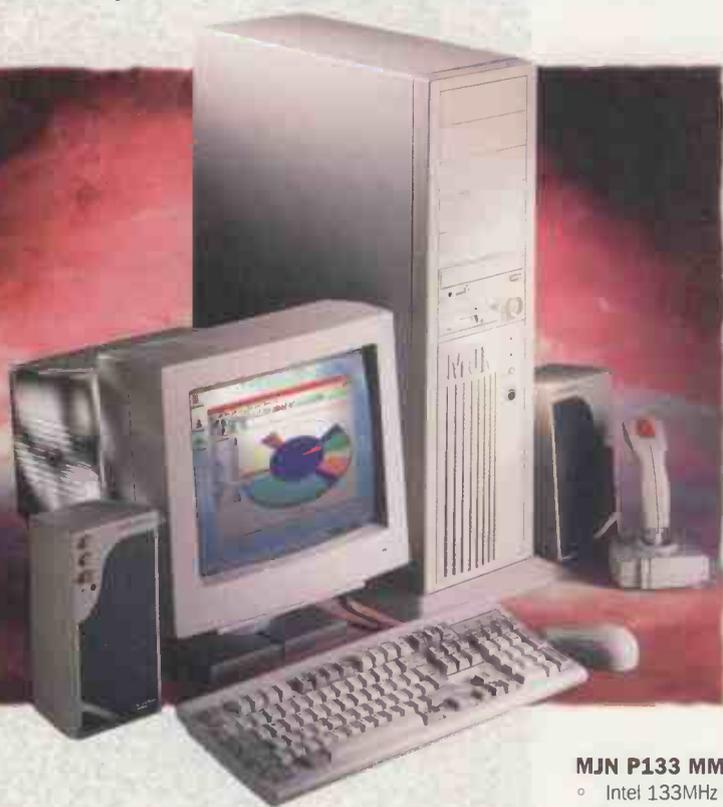
MJN Technology Ltd, Granville House, Blackburn Rd, Simonstone, Burnley, Lancs, BB12 7GT.



MJN P133, 16Mb Multimedia System with x8 CD-ROM at

£1399 +VAT

£1643.83 inc. VAT



“you can put the exceptional performance down to the fact that the machine uses good quality brand-name components”

What Personal Computer

Screen and Speaker Upgrade Options

15" NI to 17" NI screenplus £230+VAT
 4w to 15w speakersplus £20+VAT
 4w to 70w speakersplus £50+VAT

Other Options

Please call for details

Quickshot PC microphone, MJN mouse mat, MJN total cover 3 year warranty and Lotus back-up CD

Printers

HP DeskJet 600, HP DeskJet 660C, Epson Stylus Color 2S, Epson Stylus Color II, NEC Laser Printer

Personal Finance

All systems are available on personal finance APR 19.8%. Please call for details. Be sure you can afford the payments before entering into a credit agreement.

Business user prices shown. All prices exclude VAT at 17.5% and delivery

Tel. 01 282 777 555. Fax 01 282 77 08 44. Business user prices shown. Consumer enquiries welcome. All prices exclude delivery (£25+VAT=£29.38) and VAT (17.5%). Software applications are provided on CD or pre-loaded with on-line documentation. Screen sizes shown are CRT sizes as per industry practice. Pack shots shown for purposes of illustration only. Goods are normally despatched within 7 to 14 days. All orders will be fulfilled within 28 days unless otherwise notified. Specifications, prices and availability are subject to change without notice. Products sold subject to our conditions of sale copies of which are available on request. The peripherals and upgrades listed are sold only with the purchase of an MJN system. Intel Inside and Pentium logos are registered trademarks of Intel Corporation. E&OE.

6MJNFT9A

MJN multimedia full tower systems include the highest performance components in a truly expandable nine bay full tower case. Our best buy systems feature the latest Intel® Pentium® processor based motherboards with socket 7 upgradeability, ultra fast 64-bit PCI graphics, large enhanced IDE hard disks, eight speed CD-ROM drives, superb screens and fast 28.8 BABT approved modems.

These systems also include top quality multimedia titles such as Infopedia full feature multimedia encyclopaedia, WinTutor Windows® 95 tutorial and BodyWorks together with the best business software suite from Lotus. Our performance P133 'best buy' full tower system comes with the latest, large 1.6Gb hard disk, eight speed CD-ROM drive, 15" screen and fast 28.8 modem.

MJN P133 MM full tower

- Intel 133MHz Pentium processor
- Plug & play motherboard with Intel socket 7
- 16Mb RAM (max 128Mb)
- 256k Pipeline burst mode external cache
- 1.6Gb enhanced IDE hard disk with 256k cache
- Eight speed IDE CD-ROM drive
- 16-bit stereo sound card
- Twin stereo speaker system
- Quickshot joystick
- 3.5" 1.44Mb floppy drive
- Enhanced parallel and 2 high speed serial ports
- PCI 64-bit integrated graphics with video acceleration
- Superb 14" 0.28dp NI SVGA screen
- 105 Windows 95 keyboard and mouse
- Expandable full tower case with 9 drive bays

Software

- Microsoft® Windows 95
- Lotus SmartSuite 96 for Windows 95 including Word Pro 96, Freelance 96, Approach 96, 1-2-3, Organizer, SmartPics graphics
- GSP Pressworks and Designworks drawing and DTP suite
- GSP Homewise and GSP Money
- Infopedia multimedia encyclopaedia CD
- BodyWorks v5 CD
- WinTutor 95 CD
- Shareware games pack CD

MJN P166 MM full tower

- Intel 166MHz Pentium processor
- Plug & play motherboard with Intel socket 7
- Latest Intel 430HX chipset
- 16Mb EDO RAM (max 128Mb)
- 512k Pipeline burst mode external cache
- 2.0Gb enhanced IDE hard disk
- PCI 64-bit graphics with 2Mb VRAM
- Eight speed IDE CD-ROM drive
- 28.8 BABT approved external fax and data modem with fax and Internet software
- Orchid NuSound 3D wavetable sound card
- Powerful 70w twin stereo speaker system
- Quickshot joystick
- 3.5" 1.44Mb floppy drive
- Enhanced parallel and 2 high speed serial ports
- Superb 15" 0.28dp NI SVGA screen
- 105 Windows 95 keyboard and mouse
- Expandable full tower case with 9 drive bays

Software

- Microsoft Windows 95
- Lotus SmartSuite 96 for Windows 95 including Word Pro 96, Freelance 96, Approach 96, 1-2-3, Organizer, SmartPics graphics
- GSP Pressworks and Designworks drawing and DTP suite
- GSP Homewise and GSP Money
- Infopedia multimedia encyclopaedia CD
- BodyWorks v5 CD
- WinTutor 95 CD
- Shareware games pack CD

£1399 +VAT

£1643.83 inc. VAT

£2199 +VAT

£2583.83 inc. VAT

Best buy model

With 15" 0.28dp NI screen, 15w speakers and 28.8 modem

£1599 +VAT

£1878.83 inc. VAT

All the MJN multimedia systems come with the best CD multimedia titles and Lotus business software including SmartSuite 96



MJN P100, 8Mb, 850Mb Workstation at

£779^{+VAT}

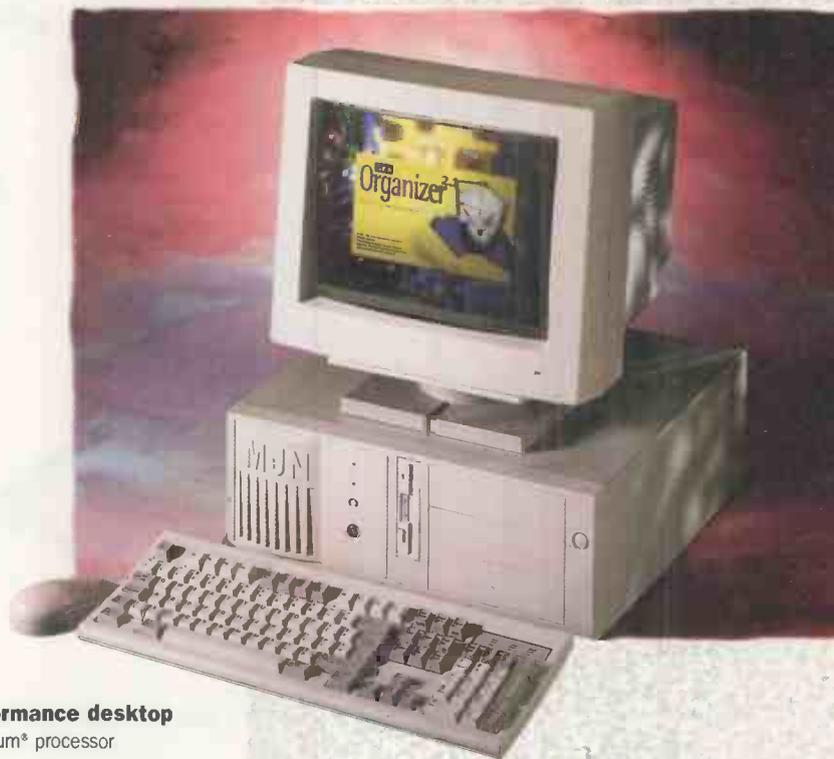
£915.37 inc. VAT

MJN Pentium® processor based workstations include a minimum of 8Mb RAM, 850Mb hard disk and crisp sharp 0.28 dp screen and are the ideal systems for business, corporate and educational users. They are suited to both network and stand alone applications. These systems can be tailored to your requirements with appropriate software,



operating system and network configurations.

MJN file servers are available with a range of configurations which can be tailored to your individual requirements.



MJN P100 W desktop

- Intel® 100MHz Pentium® processor
- 8Mb RAM, (7Mb free; max 128Mb)
- 850Mb enhanced IDE hard disk
- 3.5" 1.44Mb floppy drive
- 64-bit PCI integrated graphics (uses 1Mb RAM)
- 14" SVGA 0.28dp NI colour screen
- 105 keyboard and mouse
- Desktop case with 7 drive bays
- Select required operating system and options

£779^{+VAT}

£915.33 inc. VAT

MJN P100 W performance desktop

- Intel 100MHz Pentium® processor
- Intel 430 FX chipset
- 8Mb EDO RAM (Max 128Mb)
- 256k Pipeline burst mode cache
- 850Mb enhanced IDE hard disk
- 3.5" 1.44Mb floppy drive
- S3 64-bit PCI graphics card with 1Mb DRAM
- 14" SVGA 0.28dp NI colour screen
- 105 keyboard and mouse
- Desktop case with 7 bays
- Select required operating system and options

£889^{+VAT}

£1044.58 inc. VAT

MJN P133 W performance midi tower

- Intel 133MHz Pentium® processor
- Latest Intel 430HX chipset
- 512k Pipeline burst mode cache
- 8Mb EDO RAM (Max 128Mb)
- 850Mb enhanced IDE hard disk
- 3.5" 1.44Mb floppy drive
- Midi tower case with 8 drive bays
- 64-bit PCI fast graphics card with 2Mb VRAM
- 14" SVGA 0.28dp NI colour screen
- 105 keyboard and mouse
- Select required operating system and options

£1139^{+VAT}

£1338.33 inc. VAT

MJN workstation options

- Ethernet combi network card.....plus £40+VAT
- MS DOS 6.22 & Windows FWG 3.11 ...plus £60+VAT
- Microsoft® Windows® 95plus £60+VAT
- 14.4 internal modemplus £70+VAT
- 28.8 external modem.....plus £140+VAT
- Quad speed CD-ROM drive.....plus £50+VAT
- Six speed CD-ROM driveplus £100+VAT
- Eight speed CD-ROM driveplus £150+VAT
- 800Mb tape back-upplus £150+VAT
- 15" NI screen upgradeplus £70+VAT
- 17" NI screen upgradeplus £300+VAT
- RAM upgrade per 4Mbplus £75+VAT
- EDO RAM upgrade per 4Mbplus £80+VAT

*"The MJN is a meaty machine.
It's specification is formidable"*

Practical PC

MJN P100 W Desktop Models

	8Mb	16Mb
850Mb	£779 ^{+VAT}	£929 ^{+VAT}
1.08Gb	£809 ^{+VAT}	£959 ^{+VAT}
1.60Gb	£859 ^{+VAT}	£1009 ^{+VAT}
2.0Gb	£909 ^{+VAT}	£1059 ^{+VAT}

- Intel 120MHz Pentium processor based systemsplus £50+VAT
- Intel 133MHz Pentium processor based systemsplus £100+VAT
- Intel 150MHz Pentium processor based systemsplus £200+VAT
- Intel 166MHz Pentium processor based systemsplus £350+VAT

- Midi tower models with 256k burst cache ...plus £30+VAT
- Performance desktopplus £110+VAT
- Performance midi tower with 2Mb VRAM,.....plus £260+VAT

Server Options

Please call for details of server specifications and options

Business user prices shown. All prices exclude VAT at 17.5% and delivery

7MJNWK9A

MJN can design a network system for your particular requirements

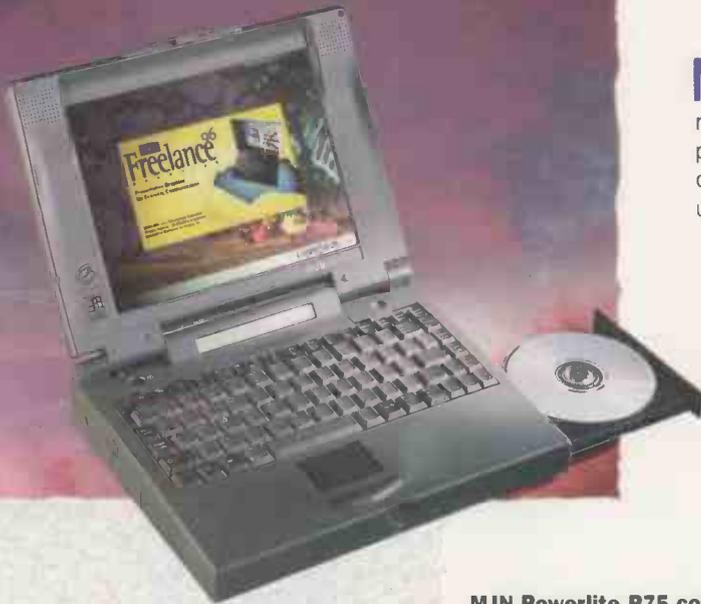


Telephone **MJN** on
01 282 777 555

MJN Colour Notebook Based on the 75MHz Pentium® Processor

£1299 +VAT

£1526.33 Inc. VAT



MJN have teamed up with Texas Instruments to provide you with top quality multimedia notebooks. Our entry level colour system with P75 processor, 520Mb hard drive, 8Mb RAM, and superb colour screens, at a remarkable £1299 +VAT is simply unbeatable. For power users our best buy P75



multimedia colour notebook includes fast Intel® 75MHz Pentium® processor, large 810Mb hard disk, 256K cache, full-feature quad speed CD-ROM multimedia and a choice of 10.4" dual scan or TFT colour screens. This is available with a collection of the best CD titles at just £1799 +VAT.

“Performance of the machine on the road proved exhilarating”

Computer Buyer

MJN Powerlite P75 MM

P75 (includes Windows 95, no multimedia or software)£1299+VAT
 P75 dual scan multimedia (as listed with software)£1799+VAT
 P75 multimedia TFT (with software)..... £2199+VAT

P75 Options

8Mb RAM module.....plus £349+VAT
 16Mb RAM module.....plus £799+VAT

Personal Finance

All systems are available on Personal Finance APR 19.8%. Please call for details. Be sure you can afford the payments before entering into a credit agreement.

Business user prices shown. All prices exclude VAT at 17.5% and delivery

MJN Powerlite P75 colour

- Intel 75MHz Pentium® processor
- 8Mb RAM expandable to 40Mb
- 256k fast cache
- 520Mb IDE hard disk
- PCI local bus graphics with 1Mb video RAM
- Large 10.5" VGA dual scan colour screen
- Built-in TouchPad
- Removable 1.44Mb 3.5" floppy disk drive
- Infrared ports
- 2 PCMCIA type II/1 type III slot (PC card slots)
- Standard ports including enhanced parallel, 16550 serial, external VGA, ext. keyboard
- Dimensions 287x200x52mm weight 6.4lbs
- Microsoft® Windows® 95

MJN PowerLite P75 MM colour

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8MJNNO9A

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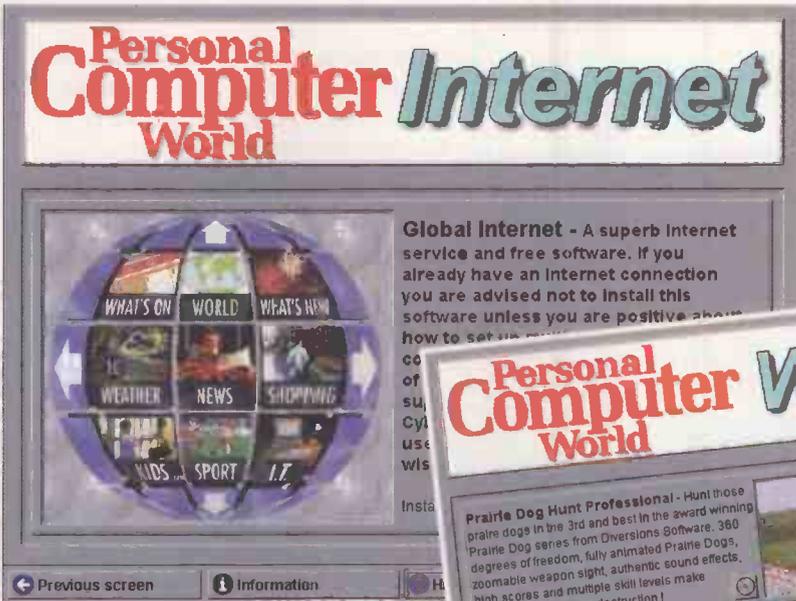


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MJN on

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reliable — in tests, we got through every time we tried. Downloading files from the US was as fast, or faster, than many other services.

Oakley Data Services

Oakley has built a solid reputation as one of the UK's top shareware publishers and its range of utilities is simply superb, adding all sorts of features to Windows — once you've got them, you wonder why Microsoft never put them there in the first place.

You're in for a real treat because this month's disc contains Microsoft's complete suite of over 30 programs, all of which are the very latest versions. Just click on the Oakley button on the CD-ROM front end to enter its browser with all the information you need about each program and quick install buttons. You can also run many of the programs directly off the CD-ROM.

Microsoft Powertoys

Don't miss out on the latest version of Microsoft's valuable additions to Windows 95. There's a whole range of utilities, but they're worth installing just for the QuickRes program that lets you change graphics mode without having to restart Windows (at last!).

Macintosh

To make up for the lack of Mac software on last month's CD (due to the inclusion

of Linux FT), we've put together a bumper 75Mb collection of 24 of the very best Mac programs currently available, including Aaron the Copeland look-a-like, Day of the Tentacle, Disinfectant, Graphic Converter, RedShift 2, Super Grouch and many, many more.

Configuring video for Windows

If you select the "New users start here" button, on the first page of PCW Interactive, you'll have the opportunity to install the latest version of the Video for Windows runtime, so that you can view the

digital movies on the CD. If you haven't installed Video for Windows from a PCW Interactive CD before, then you should install this new version as it contains the latest drivers which deliver higher quality, a larger size and a faster playback rate. If you don't install the new version, some

videos will display the message "Cannot display this video", or give similar warnings.

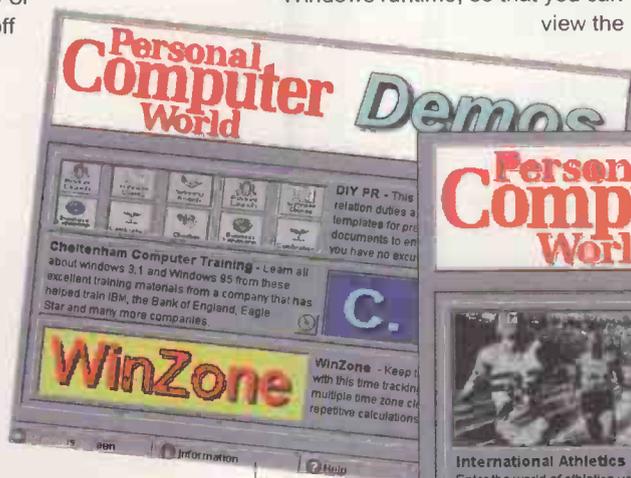
There are also some extra buttons on the Video for Windows page which allow you to fine-tune your PC's performance without having to leave PCW Interactive or restart Windows. In particular, you can choose to have digital movies played back on your PC at full screen resolution: without

having to resort to hardware add-ons such as MPEG cards, you can have full screen digital videos when you run the PCW Interactive CD-ROM.

But please remember: when you exit from PCW Interactive, if you leave the option for full screen video selected, then all video in other applications will also be full screen. If you don't want this then re-run PCW interactive and select the "Windowed" option and quit again.

Testing your CD-ROM

If you suspect your CD-ROM may actually be faulty or damaged you can run the file CDTEST.EXE in the SYSTEM directory of the CD-ROM. The program will then examine every byte of data in the PC

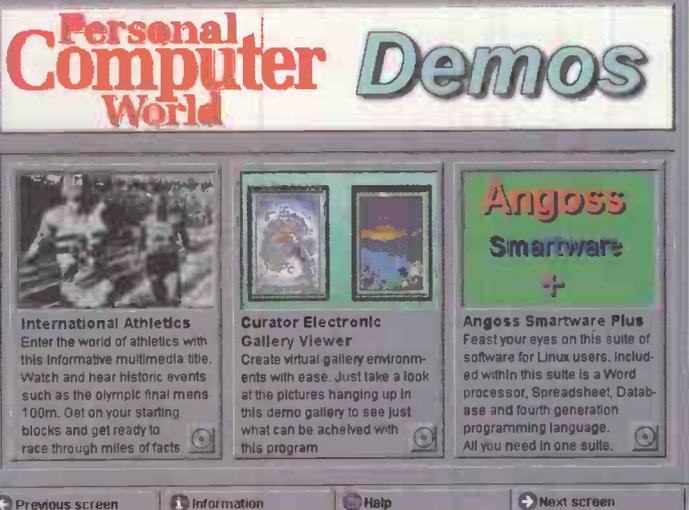


Personal Computer World Demos

Cheltenham Computer Training - Learn all about Windows 3.1 and Windows 95 from these excellent training materials from a company that has helped train IBM, the Bank of England, Eagle Star and many more companies.

WinZone - Keep it with this time tracking multiple time zone clock repetitive calculations

A dozen demon demos on our disc this month



Personal Computer World Demos

International Athletics - Enter the world of athletics with this informative multimedia title. Watch and hear historic events such as the olympic final mens 100m. Get on your starting blocks and get ready to race through miles of facts

Curator Electronic Gallery Viewer - Create virtual gallery environments with ease. Just take a look at the pictures hanging up in this demo gallery to see just what can be achieved with this program

Angoss Smartware Plus - Feast your eyes on this suite of software for Linux users. Included within this suite is a Word processor, Spreadsheet, Database and fourth generation programming language. All you need in one suite.

Personal Computer World Feature

Right Cut down your connection time with Tel-Me on-line technology.

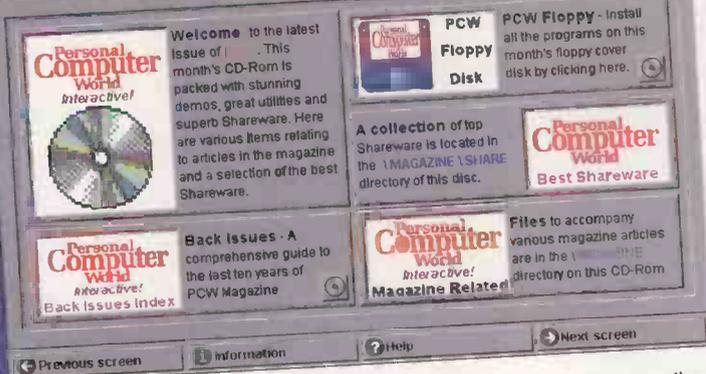
Below A collection of 12 great shareware packages in the PCW magazine section.



Tel-Me is the first information system that uses "Hardy On-Line" technology to minimise the time you spend connected. Typically each call lasts less than 20 seconds - so you save time and money. No other on-line information service works harder to keep the costs down.

So if you're after News, Train Timetables, Credit Checks, Company Information, Phone Numbers, Postcodes, Weather, Hotels, Restaurants and Leisure Facilities, Internet E-Mail, Journey Planning and Traffic Information, UK Road and Street Maps or Business Classifieds, from the companies that have the answers such as the AA and Post Office, then Tel-Me is your answer. Try out Tel-Me totally free of charge for 30 days and receive a £30 usage credit too.

Personal Computer World Magazine



videos it is probably because your graphic display driver may not be entirely Microsoft compatible. The answer is therefore to install one of Microsoft's own drivers as follows (but NOT if you are using Windows 95, as the drivers supplied with it are even newer than the ones on this disc):

1. Run "Windows Setup" from File Manager, then select "Options" followed by "Change System Settings".
2. Scroll through the list of displayed graphic drivers until you get to the final entry "Other Display (Requires Disk from OEM)" and select it.
3. Insert this month's CD-ROM into the drive and replace the "A:" prompt with "D:\SYSTEM\SVG256" (changing the D: to the correct letter if your CD-ROM is not in drive D:), then press Return.
4. Scroll through the new drivers until you find the ones beginning "Super VGA..." and select the one for the resolution you prefer to use. The driver will then be installed and Windows restarted. PCWI and Video for Windows should then have no further problems.

If this works (which it should in 95 percent of cases) you may wish to contact the supplier of your graphics card to see if they have an updated graphics driver. If Microsoft's drivers don't work you will need to contact your graphics card supplier anyway.

● If Video for Windows install fails

If the Video for Windows installation fails and you receive an error such as

"XXXXXXXX.YYY cannot be updated as it is a shared file", the answer is to delete the file "XXXXXXXX.YYY" (or whatever it is called) and reinstall Video for Windows.

● PCWI is slow to load, or runs slowly

You need at least 4Mb of RAM free to use PCWI. If necessary, you can obtain this by creating a permanent swap file of up to 4Mb. You are also advised to enable read caching of your CD-ROM by adding its name to the SMARTDRV line in your AUTOEXEC.BAT file.

You should also allow MSCDEX to set up its own buffers by adding a line such as /M:10 to the MSCDEX line, also in your AUTOEXEC.BAT file. Please refer to your manuals for full details.

● Windows NT and OS/2

Unfortunately, Macromedia Director, the program used to create PCWI, is incompatible with Windows NT. However, you should be able to run PCWI from OS/2 by simply calling up PCWI.EXE from the command line.

Robin Nixon

partition of the disc to see if it can be correctly read. The process takes up to 35 minutes and generates a verification code if the disc passes the test. If the CD-ROM fails this test, try cleaning it with a light solution of washing up liquid and dry it with a lint-free cloth and run the test again. If it continues to fail, return your CD-ROM to the magazine for a free replacement copy.

You are free to copy the CDTEST.EXE program to your hard disk in order to test other CD-ROMs as long as it is not distributed in any way. If you are running CDTEST from your hard drive you need to specify the CD-ROM drive to test, as follows:

CDTEST D:

Note: We offer this tool "As is" purely as an aid to diagnosing possible faults, some of which may occur because an older version of MSCDEX.EXE is in use and not because of a faulty CD-ROM, and we disclaim any responsibility for any erroneous error reports that it may generate.

IMPORTANT — READ THIS!

● General Protection Faults

If you receive General Protection Faults when running PCWI or playing any digital

PCW Advice & Contacts

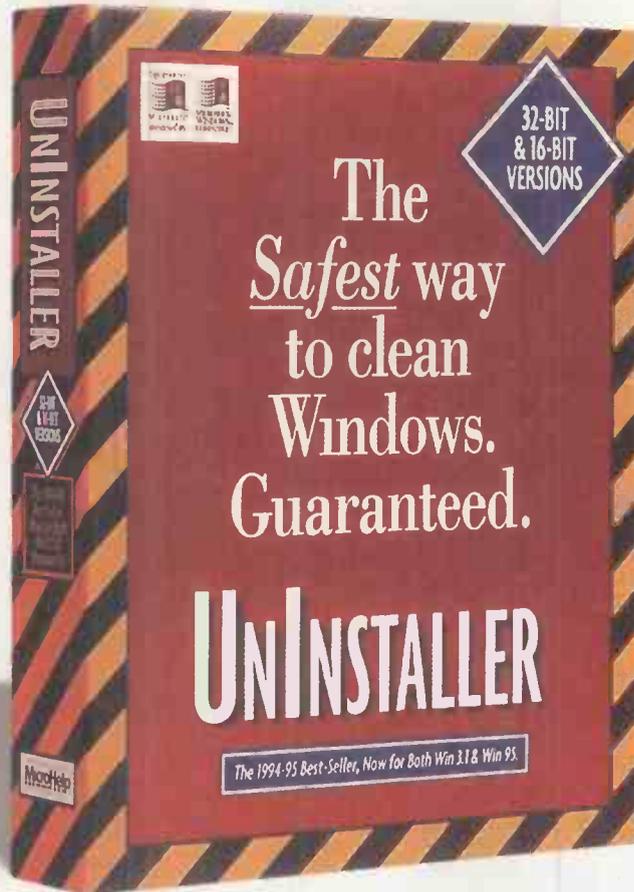
The PCW CD-ROM is virus checked at every stage of production. However, PCW will not accept liability for any problems arising from its use. You are advised not to install software on a networked PC before checking the disc.

For technical support on the CD-ROM and the programs on it call the VNU 24-hour Hotline on 0891 616 444. This is a computerised touch-tone advice system, providing hints and tips on a wide range of topics. It also offers you the opportunity to speak to a member of our technical support staff during office hours by pressing the 0 key on your keypad. Calls cost 39p min off-peak and 49p at all other times (tone phones only).

Using the computerised system you can access the information you need very quickly. If you request to speak to a member of our technical support staff and we cannot answer your question immediately, we will offer to call you back at our expense. Outside office hours you can leave us a message by pressing the 9 key. If you leave your phone number we'll call you back at the earliest opportunity during office hours.

If you prefer, you can email rnixon@cix.compulink.co.uk, or on CompuServe 70007,5547.

THERE IS ONLY ONE UNINSTALLER



“Of the three programs tested, only UnInstaller 3.0 did not offer to remove any critical Windows files”

PC Magazine On-Line, 26 Feb 1996

Clean up your Windows 95 or 3.1 system safely with UnInstaller, the world's top-selling uninstall utility. Every Windows application hides bits of itself throughout your system. That's why the only completely safe way of removing programs and files is with UnInstaller. But as well as locating and removing hidden files safely, UnInstaller's unique technology also allows you to move applications with their supporting files plus archive seldom-used programs. Reclaim wasted disk space and organise your files properly with UnInstaller, now available with both Windows 95 and 3.1 versions together in one complete package.

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Graphic detail

The overall picture in the world of graphics cards has changed in a year. We test fourteen of the finest to illustrate the point.

PCW Card Photography by David Whyte

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For this year's *PCW* annual graphics cards group test we take a look at the new breed of cards to see who's where on the evolutionary scale of things.

Graphics Cards. Next to your processor, they're probably the most important part of your PC. A card with a reasonable amount of memory and well-written drivers can make all the difference to the overall performance of your computer. This is especially the case in the age of Windows 95 and its associated Graphical User Interface (GUI) intensive applications.

But the demands on graphics cards don't end there. With the ever-increasing move towards multimedia, video is playing a larger role on the PC than ever before.

In addition, we're seeing that old standards are giving way to new in the move from VLB and ISA bus interfaces to the PCI bus interconnect. Combine this with the evolution of graphics controller bandwidth from 32-bit to 64-bit and the use of different memory types, and we have a whole new universe unfolding before us with new "species" of graphics cards. Faster cards, greater colour depths and more video playback are the result of the evolution.

Looking back a year you'll see that some, such as Samsung, have become extinct in the graphics-card business, while others have melded together like Spea and Diamond Multimedia. The result is a more diminished field of players.

To separate the weak from the strong we asked fourteen suppliers to provide us with their newest set of graphics cards. Our spec was fairly simple: they had to be PCI plug-and-play based cards with a minimum 2Mb of memory, Windows 95 compatible and cost less than £500. We also managed to get a sneak preview of two cards, the Orchid Kelvin Video 64 and the Paradise Pipeline 64, that haven't been released yet. Plus, we take a quick look at three PCI graphics cards for the new PCI PowerMacs.

Over the next twelve pages you'll find 14 PCI PC graphics cards varying in price from £89 to £339, with performance differences just as wide, giving you an overview of what's out there. Read on to see who is the fittest and who takes our Editor's Choice.

Dylan Armbrust

ATI Video Xpression



When a graphics card arrives in a plain white box with no markings, one shouldn't expect much. However, after our test results



came back we found ATI's Video Xpression almost blew away its competition. Surprising, since this 2Mb card, based on the Mach 64 264VT chip, uses standard DRAM, not fast EDO or VRAM like many other manufacturers.

A quick glance at the results and you can see the impact of ATI's well-written drivers, as well as its chip technology. Our tests show that the ATI was particularly strong on graphics primitives and the applications component at 800 x 600 in true colour.

The ATI Mach 64 264VT, successor to the Mach 64, incorporates a 135MHz RAMDAC as well as video acceleration. Oddly, the ATI's performance in our video frame drop test shows a weakness, most likely in the drivers, in video playback as it was one of the few cards to drop frames in both video tests.

The Video Xpression manages resolutions and colour depths of 640 x 480 at 32-bit, 800 x 600 at 24-bit, 1024 x 768 and 1152 x 864 at 16-bit, and 1280 x 1024 at 8-bit. It also provides for maximum resolution and refresh rate of 120Hz at 1024 x 768 but only while running at 4 and 8-bit colour depths. Anything higher and the refresh rate dropped below 72Hz. This was disappointing considering that many other cards could support better refresh rates at higher colour depths. Forgive this, and you've got a fast and affordable card.

Details

ATI Video Xpression

Price RRP £175 (street £129)

Contact ATI Technologies 01235 833666.

Fax 01235 833668

Good Points Speedy and affordable.

Bad Points Refresh rate at high resolutions.

Conclusion A good card that combines impressive speed with a good price.

Scores	
Usability	4
Documentation	4.5
Utilities	4.5
Value	5

Cirrus Logic 5446

This tiny card is a bit of an anomaly in our group test because it's not actually for sale. What we looked at is the graphics accelerator, the CLGD 5446, and what it and its accompanying generic drivers can do.



You can expect to see this chip on several OEM boards, such as one from Creative Labs, in the near future.

The board provided was a PCI and VAFC bus compliant card that had both a VESA and Video Media Interface (VMI) feature connector. The VMI connector is an open standard that will allow MPEG and TV-related add-ons to be attached to the card.

The screen quality and colour provided by the sample card was excellent. No artefacts, glitches or fuzziness were found. In terms of refresh and resolution the chip held its own when compared to the rest. With a maximum resolution and refresh rate of 1024 x 768 at 85Hz it easily provides flicker-free images. The range of colour depth is pretty much standard with 16 million colours available up to 800 x 600 resolution; 65,535 for 1024 x 768 and 256 for 1280 x 1024.

Installing the card went smoothly and Windows 95 picked up the hardware first time round, prompting the user for the driver disk. Because it is only a sample card, there was no consumer-orientated documentation to speak of. However, the generic drivers provided by Cirrus Logic include utilities that integrate into the Display Settings menu to allow for refresh rate change and on-the-fly resolution changing.

Details

Cirrus Logic 5446 Visual Media Accelerator

Price N/A

Contact N/A Phone N/A Fax N/A

Good Points Good performance at 800 x 600 resolution in 16 million colours.

Bad Points It's not for sale.

Conclusion Should do well.

Scores	
Usability	6
Documentation	2
Utilities	3
Value	N/A

Diamond Stealth 64 2201XL

At £115 the Diamond Stealth 64 Video 2201XL is one of the cheapest 2Mb EDO RAM graphics cards on the market. This half-length card is, like most of



the others, based on the S3 Trio 64V+ chip. Little in terms of design sets it apart except for its drivers and utilities.

The Stealth 64 Video's performance was a bit of a disappointment with artefacts cropping up on the screen and scores placing it in the middle of the pack. However, its In Control utilities were the best on offer from any manufacturer. Supplied with Diamond's new GT set of drivers, the In Control tools allow for on-the-fly resolution and colour depth changing, zoom, and virtual desktop settings, all integrated into the right-click function of your mouse.

The Stealth 64 Video can support a maximum resolution of 1280 x 1024 at 256 colours with a steady refresh rate of 75Hz. The card is ideally suited to the average home user with a 15in monitor as it supports a maximum non-interlaced refresh rate of 120Hz at 800 x 600, giving the user a rock solid image if the monitor can handle it.

On the card itself there is a LPB feature connector for an MPEG add-on card (available for an extra £88) but no more space for memory upgrades; 2Mb is the maximum. The card has drivers for Windows 3.1x, Win95, Microsoft NT, AutoCAD and OS/2. If you want a respectable graphics card at a good price, this is worth looking at.

Details

Diamond Stealth 64 Video 2201XL

Price £85 (1Mb), £115 (2Mb) street price.

No RRP available

Contact Evesham Micros 01386 765500.

Fax 01386 765354

Good Points Great set of utilities.

Bad Points Not the fastest of the cards here.

Conclusion An average card at a good price.

Scores	
Usability	4
Documentation	4
Utilities	5.5
Value	5

Diamond Stealth 64 3400XL



The Stealth 64 Video 3400XL was one of the hit-and-miss cards of the group. It performed very well on our application tests, especially at 1024 x 768 in 16-bit colour, but it failed to live up to expectations in some of our other tests, particularly when operating at 800 x 600 in true colour.

Like its junior, the Video 2201XL, it uses the new GT drivers and draws its versatility from the In Control utilities. Along with the expected on-the-fly zoom and virtual desktop settings it comes with some unexpected resolution settings. With 4Mb of VRAM one would expect it to reach a maximum of 1600 x 1200 in 16-bit mode, but Diamond has included an additional setting of 2048 x 1536 at 256 colours! Like Matrox, it appears Diamond, too, has big ambitions for this card.

With an IBM 220MHz RAMDAC and S3 Vision 968 chip, this card can provide flicker-free vertical refresh rates up to 76Hz at 1600 x 1200 while the maximum resolution at maximum refresh is 1024 x 768 at 120Hz. Along with drivers for Win95, Win 3.1x, NT, DOS, CAD and OS/2 Diamond has bundled a fair amount extra software. The extras included are MPEG Arcade, Video for Windows, 3DFX and CorelDraw 4.

The end result of all of these features is a sturdy graphics card that copes well with application graphics, video-file playback and DOS-based games like Doom2. If you're willing to spend a bit extra then take a look at this one.

Details

Diamond Stealth 64 Video 3400XL
 Price £189 (2Mb), £289 (4Mb) street price.
 No RRP available
 Contact Evesham Micros 01386 765500.
 Fax 01386 765354

Good Points Lots of range with its 4Mb of VRAM. Good software bundle.
Bad Points Inconsistent performance in tests.
Conclusion We expected better performance, but you wouldn't suffer with this card.

Scores	
Usability	4
Documentation	4.5
Utilities	5.5
Value	4

Hercules Terminator

Yet another S3 Trio

64V+ chip crosses our path, and when this happens we have to look at what make the card different. In the case of the Graphite Terminator, it would have to be the drivers and the price. We used the latest release of Hercules drivers, only to find they only slightly improved performance over earlier versions. As for cost, the official price is £215, the third highest in the group (street price is roughly the same).

This half-length card comes with a maximum of 2Mb of EDO RAM and can support, like most S3-based cards, resolutions of up to 1600 x 1200 at 256 colours. Maximum colour depths of 16 million colours are achieved at resolutions of 640 x 480 and 800 x 600, while 65,535 and 256 colours are supported at 1024 x 768 and 1280 x 1024 respectively.

The Graphite Terminator 64 Video may not be the fastest card in the group, but it did handle the video component of the test well. It dropped the second fewest frames on the 800 x 600 test and no frames at all on the 1024 x 768 test. It also has a dandy set of utilities. Its Touch 95 utilities incorporate on-the-fly resolution and refresh rate switching, as well as zoom and virtual desktop. And if you want an alternative to the Windows 95 multimedia player you can make use of the Hercules Entertainment Centre. The Graphite Terminator also comes with the full range of drivers except for AutoCAD.



Details

Hercules Graphite Terminator
 Price £215 (2Mb)
 Contact Imago Micro 01635 861122.
 Fax 01635 868188

Good Points Good utilities and high-resolution capability for 2Mb card.
Bad Points Expensive compared to the other S3 Trio 64V+ based cards.
Conclusion The straggler of the group and a wee bit overpriced.

Scores	
Usability	4
Documentation	4.5
Utilities	5.5
Value	4

Matrox PowerDoc

This Canadian import is currently one of the most sought-after graphics cards on the market, solely aimed at the business and SoHo markets.

Based on Matrox's MGA-2064W controller, the PowerDoc Edition reviewed here is actually an MGA Millennium with a faster 250MHz DAC and sophisticated Document Image Processing (DIP) software attached to it. Our review model came with 2Mb of Windows RAM (WRAM) upgradable to 8Mb; the only card in the group test to do so. The 2Mb PowerDoc Edition offers resolutions of 800 x 600 at 32 bits and 1152 x 882 at 65, 536 colours, with the remaining colour depths of 1280 x 1024 to 1600 x 1280 holding at 256 colours.

If you've loads of cash you can upgrade to 8Mb of WRAM, purchase an Hitachi CM-2112 monitor and run the monitor at an amazing 1880 x 1440!

Installing and setting up the Matrox came easily. Windows 95 detected the presence of the card upon startup and driver installation flowed from there. Matrox integrates its utilities well with the Display Properties menu and provides zoom, monitor, and refresh rate selection via its Powerdesk and Quick Access add-ons.

We were supplied with Matrox's newest drivers at the time of writing this and found that well-written drivers do indeed make the difference. The PowerDoc Edition ran our video test flawlessly, dropping not one frame in either format. A truly worthy card.



Details

Matrox Millennium PowerDoc
 Price £339
 Contact Matrox (UK) 01793 441144.
 Fax 01793 441199

Good Points Can upgrade memory to 8Mb.
Bad Points None to speak of.
Conclusion Great for big business but not really the home. Stick to its junior, the Matrox Millennium.

Scores	
Usability	5
Documentation	4
Utilities	4
Value	3

You just entered hostile territory
and your need for domination is
extreme.

EDGE

Want in your face, Mach-speed, pulse-pounding realism, that'll leave you shaking in your space boots? Then brace yourself, as Diamond takes gaming to the edge with a new 3D multimedia accelerator designed for Windows® 95. The Diamond EDGE 3D makes game play fully immersive and totally interactive. With real-time, jaw-dropping 3D and 2D photo-realistic graphics, a thundering wavetable audio engine, vicious full-motion

- Designed for Windows® 95
- Real-time 3D graphics with quadratic curved surfaces
- Rendering performance up to 12 million texels/second
- Fast 2D graphics and Windows acceleration
- Digital gameport and 2 Sega Saturn compatible game pad ports
- Full-motion digital video, with video texturing
- Hardware Wavetable audio, 50 voices
- Up to 2MB DRAM, up to 4MB VRAM
- Resolutions up to 1600 x 1200
- Supports up to 1 billion colors
- Vertical refresh rates up to 120Hz
- PCI-bus

digital video, and an advanced digital game port, that will leave you running for cover. Plus, a Sega game port and support for multiplayer action with Control Pad. The Diamond EDGE 3D comes bundled with killer games and software including Virtua Fighter Remix, NASCAR® Racing, and more. And it allows you to play your existing DOS games without sacrificing speed or quality. The Diamond EDGE 3D gives you perspective highest frame rates around. Plus a multitude of special effects for a gaming experience so real you'll smell the detonation. With true Plug-and-Play, a 5-year warranty, and online support services, you'll have a few less things to fear. So, if you're ready for the ultimate challenge call your nearest Diamond retailer today. We'll take you as far as you're willing to go.



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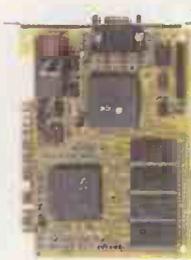
Internet: <http://www.diamondmm.com>

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Simply Computer Ltd. Tel: 0181-523 4020 Fax: 0181-523 4002

miroVideo 20SV

When we looked on the box of the miroVideo 20SV we instantly noticed the words "German Engineering" and felt reassured that this would be a good graphics card. Once we opened the box and began to install it, our faith began to wane.



When we began to install miro's software the first thing that came up was an installation screen in German. For those not familiar with the language or the basic layout of Windows 95 menus, getting to the English screen could prove to be a bit of a trial. The second item that caught our attention was the version and date of the drivers and utilities. We had version 1.0 and the date of the software was 06/09/95, which means that, in computer world terms, these drivers are quite old. miro says new drivers have been issued.

The result of the old drivers shows up in the test results. The miro didn't complete one of the application tests and it trailed many Trio 64V+ based cards on the other tests. It was also the only Trio 64V+ based chip to drop frames on the video playback test at 1024 x 768 in 16-bit colour.

It can manage a maximum resolution and refresh rate of 1024 x 768 at 100Hz. The upper resolution limit of this card is 1280 x 1024 in 256 colours at 75Hz. The miroWintools were a bit cumbersome, forcing the user to use a fruit machine-like interface to choose the resolution, almost pixel by pixel, instead of being able to choose a pre-set resolution.

In all, this is a pricey card for what it offers.

Details**miroVideo 20SV**

Price £191 (2Mb) excl. VAT
Contact miro UK 01494 510250.
Fax 01494 510070

Good Points Makes you yearn to learn German.

Bad Points Cumbersome utilities, poor performance, old drivers.

Conclusion Back of the pack and not worth the price.

Scores	
Usability	2
Documentation	2
Utilities	3
Value	2

miroVideo 22SD

This 2Mb EDO RAM based card gave us a pleasant surprise when compared to its more expensive sister card, the miroVideo 20SV. In terms of overall performance it bettered the 20SV in all but the video tests; however, the 22SD still came up short when compared to the rest.



The 22SD uses the S3 Trio64V+ display controller and integrated 135MHz RAMDAC. Unfortunately, when video cards use identical components, such as the S3 chip, it's hard to differentiate their actual capabilities and the same goes for the 22SD. Like most Trio 64V+ based cards it supports resolutions up to 1200 x 1024 at 75Hz running in 256 colours. 16 million colours can be found at 640 x 480 and 800 x 600 while 1024 x 768 will run at a maximum of 65,535 colours. Refresh rates range from 100Hz at 640 x 480 to 75Hz at 1200 x 1024.

Installing the utilities and drivers was reasonably easy, but you'll find that Windows 95 will identify the S3 chip and not the miro card as a new component. You'll have to use the install New Hardware feature of Windows 95 to install the correct drivers. Once this is done, you'll find the same situation as the 20SV regarding the initial German interface as well as the same set of miroWintools utilities. The 22SD comes with drivers for the main PC operating systems, such as NT and OS/2. miro included old drivers dating from November 1995, but has recently posted updates on its BBS and web site.

Details**miroVideo 22SD**

Price £123 (2Mb) excl. VAT
Contact miro UK 01494 510250.
Fax 01494 510070

Good Points Better than the miro 20SV and more reasonably priced.

Bad Points Still not great.

Conclusion Does the job but trails the pack.

Scores	
Usability	3
Documentation	2.5
Utilities	2.5
Value	3.5

Number Nine 9FX

The 9FX Motion 331 was one of the most trouble-free cards in the group. It came with comprehensive documentation, was easy to install, and has a five-year warranty; something you'd expect from such a well-known company.



The 9FX is a half-length card with a VESA VGA loop-through connector as well as a LPB connector for a MPEG add-on. Our card came with 2Mb of EDO DRAM but a 1Mb version (upgradable to 2Mb) is available.

Like five of the other cards it, too, uses a S3 Trio 64V+ chip with integrated RAMDAC. It will support 16 million colours to 800 x 600 resolution, dropping to 65,535 at 1024 x 768 and 256 colours at its maximum resolution of 1280 x 1024. Interestingly, its maximum resolution at maximum vertical refresh rate is 74Hz at 1152 x 864, which is ideal for 17in monitors. Otherwise, its choice of non-interlaced refresh rate ranges from 150Hz at 640 x 480 to 72Hz at 1280 x 1024, providing the user with screen images free from eye-strain.

The 9FX Motion 331 also comes with a full range of drivers for all the major operating systems.

In terms of performance the 9FX tended to trail that of its major rivals which also use the same S3 chip. It did, however, do very well in both video tests as well as its handling of our labs test of primitive graphics applications.

On the whole, this card comes with a good set of utilities and won't disappoint if you're looking for bog-standard reliability.

Details**Number Nine 9FX Motion 331**

Price £139 (2Mb) excl. VAT
Contact Number Nine Visual Technology
01256 381594. Fax: 01256 381194

Good Points Good documentation and reliable performance.

Bad Points None to complain about.

Conclusion A bog-standard card at a reasonable price that shouldn't let you down.

Scores	
Usability	5
Documentation	5
Utilities	4.5
Value	4

Orchid Kelvin Video 64

This card was one of the two beta preview cards sent to participate in the test so we didn't expect much. When our test results came back, however, we were completely surprised. The Kelvin Video 64 consistently placed in the top five results, and that was with a beta set of drivers that still had some bugs.



Bugs aside, this card looks like a contender. It's built around the Alliance 6410 controller chip with 135MHz internal RAMDAC. Resolution and colour depth support is similar to many of the S3-based cards with it able to accomplish a maximum of 1600 x 1200 in 8-bit colour. It's the same for maximum vertical refresh rates beginning with 150Hz at 640 x 480 to 75Hz at 1280 x 1024.

The set of utilities that comes with it looks to be very strong. There's on-the-fly bit depth and resolution switching, virtual desktop support, and a good click-and-point refresh rate selection menu. As well, you can abandon your monitor adjustment dials for the utility controls if you so choose. It includes a standard VESA feature connector as well as 1Mb or 2Mb of DRAM, depending on what you choose.

For a preview card, the Orchid's debut was impressive. The drivers appear to be highly optimised across all levels.

The black mark due Orchid in this group test is its two-year warranty. Surely, such a company with such a card can do better than that?

Phillips Paradise Pipeline 64

When we asked Phillips Electronics for its newest graphics card, we were sent the Paradise Pipeline 64. What we didn't know was that it was going to be the very first card to be seen or tested in the UK. As a result, it didn't come with a complete set of drivers and utilities.



But that didn't stop the card from performing well in our tests. Using a Western Digital WD9710 controller chip with integrated 135MHz RAMDAC, it stood out from most of the pack. The Pipeline 64 is similar to the ATI in its resolution and refresh rates. It's capable of colour depths of 16 million colours up to 800 x 600, 65,535 colours up to 1280 x 1024, and 256 colours at 1600 x 1200.

It does, however, let one down on its refresh rate capability. The maximum refresh rate available is 75Hz up to a resolution of 1024 x 768. This will of course allow for a flicker-free screen image, but its choice is less than that of the others in the group. At 1280 x 1024 the refresh drops to 60Hz and at 1600 x 1280 it bottoms out to a paltry 43Hz interlaced. If you chose to operate at these resolutions, you could be in for serious eye-strain.

Not much can really be said of the Oasis 95 utilities included with the Pipeline 64 as they weren't completed when we examined them. But our first impressions show they'll have the functions you'd expect.

STB Powergraph 64 Video

Once known as Simply The Best, STB has lessened its bravado and it's a good thing, too. The Powergraph 64 Video wouldn't quite live up to its name, but for £95 maybe you can't complain.



As the second cheapest card in the group, the STB Powergraph tended to come in second to last in our tests so it's fair to say that this isn't the fastest card of the lot. It does provide, however, a good screen image with rich colours and no fuzziness. The STB Vision 95 Control Panel utility provides an easy-to-use, well-designed interface. You can change refresh rates, zoom in, switch resolution and run multiple desktops all by clicking on the appropriate button.

The S3 Trio64V+ chip supports resolutions up to 1280 x 1024 at 256 colours. For deeper colour depths you'll have to use either 640 x 480 or 800 x 600 for 16 million colours, or 1024 x 768 for 65,535 colours. According to STB the Powergraph 64 has refresh rates ranging from 160Hz for 640 x 480 to 75Hz for 1280 x 1024. This is excellent for flicker-free screens, assuming your monitor is capable of handling the high frequencies.

STB has set itself apart from the rest of the group-test members by including a game CD-ROM, Comanche Maximum Overkill, with the card. It also includes the Xing MPEG software player plus drivers for OS/2, NT, Windows 3.1, AutoCAD and Windows 95. STB has also topped the competition by offering a ten-year warranty, at least twice as long as anyone else.

Details

Orchid Kelvin Video 64

Price £99 (1Mb), £147 (2Mb) excl. VAT
 Contact Orchid (Europe) 01256 479898.
 Fax: 01256 64222

Good Points Fast, fast, fast.

Bad Points Only has a two-year warranty.

Conclusion So long as the drivers stay optimised, the Kelvin Video 64 could be a real contender.

Scores	
Usability Beta	1
Documentation	4
Utilities	3
Value	3.5

Details

Phillips Paradise Pipeline 64

Price Expected £129 (2Mb) excl. VAT
 Contact Phillips UK 0181 689 4444.
 Fax 0181 781 8979

Good Points Better performance at 800 x 600 in 32-bit colour.

Bad Points Refresh rate at higher resolutions is below standard.

Conclusion It's still in the beta stage but early indications are good.

Scores	
Usability	4
Documentation	3
Utilities	1
Value	3.5

Details

STB Powergraph 64 Video

Price £69 (1Mb), £95 (2Mb) est. street price excl. VAT
 Contact STB Systems 0181 897 1003.
 Fax 0181 897 1006

Good Points Good screen image, excellent warranty.

Bad Points Not the best, especially in performance.

Conclusion A low-priced card that has lots of software extras.

Scores	
Usability	4
Documentation	5
Utilities	4.5
Value	5

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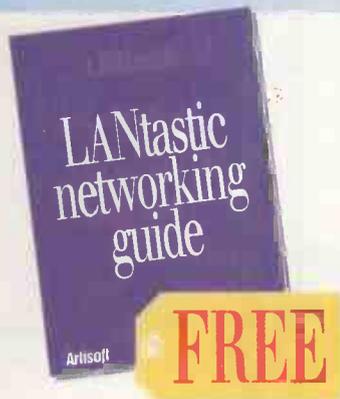
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STB Velocity 64 Video

The Velocity 64 Video was the only 4Mb EDO VRAM card that entered the group test, allowing it to sustain a much greater colour depth at a higher resolution. The Velocity 64 is able to comfortably go to 1600 x 1200 at 16-bit high colour and sustain a refresh rate of 80Hz on top of that. Not too shabby if you're looking to operate at high resolutions and have a flicker-free screen.



But what you get in capability, you lose in speed. The STB, like its cousin the Powergraph 64, didn't top the charts in our tests. It tended to fall into the lower third of the group test overall and it was one of the four cards that dropped frames in both our video tests — a bad indication for a video card. It also scored low on our Doom2 test in DOS.

That aside, the card still does the job. It manages resolutions of 640 x 480, 800 x 600, 1024 x 768, and 1280 x 1024 in 32-bit colour at refresh rates of 160Hz, 160Hz, 120Hz, and 85Hz respectively. This is due to STB's use of the S3 Vision 968 chip in conjunction with an IBM 220MHz RAMDAC.

Oddly, one would expect that with the S3 chip, IBM RAMDAC and fast EDO VRAM the STB should be a speed demon, but this isn't the case, which was a bit disappointing.

The Velocity 64 also comes with the Comanche Maximum Overkill game and all relevant PC drivers.

Details

STB Velocity 64 Video

Price £219 (2Mb), £319 (4Mb) excl. VAT
 Contact STB Systems 0181 897 1003.
 Fax 0181 897 1006

Good Points Can sustain high refresh rates at high resolutions.

Bad Points Showed weakness in video tests.

Conclusion Not our first choice for a 4Mb card.

Scores	
Usability	3.5
Documentation	5.5
Utilities	4.5
Value	2.5

VideoLogic GrafixStar 400



The GrafixStar 400 is a budget graphics card aimed more at the home market, but its performance and capabilities were excellent. With an RRP of



£165 (£130 street) VideoLogic is going head to head with the Diamond Stealth 64 Video 2201. In terms of performance, the GrafixStar 400 either matched or slightly bettered the 2201, especially on the application side of the tests. It also held up well in the video test, dropping no frames at 1024 x 768 in 16-bit colour.

The GrafixStar's capabilities are almost identical to Diamond's and most of the other S3 Trio 64V+ based cards. It manages 32-bit colour in resolutions of 640 x 480 and 800 x 600, 16-bit colour at 1024 x 768 and 8-bit up to 1600 x 1200. The integrated on-chip RAMDAC runs at a frequency of 135Hz, allowing for refresh rates above 72Hz until you reach 1600 x 1200 where it drops to 60Hz, but that's not a disadvantage if you're using anything less than a 21in monitor. In terms of the video output the colour was a little less rich than some of the other cards, but images were crisp and clear with no sign of glitches.

The card comes with either 1Mb or 2Mb of EDO RAM and a local peripheral bus feature connector to accommodate its "Scenic Highway" MPEG daughterboard. The whole gamut of drivers are provided ranging from Windows 3.1 to NT and OS/2. The Smart Tools utilities, which are extensive, include zoom, on-the-fly resolution changing and refresh rate adjustment.

Details

VideoLogic GrafixStar 400

Price RRP £115 (1Mb), £80 street;
 RRP £165 (2Mb), £130 street, excl. VAT
 Contact 01923 260511. Fax: 01923 270188

Good Points Affordable and provides good performance.

Bad Points None to speak of.

Conclusion An excellent choice in price/performance ratio.

Scores	
Usability	4
Documentation	5
Utilities	5.5
Value	5.5

Graphics cards: a glossary

DRAM

Dynamic Random Access Memory. Standard memory chip, mostly used in older PCs that are considered less efficient than VRAM or EDO RAM.

EDO DRAM

Extended Data Out DRAM. A more efficient memory with faster access time primarily used in newer PCs.

VRAM

Video RAM. Fast memory optimised for graphics cards. Considered faster than EDO RAM and DRAM.

WRAM

Windows RAM. Fast video memory optimised for a Windows GUI environment used by Matrox.

RAMDAC or DAC

Random Access Memory Digital to Analogue Converter. It converts the digital data from the PC to the analogue data required by the monitor for display.

VGA feature connector

A standard 26-pin plug for passing the VGA signal on to some other device, often a video overlay board. The feature connector cannot pass the high-resolution signal from the card and is limited to VGA.

LPB

Local Peripheral Bus. A specific feature connector used to connect MPEG or other related components (such as TV tuners) to the graphics card.

VM Channel

Vesa Media Channel. VESA's video bus which avoids the main system bus.

Refresh Rate (or vertical scan rate)

The frequency with which the whole screen is refreshed. At 60Hz (60 times a second) flicker is quite apparent. Above 72Hz the flicker appears to go away. Increasing the refresh rate above 72Hz makes the image increasingly solid.

Interlacing

Where only every other line on the screen is refreshed with each pass. It is a way of increasing the colour depth or resolution if the card hasn't the muscle to do the job properly. The result is very flickery and certainly not recommended for long periods.

Virtual desktop

When the card is capable of holding in its memory a resolution greater than that being displayed on screen, the monitor can act a "window" onto a larger viewing area. Using this system you can pan across your "desktop".

On-the-fly switching

A term used regarding the changing of resolution or refresh rates without needing to restart your PC.

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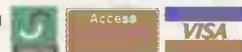


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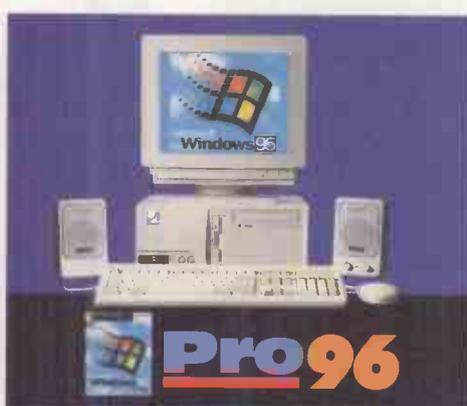
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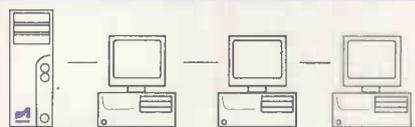
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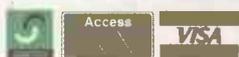
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Mac cards

Now that Apple has integrated PCI bus technology into its PowerMacs, PC hardware specialists are moving their products to this platform. Among the first to deliver video cards are Diamond, Matrox and Number Nine, each with a proven track record and unique hardware solution.

Diamond's Javelin Video series is based on the S3 968 processor, as used in the company's popular Stealth range of products. It comes in two versions, 3240XL and 3400XI, with 2Mb and 4Mb of VRAM respectively. In standard configurations the 3240 can handle 24-bit colour at 800x600 pixels, the 3400 at 1024x768. Higher resolutions up to 1600 x 1200 are supported and a stable 75Hz refresh is available for all modes.

The Javelin is interesting in that it claims to accelerate QuickTime video functions as well as traditional graphic areas such as scrolling and bit blitting. The S3 chip has built-in support for this but the current version of QuickTime allows only limited acceleration. The first version to make full use of hardware accelerators will be QuickTime 2.2, due at some point this summer.

Along with a driver extension Diamond provides a copy of KPT Convolver SE, Color It LE 3.0 and 200Mb of images for you to play with.

In tests with a PowerMac 9500 the Javelin proved faster than Apple's own video card, a 2Mb model manufactured by ATI. Screen-to-screen bit blits were noticeably fast but, as expected, QuickTime acceleration was nowhere to be seen.

The Matrox solution is a version of the Millennium, which works in exactly the same way as its PC counterpart. The card uses the company's own custom MGA chipset, offering 3D acceleration as well as fast 2D functions. This is coupled with new Windows RAM (WRAM) for top performance, and PCW was supplied with a 4Mb version for testing.

The Millennium's 3D functions are aimed squarely at such areas as CAD, with hardware gourad shading but no texture mapping facilities. This more or less rules it out of the upcoming 3D games area although Matrox has plans for this market. The only software

supplied by Matrox is an easily installable Control Panel for setting resolution, bit depths and so on.

The Millennium came top in our Mac speed tests but performance was ever so slightly flawed by a small problem. In tests, the zooming that appears when you open a folder seemed to stick from time to time.

Number Nine's Imagine 128 is again the same as the PC version, and uses a large 128-bit custom processor together with either 4Mb or 8Mb of VRAM. A Mac version of the company's HawkEye Control Panel offers functions such as Pan and Zoom, and options for a screen saver and realtime window dragging.

The Imagine proved to be the slowest of all three cards, although it was still faster than standard ATI video. It's doubtful that this is a reflection on the hardware itself, though: the drivers are far more likely to be the culprit.

And this is possibly the most important issue surrounding Mac PCI cards at the moment. If there has to be a winner then the award goes to Matrox, but all the products would benefit from further driver development.

Chris Cain

- The Diamond Javelin Video costs £249 (2Mb), £369 (4Mb)
- The Number Nine Imagine 128 costs £475 (4Mb), £1039 (8Mb)
- The Matrox Millennium PowerMac costs RRP £369 (4Mb), £599 (8Mb)

Mac benchmarks

All tests performed on a 9500/132

8-bit colour @ 1024 x 768 pixels	Norton Index
Matrox Millennium	413
Diamond Javelin Video	402
Number Nine Imagine 128	399
Standard ATI	361
16-bit colour @ 1024x768	
Matrox Millennium	332
Diamond Javelin Video	313
Number Nine Imagine 128	304
Standard ATI	280

Resolution and colour

Windows objects, icons, spreadsheet cells, title bars will always be the same number of pixels in size whatever the resolution.

Consequently, at higher resolutions they will appear smaller and you'll be able to fit more on the desktop. Of course, make them too small and you won't be able to see them at all, which is why higher resolutions work better on physically larger monitors where the pixels are correspondingly larger.

Typical ideal resolutions on certain-sized monitors are 640 x 480 on a 14in, 800 x 600 or 1024 x 768 on a 15in, 1024 x 768 or 1152 x 882 on a 17in and 1280 x 1024 or even 1600 x 1200 on a 20/21in display, but be sure your display will be able to cope with any modes you have in mind.

VGA mode works at a resolution of 640 by 480 pixels in 16 colours or sometimes 256, requiring around 256Kb of video memory. A resolution of 1024 by 768 pixels in 256 colours requires 1Mb of video memory. Numbers of colours, or pixel depth, is often described as numbers of bits. The total number of colours is 2 to the power of the number of bits; 8 bit offers 256 colours, 16-bit (high colour) supplies 65,536 and 24/32-bit (true colour) reaches that mystical figure of 16,777,216 colours.

If you want a display to fool the eye into seeing full colour, you need 256 shades of red, green and blue; that is 8 bits per three primary colours, hence 24 bits in total. 16-bit colour requires twice

the memory of 8-bit, while 24-bit colour requires *three* times the memory than 8-bit at the same resolution. Consequently, 16-bit colour at 1024 by 768 pixels would require 2Mb of video memory, and 24-bit would need 3Mb. If you have the appropriate drivers, 1Mb of video memory can do 1024 by 768 pixels in 8-bit, 16-bit at 800 by 600 pixels or 24-bit at 640 by 480 pixels.

Interlacing is the process of drawing every other line until the entire screen is full, then going back to the top and drawing the others again until the bottom is reached. Since an entire frame is drawn in two goes, the resulting effect is a highly undesirable flickering display. Non-interlaced (NI) is where every line is drawn before returning to the top for the next frame, resulting in a far steadier display.

The last point to note is refresh rate, measured in Hertz (Hz) and representing the number of frames displayed on screen per second. Too few, and the eye will notice the intervals in between and perceive a flickering display. The worldwide accepted refresh rate for a flicker-free display is 70Hz and above, although many can see improvements from 72 to 75Hz. Below 70Hz is unacceptable to most eyes, as are any interlaced modes. Ensure your monitor is capable of displaying the resolution at the refresh rate you desire. If you push your monitor too hard, it won't display anything at all.

Gordon Laing

What's on your graphics card

RAMDAC:

Controls the digital image coming from the PC and converts it to an analogue signal for the monitor. It's very important for refresh rate and colour palette. Some RAMDACs are integrated into the graphics controller chip

VGA Feature Connector:

Used to connect other expansion cards to transfer data to and from each other

Local Peripheral Bus (LPB):

Used for add-ons such as MPEG daughterboards

On-board Video Memory:

Commonly consists of 2Mb of memory, but some boards can come with up to 8Mb

Video-in Socket:

Not common to many cards at the moment. Used for input of video images from VCRs and so on

SVGA Monitor Connector (HD-15):

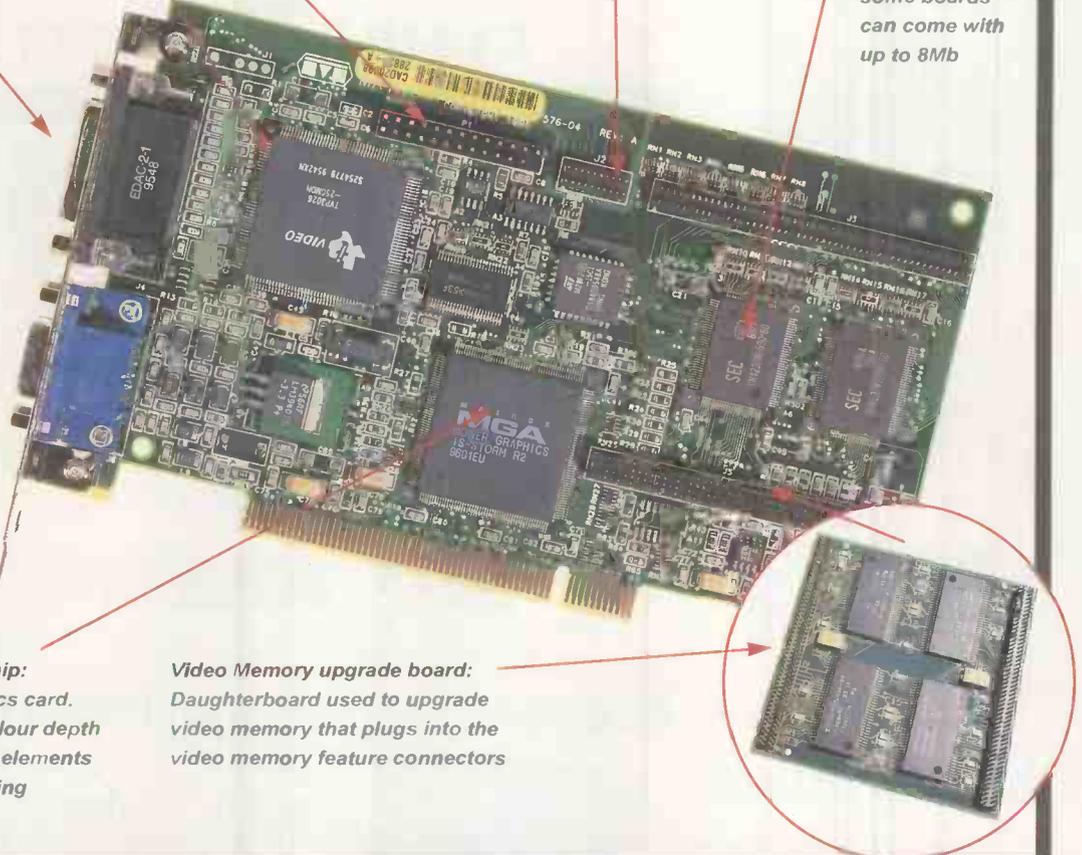
15-pin plug connecting the graphics card to the monitor

Graphics Processor Chip:

The heart of the graphics card. Controls resolution, colour depth (with RAMDAC) and all elements associated with rendering images on screen

Video Memory upgrade board:

Daughterboard used to upgrade video memory that plugs into the video memory feature connectors



Editor's Choice

This year's group test proved to be a tough one when it came to selecting the Editor's Choice. With the advent of Windows 95, more video capability and the presence of so many S3 chip-based cards, choosing the "fittest" of the lot proved a trial.

We could have selected a card based on overall speed but by doing so we would have had to ignore cost, and that's too important to forget. So factors such as utilities, ease of installation (or usability), documentation and value were combined with performance when considering our choice.

With this said and done we found one card that impressed us the most and, thus, was awarded Editor's Choice — the ATI Video Xpression. It performed very well in all of our application and graphics primitive tests, with it being specially optimised for 800 x 600 resolution in true colour. This is ideal for the multitude of users out there with 14in and 15in monitors. It has a powerful graphics engine in the form of the ATI Mach 65 264VT chip and it comes with only 2Mb of standard DRAM for its video memory. It also provides a good range of resolution and colour depth while maintaining a minimum vertical refresh rate above 75Hz. The RRP of the Video

Xpression is listed at £175 but street prices tend to hover at £129, which is a good buy if you want speed at an affordable price.

Our runners-up and recipients of a Highly Commended award are the VideoLogic GrafixStar 400 and the Diamond Stealth Video VRAM. The GrafixStar 400 is one of those truly affordable cards that delivers respectable capability and performance. It's not able to leap tall buildings in a single bound but it does provide a colour depth of 65,535 colours at 1024 x 768. Its speed can be attributed to its use of EDO RAM and S3 Trio 64V+ optimised drivers.

The Diamond Stealth Video 3400XL was chosen for one main reason: speed. Looking at the results, it performed particularly well on the applications test at 1024 x 768 in 16-bit colour. Most cards are now optimised for this resolution but it's apparent the Diamond Stealth Video 3400XL GT drivers are the best for this, which means that Windows users should benefit well.

Outstanding omissions include the Orchid and Paradise cards. They did great but they're still in development, so we decided to wait and see how the final versions come out. They should be in the shops by the end of May or early June.

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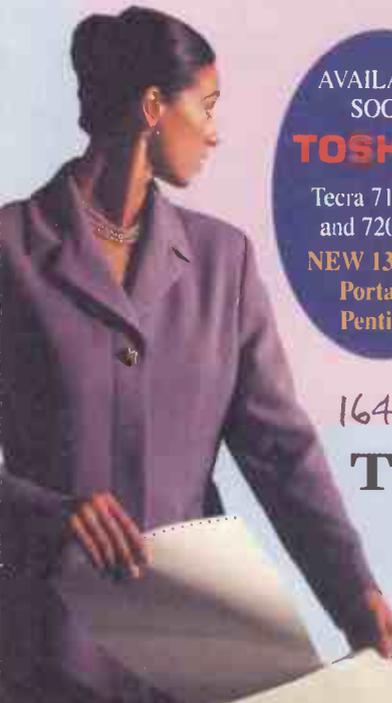
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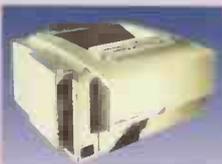


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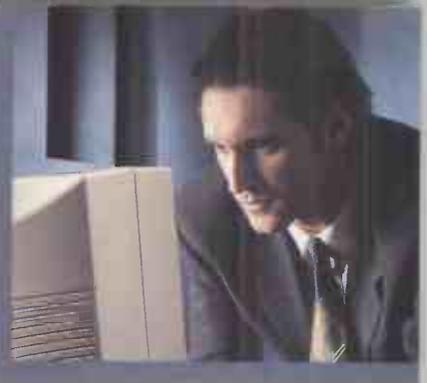
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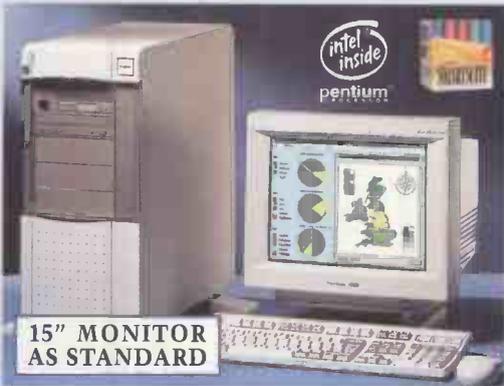
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- Premier Desktop Case
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- MS Windows®95 or DOS & MS Windows®3.11
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- Professional Tower Case
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Microsoft Software Suite

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- MS Works 4 - CD
- MS Money 4 - CD
- MS Golf - CD
- MS Dinosaurs - CD
- MS Fine Artist - CD
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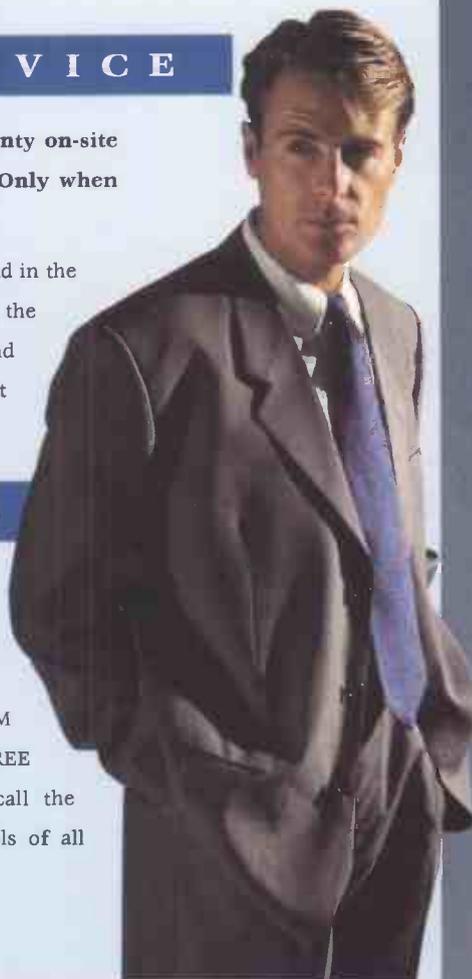
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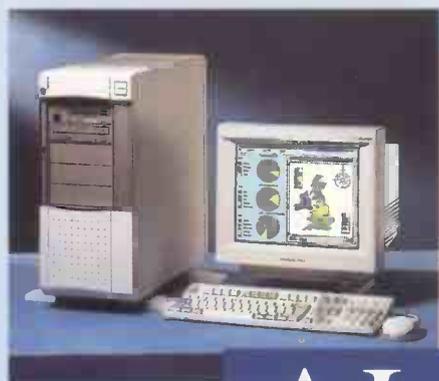
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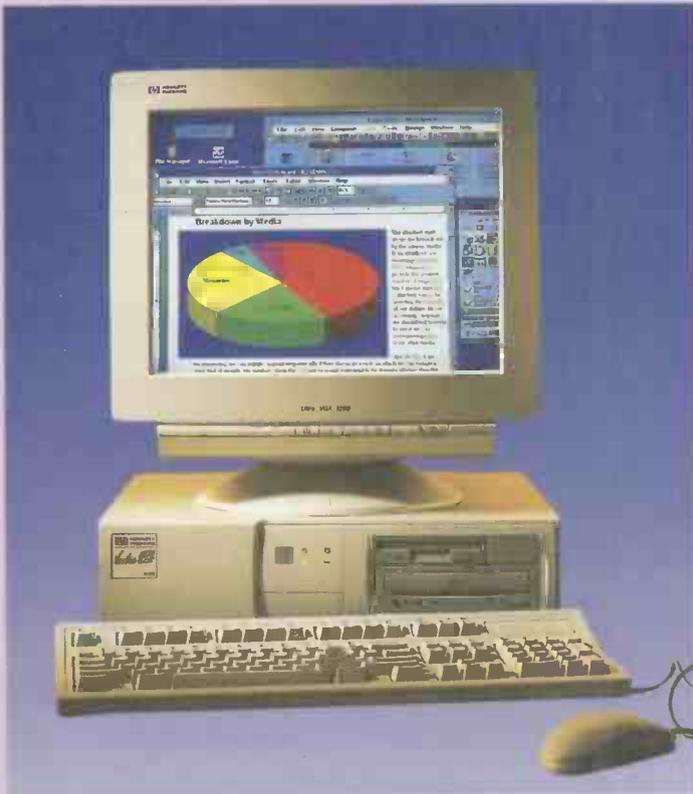


164d



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Another great computer deal from Alternatives.



Ideal for use in the home or office, the Hewlett Packard VE provides the power of a fast 100MHz Pentium Processor, 8MB RAM and a massive 1.2GB hard disk drive for an unbelievable price.

With the added security of a 3 Years Warranty (1st year on-site) and the brand name of a leading manufacturer its a PC offer you cannot afford to miss!

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- PCI Local Bus Graphics with
- 1MB Video RAM
- Plug and Play Compatible
- 4 Expandable Slots
- 102 Key Keyboard and Mouse
- 14" SVGA Colour monitor
- MS DOS 6.22 and MS Windows for Workgroups

Ex VAT Inc. VAT

Creative Labs Vibra 16 & Mains Powered Speakers
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£99.00 £116.33



£1099
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COMPAQ Presario



CareFREE 36
3 YEARS ON-SITE WARRANTY INCLUDED FREE

- Presario 5220**
- Intel Pentium 100MHz Processor
 - 8MB EDO RAM
 - Upgradable to 136MB
 - 840MB HDD
 - Quad Speed CD ROM
 - Enhanced PCI Based Local Bus Graphics
 - Pre-installed Software and
- Bundled CD Titles**
- MultiMedia Home Communications Feature (5220 Only)
 - 3 Year Warranty (1st Year On-site)
- Presario 9220**
- Specification as Presario 5220 in Stylish Tower Case

Ex VAT Inc. VAT

Presario 5220 £1449.00 £1702.58
Presario 9220 £1499.00 £1761.33

COMPAQ ProLineas



SEE TABLE BELOW FOR MONITOR OPTIONS

- Processors from 75MHz to 100MHz Pentium®
- 8MB or 16MB RAM
- Upgradable to 192MB
- Optional CD ROM Drive
- 630MB or 1GB Hard Disk Drive
- Integrated PCI Local Bus Graphics

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e 3875	£849.00	£997.57
e 57100	£979.00	£1150.32
5/75 3 Bay/3 Slot	£999.00	£1173.83
5/90 4 Bay/4 Slots, CD ROM	£1129.00	£1326.57
5/100 4 Bay/4 Slots, CD ROM	£1169.00	£1373.57
5/100 4 Bay 4 Slot 1GB HDD	£1349.00	£1585.08

COMPAQ LTE 5000's



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- 8MB RAM
- Upgradable to 72MB
- 510MB to 1.35GB HDD
- MS Video and Compaq Sound System
- CareFREE 36 On-site Warranty

Ex VAT Inc. VAT

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LTE 5000 P75 M1010 CSTN 8"X6"	£2299.00	£2701.33
LTE 5000 P75 M1010 CTFT	£2499.00	£2936.32
LTE 5100 P90 M1010 CTFT 8"X6"	£2749.00	£3230.07
LTE 5100 P90 M1010 CD CTFT 8"X6"	£2999.00	£3523.83
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GRAPHICS CARDS TABLE OF FEATURES

							
Manufacturer Model	ATI Video Xpression	Cirrus Logic CLGD-5446 Chip	Diamond Diamond Stealth 64 Video 2201XL	Diamond Diamond Stealth 64 Video 3400XL	Hercules Graphics Terminator 64 Video	Matrox MGA Millennium PowerDoc Edition	miro miro Video 20SV
Supplier/contact	ATI Technologies	N/A	Evesham Micros	Evesham Micros	Imago Micro	Matrox UK	miro UK
Telephone	01235 833666	N/A	01386 765500	01386 765500	01635 861122	01793 441100	01494 510250
Fax	01235 833668	N/A	01386 765354	01386 765354	01635 868188	01793 441199	01494 510070
Price (with 2Mb or 4Mb) excl.VAT	£ 175 (2Mb, £130 street)	N/A	£115 (2Mb)	£189 (2Mb) £289 (4Mb)	£215 (2Mb)	£339 (2Mb)	£191 (2Mb)
RAM Type	DRAM	EDO DRAM	EDO DRAM	VRAM	EDO DRAM	WRAM	VRAM
Max RAM (Mb)	2	4	2	4	2	8	2
Price of MPEG module (excl.VAT)	N/A	N/A	£ 88	£ 179	N/A	£ 235	N/A
Processor	Mach 64 264VT	CLGD-5446	S3 Trio 64V+	S3 Vision 968	S3 Trio 64V+	MGA 2064W	S3 Vision 968
Processor type	64-bit	64-bit	64-bit	64-bit	64-bit	64-bit	64-bit
RAMDAC (MHz)	135	135	135	220	135	250	135
Video Bus Standard							
VESA Media Channel (VMC)	○	○	○	○	○	○	○
VAFC**	○	●	○	○	●	○	○
PCI*	●	●	●	●	●	●	●
3D Support							
3D Acceleration	○	○	○	○	○	○	○
3D Libraries supported							
Direct 3D	○	○	○	○	○	●	○
Quickdraw 3D	○	○	○	○	○	○	○
Feature connector							
VESA	●	●	●	●	●	○	●
MCA	○	○	○	○	○	○	●
Local Peripheral Bus (LPB)	●	●	●	○	○	○	○
Video acceleration	●	●	●	●	●	●	●
Resolution and Refresh							
Max bit depth 640 x 480	32	24	32	32	24	32	32
Max bit depth 800 x 600	24	24	32	32	24	32	32
Max bit depth 1024 x 768	16	16	16	32	16	32	16
Max bit depth 1280 x 1024	8	8	8	32	8	24	8
Max bit depth 1600 x 1200	N/A	N/A	N/A	16	8	24	N/A
Max refresh 640 x 480 (Hz)	120	85	120	120	120	200	100
Max refresh 800 x 600 (Hz)	120	85	120	120	120	200	100
Max refresh 1024 x 768 (Hz)	120	85	100	120	90	120	100
Max refresh 1280 x 1024 (Hz)	75	75	75	90	75	110	75
Max refresh 1600 x 1200 (Hz)	N/A	N/A	N/A	76	86 (int.)	85	N/A
Max res. at max. refresh	1024 x 768 @ 120Hz	1024 x 768 @ 85Hz	800 x 600 @ 120Hz	1024 x 768 @ 120Hz	800 x 600 @ 120Hz	800 x 600 @ 200Hz	1024 x 768 @ 100Hz
Refresh-rate selection utility	●	●	●	●	●	●	●
On-the-fly resolution switching	●	●	●	●	●	●	●
On-the-fly bit depth switching	●(Win 3.1)	○	●	●	○	●(Win 3.1)	○
Extras/Drivers							
Virtual desktop	●	○	●	●	●	●	●
Zoom	●	●	●	●	●	●	●
Windows 95 drivers	●	●	●	●	●	●	●
Windows 3.1x drivers	●	●	●	●	●	●	●
Microsoft NT drivers	●	●	●	●	●	●	○
OS/2 drivers	●	●	●	●	●	●	●
AutoCAD drivers	●	●	●	●	○	●	●
Warranty (years)	5	N/A	5	5	5	5	2
Free Tech Support	●	N/A	●	●	●	●	●
Additional software	MPEG Player		MPEG Arcade, Runtime for Windows	3DFX, Corel Draw 4, MPEG Arcade, Runtime for Windows		Compcore Software MPEG, Document Viewer	

KEY ● Yes ○ No

*PCI Peripheral Component Interconnect **VAFC VESA Advanced Feature Connector

GRAPHICS CARDS TABLE OF FEATURES

	miro	Number Nine	Orchid	Paradise	STB	STB	VideoLogic
Manufacturer Model	miro miro Video 22SD	Number Nine 9FX Motion 331	Orchid Kelvin Video 64	Paradise Pipeline 64	STB Powergraph 64 Video	STB Velocity 64 Video	VideoLogic GrafixStar 400
Supplier/contact	miro UK	Number Nine Visual Technology	Orchid (Europe)	Philips Electronics (UK)	STB Systems	STB Systems	VideoLogic
Telephone	01494 510250	01256 381594	01256 479898	0181 689 4444	0181 897 1003	0181 897 1003	01923 260511
Fax	01494 510070	01256 381194	01256 64222	0181 781 8979	0181 897 1006	0181 897 1006	01923 270188
Price (with 2Mb or 4Mb) excl.VAT	£123 (2Mb)	£139 (2Mb)	£147 (2Mb)	expected £129	£95 (2Mb)	£219 (2Mb) £319 (4Mb)	" £165 (2Mb," £130 street)
RAM Type	EDO DRAM	EDO DRAM	DRAM	EDO DRAM	EDO DRAM	EDO DRAM	EDO DRAM
Max RAM (Mb)	2	2	2	2	2	4	2
Price of MPEG module***	N/A	N/A	N/A	N/A	N/A	N/A	£89 (£75 street)
Processor	S3 Trio 64V+	S3 Trio 64V+	Alliance 6410	WD9710-MZ	S3 Trio 64V+	S3 Vision 968	S3 Trio 64V+
Processor type	64-bit	64-bit	64-bit	64-bit	64-bit	64-bit	64-bit
RAMDAC (MHz)	135	135	135	135	135	220	135
Video Bus Standard							
VESA Media Channel (VMC)	○	○	○	○	○	○	○
VAFC**	○	○	○	○	○	○	○
PCI*	●	●	●	●	●	●	●
3D Support							
3D Acceleration	○	○	○	○	○	○	○
3D Libraries supported							
Direct 3D	○	○	○	○	○	○	○
Quickdraw 3D	○	○	○	○	○	○	○
Feature connector							
VESA	●	●	●	●	●	●	●
MCA	●	○	○	○	○	○	○
Local Peripheral Bus (LPB)	○	●	○	○	○	○	●
Video acceleration	●	●	●	●	●	●	●
Resolution and Refresh							
Max bit depth 640 x 480	32	32	32	32	32	32	32
Max bit depth 800 x 600	32	32	32	32	32	32	32
Max bit depth 1024 x 768	16	16	16	16	16	32	16
Max bit depth 1280 x 1024	8	8	8	16	8	32	8
Max bit depth 1600 x 1200	N/A	N/A	8	8	N/A	16	8
Max refresh 640 x 480 (Hz)	100	150	150	75	160	160	120
Max refresh 800 x 600 (Hz)	100	130	120	75	140	160	120
Max refresh 1024 x 768 (Hz)	100	78	120	75	120	120	100
Max refresh 1280 x 1024 (Hz)	75	72	75	60	75	85	75
Max refresh 1600 x 1200 (Hz)	N/A	N/A	60	43 (interlaced)	N/A	80	60
Max res. at max. refresh	1024 x 768 @ 100Hz	800 x 600 @ 130Hz	1024 x 768 @ 120Hz	1024 x 768 @ 75Hz	1280 x 1024 @ 75Hz	1600 x 1200 @ 80Hz	800 x 600 ¹
Refresh-rate selection utility	●	●	●	●	●	●	●
On-the-fly resolution switching	●	●	●	●	●	●	●
On-the-fly bit depth switching	○	○	●	●	●	●	○
Extras/Drivers							
Virtual desktop	●	●	●	●	●	●	●
Zoom	●	●	●	●	●	●	●
Windows 95 drivers	●	●	●	●	●	●	●
Windows 3.1x drivers	●	●	●	●	●	●	●
Microsoft NT drivers	○	●	●	●	●	●	●
OS/2 drivers	●	●	●	●	●	●	●
AutoCAD drivers	●	●	●	●	●	●	●
Warranty (years)	2	5	1	5	10	10	5
Free Tech Support	●	●	●	●	●	●	●
Additional software		Runtime for Windows	Xing MPEG	Paradise Video Player	Comanche Maximum Overkill, Xing MPEG	Comanche Maximum Overkill, Xing MPEG	Xing MPEG

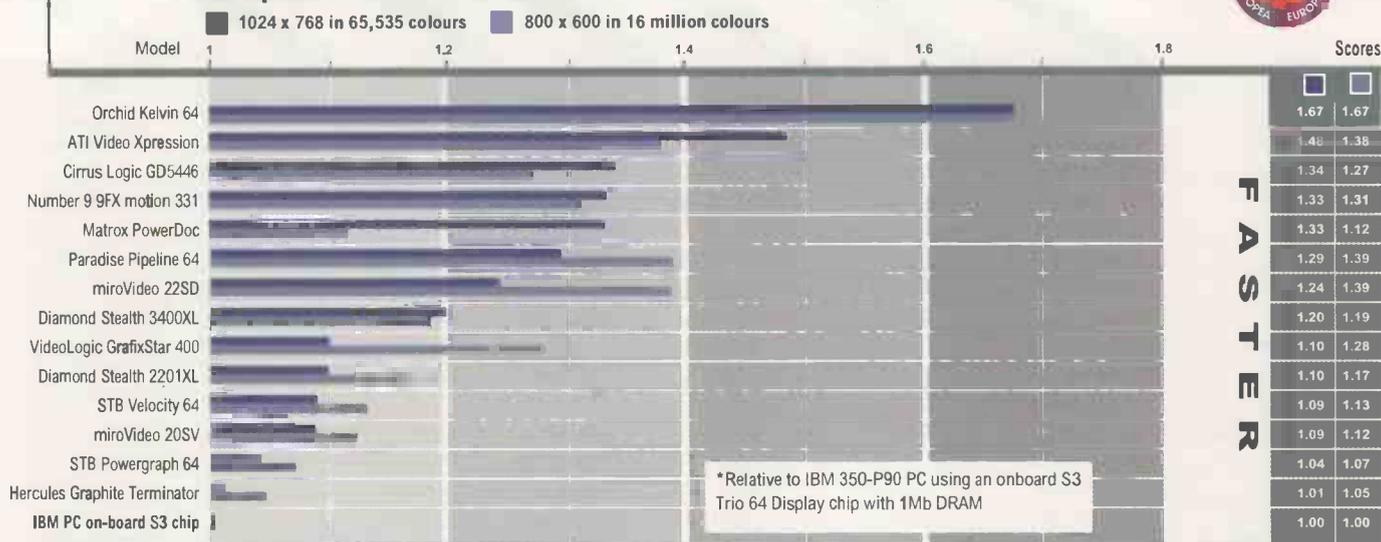
KEY ● Yes ○ No

*PCI Peripheral Component Interconnect **VAFC VESA Advanced Feature Connector *** (excl.VAT) ¹ @ 120Hz

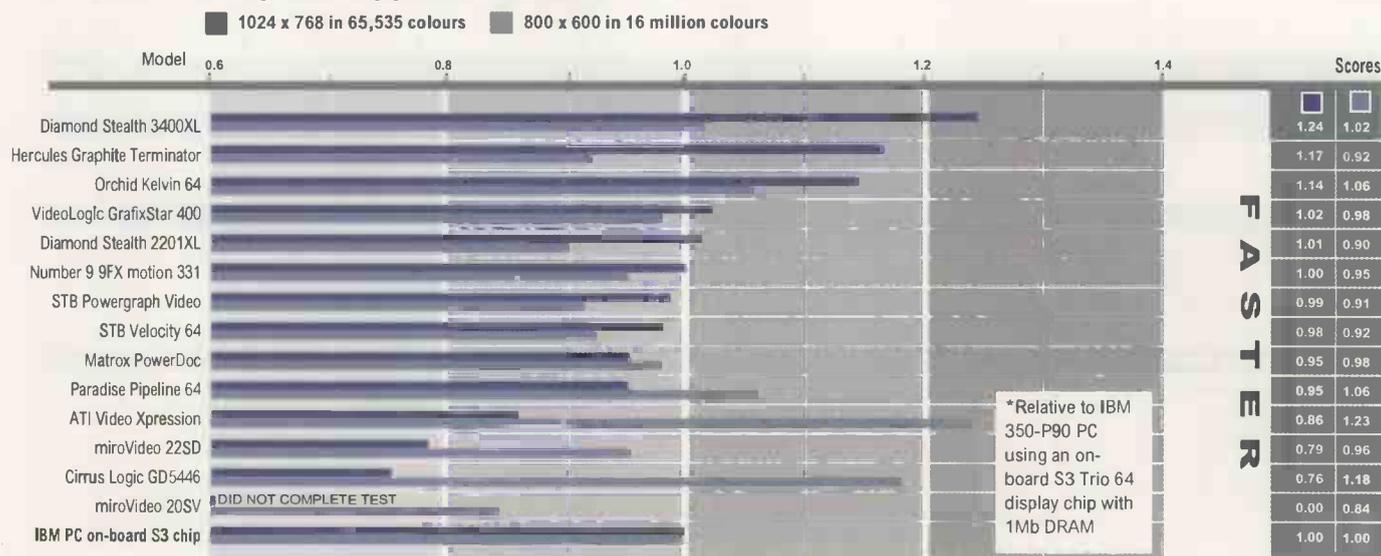
Performance Results



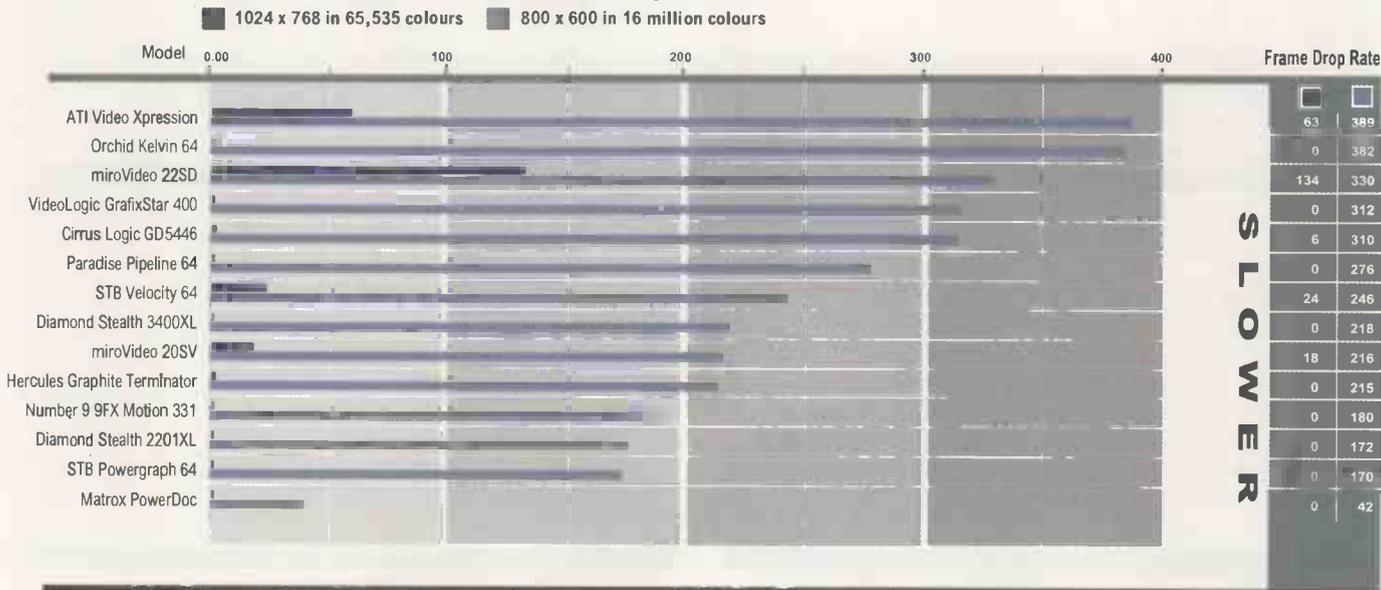
Graphics Primitive Tests



Graphics Application Tests



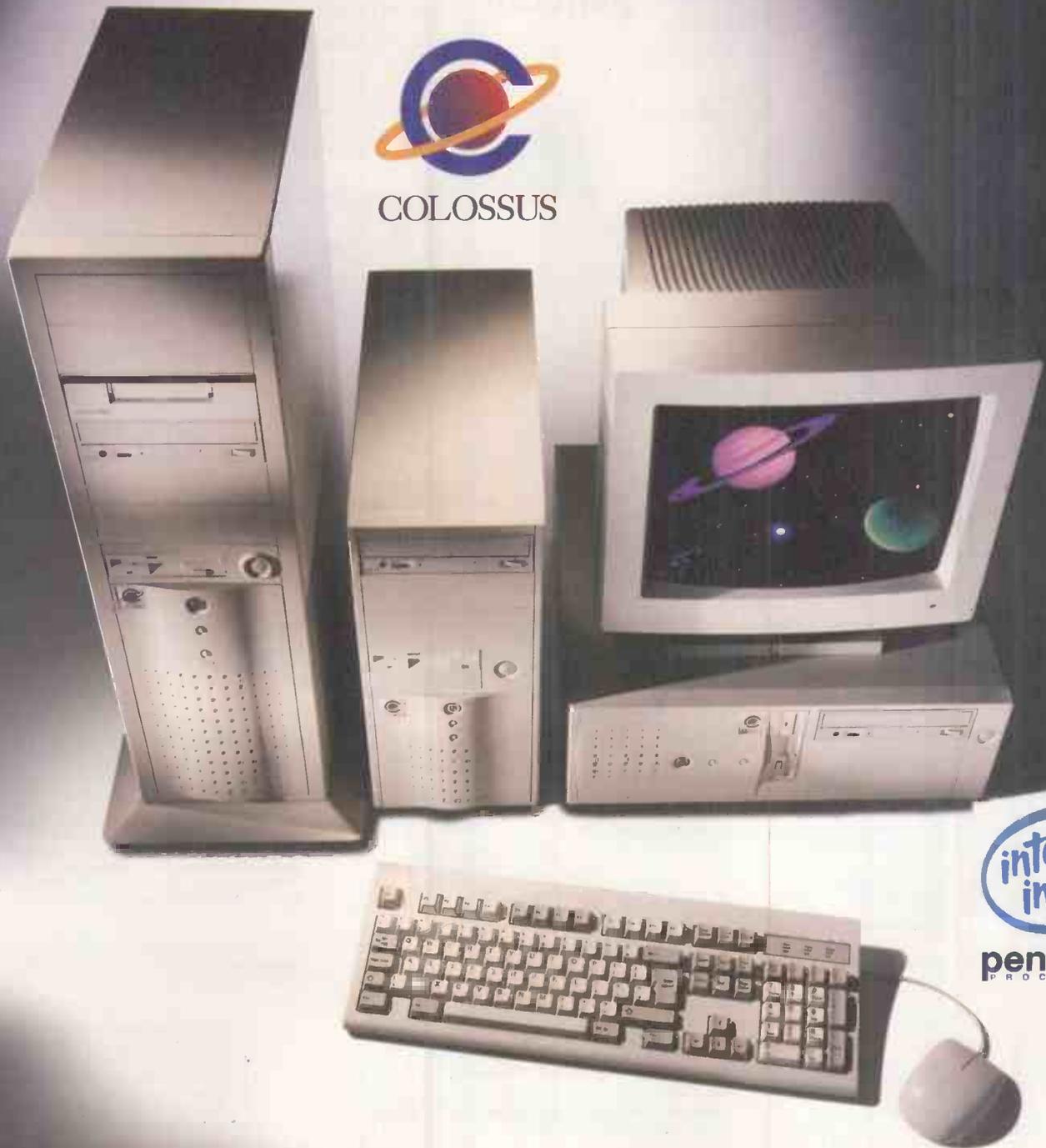
Video for Windows Frame Drops



Colossus build performance PCs & that's a fact



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pentium
PROCESSOR

Colossus PI00 Multimedia MT

£1079 +VAT £1267.⁸³ inc.VAT

- Intel® 100MHz Pentium® processor
- 16Mb RAM expandable to 128Mb
- 850Mb enhanced IDE hard disk with 256K cache
- Quad speed IDE CD-ROM drive
- BABT approved 14.4 fax/data/Internet modem
- 256K Pipeline burst mode external CPU cache
- Intel Socket 7 and advanced 'Plug and Play' motherboard
- Support for flash BIOS and EDO RAM
- Fast PCI enhanced IDE mode 4 hard disk controller
- 3 Free PCI and 4 ISA expansion slots
- Two 16550 compatible UART driven high speed serial ports
- EPP and ECP capable enhanced bidirectional parallel printer port
- 64-bit integrated graphics with video acceleration optimised for Windows® 95, switchable to use 2Mb RAM for video
- 16-bit stereo sound card
- 3.5" 1.44Mb floppy drive
- Colossus 8 bay midi tower case with 210w CE approved power supply and CPU cooling fan
- 105 Windows 95 keyboard & Microsoft® compatible serial mouse
- 14" SVGA colour screen (with 15" and 17" options available)
- Various speaker options available
- Microsoft Windows 95 with manuals and CD, Lotus Windows 95 software suite with 1-2-3, Word Pro, Approach, Organizer and SmartPics, GSP Pressworks and Designworks suite

PI00 Best Buy: with 14" NI .28dp screen, 4w stereo speaker system & 6 CD multimedia titles _____ +£40+VAT extra (£47)

Colossus P75 Multimedia MT

£999 +VAT £1173.⁸³ inc.VAT

75MHz Pentium processor, 8Mb RAM model with PerfectOffice Instead of Lotus - call for detail (limited stocks)

Colossus PI20 Multimedia MT

£1139 +VAT £1338.³³ inc.VAT

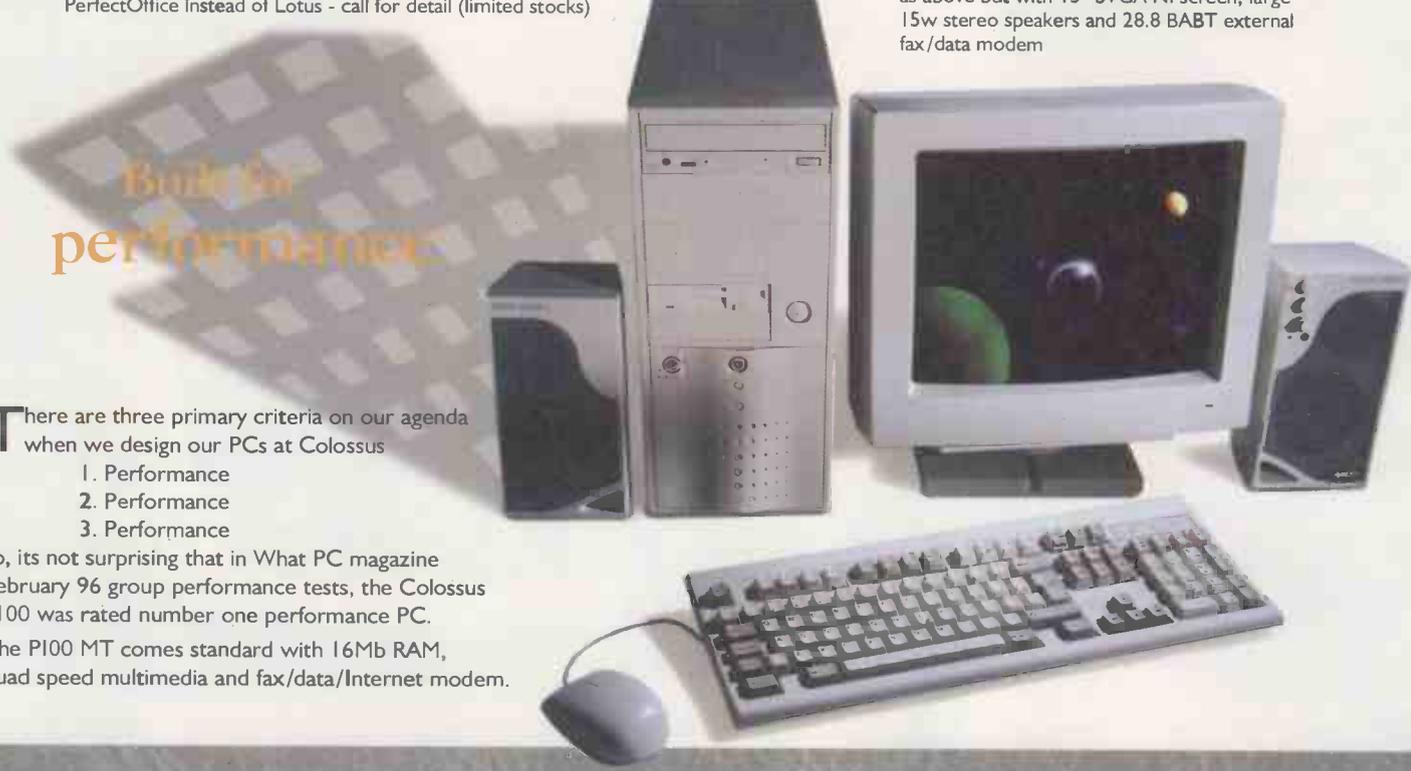
- Intel 120MHz Pentium processor
- 16Mb RAM expandable to 128Mb
- 1.08Gb enhanced IDE hard disk with 256K cache
- Quad speed IDE CD-ROM drive
- 256K Pipeline burst mode external CPU cache
- 14" NI .28dp low radiation SVGA colour screen (with 15" and 17" options available)
- Intel Socket 7 and advanced 'Plug and Play' motherboard
- Support for flash BIOS and EDO RAM
- Fast PCI enhanced IDE mode 4 hard disk controller
- 3 Free PCI and 4 ISA expansion slots
- Two 16550 compatible UART driven high speed serial ports
- EPP and ECP capable enhanced bidirectional parallel printer port
- 64-bit integrated graphics with video acceleration optimised for Windows 95, switchable to use 2Mb RAM for video to increase resolution/colours
- 16-bit stereo sound card
- 3.5" 1.44Mb floppy drive
- Colossus 8 bay midi tower case with 210w CE approved power supply and CPU cooling fan
- 105 Windows 95 keyboard & Microsoft compatible serial mouse
- 4w Stereo speaker system (various options available)
- Microsoft Windows 95 with manuals and CD
- Lotus Windows 95 software suite with 1-2-3, Word Pro, Approach, Organizer and SmartPics
- GSP Pressworks and Designworks suite
- 6 CD multimedia titles



Colossus PI20 Performance MT

£1339 +VAT £1573.³³ inc.VAT

as above but with 15" SVGA NI screen, large 15w stereo speakers and 28.8 BABT external fax/data modem



Look for performance

There are three primary criteria on our agenda when we design our PCs at Colossus

1. Performance
2. Performance
3. Performance

so, its not surprising that in What PC magazine February 96 group performance tests, the Colossus PI00 was rated number one performance PC.

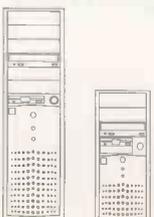
The PI00 MT comes standard with 16Mb RAM, quad speed multimedia and fax/data/Internet modem.

Expandable Case Designs

Our systems feature our new re-designed case styles with small footprints yet incredible expansion potential. All feature security locks, reset button and heavy duty 210w or 230w CE approved power supplies.



Desktop case has standard footprint, yet seven drive bays (three 5.25" accessible, one 3.5" accessible and three 3.5" internal) 16.8" W, 16.53" D, 5.74" H



Midi-tower case is the most popular and features eight drive bays (three 5.25" accessible, two 3.5" accessible and three 3.5" internal) 6.69" W, 16.14" D, 14.96" H

Full-tower case used in our high performance systems features larger power supply and nine bays (Six 5.25" accessible, one 3.5" accessible and two 3.5" internal) 7.56" W, 18.19" D, 24.4" H

High Performance Motherboards

In the heart of our most powerful systems lies the highest performance motherboards available.



- Latest Intel 430HX Triton 2 chipset with ZIF (Zero Insertion Force) Socket 7 (permitting access to Intel's upgrade path).
- 512K pipeline burst mode cache with support for flash upgradeable BIOS and faster EDO RAM (only useful if pipeline cache is fitted)
- Full implementation of standard performance components such as enhanced IDE fast mode 4 interface, 16550 fast serial ports, advanced parallel ports
- Memory to PCI bus transfer rate of up to 100Mb/s
- Fully 'Plug 'n' Play' compliant PCI bus with high levels of integration.

64-bit PCI graphics are integrated on our entry level systems which also feature high performance SIS Triton compatible chipset. The graphics on these systems use 1Mb of system RAM.

Ultimate 64-bit Graphics

Our popular systems feature fast 64-bit integrated graphics with truly excellent levels of performance through 64-bit CPU access to graphics data. This superb graphics system also provides fast 2D Windows acceleration, video acceleration for video playback, and on 16Mb systems can be switched to use 2Mb RAM for video giving higher resolution/more colours at no extra cost

System 96 models feature top brand 'VRAM' based PCI graphics controller with its own dedicated 2Mb or 4Mb VRAM and fast S3 968 processor.

- 2Mb or 4Mb fast dual-ported 'VRAM' video memory
- Latest S3 Vision 968 Processor (Diamond Stealth 64 '3400' VRAM or No9. Motion 771 VRAM)
- Flicker free refresh rate over 120Hz
- Fully 'Plug and Play' compliant
- Full hardware acceleration of graphics and real-time video
- Virtual desktop support at incredible resolutions and colours

Colossus PI33 Multimedia Desktop

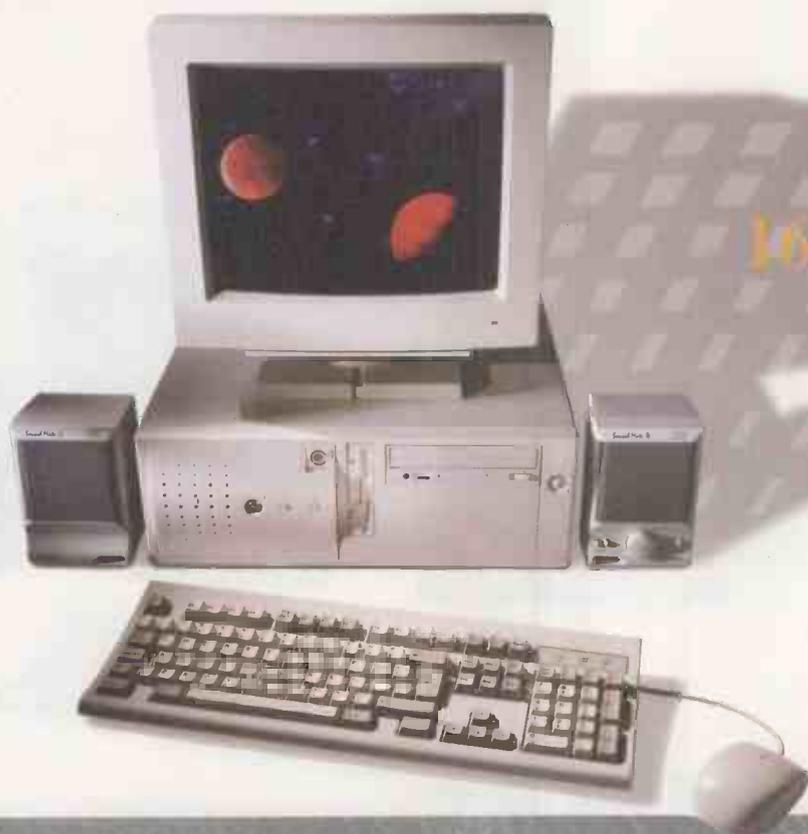
£1199 +VAT £1408.⁴³ inc.VAT

- Intel® 133MHz Pentium® processor
- 16Mb RAM expandable to 128Mb
- 1.08Gb enhanced IDE hard disk with 256K cache
- Quad speed IDE CD-ROM drive
- 256K Pipeline burst mode external CPU cache
- 14" NI .28dp low radiation SVGA colour screen (with 15" and 17" options available)
- Intel Socket 7 and advanced 'Plug and Play' motherboard
- Support for flash BIOS and EDO RAM
- Fast PCI enhanced IDE mode 4 hard disk controller can control up to 4 drives
- 3 Free PCI and 4 ISA expansion slots
- 2 16550 Compatible UART driven high speed serial ports
- EPP and ECP capable enhanced bidirectional parallel printer port
- 16-bit stereo sound card
- 3.5" 1.44Mb floppy drive
- 64-bit integrated graphics with video acceleration optimised for Windows® 95, switchable to use 2Mb RAM for video to increase resolution/colours
- Colossus 7 bay desktop case with 210W CE approved power supply and CPU cooling fan
- 105 Windows 95 keyboard & Microsoft® compatible serial mouse
- 4w Stereo speaker system (various options available)
- Microsoft Windows 95 with manuals and CD
- Lotus Windows 95 software suite with 1-2-3, Word Pro, Approach, Organizer and SmartPics
- GSP Pressworks and Designworks suite
- 6 CD multimedia titles

Colossus PI33 Performance Desktop

£1399 +VAT £1643.⁸³ inc.VAT

- Intel 133MHz Pentium processor
- 16Mb RAM expandable to 128Mb
- 1.08Gb enhanced IDE hard disk with 256K cache
- Quad speed IDE CD-ROM drive
- BAPT approved 28.8 fax/data/Internet modem
- 256K Pipeline burst mode external CPU cache
- 15" NI .28dp low radiation SVGA colour screen
- Intel Socket 7 and advanced 'Plug and Play' motherboard
- Support for flash BIOS and EDO RAM
- Fast PCI enhanced IDE mode 4 hard disk controller can handle up to 4 drives
- 3 PCI and 4 ISA expansion slots
- 2 16550 compatible UART driven high speed serial ports
- EPP and ECP capable enhanced bidirectional parallel printer port
- 16-bit stereo sound card
- 64-bit PCI integrated graphics with video acceleration optimised for Windows 95, switchable to use 2 Mb RAM for video to increase resolution / colours
- 3.5" 1.44Mb floppy drive
- Colossus 7 bay desktop case with 210w CE approved power supply and CPU cooling fan
- 105 Windows 95 keyboard and Microsoft compatible serial mouse
- 15w Stereo speaker system with A/C adapter
- Microsoft Windows 95 with manuals and CD
- Lotus Windows 95 software suite with 1-2-3, Word Pro, Approach, Organizer and SmartPics
- GSP Pressworks and Designworks suite
- 6 CD multimedia titles



Build with
16Mb RAM

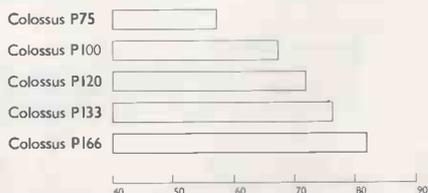
For optimum performance in Windows 95, you need 16Mb RAM. Eleven out of twelve of our 'best buy' systems now include 16Mb or more RAM as standard. On 8Mb Windows 95 systems, increasing the RAM to 16Mb is the single most important factor that will increase real-life performance and productivity.



Fastest Processors

All Colossus systems use only genuine Intel Pentium processors. All our motherboards feature Intel socket 7 which will take processors from 75MHz to 200MHz. Systems using Intel's new Pentium Pro processor are currently more suited as file servers or for 32-bit software such as Windows NT and are actually slower than Pentium processor based systems when running typical Windows 95 applications.

Relative Windows 95 performance



Pipeline Burst Mode Cache

The case for pipeline burst mode cache could not be stronger. Having pipeline burst mode cache is far more important than having just EDO RAM which only produces a marginal increase in performance. All our best buy systems except P75 include 256k or 512k pipeline burst mode cache

16Mb System RAM

Amount of system RAM is more important than type of RAM. If you are on a tight budget, we strongly recommend 16Mb RAM in preference to a faster processor. Windows 95 usability tests show better productivity and performance with 16MB RAM compared with a system with much faster processor but only 8MB RAM.

Business Software

Most of our best buy models come with an excellent range of top quality business software. Please check system specification for details of which software is bundled.

Lotus Windows 95 software suite with on-line documentation is pre-loaded on most systems and includes

- Lotus Word Pro 96 for Windows 95
- Lotus Approach 96 for Windows 95
- Lotus 1-2-3 v5 for Windows
- Lotus Organizer v2.1 for Windows
- Lotus SmartPics graphics
- GSP software suite including Pressworks desktop publisher, Designworks graphics package



Business software from Novell



Multimedia CDs including BodyWorks 5

Colossus PI33 Multimedia MT

£1399 +VAT £1643.⁸³ inc.VAT

- Intel® 133MHz Pentium® processor
- 16Mb EDO RAM expandable to 128Mb
- 1.6Gb enhanced IDE hard disk with 256K cache
- Six speed IDE CD-ROM drive
- 256K Pipeline burst mode external CPU cache
- 64-bit PCI graphics with 2Mb dedicated video RAM, optimised for Windows® 95
- 14" NI .28dp low radiation SVGA colour screen (other options available)
- Intel Socket 7 and advanced 'Plug and Play' motherboard
- Intel Triton 430FX chipset with support for flash BIOS and EDO RAM
- Fast PCI enhanced IDE mode 4 hard disk controller can handle up to 4 drives
- 3 PCI and 4 ISA expansion slots
- 2 16550 Compatible UART driven high speed serial ports
- EPP and ECP capable enhanced bidirectional parallel printer port
- 16-bit stereo sound card
- 3.5" 1.44Mb floppy drive
- Colossus 8 bay midi tower case with 210w CE approved power supply and CPU cooling fan
- 105 Windows 95 keyboard & Microsoft® compatible serial mouse
- 4w stereo speaker system (various options available)
- Microsoft Windows 95 with manuals and CD
- Lotus Windows 95 software suite with 1-2-3, Word Pro, Approach, Organizer and SmartPics
- GSP Pressworks and Designworks suite
- 6 CD multimedia titles

Colossus PI33 Performance MT

£1599 +VAT £1878.³³ inc.VAT
 as above but with 15" SVGA NI screen, 15w stereo speakers and 28.8 BABT external fax/data modem

Colossus PI33 System 96 I

£1899 +VAT £2231.³³ inc.VAT

- Intel 133MHz Pentium processor
- 16Mb EDO RAM expandable to 128Mb
- 2.0Gb enhanced IDE hard disk with 256K cache
- Six speed IDE CD-ROM drive
- BABT approved 28.8 fax/data/Internet modem
- 256K pipeline burst mode external CPU cache
- 64-bit PCI graphics with 2Mb 'VRAM' video RAM, video acceleration and optimised for Windows 95
- Orchid NuSound 'Plug and Play' wavetable 3D sound card
- 15" NI .28dp low radiation SVGA colour screen (other options available)
- Intel socket 7 and advanced 'Plug and Play' motherboard
- Intel Triton chipset with support for Flash BIOS and EDO RAM
- Fast PCI enhanced IDE mode 4 hard disk controller can handle up to 4 drives
- 3 PCI and 4 ISA expansion slots
- 2 16550 compatible UART driven high speed serial ports
- EPP and ECP capable enhanced bi-directional parallel printer port
- 3.5" 1.44Mb floppy drive
- Colossus 8 bay midi tower case with 210W CE approved power supply and CPU cooling fan
- 105 Windows 95 keyboard & Microsoft compatible serial mouse
- Powerful 70w stereo speaker system
- Microsoft Windows 95 with manuals
- Lotus Windows 95 software suite with 1-2-3, Word Pro, Approach, Organizer and SmartPics
- GSP Pressworks and Designworks suite
- 6 CD multimedia titles

Built to your requirements

If none of our money saving 'best buy' models listed here matches your desired specification, you can instruct us to build a performance multimedia system to your individual requirements.



Business Software

Novell PerfectOffice may be pre-loaded on some systems or available as an optional extra on CD with other systems. PerfectOffice includes the following. Call for details

- WordPerfect word processing package
- Quattro Pro for Windows spread sheet
- Presentations graphics package
- Envoy document system
- Infocentral organizer
- GroupWise electronic mailing system

Leisure/Multimedia Software

In order you may enjoy the multimedia capabilities of these systems. Immediately, we include a range of CD multimedia packages which include:

- WinTutor 95 multimedia tutorial
- Infopedia full-feature encyclopaedia
- BodyWorks 5 educational/medical package
- French, German & Spanish language tutor
- Quicken v4 multimedia CD finance pack
- Shareware multimedia CD

Unique Sound Capability

All our multimedia systems feature quality 16-bit sound with low noise to signal ratio. System 96 features the latest wavetable PnP 'NuSound' sound card from Orchid with the following features

- Hardware wavetable synthesis and MIDI support
- 3D Spatializer audio technology giving 'surround sound'
- 1Mb wavetable in compressed ROM (forget 512K wave table sound cards)
- Up to 32 simultaneous voices, 190 instrument sounds and voice recognition
- 5 sound channels (4 stereo and 1 mono)
- Fully 'Plug and Play' compliant with CD quality sound compatible with Soundblaster, MPC II/III, Roland MT-32 and MPU-401
- Speakers may be upgraded to 15w for £20+VAT (£23.50) or 70w for £50+VAT (£58.75)

Fast 28.8 Modems

Most of our systems come with high performance 14.4 internal or 28.8 external modems with associated fax, data comms and Internet software.



High Capacity Storage

- Hard disks: All our systems feature the latest enhanced IDE hard disks with on board cache. Capacities are available from 850Mb to 2.0Gb. The performance of these disks when linked to the E IDE controller on our motherboards are comparable to SCSI II based systems.
- CD-ROM: All systems feature a fast IDE quad, six or eight speed CD-ROM drive with data transfer rate approaching 1200Kb/sec.
- System 96 P166 models come with 3.2Gb tape back-up as standard.

Superb Screens

All systems can be purchased with a choice of top quality SVGA colour screens (14", 15", 17" or 20"). Please note that computer screens are normally measured using the CRT tube size

- 14" .28 to 15" .28dp NI screen _____ +£70+VAT (£82.25)
- 15" .28 to 17" .28dp NI screen _____ +£230+VAT (£270.25)
- 17" .28 to 20" .28dp NI screen _____ +£530+VAT (£622.75)

Colossus P166 System 96 2

£2499 +VAT £2936.33 inc.VAT



- Intel® 166MHz Pentium® processor
- 16Mb EDO RAM expandable to 128Mb
- 2.0Gb Enhanced IDE hard disk with 256K cache
- Eight speed IDE CD-ROM drive
- BABT approved 28.8 fax/data/Internet modem
- 256K Pipeline burst mode external CPU cache
- 64-bit PCI graphics with 4Mb 'VRAM' video RAM, video acceleration and optimised for Windows® 95
- Orchid NuSound 'Plug and Play' wavetable 3D sound card
- 3.2Gb tape back-up system
- 15" NI .28dp low radiation SVGA colour screen (other options available)

- Intel Socket 7 and advanced 'Plug and Play' motherboard
- Intel Triton 430FX chipset with support for flash BIOS and EDO RAM
- Fast PCI enhanced IDE mode 4 hard disk controller can handle up to 4 drives
- 3 PCI and 4 ISA expansion slots
- 2 16550 Compatible UART driven high speed serial ports
- EPP and ECP capable enhanced bidirectional parallel printer port
- 3.5" 1.44Mb floppy drive
- Colossus 9 bay full tower case with 230w CE approved power supply and CPU cooling fan
- 105 Windows 95 keyboard & Microsoft® compatible serial mouse
- Powerful 70w stereo speaker system
- Microsoft Windows 95 with manuals and CD
- Lotus Windows 95 software suite with 1-2-3, Word Pro, Approach, Organizer and SmartPics
- GSP Pressworks and Designworks suite
- 6 CD multimedia titles

Colossus P166 System 96 3B

£2799 +VAT £3288.83 inc.VAT



- Intel 166Mhz Pentium processor
- 32Mb EDO RAM expandable to 128Mb
- 2.0Gb Enhanced IDE hard drive with 256K cache
- Eight speed IDE CD-ROM drive
- BABT approved 28.8 fax/data/Internet modem
- 512K Pipeline burst mode external CPU cache
- 64-bit PCI graphics with 4Mb 'VRAM' video RAM, video acceleration and optimised for Windows 95
- Orchid NuSound 'Plug and Play' wavetable 3D sound card
- 3.2Gb tape back-up system
- 15" NI .28dp low radiation SVGA colour screen (other options available)

- Intel Socket 7 and advanced 'Plug and Play' motherboard
- Latest Intel Triton 2 430HX chipset with support for flash BIOS and EDO RAM
- Fast PCI enhanced IDE mode 4 hard disk controller can handle upto 4 drives.
- 3 PCI and 4 ISA expansion slots
- 2 16550 compatible UART driven high speed serial ports
- EPP and ECP capable enhanced bidirectional parallel printer port
- 3.5" 1.44Mb floppy drive
- Colossus 9 bay full tower case with 230w CE approved power supply and CPU cooling fan
- 105 Windows 95 keyboard & Microsoft compatible serial mouse
- Powerful 70w stereo speaker system
- Microsoft Windows 95 with manuals and CD
- Lotus Windows 95 software suite with 1-2-3, Word Pro, Approach, Organizer and SmartPics
- GSP Pressworks and Designworks suite
- 6 CD multimedia titles

Best for
Windows 95

'System 96 by Colossus' truly unlocks the power, compatibility and the versatility of Windows® 95. These systems are built on a solid performance foundation that includes the fastest motherboards, 2 or 4Mb 'VRAM' graphics, 28.8 modems, up to 32Mb EDO RAM with 512k burst cache and six or eight speed multimedia with wavetable 3D sound.



Certificate No. FS 28122
BS EN ISO 9002:1994



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Colossus Computer Corporation Ltd. Colossus House, Travellers Lane, Welham Green, Hertfordshire. AL9 7DA



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Sales lines are open Monday - Friday 9.00am - 6.00pm

Colossus SBF Business Systems

Colossus Business Systems "Specifically Built and Formulated" (SBF) to your individual requirements

Colossus Value Range PI00 850Mb Desktop

£839 +VAT

- Intel® 100 to 166MHz Pentium® processor
- 8Mb RAM expandable to 128Mb (7Mb free)
- 850Mb (or higher) hard disk
- SIS 'Triton performance' chipset
- Integrated 64-bit PCI graphics (uses 1Mb of RAM)
- 14" SVGA .28dp screen
- 7 bay desktop case (8 bay midi-tower optional extra)
- Microsoft® Windows® 95 (or MSDOS 6.22 & Windows for Workgroups 3.11)

All standard features such as 1.44Mb floppy drive, two fast serial and parallel ports, three PCI and four ISA slots, keyboard and serial mouse.

Hard disk	850Mb	1.08Gb	1.6Gb	2.0Gb
100MHz	£839	£869	£919	£969
120MHz	£889	£919	£969	£1019
133MHz	£939	£969	£1019	£1069
150MHz	£1039	£1069	£1119	£1169
166MHz	£1189	£1219	£1269	£1319

Midi-tower models with 256K burst cache +£30

All prices exclude delivery & VAT at 17.5%

Colossus Standard Range PI00 850Mb Desktop

£949 +VAT

- Intel 100 to 166MHz Pentium processor
- 8Mb EDO RAM expandable to 128Mb
- 850Mb (or higher) hard disk
- Intel Triton 430FX chipset
- 256K Pipeline synchronous burst mode cache
- 64-bit PCI graphics card with 1Mb DRAM upgradeable to 2Mb
- 14" SVGA .28dp screen
- 7 bay desktop case
- Microsoft Windows 95 (or MSDOS 6.22 & Windows for Workgroups 3.11)

All standard features such as 1.44Mb floppy drive, two fast serial and parallel ports, three PCI and four ISA slots, keyboard and serial mouse.

Hard disk	850Mb	1.08Gb	1.6Gb	2.0Gb
100MHz	£949	£979	£1029	£1079
120MHz	£999	£1029	£1079	£1129
133MHz	£1049	£1079	£1129	£1179
150MHz	£1149	£1179	£1229	£1279
166MHz	£1299	£1329	£1379	£1429

Video RAM upgrade to 2Mb +£40
PC TV card with Teletext +£160

All prices exclude delivery & VAT at 17.5%

Colossus Performance Range PI00 850Mb Midi Tower

£1099 +VAT

- Intel 100 to 166MHz Pentium processor
- 8Mb EDO RAM expandable to 128Mb
- 850Mb (or higher) hard disk
- Intel Triton 430HX chipset
- 512K Pipeline synchronous burst mode cache
- 64-bit PCI graphics card with 2Mb 'VRAM' video RAM
- 14" SVGA .28dp screen
- 8 bay midi-tower case (9 bay full tower with 4Mb VRAM optional)
- Microsoft Windows 95 (or MSDOS 6.22 & Windows for Workgroups 3.11)

All standard features such as 1.44Mb floppy drive, two fast serial and parallel ports, three PCI and four ISA slots, keyboard and serial mouse.

Hard disk	850Mb	1.08Gb	1.6Gb	2.0Gb
100MHz	£1099	£1129	£1179	£1229
120MHz	£1149	£1179	£1229	£1279
133MHz	£1199	£1229	£1279	£1329
150MHz	£1299	£1329	£1379	£1429
166MHz	£1449	£1479	£1529	£1579

Full tower models with 4Mb VRAM and 16Mb EDO RAM +£450

All prices exclude delivery & VAT at 17.5%

Business Best Buy PI33 16Mb CD Business DT

£1159 +VAT

Colossus desktop with Intel 133MHz Pentium processor, 256K burst cache, 16Mb RAM, 1Gb hard disk, quad CD-ROM, 14" screen, business sound (no speakers), Windows 95 and Lotus software.

System Options

Screen upgrade to 15"	+£70
Screen upgrade to 17"	+£300
16-bit Ethernet card	+£40
32-bit PCI ethernet card	+£100
Adaptec 2940 PCI SCSI controller	+£200
RAM upgrade per 8Mb	+£150
EDO RAM upgrade per 8Mb	+£160
800Mb tape back-up	+£150
3.2Gb tape back-up	+£220
Int. 14.4 BABT fax/data modem	+£70
Ext. 28.8 BABT fax/data modem	+£140
Quad speed CD-ROM	+£50
Six speed CD-ROM	+£100
Eight speed CD-ROM	+£150
16-bit sound card	+£30
Orchid NuSound PnP 1024K wavetable sound card	+£100
4w speakers	+£10
15w speakers	+£30
70w speakers	+£60
PerfectOffice software suite on CD	+£call

All prices exclude delivery & VAT at 17.5%

Colossus Power Portables

Colossus Power Portables provide incredible computing power for users who need desktop performance in a portable package. They are designed for mobile and Industrial applications that require speed, expandability, and ruggedness. The most popular uses are in network management, instrumentation, data capture, presentations and multimedia applications.



Colossus PI00 CRT Colour

£1799 +VAT

- Colossus CRT portable features 9" Sony SVGA colour screen
- Colossus "Lunchbox" portables feature LCD, VGA mono, STN dual scan colour or TFT colour screens
- Intel 100MHz Pentium processor
- 8Mb RAM expandable to 128Mb
- 850Mb enhanced IDE hard disk



Colossus PI00 LCD Mono

£1399 +VAT

- 3 drive bays and 5 slots
- 3.5" 1.44Mb floppy drive
- Parallel and 2 fast serial ports
- Portable keyboard

Select required operating system and options.



Colossus PI00 STN Dual Scan Colour

£2199 +VAT

- Colossus Power Portable Options**
- HD upgrade to 1.08Gb +£30
 - HD upgrade to 1.6Gb +£80
 - HD upgrade to 2.0Gb +£130
 - 133MHz Pentium processor upgrade +£100
 - 150MHz Pentium processor upgrade +£200
 - 166MHz Pentium processor upgrade +£350
 - Microsoft Windows 95 +£60
 - MS DOS 6.22 and Windows 3.11 +£60



Colossus PI00 TFT Colour

£3099 +VAT

- RAM upgrade per 8Mb +£150
- 3.2Gb tape back-up +£220
- 14.4 BABT fax/data modem +£70
- 28.8 BABT fax/data modem Ext. +£140
- NEC 6Xi SCSI CD-ROM +£300
- NEC SCSI adapter +£60
- 16-bit Ethernet card +£40
- Deluxe serial mouse +£19

All prices exclude delivery & VAT at 17.5%



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Northern Sales Office 01 282 77 00 88
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Opening June 96

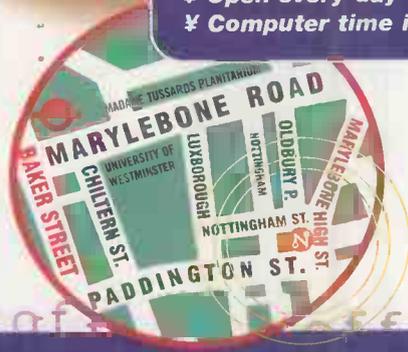


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Computers
 A professionally produced business plan, presentation or C.V. can give you that competitive edge. Network City can help you achieve that Image with:
 ¥25 Digital Celebris Pentium 90 s
 ¥Windows 95, Microsoft Works and Microsoft Office including word-processing, spread sheet and presentation software
 ¥Flatbed Scanning, Laser Printing, photocopying, fax, binding and courier service
 ¥CD-ROM s, available to try or buy
 ¥DIY Tuition tapes, one to one and group training

Internet
 The Internet, once the domain of academia, the government and the military is now open to everyone regardless of age, sex or computer knowledge.
 Network City Offers You:
 ¥A fast dedicated link
 ¥Netscape Navigator
 ¥E-Mail Accounts
 ¥WEB Page authoring
 ¥A helpful Home Page, including mag.net (VNU's computer magazine web-site)
 ¥Internet training

Coffee
 We have the usual coffee, croissant and chatter, plus some separate areas for those needing a quieter working atmosphere
 ¥ Located in central London,
 ¥ Close to Baker Street tube,
 ¥ Bus routes 13, 18, 27, 30, 74, 82, 113, 274
 ¥ Open every day 9.30 to 11.00, Sunday 10 to 10
 ¥ Computer time is only £3.50 per half an hour.



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Inside Excel 7

Stephen Wells shows you how to get the best from Excel. This month he describes the most significant surface changes between versions 5 and 7.

major advancements since Excel 5. (There was no Excel 6.) In part two, next month, I'll demonstrate how Excel now offers so many built-in features and add-ons that you may well not have to write even one line of Visual Basic code to tailor it to your specific applications. In part three, I'll concentrate on presentation features.

Regrettably, it's a sign of the times

EXCEL HAS HELD THE inside edge in the spreadsheet market for a number of years. It was the first Windows spreadsheet and inevitably Version 7 is the first Windows 95 spreadsheet.

As there is a lot to cover, I've divided this tutorial into three separate parts. This month I'll show you how to use the

Picture this: What's new in Excel 7



◀ All in the family
Even more lookalike toolbars and dialogue boxes mean once you've learned your way around one Office 95 application, you're half way to navigating them all. Here are the menu bars and default Standard, Formatting and Drawing toolbars in Excel 7 and Word 7 — it's easy to add and delete tools to any of the bars

▶ Taking a peek
Before even opening Excel, you can right-click the mouse and use Quick View in Windows 95 Explorer to preview a corner of the first sheet in any Excel 7 workbook. Alternatively, in the Excel File Open dialogue box you can preview any Excel 7 file, as long as you've checked the SVP box on File Properties, Summary





that this tutorial is even necessary. Excel 4 came with a massive manual in three volumes. Excel 5's documentation was quite skimpy. Those who get their Excel 7 as part of Office 95 — on the hard disk of a new PC — are lucky if they receive a backup CD. There's nothing on paper at all. This is partly because software prices have been driven down in line with the present bargains in hardware, and partly because publishers would rather just manufacture a stack of CDs at £1 each, than a CD with a thick paperback at, perhaps, £10.

But at least it's easier to get upgrades these days; you can just download them from the Microsoft Excel 95 Forum. If you join The

Microsoft Network (MSN) you can even go direct to it from the main Help menu. The last time I did this I received a 30-minute credit on my MSN time charges; so the upgrades are not only free, but the cost of the download can be no more than the price of the phone call.

Excel 7 is also a much greater leap forward over Version 5 than Version 5 was over Version 4. That was really just a catch-up with the competition, mainly adding cosmetic touches like the Tip Wizard and tabs to jump between worksheets and in dialogue boxes.

You can't run Excel 7 with Windows 3.1, because it has been rewritten in order to take full advantage of the ease of use and power of a 32-bit operating

system. According to Microsoft's tests, Excel 7 recalculates, on average, 50 percent faster than Excel 5. It is more efficient with memory, too: a pivot table in Excel 7 needs only 50 percent of the memory of that in Excel 5 running on Windows 3.1.

It has very much the look and feel of Windows 95, with family-style menus, toolbars and dialogue boxes; and more context-sensitive use of the right mouse button. There is a considerable amount of shared code. Many tools and technologies are shared across all Office 95 applications, including Find Fast, Answer Wizard and AutoCorrect. Unfortunately, spellchecking is only common between PowerPoint and Access, so to get the Queen's English

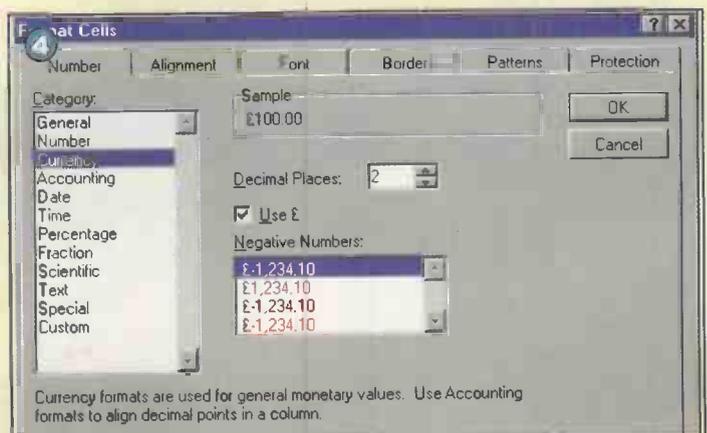
Picture this: What's new in Excel 7

	A	AG	AH	AI
3		Cash	Cheques	Total
17				
18	Computer Exp.			-
19				
20	Council Tax			-
21	Ele	January Expenses		-
22	Ga	February Expenses		-
23	Ins	March Expenses		-
24	Ma	April Expenses		-
25	Tel	May Expenses		-
26	TV	June Expenses	86.50	86.50
27	We	July Expenses		-
28		August Expenses		
29		September Expenses		86.50
30		October Expenses		
		November Expenses		
		December Expenses		
		Total 1996 Expenses		

Table of Contents

Not only does each sheet in an Excel 7 workbook have a tab, you now have an alternative way to navigate: right-click on the VCR-type controls at the lower left of the screen and a menu of all the tabs is displayed; you can run the cursor up and down this list to choose a worksheet

Easier formatting
 The Format dialogue box is less confusing than in earlier versions. You pick from examples which avoid the # signs. The number sample uses the data from the cell where the cursor lies on the worksheet. The other controls change to suit the categories, including phone numbers and postcodes



it's necessary to fight different battles with Excel and Word.

Accentuate the positive

But let's eliminate the negatives and accentuate the positives. There is more subtle animated visual feedback for actions such as sliding columns or inserting rows. You can use long filenames and UNC names — the universal naming convention for network servers and shared directories.

DocObjects and the Taskbar

Not only can you drag and drop data between worksheets, workbooks or other Office applications, you can also simply drag and drop onto the desktop. Excel 7 supports OLE automation as a controller and object, so it can drive other applications with its programming language, VBA, and be driven itself. It also supports a new extension to OLE (object linking and embedding) called DocObjects (Document Objects). Small chunks of one application, such as Excel ranges or charts, can be better embedded in another application's document. DocObjects enable an entire document to behave as an object,

complete with styles and print settings.

You can even drag and drop an Excel chunk to another application via the icon in the Windows 95 Taskbar. The Taskbar displays all the open applications and folders at the bottom of the screen.

To copy an Excel chart or block to a Word document, you select the Excel chunk, hold the Ctrl key and, with the mouse, drag your selection down to the Word document icon on the Taskbar. The Word document will automatically maximise and allow you to drop the chunk anywhere. Without the Ctrl key it's a move, not a copy.

There are two provisos: on your Excel sheet make sure the Options, Edit, Allow Cell Drag & Drop box is checked; and keep the mouse and Ctrl key down until the final spot is selected.

Office Binder

Support for DocObjects also lets you place any Excel workbook into an Office Binder along with Word, PowerPoint and Access documents. An Office Binder is similar to an Excel workbook, but it can include files from any Office-compatible application that

supports DocObject technology.

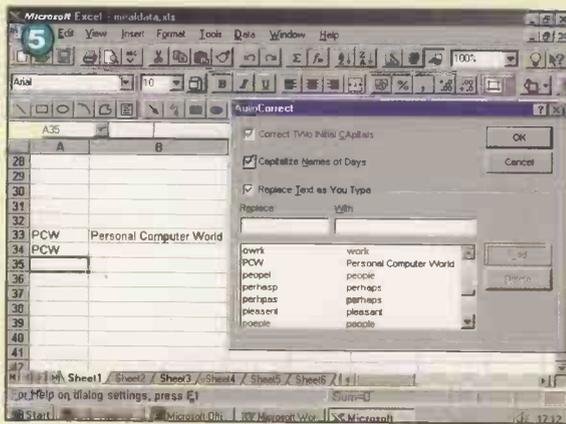
Since it is a single file, bound documents travel together onto floppy disks, around networks, or via electronic mail. If needed, a Binder can easily be broken apart into separate documents, as is the case with a physical three-ring binder. So you could send a PowerPoint presentation with a packet of Excel charts, a supporting section from an Access database and a Word covering letter, all together.

Excel 7 also has better links with the Windows 95 version of Access, so it can use Access forms in reports in Excel and convert Excel worksheets to Access files.

Spreadsheet

With a new version of a spreadsheet which is also part of a suite, the difficulty for the publisher is in deciding whether to provide continuity between the applications in the suite, or between versions. In earlier versions of Excel, for example, if you tried to open a template file, a copy of the template was opened. To edit the original you had to hold down the Shift key while you opened it. In Excel 7 the procedure

Picture this: What's new in Excel 7 (continued)

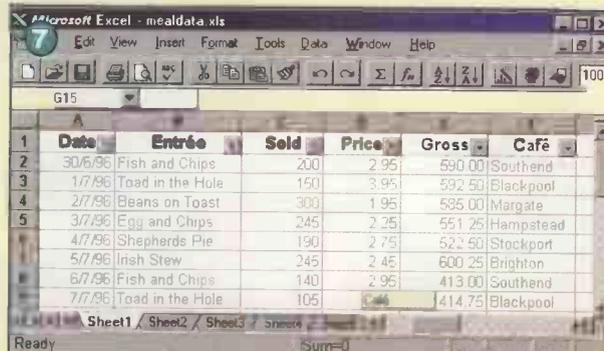


Automatic typing
AutoCorrect maintains a replacement list shared with Word 7. I told Word to always replace "PCW" with "Personal Computer World" and it worked here, in column B. In cell A34, I only had to enter P and Excel displayed PCW; AutoComplete put in the rest. It works in one column at a time. It's activated under Tools, Options, Edit

Instant answers
AutoCalculate lets you find the maximum, minimum, or average of a range, or (Sum) total it. You can count items, or count just the cells containing numbers. Mark the cells, columns, rows, or (using the Ctrl key) non-contiguous ranges to see the result in the Status Bar. Right-click to switch to another function



Scrollbar Tips
AutoFilter still turns column labels into drop-down pick lists. Now, when AutoFilter is active, the horizontal scroll bar displays column labels instead of row letters as you slide it. Here, it displays "Café" not "Column F". The vertical scroll bar shows row numbers. Both bars make big leaps if you press Shift while you drag them



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PERSONAL COMPUTER WORLD
JUNE 1996

has been made consistent with Word. But if you become a regular Office 95 application user it soon becomes easier to remember current common procedures than recall earlier ones.

Registry

A significant change concerning Excel power users is that, unlike some other Office 95 applications, Excel 7 never refers to .ini files. It stores all equivalent settings in the much more complicated Windows 95 Registry. Fortunately, Excel 7 offers many more options for changing settings on the Menu Bar.

Networks

Using Excel is now easier on a network. The Shared Lists feature allows more than one user to open and make changes to a workbook at the same time. A Shared List file is posted on to a network server and people use the File, Open command to open it, just as they would for any other file.

Instead of receiving a file-is-in-use warning, users open the file in Shared mode. (The workbook window caption will have "Shared" appended to the filename.) Each user may then enter or

edit the worksheet data and save the file as normal. If two users change the same cell, Excel 7 helps to resolve the conflict.

There is no problem until the users try to save the file. At that point Excel shows smooth diplomacy: the first person to save is not made aware of the problem; the second person to save is shown the details of the conflict and gets to decide which value to keep.

However, all such conflicts are logged into a Conflict History worksheet, automatically created in any shared workbook. For every conflict, the Conflict History sheet contains details such as the Date Deleted and Who Deleted. This allows whoever has "the corner office" to review and reverse earlier decisions made by lesser lights.

Excel 7 uses the same file format as Excel 5.0 for Windows, so upgrading files is automatic. But the file size will increase by 4 to 6K. Ironically, this is because of an optimisation that allows Excel 7 to save files faster.

However, if you create and save a new file in Excel 7, the file is not necessarily larger than an equivalent file created and saved in Excel 5. If you go back to Excel 5 and try to open an Excel

7 workbook, the older version can't update links or find link sources. But return to Excel 7 and open the same file, and the long filename is preserved and links can be updated.

Organisations which use various spreadsheets can rest assured that Excel 7 will read the .WK4 file format used in Lotus 1-2-3 releases 4 and 5, and the .WB1 file format used in Quattro Pro for Windows version 5.0.

Additionally, from Excel 7 you can save in 25 different formats including DIF, SLK, DBF4, Excel V2.1, V3, and V4, as well as the WK4 format.

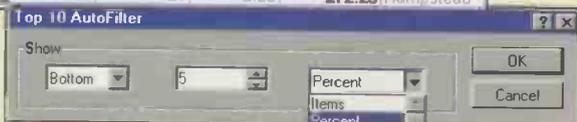
● *These are all the most significant surface changes between Excel 5 and 7. Next month, we'll get inside and take a test drive; examining the features which can help you to create your own applications.*

PCW Contacts

Stephen Wells welcomes comments on this tutorial and spreadsheets in general, via PCW Editorial at the usual address or Stephen_Wells@msn.com. Files can be attached if you're on MSN.

Picture this: What's new in Excel 7 (continued)

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8	30/6/96	25	2.9		Southend
3	1/7/96	150	3.9		Blackpool
4	2/7/96	300	1.9	181.50	Margate
5	3/7/96	245	2.3	191.25	Hampstead
6	4/7/96	190	2.7	200.85	Stockport
7	5/7/96	245	2.4	203.55	Brighton
8	6/7/96	140	2.95	413.00	Southend
9	7/7/96	105	3.95	414.75	Blackpool
10	8/7/96	210	1.95	409.50	Margate
11	9/7/96	172	2.25	387.00	Hampstead
12	10/7/96	133	2.75	365.75	Stockport
13	11/7/96	172	2.45	421.40	Brighton
14	12/7/96	98	2.95	289.10	Southend
15	13/7/96	74	3.95	292.30	Blackpool
16	14/7/96	147	1.95	286.65	Margate
17	15/7/96	121	2.25	272.25	Hampstead



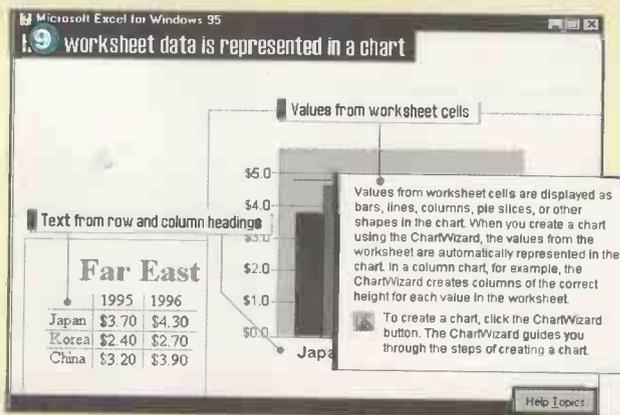
Getting sorted

An improved AutoFilter shows you subsets of your data.

Click an arrow for a drop-down selection box offering a custom sort dialogue box, a pick list from the lowest upwards, "All" which gets you back to the full worksheet, or "Top 10" which can also be the Bottom-whatever in numbers or percent

Ask the Wizard

You can ask the Excel Help file questions in your own words: "How do I...?" queries tend to answer with a step-by-step solution, sometimes using macros to open menus and show you the way. "Tell me about..." requests often produce a visual example like this one on chart-making, with clickable Screen Tips



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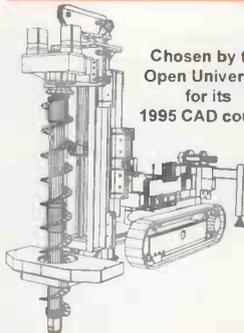
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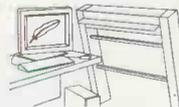
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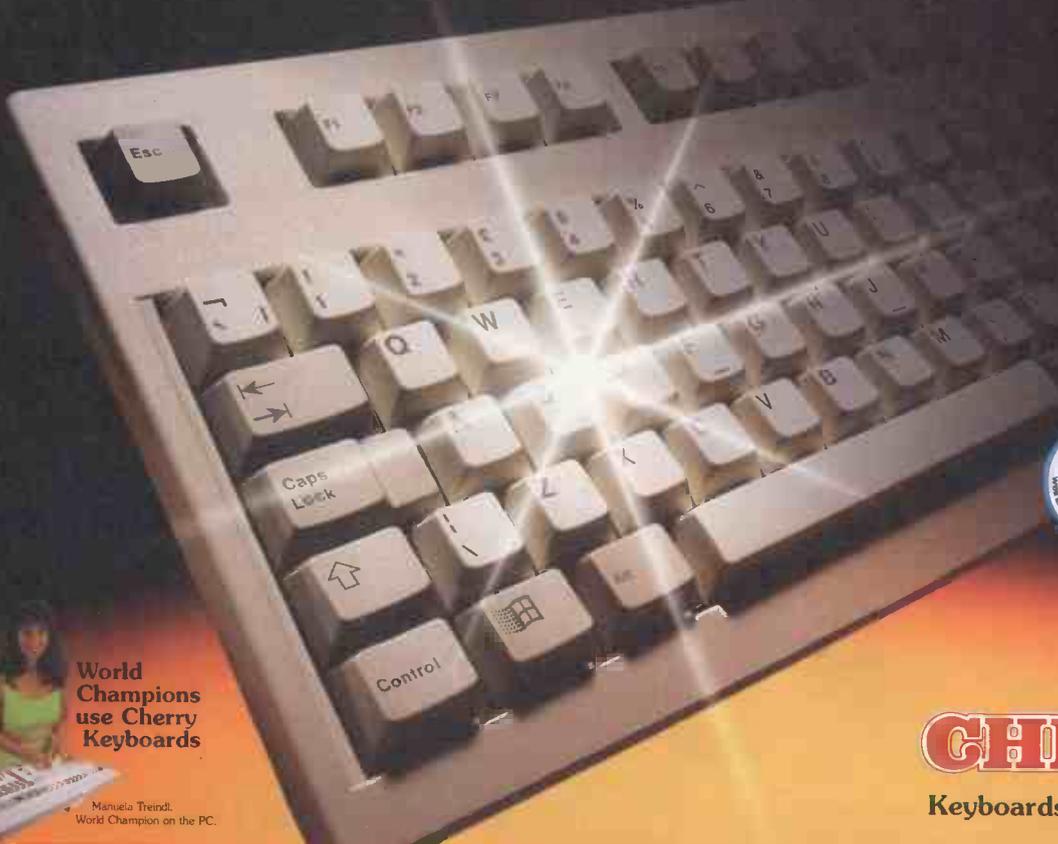
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A firm price has not yet been set, but it's likely to cost around £3,500 when it reaches the UK market in September. By then it will cover the entire M25 area, with the rest of the UK mainland to follow. The version we tested could only cope with London.

TravelPilot uses the top-of-the-range Blaupunkt Berlin RCM 303 as its interface (Blaupunkt is a division of Bosch). The system will play audio compact discs (ten are stored in the autochanger, which is separate from the CD-ROM player) and cassettes, and has a radio with three antennae to give the

best reception possible. There are two circular switches and one rocker switch on the front of the unit. One of the circular switches moves the control between the TravelPilot, radio, cassette and CD. All the features use the 11cm TV screen. The RCM 303 records traffic information, identified by RDS and played over the radio in a separate memory. You can summon up the latest traffic reports by pressing a button in the centre of the circular switch.

The radio and its associated features are wonderful but when the fun stops, the TravelPilot's technology takes over. To use the system, select Set Destination from the first menu, then select an area followed by the street address. This isn't a task you should undertake on the move but a quick stop will pay dividends, and you only need to enter enough of the destination name to be distinctive. There is no information on street numbers so if you are visiting a big road it's best to opt for a small, nearby turning.

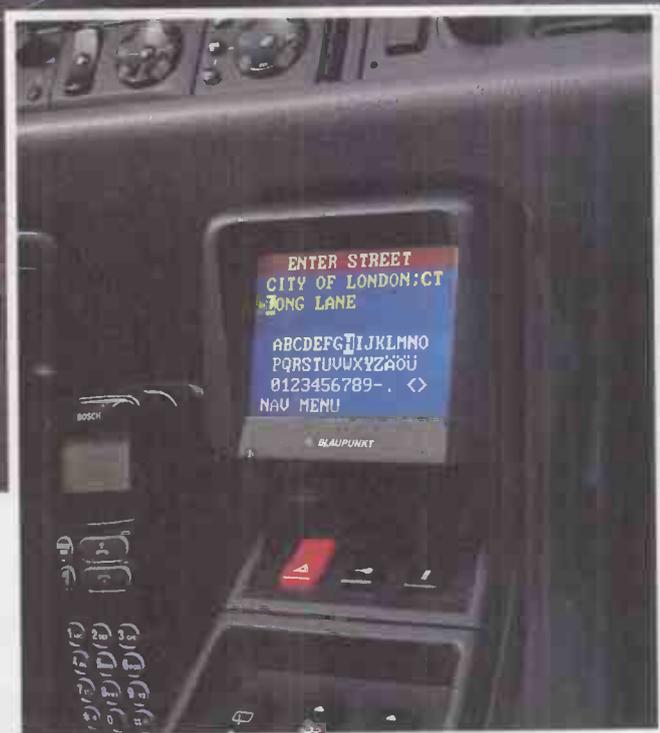
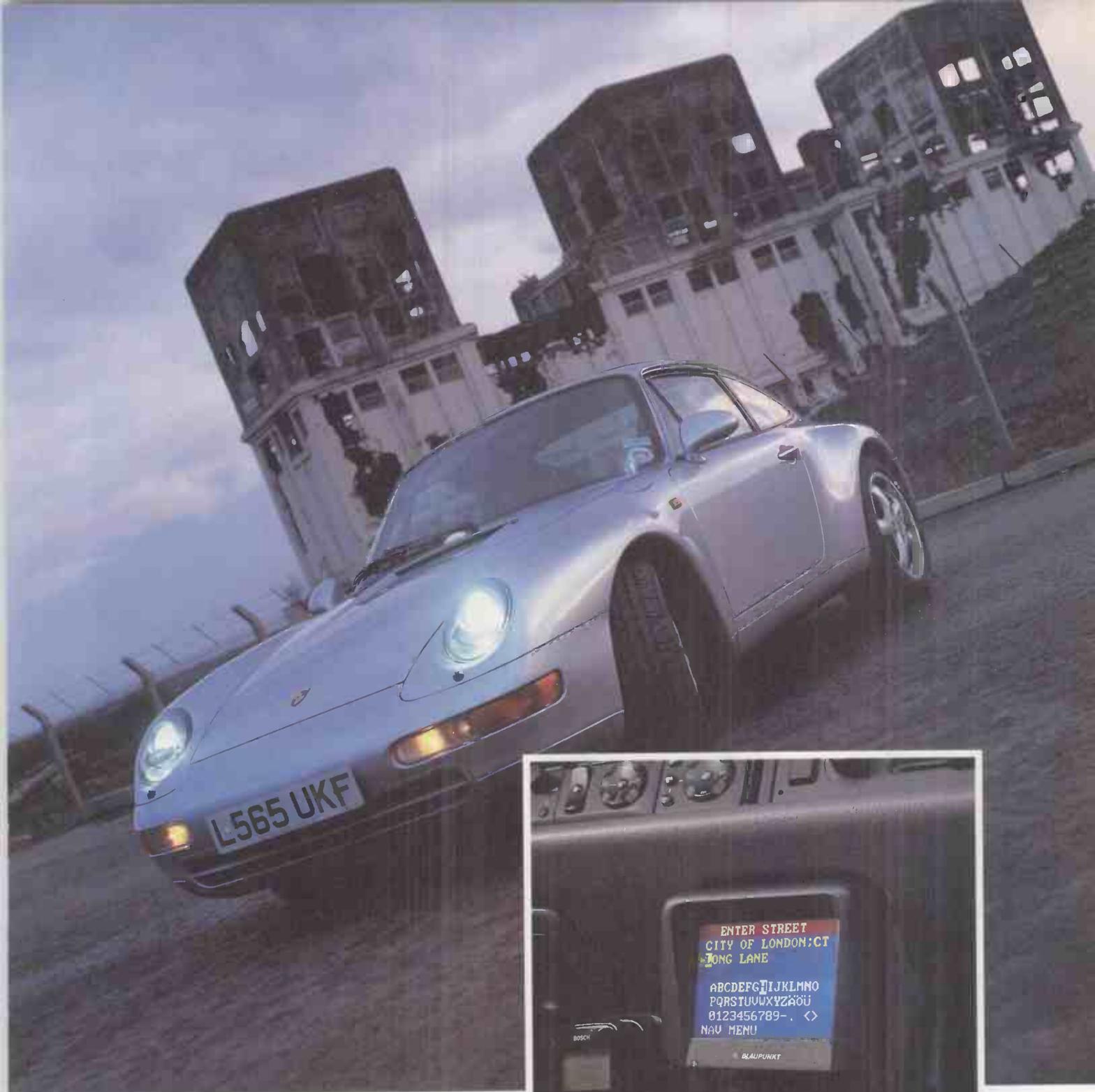
When you have entered the details, a large arrow shows the route to your

destination as the crow flies and a soothing female voice tells you, "The route is being calculated." The directions use separate audio circuits to the hi-fi, with the advantage that the music doesn't stop when you are given an instruction. This means that the voice can be drowned out if the hi-fi is too loud and there is no "repeat last instruction" button. After a couple of seconds, the computer says: "The route has been calculated", and gives its first instruction.

There are two views, a simple arrow and a vector map. The yellow arrow shows the direction in which you need to travel: if the computer instructs you to turn right at the second turning, the screen will show a right turn with a faint first turning. A bar graph shows how far away that turning is and the arrow turns red as you approach.

The display shows junctions very simply: it can cope with a wiggly line (bear left or right), left and right turns and roundabouts. Because of the way the computer understands forks in the road, it sometimes gives a strange instruction when travelling against the fork.

The vector map shows you all the roads in the area and the route the system has plotted. The view has a zoom from 0.1 of a mile (not detailed enough) to five miles (too crowded) but gives a good view of other routes. The test disc



even held some roads on Ministry of Defence land which are not shown on normal maps. In addition to the map, the vector display shows panels containing a small version of the direction arrow which points directly towards your destination, a compass pointing to magnetic north and the number of GPS (global positioning system) satellites in view.

You can use the vector map to get a feel for what lies ahead. The view rotates to show the forward direction. Once you have used the system for a little while, you become confident in it and can relax with the simple spoken directions. These say things like: "Prepare to go straight ahead in 300 yards", or "Take the next

left followed by a sharp right". All the instructions are precise and clear.

The TravelPilot is inflexible, so if a new road is built or an old one blocked off, you'd need a new disc. The software will always calculate the same route — there are no alternatives. This means you can't rely on local knowledge and there is very little help on which lane to be in at any given time. It would be good to be able to "avoid" places, and for the

Without a keyboard, you have to enter destinations a letter at a time



road haulage industry it would be particularly useful if the software could be told about busy high streets and low bridges.

Although it's good, the system is still no match for a human navigator. The computer will never say: "Turn left at the Dog and Duck" or "Go under the iron bridge". Destinations have to be entered in the zones the computer understands. The system doesn't cater for postcodes although a postcode facility is being planned for the next release.

The computer stores the names of roads, the screen shows the name of the road you are on and the one you are about to turn into, but the system doesn't read them out. This is a shame, as the reassurance would be welcome. The weakest aspect of the system is that it calculates the shortest route, not the quickest, and the computer takes no account of traffic flow. This is fine in a Porsche at 3am, but in heavy traffic, when overtaking is difficult, a link to a traffic database would be a distinct advantage.

The most important element of the

Different levels of zoom allow you to get your bearings



This is the mode you should use when driving along



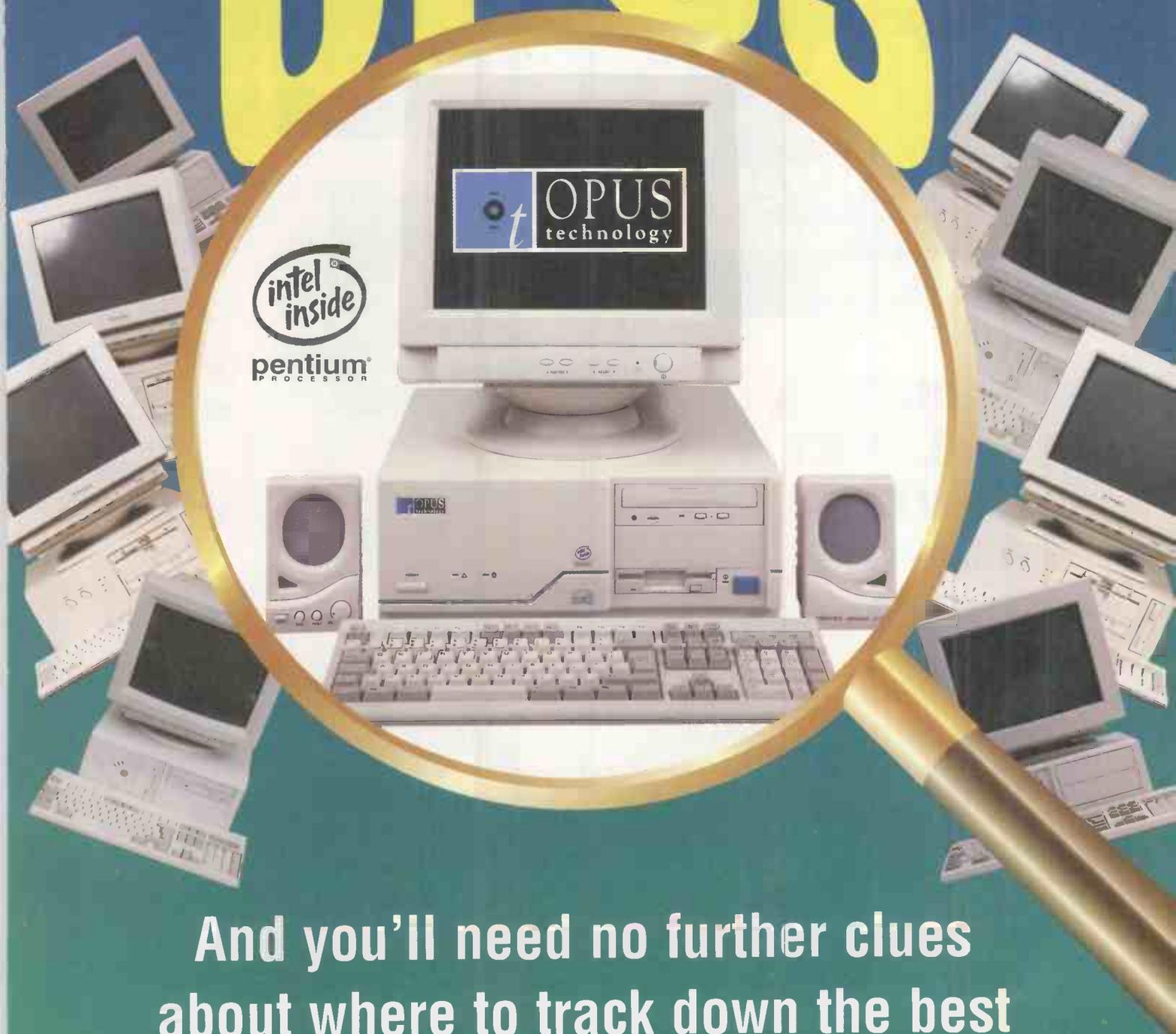
system is the map. The guidance systems only need to direct the computer to the accuracy of one road junction before the map takes over. The GPS locates the car roughly within 25 metres. From here, it can work out the car's position on the map. If you drive out of the area covered by the map, the arrow merely points directly towards your destination. Once you are on the map, the software looks you up.

The GPS isn't used very often. The compass works out which way the car is facing, so it can calculate in which direction you are travelling along the road.

The system keeps track of how far the car has journeyed down the road by measuring the distance travelled. The normal cable-driven odometer is not accurate enough for this purpose so the system uses the magnets in the anti-lock braking system to measure the revolution of the wheels. This needs careful calibration but can still be fooled. Tyre wear can fool the system — but only until you make the next turn. When this happens, the computer checks to see where you are likely to be — it's only going to be a few yards out — and resets the position. The result of all this is a car which always knows where to go.

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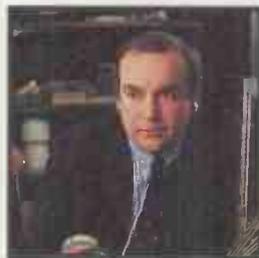
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SILICON FEN — AGAIN...

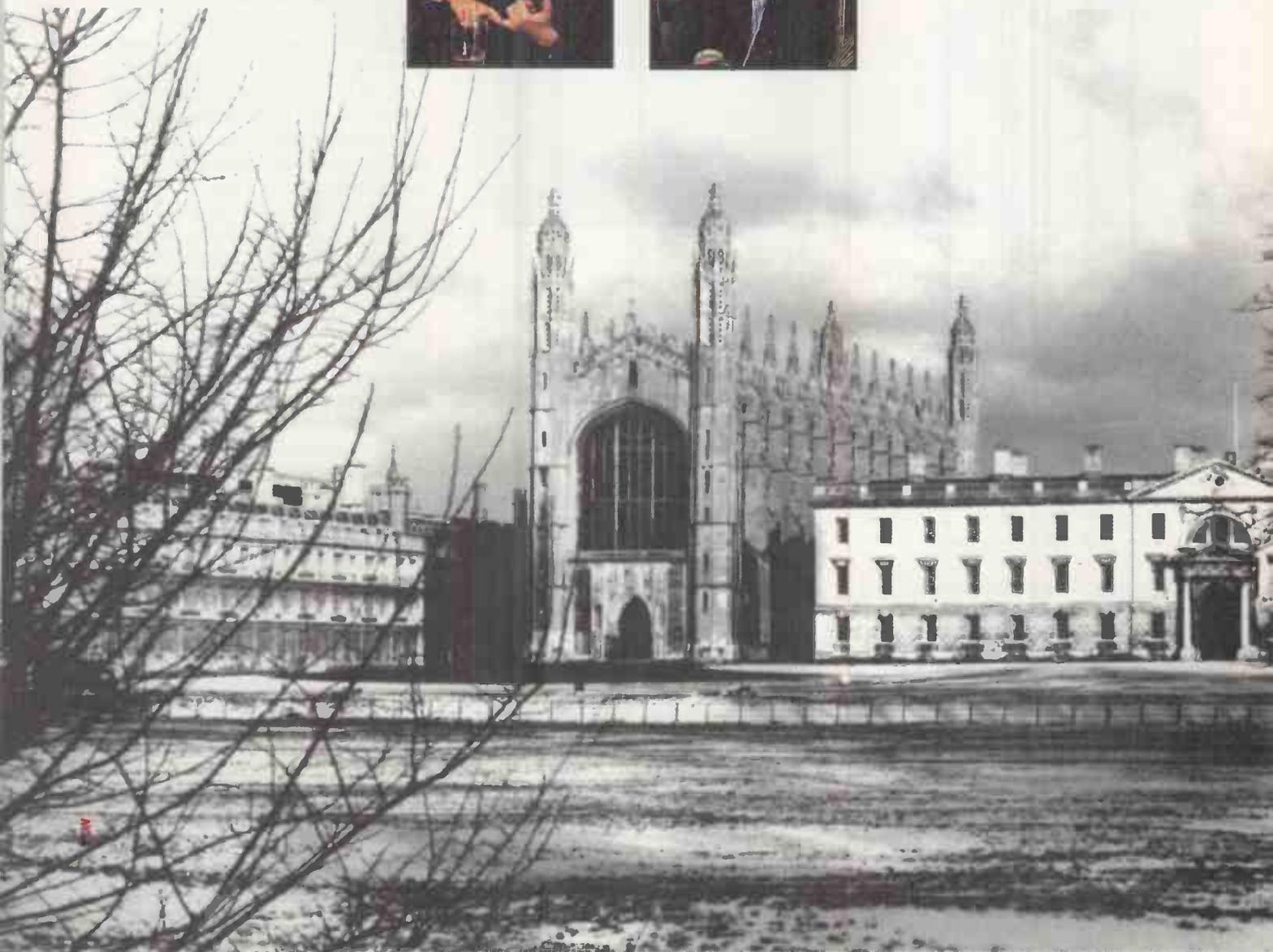
Towards the end of the 18th century, a group of Dutch engineers were invited to a corner of eastern England. They were asked to bring with them the water management technology which had tamed the hostile North Sea and created one of Europe's richest agricultural regions. Today, some 200 years later, the land created by that pre-industrial age technology is still as fertile as ever, but it is not just growing sugar beet and

The UK computer industry was kick-started in Cambridge by luminaries like Herman Hauser and Chris Curry (below). After years in the doldrums, IT is once again raising its head in the land of academia. Phil Jones reports.



potatoes. Silicon Fen is emerging once again as one of the world's hotbeds of post-industrial age technology innovation and development.

For those of you too young to remember a time before MSDOS and Windows, Silicon Fen (a play on Silicon Valley) was the name given to Cambridge and the surrounding area which spawned some of the most innovative early computer companies anywhere. Names like Sinclair Research,





THE FALL AND RISE OF CAMBRIDGE

Acorn, Torch and Cambridge Computers were, in their late seventies and early eighties heyday, every bit as well known as Apple, Altair, Commodore and Intel — US companies which, some still claim, followed a path that had already been trodden by their UK counterparts.

Now, of course, Apple and Intel are billion-dollar giants, and the PC industry is dominated by Microsoft and a handful of other US and Far-Eastern manufacturers. Sinclair Research no longer makes PCs and Acorn is a wholly-

so that he could be closer to his friends at Cambridge Consultants, one of the first consultancies to take the new generation of digital technology seriously.

Sinclair is unfairly remembered today for the C5 electric tricycle, an under-powered commercial disaster which can still be glimpsed in parts of North London, chained to lampposts, advertising a health club. In 1978 though, Sinclair was hailed as the Isambard Kingdom Brunel of his time. His first company, Sinclair Radionics, started out making small radios in 1964, but Sinclair was one of the first

as well as the main memory RAM, they also had special fast RAM to run the display and other special display electronics. We made the processor do the whole thing," Sinclair recalls.

Thanks to its innovative design, the ZX80 came to market at just over £100. It was far cheaper than its US competitors, and easier to program. Over the next seven years, the ZX80 and its successors, the ZX81, the Spectrum and the QL, would sell over 11 million units across the world.

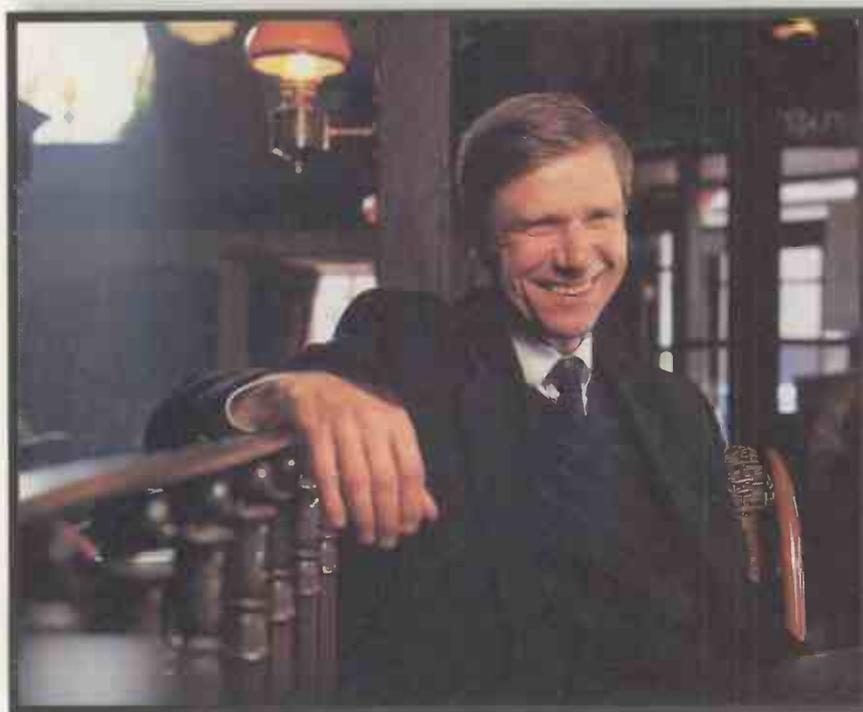
Sinclair's claim to have devised the first unified text and graphics architecture is still contested today by Herman Hauser, who, with Chris Curry, co-founded Sinclair's arch local rival, Acorn. Whatever the merits of their opposing claims, Hauser is the first to admit that it was Sinclair's early success with the ZX80 which laid the foundations for what was to become Silicon Fen. "Clive was important in two senses. He came up with the business model which was right for the time — mail order, and he was successful, a winner. He became a role model for the rest of us," says Hauser.

The Sinclair ZX80 was the right product at the right time and, for Sinclair's purposes, in the right place. Cambridge was, and is, home to the flower of UK academia, including the world-renowned Cambridge Labs, and the Cavendish and maths laboratories. So there was no shortage of bright young electronics and computing graduates with the scarce skills needed to build IT businesses. There was also the added incentive of the nearby Cambridge Science Park to grow in to.

As if on cue, the traditionally cold welcome UK academia gave to commerce and industry was just about to run headlong into the Thatcher revolution. Sinclair Research was about to be flattered by a stream of Cambridge-based imitators driven by some of the brightest minds in the UK scientific community.

From little Acorns...

The first, and still the most prominent offshoot of Clive Sinclair's success was to become known as Acorn Computers. Chris Curry and Herman Hauser began the relationship which would found Acorn, the UK's most successful microcomputer



Herman Hauser — "hanging around Cambridge looking for an excuse not to go home" when he met Chris Curry

owned subsidiary of Olivetti, itself a faded star of the PC business. But Silicon Fen is still there. The same conditions which helped to inspire the first generation of Cambridge IT companies are producing a new crop of innovators, and it is these people who may yet drive a renaissance in the UK's high-tech fortunes.

Sinclair and Silicon Fen

The Silicon Fen story starts in 1978, when Clive Sinclair (now Sir Clive) moved the headquarters of his Sinclair Research organisation to a small office in Cambridge

entrepreneurs to recognise the microprocessor's ability to miniaturise virtually any electronic device. In the seventies, he gave the world its first affordable pocket calculator and pocket TV.

By 1977, Sinclair remembers: "There had been a couple of interesting developments in the US. Commodore and Altair had begun selling small computer kits for about \$500. I was convinced we could do it for less, and that there would be great demand for a cheap home computer." He was right.

Sinclair was the first developer to take the low-cost Z80 processor and build it into a compact design which, by the standards of the day, was a major step forward. "If you looked at the machines available at that time, you would see that,





company, after a chance social meeting in Cambridge. "We met in a pub," Hauser remembers. "It was probably either at the Copper Kettle or Shades Bar." Wherever it was, it happened at an opportune time. Curry was looking to leave Sinclair, and "Herman was hanging around Cambridge looking for an excuse not to go home to the family wine business in Vienna," says Curry. They were to prove good foils for one another: "Chris had in-depth knowledge of high-tech manufacturing, I had all the University contacts," says Hauser.

From that meeting, Curry set up Cambridge Processor Units (CPU) which made game consoles, and with Hauser taking an active interest, began development of a microcomputer called the Atom, whose user manual gloried in the title: "Atomic Theory and Practice". The Atom, which cost £149, was positioned against the Apple I, which cost £500, and became the foundation for the first Acorn machine.

Both men are still understandably proud of what they achieved together in under two years, but they did have some good luck along the way. In 1979, the BBC was looking for a machine to be the home centrepiece for an educational series on computing. To Clive Sinclair's lasting disgust, the BBC contacted Curry and Hauser, and the BBC Micro was born. It was to catapult Acorn into the computer industry's fast lane.

The BBC Micro was the first taste of computing for a whole generation. It was a better start than they would have got growing up in California, right next to Steve Jobs' garage. "It was better than the Apple I," says Hauser, who has a knack of avoiding unnecessary modesty without sounding arrogant. "It was twice as fast, and it was the first computer anywhere [although Clive Sinclair would contest this] to have a unified architecture for text and graphics. Everything else was using a separate text node."

It also had some peculiar features which were to prove significant later. Suitably enough for a BBC product, it set new standards for running text and graphics using a TV monitor as the display, plus it came complete with one of the world's first local area network systems, Econet.

Econet was included in the package so that the BBC Micro could be used in

classrooms, allowing the teacher to control what was happening on the different screens. But because of the success of the BBC Micro during the early 1980s, there is evidence to suggest that it had, if only fleetingly, a larger installed base than Ethernet, which was just beginning to be widely used for linking networks of mini-computers and terminals.

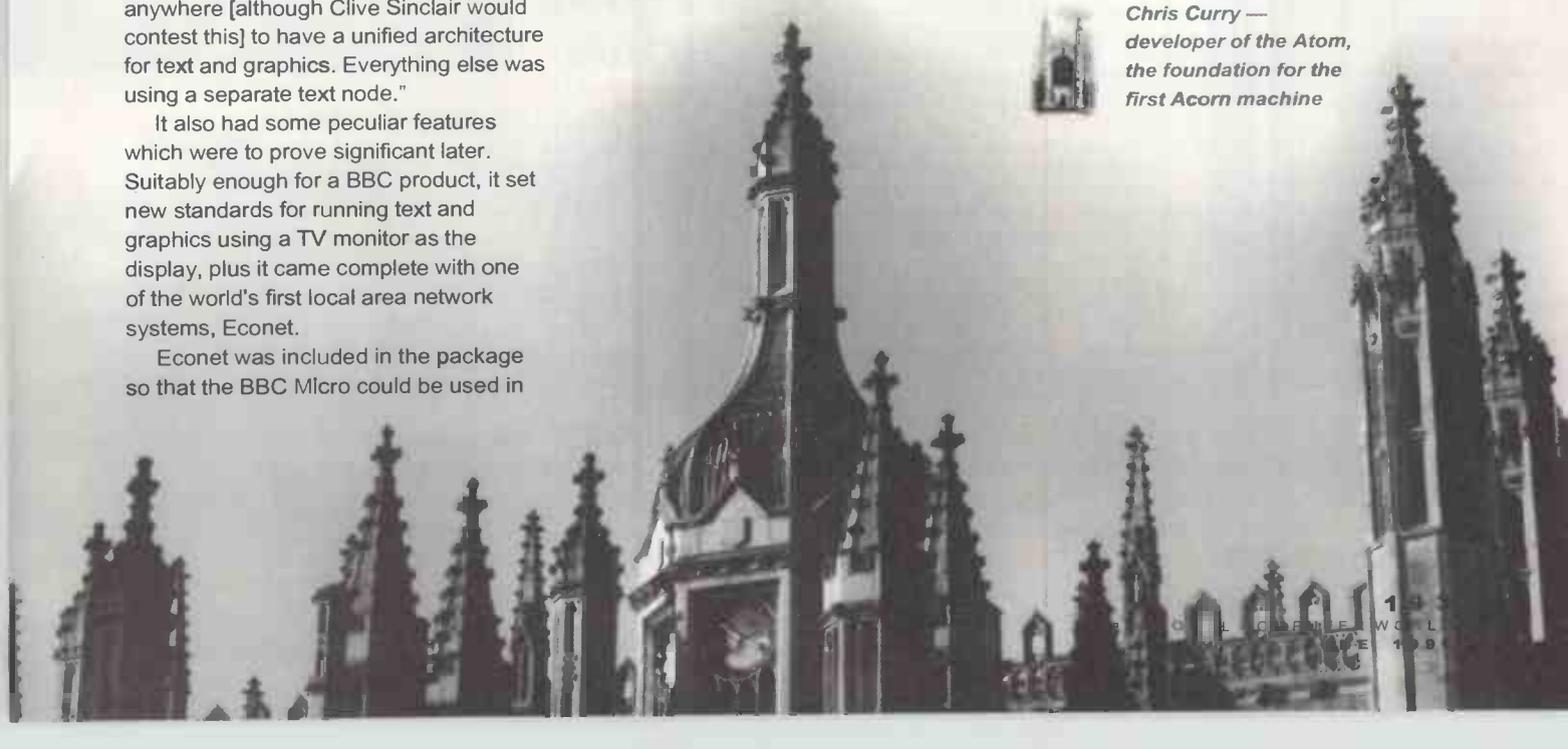
It was certainly the first microcomputer-based network of any importance. With the Cavendish Labs becoming interested in it as the foundation for the Cambridge Fast Ring technology, it might have proved a world-beater. But, "We were so far ahead then, we didn't know it," says Hauser. Neither did anyone else. Hauser invited another of the industry's young

Turks to Cambridge to "look at a real operating system" and took the opportunity to demonstrate their network technology as well. "We showed Bill Gates the Econet network and he said 'What's a network?'" *Plus ça change.*

At its peak in the early eighties Acorn was generating an annual turnover of £200 million, and Sinclair Research was making profits of around £15 million on turnover of £120 million. The rises of Sinclair and Acorn were as spectacular as those of Microsoft or Compaq, who were just about to come into their own. Anyone who had invested £1 in Acorn when it started would, if they had sold their shares at their peak, have reaped a return of £1 million (although they would have had to sell their shares quickly).



Chris Curry —
developer of the Atom,
the foundation for the
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Decline and Fall

In October 1981 IBM had launched the IBM PC, based on the Intel 8088 processor and packaged with Microsoft's MSDOS operating system. When it was launched it cost \$1,595, and was far more expensive and no more powerful than machines from Sinclair and Acorn. But the IBM brand guaranteed its success in commercial business markets. Within three months, IBM's PC revenues hit \$40 million and by 1984 the company's annual PC revenues were \$4 billion.

Almost overnight, Acorn and Sinclair Research became also-rans in what came to be known as the IBM PC business. By 1983 Olivetti had paid £40 million for 85 percent of Acorn, and in 1985 Sinclair Research sold its PC technology and brands to Alan Sugar's Amstrad for £15 million. "We lost our shirt," remembers Curry, who also lost his house. But that wasn't the end of the story.

Although Acorn and Sinclair's declines cast a pall over Silicon Fen's success story in the mid-eighties, their original successes had set up a trend which did not entirely lose its momentum. By the time Acorn and Sinclair were in eclipse, other Cambridge start-ups were making a name for themselves.

In the mid-eighties Ray Anderson,



now another of Cambridge's IT millionaires, set up Torch. Torch was an innovative Unix processor company which would later give way to a more successful venture, Anderson's IXI, which is now part of SCO. In its brief life,



Torch learnt a lot about how to squeeze good Unix performance from a compact design. George Grey, Torch's chief engineer, went on to establish Tadpole Technology, the first company to put a RISC processor (the Sun Sparc) into a notebook format, and still one of the leading vendors of high-performance portable machines around to do so.

The next generation

Nor did Sinclair, Hauser and Curry completely disappear from the scene. Sinclair helped found Shaye Communications, a pioneer developer of cellular telephony handsets. Hauser stayed on with Acorn under Olivetti, becoming the company's vice president of technology and, with Dr Andy Hopper, a reader at Cambridge University, set up the Olivetti Research Centre in the heart of Cambridge. Much of the technology Olivetti acquired from Acorn, including the Advanced RISC Machine (ARM) processor, was kept alive by Hauser and Hopper, and is now helping to drive a second generation of Cambridge start-up companies.

Chris Curry also went on to found new companies, including Key-Line, which was set to become one of the first vendors of electronic cash devices before the banking recession of the late 1980s brought that project to an abrupt halt. Curry is now trying again, with General Information Systems (GIS), which designs the Smartcard devices used in the Midland Bank's electronic purse pilot, Mondex.

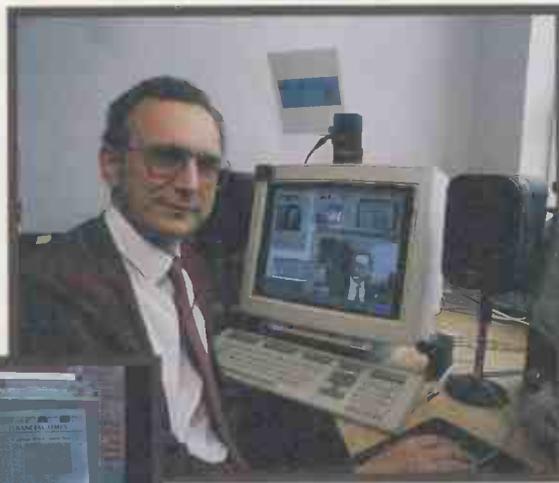
Possibly because he was born in Cambridge, Curry is circumspect about what he calls "the foreign influence" that companies such as Olivetti and Hitachi, which has built its own research centre next door to the Cavendish Laboratory, have brought to the city. However, Hauser, an Austrian, sees foreign investment in the city as the key to its revival as a centre of technology, and he believes Silicon Fen must play a supra-national role if its investors are to be able to compete with the Americans.

"Cambridge still has a chance to be a European centre. No other European



THE FALL
AND RISE OF
CAMBRIDGE

At the Olivetti Research Centre, Dr Andy Hopper, together with Herman Hauser, are keeping Acorn technology alive and helping to drive a second generation of Cambridge start-ups



OnLine Media — an Internet company and spin-off from Acorn, and perhaps most importantly ARM — the 1993 Olivetti spin-off which has successfully developed the ARM processor and sold it into mainstream products, including Apple's Newton PDA.

Between them, these companies have the skills to make the most of the blossoming commercial interest in the Internet, and with other interactive communications media. Online Media, for instance, is working alongside the BBC, Anglia TV, National Westminster and the Post Office to develop interactive consumer services, while ATML claims already to be a market leader in provision of 25Mb/s ATM switches.

Each of these companies owes a debt to ARM, whose 32-bit RISC processor is starting to win friends as more companies recognise its potential. The ARM processor provides full 32-bit RISC power at one sixth of the price of an equivalent Intel Pentium chip, but requires only a 3v current and comes complete with its own operating system, RiscOS. RiscOS runs in 2Mb of ROM, a technology which costs roughly one seventh of the equivalent RAM.

In a conventional PC arena RiscOS is an obvious disadvantage, but in the new applications which are emerging on the coat-tails of the Internet, this may not matter. As well as already powering the Newton PDA and ATML's ATM switches, it is now set to power the NetSurfer Internet terminal which Acorn has been contracted to design for Oracle, and which is set to launch later this year.

The Internet is changing the rules of the PC game, and Java is waiting in the wings to potentially sever the last hard links between desktop applications and the Windows/Intel platform. As Hauser points out, under these circumstances, the chief factor behind Silicon Fen's eighties decline may no longer apply. Back then, when the world turned IBM blue overnight, "If I had known then what I know now, the world might have been Acorn-compatible, instead of IBM-compatible."

Maybe now Hauser and his Silicon Fen successors will have a second chance, and maybe the new world of IT will be Cambridge-compatible. 



square metre, the materials themselves are much cheaper than LCD screens and can be made to any size. If CDTI can make it work, it could even provide an affordable flat-screen alternative to desktop monitors. CDTI's technology is still in the early development stage, but

it has shown sufficient promise to attract new funding and the interest of no less an investor than Apple's former CEO, John Sculley.

All together now...

Perhaps the most immediate prospect for a Cambridge IT revival will come from a

city has such a concentrated centre of academic excellence as Cambridge," claims Hauser, who believes there is one more barrier it must overcome before the city can fulfill its potential. "Cambridge has succeeded in building £100 million companies; it has still to achieve a \$1 billion company."

Pioneering spirit

Hauser believes the roots of the first \$1 billion Cambridge company may already have been grown. As well as Acorn, which continues to operate under Olivetti's wing, there are a number of new Cambridge companies which are feeding off Olivetti's research, as well as pioneering technologies on their own.

One such company is Cambridge Display Technology (CDTI) which was set as a spin-off from the Cavendish Lab in 1989. CDTI is developing new display technologies based on light-emitting polymers, a product of the Cavendish's material sciences research which promises to revolutionise screen displays, particularly for notebook and pen-based computers. By using charged sheets of ultra-thin polymer, CDTI expects to be able to produce a screen with greater clarity and faster refresh speed than is possible with conventional LCD screens, while requiring only a 3v current. At an estimated cost of £10 per



group of companies which are becoming known as the Cambridge Keiretsu. The name derives from their similarity to Japanese companies, which traditionally band together, sharing skills and technologies to help build a market.

Cambridge's Keiretsu is built around Olivetti and Cambridge University, and includes several companies which are spin-offs from Olivetti. There's ATML — an ATM communications specialist,





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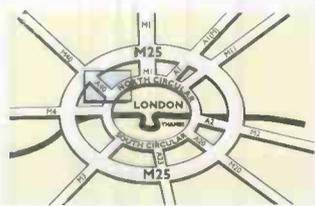
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OPTIONS

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Product Code	Description	Price Inc VAT
CMDPOT3F	14.4 kbps PCMCIA Fax Modem	£217.38
CMDPOT4F	28.8 kbps PCMCIA Fax Modem	£292.57
NCDRAM08	Memory Upgrade from 8MB to 16MB	£199.00
NCDRAM16	Memory Upgrade from 8MB to 24MB	£389.00
NCDRAM32	Memory Upgrade from 8MB to 40MB	£839.00
PAMMPS03	External amplified Speakers	£11.75
N4XPSXDC	Universal Car Battery adaptor	£81.08
VTC14PEL	ENVY14PE External Colour 14" Monitor	£233.85
VTC15DXL	ENVY15D External Colour 15" Monitor	£339.57
NCDXXDK0	Mini Docking Station (Future Product)	TBA



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Product Code	Description	Price Inc VAT
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UMMCDN14	Add a full MultiMedia Upgrade Option 1/4	£189.00
PDDXPAT1	Upgrade to ATI 264CT Video Card (1MB)	£34.07
PDDXPM2	Upgrade to Matrox Millennium (2MB)	£210.33
VTC15DXL	Upgrade to ENVY 15D, 15" Colour Monitor	£105.75
VTC17XXL	Upgrade to ENVY17, 17" Colour Monitor	£387.75



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December 1995
Contender ES



June 1995
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March 1996
Genie PCI P5/150



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Pentium® 133MHz	£1499	£1709	£1779	£2049
Pentium® 150MHz	£1609	£1819	£1889	£2159
Pentium® 166MHz	£1809	£2019	£2089	£2359

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PDDXPM2	Upgrade to Matrox Millennium (2MB)	£168.82
VTC17XXL	Upgrade to ENVY 17, 17" Colour Monitor	£282.00
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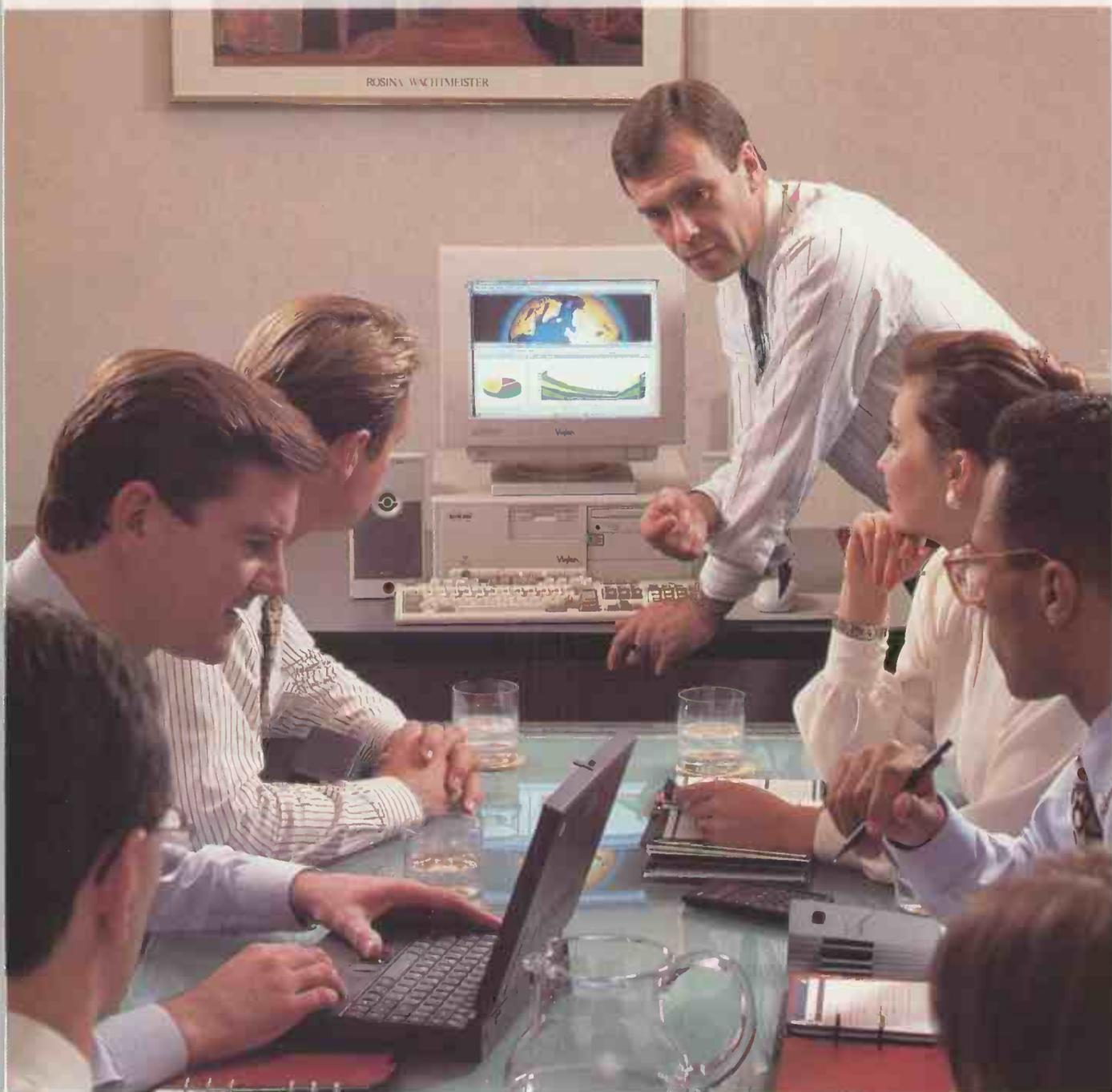




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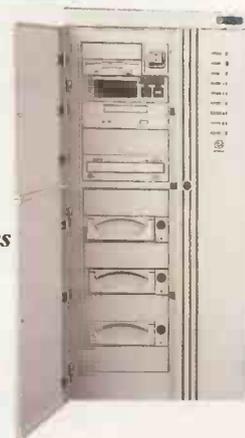
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CUTTING EDGE

On the



Welcome to Cutting Edge, the section in *Personal Computer World* that combines our regular reviews of games, books and CD-ROMs, with features keeping you right up to date with computing and the Internet.

We now have the most comprehensive coverage of these topics available in a general computing magazine. Stay with us and we'll take the pain out of keeping on the cutting edge.

PCW Online

- 2 0 2 **Focus** — Ed Krol, Net guru and author of *The Whole Internet*, talks to PJ Fisher about his beginnings, his book and his views of the current state of the online revolution.
- 2 0 7 **Focus** — *.sig files. Next time you send electronic mail, leave a lasting impression. Bob Lauder shows you how to sign right.
- 2 1 3 **net.newbies** — How to get online, with ease.
- 2 1 4 **net.news** — Netscape and Microsoft font fight; new ratings system for netkids' parents, and more news by PJ Fisher.
- 2 2 0 **net.answers** — Finding your way around the Internet throws up all sorts of queries. Nigel Whitfield has the solutions.

PCW Futures

- 2 2 7 **Innovations** — Microsoft crams more megabytes onto its business software floppies than you'd expect. Tim Frost tells you how they do it.
- 2 2 9 **Horizons** — Netters love Linux — it's fast and free. Jim Smith looks at the reasons behind the popularity of this Unix variant.
- 2 3 0 **Bluesky** — Look out! Software agents about. Toby Howard tells how these may hold the key to the future of computing.
- 2 3 2 **Retro Computing** — The short-lived Librex was Nippon Steel Corporation's ill-fated attempt to grab a slice of the burgeoning notebook market. Simon Rockman tells the story.

PCW Media

- 2 3 7 **Books** — Jumping Java! It's bandits on the information superhighway. Just two of the tomes tackled by our intrepid team this month.
- 2 4 8 **CD-ROMs** — We've fed blood and gore, music and food through the mincer this month.

PCW Fun

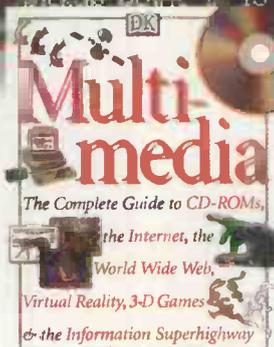
- 2 4 3 **Kids' Stuff** — Paul Begg rates rabbits, dogs and mice for your little 'uns delight, and something for the big 'uns, too.
- 2 5 9 **Screenplay** — There's a new game to delight Doomers, golf, monster mashing, and more. And, there's Screenplay news.
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Screenplay: *Future Shock*



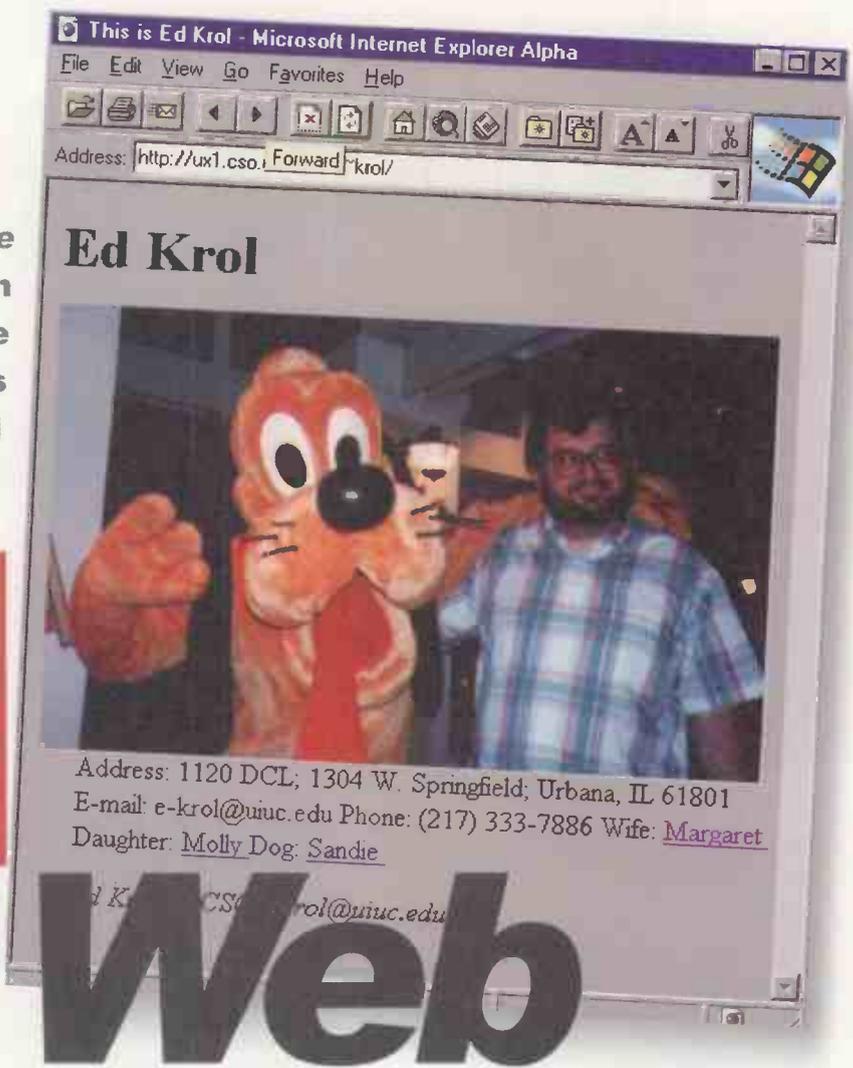
Kids' Stuff: *Digby the Dog*



Books

His first book, *The Whole Internet*, made Ed Krol an Internet star. Here, he talks about his background, the Net and his plans for the future.

The man who sold the Web



“THE WHOLE INTERNET” is regarded as the bible for Internet users. Its author is Ed Krol, a man who, in the sixties, went to the University of Illinois to study computing and somehow never left. In 1992, the first edition of this now classic book was published to critical acclaim. *Cutting Edge* editor **PJ Fisher** went to meet him.

PJF: *Computing must have been very different in the sixties. What was the original attraction and when did you discover the Internet?*

EK: “My original fascination was neural network applications but while we were surrounded by computers, I realised then that it was far from a decent way to make a living.

“As for the Internet, I kinda snuck my way onto it and played games — like an old Star Trek game based around Fortran, which we used to play during lunch (some things never change) — we certainly made

good use of it at the time!

“I got into mainstream academic computing in '85, when the National Centre for Supercomputer Applications (NCSA) was created. We got a grant award (but no staff) and I became facilities manager. My task was to get the NCSA connected to the Internet, which is where it really all started for me.”

PJF: *Did you get involved with the original Mosaic project at NCSA?*

EK: “No. In the early days of the NCSA it was a very jet set kind of life: flying to Washington in the morning for a meeting and flying back again in the evening. It became very wearying.

“After three years, in 1988, the NCSA staff had the option of returning to the campus: I took up the option so I could be at home more. I had a five-year-old daughter at the time.

“It was only when the first edition of my book came out, in 1992, that I became aware of

Mosaic's existence.

“Ironically, when we did the first edition of the book, we weren't sure whether to include the Web because we didn't know what to make of it. We originally decided it was just going to be another Telnet-able resource on the Net; a way of Telnetting to CERN. So we added the chapter on the CERN browser.

“The book went to print when the head of software development at NCSA invited me to a meeting with him and Marc Andreessen in a coffee shop. They told me all about Mosaic and invited me over to play with it.”

PJF: *Were you surprised at the success of the book, considering that you weren't even going to include the Web in it?*

EK: “Certainly. My wife thought we would sell 10,000 copies, I thought we'd sell 30,000, and a librarian friend thought we'd sell 100,000. To date, we have

sold 750,000 copies in various editions.”

PJF: *The book was published in 1992, and this coincided with the surge in popularity of the Web.*

Have you any idea why that happened when it did after there had been no real change in the technology; no sudden increase in bandwidth, for example? The Internet was pretty much the same as it had always been.

EK: “Yes, I have a couple of ideas about the reasons for some of the growth — I certainly don't have an explanation for the exponential growth.

“1987 is probably the time when engineering students in the US became aware of the Net: and four years later this first generation of Net-savvy students were graduating and went off into industry to spread the gospel there, so that probably had something to do with it.

“And I also think that Mosaic and the Web had a lot to do with



COMING

it and that Gopher helped, too — the Web caught the imagination of a lot of people."

PJF: *It shows no sign of abating. It's not an explosion that has come and gone — it seems to be accelerating all the time.*

EK: "I certainly screwed up my investments in the Web. I bought and sold my CISCO stock several times. If I had held on to it I would be a millionaire by now, but I was too stupid to do that!"

PJF: *Well, that leads into the current situation where a war for control of the Internet has been developing between Microsoft and Netscape/Sun.*

Despite the call on all sides for maintaining open systems you get the feeling that the first party to win will close it down. Are you saddened by this, or are you just pragmatic?

EK: "Not so much saddened by the availability of commercial enterprise on the Net: my view of the Net is one of an 'information spigot' in your home. If I want to find out about vacations in Disneyworld I can do that. If I want prices from Sun I can do that, too, or I can buy stuff. All very nice and convenient.

"I find the Netscape Internet posturing very interesting. It is clear that Microsoft underestimated the inertia of the Internet: suddenly it is just another ISP.

"As for the Netscape attitude that it was going to build an application which you'd never leave and wouldn't care what OS you were running underneath it — well, six months ago Netscape said that was its target. But instead of adding collaboration and text processing to Netscape Navigator, it let Microsoft step in and add it to Internet Explorer.

"So it's an interesting fight, but what bothers me most is that the consumer seems to have been lost in the fray. It seems they are being told: 'You don't understand all this but in another couple of years we'll get

all this stuff straightened out and then we can charge you \$30 a month and you'll be really happy. But we don't want you to have any input, because you don't understand'."

PJF: *So what do you think all this is bringing to ordinary people? We forget that ordinary people mostly watch TV and make phone calls, so apart from looking up flights and so on (which is a service), what will they get?*

EK: "I think that for a large chunk of the population, which finishes work, spends a couple of hours in the pub and then goes home, probably very little. But those who are interested in communicating in a timely fashion will be involved.

"If you have a son or daughter on an exchange visit overseas then you may want to send them an email which is more cost effective than phoning, for instance — it gives you a warm, fuzzy, feeling — and people who have any real reason for getting specific information will be sucked in, too.

"I guess I am a little worried that a move to make the Web all things is going to put off many people. For instance, all these stripped-down PCs, \$500 NCs [network computers] which allow you to get on the Web but do very little else..."

PJF: *More hype there?*

EK: "...well, right, are they really any different to Minitel terminals — another version of 'we know what technology you really want'? The Internet is really like the telephone system: we give you a basic means of communication as long as you know how to dial the phone. We are losing the ability to do that with these engineered boxes."

PJF: *A year ago, things were relatively simple, yet we now have these NCs: endless extensions to HTML, none of which have been ratified.*

EK: "And many of them, like blinking, are more of a nuisance than an asset!"

PJF: *And one person's page or site won't work in another's browser. It seems to me that it's getting worse, not better.*

EK: "Very likely it will continue to get worse before it gets better. I don't think Netscape is quite as far out in front as it once was.

"Microsoft is catching up, Lotus is coming up with a built-in browser which does VRML, Java, SSL..."

"Netscape had a good idea and is running down the road, but it has to do all the engineering and the software development, whereas anyone else merely has to develop the software if they accept Netscape's de-facto standard.

"Netscape is losing its focus; having to do all this other development work as well in order to take on Microsoft. I think it's a fairly hard road for them."

PJF: *Java is a wonderful idea, but it will be a while before anyone convinces me that it has any serious use. It's just a programming language.*

EK: "And of course, when a new programming language gets designed, it is the one that will supplant all others! But Fortran and Cobol are still around.

"I'm not convinced. I think the concept of applets is a very powerful one but I'm not sure that Java isn't Betamax-format VCR tape: that had Sony behind it but for some reason didn't take off.

"For years, we have been saying to people 'My God, be wary of downloaded software you don't want to download software willy-nilly — be careful'. Now suddenly, with Java, we're saying 'It's OK! You won't even know it's downloaded, but it's OK, it's safe'."

"There are a number of issues, here: everybody thought Unix was safe but it's full of holes. When Windows NT was released it was supposed to be very solid; now we are seeing a couple of security breaches in it.

"I don't doubt there is going to be some Java application in which the virtual machine [which describes the Java environment] won't be powerful enough to handle that factor, so that machine will have to be re-engineered to make it safer.

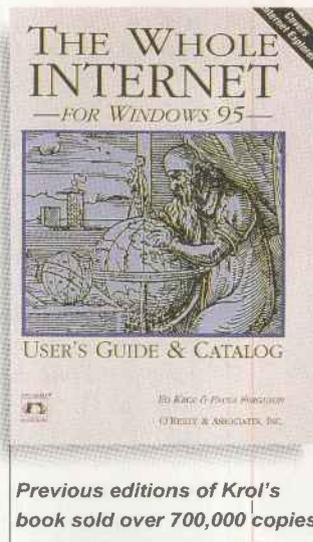
"I'm not sure Java is the way to go. Additionally, the current implementations are so slow — the download and execution."

PJF: *And they don't do anything useful, it's just bits of fun.*

EK: "Right. Would you be willing to pay for 30 seconds' service, just to see the coffee in the corner steam?"

PJF: *This whole idea of NCs seems to me to be a backward step: back to mainframes in a different way. The idea of a PC was that it liberated you, it was your personal computer. Now we are telling people "Hey, get rid of all that, we want you to download mini-applications and pay someone \$5 for the privilege."*

EK: "I think it's a backward step, too. But I think the marketing tack that will be taken for these \$500 NCs will hinge on all those people who buy PCs and never use them because they are so hard to use. But with these



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boxes you just plug them in and they magically work — you don't have to do anything."

PJF: *Let's return to your books. Are you working*

on anything else?

EK: "No, but I'm starting real soon. We are scheduled to do a revamp of the original version of The Whole Internet. It will be reorganised like the Windows 95 version was. We thought: 'Well, no-one cares about this Telnet and FTP junk anymore. What people really want is the Web and news'. And we might have to do that to the old version of the book, too."

PJF: *Writing books about the Internet must be difficult now, with technology changing so fast. All things considered, even your Windows 95 version is already out of date, with the stuff on MSN being made obsolete by Microsoft's recent changes. Is that a real worry?*

EK: "Yeah; and we also had the old version of Explorer in the book, and Navigator too. We thought it was good that we did that! Yeah, it makes it hard. One of the things that people don't realise is that the Internet is really easy to use. If you know how to use Explorer, or Mosaic, or Netscape, most of the rest is fluff."

"The bottom line is that even if I look at information in Mosaic, designed for Netscape 2.0, that information is still there but it just looks a little strange. It's certainly quite usable. I can argue, in a lot of cases, that background colouration is not worth the bits that it takes."

PJF: *Do you have a home page?*

EK: "Oh yeah, I had to have one so I put one up. There's not much there!"

PJF: *Will you write any books that are not just about the Internet — wider technological issues?*

EK: "I might. In many ways, the Windows 95 book was the first move into writing about something I was not really familiar with. The first book was quite easy in that I didn't really have to do much research. It was just like a dump of my everyday work habits — I generalised by 30 percent and it was done. But I have never been a Windows person."

PJF: *What do you use as an OS?*

EK: "Ever since desktop computing came

into being I have primarily been a Macintosh person, but, you know, you can probably put me in front of *any* machine and I could get by on it, since over the course of time I've used all the big ones: VMS, Unix... If you gave me a Sun Workstation out of the box I could configure it. It might take me all day, but I could do it!

"Windows 95 was pretty amazing because it was so Mac-like. We got a CD of the beta version and the documentation was typically poor and didn't correspond to what was on the CD. But when you clicked on install, it worked. It was pretty straightforward. It tends to crash a whole lot less than Windows 3.1.1. With Windows 95, I only have to reboot maybe once a month."

PJF: *Do you have much time for the OS religious wars? Isn't it all ridiculous? After all, they're operating systems, that's all. And none of them are perfect.*

EK: "Well, if you're looking for OS Nirvana, then OS/2 is probably the pick of the litter, but it's going nowhere. It never picked up enough critical mass to become a viable player. Unix blew it by not standardising. If there had been a single, standard Unix which everybody used before NT came out, I think it could have cornered the market."

"Much of the industry wanted a solid, standard platform and Unix was too busy fighting its little internal wars, so NT grabbed a slice of the market. But I don't think the OS matters all that much in the grand scheme of things."

PJF: *So, finally, let's take the example of a young person leaving college with a computer science degree. What do you suggest they do with it? Are we still living in the age of the programmer as God?*

EK: "Pretty much, but the interesting thing is that if the Web has done anything, it's given jobs to semi-literate computer people."

"The propeller heads have had no trouble getting jobs in the last 25 years but right now there is this whole market for HTML content developers. If you talk to a computer scientist, doing HTML is not an interesting pursuit. But there are an awful lot of people who have degrees in English and an eye for layout. What the Web has done is make it a really good market for those people. And you don't have to do much to get experience — get an Internet account, put up a Web page, then go off to a prospective employer and say 'look what I did'."

"But I don't think operating systems are where it's at anymore. Both of the major players are saying that the OS is meaningless. There is a clue to be taken from that." ■

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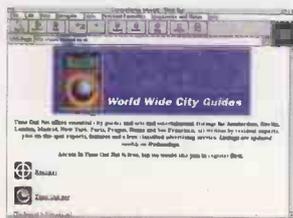
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cramped. Don Gilbert's *.sig is evidence that the thought which goes into a *.sig is more important than size. It's a short, but instantly recognisable, one-liner (Fig 1).

How do they get there?

So, you might wonder, how do those people with complex *.sigs get them into every mail and post? They can't be typed in every time; that would take too long and be prone to error.

There are several other ways to make your *.sig available every time you post. You could keep the text in a separate file and copy the contents each time. But better than this is to have your *.sig put in automatically. Most newsreaders and mailers

have this facility. You define the source *.sig file, which is then automatically included with every mail and post.

"Just the facts"

(B. Willis, Die Hard 2)
One of the main things you'll want in a *.sig is your name and location. If your main Internet access is at work, you may want to include your office address (but see *Disclaimers*, below).

If your main access is at home, you may not want to show your full address; so just use the name of your town. Many *.sigs have the author's snailmail address, phone and fax numbers. Or, you could follow Bruce's advice and provide the facts, without the fax (Fig 2).

Pointers

Just like a life form, *.sigs evolve and they do it pretty fast. Recently, more and more are carrying pointers to home pages on the Word Wide Web or an FTP site from which useful (or useless but interesting) files can be downloaded (Fig 3).

ASCII art

ASCII art is produced merely by using the 128 characters in the ASCII character set. It's amazing what can be done with only a few slashes, dashes and lines. You may want to depict your hobby, or just show what you can do using simple materials.

It's in this section that the skill of keeping the *.sig small and under control is important.

The most impressive pieces of ASCII art are those which depict an image with minimal use of characters and space. Dileep Agrawal has worked hard to avoid the pitfalls, and has created a great *.sig (Fig 4).

A joke

One way to get your *.sig noticed is to include a joke. It should be short and sharp, otherwise your *.sig will get too big — one-liners fit well into *.sigs (Fig 5). Be certain that it will offend no-one, ever. Think carefully before committing a joke to your *.sig: the Internet is used by people of every race, gender, sexual orientation, religion and disposition.

A quote

If you have a favourite quote from a film, a book, or some great philosopher, your *.sig is a great place to share it with others. Just remember, though, that anything controversial in a *.sig will cause you problems. Some people who've trod the path of choosing a quote are shown in Fig 6.

It doesn't have to be a real quote; you could modify a well-known one to make it funny. But don't be tempted to make up a quote which you want to go down in history: unless you're a philosopher, or hit lucky, the only thing it'll go down in is flames (Fig 7).

Disclaimers

Another common feature finding its way into the humourist's *.sig is the disclaimer.

There are many variations of the standard, "these are my opinions, not those of the company" type of disclaimer. This is currently one of the growth areas in *.sigs, as more people create unusual variations on a theme (Fig 8).

So get thinking about those *.sigs. If you've got a good one, please do send me a copy.

Bob Lauder

● Bob Lauder can be emailed on r.lauder@lancaster.ac.uk

Signs of the times (cont'd)

Fig 6

```
*****
* John Alsobrook   Child Study Center   Yale University School of Medicine *
* internet: alsobrook@biomed.yale.edu / bitnet: alsobrook@biomed.bitnet *
* ----- *
* "Giving money and power to the government is like giving whiskey and car *
* keys to teenage boys." -- P.J. O'Rourke *
* ----- *
```

```
Dr. Jim Offord           |There is more to life
Parke-Davis Biotechnology |than increasing its speed.
offordj@aa.com           |
Opinions? They're all mine. |Mohandas K. Gandhi
```

```
*****
* Charles T. Faulkner * When you don't know where you're
* Univ of Tennessee, Knoxville * going any road will take you there.
* (ctfaulkn@utk.utk.edu) * Alice
*****
```

```
-----
In American politics you ask the rich for money and the poor for votes and
expect them both to believe you. A. Lincoln
----- Jack Warner jwarner@freenet.columbus.oh.us -----
```

Fig 7

```
Eric Sybesma, Unisys | sybesma@uniras.rsvl.unisys.com | (612) 555-3380 |
Site Management Products | "One in the hand is better than two in the bush, |
Roseville, MN 55113 | unless, of course, we are talking about thorns." |
```

Fig 8

```
* Derek M. Harkins <harkinds@sol.fiu.edu> | All opinions here stated, if *
* United States Department of Agriculture | correct and lucid, are solely *
* Agricultural Research Service NCGR-MIA | my own. All others you can *
* Miami, FL 33158 USA (305) 555-9321 | blame on my evil twin. *
```

```
* Dennis Stockert My opinions may not qualify as "intellectual"
* stockert@lerc.nasa.gov property; but they're mine - and mine alone
```



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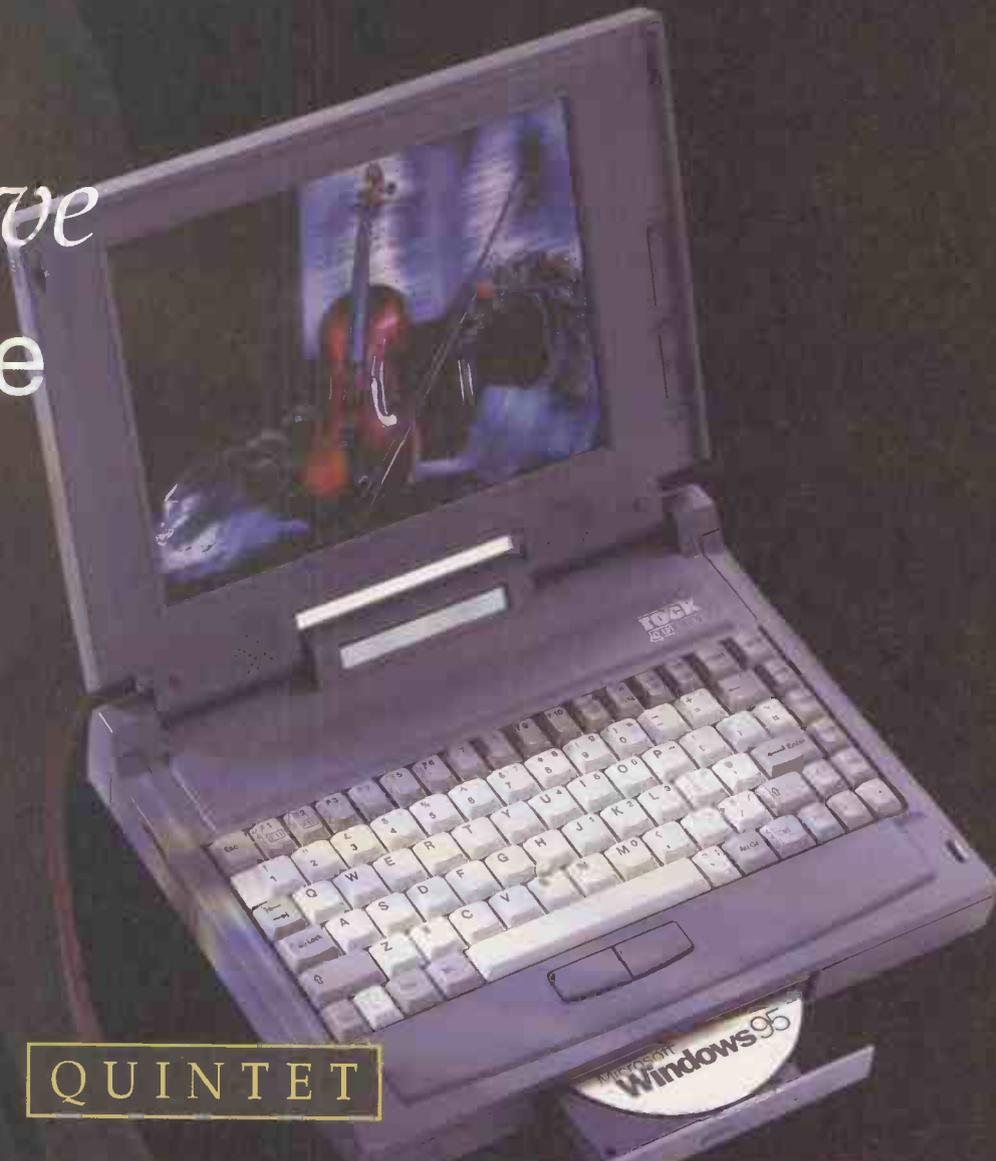
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*Available to the first 500 respondents from 25.3.96

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The compact Quintet incorporates a pentium CPU and offers full-size CD-Rom capability with a built-in QUAD Speed Drive, 16 bit Soundblaster Pro compatible sound system and the ability to play MPEG movie CD's. The Quintet is able to bring an enlightening new quality to business presentations, seminars or sales opportunities. Naturally the Quintet can be linked into other peripheral equipment including monitors, printers and modems to offer an exciting world of audio/visual possibilities.

QUINTET PRICE GUIDE

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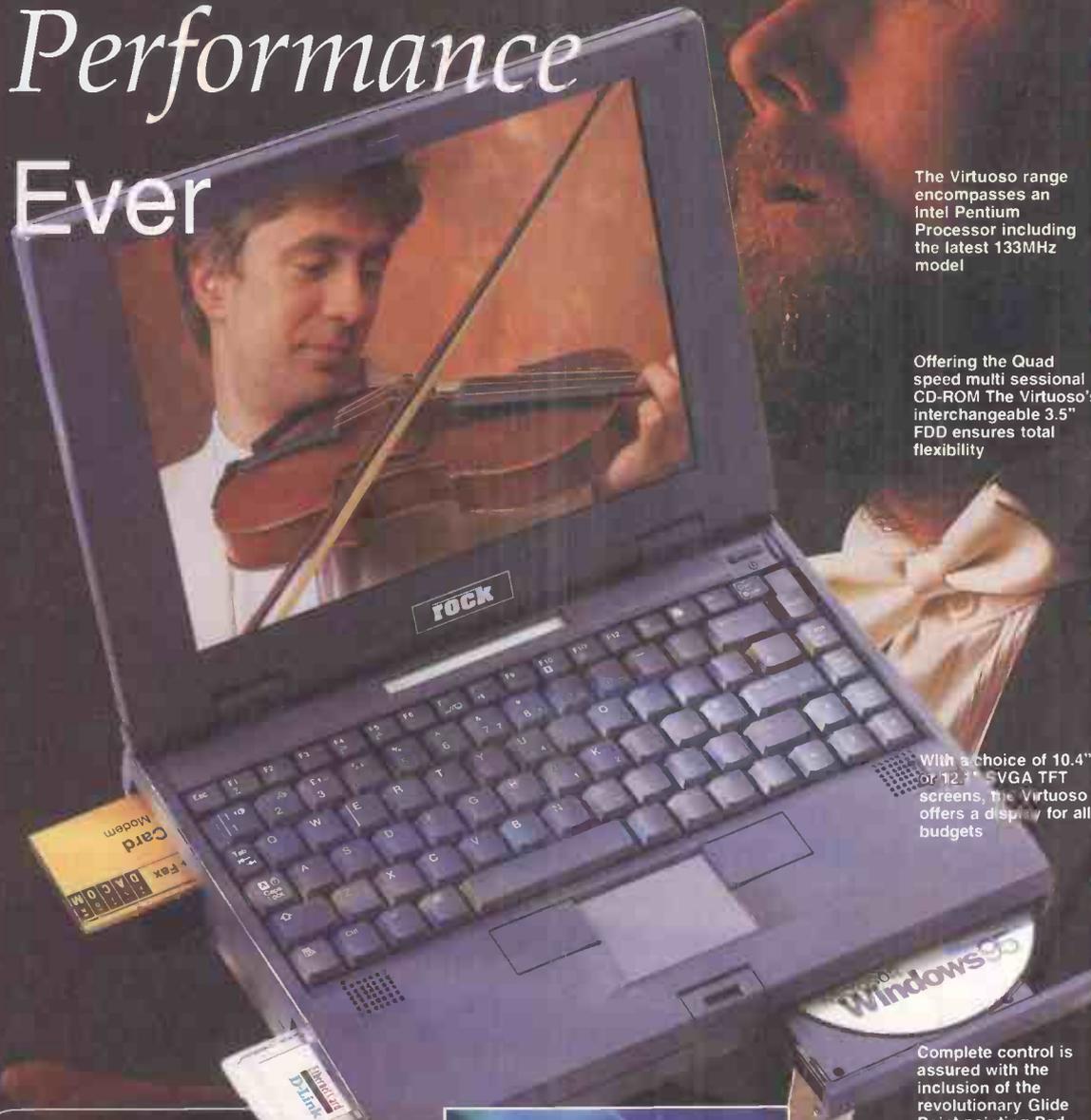
875 Plymouth Road Slough Berkshire SL1 4LP
Tel: 01753 567899
Fax: 01753 567007

121 Regent Street, Leamington Spa Warks CV32 4NU
Tel: 01926 832291
Fax: 01926 832279

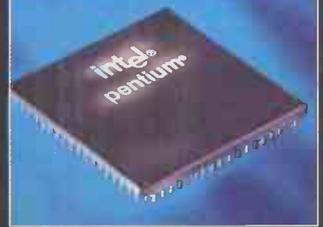


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CompuServe Supervalues [§]	X	✓	X	£195.72	£195.72	£195.72	£256.68
AOL Standard	✓	✓	X	£71.40	£93.60	£226.80	£493.20
Demon	✓	X	X	£132.50	£132.50	£132.50	£132.50
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net.newbies

Getting started on the Net:
what to do, where to go

These pages are designed to be an easy-to-use reference guide to the Internet for the novice.

So what is the Internet?

The Internet consists of millions of computers interconnected in a global network. The number of users is difficult to measure, but those worldwide who can at least exchange electronic mail messages is estimated to be 30 million and growing.

What about this World Wide Web then?

It is *not* the Internet. It is a service on the Internet which uses special software known as Web Browsers (usually available free) to give users access to pages of information with pictures and multimedia instead of just text. About 15 million people around the world have access to the World Wide Web.

Sounds great. What do I need to get on?

A PC of almost any age can be connected to the Internet as long as you can plug it into a modem. You don't even need to be able to view graphics on your machine to look around (although it helps).

A modem allows your PC to dial in to another computer with a modem and communicate with it. They come in different speeds, from 2,400 baud to more than ten times that. When you are using the Internet, the speed at which things work is more likely to be limited by the speed of your modem than by that of your computer. Buy the

fastest you can afford. An old 2,400 baud "V.22bis" model is fast enough to exchange electronic mail messages, but to send and receive files, or use the more exciting services on the Internet, a modem which runs at a speed of at least 14,400 baud "V32.bis" is vital. Fortunately, these have plummeted in price over the past few years and now cost as little as £100. If you have the money, go for a 28,800 baud V.34 modem. Over time, you'll recoup the added cost by reducing your phone bills.

Okay, I've got a modem. Now what?

For a modem to bring you information, it has to have a number to dial. This is where a "service provider" comes in — you have to subscribe to one if you want to get online. Whatever kind of connection you have set up, you will have to pay your phone costs on top of any subscription, unless you are lucky enough to get free local calls through a cable company. The bigger service providers will have the numbers you dial, PoPs (points of presence), scattered across the country so you only have to dial a local number.

If there's no company near to your home which offers Internet access, you may have to pay long-distance phone rates. Once connected, though, it doesn't matter where the information you are accessing is physically located: you are always charged at the same rate. A list of providers and telephone numbers is available in the panel below. For more details, have a

look at the supplement banded with the January issue of *PCW*.

Full Internet access, which allows you to use email and Internet services for any amount of time, limited only by the size of your potential phone bill, costs more, currently between £8.50 and £15 per month. There are dozens of companies offering this kind of Internet access, none of them big enough to dominate the market. The basic service being offered is largely the same, although some higher-priced providers may claim to offer a more personal service or a better selection of access software.

Why don't I just join CompuServe?

Or you could try AOL, Europe Online, UK Online and MSN who all now offer Internet access and also have a large number of services of their own to which only their subscribers have access. These services include official technical support for hardware and software by electronic mail, online games, vast indexed software libraries and databases of business or consumer information. A monthly subscription tends to cost between £5 and £10 per month, plus a charge per hour if you are online for more than a set number of hours in that month. But as the market becomes more competitive prices are falling — CompuServe has announced some significant reductions.

Demon Internet is the best known and most popular of the standard Internet operators but

doesn't cater too well for beginners. Perhaps better for the raw newbie is Easynet (although it only has PoPs in London and Edinburgh) or UK Online. The latter is a special case; a cross between an Internet provider and an online service. For £8.50 to £12.75 per month it offers unlimited access to the Internet, partially "censored" to make it safer for children to browse, plus access to online magazines and other services.

Any good service provider should provide you with appropriate access software when you sign up, and if you want to choose something different, most of it can be acquired online, free of charge.



CUTTING EDGE

PCW Contacts

AOL 0171 385 9404
CompuServe 0800 289378
 email: 70006.101@csi.compuserve.com
Delphi 0171 757 7080
 email: uk@delphi.com
Demon 0181 371 1000
 email: internet@demon.net
 email: sales@demon.net
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 If you don't understand what's written here or have any suggestions, please let us know. Contact **Paul_Fisher@pcw.ccmail.compuserve.com**, or "snailmail" (Internet-speak for the post) to the *PCW* Editorial address on page 12.



net news

Around the Web world, with PJ Fisher.

Font fight is the new browser battle

Microsoft

typography

<http://www.microsoft.com/truetype/>

Netscape and Microsoft have each fired off their first salvos in a new browser battle. This time, the prize is for who can convince the most users that its browser technology has the best fonts.

As usual, Microsoft is going it alone by promoting an extension of TrueType technology for the Web, while Netscape has teamed up with Adobe to build HTML extensions which will support Adobe Type 1 fonts as well as TrueType, within Navigator.

TrueType was originally developed jointly by Microsoft and Apple as a way to combat Adobe's monopoly of the desktop publishing market. The battle has come to the Web now that designers are crying out for ways to create good-looking Web pages.

Microsoft has a short lead over its rivals. Internet Explorer 2.0 already supports a limited number of TrueType fonts within the browser, as long as those fonts are present on the client PC and are supported by an HTML tag. This has recently been

extended to the Mac version of Explorer.

The Netscape camp is promising much: anti-aliased type, embedded and compressed fonts that are sent with the Web page, progressive rendering of fonts and font subsetting which, it claims, improves performance because only those characters needed are downloaded.

The technology is based around an enhancement of Adobe's Amber technology which enables Acrobat documents to be read within the Netscape browser.

Microsoft is extending the work it has already done by letting Web designers create pages around a core set of TrueType fonts and then send them to any platform. Like Adobe, Microsoft will embed fonts within HTML. Supporting this, Microsoft is to introduce a royalty-free cross-platform licensing program for the TrueType rasterizer which will bring TrueType to platforms (such as UNIX) that previously did not support TrueType.

To protect type designers,

type manufacturers can specify embedded fonts to be read-only or to be fully-downloadable to protect intellectual copyright.

Microsoft is to make the core set available to Web developers and will include designs from top type designers, including Matthew Carter. By licensing the TrueType download technology to other browser and application developers it hopes to unlock thousands of TrueType fonts for the Web.

Both camps are proposing their font technologies to the World Wide Web consortium for approval as extensions to HTML but undoubtedly, neither will wait on approval for implementation.

Although considered inferior in quality to PostScript fonts, TrueType has been successful with over three billion fonts sold.

Hedging its bets, Adobe has recently announced that Amber will also be supported in Internet Explorer 3.0.

<http://www.microsoft.com/truetype>

<http://www.adobe.com>

Sony PC for the US

It has often been said that if Sony were to ever seriously apply its vast resources to making PCs, then the giants in Silicon Valley would really have something to think about. Witness the success of its PlayStation consoles since they were launched last year.

For years, however, Sony has shown very little interest in the PC market, making only monitors and other peripherals.

But news that Sony is developing an operating system to run on its own network computers could change all that. The company is also developing motherboards in conjunction with Intel, boasting "new generation" video and audio capabilities for a Sony PC to be released in the US this autumn.

Sony COMPUTER PRODUCTS GUIDE

Parent-power on the Web

Parents concerned about their children accessing porn on the Net may soon have a ratings system to help allay their fears. Microsoft has joined forces with the (US-based) Recreational Software Advisory Council (RSAC) to enable a Content Advisor feature which will be included in the final release of Internet Explorer 3.0.

According to Microsoft, this will make it easier for parents to monitor what their children are viewing on the Web and other parts of the Internet.

The new system has been developed from The World Wide Web Consortium's "Platform for Internet Content Selection" (PICS) guidelines. These are designed to allow content providers to label, voluntarily, the



PICS

content of Web sites. Used in conjunction with existing parental control software such as SurfWatch or NetNanny, parents can regulate what their children see via a rating system similar to that used on video tapes. X-rated sites would, for example, be immediately blocked by the browser.

Microsoft is setting up a Web site which will detail in full how the system will work and will advise on existing parental control methods.

PICS itself believes in self-regulation and is against the blanket ban on anything deemed "unsuitable" by governments. Instead, it urges parental guidance.

<http://www.microsoft.com/ie/parents.htm>

<http://www.w3.org/pub/WWW/PICS/>

Navigator 3.0 released

Just as Microsoft releases an alpha of its Internet Explorer 3.0, Netscape has quietly released version 3.0 of Navigator. Nothing revolutionary: just support for Live 3D, a VRML viewer and a plug-in for playing inline AVI, WAV and MIDI files supported by HTML. This only works under Windows 95 or NT. Macintosh users will be able to run Java applets, at last.

An add-on application called CoolTalk allows users to use the Web for conducting telephone conversations and data conferencing via a 14.4Kb/sec modem. A whiteboard facility is also available using CoolTalk. The alpha is free to download for a 90-day trial period from Netscape's Web site.

www.netscape.com

Mirror Group goes with AOL

Unlike other newspaper publishers the Mirror Group, including the *Daily Mirror* and *The Independent*, has chosen to go online via AOL.

In the belief that this will "attract a new group of readers and users" the group's other titles, including *Sporting Life*, will follow at a later date.

Elements of LIVE TV, also part of the Mirror Group, are additionally promised although the company did not specify which. Perhaps we might see the new bikini-clad weather girls next to the animated AOL weather maps?



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0171 649 1326 Faxback info

0181 265 2211 Modem(8N1)

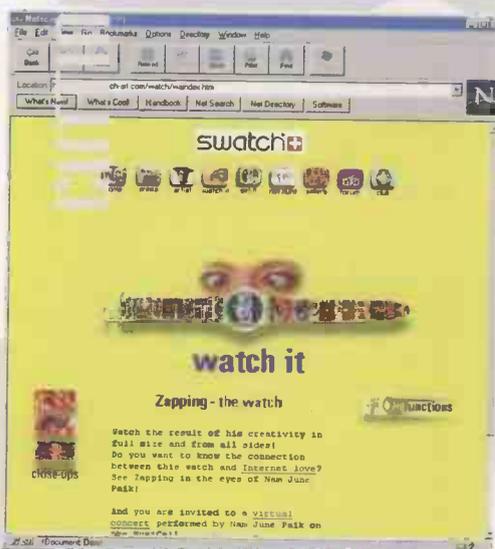
sales@dircon.co.uk



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Net.surf



Swatch this Swatch has brought its colourful approach to watchmaking to the web with its new site. There's plenty to keep you amused including a gallery of Swatch art, information on highly collectable Swatch watches and an in-depth look at Mr Nam

June Paik, billed as the "father of video art". His new design for Swatch, based around "Internet Love", is described in full Technicolor detail.
<http://www.swatch-art.com>

The French correction
Need a shave? Perhaps you should drop into the Daniel Rouah Barber Shop & Skin Care Salon. Not only is Daniel "the barber to the stars" but he also claims to be the first barber in cyberspace. And who's to argue? Billed as a "Frenchman With a Razor and a Mission", Daniel is frankly appalled at the way British men shave. So tomorrow morning surf over to Daniel's web site on tips on how to do it properly. Or better still, be like me and don't bother to shave at all.
<http://www.blu-chip.com/drouah>



It's a breeze
The latest trend among radio stations is to start broadcasting over the net: witness Virgin's much trumpeted

launch last March. Not to be outdone, two Essex-based commercial stations, Breeze FM and Essex FM, have launched web sites. They don't seem to have heard of RealTime Audio but you can listen to an exciting jingle.
<http://www.breeze.netforce.net>
<http://www.essexfm.netforce.net>



none other than the lovely Diana, PoW. This unashamedly trivial site has got all the links that any patriotic citizen should know about the woman who refused to play the monarchy game.

Shame the site itself isn't too easy on the eyes.
<http://user06.blue.aol.com/douglasb52/index.html>

PJ Fisher

IBM Web server give-away

IBM is entering the Internet fray even later than Microsoft but hopes to attract people to its new server software by giving it away via its Web site.

The IBM Internet Connection for AIX and OS/2 Warp is available now and will be followed by an NT version. Apart from the standard Internet protocol, the new server will support IBM's proprietary protocols to enable corporate databases to connect to the Internet or form part of company Intranets.

The new server is designed to compete head to head with Microsoft's Internet Information Server as both companies are trying to leverage market share from the NCSA (National Centre for Supercomputing Applications).
<http://www.ibm.com>

Quarterdeck grabs Datastorm

Quarterdeck has been on the acquisition trail again with its purchase of Datastorm Technologies, developer of Procomm Plus, one of the first comms suites for Windows users. This was recently updated to take advantage of Windows 95 and the web.

As Quarterdeck already sells its own Internet and comms suite, the acquisition seems puzzling. But Quarterdeck also signed an "intent" to acquire Future Labs which develops whiteboarding and collaborative technology.

Quarterdeck says it hopes to combine technology from both companies to push into the collaborative computing markets.
www.qdeck.com

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Windows 95

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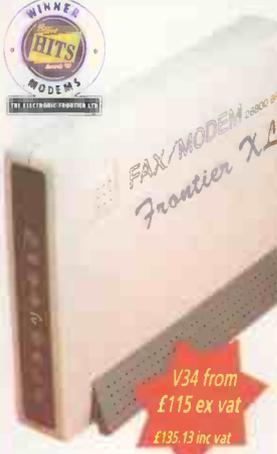
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Barclays banks on the Net

Since announcing its development of Internet banking via Microsoft's Money home accounts software, Visa Interactive has named Barclays Bank as the first UK financial institution to develop the system for its customers. In the US, more than 30 banks have signed up to the system. <http://www.visa.com>

Take five steps with Corel Web database

Corel has announced a new database package for the Web, CorelWEB.DATA will allow companies to publish database information directly to their Web sites.

It is Windows 95 and NT compatible and uses extensions to Netscape 2.0 or Microsoft Internet Explorer to publish catalogues, phone lists or other data via the Common Gateway Interface (CGI) protocol.

Corel claims that the process is completed via a simple five-step procedure that begins by selecting the type of database, and finishes by hitting a Process button which converts the database information directly into HTML.

Graphics and hyperlinks can be added along the way and databases can be merged into existing Web pages. A 30-day free trial version is available from Corel's Web site.

Corel has also released WEB.GALLERY, a CD-ROM of over 7,500 "Web-ready", copyright-free images including backgrounds and bullets.

Corel WEB.DATA will cost around £169 and WEB.GALLERY about £79. www.corel.com

Gates proposes PC control

Remember Microsoft At Work? The long-forgotten Gatesian idea of linking office faxes and photocopiers with PCs has resurfaced in the shape of Simply Interactive PC, an idea outlined by Bill Gates at the Windows Hardware Engineering Conference in San José, California.

This time, your PC is being tipped to control other gadgets



in the home such as the TV, stereo, VCR and other unspecified domestic "electronic devices".

Much of what was said was at proposal stage only but Gates believes this is one way

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of maintaining PCs as the dominant force in computing against the threat of the new Network Computers (NCs) from Oracle, Sun and others.

Firmed-up ideas did, however, include the announcement of (real) plug-and-play connections for VCRs and camcorders, and a Universal Serial Bus for instant hook-up of office devices such as scanners and printers.

Of more interest is the "On Now" technology which is intended to remove the long bootup procedure from PCs, making them more like other consumer devices with instant

switch-on. This differs from sleep mode found on some current PCs by IBM, for example. Also promised is "easy access" to the Internet and even step-by-step ISDN networking.

According to Gates, these new PCs would be small, sealed, boxes inaccessible to users but upgraded or added to by plugging in other components, much like separate audio systems. Peripherals of all types would configure themselves automatically to these new slimline PCs. The Microsoft boss believes they could sell for around \$500. <http://www.microsoft.com>

UK Java centre set up

Java is definitely here to stay and the first UK-based Web site has been set up, devoted to this increasingly popular programming language.

Independent from Sun Microsystems, it intends to become a resource and discussion centre for UK-based Java developers. There will be details of tutorials, exhibitions and events in the UK.

A Golden Duke award, voted by visitors to the site, will be given to outstanding applets on a monthly basis. Other sections include the J Files, a resource of Java applets, and Ask Dr J, an advice centre.

<http://www.java.co.uk>



Price wars

Global Internet has announced what it claims is the best value ISDN Internet access service in the UK. At £7.50 the tariff is identical to its dial-up modem service.

"No other Internet company is able to offer such a good value ISDN tariff," said managing director, Laurence Blackall.

UK Online is to make its online service and Internet access available via ISDN at a flat rate of £14.99 per month with no extra charges for time online.

Planet Internet will be offering unlimited access to users for £12.50 a month. The company is committed to introducing its free 0800 access this month.

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Nigel Whitfield guides you through the Internet.

Is Big Bill watching you?

Q: I heard a rumour that when you connect to MSN, a check is made on all the unlicensed software you have on your computer. It is worrying to think that this could be happening; after all, surely this is an infringement of privacy?

Have I just been told a silly story, or is it true? Does "Uncle Bill" really know what's on our PCs?

A. Leaving aside the fact that having unlicensed software on your computer is pretty close to theft, there's not much to worry about. It's been widely rumoured on the Internet, and elsewhere, that the online registration for Windows 95 or for Microsoft Network reports your system configuration, but there's only a small element of truth in the story.

If you opt to register online, you will be asked whether details of your Microsoft software can be sent as part of the registration process. If you have unlicensed Microsoft programs, details will be sent too.

But no information is sent unless you click on a button to allow it, and you don't have to register online — you could

send in the registration card instead.

Microsoft Network does not record details of your system and send them over the wire, either, though it will automatically upgrade itself if you are using old MSN software on your computer such as, for instance, Pipex Dial.

Despite widespread rumours of this sort, no-one has ever proved that information is being sent from your computer without your consent when you use Microsoft products, and Microsoft has denied it. In short, this rumour is like so many of the stories that you hear on the Internet, just another urban legend. Don't worry about it.

Forming an attachment

Q: Whenever I send an attachment, the receiver always gets its x's and 1's all over the page, as if it has been opened along the way. Is there any way of fixing this, and sending attachments properly?

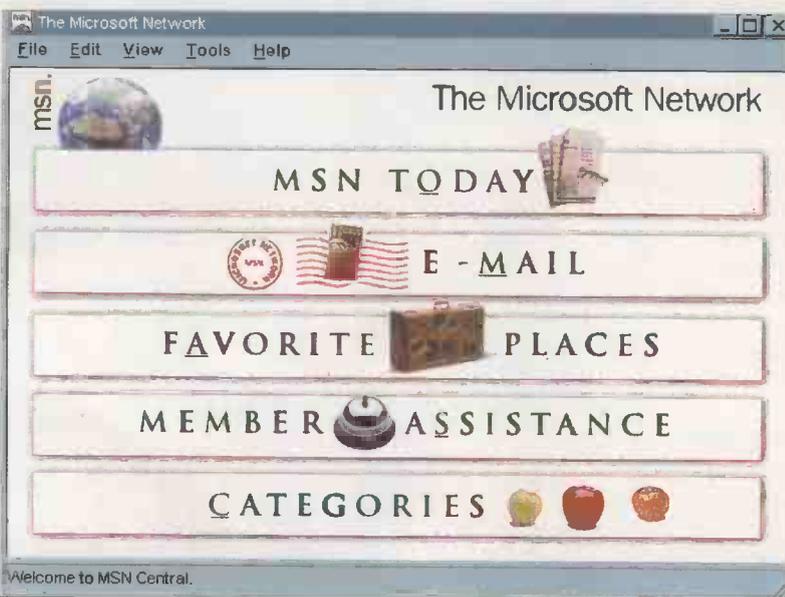
A. Without knowing what sort of email program you're using, it's hard to give a definitive answer to a question like this, but there are some basic guidelines for sending attachments from one system to another.

Firstly, make sure that both the mail programs can use the same format for exchanging attachments — such as MIME, BinHex or UUencoding. If you can't find a format that both

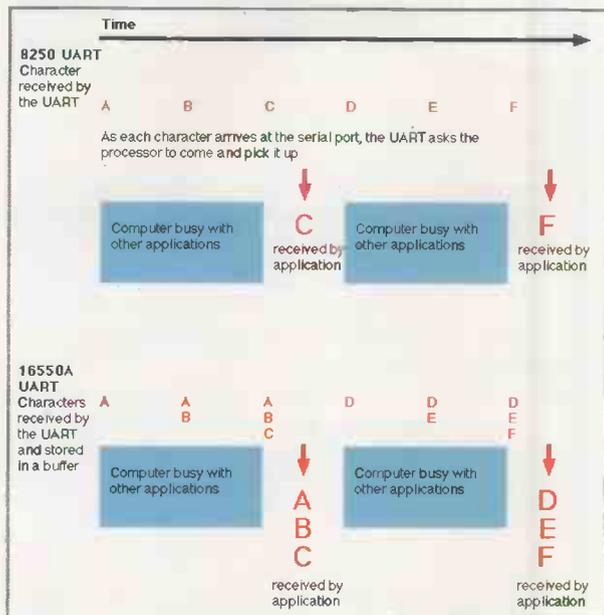
programs support, you'll have to use a separate program such as WinCode to encode files that you want to send. You can include the encoded version of a file into your message, just as you'd include a text file. At the other end, the recipient will have to save the message as a file and use the same program to decode it.

If you still have problems, there are a number of things you should check when you send a message. Firstly, send a copy to yourself and see if you can decode it; if you can't, there's a problem with the encoding program. Secondly, find out which systems your message is passing through. The names of the systems appear in the headers of the

Received message, and if you see references to systems such as X400 or



Urban myths — Microsoft Network and Windows 95 don't report on all your software. But that's still no excuse for having unlicensed programs on your system



This is a PICT file of something I drew to try to illustrate the difference between a 16550A and a 8250 UART

However, I recall reading some time ago that it is advisable to buy a connector which will speed up the data transfer through the serial port to which the modem is connected. I can't find any reference to such items in recent magazines. Is this still an advisable thing to do? Can I test the speed at which my serial port works? I have a year-old

Gateway 75MHz Pentium.

A. What you need to speed up your modem is not a connector, but a whole new serial port. Whether or not it's worth upgrading depends on the age of your computer and the type of port it's already fitted with.

The critical component in your PC's serial port is the UART chip (Universal Asynchronous Receiver Transmitter). This is the chip that receives information from the serial port and provides it to the rest of the computer. Many PCs use a chip called the 8250 (or a close relative, the 16450), which was used in the original IBM PC. While this is fine for older modems, it simply can't keep up with a modern, fast modem. The problem is that it can only remember the most recent character to arrive through the modem: when that information arrives, it asks the PC to come and pick it up. But with a fast modem, more information might have arrived before the PC is ready, especially if you're running more than one program at a time, and so data is lost. Since modems have error correction, this is not the end of the world, but it does mean that things slow down as data has to be retransmitted.

Modern systems — including most Pentium PCs, and all the ones with the Triton chipset — are often fitted with a newer chip, the 16550A. This does the same thing as earlier UARTs, but it can remember up to 16 characters, allowing it to work much faster and not to lose information while it waits for the PC to respond: though on a very busy computer you might find that even a 16550A isn't fast enough.

Another alternative is to buy a more

cc:Mail, it's likely that your mail is going through some sort of gateway computer, and that is very often the cause of problems like yours.

MIME relies on special headers in the message to say what type of attachment you're including. Some of the gateways that are used to connect corporate email systems to the Internet still don't understand MIME or some other ways of attaching files to messages. In the case of MIME, if the special headers were deleted, the resulting message would contain just the encoded version of the file, looking like gibberish.

Other gateways corrupt certain types of file — you can't use UUencoding to send a file through a BITnet gateway, for instance, as any ~ characters will be corrupted; while some simply throw away attachments they don't understand. Remember, too, that while your mail program might show you an attachment as a cute icon in a message, if it's not using MIME, there won't be any special headers to tell the recipient about the file and they will see what appears to be random text, unless their email program automatically detects non-MIME attachments

The best advice if you have problems is to try different ways of sending your attachment. If you can use MIME, do, but otherwise try UUencoding or, if you know your message is passing through a BITnet gateway, use something like BTOA encoding (which we discussed in a previous column).

Serial port speed test

Q: I have recently bought a Motorola V.34 modem, which seems to be working fine.

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Foreign accents

Q: I have been trying to send email messages in French, but the recipient is never able to resolve the letters with accents. Instead, they see one or two entirely different non-accented characters in place of the intended character. Is there an easy way to solve this problem? My mail tool is Eudora Light v1.5.

Q: When I compose messages using Exchange and see them appear on some mailing lists, lots of the lines end with =20. How can I stop this from happening?

A: Both of these problems are caused by the same thing — a type of encoding system used for email called "Quoted Printable", which is often found in mail programs such as Eudora, along with other MIME features.

The email system on the Internet was designed as a way of sending 7-bit messages, using the standard ASCII character set. That means you can send letters, numbers and basic punctuation for American English: there isn't, for example, a standard ASCII code for the £ symbol. As the Internet has grown, many people want to send messages in foreign languages, but the standards for mail are still only 7-bit, with very few systems understanding anything else.

As a result, you have to use special ways of encoding extra information, using systems such as MIME. The "Quoted Printable" format is one of these systems, and is designed to make sure that most of a message is readable whatever type of mail program you use, with only the special letters and characters encoded. Encoding is done by using a = sign, followed by two letters or numbers that represent the code number of a special character in hexadecimal. For instance, you'll often see "=A3" in messages, which is the Quoted-Printable way of saying "put in character 163" here, which will usually produce a £ symbol when the message is read in another mailer that understands the format. If a recipient is seeing odd pairs of letters instead, it's likely that their mail program doesn't understand Quoted-Printable.

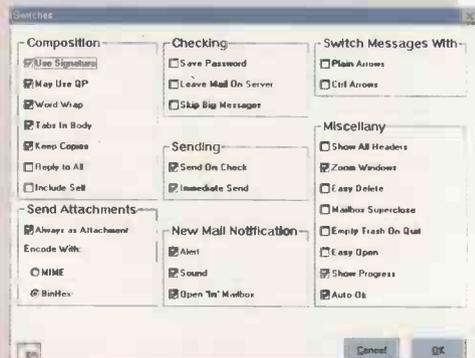
The only real solution to this problem is for both people to use a program such as Eudora, which will work properly. If you

know that all the systems your message will pass through are capable of handling 8-bit messages, then you might be able to avoid using Quoted-Printable, but it will be a rather hit-and-miss affair.

The second problem, where lines end in =20, is easily resolved. You'll often find that if you press the Enter key when a line is becoming long, rather than allowing your email program to move you to the next line automatically, the =20 won't appear in your messages.

What's actually happening is that when your typing reaches the right-hand side of the compose window in a program such as Exchange, and you move on to the next line, a new line is put into your message but preceded by the code for a space, "=20". When a similar mail program reads it, it interprets the sequence as meaning, "This is really all one line, but it was split up to fit in the window". A mail program that understands Quoted-Printable messages will display everything properly and can reformat the message to fit the window it's displayed in, but other programs will have new lines where the original mailer wrapped them, and =20 on the end of each one.

If your mail program understands the format, but you see the symbols in messages you receive from mailing lists, it means that somewhere along the line, the MIME headers that tell mail programs to use Quoted-Printable have been lost. As with other special features, if you don't know that everyone you write to can understand them, you should turn them off in your mail program.



If you don't want to see lots of "=20" in your mail messages, make sure that you turn off the Quoted-Printable option

sophisticated serial port, such as the Hayes ESP card or a Digi serial controller. Cards such as these have their own on-board processors and can work much faster, but

they'll typically cost from £150 upwards, whereas a simple serial card with a 16550A costs about £50.

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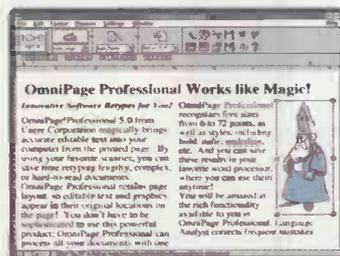
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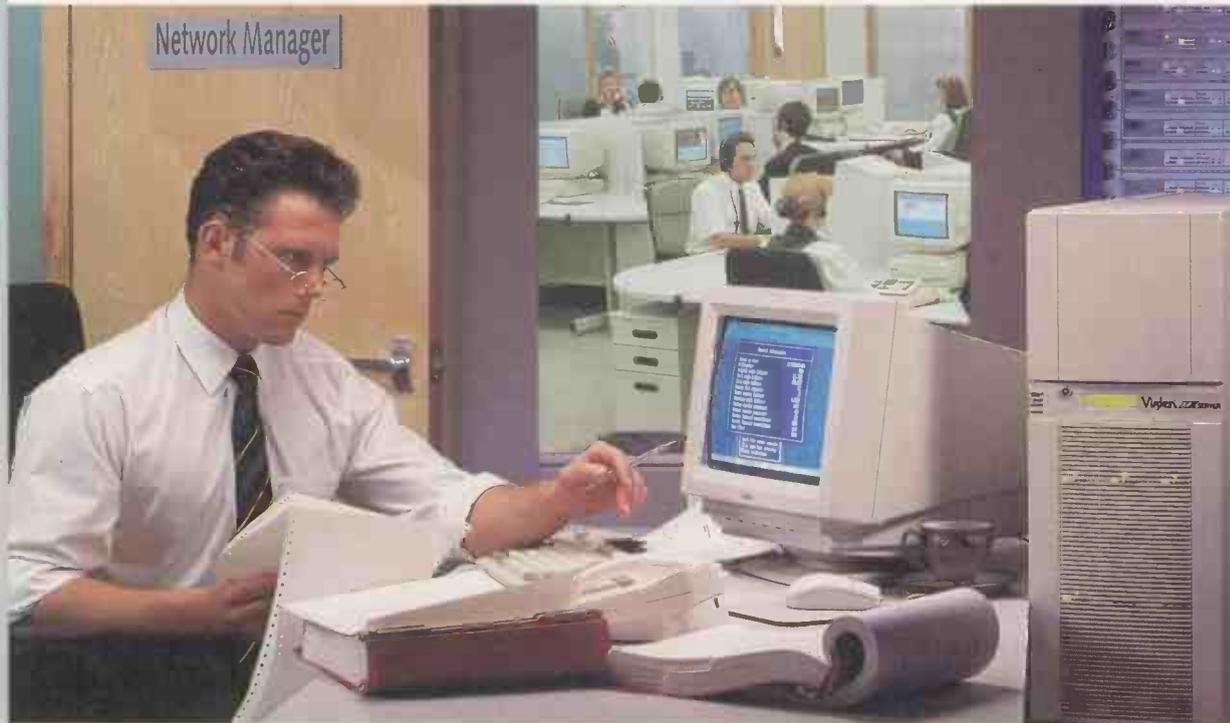
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TELEADAPT



If you want to connect to the Internet using ISDN, you'll usually need a modem and driver that support Synchronous PPP

and if your TA doesn't support the right format, then you won't be able to connect.

Many Internet providers in the UK use similar equipment to provide their services via ISDN, and unless your provider tells you otherwise, you'll need a terminal adaptor that

can support Synchronous PPP via a standard serial port. That's sometimes called "HDLC Synch PPP" and it means you can use your existing Internet software to connect, and your existing serial port, which is "asynchronous." The difference is that in a synchronous connection, data is transmitted all the time, so one system doesn't need to signal to the other when it's starting to send, and there's less overhead in communication.

Unfortunately, most PCs don't have a synchronous port — though you can buy one for a price. Instead, you'll need a TA that can convert data between the two formats automatically. A growing number of external TAs can do this, but it's much easier with an internal ISDN card. When you're shopping for a new TA, make sure that this feature is included, because it's likely to

become more important over the coming months. If you can't find one that does support synchronous PPP, make sure that you can upgrade it later.

If you use an external TA, you'll usually have to tell it that you want to communicate in PPP mode, then you'll be able to use the same software as you would with a modem. Check with the Internet provider, as there may be other differences. For instance, when you make a modem connection to Demon Internet, you have to enter your user name and password before starting a PPP connection; but when you connect via ISDN, you use the PAP password system built in to PPP. If your PPP software doesn't support PAP, you won't be able to connect.

find out what sort of serial ports are fitted on your computer using the MSD diagnostics tool, which is in the Windows directory. There's no similar command in Windows 95, and you can't tell by looking at the Hardware properties for your serial ports as the information displayed is identical regardless of the type of UART chip in your PC.

As a general rule of thumb, a system built in the last year is likely to have fast serial ports, especially if it's a Pentium. In many cases, the UART chip itself doesn't exist as such, but is built in to the motherboard chipset or the chips on the disk controller. If you want to add a new serial card to increase the speed, check to make sure that

you can disable any built-in ports, or that you can buy a card with a wide range of interrupt settings. Cheaper cards aren't always easy to configure if your system already has two serial ports.

Setting up ISDN

Q: My Internet provider says I can connect to them using ISDN instead of a modem. Do I need a special piece of equipment to do this?

A. Yes. You can only connect via ISDN using a special piece of equipment called a Terminal Adaptor (or TA) which links your computer to the ISDN line. Unfortunately, there are several different ways that two terminal adaptors can talk to each other,

PCW Contacts

Nigel Whitfield is a freelance writer and maintainer of several Internet mailing lists. He welcomes comments via the address

nigel@stonewall.demon.co.uk
If you have questions you'd like answered, please send them to net.answers@stonewall.demon.co.uk.

Please note that a personal response to every query cannot be guaranteed.

The bare essentials for communicating from abroad

Travelling with a notebook PC and fax/modem?

Without the correct telephone adaptor for the country you're visiting, you may experience problems trying to connect. This could seriously affect your business.

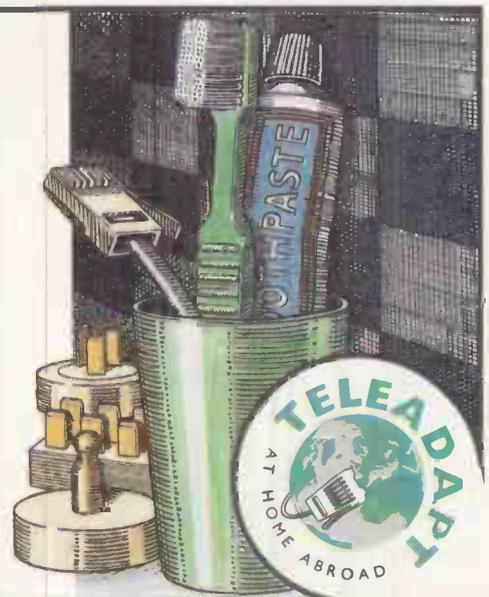
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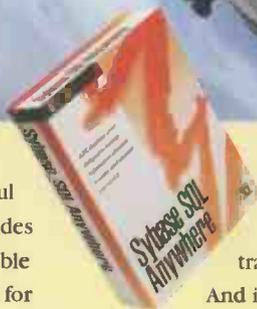
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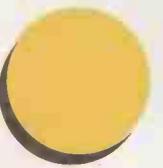
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Innovations

How did they do that?

The DMF disk format not only reduced Microsoft's costs, but also generated the benefit of piracy protection.

IF YOU'VE BOUGHT ANY OF Microsoft's recent business software on floppy, you may well at some stage have used File Manager to look at the disk and discovered a file size well in excess of the 1.4Mb that you would normally expect to see. Access 96, for example, clocks in at 1.67Mb per disk and to quote a well-worn phrase, how do they do that?

As many people know, 1.4Mb disks are often confusingly promoted as 2Mb. This is because if you were to record one long stream of data onto the disk, with no clusters or any other formatting, then you'd be able to get two million zeros, or ones, recorded onto it. But PC data is written in blocks and the drive must be able to identify those blocks.

To make certain the drive knows where the blocks start and finish there has to be a substantial guard-band of unused data placed between them. Without the guard-band, or using a very narrow guard-band, you would find that each time you stopped and started writing data, the blocks would begin merging into each other. It wouldn't then be possible to read a file with any reliability — especially on drives that were old, or less than perfectly set up.

Because the floppy disk system has to work reliably across a huge range of drives (of completely unpredictable quality and age), the guard-band has been made big enough to cope with all but the very, very worst of

drives. This is why, despite the millions of floppy disks worldwide being repeatedly written and over-written, there are few write/read problems ever caused by the format itself.

The down side of the guard-band is the overhead: the wastage of capacity that it entails. In total, 0.5Mb is lost — a quarter of the disk's real capacity. For the home or office user this is more of an inconvenience than a real cost problem — it would simply be nice to squeeze a few more files onto each disk.

But for Microsoft, and any other really large retail software organisation, this waste of space represents a significant cost. If you are publishing several million disks a year, increasing the capacity of each by even 20 percent will save a lot of money.

So Microsoft returned to the drawing board and saw that what it was doing with floppy disks was quite different to the normal way they are used. As a publisher, the company is only producing disks as a read-only



format, where all the files are written in one go. The data is virtually sprayed onto the disk in one long stream, with the duplicator doing a bit-by-bit copy from a master image held in a solid-state memory.

So, there is no need to format the disk with large guard-bands because files are not being put onto the disk as separate entities. In fact, most of these normally contain only one large, compressed file anyway.

And once the disk gets to the consumer, because it will be used as a read-only disk, there is no need for the large guard-band to be built into the formatting.

Since the guard-band is there to ensure that repeated write/reading is reliable, just reading the pre-recorded disks has not proved problematical. Although there were initial fears that some old drives would not like the DMF format, return rates for DMF floppies are actually lower than for ordinary DOS formatted drives.

The main driving force

behind the DMF format was the need to cut down on the number of disks in each software pack, so reducing the cost and making it a little easier for the consumer to load. But once the DMF disks have got out into the marketplace, a second benefit has become apparent. Because PCs generally copy disks file by file, it just isn't possible to run off a second copy of a DMF disk for a "friend" as the copy process will simply come to halt with a "no space left" message.

Microsoft realised from the outset that a byproduct of DMF would be to reduce piracy, to some degree. Although it is not giving out any details, the general enthusiasm for the format within the organisation indicates that this sort of casual piracy of office-type software has all but been eliminated.

There were, it appears in the early days, plans to offer the format as a licensable product but those have been shelved. This is partly because it would only really be of interest to another huge software publisher (and IBM/Lotus are already using a variation on the theme), but mainly because of the anti-piracy benefit that using DMF has generated.

Microsoft has made DMF technology available to several disk-copy equipment manufacturers, so that they can actually get their own disks duplicated. But the format can also be included in smaller copiers for multi-site licensees. Although not large in number, they do exist, and some use a single physical software copy and then distribute their site copies on floppy disk. They can buy a disk duplicator and under strict licence from Microsoft have the DMF software included to produce their own 1.8Mb disks.

Tim Frost

www.iwi-learn.com

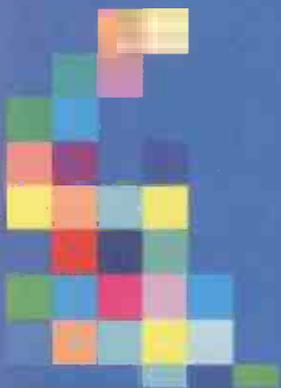


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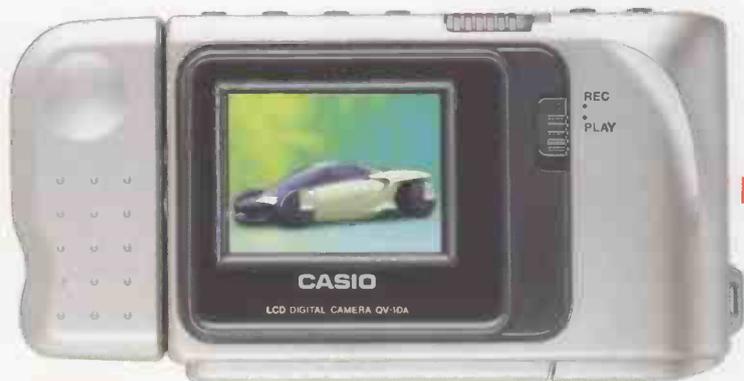
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Shoot

Using the built-in LCD screen as the view finder, compose your picture, adjusting the exposure if necessary, and capture the image in the 2MB flash memory.



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With the camera in playback mode you can review any of the 96 images captured in multiples of either one, four or nine. The zoom function allows you to view a section of the image in detail.

Visiary features of the Casio Quick View

Communications

Connect the QV-10 to a computer or TV

Upload images to PC or Mac and incorporate them in your documents. Images can even be downloaded back into the camera providing an ideal portable presentation tool.



Connect the QV-10 to a TV/Video for an instant presentation using the Auto-Play function



Multi Image Display

Built-in, LCD colour screen lets you view images instantly in multiples of 1, 4 or 9. Images are protected even when the batteries go dead.



Zoom Function

Select a segment of any image and enlarge it on the LCD screen.



DELETE PAGE?



Delete Function

Select any image you want to delete.



Self Timer

QV-10 displays 10 second countdown once shutter is pressed.

Large Image Memory

The QV-10 stores 96 images which can be displayed as "thumbnails" on computer.

Camera Album



with the Casio Quick View Camera

The QV-10's built-in, colour LCD screen makes it so user friendly. Simply capture the shot you want then review it instantly on the LCD screen. It means you can be certain you've always got the images you need and you can easily delete the ones you don't, to free more memory.



Edit

Any image can easily be deleted on the camera, re-shot then protected against accidental deletion.

View

Using the connection kit provided, the images can be uploaded to your personal computer and be incorporated into any type of documentation you want.



Exposure Control

Adjust exposure and aperture for lighting conditions on-screen.



Macro Lens

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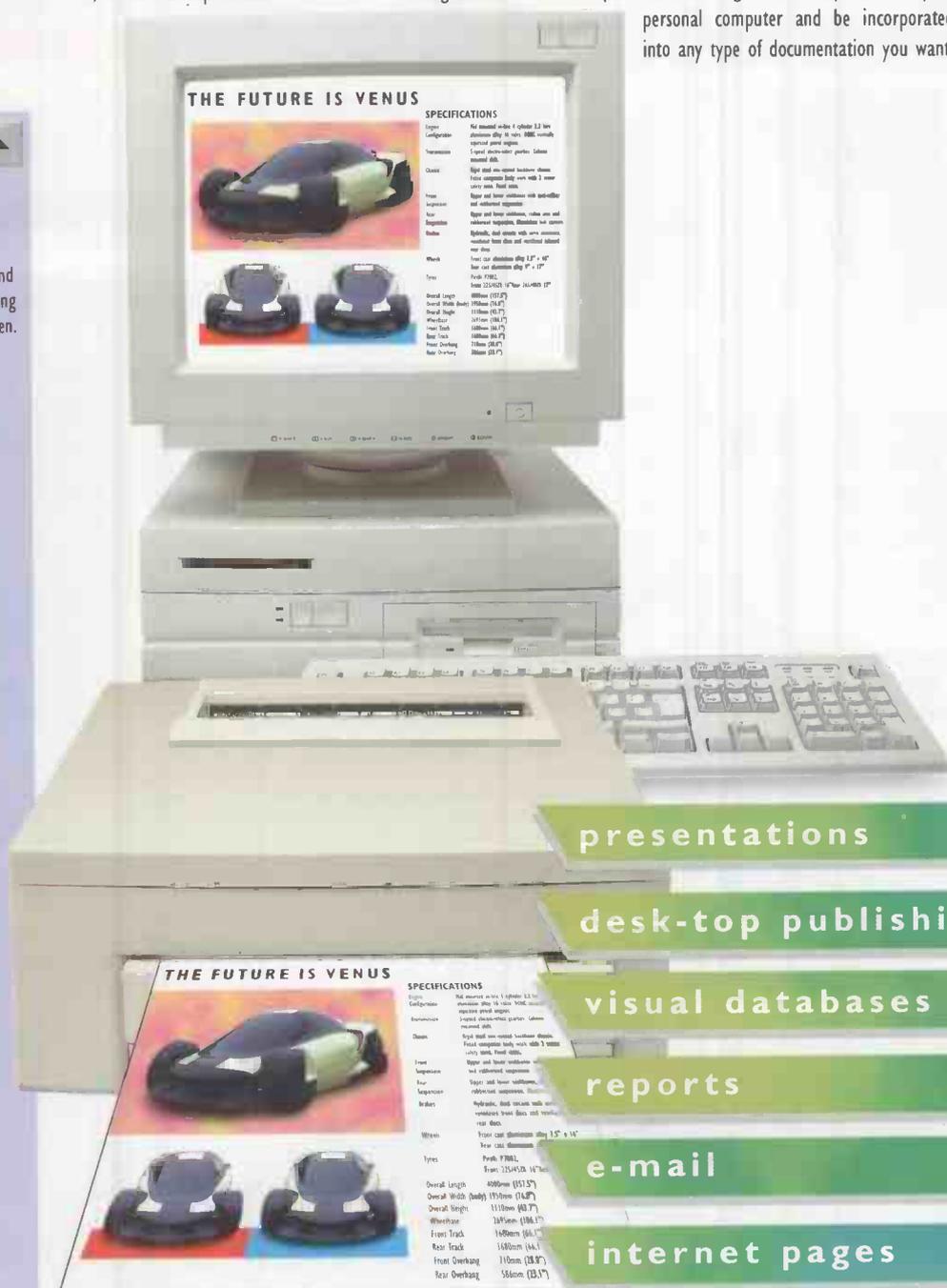


Camera to Camera Data Transfer

Images can be exchanged between cameras (QV-10A only-optional cable required).

Lens Rotation

270° lens rotation allows you to shoot at awkward angles and still see the screen.



presentations

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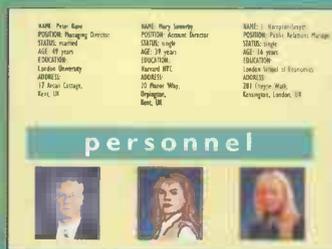
PRESENTATIONS

The QV-10 enables you to incorporate images into your presentations. When connected to a TV you can view the images stored in the QV-10 and create a large screen presentation.



REPORTS

Improve your presentation, communication and impact by including images in your reports.



DESK TOP PUBLISHING

Live up your communications to customers and staff with colour pictures. An ideal tool for designers.



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With the QV-10 images can easily be included on your internet pages.



VISUAL DATABASES

Keep a record of personnel, valuables, previous work, product etc. The QV-10 is ideal for preparation of a CD-ROM catalogue.



VISUAL MEMOS

For meetings, site visits, interviews etc, the QV-10 provides a handy visual reminder.



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Include images in your E-Mail communications.



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The convenient size and portability of the QV-10 enables you to carry it anywhere, always ready to capture the unrepeatable moment.

QV-10 Specifications



Accessories Included

- Wrist strap
- Soft case
- Alkaline batteries (AA x 4)
- Lens cloth
- Owner's manual
- Video cable
- Connection kit for PC or Macintosh



Technical Information

Recording System:	Digital/Field recording
Video Signal System:	PAL standard
Recording Medium:	Built-in 2MB flash memory
Number of Images:	96
Delete Functions:	Single page; All pages (with page protect feature)
Imaging Device:	1/5-inch CCD (250,000 pixels)
Lens:	Fixed focus with macro position: F2.8/f=5.2mm
Aperture:	F2.8/FB manual switching
Focusable Distance:	F2.8/NORMAL: 60cm to 310cm; F2.8/MACRO: 13cm to 16cm F8/NORMAL: 28cm - ∞; F8/MACRO: 10cm to 24cm
Light Metering:	TTL centre point by photographic element
Exposure Metering:	Aperture priority AE
Photometric Range:	-2EV to +2EV

Shutter System:	Electronic
Shutter Speed:	1/8 to 1/4000 second
White Balance:	Automatic
Self-timer:	10-second (Automatic countdown display)
Monitor:	220x279-dots TFT anti-glare colour LCD; doubles as view finder: 1.8-inch
Terminals:	Digital input/output, video output, DC in 6V
Power Supply:	Batteries (AA-size Alkaline batteries x 4)/AC Adaptor
Battery Life:	Approximately 2 hours
Dimensions:	66(H)x130(W)x40(D)(mm)
Weight:	Approximately 190g (excluding batteries)
Accessories Included:	Wrist strap; soft case; Alkaline batteries (AAx4); lens cloth; owner's manual; video cable; computer connection kit
Options:	AC Adaptor; Communication Cable SB-62 (QV-10A only)

CONNECTION KIT

Items contained in the connection kit let you transfer data from the camera to a personal computer in digital format. Image data can be converted from CASIO's CAM data format to TIFF (MS-Windows, Macintosh), BMP (MS-Windows), or PICT (Macintosh) data. Commercially available graphic software can be used for data editing and modification. Images uploaded to a computer are 240x320 pixels.

Connection Kit (includes software, cable)

- MS-Windows • Macintosh

*Connector Configuration: Windows: RS-232C (9-pin/25-pin male and female)
Macintosh: RS-422 (8-pin)

SYSTEM REQUIREMENTS

IBM PC or compatible

- Microsoft Windows Ver.3.1 or later* • 386SX CPU or higher (486SX recommended) • 4MB of RAM (8MB recommended)
- 10MB available hard disk space • Colour display (true colour 24 bit recommended) • 3.5"1.44MB disk drive (for installation)
- RS-232C serial port (D-Sub 9-pin or 25 pin) • Mouse or other pointing devices.

*Proper operation is not guaranteed with Windows 95. Application will not run with Windows NT. Proper operation may not be possible depending on your system configuration. Consult with the manufacturer of your computer for details.

Macintosh

- System 7.1 or later • 68030 CPU or higher (68040 recommended)** • 4MB of RAM (8MB recommended) • 10MB available hard disk space • 256-colour display (true colour 24 bit recommended) • 3.5"1.44MB disk drive (for installation)
- Modem port (RS-422). **This application is not a Power Application. Consult with the manufacturer of your computer for details.

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H o r i z o n s

Adventures in Web-head heaven

Linux is undeniably popular. It's free, it's user-maintained and a growing number of Netters on a budget are using it to gain a low-cost presence on the Internet.

BUDGET-CONSCIOUS WEB-heads, eager to begin putting content on to the Net but without the wherewithal to buy a professional Unix system, are turning to Linux in droves.

As you might gather from the name, Linux is a Unix variant, currently running on Intel-based PCs and soon, PowerMacs. It's somewhat like a plug-compatible Cyrix 586. To the applications that run on it, it behaves exactly like Unix, yet there isn't a single line of original Unix code in the Linux kernel. Linux, which began life as a school project, is a fast, 32-bit, truly multitasking, multi-user, memory-protected operating system, just like Unix. Best of all, it's free.

As you might expect, it's this free-ness that makes Linux attractive to the lower-budget Web operation. But the joyous thing about Unix (and plug-compatible Unix clones such as Linux) is that the whole concept of "free" goes further than it does anywhere elsewhere in the software industry.

People write things for Unix, then give them away for one of two reasons. They could be doing it as an academic project, as happens with all the fine Web software developed at US universities such as Carnegie Mellon, or research bodies such as the National Center for Supercomputing Applications (NCSA). Or it could be that

Linux Journal: the gear-head's bible

they're just old-school hackers who believe software should be free to whoever wants to use it. This attitude finds its highest expression in organisations such as the Free Software Foundation. The result is that Unix offers some remarkably good software (Web servers, word processors, C++ compilers) freely downloadable, that would command a considerable premium on any other platform. It's a salutary lesson if you're used to seeing Windows utilities such as a desktop clock command a \$25 shareware fee and delete themselves if they're not paid for. The great benefit of Linux is that it lets Web providers access great, free, software such as servers, CGIs, perl-scripts and file transfer daemons, without having to fork out for an expensive, specialised, Unix box.

One of the joys of Linux is that it can take a machine defeated by Microsoft's OS, such as a 386, and make it a fairly snappy computer — rather like monkey-gland treatment.

Linux isn't binary compatible with Unix: it has its own libraries to handle the peculiarities of



being on an Intel system. If you want to port an application from another version of Unix, you need to recompile the source code. However, this is common practice in the Unix world — compatibility is not a strong point among the many flavours of Unix: the Free Software Foundation's GNU compilers are available on the platform and come as recommended parts of the installation process. Just type "make program name" and you're off.

This leads on to another reason why Linux is popular. Not only is it cheap and runs on PCs, which cost a fraction of the price of an equivalent Sun SPARCstation, but it's endlessly customisable. The source code for the various Linux kernels is available and

included on most installer CD-ROMs. There is a certain machismo attached to working through the source code, commenting out the parts you don't need. But the advantage of this otherwise hyper-nerd behaviour is that you can optimise Linux to run on your system.

Another manifestation of this tendency is the fact that Linux is maintained by a network of volunteers around the world, who take it upon themselves to update the kernels, write device drivers and add system utilities such as shells. There's little co-ordination, so the devices and types of PC supported (although extensive) do have sporadic gaps. But the ultimate in Linux machismo is to write your own device driver.

The fatal attraction that Linux has for the Unix gear-head cancels out the main problem with the OS. Because it's free, not manufactured by a slick Californian company and comes either direct from the Internet or from shareware libraries or bookshops (many popular distributions come with How-To manuals), there is no official support. If your SPARCstation goes down and no amount of poking around in the entrails of the core dump explains the problem, you can call Sun and a besuited minion will be despatched to fix it.

Linux has no aftersales support to speak of: if it goes wrong, which it does a fair bit, it's down to your skills and those of the hundreds of thousands of users around the world on the various Internet newsgroups to solve it — and there surely isn't a single Linux user who's not Internet connected. But if you're enough of a gear-head, it's a challenge you'll relish.

Jim Smith

PCW Contacts

Jim Smith is development manager of **Wide Area Communications**, a full-service Web consultancy which uses Linux for development but trusts Solaris to deliver the pages to a waiting public.
Email: jim@widearea.co.uk

Bluesky

Calling all agents

Software agents may be the beginning of true artificial intelligence. And they're coming to a desktop near you, soon.

It is ten years since Marvin Minsky, founder of MIT's Artificial Intelligence Laboratory, proposed in his groundbreaking book, *The Society of Mind*, that intelligence can emerge out of non-intelligence.

In Minsky's view, the human mind is made up of many processes he calls "agents", each of which performs a single very simple task requiring no innate intelligence whatsoever. But connect enough of these agents together "in certain, very special ways", and true intelligence emerges. These agents of the mind are the inspiration for a new kind of software design which may hold the key to the future of computing.

Software agents will be goal-directed, may operate autonomously, will learn from their previous experiences, be reactive to their execution environments, and collaborate with other agents. The claim is that recognisably "intelligent" behaviour will emerge.

Suppose you decide to buy a new colour printer. You summon a suitable software agent and tell it to: "Find the fastest colour printer under £400, with the best warranty and upgrade deal, and the best reviews." Off goes your agent, marshalling the appropriate Internet search agents to scan online dealers' catalogues, discussions in appropriate newsgroups, and relevant Web sites. The agent will eventually report back to you a summary of its

findings. You scan the list, click "yes" against your choice, and off goes another agent, ordering the item with your credit card and telling your "personal finance" agent that you've made a transaction.

It sounds far-fetched, but prototypes of such agents already exist. Andersen Consulting's "BargainFinder", for example, allows comparison shopping for CDs. You supply the title of the CD, and BargainFinder visits nine retailers on the Web on your behalf, returning a summary of prices and delivery charges.

The current buzz is to call such agents "intelligent". Intelligence is a loaded term: one person's intelligent agent is another's humdrum software tool. Nevertheless, agents are now a hot topic of research in the Computer Science and Artificial Intelligence communities, and intelligent or not, it is certain that agents of one kind or another are set to play a prominent role in information retrieval and filtering.

Traditionally, information databases have been the domain of computing professionals, but in the last couple of years, anyone with a modem has had access to the largest worldwide distributed database of all time — the Web. The problem of making sense of the unimaginable amount of information out there is a hard one. Current strategies for indexing the Web

are somewhat naive, and rely on software robots crawling around the world, accumulating and indexing information as they go. The resulting databases are huge. Lycos, for example, currently claims to store 32Gb of indexed Web data. Such databases are monolithic, and will not scale well as the size of the Web increases. In the future, we should expect to see a proliferation of agents compiling smaller, specialised and interconnected databases.

At the moment, when seekers of information perform keyword-based searches on Web databases, these are generally one-off operations. An agent, however, may use its experience of previous searches and work in collaboration with other agents. The University of Massachusetts' "searchbots" are a step in this direction. They offer goal-directed searching with multiple agents performing parallel searches using standard Web tools, filtering the results appropriately.

A similar agent, currently in Beta testing, is IBM's "infoSage". You submit an "interest profile", and infoSage filters news and information sources on the Web, emailing you twice a day with a "personalised newsletter" of snippets relevant to your interests. As with many such systems, it would be inappropriate to call infoSage "intelligent", since its filtering algorithms are somewhat inscrutable: some users report receiving articles

which appear to have nothing whatsoever to do with their interest profiles. And one can't help wondering just what IBM is doing with all those profiles it collects.

Although the ideas in agent research are exciting, some people find agents decidedly unattractive. They worry that they take on too much responsibility, leaving their users confused about what is being undertaken on their behalf and leading to alienation.

There is also a view that the claims for intelligent agents will lead to unfulfilled expectations, rather like the failure of Artificial Intelligence research to live up to its promises in the seventies. Surprisingly, one of the fiercest critics of agents is Jaron Lanier, a pioneer of virtual reality.

Intelligent agents are not yet here, but the chances are that they will arrive soon. And, as long as we can trust them, we shall one day wonder how we ever managed without them.

Toby Howard

PCW Contacts

Toby Howard is a lecturer in computer graphics at the University of Manchester and co-editor of *The Skeptic* magazine.

A collection of links to information about agents, intelligent and otherwise, may be found at

<http://www.cs.man.ac.uk/aig/agents/>

CLASS OF ITS OWN

Until now, choosing a portable PC could mean compromising on power and flexibility. Elonex's NB-500/I notebook changes all that. Even the basic specification of the NB-500/I offers PCI Pentium power and a colour screen. And its modular design means that despite its small size and light weight, users benefit from a wide range of alternative configurations, including an optional CD-ROM drive. This Notebook has been designed to beat the best in the world, matching the versatility and processing speed of much bigger and heavier machines. Its Pentium processing power, multimedia capabilities, upgradeability and performance certainly puts the NB-500/I in a class of its own.



Notebook with docking station

NB-575/I

75MHz Pentium Processor
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Windows 95

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Retro

Nippon to the bandwagon

Nippon Steel's Librex notebook was a vain attempt to join a growth market. It was over-hyped, over-priced and over here. But not for long...

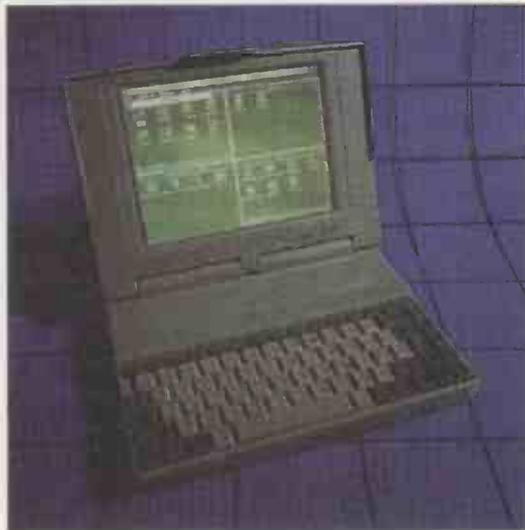
Sometimes being a computer journalist gives you an interesting perspective on the market: the better the lunch, the poorer the product.

When you've seen the same graphs from half a dozen companies, each predicting that they will be the third biggest manufacturer in a field with a 30 percent market share, you have a feeling that someone is headed for a fall. It's likely to be the company with the biggest restaurant bill.

It was against this background, at Le Gavroche restaurant, that Librex announced its intention to be the third biggest notebook manufacturer (behind Compaq and Toshiba).

The Nippon Steel Corporation is the 28th largest company in the world, and like all really large companies it has interests outside steel. This included a large data processing department which came up with the idea for an own-brand computer.

The Librex notebook was the company's only product,



The Nippon Steel Librex 386SX — the hype wouldn't wash

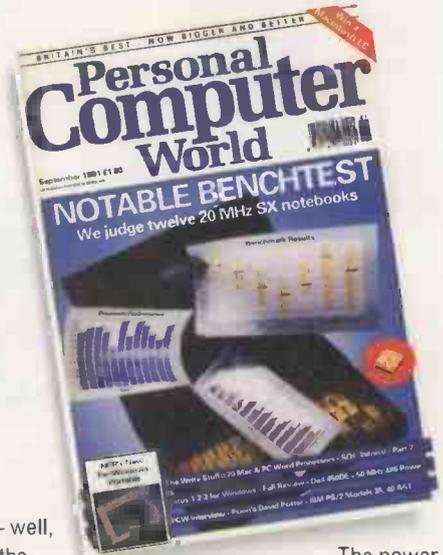
available in 286 and 386 guises, each with a choice of hard disks. The corporate rationale behind this was that as the notebook was the fastest area of growth in microcomputing, the company could capitalise on this.

At the time, back in July 1991, PCW noted the folly: "There must be around 30 computer companies which want to have a 20 percent share of the notebook market by 1992. Now at least 25 are going to be disappointed, and it is more likely that all 30 will feel hard done by." Indeed, the press conference majored on this

theme — well, that and the nature of the advertising campaign. Its images of freedom were more akin to tampons than terminals.

The major problem for the Librex was that although Nippon Steel considered itself to be big and important, no-one else did. So with a Librex costing £3,000 and a Viglen costing £1,700, it had to rely on those cheesy advertisements to attract its customers.

For the target market of business people, who spend more time in first class airline seats than they do at home, support and reputation (even if it is only a reputation built upon advertising) is more important than the specification. Which was just as well. Back then, we said the Librex was "very dull". The machine we reviewed (in our September 1991 issue) had the standard and unexpandable 4Mb RAM, a 40Mb hard disk, 20MHz 80386SX and an Award BIOS. And, of course, a monochrome screen.



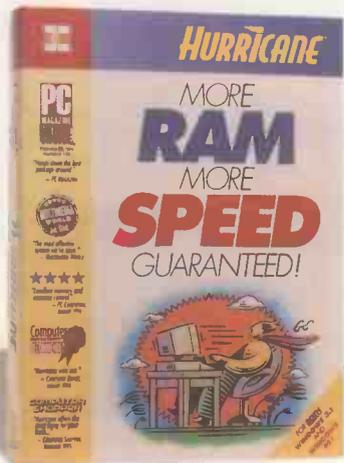
The power-saving features did not extend to a sleep mode which triggers when you shut the lid, but did include the options one would expect for screen and hard-disk timeouts after a set period of inactivity. The keyboard was okay but nothing to write home about, with reduced key travel to restrict the height of the machine.

There were some strange aspects to the design: the battery was connected with a socketed lead (although this was changed on later models), and a software-operated power switch.

By dropping the clock speed to 10MHz you could get a good couple of hours' continuous use — less than Nippon Steel's quoted three hours. But at the time of review, it wasn't the staying power of the Librex we were worried about; it was the staying power of the manufacturer, and our fears were borne out. It didn't take much time using the machine to form this opinion; just the rather good lamb chops and the graphs.

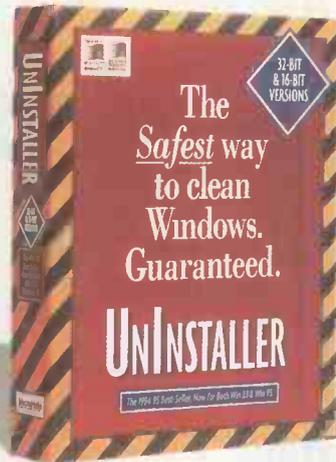
The moral is: if you are going to launch a so-so computer, you need to get the price right. And if that means no graphs and a round of Big Macs, so be it.

Simon Rockman



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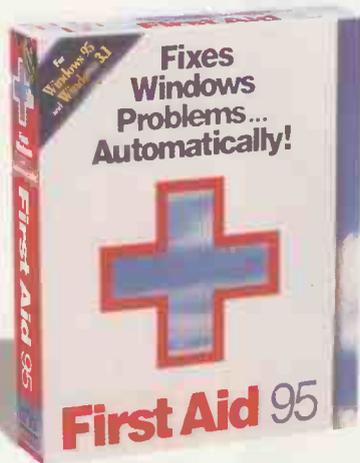
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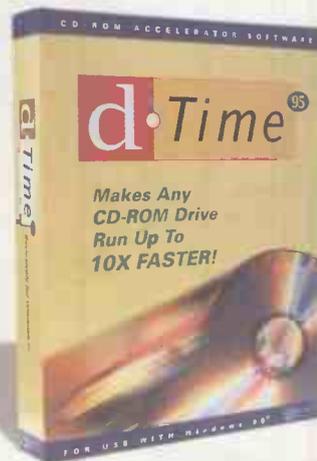
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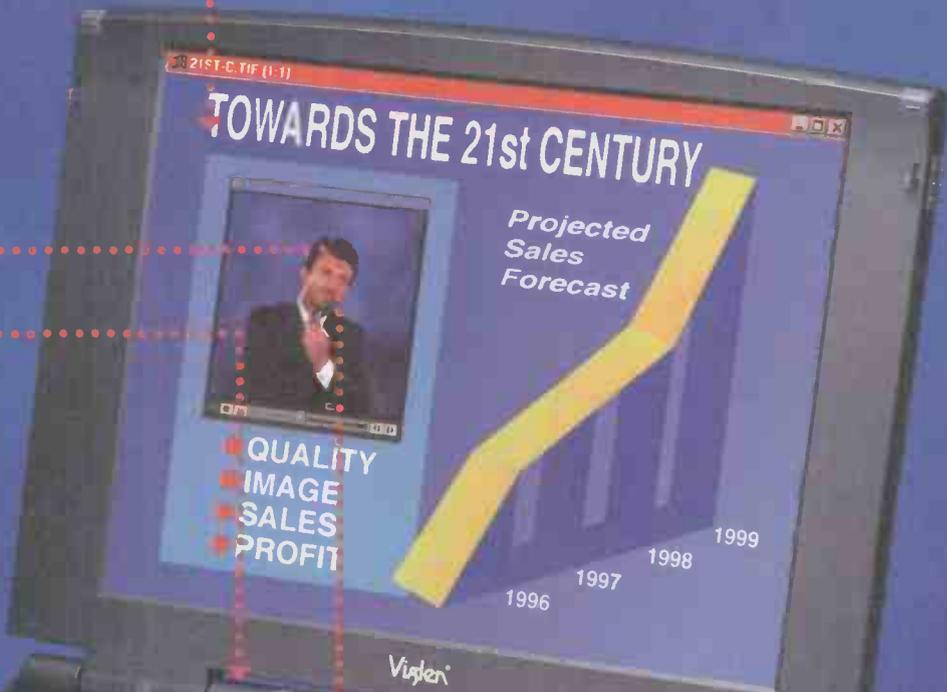


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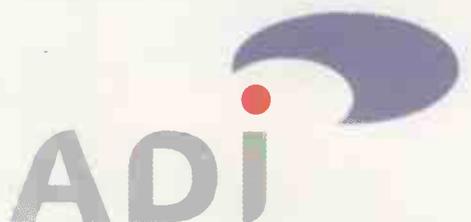
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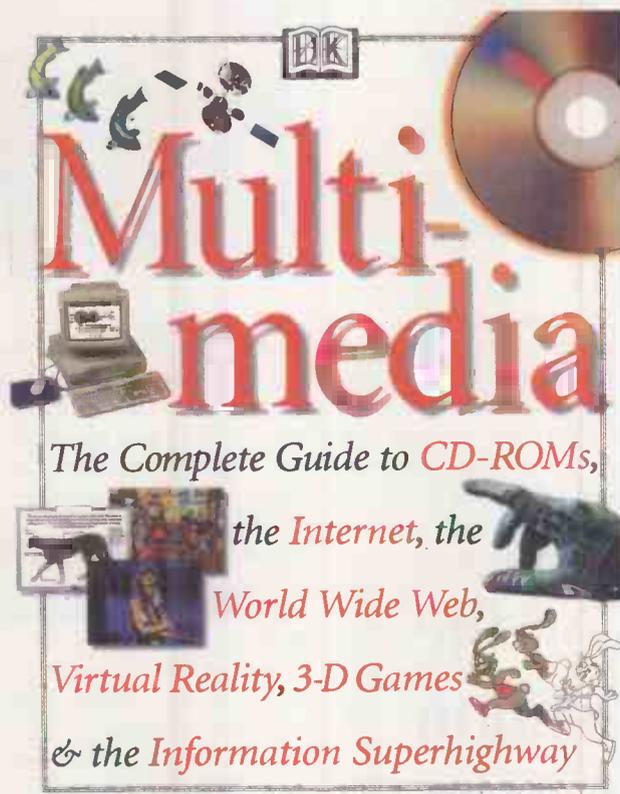
A Java sourcebook is strictly for the evangelists, non net-heads might browse through a basic multimedia overview and venture into the realms of cultural philosophy, and there's good news for those who want to protect data on the net.

Multimedia: The Complete Guide

This lavishly-illustrated book comes from information specialist and one-time outpost of the Microsoft empire, Dorling Kindersley. Since parting from Bill and his chums, DK has continued to push into multimedia publishing, so it comes as no surprise that the company should launch this title. Every single page is served by beautifully-printed colour illustrations and, like most DK books, you cannot help picking it up and flicking through it.

Of course, it's an anachronism to use an "old-fashioned" book to teach people all about multimedia. But DK's now classic style provides one of the best introductions to the world of computing and multimedia. And anyway, books share many of the attractions of multimedia. You can flick from page to page using an index to search, and the pictures don't take an age to download.

The title is rather misleading. The book isn't just about lots of CD-ROMs and computer animation (although these obviously form chapters): it also serves as an introduction to PCs and how they work, the Internet and not-so distant developments such as intelligent homes and personalised newspapers.



This book has everything: how sound works, the difference between twisted pair cables and coaxial, and how to design type to be read on-screen. The chapters on leading games consoles make for an interesting read and are as up-to-date as is possible.

Buy it now rather than later, because in two years' time it will be out of date. For anyone wishing to know more about the information technology affecting our lives, this is a highly recommended choice. Some

more eclectic titles are so in love with the technology that they miss the point, and this very solid read manages to avoid this trap.

PJ Fisher

Multimedia: The Complete Guide
 Editors Joe Elliot, Tim Worsley et al
 Publisher Dorling Kindersley
 Price £19.99
 ISBN 0-7513-0243-0
 Rating: ♦♦♦♦♦

Bandits On The Information Superhighway

This overtly friendly title aims to reassure and advise those who worry more about what will happen when they go on the net than about getting connected in the first place. It's not just businesses that are worried by the net. Women are worried by sexual harassment, and parents are worried that their children might see things they shouldn't — and that doesn't just mean porn.

What this book aims to do is separate the hype surrounding the perils of the Internet from the reality. As it succinctly states: "The Internet mirrors our society." That's a point worth repeating: just as suburban trains are used overwhelmingly by law-abiding citizens, there are unfortunately a few who can make the journey hell. But the trains are not to blame.

As far as business is concerned, *Bandits* is aimed mainly at the consumer. It looks at ways to avoid getting one's fingers burned buying on the net, warning you to avoid the get-rich-quick schemes which have started to appear in news-groups over the last year or so. Most of the advice is straightforward and it really comes down to applying the same principles you would when buying goods elsewhere.

It also looks at email, blowing apart the myth that it is private when in truth it can be read at more than seven different points along its journey, due to the way the Internet sends packets of information. It also warns of the danger of spoof email, in which someone pretends to be you or puts a false header onto a message to give it credence. But it also tells how anyone, with a minimum of technical knowledge, can beat the hackers at their own game.

On the subject of porn, the book again takes a sensible stance, pointing out just how small newsgroups devoted to such activities really are. It claims only 290,000 users worldwide actually look at the infamous alt.binaries.

pictures.erotica on a regular basis. That's still a small number compared to the total actually using the net. It makes no mention, however, of the growing number of pornographic web sites.

Whatever the truth, the book makes rational suggestions about how to protect children,

such as using blocking software and taking an interest in children's Internet activity.

The layout of the book makes it an easy read and serves as instant reference. Most pages feature anecdotal advice spots and instances of Internet banditry, some sinister, some more benign. This book also has enough in it to serve as a good general technical introduction to the Internet.

PJ Fisher

Bandits On The Information Superhighway

Author Daniel Joe Barrett
Publisher O'Reilly & Associates
Price £11
ISBN 1-56592-156-9
Rating: →→→→→

Java Sourcebook

Don't be misled by the attractive cover; this is still a pretty hard-core book for seasoned programmers. It starts off simply enough, with a brief description of how Java works and what it does. But you really need some programming experience to get the best out of it. The

WHAT YOU NEED TO KNOW

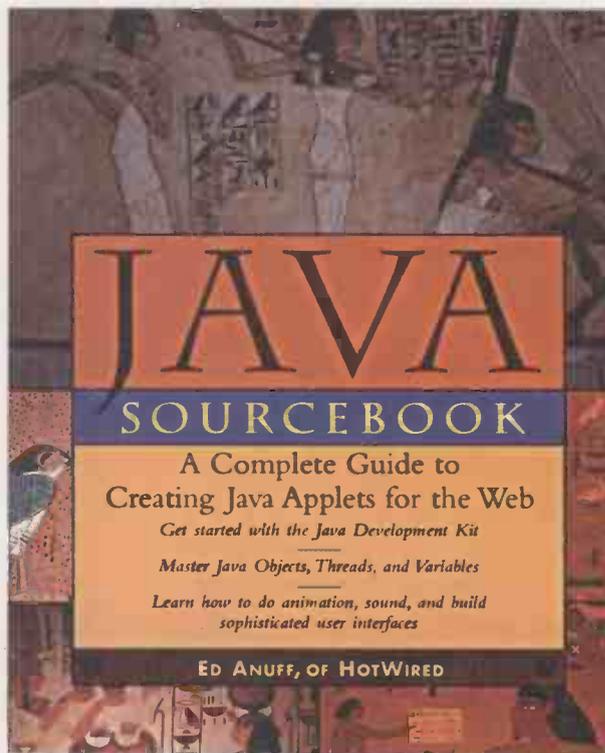
bandits on the information superhighway



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- **MEET STRANGERS SAFELY**
- **KNOW YOUR RIGHTS**

DANIEL J. BARRETT

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blurb on the back of the book promises that "No matter where you are in your level of programming, this book will turn you into a Java programmer, even if you've never done object-oriented programming before." Well, maybe. The bottom line is that Java just ain't easy and anyone hoping for an instant education is going to be disappointed.

You will also need the Java Development Kit (available from Sun's Java web site on www.java.sun.com) before you do anything. It would be nice if the publishers had included the JDK on a companion disk, but most would-be Java jockeys should have net access anyway.

Delving deeper into this book proves that thought has gone into its structure and you can learn a lot. It explains clearly what Java classes and sub-classes are, and the difference between classes for different platforms. After that you get into the hard stuff of actually building Java applets for the web. It takes you through projects such as building Applet user-interfaces with interactive buttons and pop-up menus.

This book and a copy of Sybase's new Optima++, which brings RAD techniques to Java, would make an excellent introduction to the subject. This is a lucid book that tries hard to make a complex new language easy to get to grips with. What it doesn't tell you is whether it is worth doing in the first place. If you're serious about Java, get yourself a copy and warm up your Web pages. Wiley has its own Java resources on www.wiley.com/compbooks/.

PJ Fisher

Java Sourcebook
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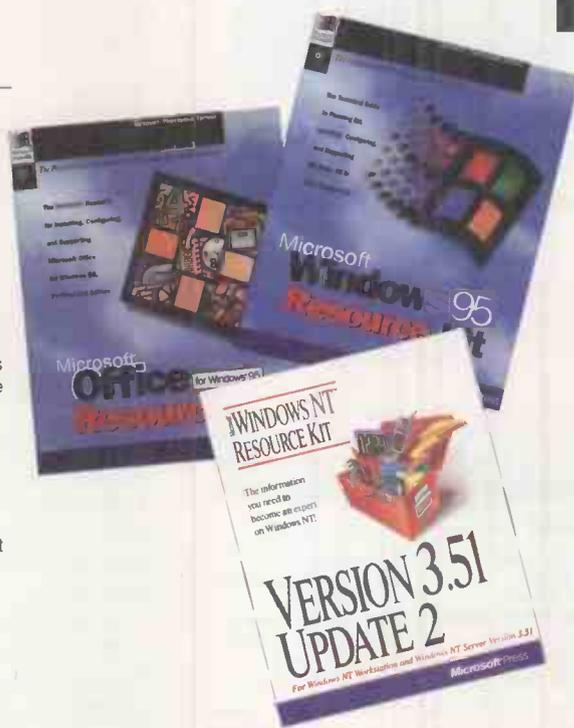
This kit contains an exhaustive collection of information, tips and tools for anyone responsible for installing, supporting and configuring Microsoft Windows 95. It's the most comprehensive source of technical information and productivity information on CD and is designed with the computer professional, advanced or enthusiastic user in mind. A must have for system support.
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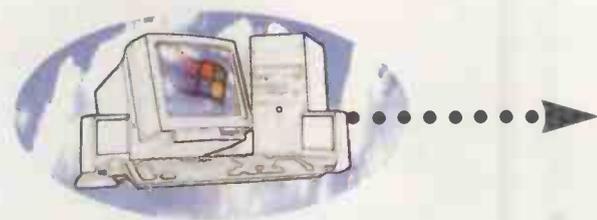
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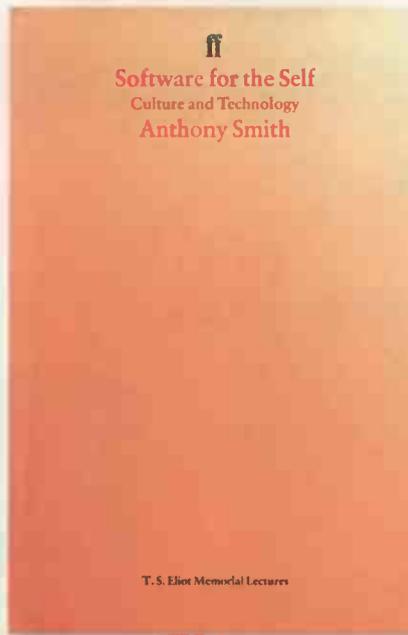
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Software for the Self
 Culture and Technology
 Anthony Smith

T. S. Eliot Memorial Lectures

Software for the Self, based on a series of lectures by Anthony Smith, promises to evaluate how the digital revolution has changed the face of culture. It's a fascinating subject, but this book fails to do it justice.

Smith does a good job of demonstrating to the reader how far everyday life is permeated by the idea of an "information society". It suggests efficiency, easy access to knowledge and freedom from the grind of traditional "work". It's such an attractive metaphor that politicians use it to create a utopian vision of the future. US vice president Al Gore's now famous speech to a telecommunications conference used the notion of the "superhighway" to suggest that the Internet would streamline the quality of all of our lives. "We can now at last create a planetary information network that transmits messages and images

with the speed of light from the largest city to the smallest village on every continent," he said. There are one or two pearls of wisdom: Smith suggests, for example, that the strength of the "information society" metaphor is due to the discovery of DNA and the idea of information as a blueprint for life.

On the whole, however, it's nothing we didn't know. Smith fails to inject any fresh insights into familiar debates, preferring to re-hash tired sociology. The first two chapters of the book examine how notions of "art" have evolved from the ancient world to the present day, and later ones set modern technology firmly in this context. It's all written in a wordy, lit-crit prose style, which tends to turn promising subject matter into a dry lecture. For example (on cyberspace): "We are evolving a medium of contrived irrationalism, in which the culture of pure argument dating back to the enlightenment dissolves into a complexity of interactive improvisations." Come again?

Smith's focus on the Internet is a journey through well-mapped territory: Is it the superhighway of freedom or a Frankenstein's monster? Should there be censorship? Is it anything more than a CB radio forum? After such a detailed history of modern culture, the reader expects an authoritative answer to many of these questions, but it's not forthcoming. One is left with the overall question, "So what?"

Jessica Hodgson

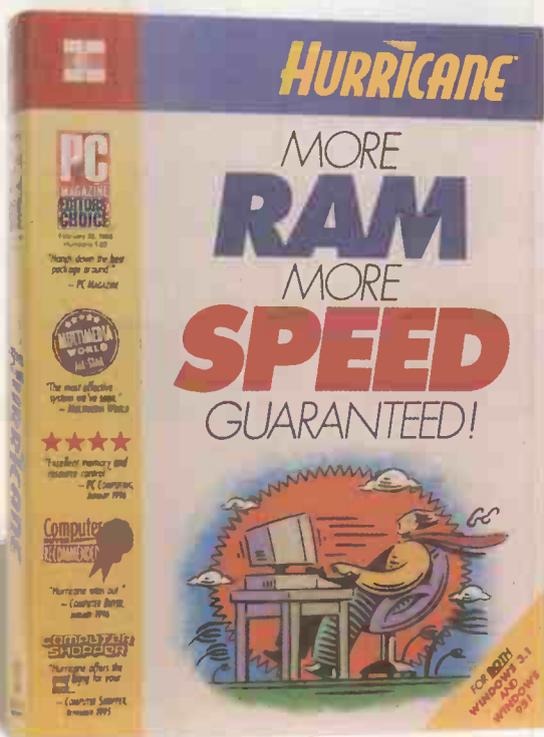
Software for the Self — Culture and Technology
 Author Anthony Smith
 Publisher Faber & Faber
 Price £7.99
 ISBN 0-571-17768-9
 Rating ⓈⓈⓈⓈⓈ

Top Ten Books: June 1996

Rank	Title	Publisher	Price
1	Java in a Nutshell: Desktop Quick Reference	O'Reilly	£10.95
2	Teach Yourself Java in 21 Days (Book/CD-ROM)	Sams.net	£37.50
3	Programming Windows 95 (Book/CD-ROM)	Microsoft Press	£46.99
4	Hooked on Java	Addison-Wesley	£24.95
5	Microsoft Windows 95 Resource Kit (Book/CD-ROM)	Microsoft Press	£46.99
6	Teach Yourself Web Publishing with HTML 3.0 in a Week, 2nd Ed.	Sams.net	£26.95
7	Inside Visual C++, 3rd Edition (Book/CD-ROM)	Microsoft Press	£41.99
8	Teach Yourself CGI Programming with Perl in a Week (Book/CD)	Sams.net	£37.50
9	Windows 95 Secrets (Book/CD-ROM)	IDG	£38.99
10	Introducing Microsoft Exchange (Book/CD-ROM)	Microsoft Press	£27.99

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February 1996

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PC Magazine, February 20 1996

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Eliminates "Out of Memory" errors caused by conventional memory overflow	YES	Yes	Yes	No
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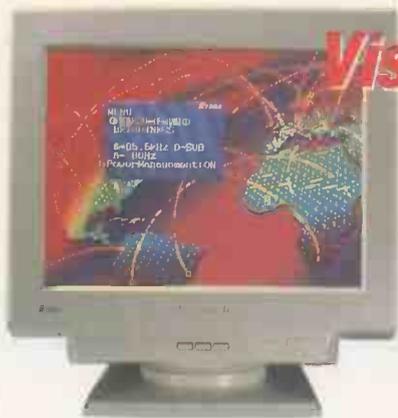
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Kids' **s** **t** **u** **f**

Everything in the garden's lovely: Peter Rabbit helps with counting and children can interact with Digby the dog. Indoors, Mickey and crew get a print studio together. On a more serious note, there's a children's encyclopedia and information on world-changing events.

Do children really like the characters that adults consider innocent and cuddly and suitable for young minds?

Sometimes, you wouldn't think so. Today, my daughter Siobán was watching *Real Monsters* on television. It's a cartoon series full of characters complimenting one another with lines like: "Gee, that's the nicest open sore I've seen in a long time." Nevertheless, despite the occasional fascination for the not-so-nice or even downright awful, children still seem to find Peter Rabbit an engaging character.

Peter Rabbit's Number Garden

Having finished with *Real Monsters*, Siobán came up to



my office and tried Peter Rabbit's Number Garden.

It's designed for children aged four to eight (although I think that eight is maybe a little old), and is a learning game to familiarise your child with number concepts. It is fully narrated so no reading skills are required, and the superb, hand-illustrated graphics are bright and colourful enough to maintain children's interest.

There are five games to help familiarise your child with addition, subtraction, colour and size recognition. For example, in one game Mrs Tiggywinkle has a lot of washing and ironing to do and you have to take the dry washing off the line.

Mrs Tiggywinkle tells you which washing is dry (the jacket with five buttons, for instance) and the child's task is to count the buttons in order to select the correct jacket.

Another game is one in which you have to match flower pots; one containing the sum and the



other the answer. Once the game has been completed, radishes fall from the sky. A mouse-click on the radish as it falls allows the child to collect the radishes, which can then be planted in Peter Rabbit's garden. This is a simple little game, quite fun, and with the additional advantage of helping your child to develop coordination and mouse skills.

In addition to the attractive graphics, the music is superb and the program offers UK or

Top Choose a maths activity

Above

Lovely graphics make this program a sheer joy to use

American English for pronunciation, spelling and idiomatic expressions.

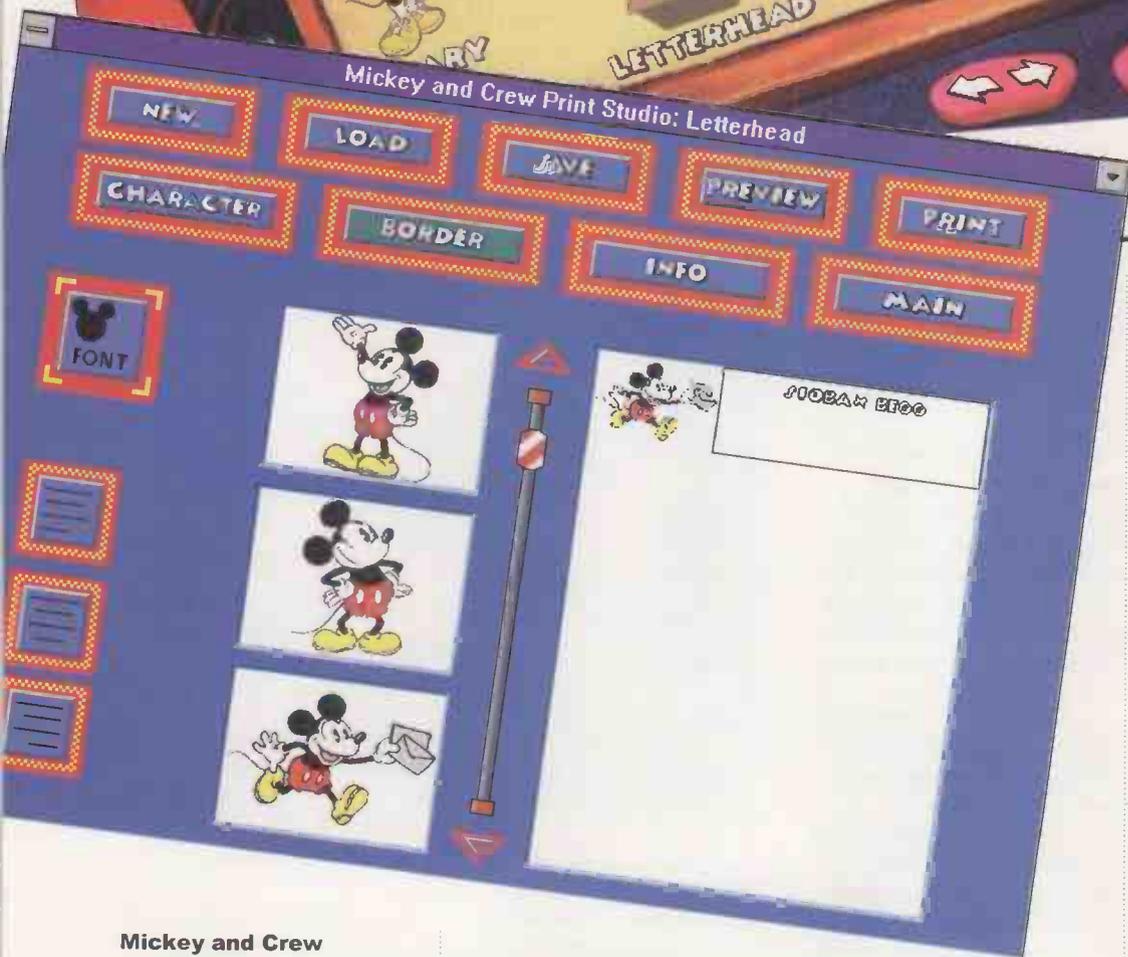
The narration, too, is very good. One nice touch is that you can print out the garden scenes for your child to colour. Overall, an exceptional package for the pre-schooler.



Choose your project from the range supplied

Mickey and Crew Print Studio: Letterhead

Here we've chosen a letterheading



good selection of artwork featuring Mickey Mouse and co, and add some text — the Studio comes with several appropriate fonts — and a border when available.

You have little control over how or where the illustration is placed, but this isn't really a problem as the end result is always pretty good. The Studio is a great way of creating personalised party invitations, letterheads and impromptu cards, such as a "get well soon" card for a friend.

The calendar and diary templates are a lot of fun, too. And once in a while, no harm is done to a business letter or fax by adding a picture of Mickey Mouse. It's all a lot of fun and a productive way of using those expensive colour ink cartridges.

Next month we'll look at some brand new Disney titles, including Pocahontas and Toy Story.

Digby the Dog

SoftKey has launched a range of children's software titles at music CD prices.

There are 33 products in all, each with a suggested street price of £12.99 (including VAT). Called Key Kids Platinum, the

Mickey and Crew Print Studio

Do you remember the TV commercials earlier this year, for the Hewlett-Packard DeskJet 600C and Disney Lion King Print Studio bundle? The latest addition to the Disney Print Studio series is Mickey and Crew, the crew consisting of Donald Duck, Minnie Mouse and Pluto.

There really isn't a lot to say

about the Print Studio except that since loading it up we've printed everything from a calendar, diary and letterhead to party invitations, place mats and even diskette labels — everywhere I turn, I see Mickey Mouse.

The Print Studio is actually great fun and extremely simple to use. You have two screens of projects. A project can be a banner or poster, place-card,

bookmark, name tag, the above-mentioned calendar, letterhead and so forth.

You then choose the style of your project (how you want it to be laid out) and a mouse-click takes you in to the studio. Having selected from several predefined templates such as a greetings card or a party invitation, you then choose from a

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titles span all age ranges from three to 14 years. Don't think you are getting rubbish for this price — some of the titles are outstandingly good.

Siobán and I looked at Digby the Dog. It is every bit as good as the Living Books and maybe even better. It's written and narrated by actress Shelley Duvall (probably best known for her role as Olive Oil in the movie Popeye). It is the story of Digby, a tiny Yorkshire Terrier who weighs only one pound.

Digby is beautifully animated with some pleasant original songs, good stories and touches of humour that made us laugh. But what makes Digby stand out from the crowd is its branching storylines.

For example, Digby is in the garden at home, when the gardener arrives. Being frightened of the lawnmower, Digby has three choices: he can run through the gate, run through a hole in the fence or bolt back into the house through the dog-flap. You have to make the choice, and the story which follows depends on that choice.

In addition to all this, there are hot spots on the screen which cause something to happen, usually an animation, when you click on them. There are nine games and puzzles, including a compass game, a music studio, and a little space invaders-type game where

you are a skunk and have to spray a coyote.

If Digby sounds familiar, this is probably because it was originally released a while ago by a company called Sanctuary Woods — but not at the SoftKey price of £12.99. It is now excellent value for money.

Heinemann Children's Multimedia Encyclopedia

This month, I also came across the Heinemann Children's Multimedia Encyclopedia. Frankly, it doesn't compare with Encarta, Grolier, Comptons or Hutchinson — the big four encyclopedias, but younger children can find them a little difficult to use and the content is too advanced. The Heinemann is designed for children aged eight to 12-years old, so at the top end there is probably a little crossover, but otherwise the electronic version of the popular Heinemann book encyclopedia is ideal for younger members of the family.

It contains all 11 volumes of the original book edition, over 800 photographs, 90 video clips, animations, sound effects and more than 700 narrated captions. Searching is easy, even for a small child. You can browse, pop-up the clipboard for note taking and use bookmarks.

The coverage is broad. Topics include earth and space, famous people, plants, animals, countries, and sport. So if you consider that Encarta is too advanced for your child, you may like to consider the

Digby the Dog — a cartoon on your computer





EDGE



Heinemann as a more approachable alternative.

Events That Changed The World

Finally, one superb CD-ROM for older children and adults is Events That Changed The World. It looks at 60 of the most significant events in human history, attempting to evaluate each event's knock-on effect. For instance, it reviews the bombing of Pearl Harbour in the forties, looking at how that incident has affected world politics in the nineties.

Although the language and subject matter would be way above younger children, Events That Changed The World drew me in and held my attention far longer than I could really afford. But I came away with a greater understanding of religions such as Buddhism and the causes of the Great Depression.

The illustrations are superb, the music suitably atmospheric and the information well-written and informative. There are 25 videos, some games, puzzles and a quiz. It's very impressive to look at, so see if you can get a preview the next time you visit your local computer store.

Paul Begg

Smashing graphics, atmospheric music; learning history for the older child

PCW Details

Peter Rabbit's Number Garden
Price £29.99

Contact Penguin Electronic
Tel 0171 416 3000

Rating ★★★★★

Mickey and Crew Print Studio
Price £34.99

Contact Buena Vista
Tel 0171 605 2400

Rating ★★★★★☆

Digby the Dog
Price £12.99

Contact SoftKey International
Tel 0181 789 2000

Rating ★★★★★

Heinemann Children's Multimedia Encyclopedia

Price £49.45
Contact Heinemann Interactive
Tel 01865 311366
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Events That Changed The World
Price £40

Contact Dragon's World
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Rating ★★★★★

Technical Specifications

Common Features:-

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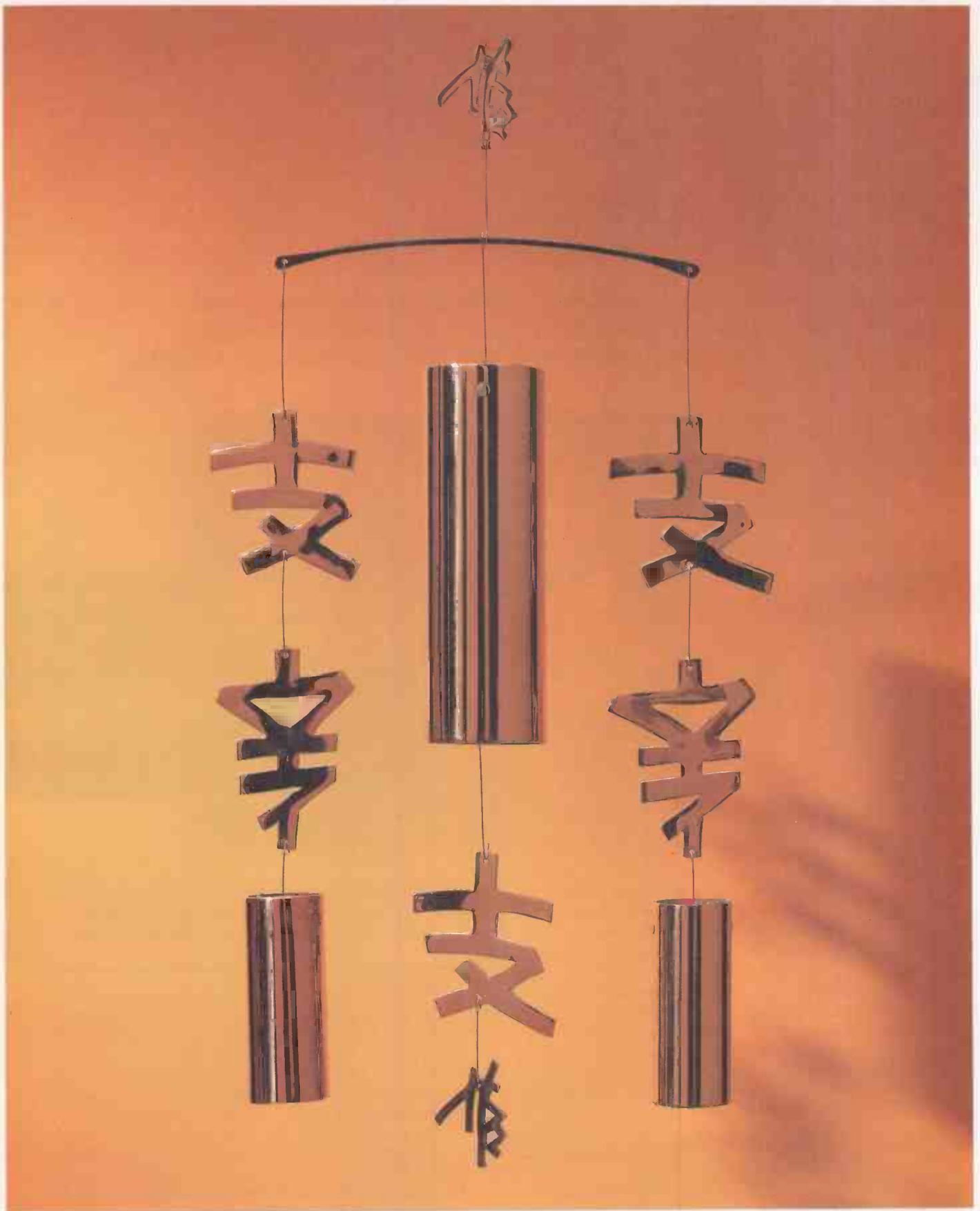
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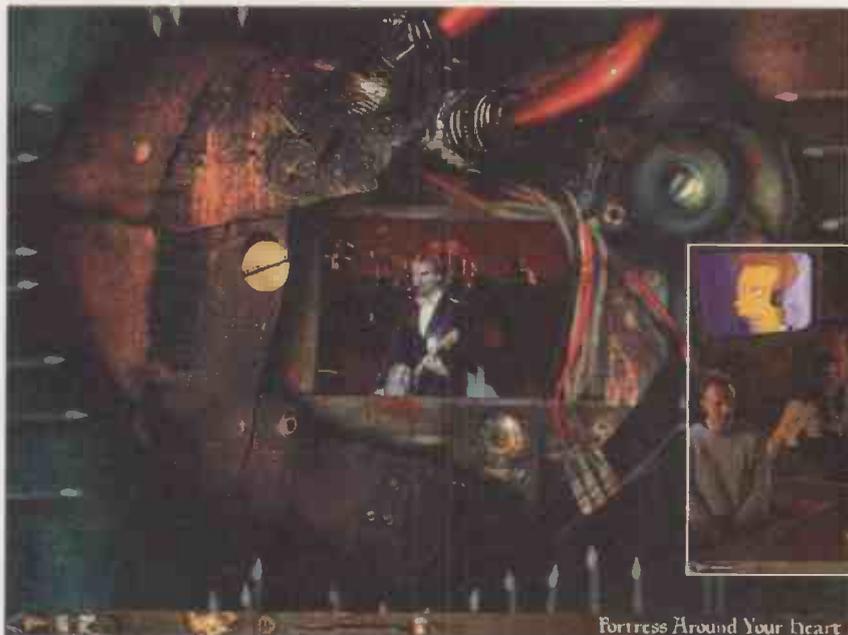
CD-ROMs

Probably the best interactive music CD in the world, a history of medicine which makes ER look like Neighbours, a stroll through some of the world's greatest art galleries, and 1000 culinary delights.

Sting: All This Time (for Windows 95)

The entertainment industry is changing fast, and musicians can no longer rely on albums alone to reach all of today's audiences. This has become more apparent in recent months, following interactive multimedia releases from Peter Gabriel and the artiste formerly known as Prince. All This Time is the most recent, and most promising, interactive music CD so far, offering a fascinating insight into the life and music of the artist currently known as Sting.

All This Time is set in a part gothic, part medieval 360-degree landscape, where enchanted castles skirt Scottish coastlines. You move around by dragging your mouse to the edges of the screen. When you



Fortress Around Your Heart

click on a "hot" object, such as a castle door, you are whisked off to a new location where discovering what to do next is all part of the fun. Clicking on a headstone in the Mexican crypt, for instance, brings Sting and his accompanist up from the dead to play an acoustic version of the Venezuelan Waltz. At this point he talks about the death of his parents and how it affected his music.

A medieval backdrop provides the setting for an exploration of Sting's work. The "virtual cinema" shows highlights from his film and TV career and his singalong with the Simpsons

Not all is dark and mysterious, though: there are moments of humour. Down in the local while enjoying a few pints, Sting invites you to view some of his television appearances. These include the hilarious interview with Vic and Bob on Saturday Night Live and his charity singalong with the Simpsons.

At this point I should perhaps mention that there are 15 new live acoustic performances on this CD, including Sting's most famous of all — "Message in a bottle". You'll have to find where he's "hanging out" first, though, in order to see them. On your travels you will come across hidden Tarot cards from which

Sting will give you a personal reading — a quirky, interesting touch. Down in the "virtual cinema" you can view excerpts from his diverse film career. He also talks about his experiences in the film industry.

All This Time is an excellent example of what multimedia should be about. Sting fans the world over will love it, although there's little to interest a more general audience.

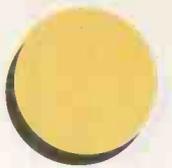
Steven Helstrip



Down So Long

Sting and friends having a bit of a jam in the front room. It's not all gothic castles and crypts...

Sting — All This Time
 Contact Philips Media
 0171 911 3000
 Price £39.99
 Rating ●●●●●



Something to smile about



Masterpieces



Stroll through the world's greatest museums, room by room

The Great Museums of Europe/The Louvre

The art galleries of the world are well represented on CD-ROM. The National Gallery and the Louvre have been the subject of at least two other CDs apiece from various producers, and now EMME, well known for its glossy products on numerous artists, are jumping on the bandwagon.

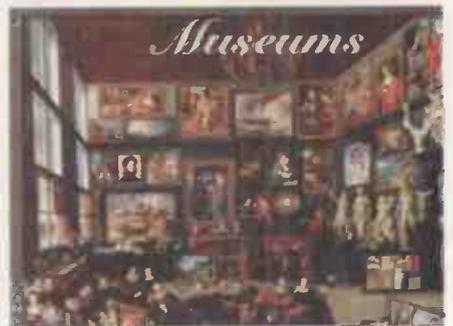
Rather than suffering from a sense of *déjà-vu*, two series offer a new approach and a fresh look at the galleries. The Great Museums of Europe series is the more simplistic of the two. There are six museums on each disk, including the National Gallery, the Uffizi, the Tate,

the Louvre, the Prado and the Vatican Museum. For each museum there is a short introduction giving details of opening times, locations and prices. Once inside, you can scroll through the different rooms and see the works displayed there.

The number of rooms in each museum varies from two at the Tate to twelve at the Uffizi. Most of the works include just the image itself. You can zoom in on some, but for commentary you need to turn to the Masterpieces

section. Here there are only a few works, but they do have some explanatory notes with them. Like the rest of the CD, it is a very superficial introduction. The series seems to be aimed at a secondary school user, rather than at an art expert. This is compensated somewhat by the excellent History section, which takes you through the main events surrounding the development of modern Europe and the influence this had on the art of the time.

The Louvre double CD is a more substantial package. There is more detail on the works, all of which can be viewed in detail with a zoom tool that pans around the painting, and the commentary itself is far more advanced than the Great Museums disks. The zoom facility alone, however, takes up lot of



room, hence the two volumes.

The package is clearly aimed, without being too precious, at a more discerning user. There are many of the same features as on the other CDs, but the whole ethos is pitched much higher. The result is a CD that is well worth having.

Adele Dyer



The Great Museums of Europe — EMME

Contact Koch 01420 541880

Price £39.99

Rating ●●●○○

The Louvre

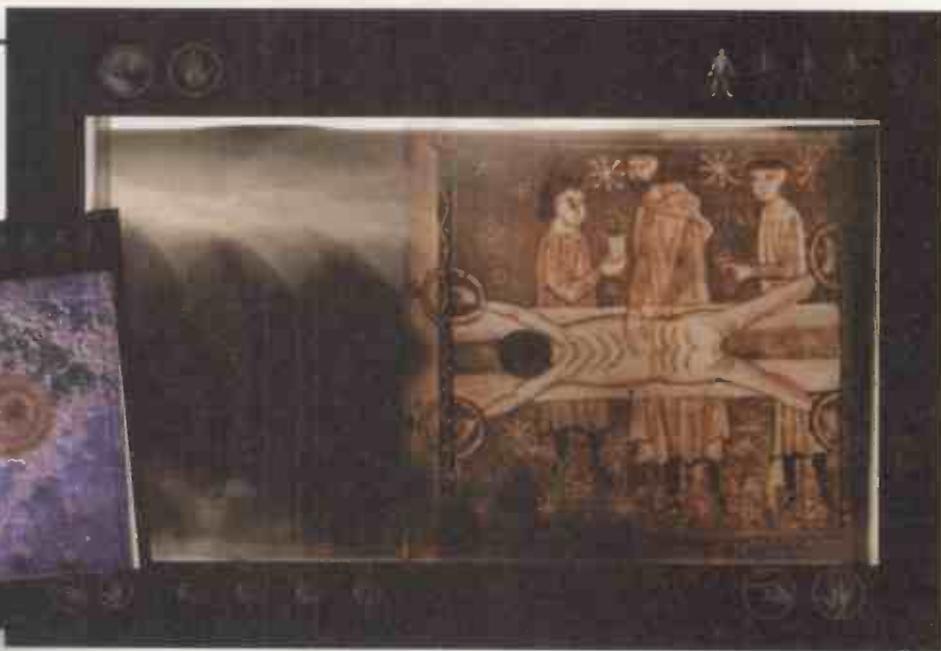
Contact Koch 01420 541880

Price £39.99

Rating ●●●●○

CUTTING EDGE

Gory, ghoulish, but gripping, the *History of Medicine* contains a wealth of facts about how medicine has evolved, from the ancient world to the present day



History of Medicine

Britain's fascination with all things medical never ceases to amaze me. We lap up medical soaps and drool over real-life hospital documentaries.

This two-CD set takes very much the same approach — a morbid and slightly ghoulish

fixation with disease and pain.

Everything is presented in documentary form, with narrated voiceovers and stunning graphic designs

illustrating the various subjects. You can leave it to play and just sit back and relax. If, however, you want to navigate around, the disk is so well constructed that you wonder why all CD-ROM producers can't make life this easy.

The main part of the disk focuses on how medical practice

has evolved to its present-day state. It starts way back in the prehistoric ages, when our ancestors were regularly scourged by anthrax, rabies, sleeping sickness and gangrene. This goes through to the present day and the spread of the Aids virus.

There is plenty of gory detail, and several interesting facts. The best examples of this are in the "Did You Know" section; random medical trivia on everything from a story about a man who died from drinking too much carrot juice, to the fact that Moses had a hare lip.

As a sideline various experts

talk about their own particular line of interest, everything from quackery to anatomy to forensic medicine. Instead of the usual dithery videos of talking heads approach, Flagtower has opted to use a documentary style with the experts talking over a moving reel of images.

The overall feeling of the disk is a good one. It is very slickly put together and the content is excellent.

Adele Dyer

History of Medicine

Contact Flagtower 0500 486500

Price £39.99

Rating ●●●●○

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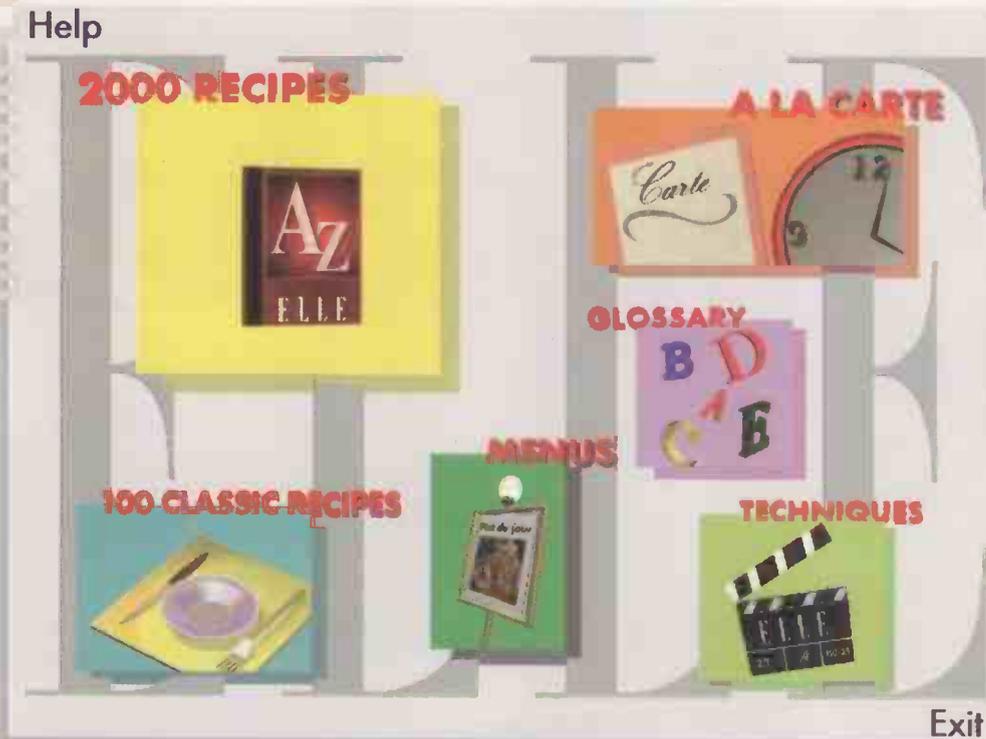


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Help



Nice cookin', shame about the lookin'. The graphics on the Elle — 2000 Recipes CD are not up to the standard you'd expect from a style magazine

little superfluous to some, but it is something which can only be demonstrated, not explained.

To the beginner, this CD is a good introduction to French cookery. But don't expect the look or the variety of the magazine.

Adele Dyer

Elle — 2000 Recipes

Contact New Media Solutions

0181 600 6000

Price £39.99

Rating ●●●○○

Elle — 2000 Recipes

The main attraction about *Elle* magazine has always been the way it looks — true to the ethos of a style magazine. In the old French version, the recipe cards were four to a page, so you could cut them out and slip them inside an ordinary paperback cookery book. Each one had a glossy photograph with ingredients on one side and instructions on the other.

In the British version, the pages are equally glamorous, so at first look this CD was a disappointment. These are the same people who produced the visually stunning "A Stroll Through Twentieth Century Art", and by comparison the interface to this disk is distinctly shabby.

The recipes are more Tante Marie than Marco Pierre White. Still, there is nothing wrong with traditional recipes, and the ones here all have their place in any cook's repertoire.

All the recipes come complete with a photo, tips and a wine suggestion. The content, therefore, is very much what it is in the magazine, but it just does

not look as good. To find the recipes, you can choose an ingredient and the amount of time you want to spend cooking it. This is a very good idea, but all too often you get the answer "no suggestion found". Infuriating, to say the least.

To add spice to the proceedings, there is a menu section where you can choose a variety of occasions. The CD makes suggestions on how to put together a balanced three-course meal. Most of these are a little dull, however, and very little imagination is shown in the combinations of dishes.

One of the best aspects of the disk is the "How To" video section. Some of these are a bit pointless for the experienced cook, but many are quite

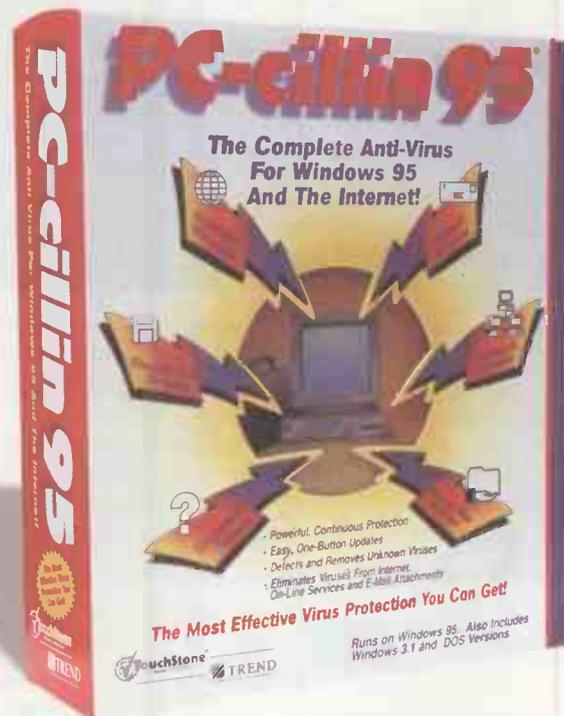
interesting. Learning how to caramelize a mould may seem a



Although some of the recipes are a little old-fashioned, there's a good hands-on video section

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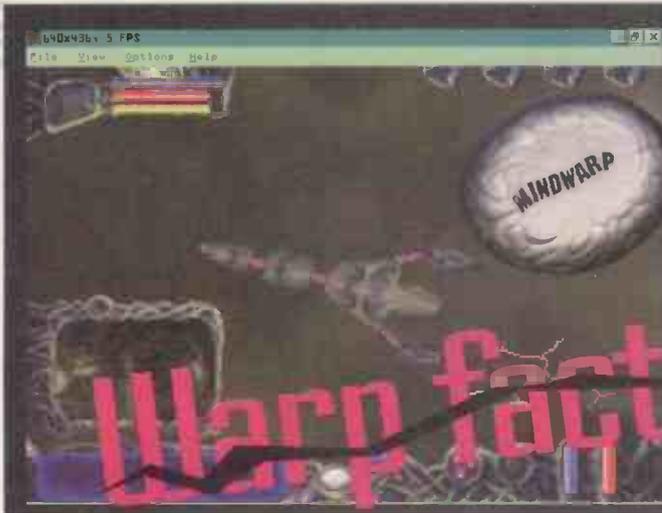
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Screenplay

NEWS



Leading simulation specialist Maxis is set to break into unknown territory with its latest title, Mindwarp. Billed as an exciting action/strategy affair, it will apparently send players plummeting down the twisted 3D corridors of an alien dreamscape.

You enter the landscape of the alien mind using a thought vehicle called a Synaptic Probe, pulsing with energy and alive with bio-psychic

devices. The idea is to battle against computer or human-controlled opponents, using high levels of strategy. To make things more interesting, the alien landscape is a sentient, living organism that's constantly changing. The 3D graphics are rendered on the fly to provide a realistic effect.

It all sounds a far cry from the pace of SimCity, but Sim fans needn't worry. The company also has plans for SimCopter and SimGolf later in the year. Maxis 0171 490 233

MONSTER MASH

Continuing its push into the action market, 7th Level is set to release a new platform affair called Arcade America. You play Joey, a typical all-American boy, whose pet monsters have accidentally blown up the house

while trying to wake him up. The explosion has sent them hurtling across the land, and now you have to round them up.

7th Level say parts of the game will include more than 10,000 cells of hand-drawn, digitally inked and painted

animation, extraordinary sound effects and an authentic cinematic soundtrack. Sounds Good. Destined to be in the shops by the time you read this, Arcade America will run with both Windows 3.1 and 95. 7th Level 01932 355666

Charts



LEVEL ONE

1	Civilization 2 (CD)	Microprose
2	Duke Nukem 3D: Demo (CD)	US Gold
3	Command & Conquer: Covert Ops (CD)	Virgin
4	Command & Conquer (CD)	Virgin
5	Descent 2: Demo (CD)	US Gold
6	NBA Live 96 (CD)	EA
7	Sam & Max: White Label (CD)	Virgin
8	7th Guest: White Label (CD)	Virgin
9	FIFA 96 (CD)	EA
10	Worms (CD)	Ocean
11	Under a Killing Moon (CD)	Kixx
12	Day of the Tentacle: White Label (CD)	US Gold
13	Rebel Assault: White Label (CD)	EA
14	Beavis & Butthead (CD)	Viacom
15	Champ: Manager 2 CD	Domark
16	Screamer (CD)	Virgin
17	Rise of the Triad (CD)	Access
18	PGA European Tour (CD)	EA
19	Wing Commander 4 (CD)	EA
20	Spycraft (CD)	Activision

Strategy fans and gamers with an Internet connection can break into the world of espionage with Spycraft: The Great Game. An interactive CD-ROM drama, Spycraft has you tracking down clues to find the guilty party behind an international, world-threatening crime. The twist in the tale with this one is that you'll need to use the World Wide Web and Activision's home page to complete your mission.



Spycraft has been designed with the new features of Netscape 2.0 in mind, and includes input from William Colby and Oleg Kalugin, former directors of the

CIA and KGB respectively. Both will help you in your quest to stop the launch of nuclear missiles and avert a potentially nasty situation. Other plus points include encrypted codes to crack, voice analyses to perform and videos to help you in your hunt for the guilty.

More info on <http://www.activision.com>



The Terminator: *Future Shock*

At last, a challenger to the Doom throne.



Doom is without doubt the most influential game of the decade. Shortly after it hit the streets, we saw the release of Heretic, Descent, Rise of the Triads and a hundred other Doom-alikes. But none scored quite as highly when it came down to sheer playability. Until now.

Future Shock is the first game in a long time to really grab my attention and, indeed, much of my spare time. It's not just another 3D game with 17 deadly weapons and twice as many different monsties: there's a gripping story to go with it and plenty of variation. For those who didn't see the film, here's an abridged version of the future...

SkyNet, the US defence computer, becomes sentient and decides to take on the world with nuclear weapons. Not surprisingly, there are few survivors. Twenty years on, the battle still has not been won, and in this time SkyNet has

developed intelligent robots to round up the remaining humans. By pure coincidence, you become part of a resistance movement and take on the responsibility of destroying SkyNet. It's not easy, though. There's no sign of Arnie, and the



robots have much bigger guns than you.

The game starts on foot in downtown LA, where you first have to gather your weapons and track down a car to enable you to escape from the city. Once you meet up with resistance leaders, you face 19

missions which lead ultimately to SkyNet's demise, although I haven't got that far.

Your character and the vehicles you use are controlled using the mouse and keyboard simultaneously. The mouse determines which

way you're looking and fires the weapons and grenades, while the keyboard allows you to walk, run, jump and select weapons. It doesn't take long to grasp and provides six directions for movement.

The combination of texture-mapped graphics, true 3D movement and a fantastic



soundtrack really draw you into this game. Another plus is that no two places look the same since your missions have you in and about the sewers, in the city and searching wrecked buildings. You even get to fly a really cool hovercraft, once you've captured it, that is.

Steven Helstrip

System Requirements

486DX/50 with 8Mb RAM, DOS 5 (runs under Windows 95), 20Mb minimum disk space, double-speed CD-ROM and VGA display.

Price £44.99

Contact Virgin Interactive
0171 368 2255

PGA European Tour

The European edition of PGA's golf classic's got everything except the picnic hamper.

The latest addition to Electronic Arts' Sports series, PGA European Tour, is the follow-up to the best-selling PGA Tour Golf. It takes everything that made the original great, and brings it bang up to date with new graphics and sound.

European Tour lets you try your hand at three new courses: Wentworth, Kut Garden in Hamburg, and Ireland's K Club. You can play either as an amateur or as a professional, and the game adjusts itself to suit your skill. In amateur mode the computer selects the club for you and indicates the amount of swing needed to get the best results. This makes the whole thing easy to get into, although the settings



can be changed if you think you know better. In Professional mode you have to make all of

the decisions yourself, but that's what playing for the big bucks is all about.

Before teeing off, you can take in an aerial fly-by movie of the hole from tee to green, with commentary from "the voice of golf" himself, Peter Alliss. This can be enter-

taining, but his hints on how to play each hole are equally useful. After this you appear on screen as a digitised photo-realistic golfer, complete with accompanying foliage and animated rippling rivers and ponds. The landscapes are particularly impressive, with first class 3D rendering. It's a far cry from the flatness of the original. Three

small windows or "PIPs" (Picture-in-picture) provide every possible view, to enhance the playing realism.

From here on the basic rules of golf apply, and the game carries on in the traditional "hit the ball along the fairway, onto the green and into the hole" fashion. Getting the feel for the club, which involves three mouse-clicks and a power meter, and adjusting to the game's response time takes a little practice, but that's the only way you can hope to get onto the Leaderboard. Teeing off certainly feels great with a generous swishing-club sound backed up by an appropriate comment from Mr Alliss.

The essence and skill of golf is difficult to capture, but PGA European Tour comes closer than any other. There's also a lasting challenge, with eight other European Pro players and a range of natural hazards to test your skill. The only things missing are the incidental bird noises and a picnic, for that total outdoor experience. Definitely the best golf game I have seen for the PC.

Nicola Kingsley

System requirements

486DX/66 or Pentium
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Maths Workshop (Ages 6+)	SPECIAL 23.95	28.14
Microsoft Creative Writer/Fine Artist	36.95	43.42
Millies Maths House	12.95	15.22
Mugglets Titles - CALL	NEW 14.95	17.57
P.A.W.S.	NEW 22.95	26.97
PB Bear's Birthday Party	NEW 19.95	23.44
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(Award the World in 80 Days, Peter Pan Paintings, Jungle Book)		
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Sesame Street Titles (3-6) (CALL)	26.95	31.67
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HOME AND HOBBY

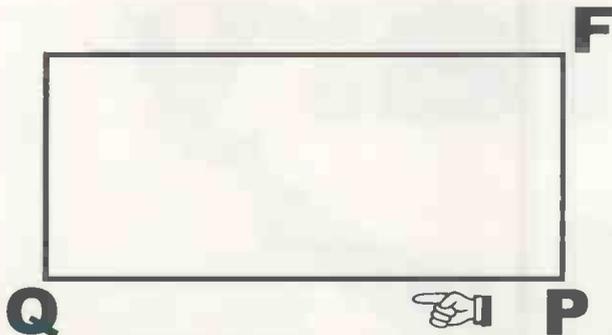
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Leisure Lines

Brain teasers courtesy of JJ Clessa.

This Month's Quickie

I heard this one on the radio the other day and I thought it was worth including.
What did Tchaikowsky write between the years 1811 and 1813?



This Month's Prize Puzzle

A very old chestnut this month, but perhaps some of you haven't encountered it before. It can be solved mathematically without a computer, but the calculations are quite difficult. However, it yields itself admirably to a computer simulation, and the equations needed for this are quite simple — just a knowledge of basic trigonometry, which should be well within the abilities of most of our readers.

A farmer is at the top right corner (F) of a rectangular field 200 yards by 100 yards, when he sees a pig (P) at the bottom right corner. He runs to try and catch the pig, always running directly towards it. The pig, meanwhile, runs in a straight line along the bottom edge of

the field towards the corner (Q). If the farmer is initially 100 yards from the pig, and runs twice as fast, how far does the pig get before it is caught?

Now, that is the classic problem, but in addition I want you to tell me what speed, relative to the pig, does the farmer have to run at in order to be sure of catching the pig before it reaches the point (Q)? Your answer should be to the nearest 2 decimal places, please.

Answers on postcards or backs of sealed envelopes — no letters and no floppy disks — to: PCW Prize Puzzle - June 1996, PO Box 99, Harrogate, N. Yorks HG2 0XJ, to arrive no later than 20th June 1996. Good Luck!

Winner of March 1996 Prize Puzzle

A fair response, just less than 100 entries, to our number seed cycle problem — considering that the problem was one of greater than average difficulty.

The lucky entrant whose card came out of the bag first — using our random number generator — was Mr Simon Page of Whitstable, Kent, who gets our heartiest congratulations and, very shortly, his prize. The correct answers were:

- Longest Cycle is 110 iterations with a seed of 6239 and generates 97 numbers
- Shortest Cycle to generate 99 numbers is only 91 iterations with seed of 7277

Meanwhile, to all the nearly-wons, keep trying — it could be your turn next.

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WAW Typeshop Library

Font freaks,
multimedia
maniacs and
DTP demons, have
we got something
for you!

If your computing interests lie with DTP, presentations or multimedia, we've got a treat in store for you. Thanks to our friends at Fontware and Macromedia, this month we've got an absolutely fabulous selection of software prizes to give away.

Bitstream Typeshop CD-ROM Font Library
Founded in 1987 and based in Fareham, Hampshire, Fontware is a specialist reseller and developer of computerised typefaces.

For the person lucky enough to win, the company has kindly agreed to a give away a copy of its prized Bitstream TypeShop CD-ROM Font Library.



Font Fountain could be just your type!

The ideal desktop publisher's mate, Typeshop Library comprises no less than 1,085 professional fonts in PostScript format. Normally, each font must be purchased separately and unlocked with a special code before use, but Fontware has agreed to supply one PCW reader with a completely unlocked edition, with a retail value of over £900. To complete the package, Adobe Type Manager will be included so that the fonts can be used in all your Windows applications.

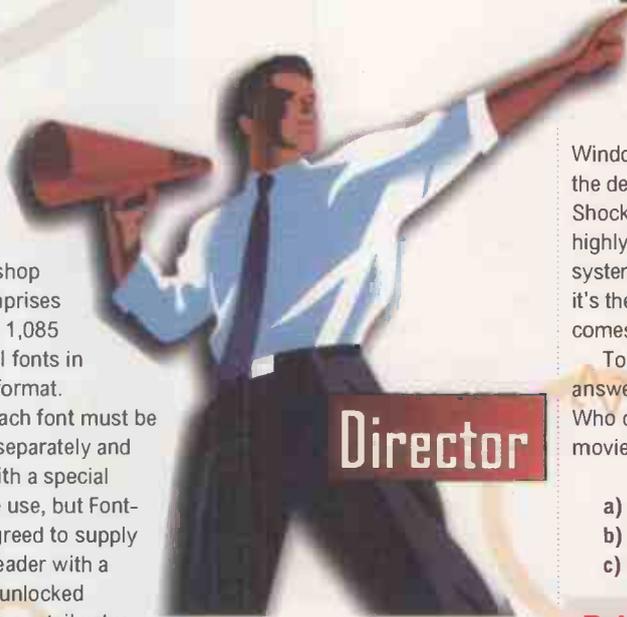
Fontware has also donated copies of its Fontware Font Fountain packs, containing 150 TrueType fonts, 1,500 icons and 50 sounds, for ten runners-up. A further 20 lucky readers will receive a copy of the company's Type Solution Guide.

For a chance to win one of these prizes, just answer **Question (1)**, below.

(1) What font is this:

“Font Competition”

- a) Times
- b) Courier
- c) Helvetica



Macromedia Director
As if that wasn't enough, we've also got two copies of the brand new Macromedia Director 5.0 for Windows to give away. The premier multimedia authoring tool for the PC, Director is responsible for some of the best CD-ROM titles on the market, including the award-winning children's titles from Broderbund and games like Iron Helix. It's also the most popular application for cross-platform work — versions are available for Mac and PowerMac as well as Windows 3.1 and Windows 95.

Version 5.0 boasts a horde of improvements, including a new open architecture, 50 percent faster Lingo execution, compatibility with Adobe Photoshop plug-ins, and full 32-bit code for

Windows 95 compliance. It's also the development environment for ShockWave, Macromedia's highly-acclaimed presentation system for the Internet. In short, it's the bee's knees when it comes to multimedia.

To enter our prize draw, just answer **Question (2)**, below. Who directed the blockbuster movie Jurassic Park? Was it:

- a) Steven Segal
- b) Steven Helstrip
- c) Steven Spielberg

Rules of entry

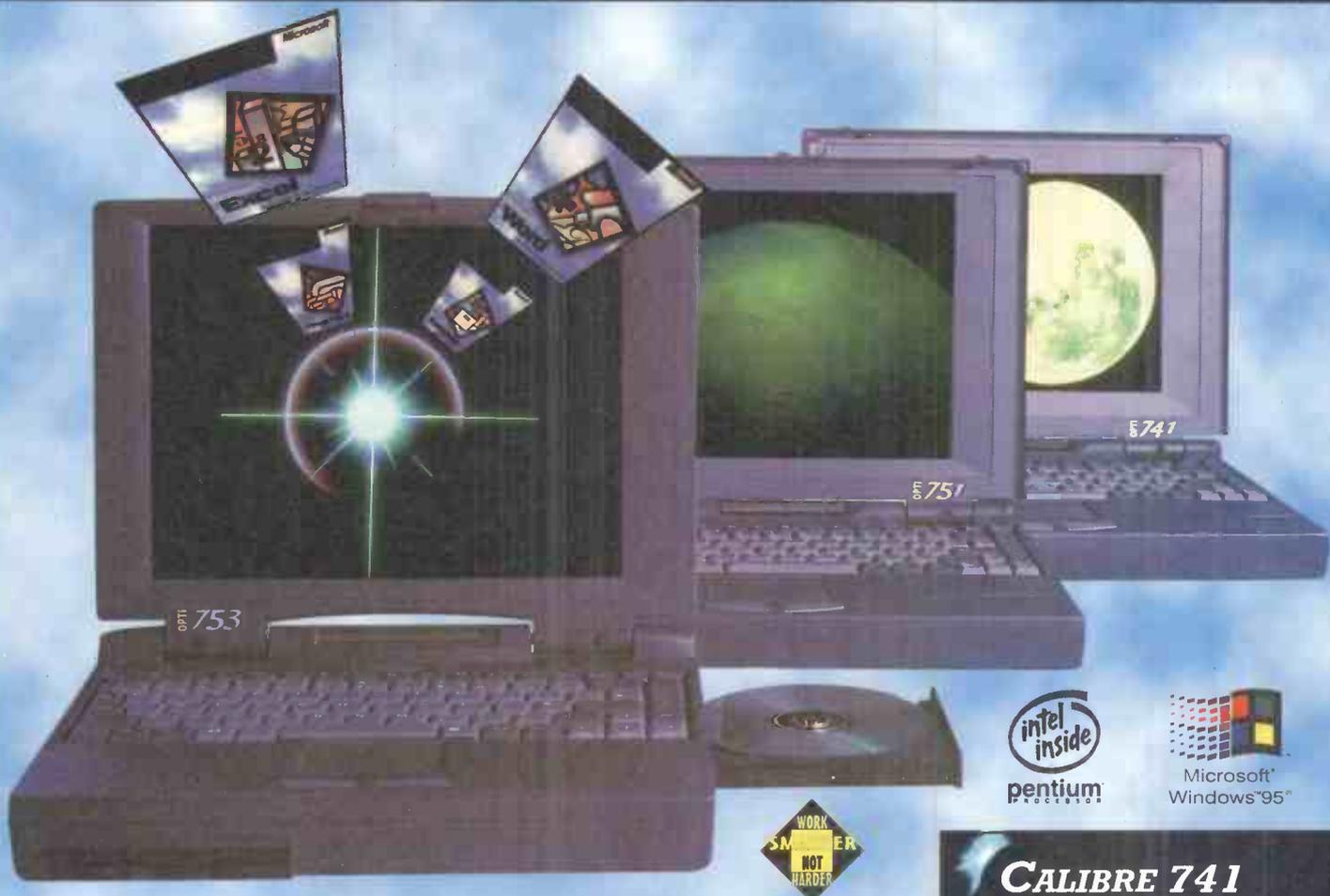
This competition is open to all readers of *Personal Computer World*, except for employees, and their families, of VNU Business Publications, Fontware and Macromedia. Entries must arrive by **6th June 1996**. The Editor of PCW is the sole judge of the competition and his decision is final. No cash alternative is available in lieu of prizes.

How to enter

To enter the competition, just write your answers on a postcard, or the back of a sealed envelope, along with your name, address and daytime telephone number, and send to: June Competition, Personal Computer World Editorial, VNU Business Publications, VNU House, 32-34 Broadwick Street, London W1A 2HG.

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2.1Gb SCSI-2 hard disk
Adaptec PCI SCSI 2940 controller card
3.5" 1.44Mb floppy disk drive
Fax/modem (V34, 28,800bps)
17" SVGA colour monitor
Matrox Millennium PCI SVGA graphics card
(2Mb Windows RAM)
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Enhanced IDE/EPP/ECP controller
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Auto-switching 50W AC/DC adaptor (charges battery
while PC works)
Serial port, parallel port, Keyboard connector, Ext.
monitor connector, PCMCIA type 3 slot
Fax/modem (PCMCIA, V34)
Windows 95 on CD-ROM
Size: 300mm x 227mm x 54mm, Weight: 3.5kg

£2,495 (plus VAT = £2,931.62)

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ET-4000 PCI SVGA graphics card
(1Mb DRAM, expandable to 2Mb)
Quad-speed CD-ROM drive
15" SVGA colour monitor
2 fast serial ports, 1 enhanced parallel port
3 PCI slots (2 free), 4 ISA slots (4 free)
105-key Cherry keyboard
Serial 2/3-button mouse
Windows 95 on CD-ROM
Desktop case (425mm deep x 424mm wide x
155mm high)

£1,145 (plus VAT = £1,345.37)

Financing (personal): £134.53 down, 24 months x
£58.16 (includes VAT)
Lease rental (business): £120.60 down, 33 months x
£40.20 (excludes VAT)

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Intel Triton PCI/ISA chipset
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256K synchronous cache memory
850Mb IDE hard disk
3.5" 1.44Mb floppy disk drive
ET-4000 PCI SVGA graphics card
(1Mb DRAM, expandable to 2Mb)
14" SVGA colour monitor
Quad-speed CD-ROM drive
2 fast serial ports, 1 enhanced parallel port
3 PCI slots (2 free), 4 ISA slots (4 free)
105-key Cherry keyboard (membrane switch type)
Serial 2/3-button mouse
Windows 95 on CD-ROM
Desktop case
(425mm deep x 424mm wide x 155mm high)

£845 (plus VAT = £992.87)

Financing (personal): £99.28 down, 24 months x
£42.92 (includes VAT)
Lease rental (business): £89 down, 33 months x
£29.67 (excludes VAT)

Notino Traveller

Intel 806DX4 processor
100Mhz clock speed
8Mb RAM, expandable to 36Mb
128K cache memory
500Mb hard disk
3.5" 1.44Mb floppy disk drive
9.5" dual-scan colour LCD display
VESA-LB SVGA card (1Mb RAM)
2 NiMH batteries (2 hours),
AC/DC adaptor
Sound card, Built-in speaker and microphone
1 serial port, 1 parallel port, External VGA port
PCMCIA type 4 slot
Fax/modem (PCMCIA, V34)
86-key keyboard
Trackball (centre front position)
MS-DOS 6.22, Windows 3.11 for Workgroups
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£1,245 (plus VAT = £1,462.87)

Financing (personal): £146.28 down, 24 months x
£63.24 (includes VAT)
Lease rental (business): £131.13 down, 33 months x
£43.71 (excludes VAT)



Winputer Homester

- Intel Pentium processor
- 75Mhz, upgradable to 133Mhz
- Intel Triton PCI/ISA chipset
- 8Mb RAM, expandable to 128Mb
- 256K cache memory
- 850Mb IDE hard disk
- 3.5" 1.44Mb floppy disk drive
- Fax/modem (V34, 28,800bps)
- 14" SVGA colour monitor
- ET-4000 PCI SVGA graphics card (1Mb DRAM, expandable to 2Mb)
- Quad-speed CD-ROM drive, 16-bit sound card, Speakers
- 2 fast serial ports, 1 enhanced parallel port
- 3 PCI slots (2 free), 4 ISA slots (4 free)
- 105-key Cherry keyboard (membrane type), Serial 2/3-button mouse
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- Desktop case (425mm deep x 424mm wide x 155mm high)

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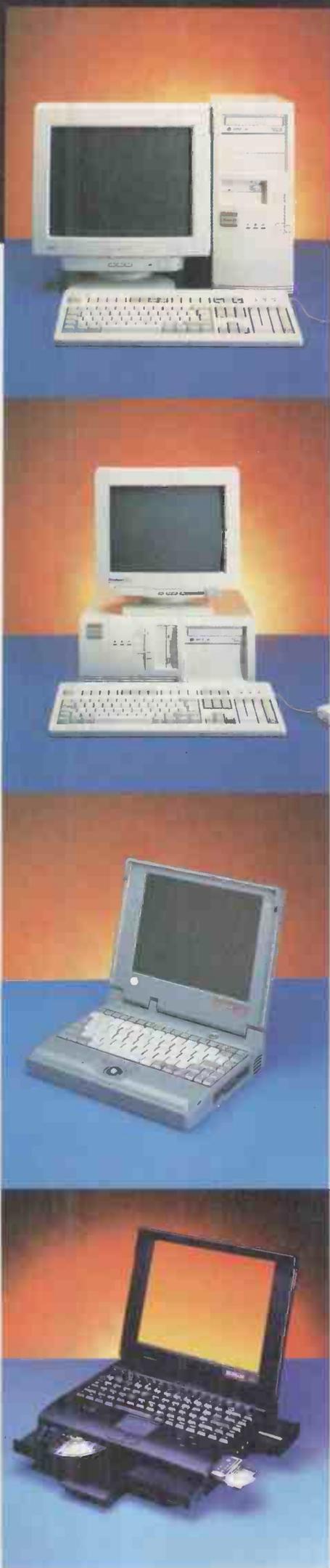
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Less expensive is the Winputer Manager, which nevertheless packs a powerful punch and will appeal to many hard-pressed executives.

Still less expensive are the Winputer Saver and the Winputer Homester. The latter, aimed at the multimedia enthusiast, comes with an Internet-ready modem

Then there are two fax/modem-equipped portables. One, the Notino Traveller, is a version of the machine, the LBC2-100, that won an Editor's Choice award from *Personal Computer World*.

The other, the Notino Mover, is a luxury notebook that some people already regard as being more a necessity than a luxury.



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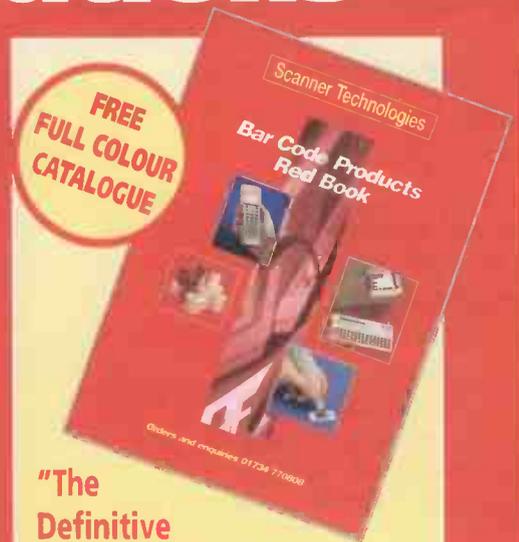
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Hands On is the place where readers can contribute to *PCW*, and as always we'll pay for anything we use. Macros, sections of code and hints and tips will be rewarded with a £20 book or record token (please say which you'd prefer) and we'll pay hard cash for longer, more involved pieces. Please include relevant screenshots in .GIF format.

All submissions should be emailed to the author of the appropriate section or snailmailed to *Hands On*, *Personal Computer World* Editorial, VNU House, 32-34 Broadwick Street, London W1A 2HG. Questions and short hints and tips can be faxed on 0171 316 9313.

We're constantly working to improve the contents of *Hands On*. If you have any suggestions, send them to the Editor at the address above, or email them to: editor@pcw.cmail.compuserve.com



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Macintosh 326

Chris Cain has the Midas touch — he has news of a downloadable Update to System 7.5.



Computer Answers 329

Frank Leonhardt pulverises problems and quashes queries. Then it's straight in to his Bargain Basement for a rummage around.



Beginners 331

VRAM, DRAM, SIMMs... Eleanor Turton-Hill takes you down memory lane.



Words of warning

Is there anybody there? Messages from beyond, an unhelpful ABC, and rides with the unknown driver all conspire to confuse a curious Tim Nott.

I've used Word for Windows since version one, and a noticeable change is the steady increase in the file size over the years; not only of the program but of its documents, too. When I upgraded from version 2.0 to 6.0, the Hands On Windows column upgraded itself from 17Kb to 24Kb, although the number of words remained the same.

Although versions six and seven ostensibly have the same file format, the latter adds a further 2Kb to the file. Curious to know what, exactly, added value was in those extra kilobytes, I opened a Word 7 file in Notepad. As expected, there was a load of binary header information, followed by the text itself, followed by more gobbledegook, followed by some more text on the subject of modem initialisation strings, which I didn't remember writing and which certainly wasn't visible when loaded into Word.

Perhaps, I thought, I'd been messing around with "hidden" text or something. Or perhaps I'd had a crash and the file had somehow got corrupted. But opening a few more files in Notepad revealed more "mes-

sages from beyond", most of which (but not all) I was able to track down to my offline mail reader. Curiouser and curiouser: was there something seriously wrong with my hard disk? Scandisk didn't seem to think so.

All became clear when Microsoft announced the "Service Pack 1", a minor update to Windows 95. This is mainly concerned with network and printing (and indeed, networked printing) issues, so I hadn't got round to downloading the

1.25Mb file. However, the readme file contains the following little gem.

"The Windows 95 OLE 32 update addresses file-management behaviour in Microsoft Word, Microsoft Excel, and Microsoft PowerPoint® for Windows 95. Because of the way these applications use OLE for file storage, files created by these applications might contain extraneous data from previously deleted files. This data is not visible while you use the applications. However, when such a document file is viewed by using Windows Notepad (for example), it might be possible to see pieces of information from the previously deleted files."

In case you didn't know, when you delete a file from disk by using the DOS delete command or emptying the recycle bin, you don't actually delete the data at that time. Instead, you mark that area of the disk as unoccupied so subsequent data can overwrite the "deleted" file. What these Microsoft applications are doing is grabbing a section of disk space without cleaning the previous data from it, which may then be preserved in the new file. Obviously, files you regularly delete (in my case, email and conference messages) stand a good chance of turning up again.

The Readme continues: "This could

Get a Liff

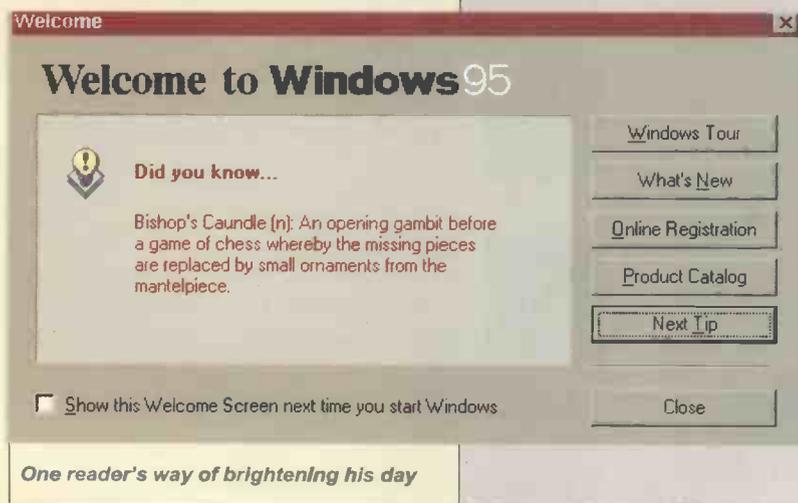
In last September's column (written when Windows 95 was still in beta) I shared with you the secret of how to customise the "Tips of the Day". To recap: run Regedit (having first backed up your System.dat and User.dat) and go to HKEY_LOCAL_MACHINE/SOFTWARE/Microsoft/CurrentVersion/Windows/Explorer/Tips. Alternatively (or if for some reason it's elsewhere), run Edit/Find... on "Tips" and keep hitting F3 until you see a list of the tips in the right-hand pane. Double-click on the number next to each message and you'll get a dialogue box where you can edit the "Value data" — in this case the tip.

Reader Peter Bryant has taken this not just a step but a whole new dimension further. He has created a .REG file containing entries from Douglas Adams and John Lloyd's book, *The Meaning of Liff*. For those of you who never visit bookshops or other people's lavatories, this is a list of strange-sounding but real place-names with implausible definitions. Example:

"Stoke Poges (n) — The tapping movements of an index finger on glass made by a person futilely attempting to communicate with either a tropical fish or a post office clerk."

Though I would dearly love to share this with you in its entirety, there are a few small problems. Firstly, Peter's .REG file runs to 80Kb — when I double-clicked on it to add it to the Registry (yes, damn right I backed up first!) Windows complained it was unable to import the file. In fact, it had imported most of it but there is, according to my usual reliable sources, a 64Kb limit to a registry key. Secondly, the "tip of the day" selection mechanism seems to be capable of handling only 53 entries; the rest get ignored. Thirdly, there is the rather awkward but interesting concept of copyright. Nevertheless, many thanks for effort, Peter.

● Perhaps other readers would like to share their own favourite tips of the day? I'll include the funniest printable ones in a future column.



Is that a Vault in your pocket or are you just organised to see me?

Despite not being able to include "Liff" (see adjacent panel, "Get a Liff") on this month's cover-mounted CD-ROM, I'm not going to leave you empty-handed. If you've ever used a decent word processor, you'll know what an outliner is. If you haven't, it's a device to help you order your thoughts into a hierarchy of headings, sub-headings and body text. You can then expand or collapse a branch, or the whole outline, rather like an Explorer tree.

Pocket-Sized Software has produced Vault, a Windows 95 (and NT) outliner. There are two panes, with the outline "tree" on the left and the text for the highlighted item on the right. If a branch of the tree has sub-headings, then it appears as a book — bottom levels appear as a sheet. It has all sorts of clever touches for adding and rearranging items, and has a hook into the Windows phone dialler. The sample file doesn't really do it justice as there all sorts of things you could do here to create to-do lists, address books and so on. The real attraction is that you can mix and match all kinds of information. It doesn't, alas, support OLE so you can't include spreadsheet tables or pictures, but apart from that is an excellent little application. It's shareware, registration is \$15 from Pocket-Sized Software in the US (see our contacts panel, page 268). I don't have an email, FTP or Web address but it's on this month's CD-ROM as Vlt32.zip.



pose information security or privacy concerns if you distribute electronic versions of files created using these applications." They aren't kidding. Have you just had second thoughts and deleted that angry resignation letter you wrote, but never sent, to your boss, calling him/her every name under the sun? It could survive and turn up in the most unexpected places, such as your Excel departmental budget projections. Likewise, your deleted (or so you thought) list of dodgy Web sites, the novel you've been writing in the firm's time and any other dark secrets you might be harbouring. Or, if you're emailing files as binary attachments, you could be freely distributing your company's deepest secrets.

At the time of writing, the Service Pack was available free from Microsoft's Web site (www.microsoft.com/windows) but by the time you read this it should be available on disk from Microsoft UK. This doesn't happen under Windows NT but can happen under 3.1 — you need to

contact Microsoft to get the "c" releases of Word 6.0, Excel 5.0 or PowerPoint 4.0 if you don't already have them.

Capital offence

Long filenames — don't you just love them? My particular *bête noire* is the way Word 7 defaults to giving a file the name of the first line in the template. So, every month, I start this column anew from a template that begins "Hands on Windows 95 column for PCW".

I type in the month, and save. It doesn't make any difference whether I add the month at the beginning or the end of the line, the document name is kindly filled in for me with the plain, undated "Hands on Windows 95 column for PCW". I've also found that long filenames have another practical limitation: if you name a file "Letter to Aunt Edith dated April 1996 thanking her for the very nice socks.DOC", you need a lot of screen real estate to see the title in list or details view — though it's rather clever the way in

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Cunning curves and clever tricks

● Returning to those "Tips of the Day" for a moment (see "Get a Liff"), if you unticked the "Show this Welcome Screen next time you start Windows" in a moment of exasperation, and now have a nostalgic urge to see those tips again, you can get at them from the Help command on the start menu: double-click on the "Tips & Tricks" book icon, then "Tips of the Day", then "Viewing the Welcome screen". A new "Windows Help" window opens: on this, is a button marked "Click to open the Welcome screen" — which it does.

● In the March issue column, I mentioned that you can no longer perform the equivalent of the old "mystery INI file" trick with the registry. With Windows 3.1, any mysterious .INI file cluttering up your Windows directory could be moved to a safe place off the path and if nothing complained, or it wasn't recreated, then it probably belonged to an application that was no longer installed and thus could be safely deleted.

If you read last June's *Hands On Windows* column, the name Jason Ozin may ring a bell. He is the creator of that essential Windows 3.1 utility Inst-All, which records changes made to the Windows and System directories, and WIN and System.ini, when you install software.

This time, he points out that I'm wrong. Faced with a mysterious branch in the registry, "you can use the 'Export Registry File...' option on the 'Registry' Menu of RegEdit and then select 'Selected Branch'. By default, this will save the selected branch (prior to you deleting it) as an REG extension which can be double clicked to add it once again to the registry at a later stage."

● If you somehow managed to avoid March '96 and last September's columns you might not be aware that the "Send To" folder is one of the most useful folders on your machine, as any shortcuts in there will be added to the right-mouse "Send To" sub-menu. Hence you can send any file to another folder or application regardless of its extension or association.

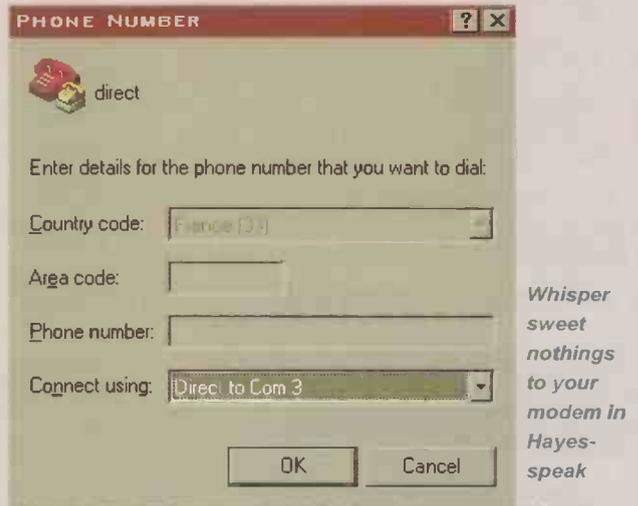
If your JPEG files are registered to a heavyweight slow-loading image processor, then you can bypass this by sending them to something like Paintshop instead of the default "Open". Or you can send any file to Notepad, and so on. The only problem is that it's a bit of a hassle to set up — you have to open the 'Send To' folder, then the folder containing the application, and drag a shortcut from the latter to the former. Richard Ansell came out with an idea so brilliantly

obvious that I didn't understand it at first, which is why it has been lying unreported on my desk for several months.

From Explorer, right-drag the "Send To" folder on to the desktop and "Create shortcut here". Then, right-drag it back into the "Send To" folder and chose "Move". Rename it "This menu". Subsequently, any program file on which you right-click and send to "This menu" will have a permanent shortcut added to the menu.

One drawback is: don't try this with folders. It will copy or move the entire folder and its contents, so it's probably best used as a temporary measure to set up "Send To" shortcuts.

● Here's a tip for those trying to sort out modem problems. Windows 3.1 Terminal was just that: you could run the program and start typing command strings straight to the modem — ATZ, for example, to reset it, and ATDT 1234 to tone-dial 1234. With the new Windows Hyperterminal, this seems impossible as it asks you for a name and phone number before it will let you start. In fact, it isn't. The trick is to choose an icon and give the session a name, just to play along, then when the "Phone Number" dialogue appears go straight to the bottom box — "Connect using". Click on the arrow and select "Direct to COM 2" (or whichever port your modem resides at). You can then type away in Hayes-speak and converse directly with your modem.



which other icons get out of the way in large or small icon view.

Another annoyance is the way folders are capitalised, or not. You can create a folder called "abc", "Abc" or even "ABc", but not, it would appear, "ABC". It seems this is because it isn't a long filename as far as Explorer is concerned. "ABCDE-FGHIJ", however, will display in all-capitals as it's over the eight-character limit. Curiously, if you do try to create or rename a folder "ABC", the "long" filename will appear as you intended from the DOS "DIR" command, even though it's short. If you see what I mean.

If at first you don't succeed... give up

This month, I had the joyful task of re-installing Windows 95. One day, Windows suddenly decided that from that moment on, it no longer liked my PCI-bus Opti hard disk controller and would be running the File

System in "MSDOS compatibility mode", which is the long way of saying "slow": so slow, in fact, that it couldn't read the "Microsoft Sound" off the hard disk at startup without pausing for breath in the middle.

So I rounded up the usual suspects. Virus? Mr McAfee, he said "No". Moreover, booting back to Windows 3.1, whose 32-bit file access tends to fall sick at the slightest suggestion of a boot-sector snuffle, showed this was in excellent health. The Windows 95 Control Panel/System/Device Manager pinned the blame squarely on my startup files. There was an "unknown driver" in Config.sys or Autoexec.bat lousing things up.

This was rather mystifying news, as I didn't have a Config.sys or an Autoexec.bat. Rebooting with saved and known-to-be-good versions of the Registry and System.ini didn't help. Neither did making a Boot log and replacing the files shown to "fail" in Bootlog.txt. Nor did

attempting to remove the defective controller from the Device Manager: Windows would lock solid. After scandisking, defragging and various other rituals I gave up and reinstalled Windows (and all my applications) from scratch. I'm pleased to say that the file system is back to its full 32-bit glory, and clearing the accumulated dross of the last few months means not only do I have acres of hard disk space, but Windows now goes like a train once more. I'm still mystified as to what happened, however, and why it should take a complete re-installation to repair it.

PCW Contacts

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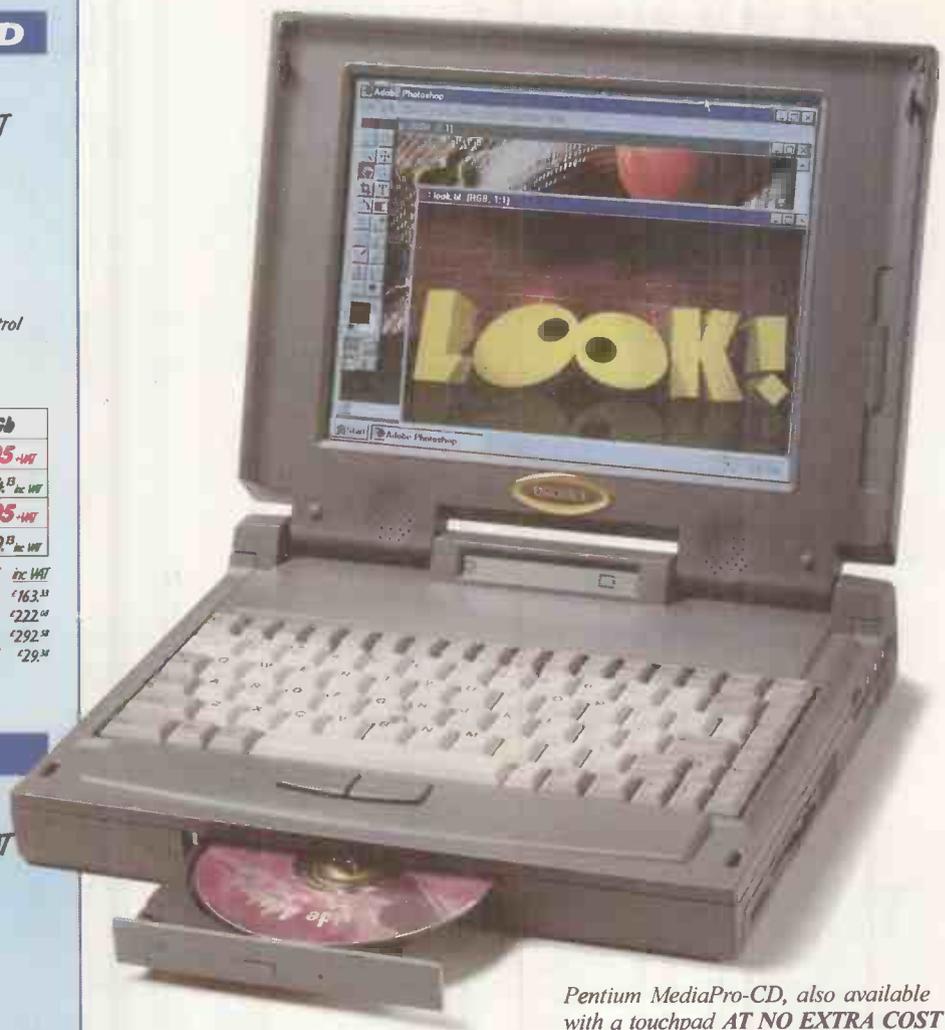
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.Inf Formation

How to purge those troublesome redundant drivers from your system, and Plug-In presents you with a full system enhancement. With Tim Nott.

TWO MONTHS AGO I PROMISED that we'd take a closer look at third-party .INF files and how they can help you weed out redundant drivers from your system. Last month I broke that promise in order to fulfil another one made in December 1993, concerning DDE. So here comes the inf on the .INFs.

On a non-networked Windows 3.1 installation, there are three .INF files used for setting up:

- **SETUP.INF** contains all the general information needed, including lists of all the possible options and where to find the relevant files. If you run Setup from within Windows and choose Add/Remove Windows Components, you'll see the lists — for instance, Wallpaper and Sounds — that are stored in SETUP.INF. It also contains details of the Windows generic video drivers such as VGA or SVGA, as well as the standard mouse and keyboard options.

- **APPS.INF** contains information on third-party applications for setting up the correct PIF and icon settings.

- **CONTROL.INF** contains the list of standard printer drivers and international settings that are set up from Control Panel. The INF files are organised much as INI files, with section headings in square brackets, each containing keynames and values. They can be edited with a text editor, though you'd really only want to change them if you were custom-installing Windows on multiple machines.

No place like OEM

When a third-party video, printer or other hardware driver is installed in Windows

```

Notepad - OEM0.INF
File Edit Search Help
-----
; Windows 3.1 Display OEMSETUP.INF file for Accelerator products:
-----
[data]
    Version="3.10"

; Names of the disks Setup can prompt for.
[disks]
1 = . "Microsoft Windows 3.1 Disk #1",disk1
2 = . "Microsoft Windows 3.1 Disk #2",disk2
3 = . "Microsoft Windows 3.1 Disk #3",disk3
4 = . "Microsoft Windows 3.1 Disk #4",disk4
5 = . "Microsoft Windows 3.1 Disk #5",disk5
6 = . "Microsoft Windows 3.1 Disk #6",disk6
7 = . "Microsoft Windows 3.1 Disk #7",disk7
8 = . "Microsoft Windows 3.1 Disk #8",disk8
a = . "Windows 3.1 Display Driver Disk",diska

;profile = driver,          Description of driver,          resolution, 286 grabber, 1.
[display]
ultra = a:ultra.drv, "Win 3.1 ULTRA 1024x768 16/256 Normal", "100,120,120", a:vgacolor.2gr,
ultrabig = a:ultrabig.drv, "Win 3.1 ULTRA 1024x768 16/256 Small", "100,96,96", a:vgacolor.2gr,

```

An OEM .INF file in the spotlight

3.1 it should come with its own .INF file, which is stored in the Windows\System subdirectory so it can be read by Windows Setup in "maintenance mode" — i.e. when you're changing system settings rather than installing Windows. If this has the same name as an existing OEM (Original Equipment Manufacturer) file, then it is renamed to OEMx.INF (where x is a number). These OEMx.INF files are linked to the Windows SETUP.INF file, so that all available display options are listed in one place. So, even if you've removed the driver files themselves, if the OEMx.INF file remains, you'll still see the driver listed as an option when you run Setup.

If you open an INF file in Notepad, one of the first sections you'll see will be "[disks]". This lists all the disks that the

setup program is likely to need, each identified by a number or letter. Obviously this will include the disk(s) supplied with the hardware, but may also include some of the Windows installation disks for resources such as screen fonts.

The next section — assuming we're looking at a display driver .INF file — should be "[display]" and this contains the nitty-gritty on the driver and supporting files. There may be just one line here or several, depending on whether separate drivers are used for different resolutions, or one "catch-all" driver is supplied with a separate utility for switching resolution. Each line is divided by commas into several sections. First comes the keyname or "profile" of the driver, used to refer to it elsewhere. Next follows an equals sign and the disk ID and filename of the driver (.DRV) itself. After that, in double quotes, comes the description — what you see listed in Setup, followed by three numbers that define the "aspect ratio" of the system

Security alert

If you're using Microsoft Excel 5.0, Word 6.0 or PowerPoint 4.0, and the Help/About... box doesn't show the version with the "c" suffix, turn to the *Hands On Windows 95* section where you may find something rather worrying.

Finally, a reminder that this column now encompasses DOS. Although we haven't done any DOSing in the past two months, it will return with a vengeance next month.

Looking Shifty

Some of the following have appeared before in this column, but here are ten really fascinating things to do with the Shift key.

1. File Manager

To tile Windows side-by-side, press Shift + F4.

2. File Manager

To save settings, press Alt + Shift + F4.

3. Program Manager

The same Shift + Alt + F4 trick works here, too. Unlike an unshifted Alt + F4 it doesn't close Program Manager. If you want to make sure the settings stay saved, untick Save settings on exit from the Options menu.

4. Starting Windows

Holding down Shift stops the Startup group from loading.

5. File Manager

Highlight a file, hold down Shift and select another: all those between will be selected as well.

6. Write and Notepad

Shift + Arrow keys selects text rather than just moving the insertion point. The trick also works with the Home, End, Page Up and Page Down keys.

7. Pasting

Shift + Insert pastes from the clipboard — handy for southpaws as you don't have to let go of the mouse.

8. Write

If you highlight some text then hold down Shift + Alt, the selected text will be moved to the location of the next mouse-click.

9. Program Manager

Shift + double-click starts an application minimised.

10. Paintbrush

Dragging a cutout with the Shift key held own paints the image with multiple copies of the cutout.

fonts — generally 100,96,96 for standard VGA or 100, 120, 120 for large fonts. Next come five more disk IDs and filenames. The 286 "grabber" (*.2GR) is used for copying data from DOS windows in standard mode, and the *.LGO file contains code for the windows startup screen.

Next comes the Virtual Device Driver (*.386), also used for DOS sessions, followed by the (*.3GR) "grabber" for enhanced mode. There may follow an "ega.sys" entry, but usually this is skipped — you'll just see two commas.

Then comes the *.RLE file, the actual bitmap of the startup logo, as some OEMs like to install their own to remind you that you're using their wonderful equipment. And finally, an optional field to point to another section in the .INF file, that may contain details of other files that need to be installed.

Drive away

So, let's assume you've installed a new video card and want to get rid of the excess baggage from the old one. The first step is to create a "safe" directory and copy SYSTEM.INI and all the OEM*.INF files there. Next, open all the original OEM*.INF files with Notepad. You should then be able to pinpoint the redundant files and move them from the Windows\System directory to your "safe" directory.

If a file appears in both the old and new .INFs, then obviously it's not redundant — most *.FON files, for example, are the Windows standard. Check, too, the optional field mentioned in the previous paragraph: if a separate section appears in the old .INF for this, there may be further redundant files. The entries here have the format: File, Destination, System.ini, Section, Keyname, Value. If a line starts with two commas, it means there's no file involved, but there is a section or key in SYSTEM.INI that can be removed. When you've finished, you can delete the redundant OEM*.INF file — keep the "safe" backups until you're sure everything is working properly. You'll no longer see the old drivers listed when you run Setup.

VGA holds sway

Finally, there may be more. If your old card had its own icon in Control Panel, there will be a redundant .CPL file lurking in the System directory. Alternatively, if there is an icon in Program Manager, you can hunt the .EXE down with the File/Properties... command. It is not a good idea, by the way, to remove the standard Windows VGA driver files — VGA.DRV, VGA.2GR and VGA.3GR.

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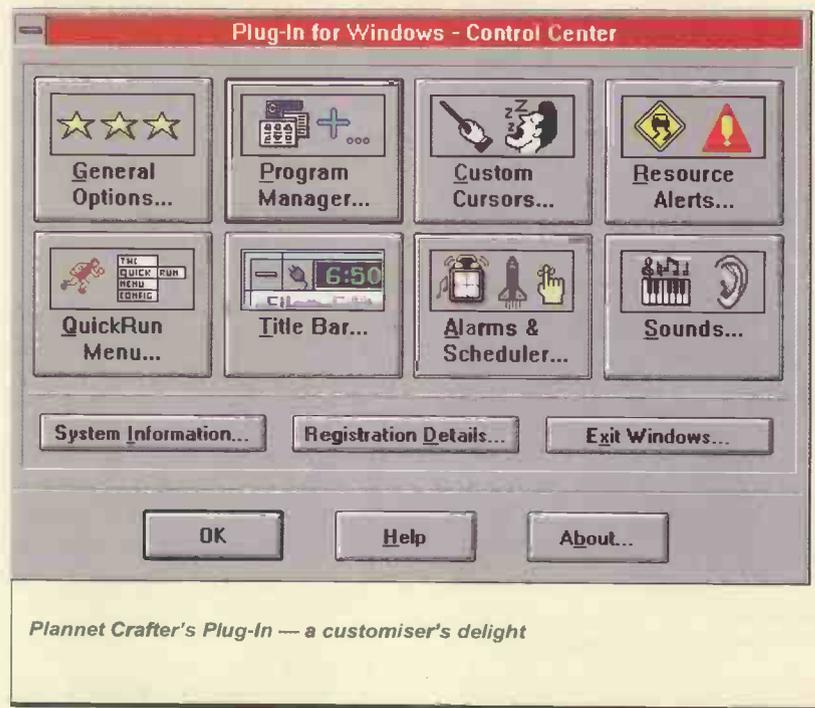
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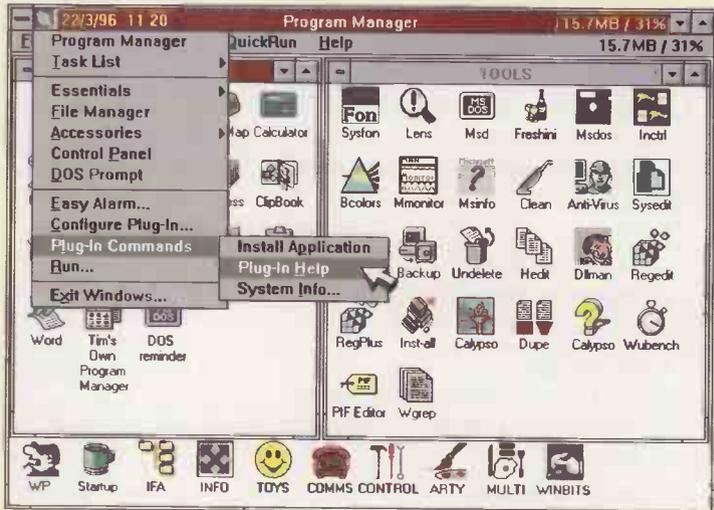
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Keep on Plugging
In September 1993 I was raving about Plannet Crafter's Plug-In, a shareware utility that added all sorts of enhancements to Program Manager and the Windows Interface in general. Since then it has won several awards, and this month brought a disk with version 2.6.

You can have nested Program Manager groups, groups can have their own icons, and you can have all sorts of additions — including date, time, resources, memory and disk space — shown in the title bar of applications. You can change the title-bar font, there's a range of wacky cursors and even a talking clock.

A little plug icon attaches itself to the title bar of all applications, with a configurable cascading menu system, so you can run one program directly from another without having to go via Program Manager.

What's really cool is that the menu is also available from a right-mouse click on the desktop, and you can use Plug-In as



Plug-In's cascading menu allows you to run programs directly without having to go to the Program Manager

your "shell", the program that kicks off and exits Windows, instead of Program Manager. This is a strange experience when you first try it, as you start with a completely clear desktop (Windows 95 users, eat your hearts out). When you right-click, the shell — Plug-In's menu system — reveals itself. It's on this month's CD, or can be downloaded from <ftp.uu.net> (/vendor/plannet).

PCW Contacts

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A little bit of intrigue

Chris Bidmead uncovers an interesting Windows NT software add-on and tries a new NeXTStep application.

Judging by the mail which seems to be flooding into my mailbox now at the rate of over 100 messages a day, Caldera is having a very busy time following the recent launch of the shrink-wrapped version of the software. I'm still working with the beta 2 version, and I don't seem to be able to get any response to my emails pleading for the release version.

The beta 2 version is working fine on Tonto, my portable, and will probably remain there. But unless I hear from Caldera soon, it looks as though I'm going to have to phase this interesting flavour of Linux out of my column.

Getting up to speed

Anyway, a lot else is happening that I really must get up to speed on. Head of the list is Windows NT. Beta 4.0 is making the rounds as I write but I'm not champing at the bit to get hold of it. My primary interest is how it fits in with the other operating systems I'm running here.

Last month I related how my friend, Marcus, and I had got the Web Server working; broadcasting pages across the network to browsers running on OS/2, NeXTStep and Linux. That's only the start of what I want to do. Stage two was going to be the installation of Microsoft's BackOffice, adding an SQL server and other facilities to the setup.

Microsoft's PR company speeded round a copy of the software, but a quick perusal of the manual indicated that we're going to need at least 20Mb of memory for BackOffice and the old Mitac only runs to 16Mb. So I rang round to see if I could get hold of some

new hardware, and things are looking promising (in a slow-moving sort of way).

Amazing NTrigue

I came across a brilliant Windows NT software add-on that looked like a real must for this column. It's called NTrigue, from Insignia; the people who wrote the DOS emulation package SoftPC that runs on Apple Macs, NeXTStep and a host of other operating systems. Insignia also produced the DOS emulation that comes with your shrink-wrapped package of Windows NT, so Microsoft must think the company is pretty good.

This is the PEP PC NeXT machine with Cub'XWindow loaded. On the left you can see SMIT, the Aix system management interface tool, which is really running on the Aix box, as is the left-hand clock. The two clocks are slightly out of time, because the other one is running on a Linux machine, as is Xtetriz and Xadmin



NTrigue is amazing. What it does is to create Windows NT sessions on the server and convert them to X. This means you can pop them up on any other system on the network that is running X server software.

Most of the operating systems I have running here have their own ways of running Windows applications locally — AIX has Wabi, Linux has WINE, OS/2 has WinOS2 and the NeXT machine uses Insignia's SoftPC.

The advantage of NTrigue is that it doesn't need to kludge the emulation, doesn't use up your local processing power and can run 32-bit apps as well as 16-bit apps. In fact, it can do anything that Windows NT can do — unsurprising, because it is Windows NT, but it's Windows NT piped over the network to any X machine on which you care to run it.

I wanted to get all this set up in time for some screenshots this month, but alas, the complexity of Windows NT has defeated me. As it doesn't come with telnet, you need to start the X client session by running rsh, the remote shell. This doesn't seem to work in a way consistent with Unix, and I'm struggling to pick my way through the permissions associated with Windows NT's stringent security and the security lock codes required by NTrigue's licensing.

The frustrating thing is that the X server end of this, running on the workstations, is all sorted out. X is integral with Linux and AIX, of course, and I've had IBM's own, somewhat clunky, PMX running on the OS/2 machine for a couple of months now, as I've shown you in past screenshots. This means that Sokoban, say, running under Linux, can be popped up in an X Window on my Warp machine, next to a copy of the AIX box's system manager, SMIT. I really could (and maybe I should) devote an entire month's column to the joys of X.

PEP talk

The PEP PC NeXT machine is the latest recruit to the amazing movable feast that is X. Out of the box, NeXTStep is almost unique among Unices in not using X as its graphical display interface. Instead, it has its own front-end mechanism based on Display PostScript.

Display PostScript windows can be exchanged between NeXT machines with the same sort of freedom as X between X

boxes — rather more freely, in fact, because you cut through problems colour and font matching. What this means, though, is that NeXTStep out of the box can't share in the X-swapping orgy with other non-NeXT machines.

Cub'XWindow

Which is where Cub'XWindow comes in. It's a NeXTStep application that installs off a CD-ROM (150Mb, if you want all the development stuff as well) and gives the NeXT workstation all the features you'd expect from a good X terminal.

You can run it full-screen, as a switchable alternative to the NeXTStep display, or you can run it as X windows floating on top of the NeXT desktop. It comes with a whole raft of options, like the choice of look-and-feel between Motif (the prevailing standard for X), fwm (the chief contender from GNU) or bowman (a clever GNU alternative that makes the X windows look and behave like NeXTStep windows. Cub'X Window can also behave simultaneously like two separate X servers.

As with any X server you can copy and paste between X windows and X and native NeXTStep windows. You can also use the NeXT Grab application to copy graphics that appear in X windows.

You'll see from the screenshots on these pages that this is all working a treat. Next month, hopefully, I'll be able to show you one of those windows running a Windows NT application.

On the brink

This month I received two closely-typed pages from Catherine Palmer, a computer veteran who says she's been reading PCW since the days of the ZX81, and has recently arrived at Linux by way of CP/M and the Amiga.

Well, perhaps not quite arrived at Linux yet, as she's trembling on the brink of partitioning one of her hard disks to make room for the version that comes on the three CDs bundled with a tome called *Linux — Unleashing the Workstation in Your PC*.

She also wants to leave herself the option of upgrading her Windows 3.1 installation to Windows 95, but has heard that Linux and Windows 95 are likely to

get into a squabble over the master boot record (MBR).

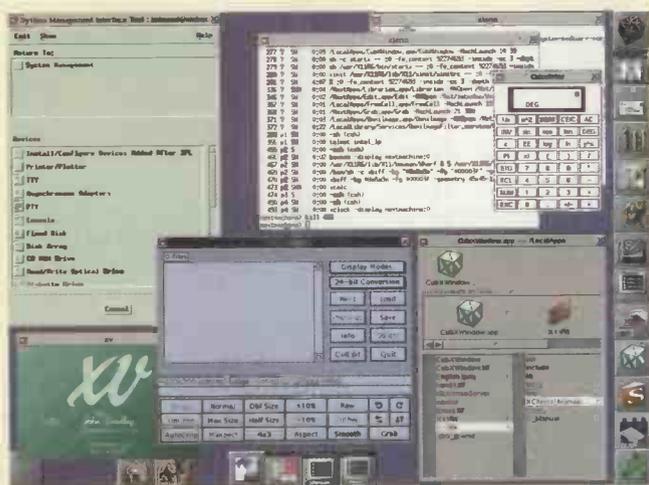
A sharp little PS to her fax asks: "If these questions do warrant a reply in the magazine, how many months would it be before the answers are published?"

Faxes about Linux make my heart sink, firstly because unless I bin them they swell the sea of paper that clogs my office and this one was too interesting to bin; and secondly, because they are a pretty clear indication that the sender doesn't have an Internet connection — I'll come to the implications of that in a minute.

I won't list Catherine's questions in detail, or give you a blow by blow account of the long phone call we had, but here's the gist of it. Catherine, if you're going to install Linux into an existing working system that you hope to keep working, I've got two general pieces of advice. I can give you some specifics about what to watch out for with the MBR but some of them won't apply to your system, and some may even be out of date, or just plain wrong. Your system will die altogether, and then you are going to fax me back and get upset.

Be safe, back up

So, General Principle Number One is to get some backup. I've said it before in this column, and you're going to go on hearing it from me: reliable backup is what gives you the freedom to mess about with your system. Linux in particular is a moving target, and whatever you read in books or



The Mosaic windows in the previous picture have their close control on the left, following the example of Microsoft Windows. But Cub'XWindow also comes with Bowman, a variant of the freeware X Window manager, FVWM. Bowman produces X windows in the NeXTStep format, with the close control on the right, where NeXT users expect to find it

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Linux: the Bosnian perspective

I have received an amazing email, over a thousand words long, from a Bosnian reader, Boris Stojnic.

He tells me he's spent the past four years in London as a refugee, and goes on to say: "...one of the very important elements in the rebuilding of my personal life and career was renewed interest in computing. The opportunity to compensate for all the loss I have suffered through work really makes me feel happy again." And here's the bit that really got to me: "And that interest was literally triggered by the series of your articles about Linux."

Obviously, I feel somewhat humbled by this. The struggles I have here with a dozen machines running various operating systems can get pretty stressful at times, but Boris's email puts my own emotional turmoil into perspective.

I can't begin to understand what you've been through, Boris, but I'm very pleased that you share an enthusiasm for Linux, not just because it's a damn good operating system, but also because as "Free Software" it stands for something other than just a technical achievement. "All I know now is that I am so fascinated with the concept of free software, and Linux in particular, that I feel a strong urge to contribute in a way that will promote that concept and allow me to build my own career around that," you write.

I see that you're getting together with friends to develop your own Linux distribution. This is excellent news, especially for the sort of people you're targetting: end-users who, up until now, may have been, as you put it, "scared off with warnings that Linux is for techies." I've talked before in this column about the meaning that Richard Stallman (father of the Free Software Foundation) gives to the word "free" in this context — it's a moral rather than a financial dimension — and you take the thought a step further: "I personally feel that free software will become free only when free from prejudice and misconceptions passed on by the few enlightened, who see it as a field in which to prove their own superiority or talent... I am sorry that this sounds so judgmental and rude..."

Not at all. Your point, if I understand you correctly, is that Linux comes as a welcome antidote to what you call "the bullying world of

Windows and proprietary software", but that somehow this breath of fresh air gets tainted by elitism. GNU folks who are writing software, not for the loot, are doing it for the glory — vain-glory, you suggest. You'd like to see a democratisation of Linux that left us free to get on with using it without having to kow-tow to the gurus at every twist and turn.

I think you strike a hard bargain, Boris. I'm deeply indebted to Stallman, Linus Torvalds, and the very bright people who put Linux together. If they do need me to tell them, from time to time, how smart they are (and I don't actually think they do) I am only too happy to oblige.

I think I understand why you don't want Linux to become the basis of a new kind of technological aristocracy, but I'm not at all sure that your solution is the way to go. You suggest that it should be possible to create a self-sufficient Linux distribution, with bound manuals and a fully-automated installation, that cuts us clear of any dependency on gurus.

Why does this make me think of the birth of Protestantism? Frankly, I see things moving in other directions. You can't, I suggest, freeze and encapsulate the goodness of Linux: that's the old software-as-product type of thinking that padded out the packages with expanded polystyrene so they'd take up more room on the dealers' shelves in the mid-eighties.

Software today floats around the universe in a state of flux and you grab what you need, sufficient unto the day, and then, as I was saying to Catherine Palmer (see "On the brink", page 275), you grab who you need to make it work.

There's a lot more contained in your letter to which I'm never going to find space to reply here, but I think I've picked up your main point.

You write: "I am sorry I made this letter so long; don't want to keep you away from your work." — Boris, this is my work. Thanks for your help with it.

● If you want to find out more about Boris's ideas for Linux distribution, his email address is 101463.3703@compuserve.com

hear from me about it is going to have some room for error.

I can't be prescriptive. I can't say: do this, do that, and everything will work. Every sensible system should have backup anyway, and systems you are going to rebuild and improve need it even more.

The MBR, which sits on the first sector of the disk and decides where the processor is going to find its operating system at

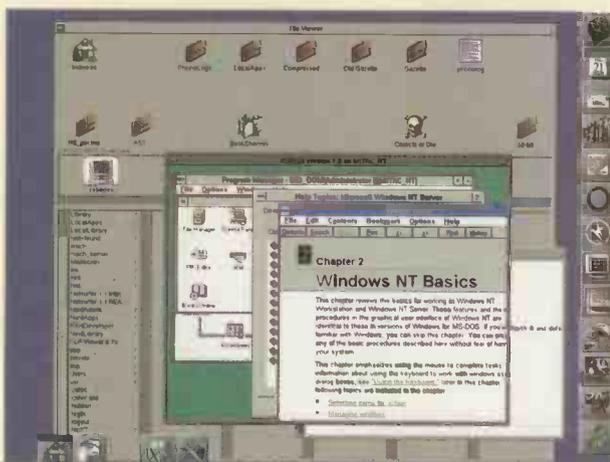
bootup time, needs special attention as it will usually be overlooked by a file-based backup system. You can bring your system to its knees if even one byte in there goes wrong, but the corollary is that MBR problems are usually a cinch to fix if you know what you're doing.

DOS-bound users need to investigate the Norton Utilities, which know how to save the MBR as a file and restore it as

necessary. If you're running Linux you can use the powerful, low-level dd command for doing the same thing (man dd will reveal all — but tread carefully). And as a fallback position, most versions of the DOS partition utility, FDISK, can restore the MBR to the DOS boot standard if you run it with the /mbr parameter.

So, Get Backed Up is the first general principle. The second is Get Connected. Fax is 1970s technology. Linux was born on the Internet and Linux users, particularly if they want to get adventurous, should be connected to it. A full World Wide Web connection is probably best, but plain ASCII email definitely is not to be sneered at. There's a wealth of information out there, and (if you ask nicely) people will be prepared to listen to your specific problems and talk you through them.

STOP PRESS: Only a couple of hours after I'd filed my admission of defeat about getting NTTrigue to run, I managed to crack it. Here to prove it is Windows NT running on the PeP PC NeXT desktop. Tune in next month for the full story



PCW Contacts

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Type cast

Tim Phillips tackles TrueType fonts, and explains the four variations of embedding technique.

Fonts, fonts, fonts, fonts, marching up and down again" as Rudyard Kipling might have written on his word processor, had he lived in the TrueType age. There seems to be a lot of confusion about TrueType and the differences between TrueType fonts, so here's a quick explanation and glossary of terms.

TrueType is Microsoft's open font format, which was designed to improve on PostScript Type 1 fonts. Because TrueType fonts are supplied with Windows, they have very quickly come to dominate the font scene, and there's no reason why not: they are a good standard and in some ways better than PostScript.

Some history: the first fonts were "bitmap" fonts, drawn as a series of pixels, like coloring in squares in a grid. This was fine at the resolution intended, but once you make a bitmap font bigger, the pixelated appearance makes the shape "blocky".

PostScript changed the rules by describing each letter as a set of mathematical rules, which were represented as bitmaps on screen. PostScript fonts gave the best resolution possible for each device, be it a screen, a printer or a typesetter, without the need to change the font.

The problem is that screen-based fonts are often small, and screens have a terrible resolution — a quarter that of the worst laser printer. When the font is displayed in a small typeface, it can be unreadable, especially with letters that contain a lot of curves. The answer is a

technique called "hinting".

Hinting takes the outline of a small letter and selectively fills in a few more pixels to make it legible. This used to happen in the old days, when fonts were made of lead; small letters used to be heavier and broader. PostScript has hinting, but it is very basic. TrueType's is far better.

Embedding fonts

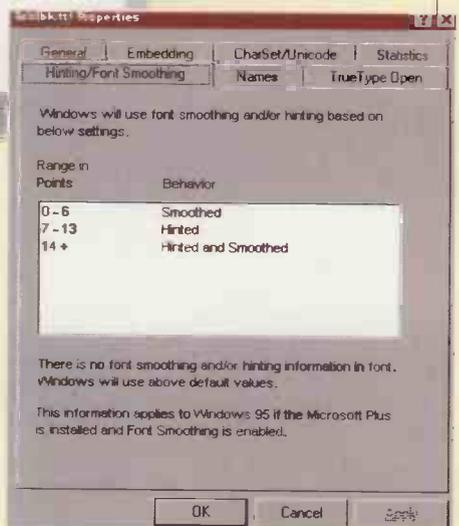
In order to view a font, you must have it on your system. TrueType fonts are embedded in your document (that's why a word processor document with lots of fonts is so huge). But all embedding is not the same — in fact, there are four types of embedding.

The best is *installable embedding*. That means the font is effectively freeware, is embedded in the document and will install on any other PC that uses the document. The basic Windows fonts like Times New Roman are installable.

Next is *editable embedding*. This means that the recipient can temporarily

Left Go to Explorer to look at your fonts — see which ones are similar. It's useful if you want to get rid of similar fonts to reclaim hard disk space

Below Properties.dll gives you an excellent source of anorak information on your TrueType fonts



install the font on his or her PC while editing the document — it means, for example, that the font can be resized. The font will not install permanently.

Worse is *Print and Preview embedding*, the standard for commercially supplied fonts: for example, those supplied with another word processor. These are embedded in the document but, as the name suggests, are read-only. That means you can change the text that is displayed in the font.

On to a winning streak

A bumper crop of WinWord hints and tips, this time for those of you who have bought Office 95, in response to several of your frequently asked questions (FAQs). Not surprisingly, these frequently asked questions tied up with Microsoft's own list, which you can find on CompuServe or MSN. I make no claims to originality in these solutions, but I have exhaustively translated them from the original Microsoftese dialect. I am also in possession of the Word 6 list, so I'll be matching that with your FAQs next month.

Q. Gosh, it says "Unable to open specified library" and my old add-ins like Internet Assistant and Word Assistant don't work with Word for Windows 95. Why?

A. This is because the old components are 16-bit code and the new ones are 32-bit. "Unable to open specified library" means that the DLL you're accessing is 16-bit. If you're a macro programmer and you use Declare statements to access Windows API functions, you may know this one. You will also get WordBasic errors in Word for Windows 95 by using 16-bit macros with the instructions FileOpen, FileSave, and FileSaveAs. The macros may make invalid 16-bit API calls, or get confused by long filenames.

To stop the problem happening, delete templates and add-ins from the Word Startup folder. Use the Organizer, which is located in the Tools, Macros dialogue box to temporarily rename any FileOpen, FileSave, or FileSaveAs macros. Then rewrite them.

Q. The Open dialogue box is impossible, isn't it?

A. Yes. Action plan: make sure the option to Search Subfolders is not checked. This makes the search take ages and brings up too many files. It's only for use when you search for specific wildcards. Click Advanced and clear the check box. Then use the My Favourites folder and dump frequently-used documents in it. Create shortcuts to documents here. Then learn to use the buttons at the top of the box (see screenshot, below): Details, Properties, and Preview buttons are all useful, especially the preview button, as it is much faster than other wp previews. I leave this as my default. Additionally:

List: filenames listed in columns, from left to right.

Details: more information about the file (size, type, and date the file was last modified).

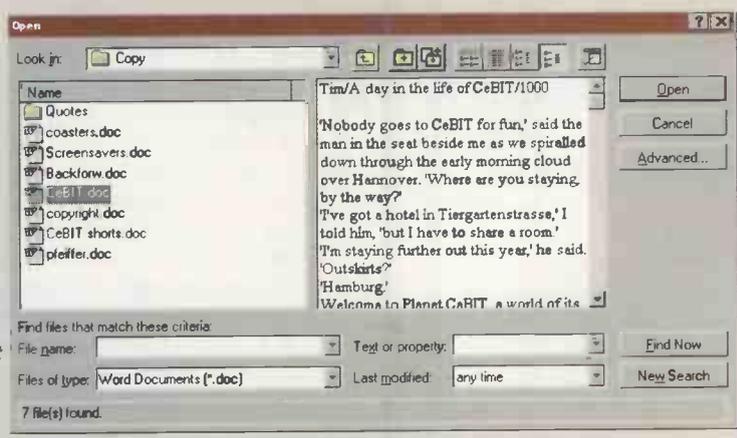
Properties: a two-paned window is displayed that shows filenames and folder tree in the left pane and the document statistics and summary information for the selected file in the right pane.

Q. Oi, where's the Grammar Checker and WordArt gone, then?

A. You installed the default setup, which doesn't include them. I agree with this, especially as I was so rude about grammar checkers in a recent column.

To install WordArt and the Grammar Checker, run Setup again. To start Maintenance Setup, find the Office folder and double-click Setup. Click Add/Remove, and you will find WordArt in Office Tools and the Grammar checker in Microsoft Word Proofing Tools.

The Open dialogue in Winword, showing the preview view. Try it, you'll be surprised at how quick it is



Nastiest of all are the *restricted licence fonts*, which do not embed at all. Use one of these in a document, pass the document on, and the recipient has to install the font separately before it can be viewed.

If you want to know more about your fonts under Windows 95, I suggest you mail me and request a file called Proper-

ties.zip. It installs as a .DLL and displays all the information about that font when you right-click on the font icon (in the Fonts directory in Windows). The screenshot (left) shows what it does. It's a little on the nerdy side, but potentially useful nevertheless. There'll be more on the subject of fonts next month.

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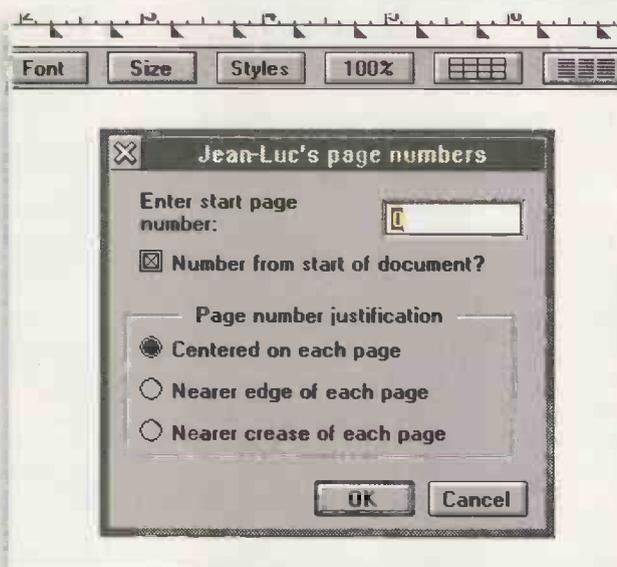
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Tim's incredibly popular macro club

"Go on, you can all come in," he said, door policy not being a phrase in my vocabulary. And you know what else? I'm not only going to pass you a WordPerfect macro, but a really long one, too.

It's so long, in fact, that I've had to put it on this month's cover-mounted CD-ROM. If you are a WordPerfect user and you can't get it off the CD-ROM, I'll mail you a copy.

The macro in question is from the admirable Jean-Luc Addams, who has risen to meet the challenge of writing a macro to publish booklets in Landscape A5 format. It handles justification and a starting page



Jean-Luc Addams' WordPerfect 5.2 macro in operation. Simple, but effective in a time of need for all WordPerfect users

number, and uses a dialogue box to start things off. If you want to save time you can leave out the documentation, but I left it in.

When the macro is running, it will place a number at the bottom of each column of text; at two columns across an A5 landscape page, you have a booklet. (Monsieur Addams has also provided a great initial caps macro, which I'm saving for next month.)

Now, all you so-called WordBasic programmers, get to it.

Finally, just a quick word for the user who asked me how to type in a macro: under Word, select Tools, Macros, New. Under other software it's similar but I recommend you look it up in the manual. If you can't find it, you've got one of those word processors where macros are meaningless.

Under new management

WordPerfect offers some good news for confused users. The free support that used to be a major selling point of the product (and which was discontinued by Novell) will be reinstated. Corel will be selling PerfectOffice as Corel WordPerfect Suite and Corel Office Professional (to be reviewed in PCW soon).

The 32-bit version is now targeted for June delivery, only a year after Microsoft Office became available in a 32-bit ver-

sion, and Corel is promising a whole rash of widget-sized utilities to make the suite more attractive. These include the Sidekick information manager, and Dashboard, a program manager replacement that is largely redundant under Windows 95 and, based on my limited exposure to it, positively irritating.

Corel admits to a seven percent market share: half that of Lotus. The remainder of the applications market is mopped up by you-know-who.

More on those pesky viruses

They might well have pooh-pooed me when I forecast terrible consequences after the first word processor macro virus was created, but I was right: the US-based National Computer Security Association (NCSA) has found the Word "Concept" virus to be the world's most, er, "popular" virus.

For those of you lucky enough not to be familiar with viruses, let's recap. A word processor hosts a virus which lives inside a document. The document contains an auto-execute macro, which spreads the virus when the document is loaded.

Concept was the first of its type and despite Microsoft having tried to label it as a "prank macro", it is still a virus.

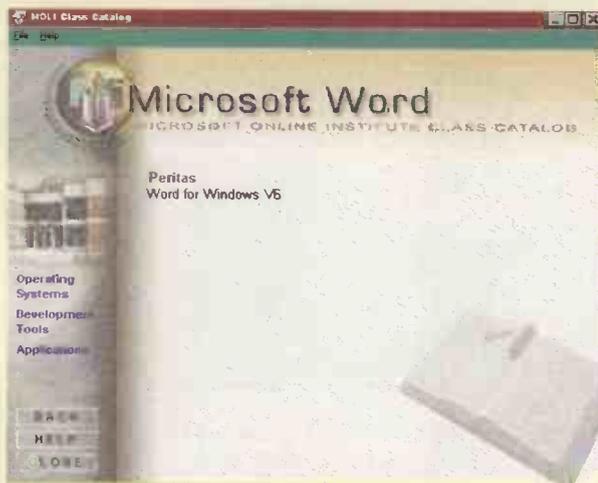
At the NCSA's January conference, 90 percent of attendees had been infected in the past year. Concept is the most prevalent; it spreads quicker than traditional viruses, because more people swap documents than exchange executables.

● If you want to check whether you have Concept, look at Tools/Macros. If you have a macro whose name begins with "aaa", you've got it: so contact Microsoft and get a fix for it, which also inoculates you. It's available from www.microsoft.com as well.

Learning online

The Microsoft Network had to be good for something. Although I can't personally vouch for the quality, you might be interested in trying out its online application training conferences. There's only one for Microsoft Word at the moment (unsurprisingly, nothing for any other package) but at \$120 (about £80) it is cheaper than formal training. You have a series of online tutorials and the chance to enter into some chat sessions with other learners.

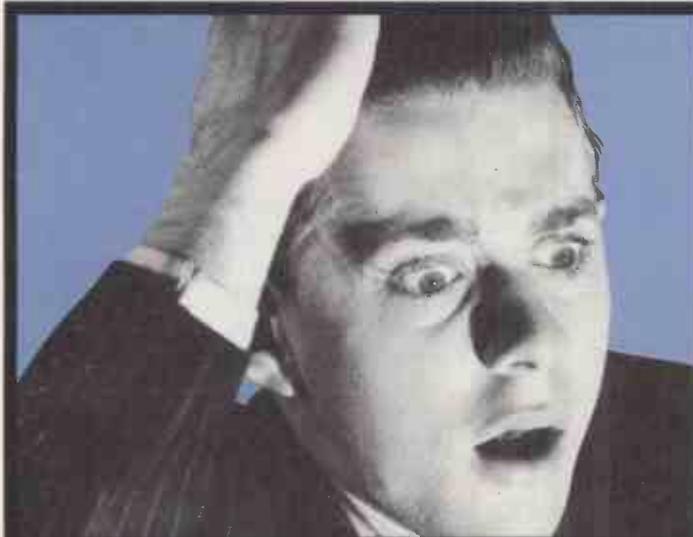
If anyone has been brave enough to give online learning a try, let me know what it was like and I'll pass on your views.



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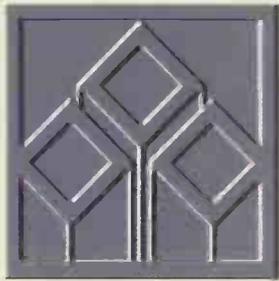
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Just in time

Without a big computerised system, how do you keep track of your business? Stephen Wells has a suggestion. Plus, Excel's Camera gets cute.

Excess warehousing is anathema to manufacturing companies. Having raw materials, parts or finished product sitting around is not an efficient use of assets. Storing, insuring, and handling depreciating stock just adds to costs. That's why the theory of Just In Time became popular. In large companies, MRP (Materials Resource Planning) is considered a vital element of manufacturing. They want new supplies to arrive in the nick of time, but not before.

But what of small companies? They can't afford massive computerised systems. No problem, while there are resourceful managers like Steve Evans who works for a company near Pontypridd, Mid Glamorgan, that makes a highly specialised medical product. I won't

tell you what it is or you'll feel queasy. But the relevant point is that the component parts are expensive and date quickly, so he's devised an Excel worksheet which tells him when to order them (Fig 1).

The original covers six months and includes a long list of component parts. I've just shown a snippet or you wouldn't be able to read it.

Cell A7 has the TODAY() function. The rest of column A is for the part numbers that require tracking. Column B displays the parts descriptions.

C14 to I14 are the codes for the products to be built. C16 to I22, in this brief example, contain the number of each part contained within each of the products — effectively a parts list. Thus products A, V and O each need one of the first

four listed parts.

J16 to J22 contain the current stock levels for each part. These are typed in by hand. M4 contains a date within the first month of production being monitored. The following five months run on out to the right in a similar fashion.

K6 to L2 contain the products to be built again (with a fuller description) and L6 to L12 the quantity planned to be built. This is repeated in the following periods.

K16 calculates the total number of the part on row 16 required during the period. The formula is

```
=SUM((L$6*C16)+(L$7*D16)+(L$8*E16)+(L$9*F16)+(L$10*G16)+(L$11*H16)+(L$12*I16))
```

The quantity to be built is given in absolute terms so the formula can be dragged down the column.

Incidentally, I can't help thinking there should be some way of multiplying named ranges as an array and simplifying that formula. If any reader has an idea on that I'd be glad to hear from them.

L16 is a simple calculation of the current stock levels minus the quantity required that period:

```
=SUM($J16-$K16)
```

The formatting is in red to show up when to order, and in this case they are short of 427 parts.

In the next column, M16 looks at the value in L16 by the function

```
=IF(L16 < 1, M$4-56, "")
```

If it is less than 1 (negative) then this part needs to be ordered. The date the order should be placed allows for a delivery time from the supplier of 8 weeks. So, 56 days are subtracted from the date in M4. If the value in L16 is greater than 1, then no date is displayed. This is repeated for the remainder of the parts for that period and subsequent periods.

Staffing up

The second spreadsheet from Steve Evans reminded me of a song from The Pyjama Game, the musical about factory unions: "Seven and a half cents doesn't seem a helluva lot..."

They were fighting for higher rates paid per hour. Today, the negotiation is over the number of hours worked. Fortunately for manufacturers, there are more people today who want to work part-time. In this factory, Steve tells me, about 20% of the employees do not work full time, so he also uses a spreadsheet to calculate

Calculating the number of parts to order and when to order them for a specialised medical manufacturing company

Microsoft Excel - Production Plan.xls													
File Edit View Insert Format Tools Data Window Help													
M22 =IF(L22 < 1, M\$4-56, "")													
	A	B	C	D	E	F	G	H	I	J	K	L	M
4											Month 1		6/6/96
5											Prod Qty		
6	Run on										Audio	50	
7	30/3/96										2KHz Pr	25	
8											5KHz Pr	25	
9											Vert	50	
10											Obscure	400	
11											FM10	30	
12											FM60	30	
13	Parts	Description	Qty per product			Stock			Prod Qty	Stock	Date to		
14	Req'd		A	2	5	V	O	10	60		left	Order	
15													
16	1020-1003	Front Cover Stainless	1	0	0	1	1	0	0	73	500	-427	11/4/96
17	1020-1004	Rear Cover Stainless	1	0	0	1	1	0	0	11	500	-489	11/4/96
18	1020-1005	Blanking Plate	1	0	0	1	1	0	0	1911	500	1,411	
19	1020-1100	Pocket clip	1	0	0	1	1	0	0	438	500	-64	11/4/96
20	1020-1300	Vascular faceplate	0	0	1	1	0	0	0	631	75	556	
21	1020-1310	Vascular nose cone	0	0	1	1	0	0	0	486	75	411	
22	1020-3278	Probe Cable clamp	0	1	1	1	1	1	1	1,428	560	868	

Calculating the number of part-time workers who will be needed during specified periods in the same company

Product	Time	Time	Time	Time	Period 1	June	Period 2	July
OB	0.1125	0.525	1.15	0.25	200	22.5	105	230
VAS	0.225	1.125	1.313	0.25	0	0	0	0
Audio	0.9	0.825	0.25	0	40	0	35	25
2MHz Pr	0.1125	0.275	0.8	0.1	40	4.5	11	25
4.5MHz Pr	0.225	0.225	0.51	0.1	25	5.625	12.75	2.5
8MHz Pr	0.25	0.225	0.81	0.2	0	0	0	0
Inducer Total						32.625		92.913
PCB Total							157.8	267.8
Asny Total								66.5
Test Total								550.5
Total Hrs								5.4367

staffing requirements (Fig 2). I've had to eliminate a lot of his attractive spacing and formatting to capture all the essential parts in one screen.

In the block B7:E17 is recorded the time, in parts of an hour, it takes to make, assemble and test each part or sub-assembly. The quantity of each assembly needed in the first period is recorded in column F. In columns G to J are the total hours to be taken for each type of work. The same calculations for further periods continue in columns out to the right.

In rows 19 to 22 it is therefore possible to total the number of hours of work required in the period for each speciality. The total hours to be worked is given in row 24.

To this has to be added a weighting for typical sickness, holidays and the traditional tea-breaks here entered in rows 27 to 29.

The sum of all these hours is now divided by 150 in row 31. This is the figure that they use as total working hours in the month. (They must spend Friday afternoons at choir practice.)

And so it is that row 31 indicates that, arithmetically, 5.4367 people are required for these duties in this month. This is then broken down into the number of people required in each production section and displayed in cells G33 to J33. The formula in G32, for instance, is

```
=SUM((G19+(I27+I28+I29)/4)/150)
```

The system has also been used to calculate the effect of changing the batch size of various products. This has required the expansion of each of the sub-assembly times to include setup time and run time.

Setup will usually take the same amount of time regardless of how many products are required to be made, whether 1 or 1,000. Run time is directly related to how many are required; therefore, changing the batch size has a direct relationship to the productivity of the manufacturing unit.

I've included these two spreadsheets this month not because they make any startling breakthroughs in application development, but, their very existence is indicative of the advances which have been made in the last decade. Now we

have managers in small companies showing initiative and using spreadsheets to improve their efficiency.

Meanwhile, back at the hospital

Speaking of things medical, I've received a follow-up email from Dr H Baillie-Johnson whom you met in the March column. He had asked for a macro for entering and shifting data, and I gave him an auto-recorded one as it's the fastest way to program in VBA (Visual Basic for Applications). I was grateful at the time to the smart sub-editor who italicised my comment that, medically speaking, the example I gave was nonsense.

I'm even more grateful now when I find out what Dr B-J does with his spreadsheet. After praising my "elegant solution", he says he uses it to help calculate doses for ten different drug cocktails used in cancer chemotherapy. I tell you, I went cold. I didn't know whether to be honoured to have made a minuscule contribution to medical science, or scared witless in case I'd made a mistake. There are times, dear readers, when I'd rather not know what you're doing.

A reader who has concealed his application well is Mark Campbell, an NHS unit manager in Newcastle. He emailed a problem with an attached file to illustrate it.

Mark's using Excel 5. His nose is out of joint because the Apply-to-all checkbox option in Excel 4's Format, Patterns dialogue box has disappeared in version 5. He wants to be able to create a multiple-series line chart with all the markers the same size, shape and colour. Goodness knows why, but with these medical chaps I don't ask.

"I can Format, Patterns as many times as needed, but this is tedious when we often have more than 60 series," he says.

Well, what I'd do is select Tools, Record New Macro, then go through it once. Apply a shortcut key to the macro. Then, in future, you just have to double-

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click the chart to select it, and press Ctrl+f or whatever you've chosen.

That's how I initially produced the following macro to do the job. Then I tightened it up by putting the main routine in a GoSub statement and substituting the variable X for the number of the series.

When viewing the module sheet, you can see all the possible colour reference numbers, from 1 to 56, by clicking on the keyword,

MarkerBackgroundColorIndex and pressing F1. Similarly, you can see the descriptions of all the shapes available for Markers by clicking on MarkerStyle and pressing F1.

To use this macro, just choose Insert, Macro, Module then type in the listing. The new sheet will appear as the last tab but you can move it up front easily with a right-click. And you can rename it with a double-click.

The listing is shown in Fig 3.

Photo fit

Here's the cutest idea I've seen in a long time. I downloaded the gist of it from the Excel Forum, though I've refined the idea.

I've always known that if I made an entry into an Excel spreadsheet cell, an

existing content would be deleted. Also, a function statement always has to refer to any other cell(s) than the one it is in. I was wrong on both counts.

Supposing you want a form just to display capitals. If the user enters n, for no, or y for yes, then the cell would display N or Y.

You could write a macro but it's not necessary. What you need is the Camera tool. If you can't find it, go to View, Toolbars, Customise, Utility. Then drag and drop it on to any toolbar.

Let's assume you want the entry cell to be D7. Go to some distant cell, say AZ90, and enter =UPPER(D7). Then select cell AZ90 and click the Camera button, hold down the Alt key and click on cell D7. What you're doing is creating a picture of the formula.

Now, while the object is still selected, choose Format, Object, Border - None; and Fill - None. This conceals the object.

Click elsewhere on the sheet to de-

Fig 3 Medical checkbox macro

```
Option Explicit
' Formatting Macro
' Keyboard Shortcut: Ctrl+f
Sub Formatting()
Dim X
X = 0
For X = 1 To 60
ActiveChart.SeriesCollection(X).Select
GoSub Routine
Next
Exit Sub
Routine:
With Selection
.MarkerBackgroundColorIndex = 5
.MarkerForegroundColorIndex = 5
.MarkerStyle = xlCircle
End With
Return
End Sub
```

select the object, and then select cell D7 and choose Format, Font, Colour - White. This hides the new entry so if you enter any lower-case letters, they only display as capitals.

A variation is to use another formula. For instance,

```
=IF(D7="y","Y",IF(D7="n","N",D7))
```

would only capitalise those two letters and not any others. You could as easily turn an entered "n" into "NO" or any word.

Ain't misbehaving

Ask not why your spreadsheet is messing you up. Ask if you're messing up your spreadsheet.

The cursor moves to the right after you've made an entry and pressed Enter. In Excel, you can clear the Move Selection After checkbox under Tools, Options, Edit in Excel. In practically any spreadsheet, you can press the arrow key for the direction of your choice after entry. It will also finalise the entry.

Your printout is not as you intended. Always mark the Print Area before you start; and go through the many options under File, Page Set-up carefully. Check the orientation, margins, scaling, headers and footers. Also, check the Black and White option if you don't have a colour printer but are displaying colour formatting. It can speed things up.

Converting from 1-2-3 to Excel

In the March column, Denzyl Pereira requested a macro to make a bulk conversion of *.wks files to *.xls and frankly I wasn't that helpful. Now to the rescue comes Chris McCarthy of Birmingham, who has emailed a solution that I've tried and it works for me. The macro found the right files and did the business, as they say in some parts of the capital. Here's the listing:

```
Option Explicit

Dim FileToConvert As String
Dim FileConverted As String

Sub MultipleConvert()
ChDir "C:\windows\temp"
FileToConvert = Dir("*.*.wks")
While FileToConvert <> ""
Workbooks.Open FileToConvert
FileConverted = Left(FileToConvert, Len(FileToConvert) - 3) & ".xls"
ActiveWorkbook.SaveAs Filename:=FileConverted, FileFormat:=xlNormal
ActiveWorkbook.Close saveChanges:=False
Kill FileToConvert
FileToConvert = Dir("*.*.wks")
Wend
MsgBox ("All *.wks files in temp directory converted")
End Sub
```

You can either adjust the instruction to change directories, or copy the files you want to convert in to that directory. I would add that the conversion of the files is done automatically when the macro opens the Lotus 1-2-3 file and uses the SaveAs function to save it in the Excel format. It works just the same as if you did it manually.

As Excel will automatically open files in numerous formats, there are many other options for you than the .wks extension; and you can save the file in a myriad formats by changing the .xlNormal extension.

PCW Contacts

Stephen Wells welcomes comments on spreadsheets, and solutions to be shared, via PCW Editorial at the usual address or Stephen_Wells@msn.com. Files can be attached if you're on MSN.

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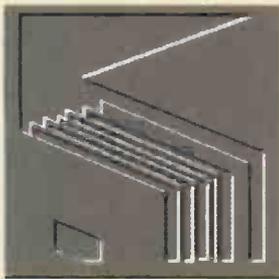
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Meter mania

The meter readings problem has sent Mark Whitehorn's postbag level off the dial and offered up an alternative view.

The meter reading problem which first appeared in the March issue, continues to fascinate people (myself included). One reader is, however, convinced that I have missed the point. He feels that the real problem lies not in the SQL required to extract the data, but way back in the structuring of the original table I supplied. He is convinced that it isn't normalised to third normal form, and that the entire problem is easier to solve if the table is normalised to this level.

Challenging meter reader

The following is paraphrased from several email exchanges on the subject.

"The main problem stems from the fact that you have failed to identify that each meter reading is in itself an item of interest and should therefore have an individual

The original table structure I suggested for the meter problem...

Meter No	Date	Reading
1	18/05/91	20
1	11/11/91	91
1	12/04/92	175
1	21/05/92	214
1	01/07/92	230
1	21/11/92	270
1	12/12/92	290
1	01/04/93	324
2	18/05/91	619
2	17/09/91	712
2	15/03/92	814
2	21/05/92	913
2	17/09/92	1023
3	18/05/91	20612
3	11/11/91	21112
3	15/03/92	21143
3	21/05/92	21223
3	17/09/92	21456
3	21/03/93	22343

Reading No	Meter	Date	Reading	Previous Reading
1	1	18/05/91	20	20
2	2	18/05/91	619	619
3	3	19/05/91	20612	20612
4	2	17/09/91	712	619
5	1	11/11/91	91	20
6	3	11/11/91	21112	20612
7	2	15/03/92	814	712
8	3	15/03/92	21143	21112
9	1	21/05/92	214	175
10	2	21/05/92	913	814
11	3	21/05/92	21223	21143
12	3	17/09/92	21456	21223
13	2	17/09/92	1023	913
14	3	21/03/93	22343	21456
15	1	12/04/92	175	91
16	1	01/07/92	230	214
17	1	21/11/92	270	230
18	1	12/12/92	290	270
19	1	01/04/93	324	290

...and the table suggested by a reader. Which one is normalised? Which one will be faster to query?

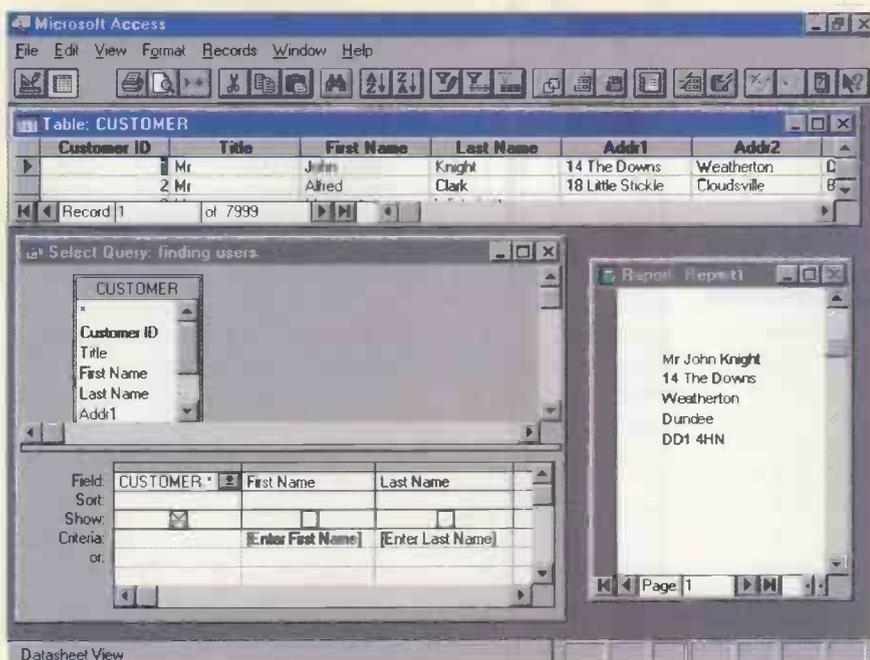
unique identifier. It is often true that combining data fields in order to arrive at a unique index means that the data design is potentially incomplete. It can be useful to retrieve items in this way as it may speed up searching, but it is often more desirable to have a separate unique item key.

"Thus, by adding (as a counter type) a ReadingID field at the front of your table and then the rather obvious PreviousReading at the end, we end up with a five-field table to deal with using ReadingID as the primary key.

"PreviousReading contains the ID of the previous reading and, to make the initial conditions easier, can point to itself if there are no previous readings."

At this point, the discussion moved to one about third normal form:

"Nowhere does it state (in Codd's



rules) that you can simply add together other fields to make up your unique identifier. The use of a single unique key is indeed needed in order to satisfy third normal form.

"This sort of 'I can add things together to make it fit the rules' approach causes more problems than any other aspect of database design. Please go away and re-read Codd. You will see that the only way the data can be produced in third normal form is by the addition of the field I suggest, not by combining two other fields to make it work.

"The solution I proposed in fact meets third normal form, in the same way as yours does. You may just argue that this extra field is redundant as it reproduces the information you already have, but that is to miss the basic advantages and simplification that it gives. You cannot claim that it breaks third normal form. (If you consider that each unique ID only relates to one combination of Meter/Date and vice-versa,

A parameter is easy to set up. Enclosing a criteria entry in [square brackets] means that, when the query runs, it will ask you for the relevant data (shown on the right of the screen)

you will see this.)

"I repeat. If you have to add together two fields to make up a (primary) key, it is almost certain that you have missed the need for a unique identifier. Such was your case. Each record as taken by the meter-reading man stands alone as a separate item and should be identified as such. It may be convenient to refer to it by other fields, but that is not the point."

It is clear that we disagree fundamentally about the way in which this table should be structured in order to comply with the relational model. Inevitably, I think that I am right, but that proves nothing in absolute terms — have you ever met any database people who *didn't* think they were in the right?

More interesting than who is right or wrong is the fact that the two solutions provide an interesting compare and contrast exercise:

1. Which one do you think is flawed in terms of the relation model, and why?
2. To what update and delete anomalies does the flawed one lead?
3. Which one will be faster when queried?
4. What are the implications of using each table in a real database?

Singled out

"Can you tell me how to get access to print one label instead of a complete list?"

ENSC1EM1@tay.ac.uk

The trick is to base your report on a query which lists only the single label that you want to print. In fact, if you want to be flash, you can base the report on a parameter query. A parameter query is one which asks you for the condition (for instance, the name of the person for whom the label is destined) before it runs.

So, when you run the report, it will run the parameter query; the parameter query will ask you for the name, and the report will print the label!

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Table 1

EmployeeNo	FirstName	LastName	DateofBirth	DateEmployed
1	Bilda	Groves	12/04/56	1/5/89
2	John	Greeves	21/03/67	1/1/90
3	Sally	Smith	1/05/67	1/4/92

Table 2

SaleNo	EmployeeNo	Customer	Item	Supplier	Amount
1	1	Simpson	Sofa	Harison	£ 235.67
2	1	Johnson	Chair	Harrison	£ 453.78
3	2	Smith	Stool	Ford	£ 82.78
4	2	Jones	Suite	Harisonn	£3421.00
5	3	Smith	Sofa	Harrison	£ 235.67
6	1	Simpson	Sofa	Harrison	£ 235.67
7	1	Jones	Bed	Ford	£ 453.00

Table 3

SaleNo	EmployeeNo	Customer	Item	Supplier	Amount
3	2	Smith	Stool	Ford	£ 82.78
5	3	Smith	Sofa	Harrison	£ 235.67
213	3	Williams	Suite	Harisonn	£3421.00
216	2	McGreggor	Bed	Ford	£ 453.00
217	1	Williams	Sofa	Harrison	£ 235.67
218	3	Aitken	Sofa	Harison	£ 235.67
225	2	Aitken	Chair	Harrison	£ 453.78

Table 4

SaleNo	EmployeeNo	Customer	Item	Supplier	Amount
1	1	Simpson	Sofa	Harison	£ 235.67
6	1	Simpson	Sofa	Harrison	£ 235.67

● Please email me, or write in and let me know what you think.

Is it a bird? Is it a bug?

The question of speed in the meter problem is also of some interest. The different

and securely, if that is all you ever do with it. Stored data has no value if you cannot question it and extract the data in some way for humans to examine. SQL is the language typically used for data manipulation and this, like most languages, has a

solutions suggested clearly have different speed implications and different update potentials. I started (as promised) to have a look at this, but I have been unable to come to a final conclusion for the intriguing reason that some of the tests are hanging Access. Is it a bird, is it a bug, is it my PC? Microsoft and I are, as we say in the trade, engaging in meaningful discussions. I'll keep you posted.

And so, to SQL

It was clear from the meter problem that many people wanted the subject of SQL covered for its own sake, so here we go. But first, a little background.

Data manipulation is a really important part of the relational model. After all, there is little point in storing data correctly, safely

set of commands. These commands in their turn are based on a set of fundamental operators.

In order to get the best from SQL, it is worth having at least a passing acquaintance with these operators. They are rarely used directly, but in my experience they keep cropping up in conversations about SQL. Knowing nothing about them can leave you at a social disadvantage. Trust me, it's worth knowing.

The only qualifier I need to apply is that the definitions I give are not complete to the relational model. For example, I say below that: "In order for tables to be 'Union Compatible', they must have the same number of fields, and the fields must be of the same data type and size." In fact, to be truly Union compatible, the fields must also draw their values from the same domains.

However, this level of pedantry is counter-productive, since most RDBMSs do not even support domains. So, as in the past, I will sacrifice exact mapping on to the relational model for practicality/readability.

The relational operators

Most of us are familiar with the standard algebraic operators (+, -, * and /) which signify addition, subtraction, multiplication and division. We use these operators to manipulate numerical values, or variables which represent values, almost without thinking. Thus, if we know that

A=5, B=6 and C=10
and that
D=A+(B*(C/A))
we can calculate that
D = 5+(6*(10/5)) = 5+(6*2) = 5+12 = 17
In a database, we store the data in

If I enter "John" in answer to the first question, and "Knight" in answer to the second, then the parameter query will find his one record out of 7999. The report is based on the query, so it prints out only a single address

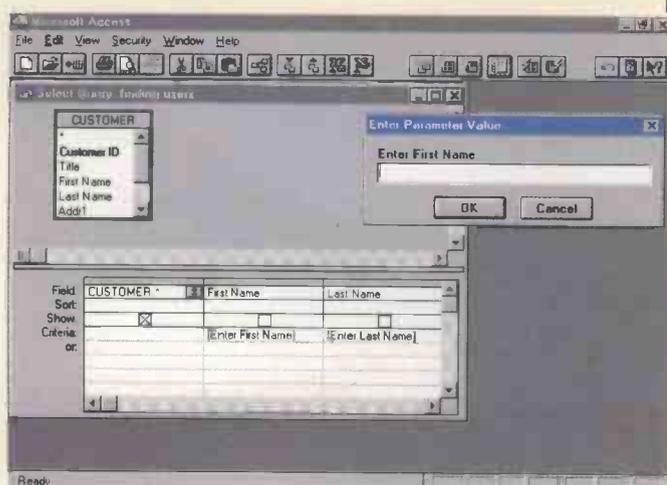


Table 5

SaleNo	EmployeeNo	Customer	Item	Supplier	Amount
1	1	Simpson	Sofa	Harison	£ 235.67
2	1	Johnson	Chair	Harrison	£ 453.78
3	2	Smith	Stool	Ford	£ 82.78
4	2	Jones	Suite	Harisonn	£3421.00
5	3	Smith	Sofa	Harrison	£ 235.67
6	1	Simpson	Sofa	Harrison	£ 235.67
7	1	Jones	Bed	Ford	£ 453.00
213	5	Williams	Suite	Harisonn	£3421.00
216	2	McGreggor	Bed	Ford	£ 453.00
217	1	Williams	Sofa	Harrison	£ 235.67
218	4	Aitken	Sofa	Harison	£ 235.67
225	4	Aitken	Chair	Harrison	£ 453.78

Table 6

SaleNo	EmployeeNo	Customer	Item	Supplier	Amount
3	2	Smith	Stool	Ford	£ 82.78
5	3	Smith	Sofa	Harrison	£235.67

Table 7

SaleNo	EmployeeNo	Customer	Item	Supplier	Amount
1	1	Simpson	Sofa	Harison	£ 235.67
2	1	Johnson	Chair	Harrison	£ 453.78
4	2	Jones	Suite	Harisonn	£3421.00
6	1	Simpson	Sofa	Harrison	£ 235.67
7	1	Jones	Bed	Ford	£ 453.00

Table 8

SaleNo	EmployeeNo	Customer	Item	Supplier	Amount
213	3	Williams	Suite	Harisonn	£3421.00
216	2	McGreggor	Bed	Ford	£ 453.00
217	1	Williams	Sofa	Harrison	£ 235.67
218	3	Aitken	Sofa	Harison	£ 235.67
225	2	Aitken	Chair	Harrison	£ 453.78

Table 9

SaleNo	EmployeeNo	Customer	Item	Supplier	Amount
3	2	Smith	Stool	Ford	£ 82.78
5	3	Smith	Sofa	Harrison	£235.67

Table 10

SaleNo	EmployeeNo	Customer	Item	Supplier	Amount
3	2	Smith	Stool	Ford	£ 82.78
5	3	Smith	Sofa	Harrison	£235.67

tables (also known as relations) and the relational model provides a set of operators (known, therefore, as relational operators) with which we can manipulate tables (that is to say, relations). The discerning, sensitive reader will have noticed that I am showing a slight tendency to slip into "database-speak" at this point. I do so only because, without using the terms, expressions such as "Relational Operators" do not make much sense.

However, it is worth noting before we begin that tables are relations, and relations are sets. Four of the relational operators (Union, Difference, Intersection and Product) allow us to perform traditional set operations.

In order to demonstrate these operators we need a sample table or three (see Tables 1, 2 and 3).

Restrict (aka Select)

Restrict simply extracts records from a table. Thus, if we perform a restriction on the table SALES where (Customer) = "Simpson", the result would be as shown in Table 4.

Union

Union creates a new table by adding the records of one table to those of another. Clearly, for this to work well it is essential

that the tables have the same structure. The union of tables *Sales* and *Employees* is unimaginable because the two tables are clearly very different in structure. In order for tables to be "Union Compatible", they must have the same number of fields, and the fields must be of the same data type and size. The tables (*Sales* and *Sales2*) are "union compatible" and the result would be as shown in Table 5.

Note that the two records shown in Table 6 were shared by the two tables, but have appeared only once each in the ANSWER (Table 5). The order in which records appear in the result of a union is unimportant, but duplicate records are eliminated.

Difference

The difference of two tables is a third table which contains the records which appear in the first but *not* in the second. The tables concerned must be union compatible. Thus the difference of SALES (Table 2) and SALES2 (Table 3) is shown in Table 7.

Note that, unlike Union, the order of the tables is vital. Thus the difference of SALES2 and SALES is not the same (Table 8). However, the records that are "missing" from the two ANSWER tables are the same (Table 9). That is, in both cases it is the records that are common to both of the tables involved in the difference operation.

Intersection

The intersection of two tables is a third table which contains the records common to both of them. Thus, the intersection of SALES and SALES2 is shown in Table 10.

Unlike the difference operation, the order of the tables is unimportant, but, of course, the two tables must be union compatible.

PCW Contacts

Mark Whitehorn welcomes readers' correspondence and ideas for the Databases column. He's available on m.whitehorn@dundee.ac.uk

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Seven Software Servers

The idea is that any combination will work together, meaning the user should have to do less work. Terence Green tries it out. Plus, more new OS/2 utilities.

I've been using OS/2 as my primary desktop system for some years now and have become inured to the endless number of "OS/2 is dead" stories. So it was no surprise when the story re-appeared following the news that OS/2 for the PowerPC was being put on the back burner for 1996, while IBM went at the Intel version.

So many people believe that anything associated with IBM and OS/2 is bad that even when the company finally makes a serious public commitment to OS/2, the story is spun around. There are millions of Intel PCs out there. There are very few PowerPC systems. Where would you put your development for 1996?

So far this year we've had Warp Server

and IBM Software Servers, announced and shipping. There's also a Secure Internet Connection Server and browser which makes business on the Web less dicey. A Java-enabled Web Explorer should be around by the time this issue is in your hands. Merlin, the next revision of Warp, should be in Beta by then, too. And Warp SMP is nearly ready to roll.

Still, I expect the noise to become even worse now that IBM Software Servers have been announced with a commitment to ship them on Windows NT as well as OS/2 and AIX.

IBM supporting Windows NT? This couldn't possibly mean that IBM has recognised the reality of open distributed systems could it? But it *must* mean that.

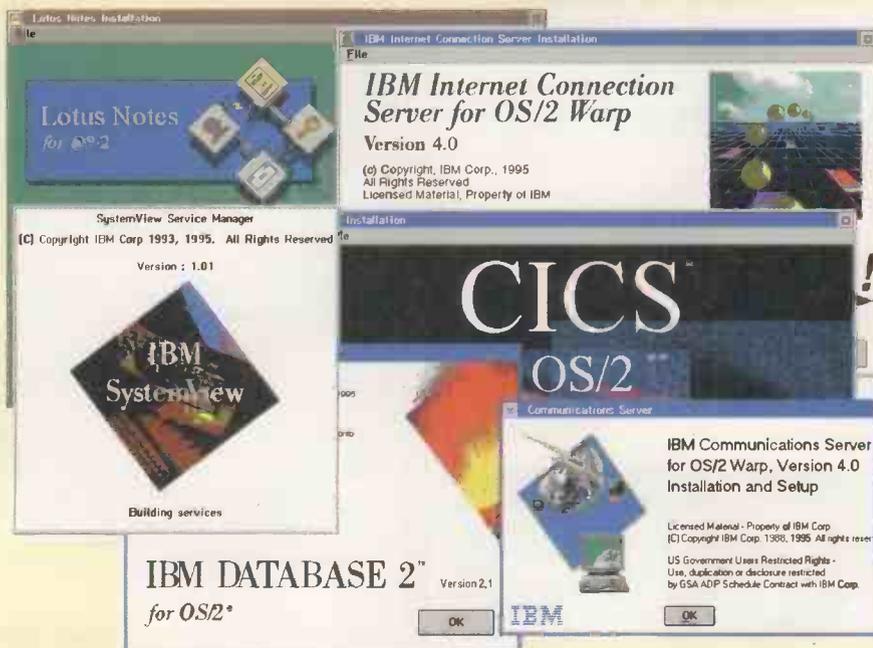
The Eagle takes flight

IBM announced its Software Servers at the end of March. Formerly codenamed "Eagle", IBM Software Servers is the family name for a group of seven applications servers which it will make available for IBM AIX, IBM OS/2 Warp and Microsoft Windows NT this year.

Later on, IBM plans to ship the Software Servers on other Unix platforms, too. At least I guessed right when I mentioned this two issues ago but I was sadly mistaken when I suggested that OS/2 would be the first platform to sport a full working set of the seven applications servers that make up the Software Servers product. In fact, the AIX Software Servers will be the first complete set to ship.

The OS/2 set of seven was ready to ship in March, with the exception of the Directory and Security Server and the Systems Management Server which will ship towards mid-year. Of the Windows NT set of seven, only Lotus Notes is ready now while the rest will trickle in between now and the autumn.

The premise behind IBM Software Servers is that any combination will work together. In other words, IBM is doing the integration work and testing rather than leaving it to customers. As customers, of course, we expected this to happen anyway but somewhere along the line the



Those Software Servers in full (with the exception of the OSF Directory and Security Services (DSS) server)

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PartitionMagic: live on the bleeding edge with software that does weird things with your hard disk partitions

PC industry kind of forgot this part of the deal.

You only have to cruise through the technical support databases of IBM,

Free WWW services

GoServ is a free EWS Web server but it may be slightly overshadowed now that IBM has decided to copy Microsoft by making its Internet server (Internet Connection Server for OS/2) freely available for download. Even so, it's worth a look if you're toying with the idea of putting up a Web server.

GoServ was written by Mike Cowlshaw, a highly-regarded programmer based at IBM UK's Hursley laboratory. Cowlshaw is also responsible for REXX, the programming language included in OS/2 and as a result GoServ's usefulness can be extended using REXX. Cowlshaw must be a busy guy; his latest project is porting Java to OS/2 and AIX.

At the time of writing, the Web Explorer home page (see www.raleigh.ibm.com) promised a Java-enabled Web Explorer update in early March. Curiously, IBM is also working on a Java-enabled browser for Windows 3.1.

You would expect Microsoft to do something about this but it's focusing on its 32-bit operating systems. IBM, on the other hand, is determined to prove that it is agnostic about user preferences and as Windows 3.1 still accounts for the vast majority of desktop systems, the company is continuing to support it.

Microsoft and Novell, to name but three, to see how they've done so far: try to manage NetWare 4.1 and NetWare Directory Services from a Microsoft NetWare client for Windows 95, as an example. Funnily enough, during testing of the Software Servers, IBM discovered that a fully-configured database server and communications server "just argued" — as an anecdote it's funny but not if you're a customer.

The full set of IBM Software Servers includes database, communications, Internet, Notes, transaction services, systems management and directory and security services. I've been playing with the Beta of IBM Software Servers for OS/2 of late but I want to see the full set, in a box and ready to roll before getting too excited.

Warp Server provides the OS base for the OS/2 Software Servers and the file and print services. It shipped at the end of February. It combines Version 5 of LAN Server and Warp and includes file and print sharing, systems management, backup and recovery, remote access, advanced print function, TCP/IP and LAN Internet access.

At the launch event in San Francisco, IBM demonstrated Warp Server running on a four-way SMP system. SMP support should become available as a free upgrade later on in the summer. Oracle, Sybase, Lotus, Compaq and Hewlett-Packard are among those assisting IBM with the development.

OS/2 utilities

OS/2 is well-supported by utilities. There are hundreds of free, shareware and shrinkwrap tools, ranging from the very neat PartitionMagic 2.0 (which manages

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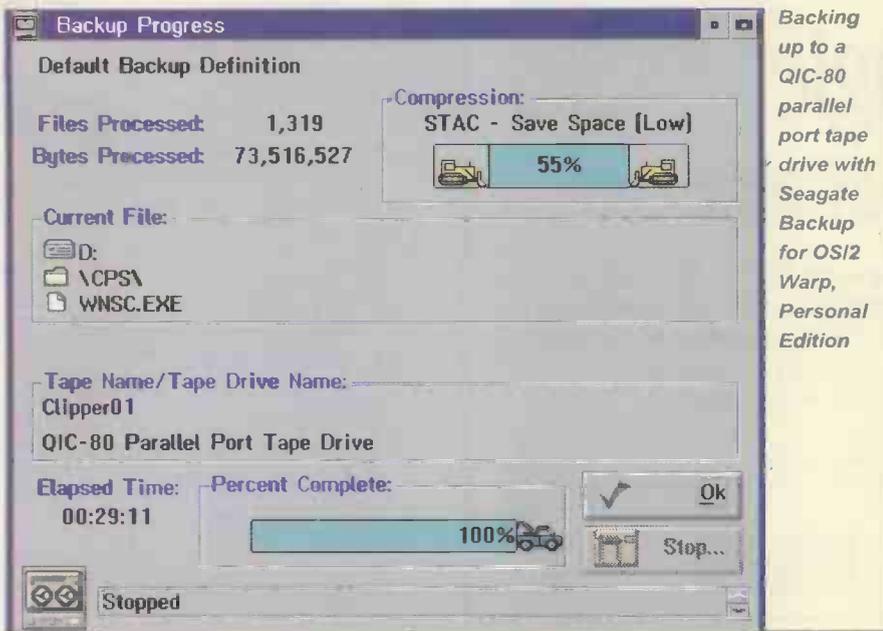
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Boot or Boot Manager. As you migrate from DOS and Windows programs to OS/2 you can downsize the FAT partition and increase the size of the HPFS partition with PartitionMagic 2.0 and you can convert FAT partitions to HPFS, too.

The principle caveat that springs to mind is that, wonderful as it may be, you shouldn't consider using PartitionMagic without first ensuring that any data you can't afford to lose is safely backed up.

Backing up is easy

Recently I've been trying a couple of easy backup utilities. Seagate Backup for OS/2 Warp Personal Edition Version 2 is one of them. In actual fact it's Arcada Backup for OS/2 Warp, which was a Conner product, but will soon turn up in a new wrapper now that Seagate and Conner have merged. Arcada, acquired by Conner a while back, also has backup software for DOS, Windows and NetWare.

Seagate Backup for OS/2 Warp Personal Edition backs up to QIC-80 and QIC3010/3020 drives attached to floppy drive and parallel ports and high-speed QIC tape controllers. So far, it seems to work OK and does have the useful feature of allowing you to restore an OS/2 system from a set of three emergency diskettes, rather than having to completely reinstall OS/2 before being able to run the restore program.

IBM also has a basic QIC tape backup product, which has a similar emergency restore facility. IBM DualStor Backup for OS/2 is more fully-featured than Seagate Personal Edition in terms of its file selection handling and it can backup NetWare bindery files, which Seagate doesn't support.

Both Seagate and IBM's backup products include a scheduler which supports automatic, unattended, backup. For SCSI tape support there is a professional edition from Seagate and Personally Safe'n Sound from IBM.



I use DINFO to keep an eye on my swapfile and drive statistics, and CLOCKGS to place a small time and date bar at the bottom of my desktop

FAT and HPFS partitions), to GoServe an efficient freeware World Wide Web server.

In addition to shareware and the stuff you have to pay for before you can see whether it works for you, there is a plethora of OS/2 software written by IBM employees which can be found in OS/2 forums on CompuServe and IBM Internet sites. It is free and is tagged as EWS (Employee Written Software). I use DINFO to keep an eye on my swapfile and drive statistics and CLOCKGS to place a small time and date bar at the bottom of my desktop.

Really useful stuff

PartitionMagic 2.0 is a utility which allows you to organise large hard disks more effectively by partitioning them into

separate logical drives. Most PCs these days are shipped with large drives of 500Mb to 1,200Mb, but on a single FAT partition.

This can be inconvenient and usually leads to a waste of space because large FAT partitions have large cluster sizes (32K on a 1.2Gb partition, for example). As file space is allocated in clusters, the "slack" or unusable space in large clusters quickly accumulates and can amount to hundreds of megabytes on a large partition.

PartitionMagic 2.0 does everything FDISK and FORMAT can do as well as shrink, expand and move partitions. There's a FAT-only version — PartitionMagic for Windows 95 and DOS — and the upmarket PartitionMagic 2.0 for DOS and OS/2, which supports both FAT and HPFS partitions. The program has a graphical interface and is extremely easy to use.

It's particularly useful on systems running DOS/Windows and OS/2 with Dual



Tue Apr 2 10:33:37 1996

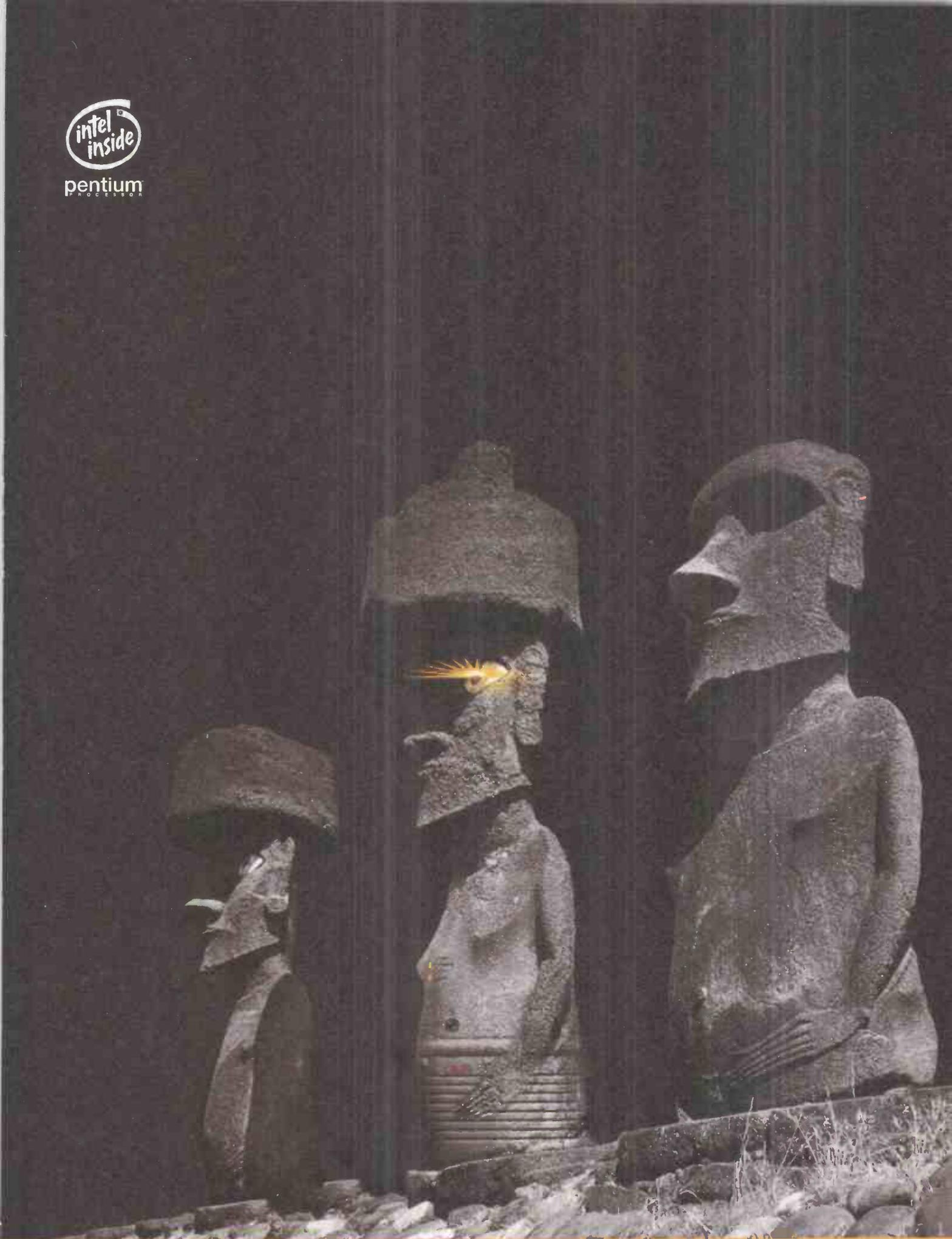
PCW Contacts

Terence Green can be contacted either by post c/o PCW or by email to tgreen@cix.compulink.co.uk

PartitionMagic 2.0. Detailed information from PowerQuest on www.powerquest.com.

IBM software enquiry service: 01329 242728.

OneStop (OS/2-savvy people) is an excellent UK source for OS/2 software of all types: ftp.onestop.co.uk or phone 0117 985 3370



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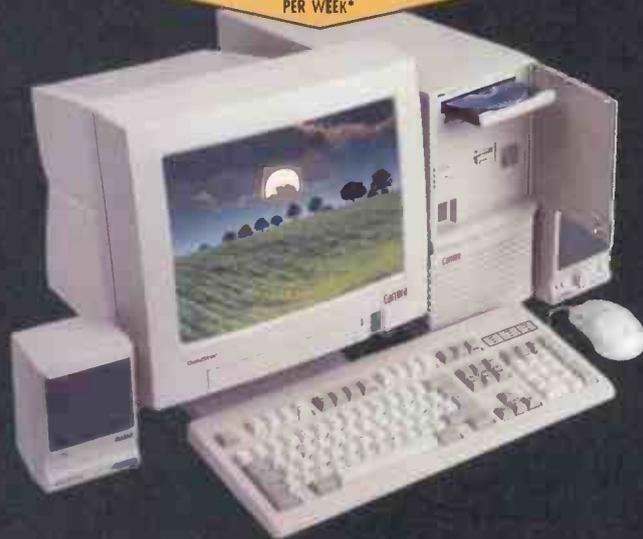
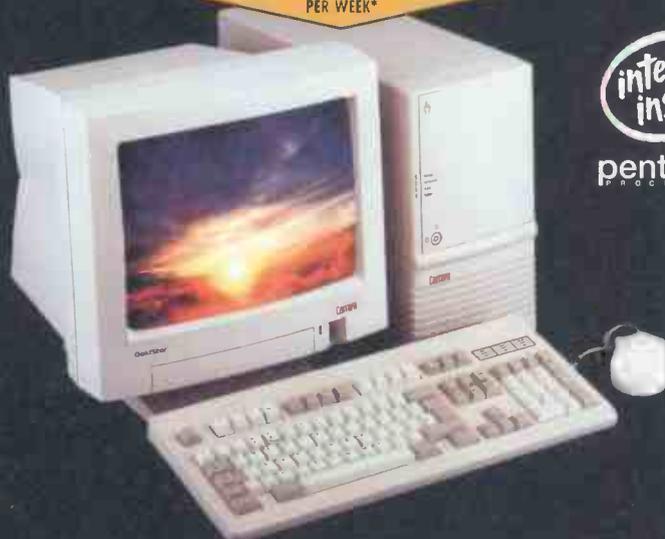
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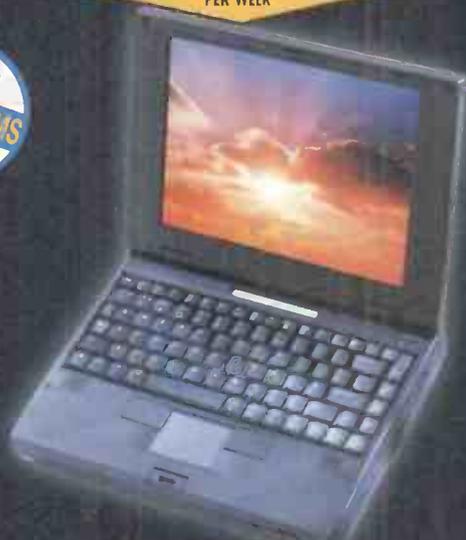
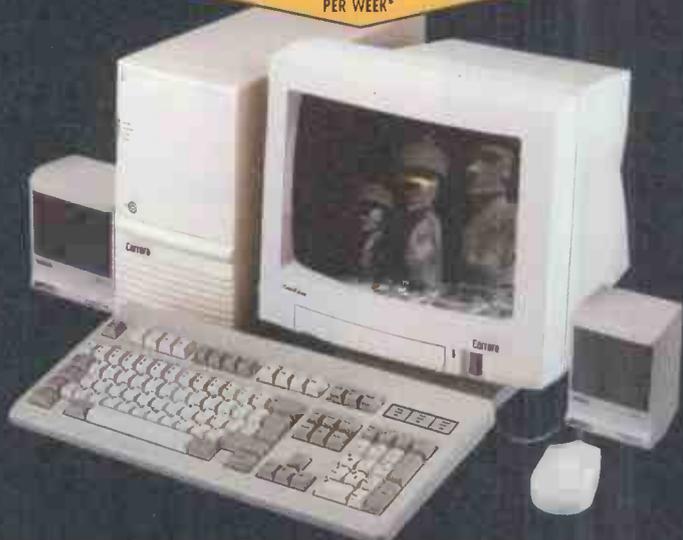
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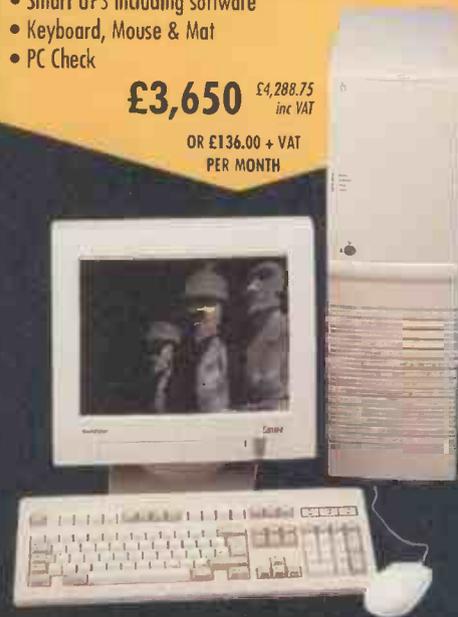
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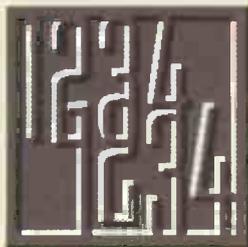
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Sequence of events

Descriptive Number Sequences, presented by Mike Mudge.

THIS APPARENTLY NEW AND certainly fascinating topic has been suggested by Jonathan Ayres of Leeds. The sequences are denoted by $ds_n(m)$ where n is the index of the sequence and m is the original number. There is a simplified version of the GLEICHNISZHLEN-RIEHE sequence with the property that the next number in the sequence describes the number of each digit in the previous number.

So, taking the case of $ds(0)$ in Fig 1.

This leads to my first question: **(1) Is this an exhaustive list of self-descriptive numbers?**

Sequences which do not lead to self-descriptive numbers instead lead to *amicable descriptive sequences*. For example, in the case of $ds(4)$, see Fig 2.

$ds_{10}(40) = ds_{12}(40)$, so this sequence has entered into a *recurring sequence* of numbers with a *period* of 2, because $ds_n(40) = ds_{n+2}(40)$, $n \Rightarrow 10$.
104122232415 and 103142132415

Fig 1

Gleichniszhlen-Riehe sequence for $ds(0)$

- $ds_1(0) = 10$ (1 zero in previous number, 1 is the digit number and 0 is the occurrence number)
- $ds_2(0) = 1011$ (1 zero and 1 one in previous number)
- $ds_3(0) = 1031$ (1 zero and 3 ones in previous number)
- $ds_4(0) = 102113$ (NB. Because there are no twos in previous number the 0 twos are not listed, so $ds_4(0) = 102113$ instead of 10210213. (I will deal with this case later.)
- $ds_5(0) = 10311213$
- $ds_6(0) = 10411223$
- $ds_7(0) = 1031221314$
- $ds_8(0) = 1041222314$
- $ds_9(0) = 1031321324$
- $ds_{10}(0) = 1031223314$
- $ds_{11}(0) = 1031223314$, and so on

Fig 2

Amicable descriptive sequences for $ds(40)$

- $ds_1(40) = 1014$
- $ds_2(40) = 103114$
- $ds_3(40) = 10311214$
- $ds_4(40) = 1041121314$
- $ds_5(40) = 1051121324$
- $ds_6(40) = 104122131415$
- $ds_7(40) = 105122132415$
- $ds_8(40) = 104132131425$
- $ds_9(40) = 104122232415$
- $ds_{10}(40) = 103142132415$
- $ds_{11}(40) = 104122232415$
- $ds_{12}(40) = 103142132415$, and so on

After $ds_{11}(0)$ all further numbers in the sequence are equal to 1031223314. This is a *self-descriptive number*, i.e. it describes itself. For example, 1031223314 is composed of 1 zero, 3 ones, 2 twos, 3 threes and 1 four = 1031223314.

From my investigations the self-descriptive numbers are:

- 22
- 10311233
- 21322314, 21322315, 21322316,
- 21322317, 21322318, 21322319
- 31123314, 31123315, 31123316,
- 31123317, 31123318, 31123319 *
- 1031223314, 1031223315, 1031223316,
- 1031223317, 1031223318, 1031223319 *
- 3122331415, 3122331416, 3122331417,
- 3122331418, 3122331419 *

The asterisked lines are related families because the final 1n is not important as n is not involved with the rest of the number.

are known as an amicable descriptive pair of numbers, because

$$ds_1(104122232415) = 103142132415$$

$$\text{and } ds_1(103142132415) = 104122232415$$

There are also amicable descriptive triplets such as
10414213142516 - 10512213341516 -
10412223142516

which have a period of 3. The amicable descriptive sequences are shown in Fig 3.

From this I define $ds(x)$ to be the lowest recurring value of $dsn(x)$, so that $ds(x)$ is either a self-descriptive number or $ds(x)$ is the lowest member of an amicable sequence, i.e. $ds(0) = 1031223314$.

Fig 3

Amicable descriptive sequences for triplets

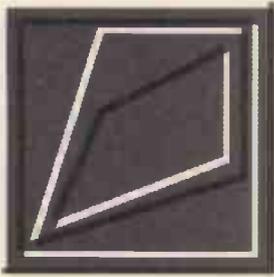
- Period 2**
- 103142132415 - 104122232415
 - 314213241516 - 412223241516,
 - 314213241517 - 412223241517,
 - 314213241518 - 412223241518,
 - 314213241519 - 412223241519
 - 41421314251617 - 51221334151617,
 - 41421314251618 - 51221334151618,
 - 41421314251619 - 51221334151619
 - 1051421314152617 - 1061221324251617,
 - 1051421314152618 - 1061221324251618,
 - 1051421314152619 - 1061221324251619
 - 5142131415261718 - 6122132425161718,
 - 5142131415261719 - 6122132425161719
 - 106142131415162718 -
 - 107122132415261718,
 - 106142131415162719 -
 - 107122132415261719,
 - 614213141516271819 -
 - 712213241526171819,
 - 10714213141516172819 -
 - 10812213241516271819
- Period 3**
- 10414213142516 - 10512213341516 -
 - 10512223142516
 - 10414213142517 - 10512213341517 -
 - 10512223142517
 - 10414213142518 - 10512213341518 -
 - 10512223142518
 - 10414213142519 - 10512213341519 -
 - 10512223142519
 - 41421314251617 - 51221334151617 -
 - 51222314251617
 - 41421314251618 - 51221334151618 -
 - 51222314251619
 - 41421314251619 - 51221334151619 -
 - 51222314251619

(2) Is this a complete list of the amicable descriptive sequences?
(3) Are there any of higher period?

Any investigations of these three questions may be sent to Mike Mudge, 22 Gors Fach, Pwll-Trap, St. Clears, Carmarthenshire SA334 AQ, tel 01994 231121, to arrive by 1st September 1996. All material received will be judged using suitable subjective criteria and a prize will be awarded to the "best" response arriving by the closing date.

PCW Contributions welcome

Mike Mudge welcomes readers' correspondence on any subject within the areas of number theory and computational mathematics, together with suggested subject areas and/or specific problems for future Numbers Count articles.



Stepping up to CD

Roger Gann takes you through the basics of installing a CD-ROM drive.

PCW Step by Step Photography by David Whyte

A CD-ROM is no longer a luxury, only needed to play exotic and resource-hungry games. With today's large applications and even larger operating systems, it's easy to argue that it's now a necessity: who wants to install something that comes on 30 floppy disks?

So this month I'll show you how to fit a complementary peripheral: a CD-ROM drive. More and more software is being supplied, as standard, on CD-ROM. Corel-Draw 6.0, for example, comes on four CD-ROM discs.

It's quite possible to justify investing in an inexpensive CD-ROM drive for the sole purpose of installing software. As little as £50 will buy you a quad-speed IDE drive, so they've never been more affordable. Besides, you need something on which to play our brilliant cover disks!

Step-by-Step

HOW TO INSTALL A CD-ROM DRIVE

As with fitting a sound card, installing a CD-ROM entails fitting the drive then installing the software drivers.

Hardware installation

Step 1

- As ever, take the usual safety precautions before opening up your PC — gather together all the relevant instructions and installation disks, together with all the tools you need.
- Power down the PC, remove the casing lid, and enter within.

Step 2

- Now's the time to configure the CD-ROM drive, if it needs it.
- If it's being connected to a (primary) IDE interface then it most probably doesn't require configuring at all: most will work just fine with their default settings, which is usually "slave".
- However, if you're installing it on the secondary IDE channel, then set it to "Master".
- As far as a SCSI drive is concerned, check to make sure that its SCSI ID is unique and doesn't clash with any other SCSI devices installed.
- If it's the "last" device in the chain you may have to "terminate" the connection (and "un-terminate" the previous device).

Step 3

- Check out the drive fixings and the

place where it's going to fit — you'll need a free 5.25in drive bay for the new drive.

- If possible, try not to mount it in the lowest drive bay, as the disk tray or caddie could foul your keyboard. Mounting it high also makes it easier to get at the disk eject button with the tray open.
- If it's an IDE/ATAPI drive try to keep it close to the IDE hard disk, as IDE ribbon cables tend to be short.
- Make sure you have the right mounting hardware, too: things like bolts or rails.
- Insert the drive into the drive bay and make sure it doesn't foul anything else.
- Tighten the mounting bolts but don't over-tighten them.

Step 4

- With the driver installed in its bay, attach a spare power cable and the 40-way ribbon cable to it. Some connectors



The front panel of a CD-ROM

- 1 Loading bay/access door 2 Headphone jack 3 Volume control
4 Status indicator 5 Play Next Track button 6 Stop/Open/Close button

The rear panel of a CD-ROM drive

- 1 Digital output connector
- 2 CD/Audio connector
- 3 Master/slave configuration jumper
- 4 Interface connector
- 5 Power connector



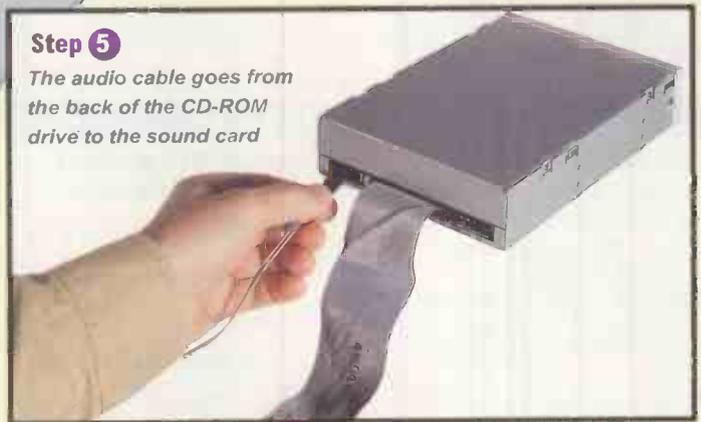
Step 4

Here, the cable's red stripe indicates alignment with pin 1



Step 5

The audio cable goes from the back of the CD-ROM drive to the sound card



are "polarised" with a little notch and can't therefore be fitted the wrong way round, but if yours isn't, make sure the coloured (red or blue) stripe on the ribbon cable goes to Pin 1 of the connector on the drive (normally the side next to the power connector).

- If you're lucky, the pins will be numbered. Likewise, make sure it is correctly orientated at the interface-card end. If you're connecting to a SCSI card, you'll have a similar but wider (50-way) ribbon cable.

Step 5

- If you have a sound card, don't forget to connect the audio cable. This is a thin, flexible cable that plugs into the back of the CD-ROM drive and into the sound card. While it's not necessary to have this cable to be able to play sound from a video or game, it will be necessary if you want to play an audio CD through your setup.

Step 6

- Power up the PC. The POST diagnostics won't report anything new, but if you've fitted a SCSI CD-ROM, the SCSI BIOS will recognise the new addition and list it, along with all the other SCSI devices. Either way, you don't have to make any alterations to your CMOS setup.
- The drive's activity LED should flash, signifying the drive is receiving power.

Software installation

With the hardware installation complete, we now have to get the operating system to recognise the new drive and to assign it a drive letter.

- To do this, we need to install driver software, though if you use Windows 95 and don't need to boot in DOS mode, you can rely on Windows 95's own 32-bit internal drivers.

- Your CD-ROM drive will come with a driver disk. This will normally install two files: a driver, specific to that drive, which is loaded in CONFIG.SYS; and a generic DOS CD-ROM Extension, loaded in AUTOEXEC.BAT.

- Because the actual name of the driver will vary from drive to drive, I'll have to generalise.

The line in CONFIG.SYS will look something like this:

```
DEVICE=C:\CDROM.SYS /D:MSCD0000
```

The "/D:MSCD0000" assigns a system signature to that CD-ROM (you can fit

more than one CD-ROM drive, after all). You can call it whatever you like, but this signature has to be identical to the one specified by MSCDEX (see below).

- If you're running a SCSI system, you'll use a generic CD device driver. If you were using an Adaptec SCSI host adaptor, you'd add a line like this instead:

```
DEVICE=C:\ASPICD.SYS /D:MSCD0000
```

The line in AUTOEXEC.BAT might look like this:

```
MSCDEX /D:MSCD0000 /M:10
```

Note the matching "signature", MSCD0000. The "/M:10" switch specifies the number of sector buffers to allocate to the CD-ROM — a crude kind of cacheing.

- There are other switches you might want to use:

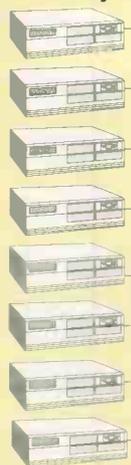
/S: Enables sharing of CD-ROM drives on Windows for Workgroups servers.

/L: Specifies the drive letter to assign to the first CD-ROM drive, so using /L:G would assign the drive letter G to the CD-ROM drive.

- Although Windows 95 has its own 32-

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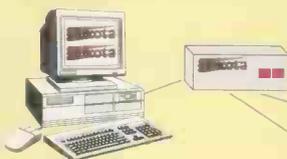
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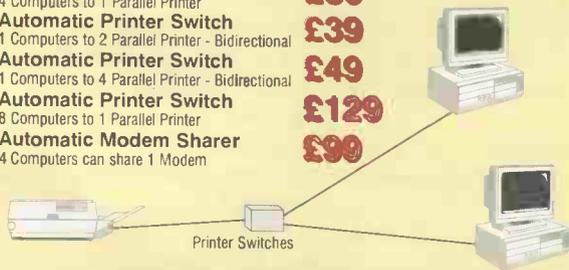
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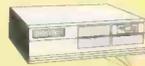
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Choosing a CD-ROM drive

Apart from your budget, there are three factors you should consider before buying a drive.

1. The first is choice of interface. There are now just two to choose from: either IDE (also known as ATAPI), or SCSI.

Most PCs will already have an IDE interface card, so fitting an IDE will probably be the cheapest and simplest solution. However, if your PC lacks an Enhanced IDE interface, with dual IDE channels, then you really should invest in one — they cost between £20 and £40.

While it's perfectly possible to slave an IDE CD-ROM to an IDE hard disk, it's not really recommended as it can slow down your hard disk. The "lowest common denominator" rule means that with a CD-ROM drive slaved to a hard disk on the same IDE channel, you'll reduce the hard disk's data transfer rate to that of the CD-ROM drive: that is, 600Kb/sec if you've got a quad-speed drive — an IDE hard disk's data transfer rate will normally be at least four or five times this. With a dual channel EIDE interface card you can connect the hard disk to the faster EIDE, or primary channel, and the CD-ROM to the slower IDE, or secondary channel.

For more demanding use, I'd recommend opting for the dearer SCSI alternative. This is because IDE typically uses Programmed I/O to manage the data transfer, which requires a high degree of CPU attention — many so-called "six-speed" drives can only hit their specified

data transfer rate by taking 100 percent of the processor's time, which leaves zero for anything else.

SCSI, on the other hand, offloads the task of supervising the transfer of data from the CPU to the host adaptor and so is very suitable for computer-intensive tasks such as software MPEG decoding. So, if you're going to use your CD-ROM for serious video playback, I'd look at SCSI. Most current CD-R writers are SCSI, which is another reason for picking this interface.

2. The second factor is data transfer rate. Most drives are now either quad-speed (600Kb/sec) or six-speed (900Kb/sec). Older (double-speed) drives are no longer made).

Most CD-ROM multimedia discs are still cut to run on humble double-speed drives, but an increasing number are now being mastered to run on quad-speed drives. The discs therefore won't run well on older drives. So from a multimedia point of view, a quad-speed drive will be adequate for the foreseeable future.

Consider buying a six-speed drive *only* if you need its superior average access speed and data transfer rate for database searching chores, where the extra turn of speed will be noticeable, especially if the drive is shared on a network.

3. The final consideration is a practical one to do with loading — do you want a tray-loader drive or one that requires a disc caddy? It's horses for courses, but I prefer the former simply because it's quicker.

bit protected mode CDFS CD-ROM file system and doesn't need real-mode DOS drivers, it helps to install the older drivers first because the "Add New Hardware" auto-detection wizard will first look at the contents of the startup files before it tries to sniff out the devices.

If it finds a CD-ROM device driver

Explanation of acronyms and terms used

● Low level

CPU Central processing unit.

● Hard drive and peripheral interface standards

BIOS Basic input/output system.
EIDE Enhanced integrated drive electronics.
IDE Integrated drive electronics.
SCSI Small computer system interface.

● Other terms

ATAPI AT Attachment Packet Interface.
CDFS Compact Disk File System.
CMOS Complementary metal-oxide semiconductor.
MPEG Moving Picture Expert Group.
MSCDEX Microsoft Compact Disk Extension. (A TSR program giving DOS access to CD-ROM drives.)
VCache Virtual cache.
Wizard A Microsoft term describing online help which guides you through tasks on the fly.

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there, it knows one should be physically present. In actual fact, Windows 95 can only specifically detect the older types of CD-ROM drives that used proprietary interfaces, such as Mitsumi or Panasonic.

● When it comes to IDE and SCSI CD-ROM drives, they will automatically be installed in the same manner as would an IDE or SCSI hard disk. This will occur as long as the interface card is properly installed.

Cacheing CD-ROM drives

CD-ROM drives are relatively slow devices, but their performance can be enhanced by cacheing.

Ever since MSDOS 6.2, SmartDrive has been able to cache CD-ROM drives. To do this, just make sure that MSCDEX is loaded prior to SmartDrive. Windows 95 uses a 32-bit development of SmartDrive, VCache, which ought to be adjusted to suit

the type of CD-ROM you've got and the amount of memory you can afford to donate to the cache. To do this:

- Open Control Panel and click on the System icon.
- Then, click on the Performance tab and the File System button.
- Finally, select the CD-ROM tab.

This dialogue lets you specify the speed of your CD-ROM and the amount of cache memory you want to devote to it.

When you've made your choices you'll have to restart Windows 95 (Fig 1, below).

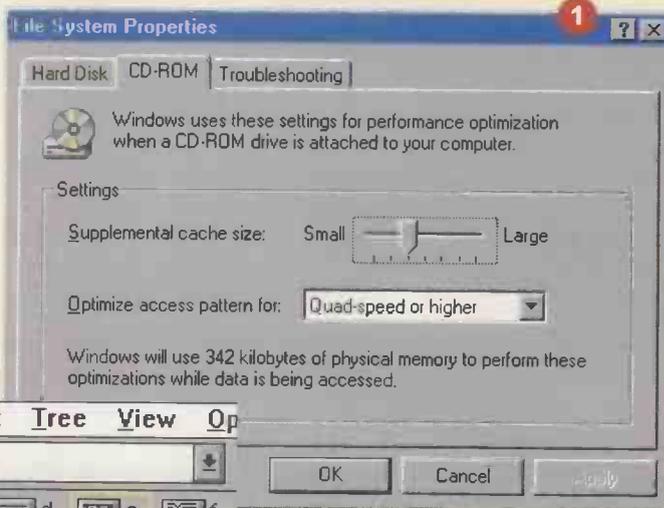
If your installation has gone smoothly, Fig 2 shows what you should be rewarded with when you load Windows 3.1's File Manager.

Under Windows 95, an extra icon will appear in the "My Computer" group (see Fig 3).

PCW Contacts

Roger Gann can be contacted either by post c/o PCW or via email at rgann@mcgilivray.win-uk.net

Fig 1 Once you have installed your CD-ROM in Windows 95, check to see that its settings are correct



2



Fig 2 If all has gone well, then the Windows 3.1 file manager should have an extra drive icon

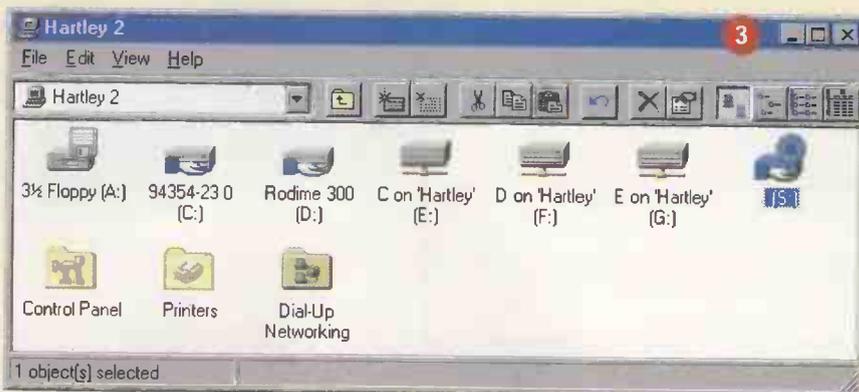


Fig 3 If all has gone okay under Windows 95, the presence of your new CD-ROM drive will be denoted by a new icon in the "My Computer" group

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On the face of it

If your hardware won't allow you to create complex modelling, one way is to focus on textures in 2D. Paint packages can help, says Benjamin Woolley.

IT MAY SEEM A PERVERSE CLAIM, BUT one of the most important pieces of software any 3D computer graphics artist needs is a 2D graphics package, particularly on a PC rather than a workstation. This is because 3D graphics running on a PC will only work comfortably if you are using relatively simple models.

By relatively simple, I mean scenes comprising perhaps 10 or 20 reasonably complex models. On a 16Mb Pentium system, for example, a furnished room with a few chairs, a table, some pictures and the odd piece of bric-a-brac will start to cause some serious disk thrashing and sluggish response times.

The secret's in the textures

The answer to this problem is either to upgrade your machine to a workstation-class system (dream on), or to use simpler models more ingeniously (cheaper and more rewarding). The latter is done by concentrating your efforts less on models and more on the textures that you are going to drape over their surfaces. This is the reason for focusing on 2D graphics.

When an object is rendered, there are several features of its appearance that you can manipulate. For example, take a rectangular block, one of the simplest possible 3D objects that you can create. You can simply give it a colour, which will produce a rather dull picture of a coloured block. However, you can also apply a "texture map" to it, an image (or indeed, an animation or video sequence) which is painted over the image. This image can be applied once across the length of one side of the block, or "tiled" several times over its length. Thus you could put a photograph of someone on the face of the block to turn it into a rather chunky picture (or, if the image is an animation or video, the block could become a TV set). Or you could apply a picture of a brick and tile it over the rectangle to create a brick wall. All of this will have been done using the

same, simple object.

You can get more ambitious and apply a bump map as well as a texture map. Bump maps use the level of light of each individual pixel in the map image to determine how much the surface of the object sticks out. For example, you could give the brick wall a rough surface by applying a speckly image to it as a bump map. The bright speckles will produce bumps, the dark specks, pits. The higher the contrast level of the bump map image, the rougher the surface will look when the model is rendered.

All the 3D packages I have encountered come with a supply of images to use as texture and bump maps, normally stored on CD-ROM. They are generally delivered in standard image file formats, so they can be edited using a standard paint program. It is exploiting this capability that is, I think, the key to successful 3D work on a PC.

Turning professional

There are several paint programs available,

many of them good. You even get one free with Windows, which is perfectly adequate for simple tasks. However, for really successful work, it is worth investing in one of the more professional packages.

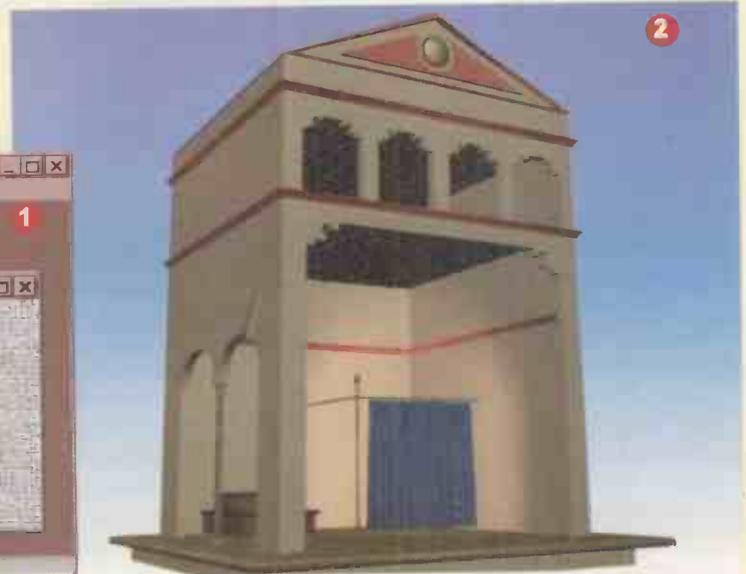
The CorelDraw suite is probably the best known. It is cheap and quite powerful. I have been a user for some years (drawn by the price), but find the software lacks polish. Even with version 4 I was still encountering bugs, so I never bothered to upgrade to 5 or 6. Perhaps they are better.

Two alternatives I have been trying recently are the latest versions of Adobe Photoshop (3.0.5, which runs very nicely under Windows 95) and Fractal Design Painter (version 4). *Fig 1* shows the texture and bump maps created for a curtain using Photoshop. The curtain is used in a structure being developed for my "Memory Palace" project (*Fig 2*).

Creating these textures took a lot of effort, but I think it was worthwhile. First, I needed a picture of an ornamental star. I



Fig 1 Adobe Photoshop with star material and bump map
Fig 2 Rendered picture of the Memory Palace model, showing curtain



3D packages: the art of seduction

People get very attached to their 3D packages. This is natural, as they have to spend so much time getting to know them. I apparently upset some veteran users of Newtek's Lightwave with my remarks about the package in the April column, so I have decided to try it out over the coming weeks. But I know already that after the first few hours I am likely to be seduced. Familiarity breeds devotion in this business.

I have found this to be particularly true with the 32-bit Windows packages Truespace (from Caligari) and Extreme 3D (from Macromedia). My loyalties have been flipping between these two ever since I started using them, and I still do not know which I favour (so, in true liberal fashion, I suppose I shall have to say I favour both).

Truespace has been around on the PC platform for longer (it is now in version 2) and its relative maturity shows. Extreme 3D, which is brand new, crashed a couple of times on my Compaq, though fortunately with frequent saving I managed not to lose anything vital. It also lacks support for all but one or two 3D and 2D file formats. Among other things, this effectively prevented me from using the Alpha channel in the creation of the curtain fabric (the Alpha channel is used to determine the transparency of each pixel in an image, so can be used to layer textures over the top of each other).

Such a serious omission is surprising in a package that is in other respects so well specified. Its texture-handling capabilities are extensive. There is network rendering (over mixed Mac and PC networks). It provides excellent realtime sketch rendering (just about the best in the business, I would say). It also offers full Bezier spline-based modelling, which is wonderful to use. The Bezier bit means you can edit curves with great precision and ease using "control handles".

Truespace also has splines,

Fig 5 Extreme 3D, showing curtain with material applied. The grid next to it is the working plane used to draw profiles for 3D models



decided to model one from scratch (Fig 3) and render the picture from that (Fig 4). I imported the picture into Photoshop and created a background of plain blue, which I gave a fabric texture using one of the plugins that are used to apply effects to images. This one was available from Adobe's new Gallery Effects range. I used the same

but it is in many other respects more basic than Extreme 3D, and this is reflected in the price. On the street it is well under £400 (at the time of going to press, Extreme 3D had a recommended retail price of £525). The documentation, in particular, is on the sparse side. However, simplicity has its merits. Truespace has most of what you need while remaining simple and straightforward. The most important tools are there, and all are a joy to use: intuitive, nicely organised, easy to access. Truespace also supports a vast array of file formats and makes a pretty good fist of translating them into its own.

Whichever is the better, both demonstrate at least one thing that relates to the first half of this month's column: the demands that 3D makes on the system. You cannot realistically run either package on a system with less than 16Mb. A Pentium is essential, as is a 24-bit graphics card and either a gigabyte of disk space or a removable disk (not for the vast array of files you will generate using them).

On my 16Mb 60MHz Pentium, state of the art just a year or so ago, the KISS principle applies whatever software I use: Keep It Simple, Stupid.

5

Gallery Effect to create a fabric bump map (the underlapping window in Fig 1). This is in mono, because the size of bumps is determined by the brightness of each pixel rather than its colour (helps keep the size of the file down, which helps reduce rendering times later). You can see the preliminary results of using this material in Fig 5,



Fig 3 Star model, displayed using Truespace 2 and ready for rendering

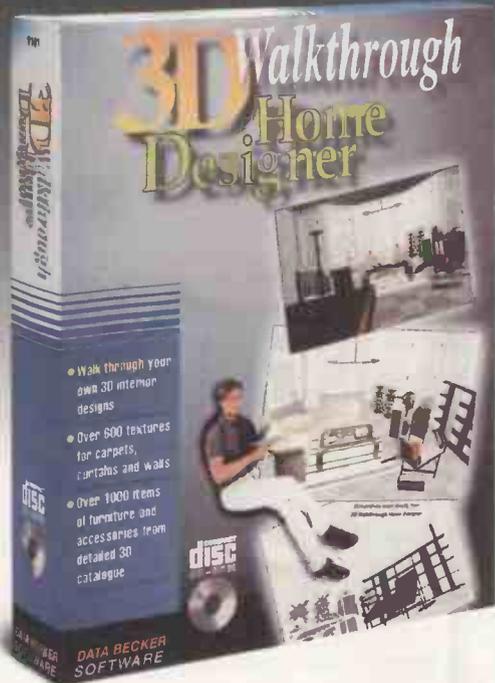
Fig 4 Rendered image of the star model

applied and sketch-rendered using Extreme 3D (of which more, left).

Photoshop is excellent for editing and manipulating existing images. If you can't afford it, PaintShop Pro version 3, which is distributed as shareware, is a good substitute. To create images from scratch, however, it is also worth considering Fractal Design's new Painter 4, which seems to be particularly good at creating various architectural effects such as mosaics and "tessellations" (good for stained glass). I'm still experimenting, but I have found it enormous fun. One criticism: some bright spark thought it would be entertaining to package the CD and manuals in a paint tin. This gives you a moment's amusement when you open it up, and hours of frustration as you try to fit everything back in again.

PCW Contacts

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3D Walkthrough Home Designer

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DATA BECKER's 3D Walkthrough Home Designer is an application that everyone can use and enjoy and feel that at last they are using the full power of their computer.

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Most other 3D design products can do this, but this is where 3D Walkthrough Home Designer really starts to shine. You have a texture catalogue of over 600 materials, fabrics and colours, with which you can decorate your walls and floors. The furniture catalogue includes over 1000 furniture pieces, all of which have their own textures and material. A wooden chair has a wood grain finish, a marble surface really has a marble pattern. Textures can be added as carpets, wallpaper and furniture textile colouring using "drag and drop". The doors, windows and furniture items all come to life as you place them and view from different angles and with various lighting effects.

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- Over 600 textures from which you can create carpets, wallpapers, wall surfaces, brickwork etc. Textures are BMP files thus allowing you to create your own wallpaper and designs from any graphics package.
- Multiple view choices. You can open several windows to examine a room from several different view points, including 2D and 3D views simultaneously.
- Walk through your design, and see what it really would be like in your 3D house, turning lamps on and off to see the effect of shadows and different lighting styles.
- Save any view to disk for later examination or printing.
- No special graphics cards required.

System Requirements:

- IBM PC with Pentium® processor recommended (minimum 486 DX2 66)
- 8Mb RAM
- Windows 3.x or Windows 95
- VGA graphics card with 256 colours (PCI/VLB VGA card with 1Mb RAM recommended)
- CD-ROM drive
- Printer (optional)

Step 3 View your design from any angle or elevation and roam freely from room to room to experience your design in virtual reality

Screenshots taken directly from 3D Walkthrough Home Designer



Step 1 Position walls, windows and doors (many different styles)

Step 2 Choose and place carpets, wall coverings, furniture and curtains

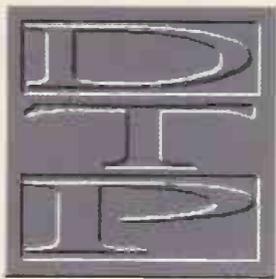
Photorealistic output from 3D Walkthrough Home Designer files



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Thumbs up for thumbnails

You know those nice graphics file icons on the Mac? Now you can get them under Windows 95. Hooray! says Gordon Laing.

Before concluding last month's topic of making selections, here's the latest news in the world of graphics and DTP. Unbelievably, in the same month, here are solutions to perhaps the two most infuriating problems I've had in recent days — apart from my troublesome water boiler, of course.

Thumbnail icons

For years I've been banging on about how fantastic the Macintosh platform is, particularly when it comes to graphics. But it takes two to tango. Apple has done a certain amount of work with its Macintosh operating system, but as much, or even more, has been achieved by the application and utility developers.

Adobe wrote an incredibly useful piece of code into Photoshop for Macintosh,

which created thumbnails of graphic files and used them as the icons for the files themselves.

When searching through windows full of graphics files, there's no longer any confusion in identifying them. The thumbnails may be small, but it's remarkable how easily you can spot the desired file at a glance. This was such a useful facility that virtually all Mac graphics apps offered the same, leading many to believe that the code was part of the Mac OS itself.

Great; but where does that leave us Windows users? Well, according to Microsoft and other developers, it leaves us up DOS creek without a resource fork to paddle. For it is the Mac file system with its resource forks which allows cunning

developers to attach handy extras such as thumbnail previews.

Cunning plans, clever tricks

Fortunately, there's cunning and there's *real* cunning: winner of this month's really cunning plan is Inset, developer of the fluent graphics converter, HiJaak.

The latest version, HiJaak 95, now acquired by Quarterdeck and reviewed in this month's *First Impressions* section, does what we had virtually given up hope of: thumbnails for graphics files icons under Windows 95.

I believed this to be so improbable that in January's column I even mocked up a fake screenshot of what I desired — and that's not just an excuse for you to peruse my infamous Christmas card design once more. The screen you see before you today is not a fake — it is the real thing, and has absolutely made my day.

Post-installation, HiJaak 95 sets to work creating thumbnails for your existing files, then waits in the background for any newcomers to turn up.

Full details, along with its other facilities, are described in the *First Impressions* review, but here are a couple of additional points.

HiJaak is not infallible. It did a good job recognising most EPS and TIFF formats, but failed on some of the more obscure flavours, such as Lab TIFFs. It didn't crash, fortunately, but instead created false-coloured or white boxes as preview thumbnails. In some cases there were a few dots or squiggles but all were sadly meaningless. To put this into perspective, these were mostly odd types of EPSs, and generally those created by CorelDraw, whose file filters I don't entirely trust.

One other slight concern crops up thanks to HiJaak's cunning cataloging system, which allows searches to be made on key words you've attached to properties of files.

The problem occurs when you've got more than one file of the same name in different locations. HiJaak assumes they're identical on the basis of name and extension alone and uses the same thumbnail for all of them.



Left Not a fake, but genuine thumbnails for graphic file icons under Windows 95, courtesy of HiJaak 95. Above The Resedit cheeky chappie saved the day when Photoshop 3 for Macintosh played up

This cropped up when HiJaak was creating thumbnails on my disk and came across the results for last year's PCW scanner group test. I had five different sets of results for each scanner, separated into five folders.

Due to my choice of naming, I had five *epson.tifs*, *agfa.tifs* and *hp.tifs*. HiJaak created thumbnails for the first folder, then reused them for the other four folders. Unfortunately, when I updated the thumbnails for the second folder, HiJaak used these for the other folders as well.

A little annoying, but forgivable, and I thank the programmers at Inset for at last writing *the Windows 95 utility* for which I've been waiting. For those too engrossed to check out the review in *First Impressions*, HiJaak 95 costs £49.95.

Ra-ra-ResEdit

A couple of months ago several graphics journalists, including myself, were invited to an Adobe press briefing where it was hinted that Illustrator for Windows 95 would be discussed. Perhaps unsurprisingly, this was not the case, and what was hoped would be a revealing morning turned out to be a big misunderstanding.

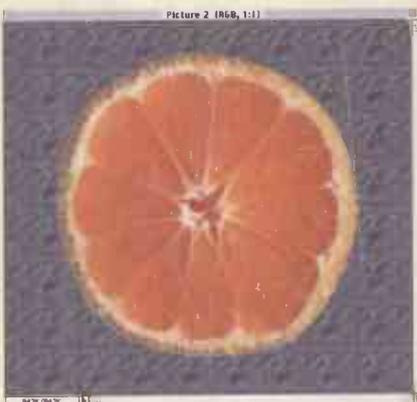
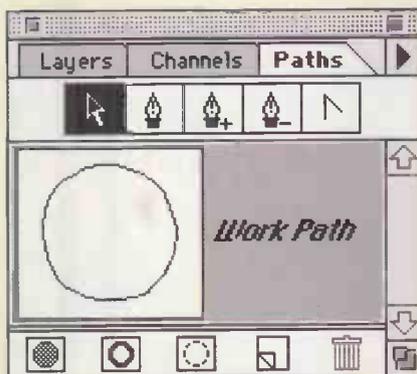
Rather than let it go to waste, and spotting Photoshop developer Doug Olson as one of our hosts, I tentatively turned the morning around into a full-blown technical support session. Not much fun for everyone else in the room, but I finally got the answers I was looking for.

The story starts a few weeks ago on Adobe's appallingly slow Web site, where I had spent hours downloading the update from Photoshop 3.0.4 to 3.0.5 for Macintosh. Why? Well, it didn't offer any big changes, but I had hoped it would fix a bug which reared its ugly head when I previously upgraded from 3.0 to 3.0.4.

Photoshop is an undeniably sophisticated application. One of the things we at PCW use it for most is converting hundreds of PC screenshots saved in a huge variety of colour depths, resolutions and formats, into standard Macintosh CMYK TIFFs, ready for the repro house.

It's really handy selecting a whole window full of DOS files, dragging them on to the Photoshop for Macintosh icon which darkens to indicate recognition, then automatically launches and opens every one of them without ever having to go to File-Open. Until 3.0.4 that is,

Selections made with vector paths. From bottom, the Parrot selected by dropping plenty of points joined by straight lines, and its palette. Next, the Orange, selected more carefully with fewer points and a curved path; see palette directly below



which resolutely failed to darken with DOS files and would only play ball with Mac files. Much to my disappointment, 3.0.5 failed to fix this.

However, after much discussion with Doug and several emails, I had my solution. Like all the best computer fixes it's not pretty, and it requires some deft handling with ResEdit, the third party Macintosh file resource editor. Anyone interested in the details and a fascinating insight into how the Mac operates at a low-ish level, should check out Chris Cain's Macintosh column on (page 326).

The good news is that Adobe is now aware of the problem and is currently shipping fixed versions. The bad news is that there's still no sign of Illustrator for Windows, nor the fabulous Adobe Dimensions which, to be fair to Adobe, ties in closely with Illustrator.

Some more good news, though, is the announcement of Fractal Designs' Poser and even Macromedia Fontographer 4.1 for Windows, to be reviewed as soon as I get my hands on them. Spookily, I had wished for both of these in the same "Dear Santa..." column (January issue) as the thumbnail icons for Windows plea. If I didn't know better, I'd think someone was looking out for me. Peace, goodwill and serious font handling for Windows must be just around the corner.

Paths to success

Last month's Graphics & DTP described how to make a variety of selections in bitmapped photo-retouching packages such as Photoshop. The point about this is that any manipulations occur only to selected areas of the image, allowing you to leave other parts untouched. Rather than change the entire colour of an image, you could, for instance, select the sky and alter this alone, without touching any other part of the image.

All the techniques explained last month work with pixels on the bitmapped image itself. Selections made in this manner, either by hand, marquee or magic wand, can be extended but not reshaped by dragging the outline. You have the dotted outline of a selection that may just be a tad off in places, but rather than tugging at corners, you have to change the tolerances and start again. At best you can add or subtract tiny portions of similar colours, but it's still infuriating.

One method would be to

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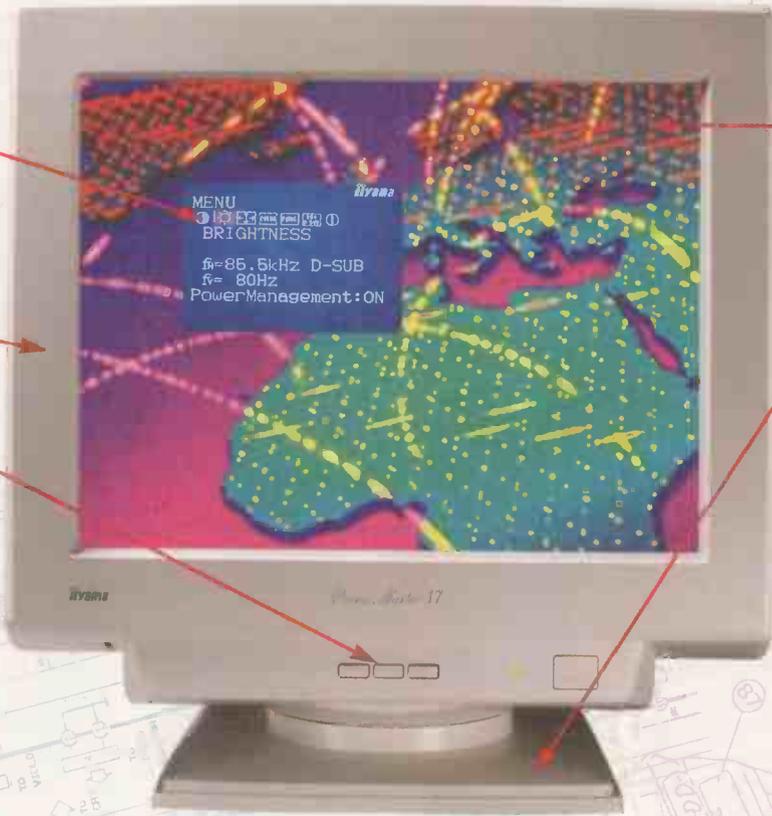
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Font of the Month

Elli

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Red Onion & Mushrooms

use the flexibility of vector outlines, which may be dragged about, reshaped and resized without any loss of resolution. Fortunately, many high-end packages offer this facility, in the form of Paths.

Paths are as easy to use as the description above. Simply choose the path tool, the pen icon in Photoshop, and draw a shape as you would in any drawing package such as CorelDraw, Freehand or Illustrator. Vector drawing consists of dropping points, which are joined up by the application.

After the initial shape has been drawn, each point may be dragged in any direction desired. Handles may be extracted from a point which adjusts the curviness and direction of the path as it passes through that point. Paths are fully described in the manuals for these applications, and were covered in detail in this column, PCW April '95.

The real beauty of paths is not just the fact that they're totally editable, but that they can be saved for future use. Being vector descriptions they're small, too. Selections, complex ones in particular, can take quite a while to create, so it's a real boon being able to save a path in case of a crash or other emergency. You can, of course, close down the application and reload the selection for additional work at a later date. Some applications such as Photoshop even allow you to convert conventional selections into fully editable and saveable paths.

Making selections of straight-edged shapes is a doddle with paths. Just drop a point at each corner and let the application join them up with perfectly straight lines. Even though it's possible to adjust paths so that they match curves perfectly, you can still get great results just by dropping lots of points around the shape. They may be joined by straight lines, but they could

be fine enough not to show.

Which leads us neatly on to the conclusion. Much of the time you'll be making selections to cut out and paste somewhere else. If you are pasting on to a new background, the hard edges of your selection make it stick out like a sore thumb. Two options to soften the blow are anti-aliasing and feathering.

Anti-aliasing surrounds the object with pixels of intermediate background and foreground shade. The result is a softer edge which blends in much better.

Feathering blurs the edges of a selection. The user defines the number of pixels the blurring should extend in to, and out of, the selection. Blurring too much loses detail but can be used for neat effects such as the white glow around my portrait in the "never-a-month-goes-by-without-a-mention" Christmas card.

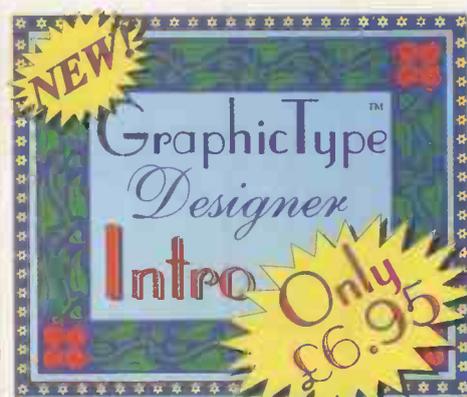
Font of the Month

What a beautiful typeface: FB Elli of the Font Bureau collection (pictured above), available from FontWorks, is just begging to be used in a cookery book or on a menu. Houghton Library commissioned calligrapher Jean Evans to design the typeface, which was presented to famed librarian Eleanor Garvey upon her retirement from Harvard University. Evans originally designed Elli in 1991, and it was adapted by Font Bureau in 1993.

PCW Contacts

That's enough selections for now. Write to me at the PCW address on Broadwick Street or email me as gordon_laing@pcw.ccmail.compuserve.com

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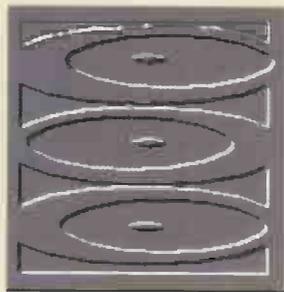


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It's quicker by bus

Panicos Georghiades and Gabriel Jacobs flag down the miroVideo DC20, a card which uses the PCI bus to speed video capture. Plus, the new IconAuthor for Win95 and the Net.

IN A PREVIOUS *HANDS ON*, WE stressed that to get good results with digital video it's important to initially capture and work with (edit) video containing as much information as possible — in other words, with very low compression. The final result then needs to be at the higher compression ratio required for distribution.

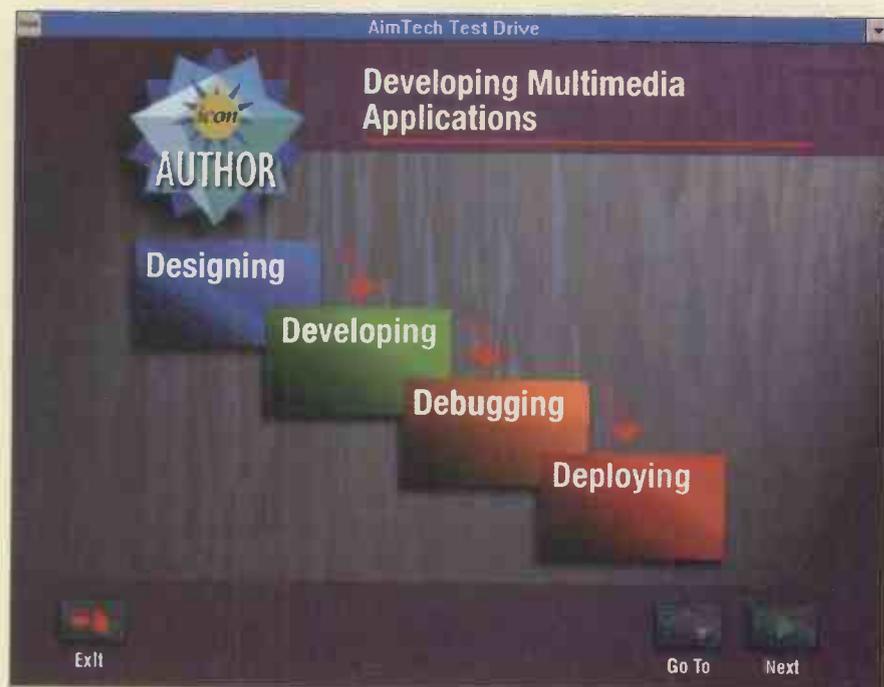
The bottleneck for capturing video at low compression is usually the hard disk transfer rate. Hard disks have been getting better at this, but the problem with many of the cards designed for amateur use has been the transfer rate between the card and the computer. This problem has been addressed by the use of the PCI bus and from now on you'll see many video capture cards using it (most of the cards on the market still use the ISA bus).

The price is right

The miroVideo DC20 is one of the first of these new PCI cards. It's medium-sized and can capture up to 3.5Mb of data to the hard disk (whereas last year's model, the DC10 using the ISA bus, managed just over 2Mb/sec). 3.5Mb/sec is not really state-of-the-art specification — remember, there are cards out there for professional "broadcast use" — but it is state of the art for a price of just over £700. Not bad.

For a full PAL signal (both fields of 25fps at a resolution of 768 x 576 this works out at a ratio of about 7:1, while for a quarter-screen resolution of 384 x 288 (good enough for MPEG-1) it works out at a compression ratio of about 2:1. The compression method is, of course, M-JPEG (Motion JPEG) and the chip it uses is a Zoran (as with other cards from Fast, Reveal and Spea). In this case, it's the ZR36050.

The card digitises at 4:2:2 YUV (YUV is a luminance and chrominance colour-encoding scheme for natural pictures). This



*Above Here, for your multimedia D-light, is IconAuthor, a graphics-based authoring package
Right The miroVideo DC20: the quality of its digitised images is impressive, given its modest price*

gives 24-bit colour (as with other cards) when grabbing moving video, but it's also capable of 32-bit colour still-image capture — as are some of the latest flatbed image scanners. It accepts S-Video as well as composite signals (all three TV signal standards: PAL, NTSC and SECAM are supported).

The miroVideo DC20 also includes a video output (S-Video and Composite), and if your hard disk can handle the 3.5Mb/sec transfer rate and capture 736 x 576 at the lowest compression ratio, you can end up with video which is better than S-VHS (Hi-8)



quality. So you can use this card to edit video on a hard disk and output back to tape.

Getting the measure of it

The bundled software includes Adobe Premiere 4.0 LE, Adobe Photoshop LE image processor, Asymetrix 3D F/X, and Vidcap32. There's also a utility program that measures the data transfer rate of

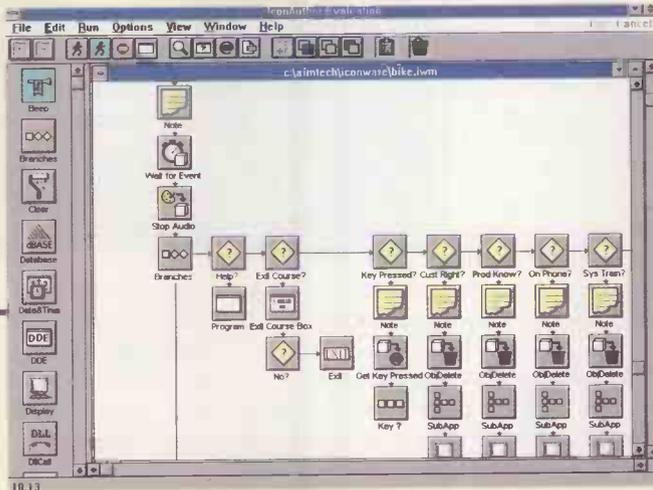
your hard drive, as well as the transfer rate of the PCI bus to memory, since you can also capture directly to memory (as long as you have masses of it).

The card can capture at 16:9 (so-called widescreen). Many films are transmitted using this format nowadays, and you can even buy special TV sets equipped for it.

Additionally, you have the normal 4:3 screen ratio.

Before capturing, you can alter the brightness, contrast, saturation, hue, video filter, compression rate

With IconAuthor, tools are dragged from a palette onto a flow diagram



and hard-disk data rate settings.

The card is plug & play and is compatible with graphics cards up to 1,600 x 1,280. There's no feature connection required, and the installation is software based — no jumpers or dip switches to set. However, you do require a Pentium 90 or better, 8Mb RAM or more and a

Held captive by the video question

Over the last six months, about a third of the letters we've received have been about video capture cards and MPEG video playback. It seems that either the interest in this topic is increasing dramatically, or else there isn't enough information available out there. Probably both.

Anyway, we'll bring you as much new information as we can about these topics, as and when we have it. So among this month's goodies, we've tested a new video capture board and bring you the results. Here's a typical email on the subject:

● "Why is it so hard to find out about video capture boards? I want to buy a PC and edit video with it. It's as though companies like miro and Fast are trying to avoid me. Desktop Video companies are trying to sell me configurations I don't need. To whom do I turn?"
fin3bni@arts-01.novell.leeds.ac.uk

You are most welcome to turn to us with specific questions, after you've done your own research: see our review of the new miro board, on the first page of this feature.

● "I am writing to comment on the advice given to James Purbrick (*Questions & Answers, February*) regarding the question of whether or not to purchase a multimedia docking station. I was wondering if you might be able to put me in touch with Mr Purbrick, because as fellow TI TM4000M owners we may be able to benefit from each other's experiences.

His suggestion of an external enclosure with CD-ROM drive and SCSI disk was the path I took. This was mainly because, for £399, all I got was a two-drive enclosure, stereo speaker pair, double-speed CD-ROM drive and a 3.5in drive bay — not very good value, even at the street price of £300, and after having reclaimed VAT. The TM4000M has a powerful power amp on the output jack and is quite loud with unpowered speakers.

The docking station is really a drive enclosure with speakers built in. However, I solved the problem of requiring active termination by using a CD-ROM drive with internal termination (which can be disabled). The TM4000M has a Fast SCSI-2 port micro-D50 pin. Cables cost a bomb. Termination costs even more."

Jason Tay <100256.3556@compuserve.com>

We sympathise wholeheartedly with the prices of cables using the micro-D50 SCSI connectors; some suppliers charge over £50 for such cables, which is daylight robbery. We're told that only Adaptec makes that type of connector, but we don't believe it. As your letter has appeared here, Mr Purbrick may get in touch with you, but we cannot pass on readers' addresses without their permission.

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Motion Picture is an interface card which plugs into your PC and allows you to grab still and moving images from a VCR, Camcorder or indeed any PAL video source.

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pcw

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All prices exclude VAT. E&OE.

300Mb hard disk or larger.

Thanks to drivers specially adapted for Adobe Premiere, the producers claim ten times faster display of images in the editing window and computation of motion JPEG files twice as fast. We tested the card on a 133MHz Pentium, which is fast anyway, but were still impressed.

An interesting upgrade option for the card is the miro Mouse, an accessory used to control camcorders and video recorders via control buttons and a jog shuttle. It supports VITC, RCTC and RAPID time codes. This can speed things tremendously when digitising video clips.

Our verdict? The quality of the digitised images is the best we've seen to date for a card costing less than £2,000. For the price, it's probably the best card on the market today.

IconAuthor 7.0

Aimtech's Icon-Author, together with Macromedia Authorware Professional, have been top-of-the-range multimedia authoring packages for a number of different platforms.

They're both expensive, both target the CBT market, and both use similar graphical methods for constructing multimedia applications — tools are dragged from a palette onto a flow diagram. This, it is claimed, eliminates the need for programming, and makes the packages easy to use even by "ordinary" people. Not that experienced multimedia developers aren't ordinary people, of course, but this is how both companies justify the high price of the products. They claim that the pay-off comes in time saved by easy development by non-experienced users. You now have the chance to see for yourselves whether this claim is true by having a go yourselves, using the demo on this month's cover-mounted PCW CD-ROM.

With this new version IconAuthor is now one step ahead of the competition, and takes on board two main contempo-

The really wild cycle show, courtesy of IconAuthor

rary issues: Windows 95 and the Internet. Version 7.0 is 32-bit, so you can experience the better performance offered by Windows 95 (you can also have the long filenames: what a relief to be able to say to Mac users, "Yes, we have that too").

IconAuthor and the Internet

It's also "Internet compatible". But what does this mean? Well, it goes beyond HTML Web pages. New features enable you to create pull-down menus and include drag and drop, timers and combo boxes in your Internet applications.

Perhaps the most important of these Internet-related features is one called Universal Media Access (UMA). It allows you to create applications, parts of which reside on the Internet and parts on CD-ROM or a Local Area Network (LAN). That way, you can put on to the Internet those parts which need to be constantly updated, while keeping back others which need less frequent updating and/or which can't be delivered properly via the Internet due to the low transfer rates of modems. Remember that a 14,400 baud modem (admittedly, without on-the-fly compression) is about 90 times slower than a single-speed CD-ROM drive.

With UMA you can update Internet pages with ease. What's more, you can enter a URL (essentially, an Internet



address) as a path in your path file. Thus you can create your files locally (graphic or otherwise) and store them on your Internet site. When IconAuthor has to access these files, you simply change the name of the path variable.

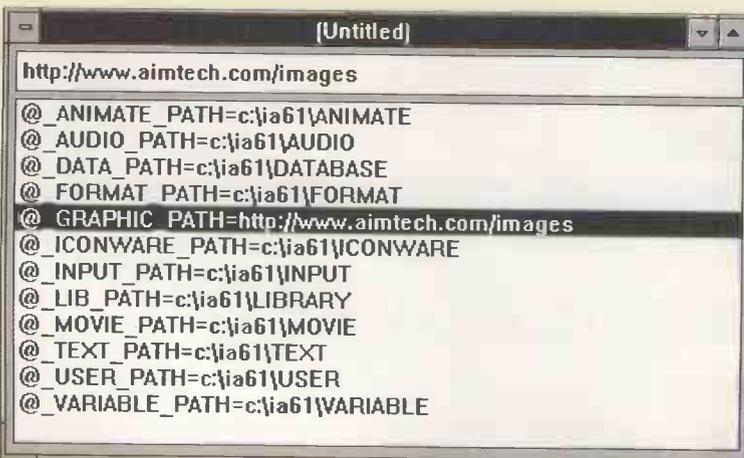
Present tense

You also get IconAuthor Present, a free runtime player which can be set as a helper application in a Web browser (such as Netscape) to launch an IconAuthor application from within a Web page. Aimtech states that it will be announcing specific support for the Netscape API in the future.

Other new features include an image manipulation utility (ImageLab), a palette object for handling palette shifts, a table object to handle the display of spreadsheet and database-type data, zooming graphics, and a search-and-replace facility.

IconAuthor claims the largest degree of platform portability, including Windows 3.x, 95, NT, OS/2, Unix/Motif and the Mac. One small disappointment at present is that Java isn't supported, but Aimtech tells us it's considering this at a later date.

● The demo on the PCW CD-ROM enables you to save but not distribute applications, and you're limited to 100 icons. Because each icon in the flowchart carries out a specific action, the creation of multimedia applications using this demo can be no longer that 100 actions, but you'll find that's quite a lot.



The path variables for an application. The graphic path variable is set to a URL

PCW Contacts

If you have any multimedia-related problems or queries, email us at g.c.jacobs@swansea.ac.uk. We're sorry, but we can't answer queries by personal reply — we'd be at it all day! But we're glad to publish queries, with our answers, which we think will interest PCW readers generally.

Aimtech 0171 702 1575
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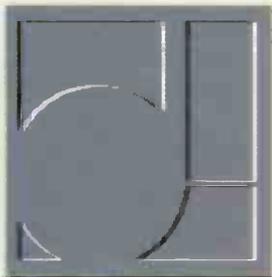


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Yamaha YSTM10 Speakers	YES (not pictured above)	yes		yes
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Maxing your MIDI

Don't put up with moaning MIDIs. Steven Helstrip shows you how to get more from your music machine.

IT'S ABOUT TIME WE took a closer look at getting more out of your setup. So, here I've selected some sound Helstrip tricks to help you squeeze more from your MIDI.

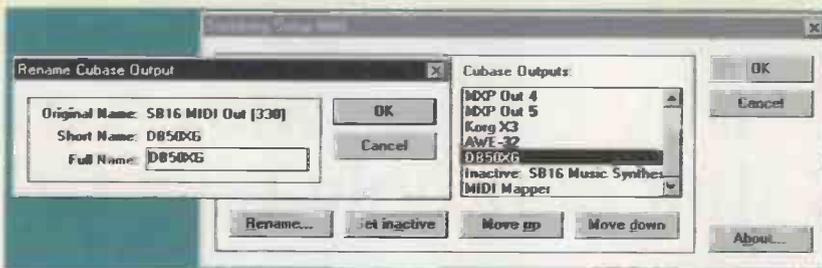
● Less noise from your PC

Noise is a problem with in every MIDI/audio setup, whether it's a standalone PC with a sound card, or a more complex studio setup. The first thing to do is to ensure that your sound card is fitted in to a slot as far away as possible from other cards: graphics cards and other intensive processors create the most audible interference. While you do this, position the card as far away as possible from the PC's power supply.

Using high-quality shielded cables between your sound card and mixer, or amplifier, reduces noise and considerably improves sound quality. The mini stereo-jack-to-phonos cable supplied with sound cards are often poor quality. For around £3 you can buy a solid mini stereo-jack-to-two-phonos converter, which will convert your card's output to phono plugs, allowing you to invest in decent cables. You can buy the converter from Tandy.

Most sound cards have individual amplifiers for each component (WaveTable synth, CD-audio, mic and line inputs), adding to the noise problem. Muting those not being used helps considerably.

AWE-32 owners should permanently mute the microphone input and use the line input to record, since the mic input is particularly noisy. Setting the master volume



Top *Muting the Mic and Line Inputs can help reduce noise from your sound card*

Above *Give your sound card a recognisable name from the MME setup in Cubase*

to maximum will improve the signal-to-noise ratio. If there is any distortion, reduce the gain settings on your mixer channels.

● Friendly MIDI ports

If you use Cubase and have several MIDI ports, you can rename them in the Setup MME drivers application. So, for example, instead of selecting SB16 MIDI Out (330) you can give it the name of the instrument connected to it. In my case, this is Yamaha's DB50XG daughterboard.

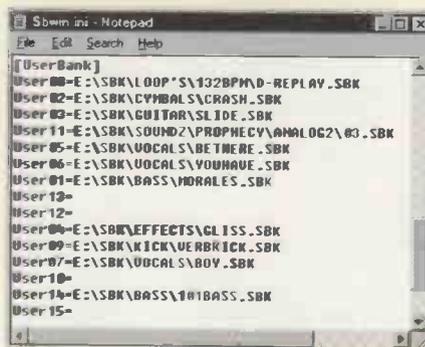
● Saving AWE-32 sessions

When I last counted, I had nearly 2,000 sample banks (SBKs) for the AWE-32. Remembering which ones I have used in a

particular song, and their locations, was just about impossible, since no application exists that allows you to save entire sessions. Nevertheless, I have come up with a solution. When you

load a sound bank, an entry is made in the user bank section of SBWIN.INI, noting its filename and path. Having completed a song, you can copy the ini file (located in the Windows directory) and paste its contents to the notepad within your sequencer. Returning to that song later will enable you to quickly reload any samples you have used.

The *Sbwin.ini file provides you with a reference to all the samples you've used on a particular song*



Let's face the D-Zone and dance

The people at D-Zone have been knocking out sampling CDs at quite a rate over the past few months. DanceZone is the latest product and one of its best so far — assuming dance-orientated CDs are your cup of tea. As usual with the Loopisms series, you get 25 pre-looped loops (if you see what I mean), and a load of "one-shot" samples. This time, the samples are courtesy of the Korg Prophecy and all are recorded at middle C. There are 125 samples in total, ranging from analogue sequences to slap bass timbres.

From now on, all of D-Zone's CDs, including this one, will be mixed mode, which means all the samples will be provided in audio and Windows .wav format. On the CD-ROM partition you will also find each sample in SBK format ready to be downloaded to the AWE-32 sound card — a nice touch.

The loops are predominantly house/garage orientated, although there are several jungle-esque loops to be found. Inclusion of the loop from Todd Terry's mix of Everything But The Girl's "Missing" (one of the best-selling singles, ever) was a bit cheeky, I thought — you couldn't possibly use it and get away with it!

For just £12.95, this is another "must have" for your collection.

Owners of AWE-32 cards shouldn't hesitate.

There's even a playable demo of Rise of the Triads on the CD for when you need a break, and a demo of Cool, the Windows sound editor.



● *Loopism's DanceZone is distributed by Time + Space (see "Contacts", page 317)*

● Save time with templates

How many times have you recorded a "four on the floor" kick drum pattern? And how many times have you tapped in 16s on the hi-hats? Because most sequences start life with a rhythm track, why not create a folder for frequently used sequences?

The tracks can be saved as complete arrangements (kick, snare, hi-hats, tambourine) or, for more flexibility, as individual parts which can be imported into any sequence. You can customise templates to name tracks, or set up drum maps, to free up more time for you to be creative.

● Change for the better

If your MIDI setup is limited to a 16-part multitimbral synth such as a sound card, it doesn't mean you are limited to using just 16 instruments within a song. By using program change messages, you can alter sounds during a sequence.

For instance, if on channel 1 you have a violin that plays only at the start of the track, you can switch to any other instrument once it has stopped playing by inserting a program change message.

Bear in mind, though, that most synthesisers take a fraction of a second to

Cubase Scores under Windows 95

Here's news of an update for Cubase Score 2.0*. Anybody running version 2.0 under Windows 95 will have experienced several problems, the most annoying of which is that the activity display doesn't work. This has now been fixed, and there are several new features — one of which is a new "virtual" MIDI port which allows you to output via the Windows MIDI mapper.

Most of the problems associated with printing and editing scores have been eliminated, and there's improved text handling. Keyboard commands which make use of the Alt Gr key proved to be a problem for many users since not all keyboards have the key. This can now be simulated using Control and Alt.



* The current version is 2.03. Updates can be obtained from Harman Audio (see page 317).

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The Pianist The Pianist series gives you exciting and educational music programs containing huge collections of up to 215 of the world's most popular piano pieces, performed by world-renowned pianists! Also included is a music trivia game "Guess the Song", program notes, biographies of famous musicians, a music dictionary (all on disk) and much more! All the pieces have been recorded "in real time" by concert pianists on an 88 note weighted MIDI piano keyboard. You'll hear the music playing with CD-quality through your sound card or MIDI system, just as if the pianist was performing in your home. Why not collect the whole series? **£45**

SONIC Sound Forge XP is a low-priced, general purpose sound editor which replaces the often unusable editors commonly bundled with most sound cards. It provides a wide range of Audio Processing functions including Fades, Pans, Normalize, Reverse, Smooth, Volume Control, and Stereo/Mono Conversion. Audio effects include Delay/Echo, Chorus, Distortion, and Reverb. Sound Forge supports most common real-time audio compression formats, and is fully 32 bit native in Windows 95 and NT. **£125**

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Chord of the Month

This month's mega-chord is G minor with a ninth. The notes in the chord are: G, B flat, D, F and A — the ninth gives the chord a jazz flavour.



change sounds. Any program change messages should therefore be made, say, a whole bar before the new instrument is required to play, to avoid any glitches.

● Mapping events

Panning an instrument, or effect, within a song can give a track greater stereo presence. However, inserting pan messages (continuous controller no10) is time con-



Mapping controllers in Cubase can save you hours of inputting CCs manually

suming and incredibly dull. Mapping a controller, such as modulation, to pan or other CC will allow you to record data in real time from your MIDI keyboard. In Cubase this can be done from the MIDI setup dialogue box. Going back to templates, you can save tracks or parts containing just the pan information for later use in other tracks.

● Massive string pads

By layering sounds you can create a bigger sound. Layering works particularly well with strings and pianos, although you can experiment with other timbres.

There are two ways to layer sounds. The first is to set several instruments to receive on the same MIDI channel when connected to the same MIDI port. If channels are fixed, as they are on sound cards, you can alternatively copy whole tracks within your sequencer and set the "ghost"

copies to transmit on a separate channel. Subtly panning the individual instruments will create a wide sound.

● Creating chorus effects

Playing two identical parts on the same MIDI channel causes a flanging, or chorus, effect. You can alter the effect by changing the velocities of each part.

● Create delays

If you don't have delay, or echo, built in to your synthesiser, you can create your own by copying parts to several other tracks. By offsetting the copied tracks, a delay effect is created. Delayed tracks can be reduced in volume or velocity and panned to create stereo effects.

● Storing cue points locator positions in Cubase

You can store cue points in Cubase in two ways: as song position, and as left and right locator positions. To store your current song position (for example, the start of a chorus), hold shift and press 0-9. To recall cue points,

simply press the location at which it was stored.

The same procedure is used to store locator positions, only these are saved and recalled using function keys. If a part is highlighted in the arrange window, pressing Alt Gr (or Control and Alt) and P will position the left and right locators around it.

PCW Contacts

Readers' contributions to the Sound column are music to our ears. If you have any hints or tips, any MIDI-related items or general comments, send them in to the usual PCW address, or to steven_helstrip@pcw.ccmail.com

Harman Audio (Cubase updates)
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Ooh, you Saxy thang!

Build point-and-click access into your applications with Sax Webster, says Tim Anderson. There's widgets and Windows, too.

FORGET LAPTOPS AND MOBILE phones; the fashion accessory of the moment must be the personal Web site. Web sites are of no use unless they are visited, so why not build point-and-click access into the applications you distribute?

You can do this by calling an external application like Netscape or Internet Explorer, but Sax Software lets you go one better by building a customised browser right into the application.

The Webster control is a 32-bit browser OCX that drops directly into any compatible development tool, such as Visual Basic 4.0 or Visual C++ 4.0. With the rampant growth of the Internet and increasing corporate usage of Intranet networks, Sax Webster has turned up at just the right moment.

For example, online help might now mean dynamic information on a Web site, rather than the static file shipped with an

application. Another option is to direct the hapless user to a site offering further products and services. HTML pages can be loaded from disk as well as from the Internet, so you could also use Webster as a multimedia browser.

Sax Webster is a complete application wrapped in a control. You can create a browser simply by dropping the Webster control onto a form in VB or Delphi. It claims to support HTML version 3.0, but Sax notes that "because 3.0 is not yet defined as a standard, it may differ from what Netscape, or some other 3.0 browser, supports."

Here is the problem with Webster, and ultimately with the Web itself: lack of tightly defined standards resulting in compatibility problems. It may not matter too much, since it would be foolish to use a Webster application as a replacement for Netscape or Internet Explorer. Webster makes better sense as a tool for accessing specific Web sites that are linked to the container application, so you can ensure the compatibility of those particular pages.

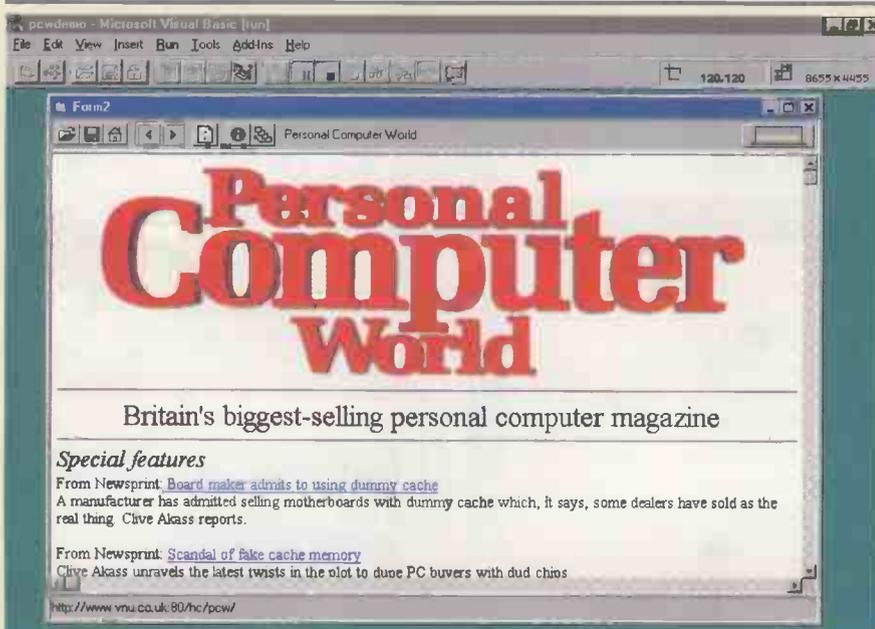
Some problems can also be overcome by writing code to intercept Webster events: for example, Webster does not support the mailto command that HTML uses to initiate an email message. The VB 4.0 code in *Fig 1* will intercept mailto and call whatever application is associated with that command in the Windows 95 registry.

Another useful feature is the GetContent method, which lets you read all or part of an HTML page into a variable.

Initially only available as a 32-bit OCX, Sax has now released a 16-bit OCX as well, but nothing yet for VB 3.0 or Delphi 1.0 diehards.

Fig 1 Intercepting mailto

```
Private Sub Webster1_DoClickURL(SelectedURL As String, Cancel As Boolean)
If Left$(LCase$(SelectedURL), 7) = "mailto:" Then
' run MS Exchange, using file association
ShellExecute 0, "open", SelectedURL, "", "", 0
SelectedURL = ""
' stop Webster attempting to act on this command
Cancel = True
End If
End Sub
```



New-look Data Widgets

Sheridan's Data Widgets has long been one of the most popular Visual Basic additions, particularly since the VB 3.0 grid is so poor. The data-bound controls in VB 4.0 are better but still leave room for third-party enhancements. Version 2.0 brings the expected conversion to 16- and 32-bit OCX format, but with enhancements. Sheridan has taken the opportunity to restructure the Data Widgets using objects and collections, bringing it into line with other programmable OLE objects. This makes for more logical code and increases the programmer's control, the disadvantage being that code which worked with Data Widgets 1.0 will have to be extensively rewritten (*Fig 2*).

The actual Data Widgets controls are

All done with Webster: VB 4.0 visits the PCW home page

the same six as before: Data Grid, Data Combo, Data Dropdown, Data OptionSet, Data Command and the Enhanced Data Control. All are useful, but the Data Grid is the reason people buy this package. Its neatest trick is to link with a Data Drop-Down so that users can click on a grid cell and select values from a dropdown list bound to a field in another table.

Do you need Data Widgets? It depends on how you prefer to program. If you make extensive use of bound controls this bundle is all but indispensable, particularly if a data grid is a key part of the user interface. The data control in VB 4.0 is not compromised in the same way as VB 3.0's effort, so this is a perfectly sound approach. The cautionary note is that large OCX controls like these cause substantially slower loading of your VB application, and grids are often not the best way to present data to the user. The Data Grid also works well as an unbound virtual list control — a further enticement which may sway doubters.

Fig 2 On the button

To put a button in a DataGrid cell in version 1.0 of Data Widgets, use a ColBtn property:

```
SSDbGrid1.ColBtn(2) = True
```

which in Version 2.0 becomes

```
SSDbGrid1.Columns(2).Style = 1 ' edit button
```

Top Tips: slim, dim and begin

- Speed VB's load time and slim your applications by stripping down AUTOLOAD.MAK (VB3) or AUTO32LD.VBP (VB4) to include only controls and references essential to every project.
- Avoid "Dim iA, iB as Integer". This code declares iA as a variant. Instead, use "Dim 1A as Integer, iB as Integer".
- In VB4, disable Compile on Demand (in Tools - Options - Advanced) to have the compiler check for syntax errors before a project runs.
- Your Delphi application can easily check for command-line parameters. ParamCount returns the number of parameters; ParamStr(0) returns the path and filename of the application; and ParamStr(n) returns the nth parameter up to ParamCount.

For example:

```
procedure TForm1.Button1Click(Sender: TObject);
var
i: integer;
```

```
begin
for i := 0 to ParamCount do
  MessageDlg(ParamStr(i), mtInformation,
    [mbOk], 0);
end;
```

- If you are adding lines to a string control like a listbox or memo, or an outline component, use BeginUpdate to increase performance by preventing screen updates. For example,

```
procedure TForm1.Button2Click(Sender: TObject);

begin
listbox1.items.beginupdate;
listbox1.items.add('One item');
listbox1.items.add('another item');
listbox1.items.endupdate;
end;
```

Tools of the trade

Microhelp's OLE tools may have up-to-date OCX technology, yet the package conveys a dated impression: the main reason being that apart from their OCX conversion, many of the controls are little changed from earlier versions, right down to their description in the manual and the clunky example applications. OLE tools also slipped up during review when one of the genuinely new items, MhSubClass, failed to deliver. This is a message-trapping control that can catch Windows API messages and either kill them, or respond with a custom event and pass them on.

MhSubClass is fine for some purposes; for example, if you want to inspect WM_MENUSELECT messages in order to provide a help text as the mouse runs down a menu. But a common requirement is to trap a message and then write code to determine whether to kill it or pass it on. MhSubClass cannot do this, since the fate of the message has to be determined

before the VB event is triggered. Rivals such as the Message-Blaster OCX have no such handicap.

Never mind the quality — with 54 separate controls, the bundle still rates as good value. MhCalendar is a data-aware

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Fig 3 A little application to toggle with

Here are two functions to detect the status of the screensaver and to check its state. Note that to work in Windows 3.1, the declarations will need to be adapted.

Option Explicit

Declare Function SystemParametersInfo Lib "user32" Alias →

"SystemParametersInfoA" (ByVal uAction As Long, →

ByVal uParam As Long, lpvParam As Long, ByVal fuWinIni As Long) As Long

Public Const SPI_GETSCREENSAVEACTIVE = 16

Public Const SPI_SETSCREENSAVEACTIVE = 17

Function isActive() As Boolean

Dim lRetVal As Long

Dim pvParam As Long

lRetVal = SystemParametersInfo (SPI_GETSCREENSAVEACTIVE, 0, pvParam, 0)

If lRetVal = False Then

MsgBox "Call to SystemParametersInfo failed"

isActive = False

Exit Function

End If

If pvParam = False Then

isActive = False

Else

isActive = True

End If

End Function

Sub SetActive(bActive As Boolean)

Dim lRetVal As Long

Dim pvParam As Long

lRetVal = SystemParametersInfo →

(SPI_SETSCREENSAVEACTIVE, bActive, ByVal pvParam, 0)

If lRetVal = False Then

MsgBox "Call to SystemParametersInfo failed"

End If

End Sub

(Note: → this symbol has been used where the code shown on the following line is a continuation, and should be entered as such. You'll find the complete code on this month's cover-mounted CD-ROM, together with versions for VB3 and Delphi).

Screensaver settings: hacking into the Win95 API

"I've bought a new system with Windows 95 and VB 4.0. My computer has a WinTV card, and I wanted to write a program that would turn the screensaver off and on without having to go into the display properties tab.

How or where can I find out about the API calls necessary to change the screensaver settings? Is there a book which describes all the Win32 (and/or Win16) API calls?"

Mark Horton

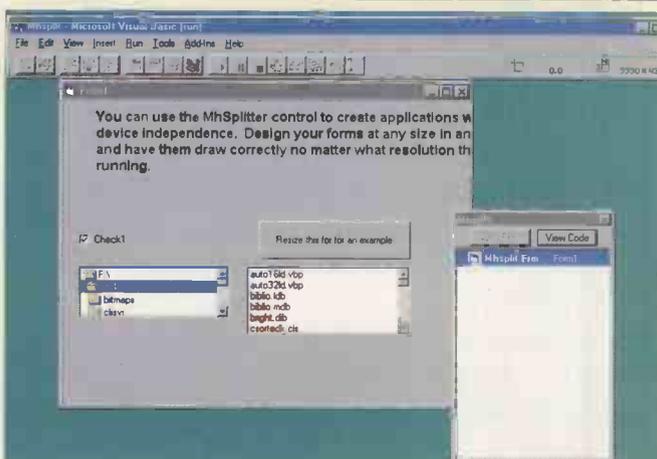
Windows 3.1 introduced a handy function called SystemParametersInfo. This reads or sets numerous system parameters including the screensaver settings.

Fig 3 shows a small VB application for Windows 95 which toggles the screensaver on and off. The two key functions, IsActive and SetActive, work by calling SystemParametersInfo. The application checks the current state of the screensaver on loading, so that it can be restored on exit.

Another possibility is for your application to disable the screensaver whenever it has the focus. Windows activates the screensaver by sending a WM_SYSCOMMAND message with wParam set to SC_SCREENSAVE. By intercepting and killing this message, you prevent the screensaver from kicking in. Delphi programmers can trap messages easily but VB users will need an add-on like the MessageBlaster OCX.

Many problems such as this can only be solved using the Windows API. That, in turn, means having a good API reference and the starting point is the Windows SDK help file called WIN31WH.HLP for Windows 3.1, and WIN32.HLP for 32-bit Windows. Surprisingly, Visual Basic 4.0 comes with declarations for the 32-bit API but not the 20Mb help file.

An alternative is Daniel Appleman's book, *VB Programmer's Guide to the Windows API*, which provides what's needed for Windows 3.1 and is to be updated for Win32.



The MhSplitter control from OLE Tools attempting resolution independence. Unfortunately, this text box does not always get correctly resized

calendar control. MhSplitter allows you to build resolution-independence into interfaces by automatically resizing controls within the container, albeit rather slowly. MhReallInput is a text box that improves on VB's masked edit control for working with real or currency values. And so it goes on, providing something of value for

most VB projects. There are differences between the two. For example, the inadequate MhSubClass is OCX-only, while the clever MhOutOfBounds universal data binding control is VBX-only.

Finally, VB tools used to come with a version of Farpoint's Grid control, but that has now been dropped.

PCW Contacts

Tim Anderson welcomes your Visual Programming comments and tips. He can be contacted at the usual PCW address, or on freer@cix.compulink.co.uk or <http://www.compulink.co.uk/~tim-anderson/>

Contemporary Software supplies Sax Webster £110; Data Widgets 2.0 £99; OLE Tools £149; and VB Tools £99. Tel 01727 811999

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The great bathtub curve mystery

A bad case of "stiction" nearly got the better of Stephen Rodda. This is how he restored order...

Hard disks have only a limited life, you know. Mine did. Or, rather died. It must be about time for me to have what seems like my annual rant about backups and so on, so consider yourselves ranted at. I had a case of "stiction" (a combination of friction and sticking), characterised by the drive not spinning up when power is applied. Luckily it was under warranty (a DEC OEM warranty of five years) and was replaced next day.

Bathtub blues

Unluckily, the replacement suffered from bathtub curve failure. A bathtub curve is the shape of a bath cut down the long way, half-way between the taps. You start at the tap end and graph failure of new units in pieces per thousand or so against time. At the tap end, fairly many new units will fail. As the faulty ones die, there's a fairly level area from the plughole up to where the bath starts sloping at the other end. This is where the equipment fails due to wear and old age.

No sooner had the engineer gone (around ten o'clock in the morning) and I had started to format the replacement, than I heard some funny noises coming from the disk. I wandered over to my Frankenstein machine which was formatting it, and received the dreaded Adaptec error screen, telling me the disk had failed. I switched the machine off and tried again.

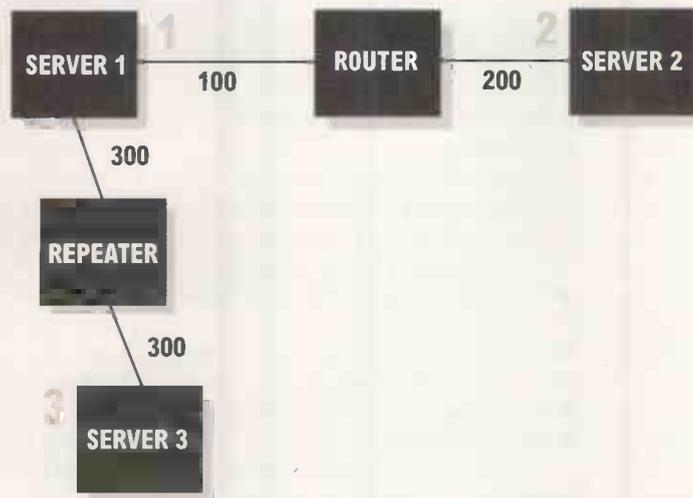


Fig 1 How to stop servers complaining about the network numbers of the other servers [see "We've got your number"]

This time it was better. The disk not only refused to come online, but after a while it powered down. I telephoned DEC again, telling them the disk had died. "There's nothing we can do about it today," they said. "We do warranty repairs with a day's turnaround." "But this was reported yesterday," I howled over the telephone. "No, the report you made yesterday has been dealt with." "By giving me a drive which died within ten minutes." "Possibly so, sir."

The moral of this story is that tomorrow I shall nail the DEC engineer down and force-feed her or him with coffee until the drive has finished formatting and verifying.

Luckily I only had stiction, and I could just do a couple of extra backups to make

quite sure. Remember — there's no such thing as too many backups. Of course, all the live data was on the NetWare server, mainly because I'm too lazy to move it, so the NT Server and Linux machine is the one that's out of commission. Actually, there's a secondary drive in it. Let's see if that's bootable. No it isn't. So, here I am, using an RM EISA machine. It's a piece of luck that there's a spare. I shall tell you what happens to the restoration of the data and the fitting of the new drive in a few lines, and you

will be a lot better off than I, since you will know in a few moments. I shall have to wait another 20 hours or so.

Dear diary

Today the hard disk has been replaced and formatted. Now I'm blessed if I know where I can find drivers for my CD. I suppose even if I found them, I'd have forgotten how to install them. Windows 95 and NT just don't need all this. Oh, I forgot to mention *why* I need drivers for the CD. I need drivers for the CD so that I can install Windows NT so that I can use the backup routine to restore from the tape drive. In the end, I went and stole an Apple CD, stuffed it onto the SCSI interface and ran EZSCSI from Adaptec.

Twenty minutes later, my machine was running Windows NT and restoring data to the new hard disk. Within the hour, I'd rebooted finally and everything had been restored perfectly.

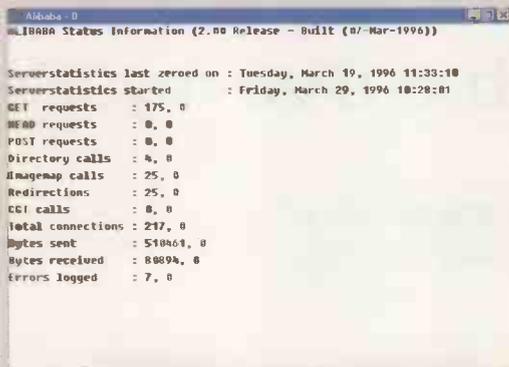
Never mind the internet, here's the intranet

Since the most recent buzzword seems to be "intranet", I thought I'd have a wander along that path.

The first question which posed itself was, "What exactly is an intranet?" I define an intranet as a LAN or a WAN operating under TCP/IP and providing some or all of the facilities available on the Internet itself.

Now, I don't have a lot of use for local FTP since all machines can (sometimes with a little jiggery-pokery) talk to all other machines on my network. Nor do I find life not worth living without Telnet.

Something which seems to be quite useful, however, is a local World Wide Web server (or perhaps I should call it an Office Wide Web). This allows you to test World Wide Web pages without



having to go online all the time. Most of the stuff you need from day to day would be available simply with a LAN connection, loading pages manually with File and Open.

Sometimes, however, it's nice to be able to test CGI scripts and image maps without going to the trouble of uploading the pages to a Web site and trying from there. To that end, I have looked at LeanHTTP (a simple server with no scripting abilities) and at Alibaba, which is built for Windows 95 and NT. LeanHTTP, which works well,

really just changes your home page to a local version and can't really be recommended for any other reason than it will allow a Macintosh to access HTML files on a Windows 95 machine. Alibaba, however, on ftp://ftp.eunet.co.at/pub/vendor/csm/alibaba/alibaba.exe, is a very different kettle of fish. Be prepared for a 4Mb download. I used an ftp agent to get it, since it was too slow from The Netherlands, so I'm sure it's a reasonably slow site. It's currently running on our LAN and I'll be reporting on how we get on with it in a future column.

Fig 2 Alibaba's statistics screen

We've got your number

I am often asked about network numbers under Novell's NetWare, and how to stop servers complaining about the network numbers of the other servers. Remember this simple rule: you can't refer to the same piece of wire carrying the same protocol by different numbers. In this case, "the same piece of wire" includes two segments bridged together or an extended network containing a repeater. Fig 1 (page 323) may help to explain; for clarity, workstations have been omitted.

Server one has two networks attached to it. Firstly, it has the segment numbered 100, which is connected to a router. This could be any form of router, but let's just say that this is a connection to a kilostream link to an office in another part of the country, which is connected to server 2. Now note that the segment which appears after the router is numbered 200 — that is to say, differently from that which goes into the other end of the router.

Note also that server 1 is connected to a very long LAN which will not reach all the machines on the site. The network administrator has added a network repeater which has extended the effective length. This repeater is transparent to the server and server 3 will see that server 1 is calling the segment by its original number. Installing server 3 we have to be careful to use the same number as server 1 for that segment. If we were to add another LAN segment to server 3, we could not use 100 or 200 again, since these numbers have already been used on the same LAN.

Xen and the art of network upgrading

"For the past year we have run a very small PC network. I asked the local Novell Apricot dealer to design a suitable network for our purposes. This consisted of:

- 1 x Apricot Xen PC Pentium 75, 8Mb RAM, 1Gb hard disk.
- 2 x Apricot LS Pro, AMD 486 33MHz, 8Mb RAM, 230Mb hard disk.
- 1 x HP LaserJet 4MP+ printer.
- 1 x Epson dot matrix printer.

The Xen PC is the server, running NetWare 3.12 and Tapeware backup. The LS Pros run Win95 3.11, and on a daily basis use MS Office Pro, PageMaker 5, and Access for Windows accounting.

I have subsequently added an Intergraph TD4 PC workstation (2 x Pentium 100, 64Mb RAM, OGLZ graphics, 1Gb HD, operating under Windows NT Workstation 3.5). All are connected by 3Com Ethernet boards and coaxial cable.

The Intergraph drives an HP DesignJet 200 plotter, a 4Mb DAT drive via SCSI, and primarily runs Pro-Engineer 3D modelling software, MS Office Pro and PageMaker 5. Occasionally it needs to access the accounting package.

We are effectively networked to share data files and printers. We have no in-house anorak, but most of us have long experience of Windows since version 1.0, a year of NT, and virtually no experience of NetWare.

It is now time to add a couple more workstations to the network (probably LS550s), mainly to use the accounting

package and MS Office. I have been receiving conflicting advice from suppliers, who should know more than we do, but I sometimes wonder. My questions are:

1. With NetWare, I have been told we cannot use the Xen as anything other than a server and for network backup duties. Is this true? It would clearly be helpful to have this machine as another workstation.
2. If we dumped NetWare and plumped for NT Server, what are the pros and cons? If we did, would you recommend Win95 or NT for the workstations?
3. Are there any other cost-effective solutions which would make the server available as a workstation?
4. If not, is there any advantage to updating 3.12 to 4.0?
5. Finally, I use a Xen-PC at home, using most of the software mentioned above, and would like to be able to log on to the network after hours to access the accounting package and other files. The Xen has 16Mb RAM, a Pentium 120 and 1Gb HD, and runs Windows 3.11.

Which remote control software would you recommend, assuming MS Remote Access could be bettered? Again, should I run NT or Win95?"

Tony Young

Phew! I'll answer the questions in the order you posed them:

1. Firstly, whoever told you that the Xen can only be used as a server was guilty of feeding you utter rubbish. It's a computer, just like anything else (albeit over-specified for running NetWare). I also presume

that whoever sold you a Pentium as a server also specified the machine with an IDE or EIDE hard disk (was that scornful enough, by the way?). Really, it does make me cross that people specify the wrong sort of computer all the time. At least when a parrot is taught to speak, you know that whatever comes out of its beak is not going to be blessed with anything as dangerous as original thought.

2. Since NetWare seems to work in your installation, I wouldn't suggest changing it now. I'm of the "If it ain't broke, don't fix it" school of thought. Windows 95 and Windows NT make perfect clients for NetWare, so there's really no problem with your current installation. With the current specification of workstation you have, it's difficult to recommend any operating system other than Windows 3.11. If you were to put another 8 or 16Mb in the workstations, I'd suggest you go for NT Workstation. On these machines, it would be faster than Windows 95.

3. Certainly there are. Just swap hard disks between one of the workstations and the server, and reconfigure (if necessary) — not forgetting to make a note of the settings first, before you open the machines up. You've then got a faster workstation and a server which still goes as fast as before. My NetWare server for four machines is a 386DX-20: you just don't need anything faster if you're only sharing files.

Another possibility is to see if there are any second-hand machines available for use as a server. An old Compaq Deskpro 386 DX with 8Mb of RAM would be ideal, as long as it is capable of taking your exist-

ing hard disk. Even if it isn't, hard disks are cheap enough that you could (possibly) upgrade to a SCSI hard disk for the server. (I'll bet these shysters sold you an IDE disk, I really do...)

4. There's no advantage to changing your network operating system until it breaks. One possible cause is that you might exceed the user count. Have you got a five-user installation, and do the printers log on to the network through JetDirect cards? Using one of the printers hanging off one of the workstations frees a Novell seat if things are getting tight.

If they do, and you want to, then I'd suggest first that you change your dealer. The one which specified the system for you clearly can't find its corporate bottom with both hands. It would have been better for you to have two faster workstations and a slower server — and they would have made more money.

If you find that you run out of networking connections, there are two possible avenues you can explore. The first, and more expensive, would be to upgrade the server to NT Server (or Workstation, since that allows ten connections). Remember, however, you'll need an altogether beefier machine to run it. The other possibility would be to see if you can get another copy of NetWare 3.12 which allows more users if it's necessary, but you should be able to do this by buying from someone who's retiring their old NetWare system.

5. A remote control system isn't the same as a remote client system. I'm not sure whether you're really clear on that point. If you only want to grab a few files for work at

home, I don't think there's anything wrong with the MS Remote Access server and client which comes with Windows 95 or NT. Windows for Workgroups 3.11 on your home machine should be able to communicate adequately with one of the machines on the network for file transfer. There's no point in spending money on a flashier product which would only do what you're already capable of doing for free.

If you decide to upgrade your home machine's operating system, do remember that more memory would not go amiss.

Sharing is such sweet sorrow

"I wish to set up two computers to share files between them via a modem link. I have tried to set it up using Dial up Networking in Windows 95 but failed miserably. Could you describe how to do it? Otherwise I shall end up having to shell out an enormous £120 for LapLink 95 to do the job.

P.S. Both machines run Windows 95."

Ian Powell

The problem here is that you only get the Remote Access Client with Windows 95. If you need a Remote Access Server, then you need the Plus! Pack. This supplies the Remote Access Server, and your troubles will be over.

PCW Contacts

Stephen Rodda is an independent computer consultant specialising in DTP and networking. He may be contacted at the_bear@cix.compulink.co.uk

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- "...UNBEATABLE VALUE FOR MONEY" — PC Magazine, November 1993
 "...LITTLE ON PRICE, BIG ON TALENT" — PCLAN, May 1994
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A touch of gold

Polish up your System 7.5 with the Golden Master version of update 2.0. Chris Cain reviews the new features and improvements.

The rumours were true. As predicted last month, the US Golden Master version of System 7.5 Update 2.0 is available now for download on Apple's Web sites and AOL. When installed, this takes your Mac to System 7.5.3.

Although this is just a maintenance release, it is nevertheless a big one which boasts much-needed improvements and bug fixes to the MacOS — and it's getting a lot of good press coverage in the US. There's more native code for PowerMacs and a faster Finder for everyone. It generally makes the Mac feel more solid than ever before.

I'll go through some of the new features, tell you what they're all about and how they might affect the way you work. I'll also be handing out a few tips on Apple's ResEdit that I picked up recently, along with the latest on news and updates — it's been a busy old month here in the Mac world.

Apple offline

First the news, and perhaps the biggest event this month was the announcement that eWorld, Apple's graphical online service, is no more.

The service has been discontinued and the company is encouraging existing users to turn to AOL and the Internet instead. This move isn't surprising, really, given that eWorld only had around 200,000 subscribers worldwide, and that it was more or less Mac only. But I, for one, will miss those well-designed pages. They looked a lot like the ones on AOL UK, except with more class.

Just as it should, Apple is offering to bounce existing users' email to another

address for a period of 90 days. For more information, talk to Apple's Customer Services department.

On a more positive note, QuickTime 2.2 has been announced. This new version will feature a QuickDraw 3D data track and a change to the MIDI side of things that Apple claims will give PowerMac users CD quality General MIDI music in software. It will provide greater control in this area, too, allowing third party developers to create their own instrument file plug-ins.

It's about time this area was addressed: the original idea of a software sound card was great, and the system has the potential to be very flexible. The current samples sound completely flat when compared to their hardware equivalents.

Other QuickTime developments coming down the line include software MPEG playback and a plug-in for Netscape designed to optimise streaming video playback over the Internet. There's also possible support for multimedia scripting languages such as Macromedia's Lingo.

This fits in well with the news that Macromedia has released a version of ShockWave (its technology for playing Director Movies over the Internet) for the Mac. This is certainly an exciting time to be in the Mac multimedia field.

Finally, on the monthly updates front, Connectix has released yet another patch for its popular Speed Doubler utility.

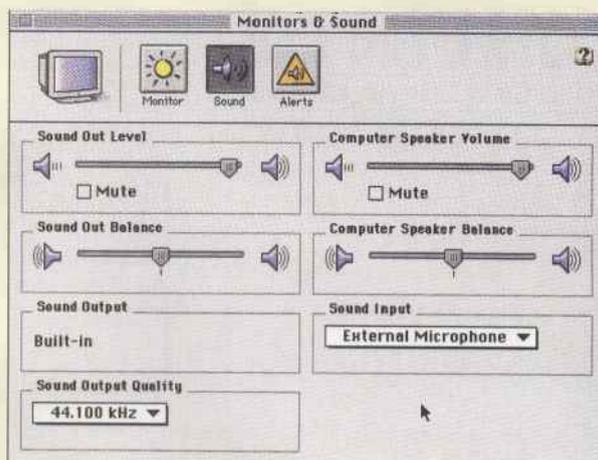
The new version is 1.1.2 and mainly fixes compatibility issues.

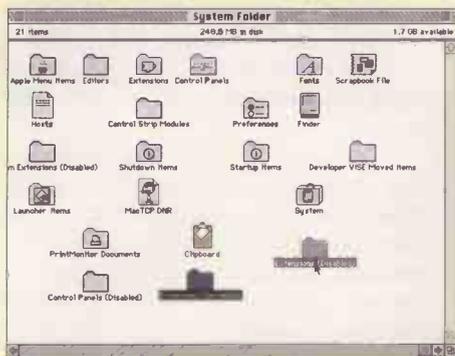
System 7.5.3

From around mid-April 1996, any new Mac that you buy will come with System 7.5.3 installed. Existing users can upgrade by installing System 7.5 Update 2.0, or by obtaining a complete copy of the new software. Although everything looks the same as the old 7.5 at first glance, there are some subtle differences and improvements you should know about.

● Monitors and Sound

The Monitors and Sound control panels (or single Sound and Display panel if you have a PCI Mac) have been replaced by a new control panel which is not really a control panel at all: it's an application. But either way, it's now the main method by which to switch graphic resolutions, colour depths and deal with the audio ins and outs on your Mac.



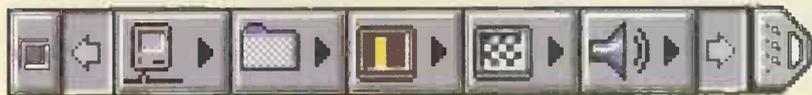


● **Translucent dragging (PowerMac only)**

When you drag an icon around the Mac screen, you normally get its outline displayed under the mouse pointer. In 7.5.3 you get a more stylish "translucent" image, as seen on systems like Windows 95. If you drag more than one icon, only the image directly underneath the cursor is displayed.

● **Open Transport 1.1**

The Open Transport 1.1 networking architecture now works on 68030 and 68040 models as well as PowerMacs. It boasts a few more options, supports PC Card interface cards and NuBus as well as the PCI bus, and has several bug fixes which should please anyone currently experiencing troubles.



● **Control Strip**

Originally designed for Powerbooks and installed only on PCI desktop models, the Control Strip is now standard operating equipment.

It enables users to quickly set the sound volume, switch screen resolutions and bit depths, and turn file sharing and AppleTalk on and off. Third party modules for the panel can be added by dropping them into the System Folder.

● **Desktop Printing**

Another extra that originally came with QuickDraw GX, desktop printing gives you icons for your printers, on screen.

Now you can print a document by simply dragging it on to the icon for the printer you want to use. If it's an application-specific file, such as a Word document, the Mac will launch the package, evoke the printing facilities, and quit the application — handy.



● **Desktop Patterns**

Yes, there are some new desktop patterns. These aren't particularly important but they are something that everyone uses, and the more you've got to choose from the better. There are ten new ones, and the roses are my favourite.

● **Desktop Rebuilds**

The final user-noticeable change is that program comments in Get Info windows no longer delete when you rebuild the desktop. Perhaps this will encourage more people to use this facility?

Homer says...

Just for a change, this month's featured utility doesn't have any real uses as such. It's just a fun bit of "postcardware" that has kept me amused over the past few weeks.

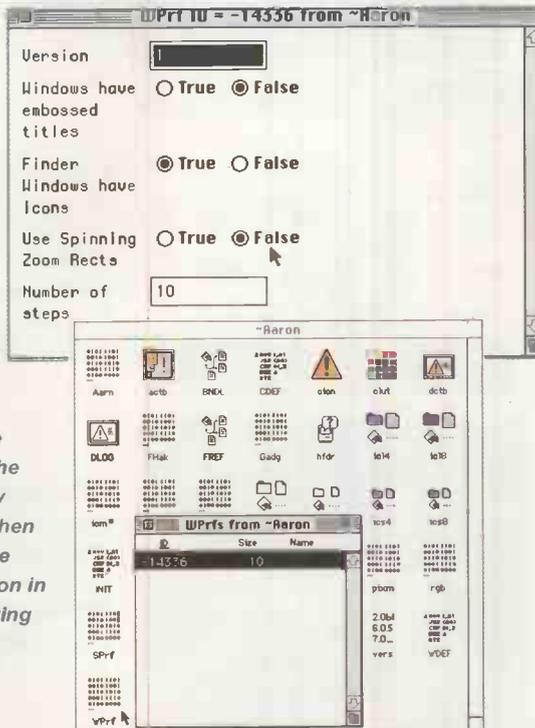
Homer Pro 2.1 puts a picture of Homer, the all-American father from the hit cartoon The Simpsons, in a small window on the screen. Then, every so often, the picture quotes one of 26 classic Homer sayings at random — if you're a Simpsons fan, It will have you in stitches.

Guaranteed to become a mission-critical application, Homer Pro can be downloaded from shareware sites on the World Wide Web, or from the authors at Slipped Disk Software, 11A Alexandra Street, Hunter's Hill, 2110 NSW, Australia. If you like it, send the authors a postcard, or email them at Richard_Salter@khazad.apana.org.au.



Fig 1 Adjusting preferences in Aaron

1. Make a duplicate copy of Aaron and open it using ResEdit. When the main window appears, find the resource called WPrf and double-click on the icon. Another window will appear with a couple of numbers in it. Double-click these



2. You now have access to the preference settings. Change the Zoom Rects option to False by clicking the button next to it, then close all the windows and save changes. Place this new version in your extensions folder, removing the old one first if you already have it installed, and restart

ResEdit rules

One of the most useful utilities ever produced for the Mac is a small program called ResEdit. As its name suggests, it's used for editing the resources and

components in Mac applications. The latest version is 2.1.3.

This month, I used it to solve a couple of problems I was having with Aaron and Adobe Photoshop. Aaron, for the

uninitiated, is a small shareware extension that changes the Finder's appearance so that it looks more like Apple's up and coming Copland operating system.

It gives you bas-relief shaded menus and windows, cool-looking 3D icons for folders and a nice new Wastebasket. But it also gives you really annoying spinning windows that slow everything down on low-end PowerMacs, which is where ResEdit comes in.

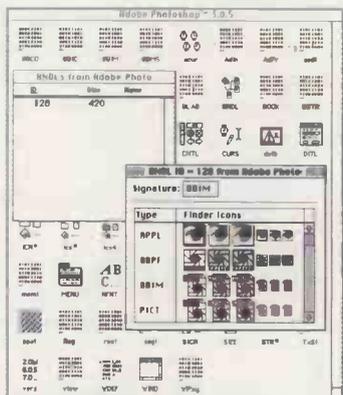
With the help of ResEdit you can open up Aaron and adjust its internal preference settings to turn off this feature. To do this, follow the simple steps shown in Figs 1 & 2.

Fig 2 Patching Adobe Photoshop

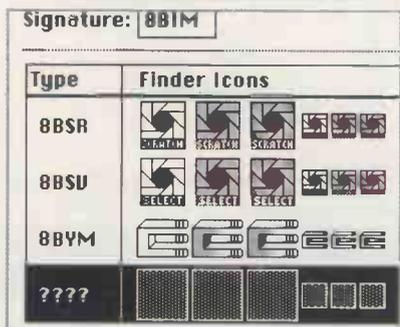
The Adobe Photoshop manoeuvre is a delicate operation. It comes courtesy of PCW's DTP guru Gordon Laing, and Photoshop programmer Doug Olsen.

It fixes a problem with Photoshop 3.0.4 or above, which prevents the application from recognising drag and drop operations with non-Photoshop files. This can be extremely annoying if you constantly need to edit images generated in another package, or on the PC.

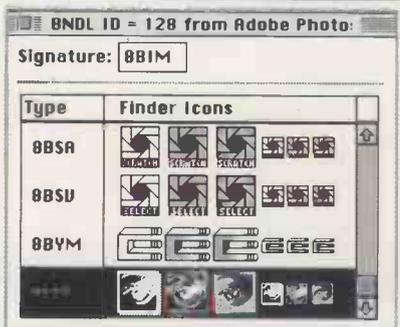
Before attempting to patch Photoshop, it is advisable to make a duplicate of the main program in case anything goes wrong. Once you've done this, open the program with ResEdit and perform the following steps:



1. With the main ResEdit window open, find and double-click the resource labelled BNDL. As in Aaron, this opens a window with numbers in. Double-click them to reveal another window



2. The new window shows a group of Photoshop Finder icons associated by the program to different file types. We need to make a new file type, so select Create New File Type from the Resources menu. A new line of empty icons will appear with the File Type ????



3. Click on the question marks and change the entry to ****, then select Choose Icon from the BNDL menu. Scroll all the way to the top of the window that appears and double-click the first Photoshop icon. The icons will be assigned to the new file type



4. Finally, close all windows and save changes when prompted. Restart the Mac and rebuild the desktop by holding down Option and Command during startup. Photoshop should now recognise those foreign files

Did you know?

The Mac's interface is renowned for its ease of use, but occasionally you do come across something that's highly annoying.

One particularly irritating thing, especially for those used to Windows 95, is the way in which windows can become cluttered and disorganised when in the normal icon view. Icons often become overlapped, or move out of the viewable area.

Apple's "Clean up Window" command offers a partial solution and, when selected, slowly moves every icon on to the nearest gridline. This can still leave you in a mess, however, especially when you've got icons outside the view.

The solution is to hold down the Option key while selecting the Special menu — "Clean up Window" becomes "Clean up by Name". Selecting this will quickly sort the contents into alphabetical order and line up the icons as much as the filenames will allow.

PCW Contacts

Chris Cain loves to hear from Mac users and can be contacted via the usual PCW address or on email as chris_cain@pcw.ccmil.compuserve.com or CainUK@aol.com or chris@cix.compulink.co.uk.

ResEdit from Full Moon Software
 01628 660242
 Apple Computers 0181 569 1199
 Apple Customer Response Centre
 0990 127753

Apple's home pages are www.apple.com and www.euro.apple.com



Q "I have read so much about different sound cards that I am not sure of anything except that PCW recommends at least a wavetable version.

I currently have an Amiga with MIDI interface connected to a Roland e-10 keyboard and run the Sequencer One software. This is quite good, but I am limited to the keyboard for sounds as the Amiga is a bit limited (only four channels) and the keyboard is not general MIDI, just plain MIDI. I plan to buy a Gateway P100 with an Ensoniq sound card and speakers in the next couple of weeks.

How does PC sequencing work? Will I be able to use my Roland for just the keys and utilise the GM-sounds on the PC-card? Do sound cards have MIDI interfaces built in? How good will the PC sounds be — on a par with a good keyboard? Is a good sound card like a synthesiser without the keys? I don't want to buy a PC and then find I still have to use my Amiga. And what does 'wavetable' mean? Your advice would be appreciated."

Nell O'Connor

The de-facto standard sound card for the IBM PC is the SoundBlaster 16 made by Creative Labs. Most other sound cards are compatible with this and use it as their base-level specification, so it's a good place to start.

There are six main components to the card: a synthesiser, a DAC/ADC section for playing and recording digital sound (known as wave files), a mixer which adds the various sound sources together, a MIDI and a joystick port, and some form of CD-ROM drive interface.

The joystick port is really only useful for entertainment applications and needs no further explanation. The CD-ROM interface is generally of the IDE type in current sound boards, if they support one at all. In the early days, sound boards formed the hub of a multimedia upgrade so included proprietary CD-ROM interfaces.

The ADC and DAC (Analogue to Digital Converter and vice versa) is used to record and play sound samples. These days they are nearly all capable of operating in several quality modes up to 16-bit samples at 44kHz or greater, and in stereo. However, this isn't as useful as it sounds for music applications unless you are interested in using the PC as a digital recorder; which is actually a practical proposition.

The interesting parts for the music maker are the synthesiser, the mixer and the MIDI ports. The basic synthesiser is of the FM (Frequency Modulated) type. This uses the same principle as the Yamaha

DX7, among others, which was responsible for many of the uninspired backing track sounds of the early eighties.

The normal FM synthesiser chip found on sound boards is the OPL3. If you like this sort of sound you can certainly have some fun with its 20 partials (simultaneous sounds). However, just because it can make 20 distinct noises at once, you might be disappointed to find it isn't much of an improvement on the Amiga's four.

The Amiga had a system which allowed each of its sound channels to play very rich sounds, whereas you have to gang up several FM partials to get good effects.

The better sound cards use a system called Wave Table synthesis, in which the notes are actually stored as digital recordings. These sample recordings are used to calculate the output wave for the required note as and when required — not an easy job, but the effect is often quite realistic.

Most wavetable synthesisers can handle 32 partials. Each partial can be used on its own and still produce a rich sound. While this may be adequate for popular music, don't try to simulate an orchestra!

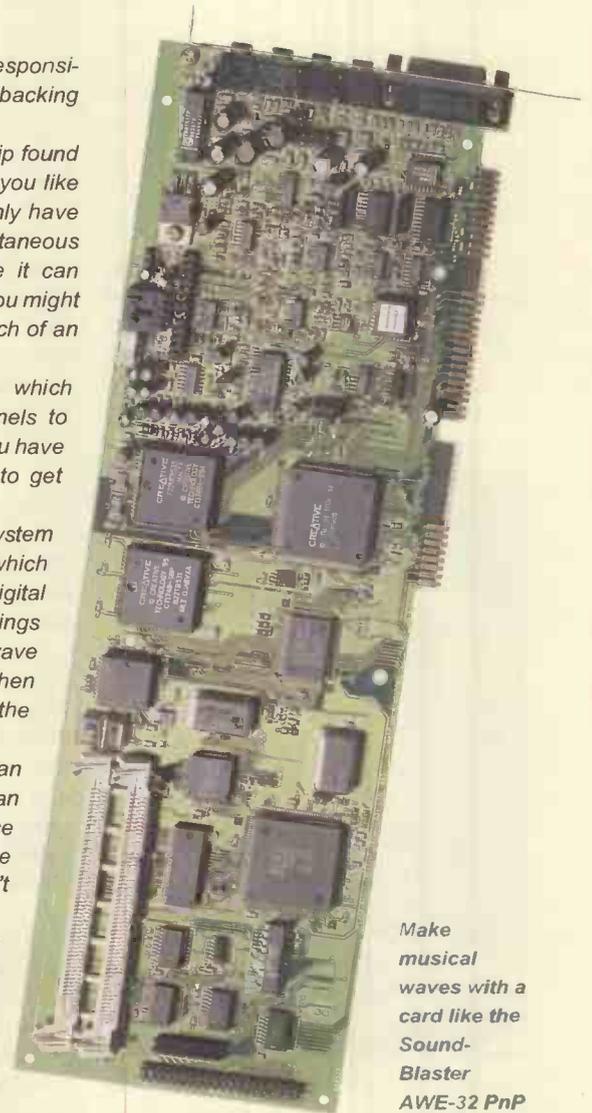
If you have a sound board with basic FM synthesis and you want to upgrade to wavetable, this can sometimes be done using a daughterboard. These plug on to a sound board with a suitable socket and appear to the PC to be an extra, external, MIDI synthesiser. In fact, it is possible to upgrade some wavetable cards like the AWE-32 with an additional wavetable module if you want to go mad. Several upgrade daughterboards are available, the most famous being Creative Labs' own WaveBlaster.

The MIDI ports are all fairly standard and trouble free once you've discovered



Any questions?

If you have a PC problem or think you could help out other readers, contact Frank Leonhardt.



Make musical waves with a card like the SoundBlaster AWE-32 PnP

that they need an external adaptor cable to make them work. The cable itself contains the opto-isolators missing from the sound board in a large plug.

For some strange reason, the MIDI signal comes out of spare pins on the joystick socket rather than having a connector of its own.

You will certainly be able to make use of the Roland keyboard by connecting it to the MIDI port. Sequencing software is readily available and basic packages are often bundled with the sound boards. The synthesiser built in to the sound board appears just like any other MIDI instrument in the chain.

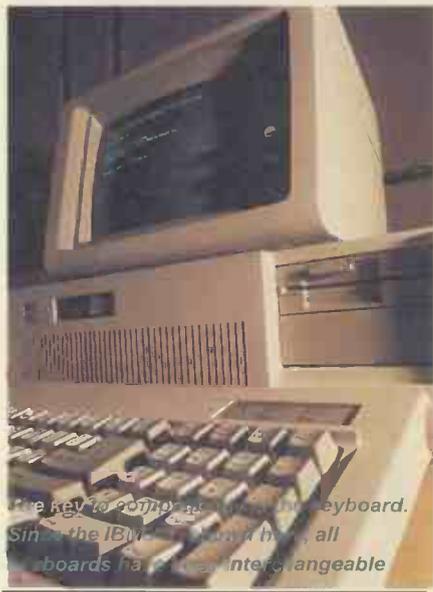
Don't get too concerned about General MIDI. What it boils down to is that a GM instrument will have the same sounds on standard patch numbers (for example, 1=Piano, 2=Electric Piano). If your instrument doesn't conform to GM numbering you will have to configure to software so it knows how to translate GM-numbered MIDI files.

Dash it all

"My friend's PC always adds a '-' in documents when using the right arrow cursor movement key. Can you tell me how to stop this from happening?"

Max Waterman

This sounds like an incompatibility between the keyboard driver and the word processor. The first thing to try is to remove any drivers like ANSI.SYS or NANSI.SYS from the CONFIG.SYS file and anything else which looks like it might be related to the keyboard from both



CONFIG.SYS and AUTOEXEC.BAT. The lines in question might contain KEYB, KEYBUK or KEYBOARD.SYS depending on your DOS version.

If this cures the problem, then start adding them one at a time to isolate the culprit. The reason for suspecting display drivers like ANSI.SYS and its numerous alternatives is that they often intercept the keyboard, too.

It could also be the case that the word

Frank's Bargain Basement

By the time you read this, RAM prices will have fallen considerably — and about time, too. I expect 16Mb to be costing less than £200, which is probably low enough to tempt many into carrying out their Windows 95-induced upgrade plans.

So why has it happened? And will prices fall further? More rubbish is talked about RAM supply than most other aspects of the computer industry. Regarding this price movement, I've been told that it was down to the Chinese New Year creating a world glut because all the Far East clone makers closed down for the holiday. Oh yeah? If they did close down the factories, which I somehow doubt, it wouldn't have been for the full two weeks of celebrations. Pull the other one. I think it's far more likely that the DRAM manufacturers have decided to supply Europe direct and get around the 80 percent tariff imposed by the US government. I smell whole-output contracts lapsing left, right and centre.

In the short term, prices are bound to stabilise and probably go up a bit once dealers realise that their large stocks are a liability in a falling market. For the latest situation, have a look at the Computer Answers Web page (see the "Contacts" panel, below).

processor you are using requires a particular keyboard or display driver which you don't have installed. Check its documentation to find out.

You may have a hardware problem with the keyboard. If it is a standard PC, the best way to prove it is to try a different keyboard.

Since the IBM AT (and other 80286-based models) all the keyboards have been generally interchangeable as long as they have the right plug fitted. The main exception to this rule is the early Amstrads. Mixing pre-AT and post-AT keyboards is not good news as they run at different voltages.

Taking a chance on Acrobat

"I have hundreds of documents in PageMaker 5 format and I need to get them into Microsoft Excel 5.0 or Microsoft Word for Windows 6.0.

Adobe have told me that PageMaker doesn't support any export facilities and that, basically, I don't have a chance. Is there any medium that could be used to convert PageMaker files with .PM5 format into a format such as .bmp or .wmf, that could be embedded into the above applications, or inserted as objects or pictures?"

Jason Smith

This could be a job for Adobe's latest bandwagon following PostScript — Acrobat. This is a system which is intended to allow you to create documents on one machine, which can then be read by all the computers in the entire world. Okay, so it's not quite universal yet, but they are doing quite well with DOS, Windows, OS/2, Macintosh and Unix support.

In case your intended recipient doesn't have an Acrobat reader on their machine, you're currently allowed to give them one free of charge.

To create the documents in the first place, you can use any application you like as long as it has a print option. You then

"print" the final version to Acrobat Exchange which converts it into its own standard format (PDF) and stores it in a file. It's as simple as printing it to a printer.

The results can be very good: when viewed, the documents appear to be practically identical to paper versions. PDF files can also be embedded as OLE objects under Windows, which is how they might solve your problem. Unfortunately, however, you don't seem to be able to see the contents unless you actually open the embedded object.

It's probably possible to convert documents into .BMP format but they would end up taking up somewhat more disk space than the originals, to say the least. PDF files appear to be relatively compact, especially considering the cross-platform compatibility they achieve.

PCW Contacts

Frank Leonhardt is an independent technology consultant who can be contacted on 0181 429 3047 or via email as frank@dircon.co.uk or leo2@cix.compulink.co.uk.

There is a web site at <http://www.users.dircon.co.uk/~wombat/answers/> which may contain late-breaking news. Letters may be sent to PCW at VNU House, 32-34 Broadwick Street, London W1A 2HG.

Sorry, but due to the high volume of correspondence, individual replies are not normally possible.

Monitor/keyboard sharing

Q-Data (MARC Software)
01349 866127
Keyzone (Various hardware)
0181 900 1525

Sound boards

Creative Labs (various Blasters)
01245 265265
Aztec (Galaxy series) 01734 814121
Orchid (NuSound) 01256 479898
Adobe (Acrobat) 0131 451 6888



RAM, or Random Access Memory, is the physical memory inside your PC. It is the working memory used by your computer to store instructions and data before they can be committed to the hard disk. It's also the focus of this month's Beginners column.

Because RAM works much faster than the hard disk, it is used for handling all the data which is in constant use while programs are running, and for this reason it's essential when it comes to performance.

How much do you need?

In the old days of DOS-based applications, most spreadsheets, word processors, and simple databases could run quite happily on one or two megabytes.

These days, most people run Windows programs, which are graphical by definition (even simple spreadsheets and word processors) and consequently they are very memory-hungry. It's generally agreed that you'll need at least 8Mb to run the average system satisfactorily — and more

Memory is made of this

Eleanor Turton-Hill guides you through the ins and outs of VRAM, DRAM, SIMMs and more of the stuff which is vital to your system's performance.

if you use graphics or CAD (Computer Aided Design) applications.

A system with 4Mb of RAM will just about stand up running the current generation of software. However, it'll soon drive you round the bend with its crunching

noises and flashing lights as it struggles to shovel data from memory to disk. Most PCs currently on the market should come with at least 8Mb of RAM as standard. If you're running Windows 95, this is an absolute minimum requirement.

You should try to maintain a healthy balance of components in your system. To do justice to a P100 (or higher) processor you should have at least 16Mb of RAM.

Virtual Memory

As its name suggests, virtual memory is not the physical stuff inside your machine; it's actually a facility in Windows which allows you to use an area of your hard disk as an extension of RAM. This is called the "swap file" and is a useful feature if your software is very demanding and your system is short of RAM. It's no substitute, alas, for the real thing, but if it is set incorrectly your system performance can deteriorate dramatically. Many new users don't discover the Windows swap file until their systems inexplicably grind to a halt.

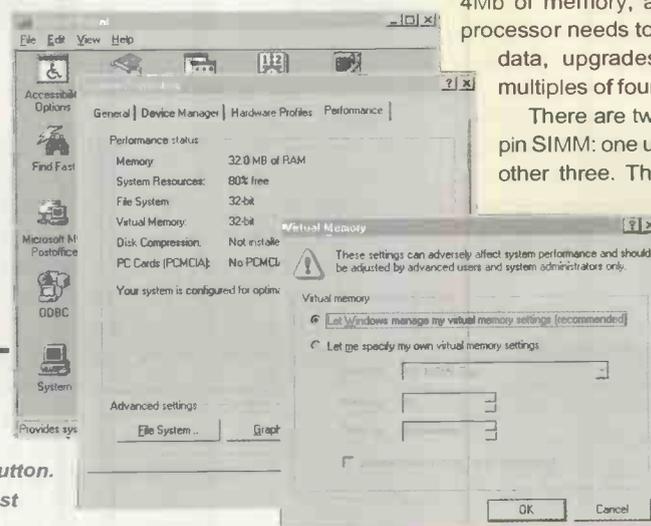
To check on your current swap file settings, go into the Control Panel and double-click on the "386 Enhanced" icon. Then click the "Virtual memory" button. A dialogue box will appear displaying the size of your current swap file, and it should also tell you whether it is temporary or permanent.

Permanent and temporary swap files work differently in terms of how they access your hard disk. Temporary swap files are built up from fragmented bits of spare disk space. In order for Windows to use a temporary swap file, it must pass data on to DOS each time it reads or writes. Permanent swap files work far more efficiently because they are made up of contiguous (that is, uninterrupted) disk space, which means that Windows "knows" the address of disk sectors and does not have to communicate via DOS.

In Windows 95, the swap file expands and contracts dynamically based on actual memory usage, and for the majority of applications it's best to allow Windows to manage this for you.

Some applications have special swap file requirements — particularly real-time applications like sound recording and video — and in this case you may need to customise its settings. Otherwise, it's best to leave well alone.

In Windows 95, you can find the virtual memory settings in the System icon in the Control Panel — just click on the Performance tab and the Virtual Memory button. The OS manages this automatically for most applications



What is a SIMM?

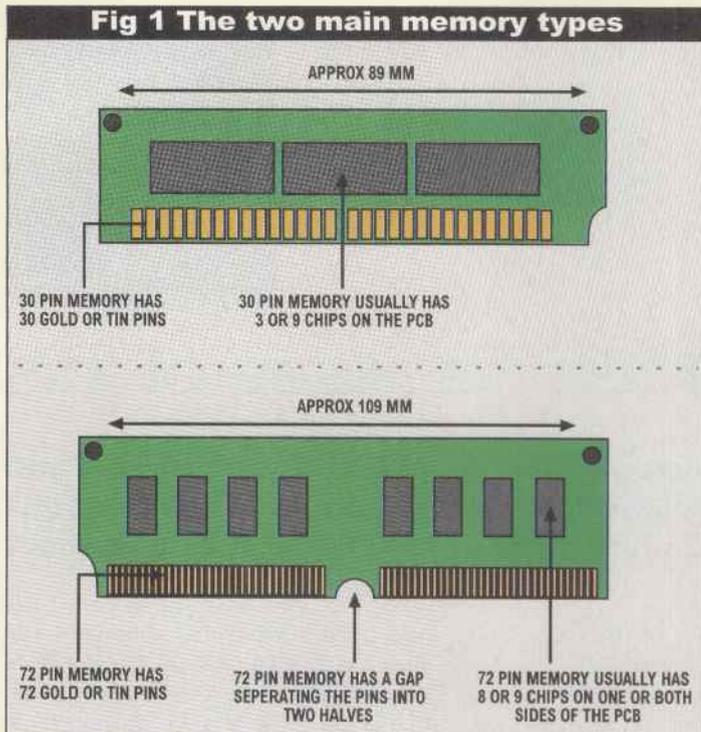
RAM comes packaged on small boards called Single In-line Memory Modules, or SIMMs, which snap into special sockets on the motherboard. SIMMs are generally easy to take in and out as long as they are not obscured by any other components.

There are two types of SIMM widely in use: 30-pin and 72-pin. To find out which type of SIMM is used in your machine, take a look at Fig 1 (page 332).

Some 486 machines were built using both types of memory modules. 30-pin SIMMs are typically sold either with 1Mb or 4Mb of memory, and because the 486 processor needs to transfer four bytes of data, upgrades tend to happen in multiples of four: 4 x 1Mb, or 4 x 4Mb.

There are two main designs of 30-pin SIMM: one uses nine chips and the other three. The two types of SIMM should be interchangeable but, as a general rule, you should use only one type of SIMM in your system.

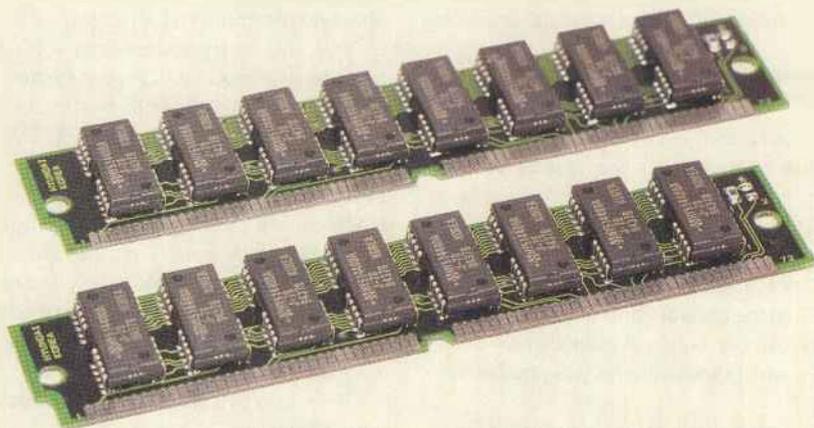
The two different types of 30-pin SIMMs have different refresh timings, and some third-party mother-

Fig 1 The two main memory types

Left, top
A 32-pin
SIMM

Left,
bottom
A 72-pin
SIMM

Below
72-pin SIMMs
like these
have become
standard on
Pentium
systems



boards do not take this into account. Fitting the wrong SIMM type into a machine can cause all kinds of erratic problems, such as spontaneous printing, system hanging, and booting hassles.

Modern machines use the longer 72-pin SIMMs which are usually sold with four, eight, or 16Mb of memory. Some 72-pin versions include pins which code the rated operating speed of the SIMM so that your PC can tell that SIMM's speed limit. These are now becoming standard on mainstream machines from big vendors.

Parity checking

Each memory location on a SIMM holds a byte (eight bits) of data, but an extra bit is often included as a parity error check.

The parity check bit enables the computer to verify the integrity of data stored in memory. When a byte of data is written into memory, the parity check bit is set either to zero or one, so that the total of all nine bits

always adds up to an odd number.

Each time data is read from memory, the nine bits of each byte must add up to an odd number. If an even number is encountered, the system immediately detects invalid data.

Do you need SIMMs with, or without, parity?

First, find out what type of SIMMs you've already got in your system. You may have to remove a single SIMM to inspect it properly: *be careful when touching SIMMs as they are extremely sensitive to static electricity, so make sure you earth yourself first by touching something metal.*

Normally, SIMMs are held in place by two small catches: one on each side of the module. These catches must be carefully released before you can pull the SIMM free. When you replace it, these two catches must be carefully clipped back into place. Make sure that SIMMs put in to the

system are facing the right direction — most SIMM sockets have keying tabs on them to prevent you from inserting them incorrectly.

You can check your existing SIMMs by looking at the number of chips on one or both sides of the SIMM: if it has eight chips on one or both sides, then it is *without* parity; if it has nine, then it is *with* parity.

Most 30-pin SIMMs have a parity chip. If your system does not require parity, then you can still use SIMMs *with* parity. But the reverse does not apply: in this case, it's possible on some PCs to disable the parity requirement via a jumper or BIOS (Basic Input Output System) setting. You'll need to consult your motherboard manual to verify this.

DRAM, SRAM and VRAM

Memory technology, like most other areas of computing, is infested with acronyms, and if you've ever leafed through a *PCW* group test you may recall having seen references to DRAM, SRAM or VRAM. The first stands for Dynamic RAM, which forms the bulk of RAM in all systems today. It is called "dynamic" because it has to be actively refreshed by the processor, at regular intervals.

SRAM, or Static RAM, does not need to be refreshed in this way and this fact, along with various other design features, makes SRAM several times faster than DRAM. Unfortunately, SRAM is also several times more expensive, so it's not practical to use it as standard system RAM. Instead, SRAM is generally built in to the processor and used as cache memory. This cache acts as a buffer between the processor and the slow DRAM. Even small amounts of SRAM (128-256Kb) can produce a massive speed increase in a machine.

VRAM stands for Video RAM and is similar in many ways to DRAM, but with one major functional difference — VRAM can be written to and read from simultaneously. This is particularly useful to the video card processor, which needs to read an image and send it to the screen without having to wait for the CPU to finish writing it.

VRAM is faster than DRAM and, as you might expect, it's also more expensive. Most video cards these days contain VRAM, but sometimes manufacturers use DRAM to cut down on costs.

PCW Contacts

Eleanor Turton-Hill welcomes feedback and suggestions from readers. She is on ellie@pcw.cmail.compuserve.com

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Buying a PC

The one universal rule with PCs is that they get "cheaper, better and faster" over time. This can happen at a bewildering rate, with the result that your state-of-the-art PC becomes outdated and old-fashioned in a couple of years. It may still work perfectly well, but it probably won't run very fast and won't run the latest software. If you're just planning to do simple word processing, this probably won't matter. But we're assuming here that you want to buy a general-purpose multimedia PC that can play games, use CD-ROMs and run a range of modern software.

Things not to do when buying

- Don't buy a machine with less than 8Mb of memory.
- Avoid older VESA local bus motherboards.
- Avoid cheap 14in monitors.

Things to do when buying

- You can never have too much disk

space. Spend extra cash on the next hard disk size up.

- Memory is expensive, but upgrading from 8Mb to 16Mb makes a huge difference to performance.
- Look at the bundle. What other software is included — is it worth having?
- Check the warranty. Is it on-site or back to base? If it's on-site, does the

manufacturer offer guaranteed response times?

- Check the technical support. Is it free? Is it easy to get through to?

PCW Minimum Specification

This is the absolute minimum spec we think you should even consider buying now. It's suitable for general business use: word processing, databases and spreadsheets.

- Windows 3.11
- 486 DX2 66MHz processor
- 8Mb RAM
- Graphics card with 1Mb of memory
- 340Mb hard disk
- 3.5in floppy disk drive
- Double-speed CD-ROM drive
- 14in colour monitor
- PCI local bus

If you're buying the PC for home use, you'll probably want full multimedia capabilities so that you can use CD-ROM games and edutainment products and play video clips.

This should include at least a

- 16-bit SoundBlaster-compatible sound card
- Speakers

PCW Recommended Specification

If you're not completely strapped for cash this is the PC specification we recommend.

Certainly no-one who works at PCW would consider buying anything less.

- Windows 95
- Pentium 90MHz or 120MHz processor (a faster processor will make your computer run more quickly and smoothly)
- 256Kb secondary cache (again this makes your computer run faster)
- 16Mb EDO RAM. 16Mb of memory speeds your PC up a lot, particularly if you're multitasking (using more than one application simultaneously)
- Graphics card with 2Mb of memory
- 500Mb hard disk — modern computer software takes up a lot of space
- 3.5in floppy disk drive
- Quad-speed CD-ROM drive (video clips will play more smoothly; you will be able to access files on CD-ROM disks more quickly)
- 15in colour monitor (one inch doesn't sound a lot, but is easier on the eyes)
- 16-bit SoundBlaster-compatible sound card
- Speakers
- PCI local bus

For up-to-date PC reviews, see our May '96 cover story

PCW Best Specification

Our Best Spec is as good a PC as you are likely to need for most software. For some specialist applications, like professional DTP or CAD, you may need to add even more memory, a bigger hard disk, a more powerful graphics card, or a larger monitor.

- Windows 95
- Pentium 133MHz PC
- 512Kb secondary cache
- 32Mb EDO memory
- 1Gb hard disk
- 3.5 in floppy disk drive
- Six-speed CD-ROM drive
- 17in colour monitor
- 2Mb VRAM graphics card (this means your graphics card can display more colours and a higher resolution on your monitor — Sixteen million colours at a resolution of 800 x 600, to be exact)
- 32-bit sound card
- Quality speakers
- PCI local bus

Other things to consider

PCs have become a lot more similar in the last few years. The days when smallish computer companies designed their own chipsets (the computer chips that assist the computer's main processor) are long gone. Most small box-shifters buy their motherboards from Taiwanese manufacturers. Larger companies either design their motherboards themselves (Apricot, Compaq, IBM) or get motherboards built by other companies to their specifications (Gateway).

Buying a NOTEBOOK

Notebooks are one area in which it's often safer to stick to brand-names. Not that some of the Far Eastern kit doesn't work perfectly well, but reliability does seem to be a problem and it can be fiendishly difficult to obtain spares. The other useful guideline for notebooks is to try before you buy.

Standard notebook specifications are generally a step or two behind the desktop equivalents. For example, quad-speed CD-ROM drives are still not standard on notebooks, where on desktops the six-speed variety are already well established. The latest generation of colour screens can cope with 800 x 600 resolution, but that's still a step behind the desktop 1024 x 768 standard.

What to look for in a notebook

• Pointing device

There's been a wholesale move from trackballs to trackpads. Some notebooks, notably IBM Thinkpads, use stick technology (a thing which looks like the rubber on top of a pencil and is controlled using one finger).

• **CD-ROM drives** are rapidly becoming standard in notebooks. If your notebook is going to be your only machine, it's worth getting one.

• **Floppy disk drive** Often there's a choice between a CD-ROM drive and a floppy disk drive. Again, if the notebook is to be your only machine, specify both. Otherwise, reinstalling an operating system can mean returning the machine to the manufacturer.

• **PC cards** Modern notebooks all have at least one PC card slot. They take credit-card sized expansion cards which can add a fax-modem, a network interface card or even an extra hard disk to your computer.

• **Battery life** Battery technology keeps improving, but unfortunately the power demands of ever more powerful notebooks tend to keep pace. Battery life varies from as little as 30 minutes over six hours. Lithium Ion and Nickel Metal Hydride batteries have now largely replaced the



older Nicad (Nickel Cadmium) batteries.

• **TFT screens** TFT or active matrix screens are starting to replace the slower dual-scan or passive matrix screens. It means the screen image is refreshed much more quickly.

• **Warranty** Drop a notebook and it may well break. This means it's especially vital to check the

terms of your warranty. How long is it? What level of service is provided.

PCW Minimum Specification

Notebooks change rapidly. It's often possible to pick up end-of-line machines with 486 processors from brand-name manufacturers such as Toshiba and Compaq at discounted prices of £1,000 or less. These can be a very good buy. Just make sure they can run the software you need to use. They probably aren't up to running Windows 95.

PCW Recommended Specification

- Windows 95
- Pentium
- 256Kb secondary cache
- 16Mb RAM
- On-board graphics with 1Mb of memory, PCI local bus
- 500Mb hard disk
 - 3.5in floppy disk drive and/or dual-speed CD-ROM drive.
 - Dual-scan screen.

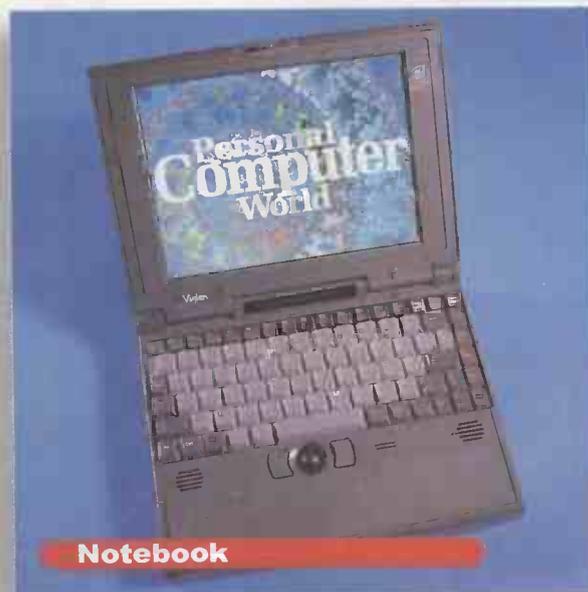
PCW Best Specification

The state of the notebook art.

You're either loaded, or your company's picking up the tab.

- Windows 95 or Windows 3.11
- Pentium
- 256Kb secondary cache
- 16Mb RAM
- On-board graphics with 2Mb of VRAM memory, PCI local bus
- 1Gb hard disk
- 3.5in floppy disk drive
- Quad-speed CD-ROM drive
- Active matrix TFT screen
- Long battery life

For recent notebook reviews, see PCW March, page 133



Notebook

GLOSSARY OF COMPUTING: IMPORTANT TERMS AND ACRONYMS

A**Access Time**

The time it takes for a device to access data. The access time, quoted in milliseconds (ms) for hard disks and nanoseconds (ns) for memory, is usually an average, as it can vary greatly. Together with the transfer rate, it is used to gauge the performance of hard disks and other devices. The lower the number, the better the performance.

Acronyms

These form most of the technobabble which has been refined over many years to confuse you, the user, and keep us, the writers, in business. Try to take as little notice as possible of it: the computer industry is littered with TLAs (Three-Letter Acronyms).

Applications

An application, or package, is one or more programs used for a particular task: for example, word processing, invoicing or spreadsheeting.

Applications are bought shrink-wrapped (wrapped in cellophane for general use) or custom-built for more specific uses.

ASCII (American Standard Code for Information Interchange)

Usually a synonym for plain text without any formatting (eg italics, bold or hidden text). Since computers naturally use binary rather than Roman characters, text has to be converted into binary for the processor to understand it. ASCII assigns binary values to Roman characters. RTF, a Microsoft standard, adds extra formatting features to plain ASCII.

B**Backwards compatible**

Compatibility of hardware or software to older versions of the product or standard.

Baud rate

The amount of data that can be sent along a communications channel every second. In common usage, it is often confused with bits per second. These days modem speeds are normally measured in bits per second. (See V* and Bit)

BIOS

Basic Input/Output System (pronounced buy-oss). Software routines that let your computer address other devices like the

keyboard, monitor and disk drives.

Bit

Binary digit, the basic binary unit for storing data. It can either be 0 or 1. A Kilobit (kbit) is 2^{10} , 1024 bits; and a Megabit is 2^{20} , which is just over a million bits. These units are often used for data transmission. For data storage, Megabytes are more generally used. A Megabyte (Mb) is 1024 kilobytes (Kb) and a Kb is 1024 bytes. A Gigabyte (Gb) is 1024 Mb. A byte (binary digit eight) is composed of eight bits.

Bug (See Crash)**Boot**

Short for bootstrap. Refers to the process when a computer loads its operating system into memory. Reboot means to restart your computer after a crash, either with a warm reboot (where you press Ctrl Alt Del) or a cold reboot, where you switch the computer off and back on again.

Bulletin board systems (BBSs)

A kind of electronic forum now being replaced by the Internet. (See net.newbies, p207)

Bus

A "data highway", which transports data from the processor to whatever component it wants to talk to. There are many different kinds of bus, including ISA, EISA, MCA, and local bus (PCI and VL-bus).

C**Cache** (See Memory)**COAST**

Cache On A Stick.

CD-ROM

A CD-ROM is the same as a normal audio CD, except it can store data as well as sounds. A CD-ROM player can be attached to your computer to read information from the CD-ROM into the computer's memory in the same way that a domestic CD player reads information from the CD into your hi-fi. The advantage of distributing information on CD-ROM rather than other media is that each one can hold up to 680Mb of data — equivalent to some 485 high-density 3.5in floppy disks. The disadvantage, however, is that you can only write once on CD-ROMs, but this makes them ideal for archiving.

CISC (See RISC)**CPU**

Central processing unit. Normally



refers to the main processor or chip inside a PC. (See Processor)

Crash

Common term for when your computer freezes. Can be caused by a power surge, a bug (which is a fault in software), or a GPF.

D**DRAM** (See Memory)**DOS (Disk Operating System)**

Once the standard operating system for PCs, it is now being replaced by Windows 95 and Windows NT.

DPI (Dots Per Inch)

Common measure of the resolution on a printer, a scanner or a display.

Drive controller card

An expansion card that interprets commands between the processor and the disk drives.

Drivers

Pieces of software that "drive" a peripheral. They interpret between the computer and a device such as a CD-ROM. If you have a SCSI CD-ROM drive connected, you will be able to use it on a PC or a Mac, just by loading up the relevant driver on each machine.

E**EIDE** (See IDE)**EISA (Extended Industry Standard Architecture)**

A bus standard designed to compete with MCA now being replaced by PCI. Its advantage was that it was designed to be backwards compatible with the now-ancient but still dominant ISA interface (as the name implies).

Electronic mail (E-mail, email)

(See net.newbies, p207)

Expansion card

Circuit boards that fit inside PCs to provide extra functionality. For example, one might be an internal modem, providing the same functions as an external one (which

are more common) but sitting inside the PC. Expansion cards are designed to be fitted and removed by people with little knowledge of PCs.

F**Floppy disk drive**

Practically all PCs come with a floppy disk drive. 3.5in HD (high density) 1.44Mb floppy disks are now the standard. They come in hard plastic cases and have replaced the older, literally floppy 5.25in disks.

Fonts

A font is an alphabet designed in a particular style. Fonts apply to both screen and printed letters. Modern TrueType and Type 1 fonts are stored as shape descriptions, scalable to any size.

Format

To wipe a floppy or hard disk in order to prepare it to accept data.

Graphics Card

An expansion card that interprets commands from the processor to the monitor. If you want a better, higher-resolution picture or more than your existing setup, you'll need to change your graphics card and/or your monitor.

GUI (Graphical User Interface)

(See Windows)

H**Hard disk**

Sometimes called a fixed disk, hard disks are hermetically-sealed rigid disks able to store data and programs. Disk capacities increase all the time. The standard is now 1Gb, but disks of up to 9Gb are available.

Hardware

All electronic components of a computer system, including peripherals, circuit boards and input/output devices.

HTML (Hypertext mark-up language)

The standard language used in the creation of World Wide Web pages.

I**IBM-compatible**

Originally meant any PC compatible with DOS. Now tends to mean any PC with an Intel or compatible processor capable of running DOS or Windows.

Internet

(See net.newbies, p213)

IDE

Integrated drive electronics. A control system designed to allow computer and device to communicate. Once the standard for PC hard disks, now being replaced by EIDE (enhanced IDE) which offers improved performance and extra features. EIDE can support four external devices including hard disks and CD-ROM drives.

IRDA

Infra Red Data Association — standard for exchanging data using infra red typically from PDAs or notebooks to a PC or printer.

ISA (Industry Standard Architecture)

This was the original bus architecture on 286 PCs. Also known as the AT bus (the 286 was known as the AT), it is still in use today. Slow by modern standards, but so widely accepted that expansion cards are still made for it. (See EISA, PCI)

ISDN Integrated Services Digital Network

A digital voice and data telephone network which looks set to replace the current analogue one. ISDN adaptors are already starting to replace modems as a fast way of accessing the Internet and transferring data.

JPEG (See MPEG)**Kbit (kilobit), Kb (kilobyte) (See Bit)****L****LAN (Local Area Network) (See Network)****Local Bus**

PCI (Peripheral Component Interconnect), developed by Intel, is now the standard for local bus architecture. It is faster than the older VL-Bus (Video Electronic Standards Association local bus) it has now largely replaced.

M**Macintosh (Mac)**

A kind of personal computer, made

by Apple, that is incompatible with PCs. Developed as a rival standard, its operating system looks like Windows, except that it predates it and (in many people's view) looks and works much better.

Maths co-processor

A specialised chip that handles mathematical calculations (floating point operations) for the processor. Modern processors such as the Pentium have a co-processor built into them.

Mbit (megabit) (See Bit)**Mb (Megabyte) (See Bit)****MCA**

A kind of bus designed by IBM to beat EISA. Although faster, it never became popular because every machine that used it had to pay a royalty to IBM, and because it was not backwards-compatible with ISA.

MPEG (Moving Picture Expert Group)

A standard for compressing video available in several flavours: MPEG 1, MPEG 2 and MPEG 4. JPEG (Joint Photographic Expert Group) is a standard for still image compression.

Memory

The term normally refers to RAM (Random Access Memory). This is the kind that disappears whenever you turn your computer off and is much faster to access than a hard disk. It acts as a kind of staging post between your computer's hard disk and its main processor.

•DRAM Dynamic Random Access Memory

This requires its contents to be replaced every 1/1000th of a second and is the most common form of memory in PCs.

•SRAM StaticRAM

Retains memory until the power is switched off.

•VRAM VideoRAM

Faster than DRAM, this is used by graphics cards.

•EDO Extended Data Out RAM

The latest type of memory, offers improved performance.

Cache memory

Temporary memory set aside to store the information that is accessed most frequently. The Pentium processor has 8Kb of cache built in. This can be further speeded up by a secondary cache, typically 256Kb. Part of your DRAM is also often used to cache your hard disk.

ROM Read-Only Memory

A kind of memory that can only be

read: you can't make changes to it as you can to RAM. It is commonly used for things that will never need to be changed, such as the information the computer requires when you start it up.

Modem

The word is a contracted version of "modulator/demodulator", which means that a modem is a box (or, less commonly, an expansion card) that lets your computer talk over phone lines to other computers.

They are commonly used for sending electronic mail and accessing the Internet. (See net.newbies, p213)

(See net.newbies, p213)

Monitor

Your computer's screen. Signals are sent to it from the video card.

Motherboard

The main printed circuit board which houses the processor, the memory and various other components.

N**Network**

A network is a group of computers linked together with cable. The most common form is a LAN (Local Area Network), where electronic mail and other files can be exchanged between users without swapping floppy disks. Printers and other resources can be shared. Typically, all the PCs on a LAN are connected to one server, a powerful PC with a large hard disk that can be shared by everyone. There are many other forms of interlinking computers including WANs (Wide Area Networks).

O**Operating System**

The operating system communicates with the hardware and provides services and utilities to applications while they run, such as saving and retrieving files.

P**Package (See Application)****PC Card**

Formerly PCMCIA. A standard to allow PCs, particularly notebooks, to be expanded using credit-card sized cards.

PDA (Personal Digital Assistant)

Small electronic organisers. The Psion 3a is a typical example.

PCI (See Local Bus)**PCMCIA (See PC Cards)****Parallel Ports**

Used by your PC to communicate with the outside world, usually via a printer. Information can travel in parallel along a series of lines, making it faster than serial ports which can only handle one piece of information at a time.

Pixel

Picture element. The smallest possible addressable dot displayed on a monitor.

PowerPC

This family of RISC chips is the result of a collaboration between IBM, Apple and Motorola. It is now used in all Apple Macintosh computers and many IBM workstations.

Processor

The chip that does most of a computer's work.

Programs (See Applications)**Public Domain**

Software that is absolutely free. The author usually retains copyright, but you can make as many copies as you want and pass them to other people. Public domain software often consists of small utilities the author feels might be useful to other people. It is often confused with shareware.

Q**QWERTY**

The name of a standard English language keyboard, derived from the first six letters on the top row. The French equivalent is AZERTY.

R**RAM Random Access Memory (See Memory)****Reboot (See Boot)****RISC**

Reduced Instruction Set Computing. These are starting to replace CISC (Complex Instruction Set Computing), as they are generally faster. The PowerPC chip is a typical example.

ROM (Read Only Memory) (See Memory)**RTF Rich Text Format (See ASCII)****S****SCSI**

Small Computer System Interface is a bus that comes as standard in a Macintosh and is starting to rival EIDE on PCs. It is commonly used for connecting devices such as hard disk drives and CD-ROM drives.

Serial Port

GLOSSARY OF COMPUTING: IMPORTANT TERMS AND ACRONYMS

The serial port, of which there are sometimes two (com1 and com2), is used by your PC to communicate with the outside world. They are predominantly used by modems and similar devices, which communicate quite slowly. Some mice also use them. Faster communications are achieved via the parallel port.

Shareware

A way of distributing software which is often used by smaller programmers rather than big software houses. It is freely available, but not free. You are honour-bound to pay a small fee to the software's developer if you continue to use the program after a set period.

SIMM (Single Inline Memory Module)

The standard modules for memory expansion on PCs. Older 30-pin SIMMs have now been replaced by the 72-pin variety available in capacities of up to 16Mb.

Software

A generic word for programs or

applications

T**Tape Streamer**

Magnetic tape recorder designed for backing up data from your hard disk.

U**UART (Universal Asynchronous Receiver Transmitter)**

Pronounced you-art. A chip that allows your PC to cope with high-speed communications.

V34, V32bis

A series of CCITT standards that defines modem operations and error correction. There are over 20, but the key ones are:

- V32.bis — the standard for 14,400bps modems.

- V34, the new standard for 28,800bps modems (see Baud).

Don't buy a modem that doesn't comply with one of these standards.

VESA (See Local Bus)**VGA**

Video Graphics Array is the name given to a popular display. VGA

graphics have 640 pixels horizontally and 480 vertically, and can display 16 colours. SuperVGA (SVGA) graphics can display 800 x 600 or 1024 x 768 in as many colours as the memory in your graphics card will allow: up to 16.4 million, or true colour.

VL-Bus (See Local Bus)**VRAM (See Memory)****W****Windows**

A GUI (Graphical User Interface) developed by Microsoft. Windows is supposed to make programs easier to use by giving them a standard, mouse-driven interface.

Windows 3.11

16-bit operating system.

Windows NT

Robust, fully 32-bit operating system. Currently has the Windows 3.11 interface, but will soon be available with the Windows 95 interface.

Windows 95

Major improvement to Windows 3.11, with a completely redesigned

interface. Now less prone to crashes and easier to use, but requires more memory.

WYSIWYG

An acronym for What You See Is What You Get, an over-used but useful word to describe much modern software. What you see on the screen is exactly what you see when you print your work out.

Z**ZIF (Zero Insertion Force)**

Sockets used for large CPUs. Lifting a handle lets you remove the processor.

ZIP

Better known as PKZIP, this is a widely used shareware utility that compresses files — making them smaller, so that they take up less room. You can tell when you have a ZIPped file as its name ends in ZIP. It is widely available from bulletin boards. PKZIP is the most common form of compression of its kind.

Glossary ends

Continued from page 331

Buying a PRINTER

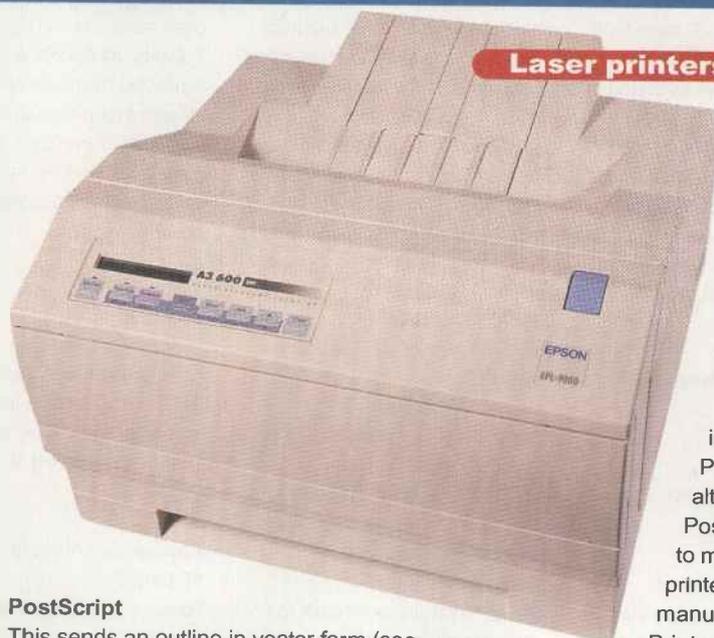
There are two main types of printer: laser and inkjet.

Lasers

Most office printers are lasers. They work pretty much like photocopiers, and are cheap to run and print quickly. Their disadvantage is higher initial cost and mono output. Laser printers are available in all sizes and at all prices. Small desktop printers cost as little as £400. You can buy colour laser printers but they are still expensive, typically £5,000 or more.

Types of laser

PCs work by sending a description of the page that's being printed down a printer cable. There are three commonly-used page description languages (PDLs):

**PostScript**

This sends an outline in vector form (see "Drawing Software") to the printer where it is rasterised (converted into dots) and printed to the device's best ability.

PostScript is device-independent so that the image looks the same on a monitor (75dpi), a laser printer (300dpi) or a professional image setter (2400dpi).

Printers using this tend to be cheaper than PostScript ones, but output will vary from one printer to another, making it less suited to professional use.

GDI (graphical device interface)

These printers download the description of your page already used by Windows

PCL

This stands for Printer Control Language, and it is Hewlett-Packard's alternative to PostScript, licensed to many clone-printer manufacturers. Printers using this tend



Inkjets

straight to your printer. They will only work with Windows, but are cheap and fast. They are also only suitable for a personal printer and will not work across a network.

Recommended Products

Cheap lasers Epson EPL-5500: Epson 0800 220546; street price £300 (see *PCW* February 96)

Sub-£750 lasers Hewlett-Packard 5P: Hewlett-Packard 01344 369222 (see *PCW* November 96)

Network lasers Hewlett-Packard 5P: Hewlett-Packard 01344 369222 (see *PCW* February 96)

Inkjets

Inkjets work by spraying ink onto paper. They are cheap to buy but more expensive to run, and slower. Even cheap inkjets can print in good-quality colour.

Recommended products

Epson Stylus 800 colour: Epson 01442 61144; street price £350 (see *PCW* August 95). **Canon BJC-610:** Canon 0500 246246; street price £370 (see *PCW*, February 96).

Hybrids

For home use and small offices a hybrid could be the answer. These combine a printer, a fax machine and some copying capability in one unit.

Recommended products

Hewlett-Packard OfficeJet LX: HP 01344 369222; street price £499 (see *PCW* December 95)



Hybrid printer



Document scanners

Buying a SCANNER

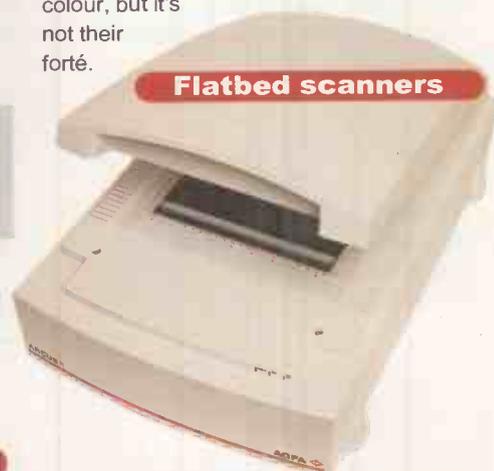
Scanners are used to import text, graphics or pictures into a PC. They vary from low-cost hand scanners not much bigger than a mouse, to drum scanners costing thousands of pounds. The latter are designed to scan photographic transparencies to professional standards.

Flatbed scanners

The most common type of scanner. They range in price from £300 to over £3,000. They're capable of scanning colour pictures to a high standard. Most have transparency adaptors as an optional extra.

Document scanners

This is a new category which aims to combine the reliability of flatbeds with speed and portability. They're intended for OCR and document management. Most will cope with photographs and some with colour, but it's not their forte.



Flatbed scanners

Recommended Products: Flatbed Scanners

Professional — Arcus II: Agfa 0181 231 4200; street price £2,600.

Intermediate — Epson GTX 9000: Epson UK 01442 61144; street price £750.

Budget — Umax Vista T-630: IMC 01753 830999; street price £450 (*PCW*, July 95).

Recommended Products: Document Scanners

Visioneer PaperPort VX: Computers Unlimited 0181 200 8282; street price £299. **Logitech PageScan Colour:** Logitech 01344 894300; street price £299.

Plustek PageReader 800: Scan Direct 01292 671676; street price £149 (*PCW*, March 96).

Buying a FAX-MODEM

You'll need a modem to connect to the Internet or an online service such as CompuServe or AOL, and to send and receive email. Modems are available in three formats: as PC cards to plug into notebooks, as external boxes, and as expansion cards. PC card modems cost the most and external modems cost slightly more than the expansion card variety.

Apart from the case and the external power supply, there's often little difference between the internal and external versions of a modem. Most modems now have fax capability built in, which means you can receive faxes on your PC to view or print out. If you're strapped for cash, a V32bis 14,400Kbits/sec modem is adequate. However, prices have now fallen so rapidly that a V34 28,800Kbits/sec modem is probably a better bet.

Recommended Products: Fax-modems

External — Motorola 3400 Online: Motorola 01923 404343; street price £160 (see PCW February 96)



Fax-modem

Buying a CD-ROM DRIVE

Just about the only things which differ on today's CD-ROM drives are their speed and means of connection. The most common connection is IDE or Enhanced IDE (EIDE). It is possible to connect an IDE CD-ROM drive to most existing IDE hard disk controllers. Older PCs may need a newer EIDE controller. IDE controllers are also found on many sound cards.

The first CD-ROM drives spun the disc at the same speed as an audio CD and were called single-speed, delivering a sustained data transfer rate of 150Kb/s. Double-speed drives spun twice as fast, doubling the data transfer to 300Kb/s, and quad-speeds twice as fast again, raising transfer to 600Kb/s.

Quads are currently the standard, with six-speeds (900Kb/s) becoming increasingly common. Manufacturers are beginning to release eight-speed drives, offering up to 1200Kb/s. All figures are theoretical



CD-ROM Drives

maximums. Buyers should go for quad-speed or higher. There is little to choose between models, but off-the-shelf supplies are frequently short. Internal IDE quads start at around £100 and six-speeds around £130.

Recommended Product: CD-ROM Drive

Teac CD56-E six-speed: fitted to many new PCs and costing around £170 (*PCW* January 96)

Buying a MONITOR

Regardless of your computer application, you'll be looking at your monitor all day — so get a good one.

Some people claim not to see monitor-flicker, but your brain will, resulting in fatigue and headaches. A refresh rate of 70Hz or higher will produce a flicker-free image on most monitors. Interlacing also results in flicker. Always run in non-interlaced modes and ignore interlaced quotes.

The resolution refers to the number of dots (pixels) horizontally and vertically on screen. Standard VGA mode runs at 640

x 480 pixels, while other typical modes include 800 x 600 and 1024 x 768. The more pixels, the more you'll be able to fit on screen, but everything will be smaller and may only be suitable on a physically larger screen. Buyers should go for a 15in or 17in monitor capable of running a resolution of 1024 by 768, non-interlaced, at 70Hz or higher. Be aware that the visible area of most monitors (and TVs for that matter) is smaller than the model implies: a 15in may only have 14.5in, and a 17in only 16in.

Recommended Products: Monitors

Sony 15sfl or **NEC XV15 Plus** costing around £300 on the street, or the larger **Sony 17sfl** and **NEC XV17** at around £550.

Buying a GRAPHICS CARD

The graphics card sits inside the PC and controls the features that the software can display on the monitor.

Check the amount of memory on the card. 2Mb is about standard these days, 1Mb is skimpy and 512Kb is barely usable. Also, check out the performance



capability of the card. Video cards come as 16-bit, 32-bit, 64-bit and even 128-bit — all you need to know is that a large numbers of bits means faster performance and more colours.

The most important aspect of your video card, and the most frequently quoted feature, relates to the resolution which the card supports in Windows. This is measured in terms of the number of pixels that the card displays on the screen. The absolute minimum these days is 1024 x 768 with a refresh rate of 70Hz. The refresh rate is an important figure to look out for, as it relates to the flicker which you will perceive from your monitor.

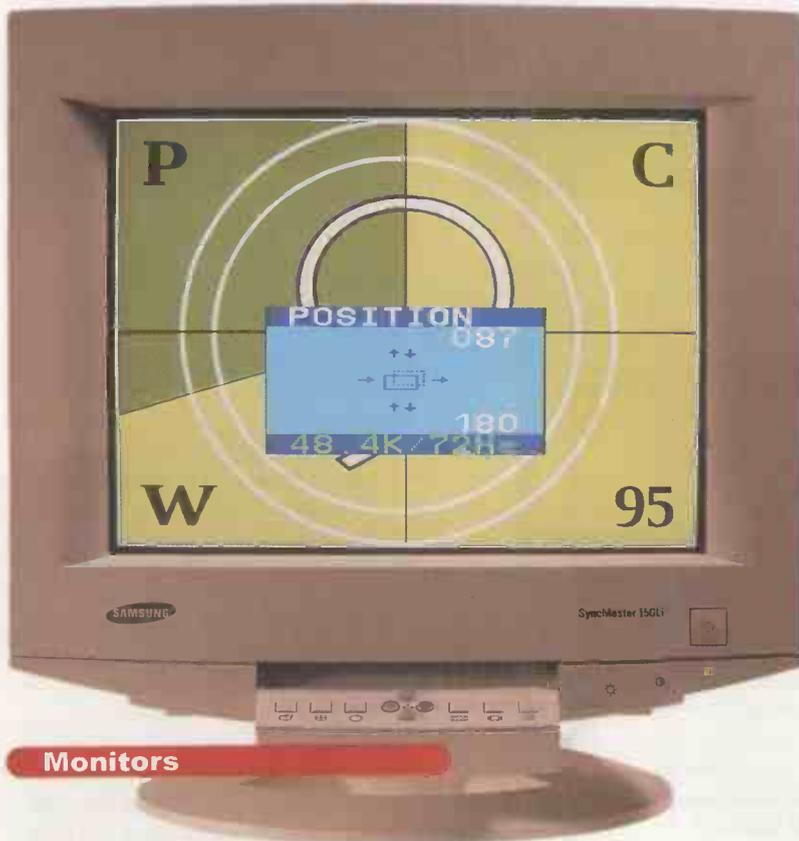
Finally, find out whether your video card is "local bus" or not. "Local bus" is a type of interface which connects your video card to the motherboard. It allows the memory in the card to be addressed directly by the CPU which makes it a lot faster than the standard ISA (Industry Standard Architecture) interface.

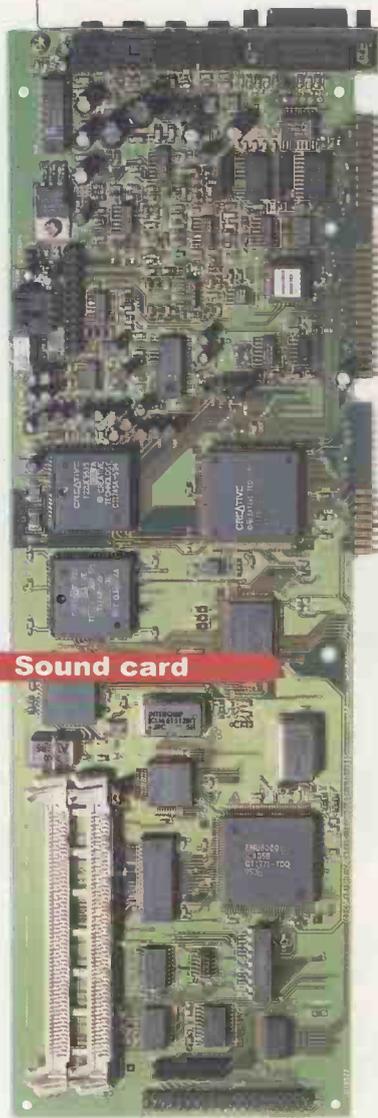
Recommended Products: Graphics Cards

ATI Video Xpression: ATI Technologies 01235 833666; around £175 (Graphics card group test p150)

Diamond Stealth 64 VRAM: Diamond 01753 501400; from around £190

VideoLogic GrafixStar 400: VideoLogic 01923 260511 from about £115





Buying a SOUND CARD

As their name suggests, they add sound capability to a PC. Check compatibility with your CD-ROM drive, and remember that 16-bit cards capable of 44kHz provide higher-quality sound than slower 8-bit cards. Better sound cards now include wavetable synthesis which means they have samples of real instruments held in ROM.

The quality of wavetable synthesis still varies widely. Even cheap cards which have the inferior Frequency Modulation synthesis should have a daughterboard connector allowing them to be upgraded to wavetable. The newer cards are also plug'n'play which means, in theory, that you should be able to plug them straight into a PC without any extra configuration. Most cards are bundled with extra software, normally sequencers, wave editors and audio players.

Recommended Products: Sound Cards

Creative Labs AWE-32: 01245 265265; £199 (PCW April 96)

Budget: Aztech SoundGalaxy Waverider Pro: Aztech 01734 814121; £79 (PCW April 96)

● CONTACT MANAGERS (see PIMs)

D

● DATABASE At its simplest, an electronic card index. For just a few hundred names and addresses, an electronic filofax such as Lotus's Organizer may be more appropriate. But for more sophisticated applications like tracking products and customers, the power of a relational database is required. Databases are generally the least user-friendly of the main suite applications. In most office environments you're more likely to use a database application that somebody else has written for you.

Recommended products: Lotus Approach, Microsoft Access

● DRAWING SOFTWARE Programs for drawing that work using vectors. This means each shape drawn is described using mathematical equations.

Recommended products: At the budget end, GSP Designworks 3 stands out. At the professional end of things it's FreeHand 5 which gets our plaudits.

I

● IMAGE EDITING SOFTWARE A program for editing bitmap files (files made up of pixels). Typically used for converting graphics files, retouching photographs and preparing pictures for printing.

Recommended product: For simple image editing the popular shareware program Paintshop Pro is fine. For professionals, Adobe's Photoshop is the industry standard.

● INTEGRATED PACKAGES Typically these combine the functionality of a database, word processor and spreadsheet in one application. This makes it easy to move data from one component to another, but integrated packages tend to lack some of the advanced features of individual applications in the Suites.

Recommended product: Microsoft Works

● OCR SOFTWARE Optical Character Recognition software converts printed text into computer text you can edit. You will also need a scanner or fax card to get the printed text on to your PC. OCR saves re-keying documents and can cut down drastically on paper filing systems.

Recommended products: Omnipage is the best product we've found, but TextBridge offers most of the same capabilities for less cash.

● PERSONAL FINANCE These help you manage home finances. They're also well suited to some small businesses and tend

Buying SOFTWARE

Just a few years ago there were dozens of different software applications in each category. In the last two years or so, however, there's been rapid product consolidation. Other magazines list large numbers of packages, most of which are out of date and aren't worth considering. We've distilled each category down to just one or two recommended products.

Software A-Z

A

● ACCOUNTS SOFTWARE One of the few categories in which there are still masses of packages on the market at a huge range of different prices. Accounts is also one of the last bastions of DOS. **Recommended products:** Lakeview LMS and Exchequer from SBS Systems.

C

● CAD SOFTWARE Computer Aided Design covers everything from architectural drawings through office planning to complex engineering drawings.

Recommended products: AutoCAD, now at release 13, is still the industry standard. However, it's expensive and complex. For the casual user, Drafix QuickCAD is a cheap and accessible way to try your hand at it.

to be easier to use than full-blown accounts packages.

Recommended products: Quicken is the outstanding product in this category and has no serious rivals.

● REMOTE CONTROL SOFTWARE

Software which lets you access and control a PC remotely usually using a modem.

Recommended products: Reachout, for its simple interface and support for different networks, particularly TCP/IP.

● **SPREADSHEET** An electronic version of an old-fashioned ledger. Ideally suited for balance sheets and sales figures. They now include excellent graphing and charting facilities.

Recommended products: Lotus 1-2-3, Microsoft Excel

S

● **SUITES** These days, most general business software (word processors, spreadsheets, presentation graphics packages) is sold in Suites. Two suites are widely available: Lotus SmartSuite and Microsoft Office. If you buy them bundled with a new PC, they can cost £100 or less. Bought separately, they cost between £200 and £300. Lotus SmartSuite also contains a

database. For Microsoft Office you pay extra for Office Professional which contains Microsoft's Access database.

Recommended products: Microsoft Office is now close to the industry standard. Its high level of integration gives it the edge over the opposition.

P

● PERSONAL INFORMATION MANAGERS (PIMs)

PIMs are an electronic way of storing names, addresses, phone numbers and appointments. Contact managers take the idea one step further to include business information about dealings with clients.

Recommended products: Sidekick 95 and Organizer are excellent PIMs. For contact managers we recommend Goldmine for Windows.

● PRESENTATION GRAPHICS

Increasingly the trend is towards doing presentations on a PC and the latest packages tackle this by including sound, sophisticated transitions between slides and support for video clips.

Recommended products: Powerpoint and FreeHand are both capable products that are sold with Microsoft Office and

SmartSuite respectively.

● **PROGRAMMING TOOLS** Applications designed for writing software. These range from "low-level" languages which are powerful but difficult to learn and use, to "high-level" languages which are much easier to use but generally sacrifice performance and flexibility in the process.

Recommended products: Delphi 2.0 is a great example of scalability, catering for beginners and serious developers working on major projects. Visual C++ is the pick of the high-end Windows development tools.

V

VISUAL PROGRAMMING (see Programming Tools)

W

WORD PROCESSOR An application in which you write letters and reports or even produce a simple newsletter. The latest word processors have advanced features such as outliners, table editors and facilities for adding up columns of figures.

Recommended products: Microsoft Word is the clear market leader. WordPro (formerly AmiPro) is a capable alternative.



A-Z of Recommended Software Products

Category	Product	Supplier	Contact	Price	Date of PCW review	
A	Accounts	Lakeview LM3	Lakeview Computers	0181 303 3329	£8,750	Jan-96
	Accounts	Exchequer	SBS Financial Systems	01202 298008	£5,980	Jan-96
C	CAD	AutoCad Release 13	Autodesk UK	01483 303 322	£3,150	Oct-95
	CAD	Drafix Quick CAD	Roderick Manhattan	0181 875 4400	£69	Oct-95
D	Database	Approach	Lotus	01784 455 445	£99	Nov-95
	Database	Access	Microsoft	01734 270 001	£220	Feb-96
	Drawing	Freehand 5	MacroMedia	01344 761111	£450	Apr-96
	Drawing	Designworks 3	GSP	01480 496789	£39.95	Apr-96
I	Image Editing	Photoshop	Adobe	0181 606 4000	£382	Apr-95
	Image Editing	Paintshop Pro	Digital Workshop	01295 258335	£49.95	Jun-95
	Integrated Package	Works	Microsoft	01734 270 001	£79.99	Oct-95
O	OCR	Omnipage	Caere	0171 630 5586	£595	Nov-95
	OCR	Textbridge	Xerox Imaging Systems	01734 668 421	£349	Nov-95
P	Personal Finance	Quicken	Intuit	0800 585058	£49.95	May-96
	PIM/contact manager	Organizer 2.1	Lotus	01784 455 445	£99	Mar-96
	PIM/contact manager	Goldmine for Windows	Elan Software	0171 454 1790	£395	Mar-96
	PIM/contact manager	Sidekick 95	Starfish UK	0181 875 4400	£39	Mar-96
	Presentation graphics	Freelance	Lotus	01784 455 445	£415	Sep-94
	Presentation graphics	Powerpoint	Microsoft	01734 270 001	£220	Sep-94
	Programming tools	Visual C++	Microsoft	01734 270 001	£379	Feb-96
	Programming tools	Delphi 2.0	Borland	01734 320 022	249	Feb-96
R	Remote Control	Reachout	Stac Electronics	01483 740 763	£110	Nov-95
S	Spreadsheet	Excel	Microsoft	01734 270 001	£220	May-95
	Spreadsheet	1-2-3	Lotus	01784 455 445	£365	May-95
	Suite	Office (Standard)	Microsoft	01734 270 001	£360	Mar-96
	Suite	Office (Professional)	Microsoft	01734 270 001	£460	Mar-96
W	Word Processing	Word	Microsoft	01734 270 001	£220.00	Feb-95
	Word Processing	WordPro (AmiPro)	Lotus	01784 455 445	£99.00	Jun-95

Buy now p on all PCs an

SOFTWARE - OVER 1200 TITLES

Quicken

ACCOUNTS

NEW

The easiest way to organise your money ever!



Quicken v5.

The brand new version of the UK's No. 1 selling finance software. The easiest way to organise your home and small business finances.

No.1
BEST SELLER

£29.78 EX. VAT

£34.99 INC VAT

PROGRAMMING

NEW

Borland Delphi 2

The brand new version of the Windows Development tool that combines high performance and integrated database access (Upgrade).

£109 INC VAT
£92.77 EX. VAT

MEMORY MANAGER

SAVE OVER £20

Quarterdeck Qemm 8

The ultimate memory manager. New release. Was £92.83 inc VAT.

£69 INC VAT
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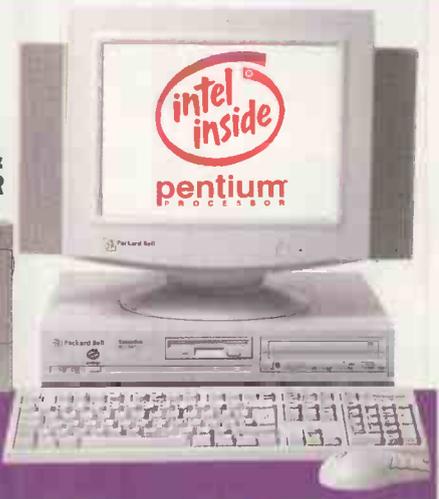
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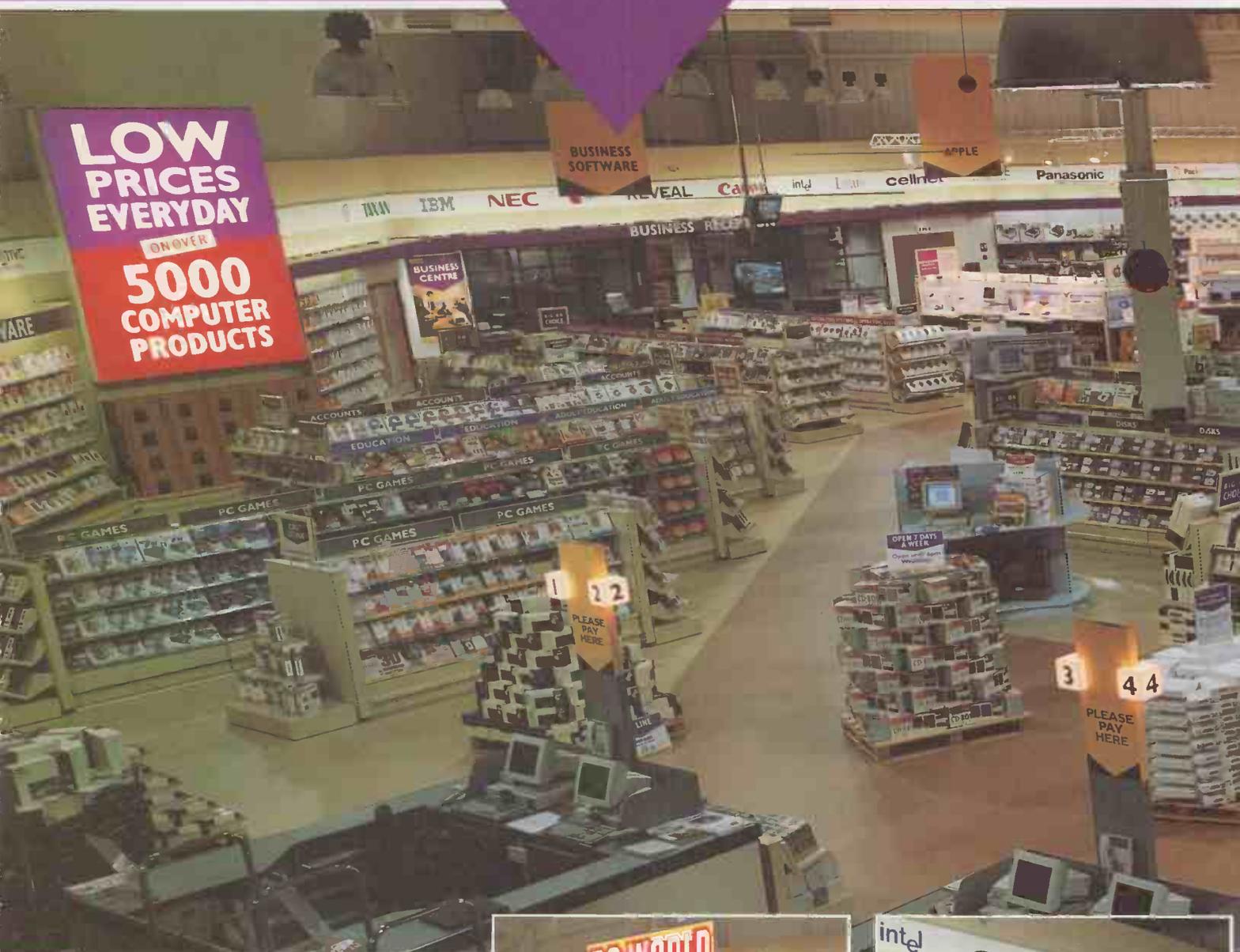
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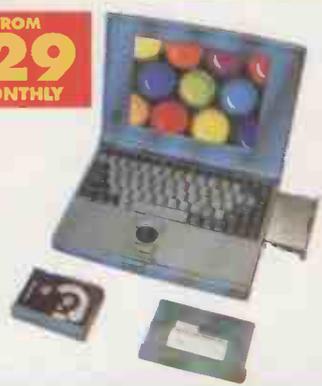
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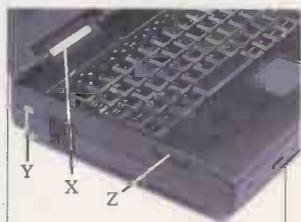
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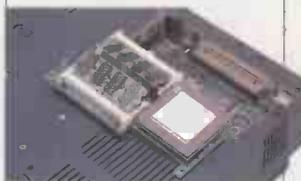
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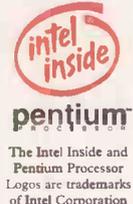
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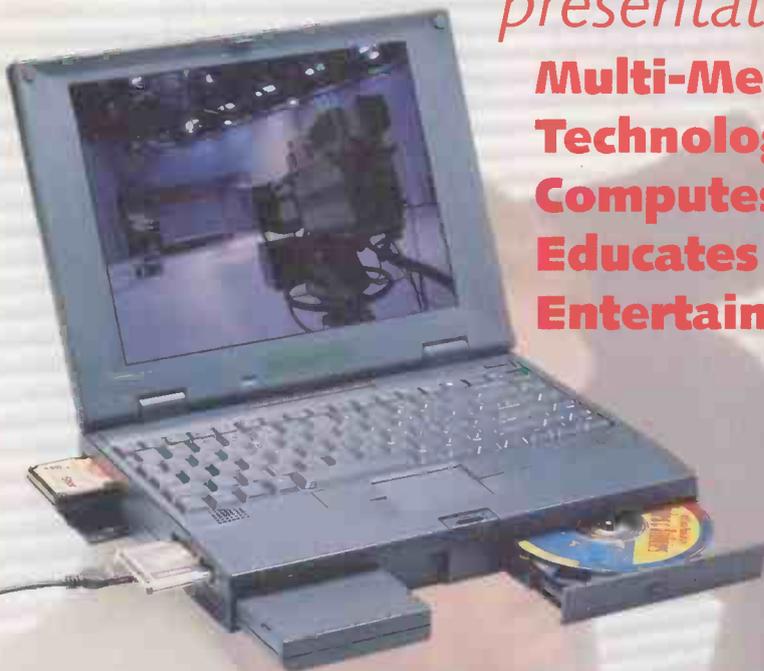
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SHOWMAN PRO

Power portability and overhead presentation

**Multi-Media
Technology
Computes,
Educates and
Entertains**



IN-BUILT TFT OVER-HEAD PROJECTOR TABLET & SCREEN



- A - Remove the tablet from the back of the TFG panel
- B - Set the adjustable stand to the correct height and attach the supplied fan
- C - Place the TFT Screen over the overhead projector and switch on

BENEFITS OF THE SHOWMAN PRO

- In-built TFT overhead projector tablet and screen (10.4"), 800 x 600 resolution
- In-built quad speed CD ROM 5.25"
- 8Mb RAM expandable to 72 Mb
- 3.5" (1.44Mb) floppy disk drive
- 32 Bit PCI bus 1Mb graphics
- Trackpad for easy use, no cleaning
- Built-in 16 bit sound-card
- 256K flash memory
- External microphone & speaker ports
- Built-in speakers and microphone
- 1 x Type III & type II PCMCIA slots
- Removable 340Mb hard drive
- 16 cell RTG NIMH battery
- 1 x Serial port & parallel port
- External keyboard port & SVGA port
- Auto-switching mains battery charger
- Carry / brief case with accessory pockets
- Full three year support plan
- Fan and stand

340Mb Hard disk & 8Mb RAM with quad speed built-in CD ROM

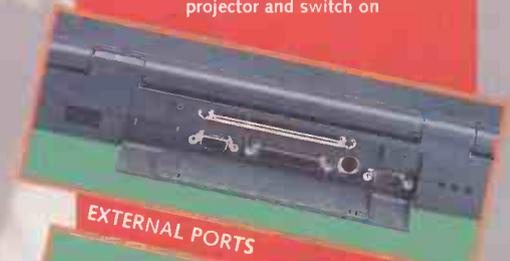
	P75	P90	P100	P120	P133
TFT Tablet	£2,749	£2,849	£2,949	£3,049	£3,149

VIDEO MPEG OPTION

This option for live video film integrates the MPEG 1 decoder for video CD and CD-I, making it a perfect partner for education, entertainment and practical programs - Available for Showman Pro and Media Pro notebooks - £249

TV TUNER OPTION

Keep up with current affairs with this TV Tuner option and capture still images from a video camera to your notebook with this module - Available for Showman Pro and Media Pro notebooks - £149



EXTERNAL PORTS



TYPE III & TYPE II PCMCIA SLOTS



86 KEY, WIN 95 KEYBOARD

OPTIONS FOR MEDIAPRO, SHOWMAN & SHOWMAN PRO

Upgrade to 510Mb hard disk	£50
Upgrade to 810Mb hard disk	£125
Upgrade to 1Gb hard disk	£175
Upgrade to 1.2Gb hard disk	£325
Upgrade to 2Gb hard disk	£499
RAM per 4Mb module	£150
PCMCIA ethernet card	£125
PCMCIA 28.8 fax modem	£195
MPEG module	£249
MS Windows 95	£79
TV Card	£89
Mini Docking Station	£129
Lithium battery option	£149
Car adaptor	£42
3M 9800 OHP	£749
Media Pro with modular quad speed CD ROM, add	£150

XITEC
the FUTURE together



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Unit 7, Princess Mews, Horace Road, Kingston, Surrey KT1 2SZ
TELEPHONE: 0181 287 4000 - FAX: 0181 287 4242

BUSINESS LEASING STARTING FROM £54 PER MONTH, PERSONAL LEASING AVAILABLE SOON

MEDIA PRO

with amazing versatile
Multimedia options

BENEFITS OF THE MEDIA PRO

- Upgradeable Pentium processor socket & CPU options
 - 256K Flash memory
 - Optional 5.25" modular quad speed CD ROM drive
 - Trackpad (easier to use than trackball - no cleaning required)
 - Two built-in speakers & microphone
 - 16 bit sound blaster compatible card
 - PCI 32 bit bus, 1Mb graphics card
 - Removable, upgradeable and easily interchangeable hard disk
 - 8Mb expandable up to 64Mb RAM
 - 1 x Type III & type II PCMCIA slots
 - NiMH battery 16 cell with special RTG feature for extra life
 - Autoswitching mains battery charger
 - Carry case with accessory pockets
 - External microphone and speaker ports
 - MPEG live video option
 - Full three year support plan
- 3.5" (1.44Mb) Floppy disk drive
 - Upgradeable dual scan (11.3") TFT (10.4") screen options, 800 x 600 resolution
 - External keyboard port & SVGA monitor port
 - 1 Serial and 1 parallel port

340Mb hard disk & 8Mb RAM with quad speed CR-ROM (optional)

	P75	P90	P100	P120	P133
Dual Scan	£1449	£1499	£1549	£1579	£1629
TFT	£1649	£1699	£1749	£1779	£1829



QUAD SPEED CD ROM 5.25"



BATTERY CHARGER (OPTIONAL)



REMOVEABLE HARD DISK DRIVE



PORT REPLICATOR (OPTIONAL)

SHOWMAN

In-built Overhead Projector Tablet



- TFT OHP screen and tablet
- 4Mb RAM expandable to 32Mb
- Built-in sound card, speakers and microphone, 128K flash ROM
- 3.5" (1.44Mb) floppy disk drive
- 32 bit Vesa local bus, 1Mb graphics
 - Built-in trackball
 - Serial and parallel ports
 - 2 x Type II PCMCIA or 1 x Type III
 - 340Mb Hard disk drive - removable
 - External keyboard port and SVGA port
 - Auto-switching mains battery charger
 - Carry briefcase with accessory pockets
- Full 3 year support plan
- Fan & stand, MS DOS 6.22 Windows 3.11 & Lotus Smartsuite preloaded with Licence

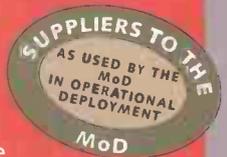
DX4-100Mhz TFT 340Mb hard disk drive 4Mb RAM - £1799



XITEC

gives you the comfort of knowing that you will receive lifetime telephone technical support for your notebook and an exceptional 3 year support plan in addition to other tailored warranty options.

The Xitec team will ensure that your notebook requirement is fulfilled whether your need is for business, education or entertainment. We will be able to offer you a solution for all your requirements. With guaranteed delivery dates at point of order and with same day delivery available, your computer needs can be completed quickly, saving time and money.



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Unit 7, Princess Mews, Horace Road, Kingston, Surrey KT1 2SZ
TELEPHONE: 0181 287 4000 - FAX: 0181 287 4242

BUSINESS LEASING STARTING FROM £54 PER MONTH, PERSONAL LEASING AVAILABLE SOON

Small Beer!

Our large screen Portable+ is BIG on features, yet has a surprising "small beer" price. Quite amazing when the 11.8" TFT LCD panel has a 800 x 600 SVGA resolution, with an amazing 65,000 colours on screen at one time and as is currently one of the largest notebook displays currently shipping.

Mmm...

Just consider, the Portable+ is a full multimedia notebook with quad speed CD-ROM, software MPEG-1 playback and wave synthesis sound built in.

What more could you possibly want?

133mhz Let's see. There is the capability of taking a 133mhz Pentium CPU; a machine that will play your AVI or MPEG presentation without any additional hardware; an optional secondary battery, so you can make your presentation or work go even further; a nifty maintenance free trackpad that won't get clogged up with muck; and to cut a long story short, many more features to keep your wallet and your mind rather excited.

Anything else?

0% Don't forget our Personal Finance package, pay 15% when you purchase and pay the balance in Winter 1996. APR equiv 0%. Written details available.

I think that's more than I want, better find out more....

Call Adams sales on 0161 282 8822 to find out about the quality notebook that think's about your budget and wallet too!



Intuitive trackpad pointing device and microphone, audio out and headphone out jacks.

Optional secondary battery fits in FDD slot.

Standard (Pentium) CD-ROM installed in FDD slot.

Quick removable hard drive.

PC Card type IV slot.

Port replicator allows permanent connection of peripheral devices.

Prices & Personal Finance

Model	Dual Scan SVGA 11.3"	TFT Active SVGA 10.4"	TFT Active SVGA 11.8"
486DX2-66	£1449	£1649	N/A
486DX4-100	£1499	£1699	N/A
Pentium® 75	£1699	N/A	£2099
Pentium® 100	£1799	N/A	£2199
Pentium® 120	£1849	N/A	£2249
Pentium® 133	£1949	N/A	£2349

Finance example

Pentium 75, 11.3 SVGA DSTN

Cash price £1699 + Carr £15 + VAT
Total price inc VAT £2013.95
Deposit 15%, £302, pay the balance of £1711.95 in six months time.
Subject to status, written details available.

Big Screen

Pentium Specification

- Pentium® 75/100/120 or 133mhz CPU's, with 256k cache
- PCI local bus with 64 bit memory addressing
- 8mb standard memory upgradeable to 32mb
- Quick removable 540mb 2.5" enhanced IDE PCI local bus hard drive upgradeable to 1.2gb
- 11.3" SVGA DSTN LCD, and 11.8" TFT VGA LCD (65,000 colours) both with with 800 x 600 resolution
- PCI 64 bit local bus graphics accelerator giving notebook resolution of 800 x 600 and external CRT up to 1024 x 768, with software MPEG-1 playback.
- 1.44mb removable FDD built in
- 16 bit stereo wavetable sound card with built in speakers
- Standard quad speed CD-ROM
- Optional secondary battery
- BIOS controlled power management facility
- Built in LED status Indicators
- Intuitive front mounted trackpad pointing device
- Type IV PC Card slot (Takes 1 x type III and 1 x type II)
- Ni MH battery standard
- Up to 4.5 hours battery life with optional secondary battery
- 1 enhanced serial port, 1 EPP parallel port, external CRT port, external keyboard port, audio connectors
- Full function 84 key UK keyboard
- Multi voltage 110-240v charger power supply
- Weight 2.9kgs with hard drive and battery
- 1 year parts and labour warranty
- Windows 95 or DOS 6.22 and Windows 3.11
- Portable+ case included

486 Specifications

- 486DX2-66 or DX4-100 CPU's
- 8mb standard memory upgradeable to 32mb
- Quick removable 540mb 2.5" enhanced IDE VESA local bus hard drive upgradeable to 1.2gb
- 11.3" SVGA DSTN LCD, and 10.4" TFT VGA LCD (65,000 colours) both with with 800 x 600 resolution
- VESA local bus graphics accelerator giving notebook resolution of 800 x 600 and external CRT up to 1024 x 768
- 1.44mb removable FDD built in
- 16 bit stereo sound with built in speakers
- Optional quad speed CD-ROM
- Optional secondary battery
- BIOS controlled dual level power management facility
- Built in LED status indicators
- Intuitive front mounted trackpad pointing device
- Type IV PC Card slot (Takes 1 x type III and 1 x type II)
- Ni MH battery standard
- Up to 4.5 hours battery life with optional secondary battery
- 1 enhanced serial port, 1 EPP parallel port, external CRT port, external keyboard port, audio connectors
- Full function 84 key UK keyboard
- Multi voltage 110-240v charger power supply
- Weight 2.9kgs with hard drive and battery
- 1 year parts and labour warranty
- Windows 95 or DOS 6.22 and Windows 3.11
- Portable+ case included

Order Information

Adams Technology sales lines are open from 9am till 6pm from Monday to Friday. Technical sales staff are available to answer questions on any of our products to help you with any differing requirements that you might have. Please add VAT to all prices quoted. We welcome payment by Visa, Switch, Mastercard and American Express, or on a cheque with order basis. We charge £15 for carriage on all portables.

All sales are subject to Adams Technology Ltd's terms and conditions of sale. These are available on request. Please call for any further information you may require.



Adams' are the official computer supplier to Williams Renault for 1996

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Some accessories & options

Memory upgrade to 16mb (486)	£370	HDD upgrade from 540mb to 810mb	£139
Memory upgrade to 32mb (486)	£869	HDD upgrade from 540mb to 1.2gb	£349
Memory upgrade to 16mb (Pentium)	£240	Internal x4 speed CD-ROM (Std on Pentium)	£199
Memory Upgrade to 24mb (Pentium)	£499	Additional primary or secondary battery	£79
Memory upgrade to 32mb (Pentium)	£739	Docking Station	£349
		Port replicator	£55

Adams

Advanced Computer Technology

ADAMS TECHNOLOGY LTD,
CITY POINT, CHESTER RD, OLD TRAFFORD, MANCHESTER,
M32 0RW, UK. Fax: 0161 283 1001

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PERSONAL COMPUTER WORLD
JUNE 1996

*The package of CD-V and MPEG-1 files requires a Pentium 100mhz CPU or higher and additional software which may be purchased separately or is available on the internet. All purchases and warranty subject to Adams Technology's terms and conditions, which are available on request. E & O.B.

Not Bread?

Marie Antoinette, with the peasants around her starving and revolting during a wheat famine in medieval France, instructed her courtiers to "Let them eat cake instead" But then again cake is not made from wheat, is it?

Sorting out the wheat from the chaff is not easy even today. We've made it very easy for you though. At Adams you can eat cake all the time because we've combined the very best components from around the world together with the world's most popular software package.

Microsoft Windows 95 and Office 95 Professional, are now included with most Adams PC's, to offer you Marie Antoinette's impossibility. The best PC's available. The best value for money in the UK. Oh yeh? Oh yeh, just take a peek at what we have on offer and you'll see there is no point in going anywhere else. A completely revised range of PC's offering value and performance, positively and utterly second to none.

Great machines you might say, how about the company? Adams was formed in 1989 with a mission to provide service and value for money. We supply computers to many corporates, uni-

586 Family Value



- Intel® Pentium® 75/100 mhz CPU
- PCI local bus
- 8mb RAM
- 850mb sub 11ms EIDE hard drive on PCI interface
- 3.5" 1.44mb floppy drive
- Ultra fast PCI graphics card with 1mb DRAM
- Six speed, EIDE ATAPI CD-ROM drive
- 14" Accuscan energy saving, MPR-II monitor, NI, max res 1024 x 768
- 2 serial, 1 parallel port
- Desktop case with 200w PSU
- Windows 95 UK keyboard
- Microsoft mouse
- 3 year parts and labour warranty (first year on site)
- Microsoft® Windows 95
- Microsoft® Works 95

P75 £949 + VAT

P100 £1049 + VAT

586 Premium



- Intel® Pentium® 75/100/120mhz CPU
- PCI local bus
- 16mb EDO RAM
- 1.2gb sub 11ms EIDE hard drive, mode 4 PCI Interface
- 3.5" 1.44mb floppy drive
- Six speed, EIDE ATAPI CD-ROM drive
- Ultra fast PCI graphics card with 1mb DRAM
- 15" Accuscan energy saving, MPR-II monitor, NI, max res 1280 x 1024
- 2 serial, 1 parallel port
- Desktop case with 200w PSU
- Windows 95 UK keyboard
- Microsoft mouse
- 3 year parts and labour warranty (first year on site)
- Microsoft® Windows 95
- Microsoft® Office 95 Professional
- Microsoft® Bookshelf

P75 £1249 + VAT

P100 £1349 + VAT

P120 £1399 + VAT

Let them

versities, the MOD, government departments and you. We are proud to be official suppliers to Williams Renault, providing computing power for the worlds foremost motor racing organisation.

Our PC's have won awards and accolades, they range from office workstations and home multimedia PC's to Pentium 166 DTP workstations and office powerstations. Pentium Pro workstations for the really serious, small work-group servers to large RAID based servers with redundancy and multichannel RAID controllers. We have the PC's to suit you, we are happy to reconfigure our standard systems to fit your requirements exactly.

Our recent move has doubled our floor area, we've added more technical support lines, more sales lines and more people. Our personal credit plan has been very well received and now nearly all our machines are available on it. We are constantly reinvesting to provide more for you, our customer.

We don't have room to show you everything we make in this advert, please call and we will be able to help you with any requirements that you might have.

Adams Sales 0161 282 8822

PS:

Visit our new web site for technical, news and sales information on www.adams-uk.com.

3 5 8

586 Pro DTP



- Intel® Pentium® 133 or 166mhz CPU
- PCI local bus
- 256k pipeline burst cache
- 32mb EDO RAM
- 2.0gb sub 8.5ms ultra SCSI HDD with 32 bit controller
- 3.5" 1.44mb floppy drive
- Matrox Millennium graphics card with 4mb WRAM
- Six speed, EIDE ATAPI CD-ROM drive
- Iiyama Vision Master Pro 17, DiamondTron 0.25mm, 1600 x 1200, max 100hz refresh
- 2 serial, 1 parallel port
- Tower case with 200w PSU
- Accutouch heavy duty keyboard
- Microsoft mouse
- 3 year parts and labour warranty (first year on site)
- Microsoft® Windows 95
- Microsoft® Office 95 Professional
- Microsoft® Bookshelf 95

P133 £2949 + VAT

P166 £3249 + VAT

586 Pro Video Editor



- Intel Pentium® 166 CPU with 256k pipeline burst cache
- 64mb EDO RAM
- 1.2gb, 10ms EIDE primary HDD, mode 4 PCI interface
- 4.0gb, 8.5ms wide SCSI-II AV hard drive with 32 bit PCI controller
- Dual/Quad speed internal SCSI CD recorder/player
- 3.5" 1.44mb floppy drive
- Matrox Millennium graphics card with 4mb WRAM
- Fast Electronics AV Master, digital video editing card
- Studio quality 4:2:2 digitisation, compression up to 4:1
- Integrated 44.1khz lip sync synchronised sound module
- Yamaha M10 speakers
- Iiyama Vision Master Pro 17, DiamondTron 0.25mm, 1600 x 1200 up to 100hz refresh
- 2 serial (16550), 1 parallel port (EPP/ECP)
- Tower case with 200w PSU
- Accutouch heavy duty keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Microsoft® Windows 95
- U-Lead MediaStudio 2.5VE, 32 it video editing software
- Requires video (TV) monitor (not supplied)

P166 £6099 + VAT

586 Workstation



- Intel® Pentium® 120/133/166mhz CPU
- PCI local bus
- 256k pipeline burst cache
- 16mb EDO RAM
- 1.6gb sub 10ms EIDE hard drive, PCI mode 4 interface
- 3.5" 1.44mb floppy drive
- Six speed, EIDE ATAPI CD-ROM drive
- #9 Motion 330, 64 bit graphics card, 2mb EDO DRAM
- 15" Accuscan monitor, max res 1280 x 1024, max refresh 75hz
- 2 serial, 1 parallel port
- Desktop case with 200w PSU
- Windows 95 UK keyboard
- Microsoft mouse
- 3 year parts and labour warranty (first year on site)
- Microsoft® Windows 95
- Microsoft® Office 95 Professional
- Microsoft® Bookshelf 95

P120 £1499 + VAT

P133 £1599 + VAT

P166 £1899 + VAT

586 Multimedia



- Intel® Pentium® 133/150/166mhz CPU
- PCI local bus
- 256k pipeline burst cache
- 16mb EDO RAM
- 2.0gb sub 10ms EIDE hard drive, PCI mode 4 interface
- 3.5" 1.44mb floppy drive
- Eight speed, EIDE ATAPI CD-ROM drive
- Matrox Millenium graphics card with 4mb WRAM
- Creative Labs Soundblaster 32 PNP
- Yamaha M10 speakers
- 17" Accuscan monitor, max res 1280 x 1024
- 2 serial, 1 parallel port
- Tower case with 200w PSU
- Windows 95 UK keyboard
- Microsoft mouse
- 3 year parts and labour warranty (first year on site)
- Microsoft® Windows 95
- Microsoft® Office 95 Professional
- Microsoft® Bookshelf 95

P133 £2099 + VAT

P150 £2199 + VAT

P166 £2399 + VAT

Some Options

850mb IDE → 1.2gb 10ms EIDE HDD	£30
1.2gb IDE → 1.6gb EIDE HDD	£39
1.6gb EIDE → 2.0gb EIDE HDD	£59
2.0gb EIDE → 2.0gb Ultra SCSI HDD (with controller)	£299
EDO memory upgrades per 1mb	£21
Ultra fast PCI graphics 1mb →	£56
#9 Motion 330 with 2mb EDO RAM	
#9 Motion 330 with 2mb EDO RAM	£69
→ Fahrenheit Pro Video 64 (2mb VRAM)	
14" → 15" Accuscan Monitor, 1280 x 1024, 72hz	£91
15" → 17" Accuscan Monitor, 1280 x 1024, 75hz	£199
17" Accuscan Monitor 17" → 17" liyama	£169
Vision Master Pro, 1600 x 1200, 100hz	
16 bit ethernet card (UTP/BNC)	£25



Accura Professional 586 Workstation - Sep 95



Accura 586 Workstation Plus - May 96



The Adams 1996 testbed: a Williams Renault Laguna; bashed, abtused and used. Still performing at the forefront of technology. See us at a race circuit near you or on BBC Grandstand every 2nd Saturday.

eat cake!

686 Workstation

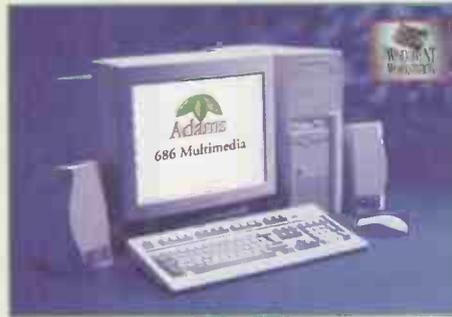


- Intel Pentium® Pro 150/200 mhz CPU
- 256k internal cache
- 16mb RAM
- 1.6gb EIDE mode 4 hard drive
- Six speed, EIDE ATAPI CD-ROM
- 3.5" 1.44mb floppy drive
- Orchid Fahrenheit Pro Video, graphics card, 2mb VRAM
- 15" Accuscan monitor, max res 1280 x 1024, max refresh 75hz
- 2 serial (16550), 1 parallel port (EPP/ECP)
- Tower case with 200w ATX PSU
- Accutouch heavy duty keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Windows® NT 3.51 Workstation

Pentium Pro 150 £2399 + VAT

Pentium Pro 200 £2599 + VAT

686 Multimedia



- Intel Pentium® Pro 150/200 mhz CPU
- 256k internal cache
- 32mb RAM
- 2.0gb 8.5ms ultra SCSI HDD with 32 bit PCI controller
- Eight speed, 1200kbps, EIDE ATAPI CD-ROM
- 3.5" 1.44mb floppy drive
- Creative Labs 32PNP sound card
- Yamaha M10 speakers
- Matrox Millenium graphics card with 4mb WRAM
- 17" Accuscan monitor, max res 1280 x 1024
- 2 serial (16550), 1 parallel port (EPP/ECP)
- Tower case with 200w ATX PSU
- Accutouch heavy duty keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Windows® NT 3.51 Workstation

Pentium Pro 150 £3399 + VAT

Pentium Pro 200 £3599 + VAT

Order Information

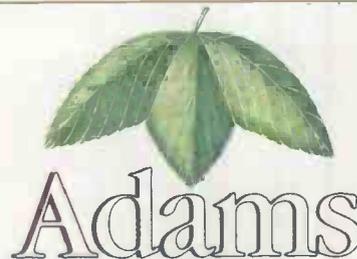
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Advanced Computer Technology

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*Warranty and money back guarantee subject to Adams Technology's terms and conditions, available on request



Served?

Adams are here to serve you. Our servers are ready and willing to dish out information continuously, as and when you need it, night and day. Our powerful Modu-RAID and Integ-RAID are unique in providing some of the most powerful quality solutions around at a very inexpensive price.

The Modu-RAID offers a "building block" style external disc array, providing the ability to upgrade your server as requirements dictate, from a 3 disc RAID upwards, even peripherals like DAT, can be added to the external block if required.

Accura Integ-RAID gives a traditional server layout, with up to 6 removable drives integrated into the case. Features include a redundant power supply system with "quick change" spare, a high efficiency cooling system and the ability to integrate further peripherals like DAT, CD-ROM and optical drives. The Accura Integ-RAID is one of the most cost effective high performance server systems available.

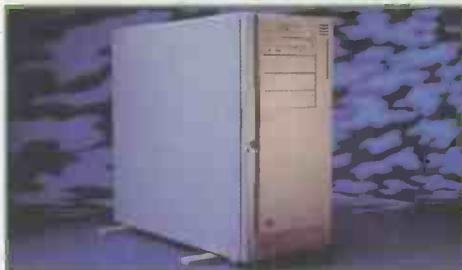


pentium

Our Pro Servers are designed with the small workgroup in mind, from Pentium (single or dual CPU's) through to the 200mhz Pentium Pro. They now feature a wide SCSI interface as standard and up to 166mhz on the single CPU model.

Call technical sales on
0161 282 8822 to find out more.

Integ-RAID



- Two Intel Pentium® 120/133mhz CPU
- PCI and EISA bus
- 512k external cache
- 32mb RAM (max 512mb)
- 3 channel bus mastering, PCI RAID fast wide SCSI-II controller with 8mb cache. Max data transfer as configured 50-60mbs
- 4.0gb addressable RAID level 5 array, with 3 x 2gb fast wide SCSI-II hard drives, mounted on alloy "hot pluggable" mounts.
- SCSI CD-ROM, 4.4 speed
- 3.5" 1.44mb floppy drive
- Fast PCI graphics card with 1mb RAM
- 14" Accuscan energy saving, MPR-II monitor, NI, max res 1024 x 768
- 2 serial, 1 parallel port
- 32 bit 100mbps PCI bus mastering ethernet card
- Accura Integrated Server case with 2 x 400W redundant power supplies and 1 x 400w pluggable spare.
- Power supply failure alarm
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Operating systems: Novell Netware (with SMP support), SCO Unix with SMP extns, Windows NT (not supplied).



Integ RAID drives and 5 secondary units



32bit bus mastering SCSI controller



Accura server case with 2 x 400W redundant power supplies and 1 x 400W pluggable spare.

Modu-RAID



- Intel Pentium® 120/166mhz CPU or 150/200 mhz Pentium Pro® CPU
- PCI and ISA bus
- 256k cache, 256k internal cache P-Pro
- 32mb RAM
- Modular expandable RAID enclosure with redundant PSU's
- 2.0gb addressable RAID level 5 array, with 3 x 1gb fast SCSI-II hard drives
- DPT PCI 32-bit bus mastering RAID controller with 4mb cache memory
- SCSI CD-ROM drive, 4.4 speed, multi session,
- 3.5" 1.44mb floppy drive
- Fast PCI graphics card with 1mb RAM
- 14" Accuscan energy saving, MPR-II monitor, NI, max res 1024 x 768
- 2 serial (16550), 1 parallel port (EPP/ECP)
- 32 bit 100mbps PCI bus mastering ethernet card
- Accura tower case with 200w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Operating systems: Novell, SCO Unix or Windows NT (not supplied).



Modu RAID drives and 5 secondary units



32bit bus mastering SCSI controller



Accura tower case with 200w PSU

Are you being

Pro Server



- Intel Pentium® CPU(s) or Intel Pentium® Pro CPU
- PCI and ISA bus, PCI and EISA bus on dual model
- 256k cache (512k dual model), 256k internal P-Pro
- 16mb RAM (max 192mb)
- 2.0gb 8.5ms wide SCSI hard drive with DPT2044 PCI 32-bit bus mastering SCSI controller (caching and RAID upgradeable)
- 4.4 spd, SCSI CD-ROM drive,
- 3.5" 1.44mb floppy drive
- Fast PCI graphics card with 1mb RAM
- 14" Accuscan energy saving, MPR-II monitor, NI, max res 1024 x 768
- 2 serial (16550), 1 parallel port (EPP/ECP)
- 32 bit PCI 10mbps bus mastering ethernet card
- Tower case with 200w PSU. (Pro Server Dual Pentium case shown)
- Accutouch heavy duty keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Operating systems: Novell, SCO Unix, (SMP extns may be req) or Windows NT (not supplied).

Speed/Model	Single Pentium®	Dual Pentium®	Pentium® Pro
120mhz	£2149	£2799	N/A
166mhz	£2499	N/A	N/A
133mhz	N/A	£2999	N/A
150mhz	N/A	N/A	£3099
200mhz	N/A	N/A	£3299

Raid Server Prices

Speed/Model	Modu-RAID Pentium®	Integ-RAID Dual Pentium®	Modu-RAID Pentium® Pro
120mhz	£3799	£6699	N/A
166mhz	£4149	N/A	N/A
133mhz	N/A	£6999	N/A
150mhz	N/A	N/A	£4499
200mhz	N/A	N/A	£4699

All Servers - some options

All server memory upgrades per 1mb	£21
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Pro Server 2gb → 9gb wide SCSI HDD upgrade	£CALL
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DPT CR4 cache & RAID module (for above, 0mb)	£349
Modu-RAID upgrade from 2gb → 4gb capacity (2 extra 1gb SCSI-II drives and 2 mount modules)	£879
Modu-RAID 4gb → 8gb upgrade (5 x 2gb SCSI-II)	£1099
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Ordering: We are pleased to accept enquiries between 9am and 6pm Monday to Friday. All Accura Servers are normally shipped within 2 weeks of order. We accept cheque with order, Visa, Mastercard or American Express. PO's are welcome from FTSE100 listed companies and government departments. Carriage charges at cost, normally around £25 per system. All prices quoted are subject to VAT.



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EPSON Stylus COLOR II

Affordable 720dpi photo-real colour and black inkjet printer.

720x720 dpi photo-real colour...

Offering high 720x720 dpi resolution, the versatile Stylus ColorII delivers photo-real colour output onto a wide variety of materials, including plain*, coated, and gloss papers, and OHP transparencies*.

*360 dpi only

Whether you're printing photographic images, illustrations or business graphics, the Stylus Color II can handle all your colour needs with ease.

Enhanced print quality, through advanced Epson technology.

A powerful combination of three advanced Epson printing technologies: Epson MicroWeave, Epson MicroFeed, and Epson Error Diffusion, enable vibrant colours subtle graduated tones, and strong contrasting shades, to be rendered with remarkable precision.

Photo-real image quality is further advanced by the absence of banding - so common in many inferior printers.



... and delivered at the double.

Designed not only for high resolution but high productivity, the Epson Stylus Color II incorporates many time saving features. Maximum text output is a fast 4 pages per minute, while enhanced data compression techniques quickly free your computer for other tasks, in matter of seconds.

For hands-free operation, the cut sheet paper feeder can handle up to 100 sheets of plain A4 stationary.

FREE SOFTWARE !
MicroGrafix Works & Epson CardMaker
free with the Stylus Color II and Color IIs



Three years warranty
with Stylus 820, Color IIs,
and Stylus Color II

Stylus Color II £232 ^{+VAT}

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Colour Upgradable Inkjet printer

- Superb 720 dpi black printing.
- Ideal for business reports, correspondence and school projects.
- Optional photo-real colour Kit.
- Windows 95 and 3.1x driver.



Stylus 820 £135 ^{+VAT}

Stylus COLOR IIs

720 dpi photo-real colour

- Interchangeable printheads for crisp black text and illustrations.
- Prints on plain, coated and gloss papers, envelopes and OHP transparencies.
- Ideal for business reports, correspondence and colourful school projects.
- Windows 95 and 3.1x driver



Stylus Color IIs . £164 ^{+VAT}

Stylus Pro

Professional level colour printing

- Colour Inkjet Printer with network capability
- Enhanced 720x720 dpi photo-real colour output.
- Prints on full range of media.
- Ideal for photographic images and high quality business graphics.
- Windows and Mac compatible
- Optional PostScript emulation.



Stylus Pro A4 ... £342 ^{+VAT}

EPL-5500 Laser

600dpi, 6ppm, compact office laser.

Modern office work demands space and your time. You make demands on your equipment. Epson is proud to introduce the EPL-5500 Laser, designed to meet your demands.

600 dpi Quality...

The Epson EPL-5500 uses BiRI Tech (Bi Resolution Enhancement Technology), an image enhancement system unique to Epson. BiRI Tech monitors the size of the dots on a page, shrinking or enlarging them to suit the image. Combined with Epson's MicroGray technology, the result is sharper graphics, smoother lines, and crisper text: unparalleled output quality, up to 600 dpi.

...Fast

Some demand good quality print. Others demand good quality print fast. The EPL-5500 laser processes at 22.5 MHz, the first page is your hand moments less than 20 seconds after you give the print command.

Halve your costs...

The EPL-5500 runs in standard or economy print mode, which lowers toner use by 50% and gives you a lower cost per page.



Additionally, the toner cartridge is separate from the photoconductor unit. You save money by replacing only the cartridge - not the photoconductor - when the toner runs out. And the EPL-5500 will output up to 20,000 prints before the photoconductor needs to be replaced.

EPL-5500 1Mb £354 ^{+VAT}
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GT-5000 scanner

The complete colour scanning solution.

Epson quality COLOUR scanning. Made easy. Made affordable.

If your about to buy your first colour scanner - or looking to upgrade to Epson's acclaimed 'flat bed' scan quality without paying a premium price - the Epson GT-5000 is the solution.

... a total solution

Because in addition to advanced features like Epson Text Enhancement Technology, a maximum output resolution of 2400 dpi - and a specially developed user interface to suit the different needs of first time and experienced users, the Epson GT-5000 comes complete with image manipulation and text recognition software for PC or Mac users.

The GTx package includes the Xerox Colour Document Management Suite, which comes with Textbridge OCR software. Corel Photo-PAint for image editing, and CorelDraw4 - the world's best selling PC graphics package.

Flexible scanning

Photographs, illustrations, business graphics up to A4 size - you can scan them all. Reducing or enlarging them from 50 - 200% in 1% increments, to suit the



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GTx 5000 parallel £298 ^{+VAT}
GTx5000 SCSI £345 ^{+VAT}

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IYAMA



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17" FST monitor, 0.26mm dot pitch,
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Diamond Pro 21TX £1299.00
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Diamond Pro 29 £3495.00
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STB

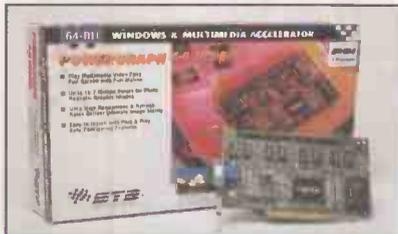


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VELOCITY 64V

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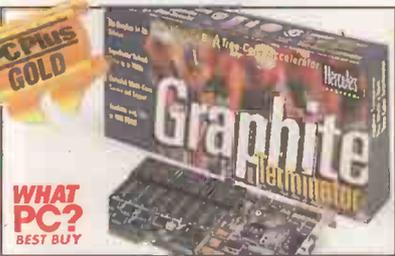


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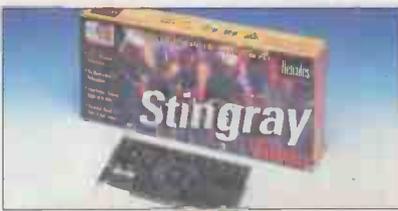
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To take advantage of MGA Millennium's powerful video, 3D and DOS performance, we have thrown in a number of multimedia titles absolutely free! They include 3D/FX by Asymmetric Design - a drag and drop 3D software for Windows Papyrus, NASCAR racing simulation game, and CompCore SoftPEG, MPEG player under Windows. 2Mb or 4Mb can be upgraded to 4 or 8MB of Window RAM.

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- 32-bit BGA core for fast DOS performance
- Ultra high, 1600 x 1200 24-bit resolution
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- Memory upgradable to 8Mb



MGA MILLENNIUM

MGA MILLENNIUM

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F P/S 60

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2 x 4 Mb VRAM; 2 x S3 968 chips PCI
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NEW! improved hardware configuration
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miroVIDEO

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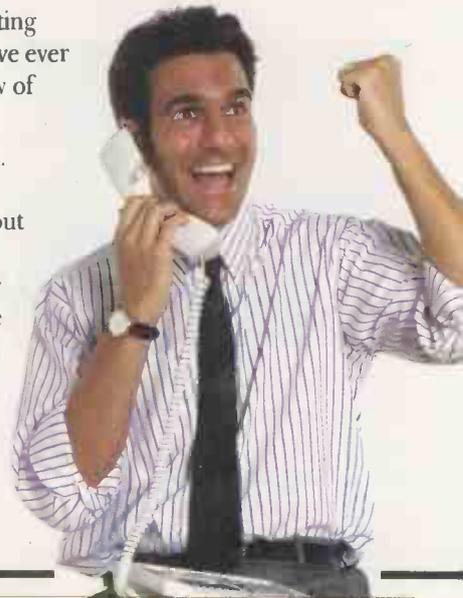
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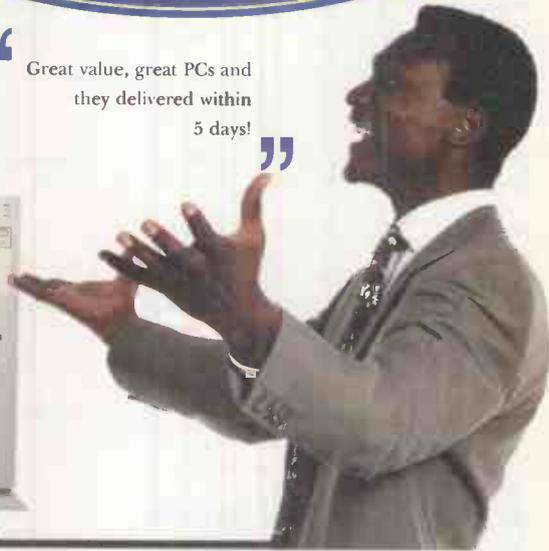
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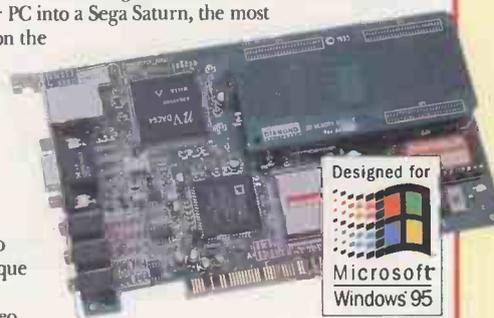
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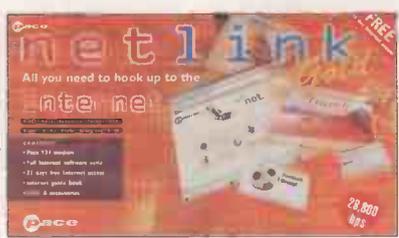
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Win/TV Celebrity	£255	£299.63
ORCHID		
1Mb Kelvin MPEG	£215	£252.63
2Mb Kelvin MPEG	£255	£299.63
Videoala	£249	£292.58
VIDEOLOGIC		
1Mb 928 Movie ISA	£123	£144.53
1Mb 928 Movie ISA Sound	£259	£304.33
2Mb PCI Movie	£229	£269.08
Captivator Pro for VMC	£160	£188
Captivator Pro TV for VMC	£199	£233.83
MPEG Player for Grafixstar 400	£89	£104.58
MPEG Player for VMC	£199	£233.83

Memory

	Ex. VAT	Inc. VAT
16MB 70ns 4x36 72 pin	£169	£198.58
16MB 70ns 4x36 72 pin	£235	£276.13
16MB 70ns EDO 72 pin	£215	£252.63
1MB 70ns 30 pin	£16	£18.80
256K 70ns 30 pin	£9	£10.58
4MB 70ns 1x32 72 pin	£39	£45.83
4MB 70ns 1x36 72 pin	£66	£77.55
4MB 70ns 30 pin	£69	£81.08
4MB 70ns EDO 72 pin	£39	£45.83
8MB 70ns 2x32 72 pin	£84	£98.70
8MB 70ns 2x36 72 pin	£109	£128.08
8MB 70ns EDO 72 pin	£84	£98.70

Tape Backup

	Ex. VAT	Inc. VAT
Travan Tapes 400/800Mb	£19	£22.33
CONNER		
800Mb Tape Store Internal	£119	£139.83
4Gb TSM4000 Int. E-IDE ATAPI	£345	£405.38
4Gb TSM4000 Int. SCSI	£345	£405.38
2Gb DAT Internal	£525	£616.88
8Gb DAT Internal	£665	£781.38
EXABYTE		
2Gb DAT Internal SCSI	£579	£680.33
4Gb DAT Internal SCSI	£649	£762.58
8505XL 5/14Gb 8mm DAT Int. SCSI	£1,415	£1,662.63

Tape Backup (cont.)

	Ex. VAT	Inc. VAT
HEWLETT PACKARD		
HP 2Gb DAT Surestore Internal	£540	£634.50
HP 4Gb DAT Surestore Internal	£630	£740.25
HP 8Gb DAT Surestore Internal	£749	£880.08
HP 2Gb DAT Surestore External	£635	£746.13
HP 4Gb DAT Surestore External	£729	£856.58
HP 8Gb DAT Surestore External	£835	£981.13
HP COLORADO		
Jumbo 1.4Gb DJ50 Internal	£179	£210.33
Colorado 350Mb Trakker External	£109	£128.08
Colorado 350Mb Trakker Internal	£79	£92.83
HP Colorado 800Mb Travan T1000 Int.	£105	£123.38
HP Colorado 800Mb Travan T1000 Ext.	£125	£146.88

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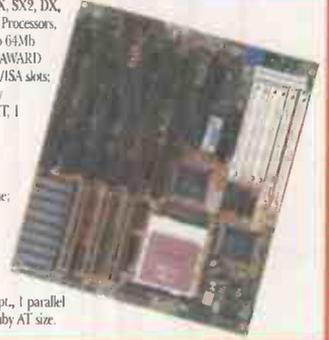
Tape Backup (cont.)

	Ex. VAT	Inc. VAT
IOMEGA		
800Mb Travan 10800 No tape, Int.	£85	£99.88
800Mb Travan 10800 No tape, Ext.	£99	£116.33
1.6/3.2Gb IQ3200 Travan3 Int.	£209	£245.58
1.6/3.2Gb IQ3200 Parallel Ext.	£255	£299.63
100Mb ZIP Drive Parallel Port	£145	£170.38
ZIP SCSI	£145	£170.38
ZIP Media (disk)	£12	£14.10
MICROSOLUTIONS		
800Mb Backpack Travan Parallel	£139	£163.33

486 Motherboards

	CPU Only	PB4-256	PCI 486AF
Bareboard	-	£62 Inc. VAT £63.18	£75 Inc. VAT £76.18
INTEL CPU			
486DX4-100	£48 Inc. VAT £56.40	£110 Inc. VAT £129.25	£123 Inc. VAT £144.53
AMD CPU			
486DX4-100	£38 Inc. VAT £44.65	£100 Inc. VAT £117.50	£113 Inc. VAT £132.78
5X86-P75-133	£55 Inc. VAT £64.63	£117 Inc. VAT £137.48	£130 Inc. VAT £152.75

PB4-256 1/2 Baby AT size board. 486SX, SX2, DX, DX2, DX4 Intel, AMD, Cyrix Processors. 256K write-back cache; Up to 64Mb RAM on-board. ALI Chipset. AWARD Bios, 3 PCI slots, 3 ISA, 1 PCI/ISA slots; 2 PCI IDE channel and floppy controller; 2 serial 16550 UART, 1 parallel ECP/EPP

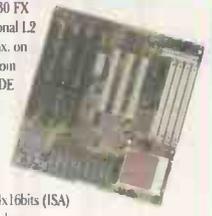


PC-148AF 486SX, SX2, DX, DX2, DX4 Processors Intel, AMD, Cyrix 256K or 512K write-back cache; Up to 64MB RAM on-board. ALI Chipset, AMI BIOS, 3 PCI slots, 4 ISA slots, 2 PCI E-IDE channel (mode 3/4) and floppy controller 2.88; 2 serial fast UART 16550 compt., 1 parallel ECP/EPP, 1 mouse port, 1/2 baby AT size.

Pentium™ Motherboards

	CPU Only	PCI-541T 256k P/B cache	PT5R2 256k P/B cache
Bareboard	-	£99 £116.33	£89 £104.58
Pentium™ -75	£79 £92.83	£178 £209.15	£168 £197.40
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Pentium™ -100	£135 £158.63	£234 £274.95	£224 £263.20
Pentium™ -120	£169 £198.59	£268 £314.90	£258 £303.15
Pentium™ -133	£229 £269.08	£328 £385.40	£318 £373.65
Pentium™ -150	£289 £339.58	£388 £455.90	£378 £444.15
Pentium™ -166	£410 £481.75	£509 £598.08	£499 £586.33

PT5 R2 Intel™ Pentium 75-200MHz Processor; Intel™ 430 FX PCI chipset; Standard 256k pipelined burst optional L2 Cache RAM module socket (COAST); 128Mb max. on board using 4-72 Pin SIMM Module, supports from 8Mb to 128Mb; Award Plug & Play BIOS; Two IDE channels, supports upto 4 Hard Drives, supports enhanced IDE compatible and Bus Master; Enhanced Parallel Port (EPP) compatible; Extended Capabilities Port (ECP) compliant, two high speed 16C550 UARTs with 16 Byte FIFOs; supports two floppy disk drives; 3x32bits (PCI), 4x16bits (ISA) expansion slots; Size: 280mm(L) x 220mm (W), 4 layers; Special Features: Supports EDO DRAM, Three PCI Masters, PCI 2.0 compliant.



PCI-541T Intel P54C/CT 75/90/100/120/133/150/166/180/200MHz processors. 256K Pipeline Burst Cache soldered on; Up to 128MB RAM Fast Page and EDO support; Intel Triton Chipset; Plug and Play AMI/AWARD BIOS; 4 PCI slots, 3 ISA slots, 2 PCI E-IDE channel (mode 3/4) & floppy controller 2.88; 2 serial fast UART 16550 compt., 1 para. ECP/EPP, 1 serial/2 mouse ports; 1/2 baby AT size

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	CPU Only	Aurora Pentium™ Pro P6 ATX Bus
Bareboard	-	£489 £574.58
Pentium™ Pro (P6) 150MHz	£399 £468.83	£888 £1043.40
Pentium™ Pro (P6) 180MHz	£579 £680.33	£1068 £1254.90
Pentium™ Pro (P6) 200MHz	£650 £763.75	£1139 £1338.33

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Roldec Multi I/O 1P25/1G IDE ISA	£8	£9.40
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ISA 1542CF Fast SCSI Controller	£135	£158.63
ISA 1542CF Fast SCSI Controller Kit	£165	£193.88
2742 SCSI Controller Kit EISA	£279	£327.83
2920 SCSI Controller Kit PCI	£105	£123.38
2490 SCSI-II Controller Card PCI	£149	£175.08
2940 SCSI-II Controller Kit PCI	£165	£193.88
2940IV SCSI-II Ultra Wide Kit PCI	£209	£245.58

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	Ex. VAT	Inc. VAT
CREATIVE LABS		
SoundBlaster 16 Value IDE	£65	£76.38
SoundBlaster 32 PnP	£104	£122.20
SoundBlaster AWE 32 PnP	£160	£188
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	Ex. VAT	Inc. VAT
3COM 3C509 16 Bit BNC ISA	£65	£76.38
3COM 3C509 16 Bit Combo BNC/RJ45	£73	£85.78
3COM 3C509 16 Bit RJ45 ISA	£64	£75.20
3COM 3C589B PCMCIA Combo	£129	£151.58
3COM 3C590B Combo BNC/RJ45 PCI	£99	£116.33
3COM 3C590B RJ45 PCI	£79	£92.83
D-Link ISA DE-220 Combo	£35	£41.13
D-Link PCI DE-530CT Combo	£79	£88.13
D-Link PCMCIA DE-650CT Combo	£89	£104.58
E-Lan NE2000-Compatible BNC ISA	£16	£18.80
E-Lan NE2000-Compatible Combo ISA	£19	£22.33
Intel Etherespress 6 Bit BNC/RJ45	£73	£85.78
Intel Etherespress 100Mbps PCI	£99	£116.33
Kingston Dual I/F Ethernet Adaptor ISA	£25	£29.38
Kingston Dual I/F Ethernet Adaptor PCI	£59	£69.33
Kingston Dual I/F Ethernet Adaptor x20	£459	£539.33
Kingston Dual I/F Ethernet Adaptor x6	£139	£163.33
Novell NE2000 16-Bit BNC ISA	£49	£57.58
Novell NE2000 16-Bit Combo BNC/RJ45	£57	£66.98
Novell NE2000 16-Bit RJ45	£46	£54.05
SMC EliteE2 PnP ISA Combo	£62	£72.85
SMC Elite Ultra 16 Bit BNC or RJ45	£58	£68.15

Networking Software

	Ex. VAT	Inc. VAT
NOVELL		
Novell Personnel Software	£44	£51.70
Novell Personnel Software 5-user	£183	£215.03
Novell Netware 3.12 10-user	£979	£1150.33
Novell Netware 3.12 100-user	£2,920	£3431
Novell Netware 3.12 25-user	£1,439	£1690.83
Novell Netware 3.12 5-user	£430	£505.25
Novell Netware 3.12 50-user	£2,080	£2444
Novell Netware 4.1 10-user	£943	£1108.03
Novell Netware 4.1 25-user	£1,430	£1680.25
Novell Netware 4.1 5-user	£430	£505.25
Novell Netware 4.1 50-user	£2,030	£2385

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15" MicroSacr 4V 28 1280x1024 NI	£235	£276.13
17" MicroSacr 17X+ 28 1280x1024 NI	£699	£821.33
17" MicroSacr 5V+ 26 1280x1024 NI	£439	£515.83
17" MicroSacr 5V+ 28 1280x1024 NI	£459	£539.33
CTX		
14" 1451 SVGA CD NI MPRII	£165	£193.88
15" 1565GN SVGA NI MPRII	£225	£264.38
17" 1765GM SVGA MPRII 26	£435	£511.13
17" 1785GM SVGA MPRII 28	£485	£569.88
9.4" LMT5020 4096-Col LCD VGA	£1,950	£2291.25
ESP		
15" XGA 0.28 NI 1280x1024	£210	£246.75
IDEK IYAYAMA		
15" Vision Master FST MF-8115	£257	£301.98
15" Vision Master FST MF-8617E	£495	£581.63
17" Trinitron FST MF-9017E	£565	£663.88
21" Vision Master FST MF-8221	£1,165	£1368.88
21" Vision Master FST MF-9121	£1,235	£1451.13
PANASONIC		
15" Panasonic (TX-T1562) 1024x768 NI	£279	£327.83
17" Panasonic (TX-D1733) 1024x768 NI	£499	£586.33
17" Panasonic (TX-D1751) 1280x1024 NI	£685	£804.88
20" Panasonic (TX-D2051) 1280x1024 NI	£940	£1104.50
21" Panasonic (TX-D2131) 1280x1024 NI	£1,190	£1398.25
PHILIPS		
14" Mono Monitor 14M	£89	£104.58
15" Brilliance 15A with Audio	£275	£323.13
15" Brilliance Autocscan 15B	£254	£298.45
17" Autocscan 17A with Audio	£569	£668.58
17" Brilliance Autocscan 17B	£540	£634.50
20" Autocscan 20C	£765	£898.88
20" Autocscan 20T	£1,299	£1526.33
21" Autocscan 21A Cyberscreen	£1,749	£2055.08
21" Autocscan 21B	£1,439	£1690.83
SMILE		
15" SVGA FST 1280x1024	£239	£280.83
17" SVGA 0.26mm FST	£480	£564
17" SVGA 0.28mm FST	£399	£468.83
SONY		
15" SVGA SFI NI 1280x1024 25	£327	£384.23
17" SVGA SFI NI	£510	£599.25
20" SVGA SFI NI	£1,390	£1633.25
VIEWSONIC		
15" 15E5 1280x1024 NI	£270	£317.25
17" 17P5 Professional NF	£679	£797.83
20" 20C 1600x1200 NI	£1,035	£1216.13
21" 21P5 1600x1200 NI	£1,335	£1568.63

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HP Scanjet 4C Colour	£625	£734.38
MUSTEK		
Mustek Hand-held 256-greyscale	£55	£64.63
Mustek Hand-held 800/1200 Colour	£119	£139.83
ROLDEC		
Roldec 1200/2400 Flatbed	£299	£351.33
Roldec 600/1200 Flatbed	£255	£299.63
UMAX		
Vista S12 LE 9600dpi	£575	£675.63
Vista S12 Plus 9600dpi	£675	£793.13
Vista S12 Pro 9600dpi	£999	£1173.83
Vista S6E 4800dpi	£269	£316.08
Vista S6E LE 4800dpi	£299	£351.33
Vista S6E Pro 4800dpi	£725	£851.88

Fax Modems

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BABT-APPROVED		
Creative Labs Phoneblaster V34 Fax/Data/Voice	£219	£257.33
Motorola Internet Solution 28.8 Ext.	£155	£182.13
Motorola Professional Sol'n 28.8 Ext.	£145	£170.38
PAGE 14.4 MessageDesk Fax/Data/Voice Int.	£99	£116.33
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Roldec 14.4 V32 Fax/Data/Voice Int.	£65	£76.38
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Roldec 14.4 V32 PCMCIA	£165	£193.88
Roldec 28.8 V34 Fax/Modem Internal	£129	£151.58
Roldec 28.8 V34 Fax/Modem External	£145	£170.38
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US Robotics V34 Courier Internal	£259	£304.33
US Robotics V34 Courier External	£259	£304.33
US Robotics V34 Sportster Internal	£155	£182.13
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	Ex. VAT	Inc. VAT
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Cherry Windows 95 Soft Touch Kbd	£19	£22.33
Chicony Standard Key Click Keyboard	£13	£15.28
Chicony Standard Soft Touch Keyboard	£10	£11.75
Chicony Standard Windows 95 Key Click	£13	£15.28
Mitsumi Windows 95 Soft Touch Keyboard	£11	£12.93
MICE		
EC-3N MS Compatible Mouse	£5	£5.88
Logitech Pilot Mouse	£18	£21.15
Microsoft Home Mouse	£20	£23.50
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Kingston PCI Ethernet Adapters 32-bit 10mps		
Dual Interface PCI Ethernet Adaptor (BNC/RJ-45)	£59	£69.33

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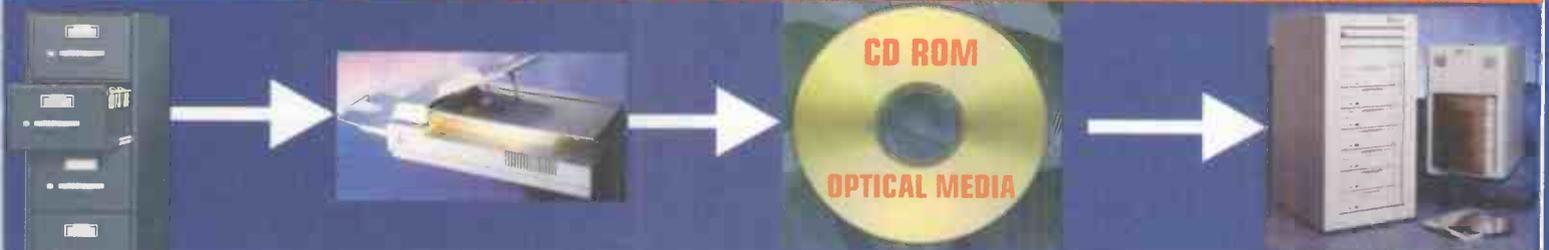
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FUJITSU M2932	2.1GB	FAST	6MB	9MS	£450	£528.75
FUJITSU M2934	4.1GB	FAST	6MB	9MS	£650	£763.75
FUJITSU M2934W	4.1GB	WIDE	8MB	9MS	£740	£869.50
IBM ORION	2.1GB	FAST	5MB	9ms	£385	£452.38
IBM ULTRASTAR	4.1GB	FAST	7MB	9ms	£950	£1116.50
QUANTUM ATLAS	2.1GB	FAST	7MB	8ms	£500	£587.50
QUANTUM ATLAS	2.1GB	WIDE	9MB	8MS	£600	£705.00
QUANTUM ATLAS	4.1GB	FAST	7MB	8ms	£750	£881.25
QUANTUM ATLAS	4.1GB	WIDE	9MB	8MS	£875	£1028.13
SEAGATE 32430N	2.1GB	FAST	5MB	9ms	£420	£493.50
SEAGATE 32550N	2.1GB	FAST	7MB	8ms	£550	£646.25
SEAGATE 32550W	2.1GB	WIDE	9MB	8ms	£650	£763.75
SEAGATE 12450W	2.1GB	WIDE	11MB	8ms	£950	£1116.25
SEAGATE 15230N	4.0GB	FAST	5MB	9ms	£650	£763.75
SEAGATE 15150N	4.1GB	FAST	7MB	8ms	£850	£998.75
SEAGATE 15150W	4.1GB	WIDE	9MB	8ms	£980	£1151.50
MICROPOLIS 4221	2.1GB	FAST	7MB	9MS	£420	£493.50
MICROP 4221AV	2.1GB	FAST	6MB	9MS	£450	£528.75
MICROP 4221W	2.1GB	WIDE	8MB	9MS	£550	£646.25
MICROP 3243	4.0GB	FAST	6MB	9ms	£650	£763.75
MICROP 3243AV	4.0GB	FAST	6MB	9ms	£725	£851.88
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HP 1534	2GB	-	11MB	-	£420	£493.50
HP 1536	2GB	8GB	11MB	16MB	£475	£558.13
SONY SDT5000	4GB	16GB	21MB	30MB	£650	£763.75
SONY SDT7000	4GB	16GB	44MB	60MB	£725	£851.88
WANGDAT 3400DX	4GB	16GB	21MB	30MB	£650	£763.75
CONNER 4326	4GB	16GB	30MB	45MB	£630	£740.25
HP C1533A	4GB	16GB	30MB	45MB	£625	£734.38
HP C1553A	24GB	96GB	30MB	45MB	£1475	£1733.13
EXABYTE 8205X1	2.5GB	5GB	16MB	30MB	£950	£1116.25
EXABYTE 8505XL	7GB	14GB	30MB	45MB	£1350	£1586.25
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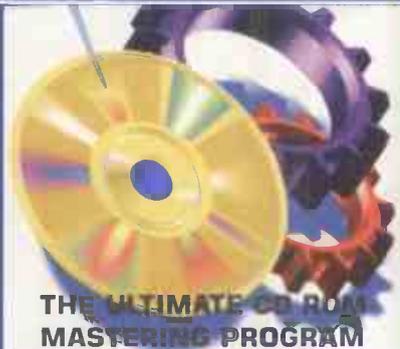
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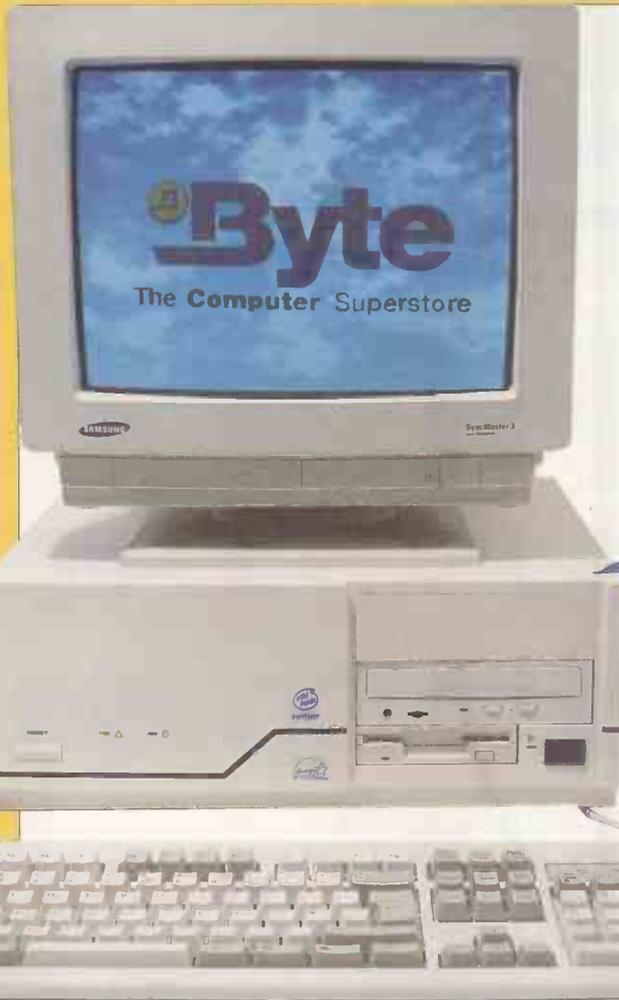
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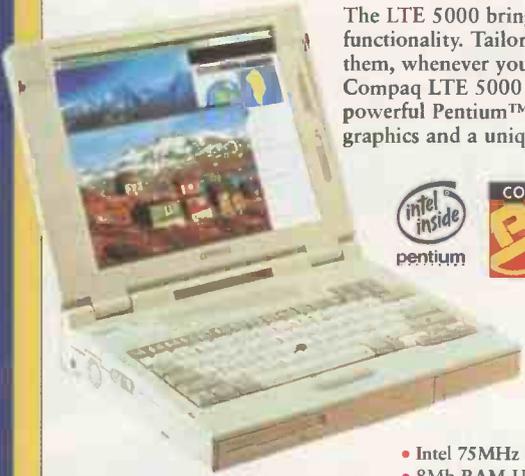
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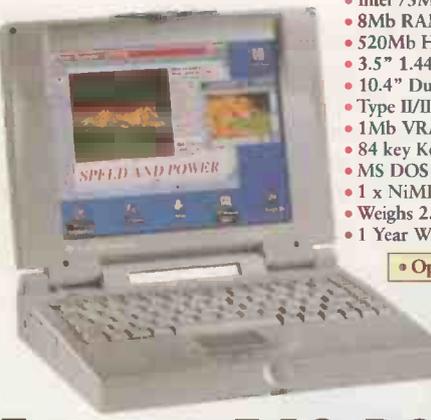
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- Up to 600 x 600dpi Black Text (REt)
- Up to 300 x 300dpi Colour
- New Pigment Inks for High Quality Print
- HP ColorSmart Technology
- Up to 6ppm Mono, Up to 3ppm Colour
- Built in Sheet Feeder
- 1 Year Warranty



HP DESKJET 850C
£329



HP DeskJet 660C Bundle

- Up to 600 x 600dpi Mono
- Up to 600 x 300dpi Colour
- HP Res. Enhancement technology
- HP ColorSmart Technology
- Simple Two Button Control Panel
- Built in Sheet Feeder
- 3 Year Warranty



INCLUDES
 WORD PRO 96 &
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 WITH 1 MONTH
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HP DESKJET 660C BUNDLE
£245



HP DeskJet 600 Bundle

- Up to 600 x 600dpi Printing
- HP ColorSmart Technology
- HP PrintSmart for Windows
- Built In Sheet Feeder



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HP DESKJET 600 BUNDLE
£154



HP DeskJet 340 & Colour Kit

- Compact & Portable
- Up to 600 x 300dpi Black Text with Ret.
- Up to 300 x 300dpi Colour with HP

- ColorSmart Technology
- Integrated Sheet Feeder
- HP Colour Kit Included
- HP PrintSmart for Windows

BYTE EXCLUSIVE!



HP DESKJET 340
£169

- HP LaserJet 5L **£359**
- HP 1600C **£869**
- HP LaserJet 5P **£599**
- HP LaserJet 4+ **£1019**



CANON, LEXMARK & SHARP PRINTERS

Canon BJC-4100

- 720 x 360dpi Colour Printing with Smoothing
- Up to 4.5ppm Mono
- Up to 3.4ppm Colour
- Advanced Dye-based Ink
- Built-in 100 Sheet Feeder
- Prints on Plain Paper, Coated Paper & OHPs
- 3 Year RTB Warranty



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CANON BJC-4100
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Canon BJC-610

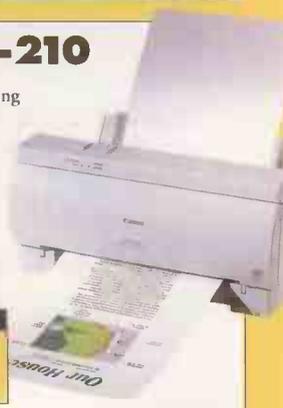
- 720 x 720dpi Colour Printing
- Microsoft Windows Printing System
- Four Colour Ink Cartridge System
- Built-in 100 Sheet Feeder
- Prints on Plain Paper, Coated Paper & OHPs



CANON BJC-610
£315

Canon BJC-210

- 720 x 360dpi Mono Printing with Smoothing
- Up to 3.4ppm
- Colour Upgradeable
- Built-in 100 Sheet Feeder
- Prints on Plain Paper & OHPs
- 3 Year RTB Warranty



CANON BJC-210
£159

Canon BJ-30

- Portable Printer, Weight 1.4Kg
- 360x360dpi Resolution, 720x360dpi with Smoothing
- Up to 2.2ppm
- Integral Cut Sheet Paper Feeder
- 6 Resident typefaces

CANON BJ-30
£132

Canon BJC-70

- Portable Printer, Weight 1.4Kg
- 360x360dpi Resolution, 720x360dpi with Smoothing
- Up to 2ppm colour at High Speed
- Integral Cut Sheet Paper Feeder
- 6 Resident typefaces & 20 Scalable Fonts

CANON BJC-70
£195

Canon BJ-230 **£249**

Canon LBP-460

- 600 x 600dpi Laser Printing
- Up to 4ppm Print Speed
- Small, Space Saving Design
- Designed for Windows Users

CANON LBP-460
£279



SHARP JX-9200

- 300 x 300dpi Laser Printing
- 4ppm Print Speed
- Bi-directional parallel interface
- 100 Sheet Feeder Tray
- Microsoft Sleek Windows Print System

SHARP JX-9200
£239



Lexmark 1020

- Up to 600 x 300dpi Colour Jetprinter
- Up to 3ppm Mono, Up to 2ppm Colour
- High Speed Parallel Interface
- 100 Sheet Input Tray
- Software Included - CorelDRAW! 3
- 3 Year Warranty

LEXMARK 1020
£159

Lexmark 150C **£229**

All prices exclude VAT and delivery

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EPSON PRINTERS

EPSON Stylus Color II

Award-winning photo-real colour for the office

- 720 x 720 dpi Photo-Real Colour & Black
- 4 Pages Per Minute Speed (Mono) Epson Standard Letter Page
- 2 Page Per Minute (Colour)
- Permanently Installed Colour & Black Printheads
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- Ideal for Professional Reports, Impressive Presentations, Vivid Charts and Graphs
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- Windows and Mac compatible
- 3 Year Warranty (RTD)

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March 1996

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EPSON Stylus Color IIs

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- Prints on Plain, Coated and Gloss Papers, Envelopes and OHP Transparencies
- 2.5ppm Mono Epson Standard Letter Page, 1ppm Colour
- Windows 3.1x & Windows 95 Driver
- 3 Year Return Warranty (RTD)



EPSON STYLUS COLOR IIs **£169**

EPSON Stylus Pro

- Enhanced 720 x 720 dpi Photo-Real Colour with Epson MicroDot™ Printing
- Prints on Plain, Coated and Gloss Papers, Envelopes and OHP Transparencies
- Ideal for Photographic Images, and High Quality Business Graphics
- Windows and Mac Compatible
- Optional PostScript Emulation and Network Interfaces
- 1 Year Warranty (RTD)

All Epson Stylus Printers have Unique Piezo Inkjet Technology



Stylus-Pro XL A3 **£815**

EPSON STYLUS PRO **£349**

Stylus 820

- 720dpi Black Printing
- 2.5 Pages Per Minute Epson Standard Letter Page
- Bi-directional Parallel Interface
- Optional Colour Kit
- Windows 3.1x & Windows 95 Driver
- 3 Year Warranty (RTD)



EPSON STYLUS 820 **£139**

EPL-5500

- 600 x 600dpi Resolution with BiRITech & MicroGray Technology
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- HP PCL5e Compatible
- Optional Postscript
- Small Footprint - Only 5Kg
- 150 Sheet Paper Tray
- 1 Year Warranty (RTD)



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EPSON EPL-5500 2MB **£405**

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- 300dpi Scan Resolution • 2400dpi Interpolated Output Resolution
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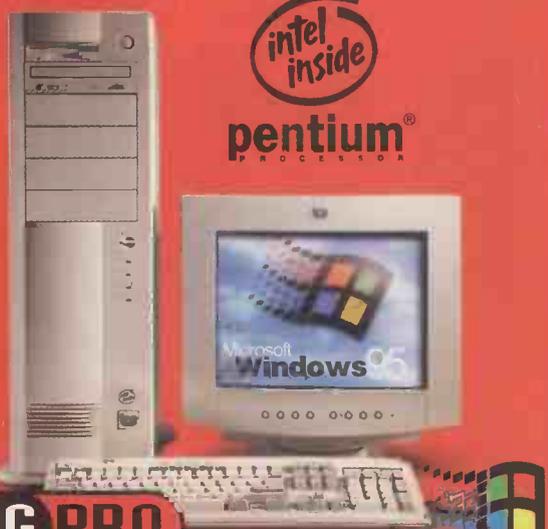
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FROM **£1200** +VAT (£1410 inc VAT)

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WINDOWS 95
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- Intel Pentium™ 100MHz processor
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- 4 PCI & 4 ISA slots
- Energy Star compliant power saving features
- Plug & play BIOS for easy upgradeability
- Intel chip set
- 16k internal and 256k pipe line burst mode cache
- 16Mb EDO RAM expandable to 128Mb

- 3.5" diskette drive
- 850Mb Enhanced IDE hard drive
- 2Mb PCI graphics accelerator card
- 1 parallel port, 2 serial (16650 UART) ports
- 15" .28DP NI MPR-II colour SVGA display
- Eight speed internal CD-ROM drive
- Enhanced keyboard & MS ergonomic mouse
- Available in desktop or mini tower case

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- As PS-100 but with • Intel Pentium™ 120MHz processor
• 1.3Gb Enhanced IDE hard drive

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£1325 +VAT (£1556.88 inc VAT)
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PS-133S

- As PS-120 but with • Intel Pentium™ 133MHz processor
• 17" .28DP Samsung FST colour SVGA display
• Adaptec SCSI PCI controller
• 2.1Gb 9ms fast SCSI hard drive

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• 1.6Gb Enhanced IDE hard drive

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PS-150S

- As PS-120 but with • Intel Pentium™ 150MHz processor
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PS-166

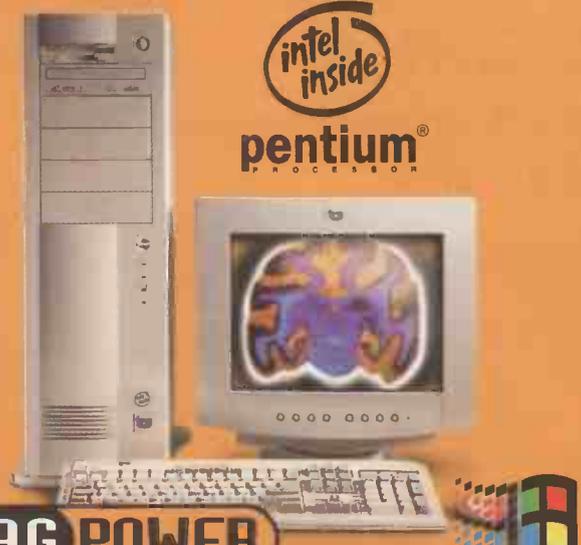
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• 4.3Gb fast SCSI II hard drive

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PROCESSOR

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FILESERVERS

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WINDOWS 95
READY

PS-120T

- Intel Pentium™ 120MHz processor
- PCI (75MHz to 200MHz) mother board
- 4 PCI & 4 ISA slots
- Energy Star compliant power saving features
- Plug & play BIOS for easy upgradeability
- Intel chip set
- 16k internal cache & 256k pipe line burst mode cache
- 16Mb EDO RAM expandable to 128Mb
- 3.5" diskette drive

- 2.1Gb Fast IDE hard drive
- 2Gb internal SCSI 4mm DAT drive
- Adaptec SCSI PCI controller
- 1Mb PCI DRAM graphics card
- PCI ethernet network card
- 2 serial (16650 UART), 1 parallel ports
- 14" .28DP colour SVGA display
- Enhanced keyboard & MS ergonomic mouse
- Full tower case as standard

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- As PS-120 but with • Intel Pentium™ 133MHz processor
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• 2/4Gb SCSI DAT drive

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• 4/8Gb SCSI DAT drive

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• 9Gb fast SCSI hard drive

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800Mb internal Conner Travan 800 tape streamer kit & software	£119 +VAT
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MEMORY

Memory per 4Mb	£79 +VAT
EDO memory per 4Mb	£89 +VAT
EDO memory per 8Mb	£149 +VAT
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Upgrade from 1Mb Diamond Stealth to 4Mb Diamond Stealth	£270 +VAT
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ALL PENTIUM MODELS UPGRADEABLE TO 512K PIPELINE BURST MODE CACHE
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Upgrade from 15" to 17" GLI .28 dot pitch SAMSUNG FST	£235 +VAT
Upgrade from 15" to 17" GLSi .26 dot pitch SAMSUNG FST	£335 +VAT

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Hewlett Packard LaserJet 5L	£359 +VAT
Hewlett Packard LaserJet 4 Plus	£1025 +VAT
Hewlett Packard OfficeJet LX	£499 +VAT
Hewlett Packard 400	£165 +VAT
Hewlett Packard DeskJet 660C	£265 +VAT
Hewlett Packard DeskJet 850C	£349 +VAT

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TAG 3 USER NETWORK using 3x TAGSTATION P5-75 **£2550**+VAT (€2996.25 inc VAT)

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Novell 10 user (version 4.1) £1060+VAT	Novell 50 user (version 4.1) on CD £1995+VAT

TAG STATIONS

P5-75

<ul style="list-style-type: none"> Intel Pentium™ 75MHz processor PCI (75MHz to 200MHz) mother board 4 PCI & 4 ISA slots Energy Star compliant power saving features Plug & play BIOS for easy upgradeability Intel chip set 16K internal and 256K pipe line burst mode cache 8Mb RAM expandable to 128Mb 	<ul style="list-style-type: none"> 3.5" diskette drive 850Mb Enhanced IDE hard drive 1Mb PCI graphics accelerator card 2 serial (16650 UART), 1 parallel ports PCI Ethernet network card 14" .28DP NI MPR II colour SVGA display Enhanced keyboard & MS compatible mouse Available in desktop or mini tower case
£800 +VAT (€940 inc VAT)	
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P5-100

As P5-75 but with Intel Pentium™ 100MHz processor	£850 +VAT (€990.75 inc VAT)
£45.13 PER MONTH inc VAT	

P5-120

As P5-75 but with Intel Pentium™ 120MHz processor	£925 +VAT (€1086.88 inc VAT)
<ul style="list-style-type: none"> 8Mb EDO RAM expandable to 128Mb Microsoft ergonomic mouse 	
£49.11 PER MONTH inc VAT	

P5-133

As P5-120 but with Intel Pentium™ 133MHz processor	£975 +VAT (€1145.63 inc VAT)
£51.77 PER MONTH inc VAT	

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Sound Pro 16 (Creative Labs chip set)	£59+VAT
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8 speed CD-ROM drive, 1.2Mb/sec transfer rate, <240ms access time 256K buffer, MPC 3	
16 Bit wave table sound card plug & play ready, 3-D sound, fully sound blaster compatible, IDEconnector	
Yamaha YST-M5 Hi-Fi speakers	
Software bundle, Myst, Magic Carpet, SimCity 2000, Rebel Assault, Compton's Interactive Encyclopedia 1996	
Includes Quick Start Video tape	£354+VAT

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28.8 Int BAPT approved Fax Modem P'n'P incl. software	£139+VAT
Motorola Internet Solution external 28.8 Fax Modem	£189+VAT

MISCELLANEOUS

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- 5 FREE lifetime telephone support
- 6 FREE 2 year warranty with FREE loan equipment
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- 8 GUARANTEED repairs within 72 hours
- 9 GUARANTEED highest quality components
- 10 GUARANTEED excellent value for money.

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TAG's standard 2 year warranty guarantees to turn a system round in 72 hours or provide a loan system.

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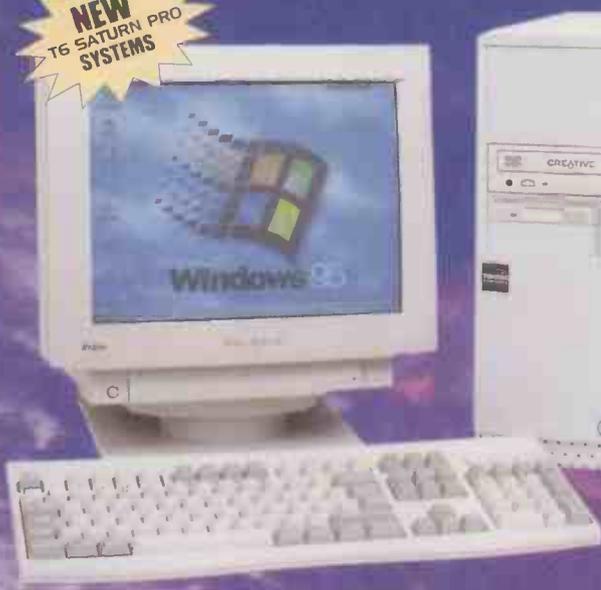
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SYSTEMS



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- 1.44 Mb 3.5" Floppy Drive
- 2 Fast serial (UART 16550) ports
- SPP/EPP/EPC Printer port
- M/S compatible serial mouse.
- Win 95 keyboard (105keys)
- Desktop or Mid Tower (CE approved)

PENTIUM® processor	1.08GB	1.6GB	2.0GB
100 Mhz	£749	£799	£849
120 Mhz	£799	£849	£899
133 Mhz	£849	£899	£949
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166 Mhz	£1099	£1149	£1199

NEW

T6 SATURN Pro (Pentium Pro Processor)

The T6 Saturn Pro is a professional workstation user's dream machine. Based on the Intel Pentium® Pro processor and the new 'ATX' motherboard, it is designed to meet the needs of the most demanding applications in the areas of CAD, Engineering etc.

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- ATX PCI Motherboard
- 16K level 1 & 256K level 2 built in cache
- 8MB EDO RAM
- Maximum 128Mb
- 2MB 64Bit VRAM SVGA
- 15" Non-interlaced 0.28 SVGA Monitor
- Choice of Enhanced IDE Hard Drives
- Supports up to 4 ATA mode 4 drives
- 1.44 Mb 3.5" Floppy Drive
- 2 Fast serial (UART 16550) ports
- EPP/ECP Printer port
- M/S compatible serial mouse.
- Win 95 keyboard (105 keys)
- Desktop or Mid Tower (CE approved)

PENTIUM® PRO processor	1.08GB	1.6GB	2.0GB
150 Mhz	£1699	£1749	£1799
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DIAMOND

GRAPHICS: (T5 OBSERVER)

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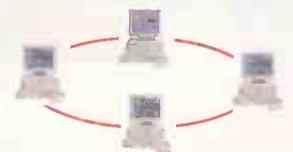


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- 15" Idek Iiyama upgrade £129
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FREE 1 Year on site Maintenance



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pentium PROCESSOR



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Capacity
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4 x 3.5
Dimensions
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Affordable Prices



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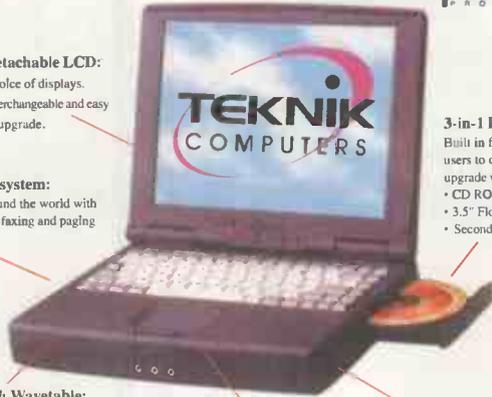
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SONY QW3000XL 1.0Gb	15.95	£77
SONY QW3010XLF 850Mb	17.95	£87
SONY QW3020XLF 1.7Gb	20.95	£100
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3M DDS D4/120M 4mm	19.95	
3M DDS D4/90M 4mm	6.95	£65
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3M DDS D8/112M 8mm	6.25	£58

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10 x 4mm/90m for **£65**

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HP 4mm 120M (92300A)	19.95
HP 4mm 90M (92283B)	8.50 £81
HP 4mm 60M (92283A)	8.75 £83
HP 4mm Cleaning Tape (92283K) (2's)	21.00
Maxell 4mm/8mm Cleaning Tape	£10.95

VERBATIM Magnato Optical

Magnato Optical	1's	5's
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TDK/MAXELL 3.5" 128Mb	13.50	£65
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3M 3.5" 230Mb (Formatted)	19.95	£95
TDK 3.5" 230Mb	17.95	£89
VERBATIM 3.5" 230Mb	16.95	£80

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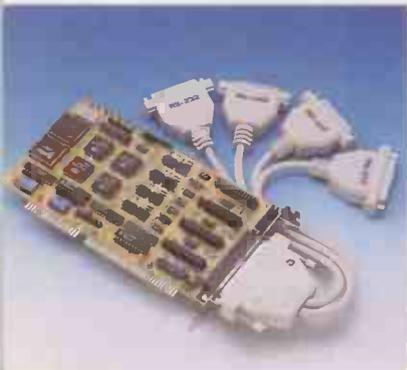
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- ▼ Supplied with 4-way cable set

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16550 Serial Card

Ideal for hardware requiring high speed communications. Highly recommended for Windows.

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- ▼ 16 bit AT bus

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Add £20 for 16550 option

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Offering 2 high speed serial ports for transmissions up to 4000 feet

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- ▼ 16 bit AT bus

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The DigiCHANNEL PC/Xe range are intelligent multi-port RS232 high speed communication boards with on-board 80186 processor and 64K memory for increased throughput. Drivers available for DOS, Windows NT, Windows, OS/2, Xenix and UNIX.

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- ▼ 16-Bit AT bus

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- ▼ RS232 interface
- ▼ Synchronous mode to 1.23M baud
- ▼ IRQ2-7, 10-12, 14-15
- ▼ DMA Channels 1 - 3

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Also Synchronous RS422/RS485 £220

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ADAM Modules (shown below) are compact intelligent sensor-to-computer interface units designed specifically for reliable operation in harsh environments. Their built-in microprocessors, encased in rugged industrial grade plastic packages provide analog I/O, digital I/O, thermocouple measurement and data display. Each module has a built-in RS485 serial interface for data transfer with the host computer.



Isolated RS232/RS485 Converter

ADAM modules need only 2 wires to communicate with their controlling host computer over a multidrop RS-485 network. ADAM modules also accept any power source between 10V and 30V and are protected against power reversal.

- ▼ Automatic control of data flow
- ▼ Input RS232 (4-wire)
- ▼ Output RS485 (2-wire)
- ▼ Baudrate 1.2K to 38.4K

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Analog Input module

ADAM modules can accommodate multiple types and ranges of analog input. You select type and range remotely by issuing ASCII commands from your host computer.

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- ▼ 1 digital input / event counter
- ▼ 2 digital outputs
- ▼ Baudrate 1.2K to 19.2K

£135

ADAM Modules

ADAM 8ch Analog Input Module	£169
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ADAM Analog Output Module	£135
ADAM Digital I/O Module	£99
ADAM Relay Output Module	£99
ADAM Counter/Frequency Module	£169
ADAM IP66 Industrial Enclosure	£85
ADAM Power Supply Unit 24V	£149

IEEE-488 Interface Card

Provides complete IEEE-488 functionality on a half size card.

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- ▼ DMA & Interrupt
- ▼ On-board firmware driver
- ▼ 16 digital outputs
- ▼ Basic, Pascal & C drivers
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The simple solution for providing digital I/O and timer functions.

- ▼ 32 digital inputs
- ▼ 32 digital outputs
- ▼ 3 channel programmable counter/timer
- ▼ Breadboard area

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144 bit Digital I/O Card

High Density mixed digital I/O Card for industrial monitoring & control.

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£155

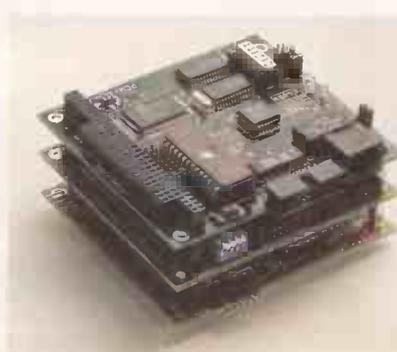
Wiring Kit & Relay Boards

Wiring Terminal Board	£35
Industrial Wiring Kit	£30
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Isolated Digital input board 24ch	£109
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Relay Board 24ch, 120V 1A	£135
Relay Board 16ch, 250V 5A	£130
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PC-104 Modules (shown below) simply stack together to form a compact modular PC-based system which has very low power consumption.

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PC-104 Ethernet Module	£109
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PC-104 Global Positioning (GPS)	£450



Analog & Digital I/O Card

Versatile fully integrated multifunction A/D, D/A and Digital I/O card.

- ▼ 12 bit 40KHz
- ▼ 16 single-ended or 8 differential A/D Inputs
- ▼ 1 D/A output
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- ▼ 16 digital outputs
- ▼ Pacer Clock
- ▼ Timer/Counter
- ▼ DMA and Interrupt
- ▼ Wiring Terminal Board

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Industrial Workstation with 14" Colour CRT

Rugged heavy duty workstation for 19" rack or panel mounting.

- ▼ Highly integrated PC Workstation
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- ▼ 27-key membrane keypad
- ▼ IP56/IP52 sealed hardened front panel
- ▼ Heavy duty aluminium and steel chassis
- ▼ 250-watt power supply
- ▼ 8 ISA slots

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The rugged all steel chassis conforms to the 19" rack mounting standard. The unit includes a 14 slot passive backplane and a high efficiency power supply (250W) in a dual-fan cooled chassis.

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- ▼ Mounting for up to 4 drives
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- ▼ Removable air filters

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The same robust 19" Industrial Chassis as described left but fitted with a special backplane offering 3 PCI slots and 9 ISA slots for use with our Pentium range of CPU Cards.

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- ▼ Heavy-duty steel construction
- ▼ Supports Pentium CPU Cards
- ▼ 3 PCI long slots
- ▼ 4 ISA long slots
- ▼ 5 ISA short slots
- ▼ 1 CPU Card slot

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- ▼ 1 D/A Output
- ▼ 16 digital inputs
- ▼ 16 digital outputs
- ▼ Pacer Clock
- ▼ Timer/Counter
- ▼ DMA and Interrupt
- ▼ Wiring Terminal Board

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Industrial Workstation with 9.4" LCD Display

Rugged heavy duty workstation with flat-panel LCD display and 80-key membrane keypad.

- ▼ Highly integrated PC Workstation
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- ▼ 200-watt power supply
- ▼ 8 ISA slots

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- CPU Card 386SX/40 £260
- CPU Card 486DX2/66 £295
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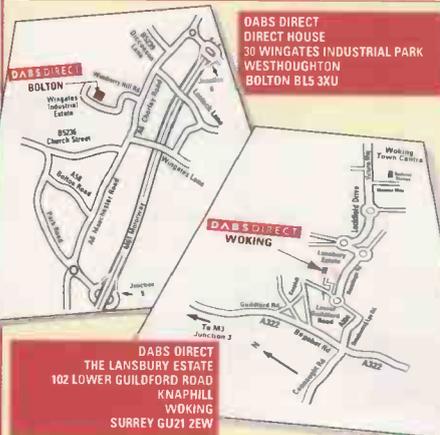


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D	1.6 Gb £1270	£1305	£1360	£1465
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	7	6	5
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IBM Parallel Printer	4	8	15
Macintosh Printer	5	-	-
IBM D25-D25 Serial cable	4	6	7
IBM D9F/D25F-D25M Modem	5	-	7
Centronics C36M-C36M	6	8	10
Ethernet BNC-BNC	4	5	6
	1m	2m	-
Twin IDE HD 140F-140F-140F Internal	3	-	-
IEC Mains or IEC-IEC Extension	5	10	-
Twin SCSI 150F-150F-150F Internal	5	-	-
SCSI C50M-C50M	8	15	-
SCSI C50M-HC50 Micro D	15	19	-
SCSI HC50 Micro D - HC50 Micro D	29	-	-
SCSI C50M-HC50 Wide SCSI	6	9	-
SCSI D25M-C50M	6	9	-
VGA Extension HD15M-F	4	5	-
Keyboard Extension DIN	-	-	5

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Canon BJC70 Bk Ink Tank	5	Canon BJC70 Col Tank	7
Canon BJ610 HiCap Black	8	Canon BJ610 Colours	7
Canon BJC800 Black	14	Canon BJ800 Colours	18
Canon BJC100 Black	20	Canon BJC100 Col	31
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Epson Stylus 800 HiCap	15	Epson Styl Col Black	11
Epson Stylus Colour	23	Epson Stylus 1500	32
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HP DJ 1200C Colours	22	HP DJ 1600C Black	20
HP DJ 850C Black	20	HP DJ 850C Colour	18
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HP Designjet 650 Black	20	HP Designjet Colours	20
HP Paintjet Colour	20	HP Paintjet Black	18
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FS-1550

- 10ppm print speed
- Low cost of ownership (1.33p/page)
- 300x300 dpi & 300x1200 dpi
- Parallel & High Speed I/O ports
- 1Mb RAM (5Mb max)
- Optional internal network card (Ethernet or Token ring)
- Optional 250 sheet second paper feeder
- Optional PostScript PK2 (requires 2mb memory)
- Optional face-up tray
- 3 year warranty on drum

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GTi-9000	569		646
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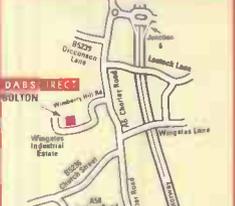
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H5465A	HP ScanJet 4S	1 Year Unit Exchange	3 Year on-site - next day	£66
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H5473A	HP LaserJet 4L, 4ML, HP DeskJet 200C/PS, 1600C/CM	1 Year Return or 1 Year Unit Exchange	3 Year on-site - next day	£105
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H5489A	HP DesignJet 230, 250C, 600 & 650C	3 Year on-site - next day	3 Year on-site - 4 hour response	£420
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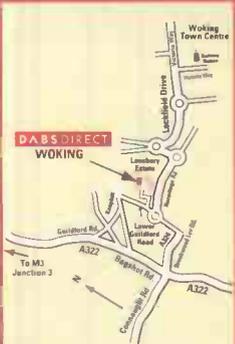
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- Unit has built in 16 bit sound card for true multimedia capabilities
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- Pass through printer port for concurrent printing purposes
- Upto 900Kb/s data transfer rate
- Supports EPP & IEEE 1284 parallel ports
- Built in universal autoswitching power supply and cooling fan
- Compatible with DOS, Windows, Windows 95 & OS2
- 200ms access time
- MPC II & Photo CD compatible



- Small lightweight enclosure
 - Motorising tray loading
 - Easy to use and install software driver
 - Supplied complete and ready to 'plug in and go'
- | | |
|-----------------------------------|---------|
| EZCD SOUND x4 - Quad speed system | £279.00 |
| EZCD SOUND x6 - Six speed system | £309.00 |

AMACOM EZCD PLUS DUAL & QUAD SPEED PCMCIA BASED CD-ROM & MOBILE AUDIO CD PLAYER

- Draws power from PC Card interface (dual speed only) quad speed supplied with mains adaptor
- Can also be operated using AA batteries (4 for dual / 6 for Quad)
- CD-ROM drive as well as mobile audio CD player
- Supports 'Hot-Swapping' to allow disconnection and reconnection without re-booting
- Data transfer rate of >600Kb/s
- MPC II & Photo CD compatible
- Audio sockets for h/phones and line out
- Very small and lightweight stylish unit
- Connects to PCMCIA type II & III slots



- Compatible with DOS, Windows, Windows 95 & OS2 (quad speed only)
 - Easy to use and install software driver
 - Supplied complete and ready to 'plug in and go'
- | | |
|---------------------------------|---------|
| EZCD PLUSx2 - Dual speed system | £249.00 |
| EZCD PLUSx4 - Quad speed system | £299.00 |

AMACOM EZCD CARD QUAD & SIX SPEED PCMCIA CD-ROM DRIVES

- Operates via supplied mains adaptor or AA batteries
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- MPC II & Photo CD compatible
- Audio sockets for headphones and line out
- Small, lightweight, attractive and extremely portable drive
- Connects to PCMCIA Type I, II or III slots
- Supports 'Hot-Swapping' to allow disconnection and reconnection without re-booting
- Compatible with DOS, Windows, Windows 95 and OS2



- Motorised tray loading
 - Easy to use and install software driver
 - Supplied complete and ready to 'plug in and go'
- | | |
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| EZCD CARD quad speed | - £275.00 |
| EZCD CARD six speed | - £349.00 |

PORTABLE HARD DISK DRIVES

AMACOM EZ DISK PORTABLE 3.5" HARD DRIVES THAT CONNECT TO PC'S PARALLEL PRINTING PORT

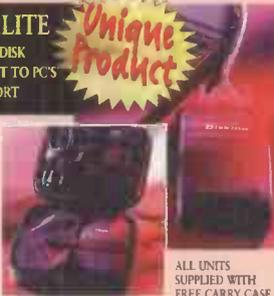
- Upto 900Kb/s data trans. rate
- Pass through printer port for concurrent printing
- Compatible with DOS, Windows, Windows 95 & OS2
- Built in universal autoswitching power supply and cooling fan
- EPP & IEEE 1284 ports
- Compact and attractive enclosure
- Easy to use and install software driver



- Supplied complete and ready to 'plug in and go'
- | | |
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| EZ DISK 850Mb | £265.00 |
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| EZ DISK 1.6Gb | £375.00 |

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- Upto 900Kb/s data trans. rate
- Pass through printer port for concurrent printing
- Compatible with DOS, Windows, Windows 95 & OS2
- Draws power from PC, no need for external power
- EPP & IEEE 1284 ports
- Ultra small pocket size attractive enclosure
- Easy to use and install software driver



- Supplied complete and ready to 'plug in and go'
- | | |
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| DISKRITE 810Mb | £469.00 |
| DISKRITE 1.2Gb | £655.00 |

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- Supplied complete and ready to 'plug in and go'



- | | |
|-----------------------|---------|
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- | | |
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- Data transfer rates of up to 800Kb/s

- Pass through printer port for concurrent printing
 - Easy to use and install software driver
- | | |
|-------------|--------|
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BUSINESS PC

FOX Award® PCI

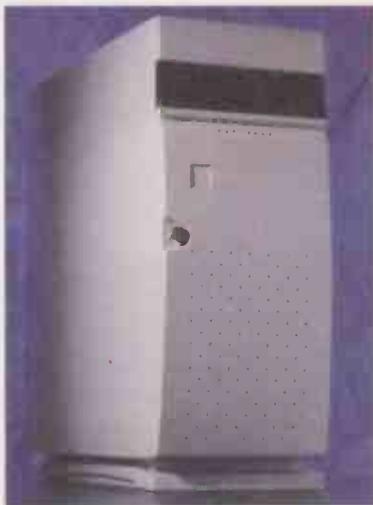
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8Mb EDO 60ns Memory
Intel PCI E-IDE 32bit Controller
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3.5" Panasonic Floppy Drive
2 x Serial 16550 UART, 1x Parallel Port
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HP35380A 2.8Gb	£452	£529
HP3533AA 4-16Gb	£619	£699
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HP DAT Drive Support Pack (3 Yrs O5M)	£119	
WangDat	Int.	Ext.
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Colorado			
DJ-25 Jumbo 680Mb Internal IDE	£117		
DJ-50 Jumbo 1.4Gb Internal IDE	£224		
T400/800e Travan 800Mb Internal IDE	£97		
Parallel Port			
T1000e Travan	£115		
BackPack 800 Travan	£149		
Colorator			
TSX4200R-FBX 420Mb	£76		
TSM4800R-FBX 800Mb Travan	£99		
TSM44000R-FBX 4Gb	£389		
TSM4200R-FBX 420Mb	EPOA		
Iomega			
100Mb 3.5" Parallel ZIP	£139		
800Mb 3.5" Internal Ditto	£115		
800Mb 3.5" External Easy	£129		
3.2Gb 3.5" Internal Ditto	£225		
3.2Gb 3.5" External Easy	£289		
1700Mb 3.5" Internal Ditto	£179		
Syquest	Int	Ext	Media
EZ 135Mb	£149	N/A	£13
SQ5200	£275	N/A	£49
SQ3270A	£259	£439	£39
SQ3270S	£259	£469	£39

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Hard Drives



Model	Size	Acc	Mode	War	Price
West Dig					
AC2850	850Mb	10ms	EIDE 3	3 Yr	£135
AC21000	1.0Gb	10ms	EIDE 4	3 Yr	£139
AC2100	1.2Gb	10ms	EIDE 3	3 Yr	£159
AC31600	1.6Gb	10ms	EDIE 4	3 Yr	£189
AC32100	2.0Gb	10ms	EIDE 4	3 Yr	£239

Seagate Medalist					
ST33630A	630mb	10ms	EIDE 3	3 Yr	£109
ST31270A	1.2Gb	10ms	EIDE 3	3 Yr	£145
ST51640A	1.6Gb	10ms	EIDE-3	3 Yr	£169

Decathlon					
ST51080A	1.0Gb	10ms	EIDE 4	3 Yr	£139
ST32140A	2.0Gb	10ms	EIDE 4	3 Yr	£209

Hawk					
ST31230N	1.0Gb	10ms	SCSI 2	5 Yr	£235
ST32430N	2.1Gb	10ms	SCSI 2	5 Yr	£469
ST15230N	4.0Gb	10ms	SCSI 2	5 Yr	£699
ST31230W	1.0Gb	10ms	SCSI 2	5 Yr	£355
ST32430W	2.1Gb	10ms	SCSI 2	5 Yr	£649
ST15230W	4.0Gb	10ms	SCSI 2	5 Yr	£789

Barracuda					
ST32550N	2.1Gb	8ms	SCSI 2	5 Yr	£499
ST15150N	4.0Gb	8ms	SCSI 2	5 Yr	£879
ST32550W	2.1Gb	8ms	SCSI 2	5 Yr	£639
ST15150W	4.0Gb	8ms	SCSI 2	5 Yr	£999
ST410800	9.0Gb	8ms	SCSI2	5 Yr	£1679

Connor					
CF51081A	1.0Gb	12ms	EIDE 4	3 Yr	£149
CF51275A	1.2Gb	12ms	EIDE 4	3 Yr	£159
CFP10805	1.0Gb	9ms	SCSI 2	3 Yr	£169
CFP21055	2.1Gb	11ms	SCSI 2	3 Yr	£389
CFP21075	2.1Gb	9ms	SCSI 2	3 Yr	£449
CFP42075	4.2Gb	9ms	SCSI 2	5 Yr	£709
CFP4207W	4.2Gb	9ms	SCSI 2	5 Yr	£849

Quantum					
FBL1080A	1.2Gb	12ms	EIDE-3	3 Yr	£155
FBL10805	1.0Gb	12ms	SCSI 2	3 Yr	£189
XP321505	2.1Gb	9ms	SCSI 2	5 Yr	£549
XP321515	2.1Gb	8ms	SCSI 2	5 Yr	£679
XP342805	4.3Gb	9ms	SCSI 2	5 Yr	£749
XP343005	4.3Gb	8ms	SCSI 2	5 Yr	£884

Fujitsu					
M1606T	1.0Gb	10ms	EIDE 4	3 Yr	£139
M1606S	1.0Gb	10ms	SCSI 2	5 Yr	£169
M29325	2.0Gb	10ms	SCSI 2	5 Yr	£399

Micropolis					
MIC4221	2.1Gb	9ms	SCSI 2	5 Yr	£519
MIC4221A	2.1Gb	8ms	SCSI 2	5 Yr	£549
MIC32431	4.3Gb	8ms	SCSI 2	5 Yr	£719
MIC11991	4.3Gb	8ms	SCSI 2	5 Yr	£759

Toshiba					
MK1924F	850Mb	13ms	IDE 3	2 Yr	£229
MK1928F	1.2Mb	13ms	IDE 3	2 Yr	£369

Graphic Adapters

Generic	
Trident 9500D8 1Mb ISA	£39
Trident 4490 1Mb PCI	£45
Cirrus Logic 1Mb PCI	£45
ET4000 ISA/VLB/PCI VESA 16.7 Million Col.	£79

Matrox	
Millennium 2Mb VRAM	£209
Millennium 4Mb VRAM	£309

Number Nine	
9FX Vision 3304 1Mb	£78
9FX Vision 3304 2Mb	£115
9FX Motion 331 1Mb	£115
9FX Motion 331 2Mb	£149
9FX Motion 531 1Mb	£115
9FX Motion 531 2Mb	£145
9FX Motion 771 2Mb	£195
9FX Motion 771 4Mb	£295
Imagine 128 1280 4Mb	£459
Imagine 128 1600 4Mb	£569
Imagine 128 1280 8Mb	£939

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Motherboards



486DX4 Motherboards

Model	VLB	PCI + I/O
486 Bare	£59	£65
486DX2/66Mhz	£74	£73
486DX4/75Mhz	£104	£102
486DX4/100Mhz	£104	£104
486DX4/120Mhz	£111	£115

Pentium® Motherboards

Spec	Bios	Mem	Cache	PCI	Mhz	ISA	Features
Type	Max	Option	Slots	Max	Slots	Onboard	
PH5 Triton+	P&P 128	P	4	200	4	A/P	
Intel®Endeav	P&P 256	P	4	200	4	A/P/S	
Intel®Atlantis	P&P 256	P	4	200	4	P/A/D/S	
Intel®Super	P&P 256	P	4	200	4	A/P	
Intel®Dual	P&P 256	P	3	133	EISA	A/P	
Intel®AMI	P&P 256	P	4	200	4	A/P	

A = Built-in 2xS 16550 UART, 1xP + E-IDEx4, 2xFdd
 P = 256/512Kb Pipe Line Cache Kelp Socket
 D = 64 Bit Mac 64 PCI Display Adaptor
 S = Built-in Sound Blaster 16 Vibra

Model	Bare 75	100 120	133 150 166
Triton+ PH5 76	146	213	251 301 378 524
Triton 76	146	213	251 301 378 524
Endeavor 135	202	270	308 358 435 580
Atlantis 205	272	340	378 428 505 650
Dual Pent 379	poa	poa	poa poa poa
SuperMicro 155	222	289	327 377 454 600
AMI Atlas 275	353	422	463 514 595 747

Pentium® Pro

Spec	Bios	Mem	Cache	PCI	Mhz	ISA	Features
Type	Max	Fitted	Slots	Max	Slots	Onboard	
Intel®Orion	P&P 128	P	3	200	4	A/D	
AMI® Goliath	P&P 128	256K	3	200	4	A/D	

A = Built-in 2xS 16550 UART, 1xP + E-IDEx4, 2xFdd
 D = Operates with up to 4 Pentium Pro's

Model	150Mhz	200Mhz
Intel Orion	£959	£999
AMI Gollath	£POA	£POA

Microprocessors

Pentium 75Mhz	£73
Pentium 100Mhz	£141
Pentium 120Mhz	£179
Pentium 133Mhz	£229
Pentium 150Mhz	£306
Pentium 166Mhz	£451
486DX2/66Mhz and DX2/80Mhz	£19
486DX4/75Mhz and T1 DX4/100Mhz	£49
486DX4/100Mhz and DX4/120Mhz	£59

Floppy/Optical Drives

1.44Mb 3.5" Floppy Disk Drive	£15
1.44Mb 3.5" Panasonic Floppy Disk Drive	£18
1.22Mb 5.25" Floppy Disk Drive	£32
10 Pack 1.44Mb PreFormatted FDD	£4
Fujitsu	
M2512A 230Mb Magneto Optical Internal	£279
Panasonic	
LF7304 1.5Gb Phase Change Internal	£1455
Hewlett-Packard	
C1716 1.3Gb Internal 3Yr Warranty	£1749

DIAMOND MULTIMEDIA

Diamond Edge

SpeedStar 64 ISA 1Mb	£82	Edge 3D 2120XL 1Mb Dram	£185
Stealth SE 1Mb	£55	Edge 3D 2200XL 2Mb Dram	£219
Stealth 64 1Mb Dram	£75	Edge 3D 3240XL 2Mb Vram	£269
Stealth 64 1Mb Dram Video	£85	Edge 3D 3400XL 4Mb Vram	£379
Stealth 64 2Mb Vram Video	£189		
Stealth 1Mb Dram Memory Up	£39		
Stealth 2Mb Vram Memory Up	£105		
Stealth 64 2Mb Vram MPEG Up	£295		

Memory Upgrades



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30 Pin Sim Modules	
1Mb 3 Chip Solution 70ms	£22
4Mb 9 Chip Solution 60ms	£85
SIMM SAVER JH004T	£25
72 Pin Fast Page Sim Modules	
4Mb 1x32bit 60ns	£39
8Mb 2x32bit 60ns	£89
16Mb 4x32bit 60ns	£179
32Mb 8x32bit 60ns	£469
4Mb 1x36bit 60ns	£79
8Mb 2x36bit 60ns	£149
16Mb 4x36bit 60ns	£299
32Mb 8x36bit 60ns	£599
EDO Enhanced Sim Modules	
4Mb EDO Memory 60ns	£39
8Mb EDO Memory 60ns	£99
16Mb EDO Memory 60ns	£249
32Mb EDO Memory 60ns	£599

Pipe Line Cache Modules	
256Kb Pipe Line Cache Module	£19
512Kb Pipe Line Cache Module	£59

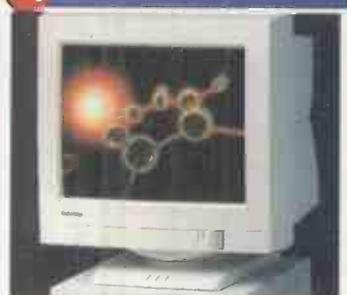
CD-ROM Drives

Quad Speed £39 SIX Speed £59

Model	Manufacturer	Int	Speed	Transfer	Price
CD-7730	Hitachi	IDE	QUAD	600kbs	£39
CR581	Panasonic	IDE	QUAD	600kbs	£49
R540	Goldstar	IDE	QUAD	600kbs	£49
DRU124	Pioneer	IDE	QUAD	600kbs	£89
NEC272	NEC	IDE	QUAD	600kbs	£49
G560	Goldstar	IDE	SIX	900kbs	£59
CD-668	Aztec	IDE	SIX	900kbs	£85
CD-596	TEAC	IDE	SIX	900kbs	£95
G580	Goldstar	IDE	EIGHT	1050kbs	£119
CD-868	Aztec	IDE	EIGHT	1050kbs	£109
CR504B	Panasonic	SCSI	QUAD	900kbs	£119
XM5401	Toshiba	SCSI	QUAD	900kbs	£139
DRU124	Pioneer	SCSI	QUAD	900kbs	£159
XM3071	Toshiba	SCSI	SIX	1050kbs	£219

CD Recorders + PCMCIA			
PCMCIA	CD-952	Dual	£199
PCMCIA	Cyberman	Dual	£199
Panasonic LF1004			£479
HP SuperStore CD Writer + easy CD SW			£689
Kodak Photo CD Writer 225			£889
Plasmon CDR420i inc cont & easycdlite			£689

Monitors



ViewSonic	
14ES 14" 1280x768 NI	£169
15ES 15" 1024x1024 NI	£219
15G5 15" 1280x1024 NI	£319
15GA 15" 1280x1024 NI + Speakers	£349
17EA 17" 1280x1024 NI + Speakers	£469
17GA 17" 1280x1024 NI + Speakers	£549
17PS 17" 1600x1024 NI	£599
V20G 20" 1600x1200 NI	£899
V21PS 21" 1600x1200 NI	£1199

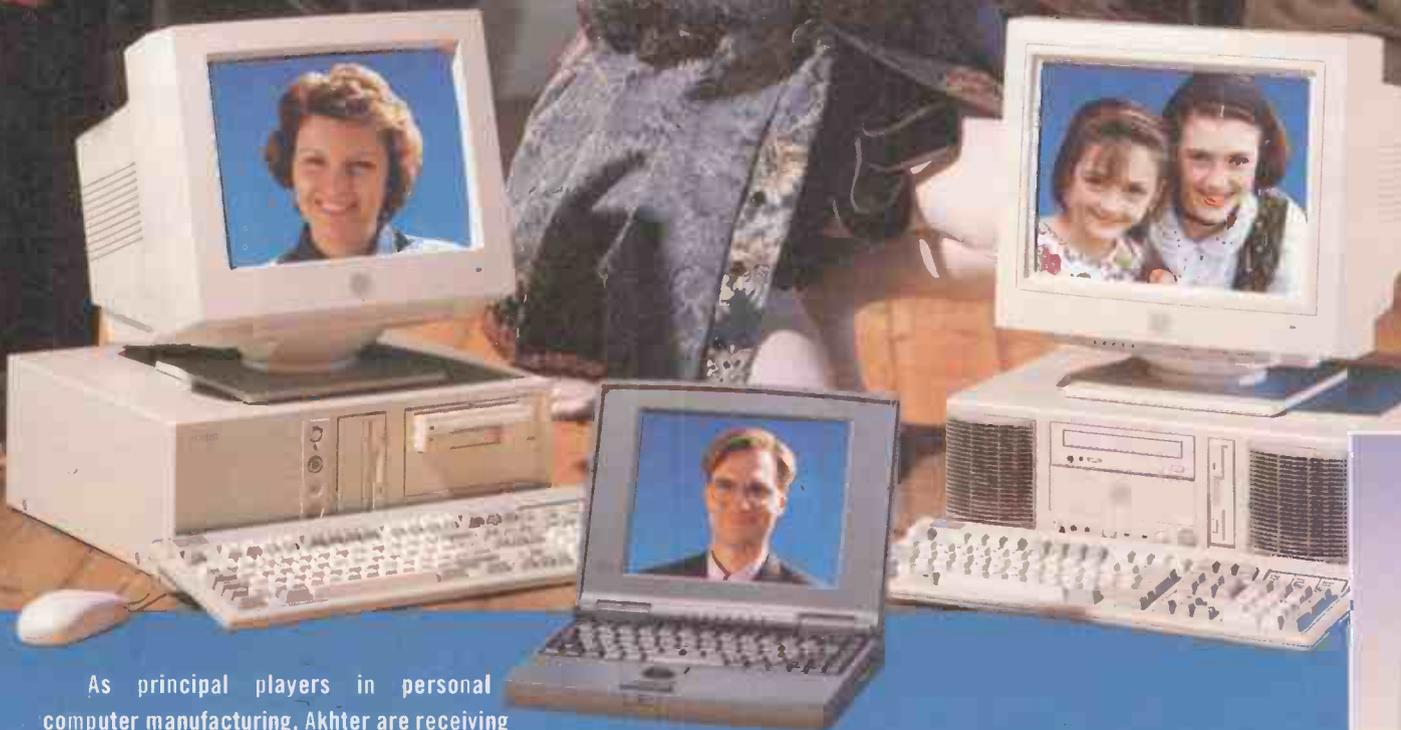
Trust	
CM200 14" Mono Paper White	£59
CM252BD 14" SVGA 1024x768 NI	£179
CM302BD 15" SVGA 1280x1024 NI FST	£179
Viewer 17" SVGA 1600x1200 NI FST	£479
CM-5031 20" SVGA 1024x768 NI	£719

Goldstar Monitors	
GSI462DM 14" LT NI 1024x768	£169
GSI1505 15" FST NI LR 1024x768	£199
GSI1527DM 15" FST NI 1024x1024	£259
GSI727 17" FST NI 1280x1024	£479

Panasonic 2 Years Site Warranty	
TXD1734-FU 17" NI 1280x1024	£535
TXD1752-PRO5 17" NI 1024x1024	£619
TXD2051-PRO6 20" NI 1280x1024	£659
TXD2151-PRO6 21" NI 1600x1200	£1359

IIYAMA Idek	
MF-8115 15" Vision Master Monitor	£259
MF-8617 17" Vision Master Monitor	£509
MF-9017 17" Vision Master Pro Monitor	£569
MF-9221 21" Vision Master Monitor	£1159
MF-9202IE 21" Vision Master Pro Monitor	£1239

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1MB X 9 BIT -3 CHIP	Call	26	23			8MB = 2MB X 36 BIT			160	
1MB X 9 BIT -9 CHIP	Call	28	22	28		16MB = 4MB X 32 BIT		280	260	
4MB X 9 BIT -9 CHIP	106	90	90			16MB = 4MB X 32 BIT EDO		300		
72 PIN SIMM		60NS	70NS	80NS						
4MB = 1MB X 32 BIT		80	60			16MB = 4MB X 36 BIT		300	200	
4MB = 1MB X 32 BIT EDO		70				32MB = 8MB X 32 BIT		580	560	
4MB = 1MB X 36 BIT		85	80			32MB = 8MB X 32 BIT EDO		690		
8MB = 2MB X 32 BIT		160	140			32MB = 8MB X 36 BIT		600	580	
8MB = 2MB X 32 BIT EDO		160				64MB = 16MB X 32 BIT	Call	Call		
						64MB = 16MB X 36 BIT	1300	Call		

CACHE - VIDEO - DRAM

8K X 8 BIT 12 & 20 NS	4	32K X 8 BIT 16 NS	6	64K X 1 BIT 16 NS	8
256K X 4 BIT 60/70 NS DIP	6	256K X 4 BIT 80 NS ZIP	7	1MB X 4 BIT 70 NS ZIP	15
256K X 16 BIT 60 NS SOJ	18	256K X 16 BIT 70 NS SOJ	16	256K X 16 BIT 80 NS ZIP	16

WORKSTATION MEMORY

HEWLETT PACKARD	4MB	8MB	16M	32M	64M
HP APOLLO 9000 375; 380; 382; 400d/s/t; 425e/s/t; 433s	160	260	480	880	
HP APOLLO 9000 SERIES 700/RX 16Ca/Ci; 19Ca/Mi; ENTRIA 16C/M; 15C; 17C; 19M; ENVIZEX 14C1; 15Ca/Ci; 17Ca/CaS/Ci/CpS; 19Ca/CaS/Ci/Cp/Ga/Gp; 20CpS	130	240	480	900	1700
HP APOLLO 9000 SERIES 705; 710; 712/60/80/100; 715/15/35/50/64/75/80/100/CX; 725/60/75/100; 745i; 747i			280	480	850
HP 3000 9x7 Series; 9x7LX Series; 9x8LX /RX Series; 9000 Series 800 Business Server Ex6/ Fx0/ Gx0/ Hx0/ Ix0; 8x7S Series; E-Class Server Ex5 Series			480	920	1700
HP APOLLO 9000 SERIES 720; 730; 735/125; 750; 755/125			480	900	1700
HP 9000 700J Workstation J200; C-Class Workstation C100/ C110				900	
IBM	4MB	8MB	16M	32M	64M
RS/6000 POWERSTATION/ POWERSERVER 220 SERIES	130	240			
RISC System 4000 43P; RS/6000 PowerStation/ Server 22W; 23S/T/W; 25E; 220; 230; M20; 42T/W; Xstation 140; 150	160	280	520	950	
RISC SYSTEM 6000 40P; XSTATION 160			300	1000	
RS/6000 POWERstation/ POWERserver 3AT; 3BT; 34H; 37T; 58H; 59H; 320/E/H; 340/R; 350/R; 360; 370; 380; 390; 520/H; 630/E/H; 650/E/L/S; 660/F; 670; 680; 690 730; 930; 950; 970; 980/B; 990; R10; R20; R24			750	1080	1950
SILICON GRAPHICS	8MB	16M	32M	64M	
Iris Indigo (R3000); Personal Iris Workstations 4D/30; 4D/35		260		800	
Iris Crimson			480	1600	
Challenge M; S; Iris Indigo (R4400); Indigo2 Extreme (R4400); Indy (R4000,R4400,R4600); Power Indigo 2 Impact (R4400,R8000)			480	900	1600
Iris Power Series 4D/120/210/220/240/280/310/320/340/380/420/440/480					1600
Challenge L; X; Onyx DeskSide; Rack; Power-Challenge DM; L; XL; / (R10000); Power Onyx DeskSide/ Rack; Reality Station (R4400,R10000); iStation (R4400,R10000)					1600
SUN MICROSYSTEMS	4MB	8MB	16M	32M	64M
MODEL 3/60; 3/80; 4/110	140		440		
SPARCSTATION IPC (4/40); 1 (4/60); 1+ (4/65); 2 (4/75); SLC (4/20)	140		440		
SPARC SERVER 4; 6		320		900	
SPARC SERVER/ SPARCSTATION 330; 370; 390		260			
SPARCSTATION CLASSIC LC (4/15); LX (4/30)		260		850	
SPARCSTATION ELC (4/25); IPX (4/50)			420		
SPARC SERVER/ STATION/ ENGINE 10 MODEL 30, 41, 52, 54; 20 Model 71, 712			480		1790
SPARC CENTER 2000; SPARC SERVER 1000				900	1700
SPARC SERVER 630MP; 670MP; 690MP					1790

DESKTOP MEMORY

AST	2MB	4MB	8MB	16M	32M	64M
Adv. & Pro 386SX/20/25; BRAVO 3/25s/33s; 386SX/16/20/25	60		180			
Adv. 486/25/33p/SX20; Bravo 4/33; 486/25; Prem. 386/33TE; 486/25/33/EITE; Prem. II 386/25/33; 486/33/SX20; Power Premium 3/33; 4/33s/60d/66d; Premium Server SE 4/33	60		260			
Adv. 610/811/612/614/810/811/812/814/816/818/p; 6000p; Adventure Pro 486's; Bravo 4/Series; Bravo LC/(II/III) 4/Series; Bravo LP Series; Bravo MS/MSL/MST/MT Series	90	170	310	620		
ADVANTAGE PLUS 486DX/33; 486DX2/50; 486DX2/66	90	180	325			
PREMIUM 386/25/33/T/SX16; PREMIUM II 386SX/20/25; PREMIUM SERVER SE 4/50; 4/66; CUPID MEMORY BOARD	140					
MANHATTAN G/V; PREMMIA 4/Series; SE 4/Series; MTE 4/Series; P/Series; MTE P/Series; SE P/Series	140	260	480	880		
PREMMIA GX P/Series; PREMMIA LX P/Series; MX Series		220	440	780	1450	
MANHATTAN SMP				800		

COMPAQ	2MB	4MB	8MB	16M	32M	64M
Deskpro 386/33L; 486/25/33L/50L; Systempro 386/33; 486/33	80		270		900	
PROLINEA 3/25s; 3/25zs	66		180			
Deskpro 286N; 3/25i/33i; 386/25M/33M; 386N; 386s20/20N; 4/25iS/33i/66i; 486/33M/s16M/25M; 486DX2/50M/66M; Deskpro XE 4/Series; Proliant 1000 Series; Enhanced/ Prolinea 4/Series; Net 1/25e/s/tr; Prolinea MT 4/Series; Prosario 400/425/433; CDS/ CDTV 510/520/524/526/528; 675/6100/5120/e; 600/633/650/660; 720/ 724 CDS; 774 CDS; 800/C/F/S Series; 833 CDS; 850/866; 860/920 CDS/CDTV; 924/974 CDS; 954; 972CDS; 978CDTV; 982/992 CDS; 6526/6528/6536/7110/7152/7170/7180/9536/9548/9548/9548; Prosignia PC Server Server; Prosignia VS Series; Systempro/ LT 386/486/ Series		90	180	320	600	
DESKPRO 450/466/4100; 675/590/5100/5120/5133; 675/590/MX; PROLINEA 675/590/5100/5120/5133/MX; DESKTOP 466/4100		90	160	300	700	
DESKPRO XL 450/466/560/566/575/590/5100/5120/5133; PROLIANT 1500/R Series; PROSIGNIA 300/500	120	220	360	680	1350	
DESKPRO 5/60M/66M; XE 5/60; PROLIANT 1000 5/60; PROLIANT 2000/R 486/50 & 5/Series 400/R 486/50 & 5/Series; 4500/R Series; PROSIGNIA PC SERVER 5/60/90; SYSTEMPRO /XL 486/50 & PENTIUM		260	360	720	1300	
PROLIANT 1500/R 5/133		150	280	550	1000	
	1MB	1-2MB	4-8MB	8MB	4MB MOD.	4MB BRD.
Deskpro 386/16	Call	Call	Call	Call	Deskpro 386s; 386/20/25/e	150
DEC					4MB	8MB
DECpc DT					90	180
DECpc LP/vt/LP/x/LP/x MT Series; MTE Series; Prioris MTE Series					90	360
DECpc LPx 560/566; Prioris HX/LX/XL Server Series; ST Series; XL/XL Server Series; Celebris /XL Series; AlphaServer/ Station 400					90	180
Celebris GL 690; Starion Series; Venturis Series					80	150
DECpc 333sx LP; 420SX; 425i; 433T; 433 WORKSTATION					180	
DEC pc AXP 150						360
Celebris GL 5100/5120/5133/ST						Call
DELL		2MB	4MB	8MB	16M	32M
SYSTEM 316SX; 320SX (REV.1); 325SX		60				
SYSTEM 320SX (REV.2); 325D; 325P; 333D; 333P; 433P			90			
SYSTEM 486/TE Series; Powerline Workstations: 486/DE/SE		110	200	390		
DIMENSION XPS 486 Series; Netplex 486/s/d Series; OPTIPLEX 486/e/s/L(V), 486/s/MX(V) Series; Performance 486/s/L/M/T Series			Call	Call		
Dimension 386/486 Series; Low Profile Desktop/ Power Desktop 486/D/P Series; Netplex P Series; Precision 386/486 Series			90	360		
OMNIPLEX 486/ ME Series; OPTIPLEX 486/ L(E); e Series; XPS P60 FS; POWEREDGE XE/ 486 Series		90	180	340	600	
OPTIPLEX 486/ LX/e/ MxE Series		90	180	350	650	
DIMENSION XPS Pentium Series; OPTIPLEX XL/XM/ XMT Pentium Series		180	340	600	1200	
OMNIPLEX PENTIUM/ ME Series; OPTIPLEX DGX Series; POWEREDGE SP/ 486 Series; XE/ PENTIUM Series		200	380	720	1400	
OPTIPLEX GL/ GM/ GMT/ GX/ GXM/ GXMT PENTIUM Series			Call	Call	Call	Call
Performance 486/ME Series; 4000/XE Series; Poweredge EL Pent. Series		190	Call	690	Call	
HEWLETT PACKARD	2MB	4MB	8MB	16M	32M	
VECTRA 386/16N PC; 386/20N PC; 386/25N PC; 386/33N; 386/33NI	80		200			
MULTIMEDIA PC Series; PAVILLION Series; VECTRA M2/N2/XM2/XM3/ XP/ XU Series; VL2 486/ PENTIUM Series; VE PC Series; VL3 Series		100	200	370	650	
NETSERVER L/L/S/L2/LS4 486/ Pentium Series; LE 486 Series; 486/Pentium LP Series; LM/2 486/Pentium Series; VECTRA 386/25 PC; 486/M/MI/NI/ST/TL/XM/XP PC Series; 486s/M/MI/NI/XM: Windows Client		100	200	390	670	
VECTRA QS/16S; QS/20; RS/20; RS/20C; RS/25; RS/25C		100				
VECTRA VE2 Series; VL4 PENTIUM/ MT Series				Call	Call	Call
VECTRA VT 6/150					Call	Call
VECTRA XU 6/150						Call
IBM	2MB	4MB	8MB	16M	32M	
EDUQUEST THIRTY/CS; THIRTY FIVE; FOURTY; FIFTY/CS	Call	Call	Call	Call		
PS/1 286 (2011); PS/1 386SX (2121)	80	140				
PS/2 25/286; 30/286		80				
PS/2 265X; 36LS/SX; 40SX; 50Z; 56LS/SX; 60; 65SX; 70; 80			100	190		
Aptiva Series; PC 300 Series Models 330/350; PC 500 Series; PC 700 Series Models 730/750; Power Series 800 Models 830; 850; PC Server 300/320/486/Pentium Series; PS/1 Advisor/ Consultant/ Essential/ Expert Investor/ PRO 386SX/ Willow; PS/Valuepoint P60D; Performance Series; PS/2 53/LS; 56/SLC LS/SXL/S; 67/SLC/SX; 76/77; 90 XP 486; 95 XP 486(6956); E: Server 85; Premier PS/2 56/67/76/77; Ultimedia M 67/77			90	180	320	600
PS/1 (2133-30PIN); (2155-30PIN); PS/Valuepoint (6384-30PIN)			100		360	
PC Server 500; PS/2 95 XP 486 Series; SERVER 95/ ARRAY Series		140	280	480	900	
PC SERVER 310				160	300	580
PC 300 SERIES MODEL 360					300	580
PS/2 SERIES 16/32 BIT MCA MEMORY BOARD (6450609 & 34F3077)		200	300	500		
GATEWAY	4MB	8MB	16M	32M		
486DX2/50/Dlx/66; P4D-66i; P5-75/90/100/XL		90	180	320	640	
P5-75/100/120 Multimedia; P5-100 Exec; P5-120/133/150/166/XL/Elite		90	160	320	640	
G6-150/ 200 PENTIUM PRO		90	170	320	620	

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AMSTRAD	4MB					
ANB 386SX MODEL 20; 40	Call					
AST	2MB	4MB	8MB	16M		
ADVANTAGE EXPLORER: ASCENTIA 700N: BRAVO NB	120			420		
ASCENTIA 800N; 810N	120	245	420			
ASCENTIA 900N; 910N	125	220	435			
ASCENTIA 950N P/75; P/90		250	445			
PREMIUM EXEC. 286/ 386SX	135					
POWER EXECUTIVE 3/25SL-C; 4/25/33SL (SE) Col, +, EL	75	135	250	455		
Power Exec. 4/25SL; Col/Plus	125			435		
CANON	4MB	8MB	16M			
INNOVA 10C	155					
INNOVA 150C; 175C	120			440		
INNOVA 200LS	135	285	450			
INNOVA BOOK 350CD		Call	Call			
NOTEJET 486/25 (BN-22)	100	225				
NOTEJET II 486C50 (BN-32P)	105	225				
NoteJet 486C25/33 (BN-100C); 486M33 (BN-120); INNOVA 486NX	110	220	440			
NOTEJET III	Call	Call	Call			
COMMODORE	2MB	4MB				
C286-LT; C386SX-LT (16 MHZ)	65					
C386SX-LT (20 MHZ)		160				
COMPAQ	2MB	4MB	8MB	16M	32M	
Conce. 4/25/33: Lite Elite	125	235	450			
Contura 3/20/25c	70	110	205			
Contura 4/25/C/CX/EX	120	200	450			
Contura 400; 410; 1c; 420c; 430; 410c; 1cx	120	210	395			
Contura Aero 4/25/33C	115	220	430			
LITE 5000; 5100; 5200		185	395	650		
LTE 386s/20	80	140				
LteLite 20/25/cle	80	140	235	440		
Lte LITE 4/25/33/C/E	110	235	440			
Portable 486/66; C/66	115	230				
SLT 386s/20	85	140				
DEC	4MB	8MB	16M			
HINOTE CS/CT 433/450/475	115	210	410			
HINOTE ULTRA CS/CT 433/450/475	115	225	410			
DELL	2MB	4MB	8MB	16M		
212N; 320N; 320N+	75					
318LT; 320LT; 320LX	70					
320SLi; 326SLi	75		260			
Latitude 433/450/C/CX	125		435			
Latitude 430/450/475/M/MC/ MCX; LX 475D/4100D/T	120	245	445			
Latitude XP 450/475/4100 C/CX; XPI P75/90/120/D/ST/T	115	210	410			
NL20; NL25	70					
EVEREX	2MB	4MB	8MB	16M		
TEMPO CARRIER; LX	65					
Stepnote 486 SX/33; DX2/50; DX4/75	115	410				
GATEWAY	4MB	8MB	16M	32M		
Liberty DX4-100 /Gold	90	160	320	640		
COLOURBOOK 486	135		720			
HEWLETT PACKARD	4MB	8MB	16M			
OMNIBOOK 300; 425; 430	125					
Omnibook 530; 600C 4/50; /75	160	290	12M			
Omnibook 4000C/T 4/50; /100	125	240	470			
IBM	2MB	4MB	8MB			
AMBRA TREKA 386SL	75					
LEXMARK SE10		135				
PS/2 CL87SX; Thinkpad 700/720C		120	260			
PS/2 L40/N33/SX; PS/NOTE	65	120	250			
PS/2 N61 SL/C; N61 SX	70	120	235			
PS/NOTE N45 SL	90					
PS/2 P70 031; 061; 121; P75	75	130	240			

IBM (CONT.)	2MB	4MB	8MB	16M	32M		
PS/Note2618; TP350/C	105	205	395				
THINKPAD 230C/Cs	115	245					
THINKPAD 300	65		245				
THINKPAD 330/340/ 345/355/360/370/C/CE/ CS/E/PE; 730T/TE; PENTIUM 765/CD/ CDV/CV/CX	110	235	425				
THINKPAD	Call		Call				
365/C/CD/CS/CS/CD							
THINKPAD 500; 510Cs	135	240	460				
THINKPAD 530	125	250	460				
THINKPAD 710T	65	120	250				
THINKPAD 750/C/CE/ Cs/P; 755 C/CD/CDV/ CE/Cs/CSE	140	265	480	900			
THINKPAD 760C/CD		260	500				
THINKPAD 820 POWER SERIES		460					
TP 830; 850 POWER	140	265	495	1005			
THINKPAD 701C/CS	135	270	430				
MITAC	4MB	PHILIPS	2MB	4MB			
3026/E	150	PC 300; 304	150				
NEC	2MB	4MB	8MB	16M			
Prospect C/SX/20	80	150					
PROSPEED 486SX; 486SX/C	115						
ULTRALITE III SL/25C	85	160	285				
ULTRALITE SL/20, /P	80	8MB - Call					
ULTRALITE VERSA 40/50/E/ EC/EC/PEP; M/75 /100/C/CP/ D/H/TC; P/75/C/ HC/V/50/75/ CD; 4000/C/D; 4050/C/H; 4080H	130	240	460				
VersaS/33/50/2000/C/D/M	115	225	440				
PANASONIC	1MB	2MB	4MB	8MB	16M		
CF-170; 270; 370	55						
CF-280; 380; 480C		105	160				
CF-580; V21P SX/25		125	440				
CF-1000		130					
CF-V21P SX33/ DX2; CFV41 75/90MHz; CFV41 DX2/4	130	250	445				
SANYO	17/ 18/ NB; NB/6	2MB	65				
SHARP	1MB	2MB	4MB	8MB	16M		
PC 3010; 3050		115	220	440			
PC 62xx Series	55						
PC 6440		140					
PC 66xx Series	90						
PC 67xx /68xx Series	65	115					
PC 77xx; 8150; 8650; /II; 8660		120	420				
PC 8601 Colourstar	90						
PC 8700; 8800; 8900		125	235	455			
TEXAS INST.	1MB	2MB	4MB	8MB	16M		
EXTENSA 450/ 455/ T	115	215	415				
EXTENSA 550/555/560/ CD/T		230	440				
Travelmate 2000	55						
TM 3000/ Win/SX/SLC	65						
TM 4000 Win, /E Win, /M		135	570				
TRAVELMATE 5000M; 5100		245	465				
TOSHIBA	2MB	4MB	8MB	16M	32M		
DYNAPAD T100NX	130						
Portege 610CT; SAT.PRO 100/400/405/410/415CDT/CS		260	580	1000			
TECRA 700 CS/CT		255	480	950			
T1000LE/SE/XE; 1800/1850/C; 2000/SX/SXe; 2200SX	40	125	235				
T1600	30						
T1900/1910/1950/1960/ C/CS/CT; T4500/4500/ 4700/4800/4850/4900/ C/CS/CT; T200/CS	115	220	395	800			
T21xx/CS/CT/CD/ST	120	215	420				
T24xx/3400/3600/CS/T	125	220	435				
T3300SL	60	125					
T4400C/DX/SX/ C:T6400DX/C/ SX/C:T6600C/ CD/V	40	130	245	440			
T6200/C; T8500	70		315				
T3100	30	T3200	3MB - 40				

ZENITH	1MB	2MB	4MB	8MB	16M		
Slim/Super286/e	40	90	140				
SUPERSPORT SX	100						
Mastersport 386SL/e; II; ZDS-600/620/625/nl	75						
Mastersport 386SX	75						
Z-SPORT 420S; 425S		160					
Z-STAR EX		115		410			
Z-NOTE 320L; 320Lb; 325L; 325Lc; 325Lp	65		245				
Z-NOTE 200; 425Ln/ c/ pl +/ c+/ p+; 433Ln/ c+/ p+		125	250				
Z-NOTEFLEX		115	225	410			
Z-STAR ES (EAGLE)		115	220	415			
Z-STAR 433VL; 433VLp	75		240				
BROTHER	1MB	2MB	4MB	8MB			
HL-4; 4PS; 4V; 4Ve	70	100	165				
HL-630; 641; 645	65						
HL-8; 8D; 8e; 8V	65	95					
HL-6V		95	150				
HL-10DPS; 10DV; 10PS; 10V	90	150					
HL-10h; 660; 1260		110	200				
CANON	1MB	2MB	3MB	4MB	8MB		
LBP-4/Lite/Plus	90	125					
LBP-4SX	65	95					
LBP-430/ 8IV/ 44/IIU			110				
LBP-8II, /R, /T	60	95	150				
LBP-8III/ PLUS	100	130	160				
LBP-8SX	75	100					
LBP-860; 1260	40	75	130	240			
COMPAQ	4MB	8MB	16M				
PAGEMARQ 15; 20		150	240	440			
EPSON	512K	1MB	2MB	3MB	4MB		
ACTION.1000/ 1500/ 5000/6200	15		70				
ACTIONLASER 1100; 1400; 3000; 5200+	40	70	115				
ACTIONLASER 1600; EPL-5600; 9000	40	75	135				
ACTION.II; EPL-4000/ 4100/4300/ 8000/8100	50	80	120				
Actionlaser Plus; EPL-6000		95	155				
EPL-7000		60	95	125			
EPL-7100/ GQ5000	24						
EPL-7500		150	180				
HEWLETT PACKARD	256K	1MB	2MB	4MB	8MB		
DESJNET 500; 500C; 510; 520; 550C; 560C; Plus	39						
DESIGNJET 200/ 220/ 230/ 250C/ 600/ 650C/ PS; 760C PLOTTER; DESJNET 1200C/PS; 1500C/CM; LASERJET 4/ Plus/ M/ MP/ MV/ M Plus/ P/ S/ SiMX V/ Colour; 5/ MP/ P/ S/ SiMX	40	70	110	220			
LASERJET II; IID	60	90	150				
LASERJET IIP; IIP PLUS; II; IID; IIP; Fax	60	90	150				
LASERJET 4L	40						
LASERJET 5L; 6LFS	60	80	135	235			
PAINTJET XL300	95	185	300				
IBM /LEXMARK	1MB	2MB	3.5M	4MB	8MB		
Laserprinter 4019/E; 4028	65	95	140				
Laserprinter 4029 (5E/6A/ 1010A/10L); 4037; VALUEWRITER 300/ 600; WINWRITER 200/ 400/ 600	40	75	130				
LASERPRINTER 4039 10P/R/DUPLEX/12L/R/ 16L/+; Colour Jet PS 4079; OPTRA C/L/Lx/Lx/RRx	65		110	220			

KYOCERA	1MB	2MB	4MB	8MB			
ECOSYS aSi FS3500A				Call			
F-800; 800A; 800T	60	85	145				
F-820; 850; 1200S; 1500; 1800A; 2000A; 3000A; 3300; 5000	35						
F-1000A	70						
F-1200S; 2000A; 3000A; 3300	70	100	155				
FS-400; 3400; 3500; 5500A	35	65	105				
FS-1500A	60						
FS-1550/ 1600/ 3600/ 6500	35	65	105	205			
MANNESMAN TALLY	1MB	2MB	4MB	8MB			
MT-904; 904 PLUS	50						
MT-905		95	165				
MT-908	40	75					
MT-9008	40	75	130	240			
OKI	1MB	2MB	4MB	8MB			

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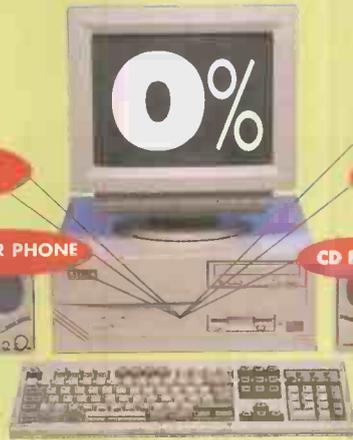


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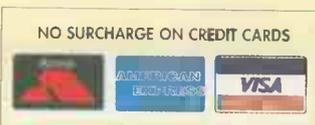
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Please call for prices on ISA and VL versions from **STB, Number 9, UMAX, Taxan and Colorgraphics**

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Fujitsu 2934Q 4.11Gb 10ms Fast & Wide SCSI2	£725
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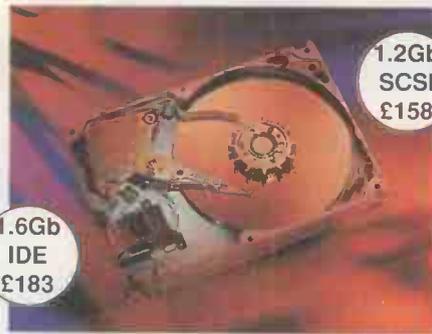
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IDE is the industry standard and is fast and easy to install. All drives are now mode 3 or 4 (All drives come with software to overcome the 528Mb BIOS barrier except Quantum)

Make	Model	Capacity	Access	Cache	Mode	Size	Wrnty	£/Mb	Price
Quantum	TB850AT	850Mb	14.0ms	128k	4	3.5" 1"	2yrs	£0.14	£121
Conner	CF850A	850Mb	14.0ms	64k	3	3.5" 1"	2yrs	£0.15	£128
West. digit.	WD2850	851Mb	10.0ms	64k	3	3.5" 1"	3yrs	£0.14	£122
Maxtor	7850AV	853Mb	12.0ms	64k	3	3.5" 1"	2yrs	£0.16	£139

Make	Model	Capacity	Access	Cache	Mode	Size	Wrnty	£/Mb	Price
West. digit.	WD21000	1,000Mb	10.5ms	128k	4	3.5" 1"	3yrs	£0.15	£147
Maxtor	71050A	1,000Mb	12.0ms	256k	3	3.5" 1"	2yrs	£0.17	£173
Quantum	FB1080AT	1,080Mb	12.0ms	128k	4	3.5" 1"	2yrs	£0.15	£165
Fujitsu	M1614AT	1,089Mb	11.0ms	64k	4	3.5" 1"	3yrs	£0.12	£132
Fujitsu	M1606AT	1,090Mb	10.0ms	256k	4	3.5" 1"	3yrs	£0.12	£132
West. digit.	WD21200	1,200Mb	10.5ms	128k	4	3.5" 1"	3yrs	£0.12	£147
Maxtor	71260A	1,260Mb	12.0ms	256k	3	3.5" 1"	2yrs	£0.13	£160
Conner	CF51275A	1,275Mb	14.0ms	64k	4	3.5" 1"	2yrs	£0.12	£132
Quantum	FB31280	1,280Mb	11.0ms	128k	4	3.5" 1"	3yrs	£0.13	£168
West. digit.	WD31200	1,282Mb	10.0ms	64k	3	3.5" 1"	3yrs	£0.14	£174
Maxtor	WD31600	1,600Mb	10.0ms	128k	4	3.5" 1"	3yrs	£0.11	£183
Maxtor	71626AP	1,620Mb	12.0ms	256k	3	3.5" 1"	2yrs	£0.12	£199

2Gb + 2.5Gb IDE - Details not available at time of print - please call.

SCSI Controllers

Adaptec Controllers

Model	Max	Flpy	Drivers	External Connector	Type	Price
ISA Bus						
AHA1505 kit	5Mb/s	no	1	25 pin apple		£43
AHA1515 kit	5Mb/s	no	1	25 pin apple		£62
AHA1522 kit	10Mb/s	yes	1 2 5	50 pin centronics		£97
AHA1542 kit	10Mb/s	yes	1 2 3 4 5	50 pin micro D		£167
VL Bus						
AHA2842V/Lkt	10Mb/s	yes	1 2 3 4 5	50 pin micro D		£154

Model	Max	Flpy	Drivers	External Connector	Type	Price
PCI Bus						
AHA2940 kit	10Mb/s	no	1 2 3 4 5	50 pin micro D		£168
AHA2940U/Ma	20Mb/s	no	1	68 pin wide		£194
AHA2940V/Lkt	20Mb/s	no	1	68 pin wide		£199

Key to Drivers

1 - Dos/Win 2 - Netware 3 - OS/2 4 - NT 5 - Unix

Please call for others - wide range available

PORTABLE SCSI SOLUTIONS

- Any SCSI device on a Parallel Port -

The Adaptec SCSI controller range plugs into any parallel port supporting up to 7 external SCSI devices. Ideal for portables or sharing between several desktops.

APA348 kit	up to 260Kb/s	£67
	bought with any SCSI device	£59
APA358 kit	up to 10Mb/s	£99
	(Thru Enhanced Parallel Port)	£89
	bought with any SCSI device	£89

- Any SCSI on a PCMCIA Slot -

APA1460 kit (slim SCSI)	compatible with PCMCIA type III/IV slots with a maximum transfer rate of up to 10 Mb/s	£129
	bought with any SCSI device	£125

Please call for Amacom's range of parallel port products

SCSI Hard Disks

For larger more powerful systems SCSI drives are more desirable. SCSI gives you the advantage of having devices externally as well as internally up to a total of seven on-chain (some SCSI cards can have more than one chain). With SCSI you also have the option of not only hard disks but high performance scanners, tape backup, optical, CD Rom, etc. N.B. You must have a SCSI controller to run SCSI devices.

Make	Model	Capacity	Access	Cache	AV	Size	Wrnty	£/Mb	Price
Quantum	TB850S	850Mb	14.0ms	128k		3.5" 1"	2yrs	£0.14	£123

Make	Model	Capacity	Access	Cache	AV	Size	Wrnty	£/Mb	Price
Conner	CFP10805	1,080Mb	11.0ms	256k		3.5" 1"	3yrs	£0.17	£167
Conner	CFP10605	1,060Mb	9.5ms	512k		3.5" 1"	3yrs	£0.15	£155
Quantum	FB10805	1,080Mb	12.0ms	128k		3.5" 1"	2yrs	£0.16	£178
Fujitsu	M16065	1,090Mb	10.0ms	512k		3.5" 1"	5yrs	£0.15	£168
HP	C37245	1,200Mb	9.5ms	512k		3.5" 1"	5yrs	£0.25	£297
Quantum	FB12805	1,280Mb	12.0ms	128k		3.5" 1"	2yrs	£0.12	£158

Make	Model	Capacity	Access	Cache	AV	Size	Wrnty	£/Mb	Price
Micropolis	MIC4421	2,100Mb	8.5ms	512k		3.5" 1"	5yrs	£0.18	£369
Conner	CFP21055	2,100Mb	8.5ms	512k	yes	3.5" 1"	5yrs	£0.20	£414
Quantum	GP42805	2,100Mb	9.5ms	512k		3.5" 1"	5yrs	£0.20	£424
Micropolis	MIC4221	2,100Mb	8.5ms	512k		3.5" HH	5yrs	£0.21	£446
Quantum	21005	2,100Mb	9.5ms	512k		3.5" HH	5yrs	£0.21	£436
Micropolis	MIC4221AV2	2,100Mb	8.5ms	512k	yes	3.5" HH	5yrs	£0.22	£468
Fujitsu	M29325	2,110Mb	10.0ms	512k	yes	3.5" HH	5yrs	£0.20	£425
Conner	CFP21075	2,110Mb	8.5ms	512k	yes	3.5" 1"	5yrs	£0.20	£425
Conner	CFP2107AV2	2,110Mb	8.5ms	512k	yes	3.5" 1"	5yrs	£0.23	£484
Quantum	XP32150	2,150Mb	10.0ms	1,024k	yes	3.5" 1"	5yrs	£0.26	£553

Make	Model	Capacity	Access	Cache	AV	Size	Wrnty	£/Mb	Price
Conner	CFP42075	4,220Mb	9.0ms	512k	yes	3.5" HH	5yrs	£0.15	£648
Conner	CFP4207AV4	4,220Mb	9.0ms	512k	yes	3.5" HH	5yrs	£0.16	£675
Quantum	GP42805	4,280Mb	8.6ms	512k		3.5" HH	5yrs	£0.16	£675
Micropolis	MIC3243	4,300Mb	8.5ms	512k		3.5" HH	5yrs	£0.17	£729
Micropolis	MIC3243AV3	4,300Mb	8.5ms	512k	yes	3.5" HH	5yrs	£0.17	£752
Quantum	XP34300	4,300Mb	8.0ms	1,024k		3.5" HH	5yrs	£0.17	£752
Fujitsu	M29345	4,350Mb	10.0ms	512k	yes	3.5" HH	5yrs	£0.15	£634

Make	Model	Capacity	Access	Cache	AV	Size	Wrnty	£/Mb	Price
Micropolis	MIC1991	9,100Mb	12.0ms	512k		5.25" FH	5yrs	£0.1561	£399
Micropolis	MIC1991AV9	10,000Mb	12.0ms	512k		5.25" FH	5yrs	£0.1661	£438

Please Call for external SCSI drives and RAID systems.

Wide SCSI Hard Disks

Make	Model	Capacity	Access	Cache	AV	Size	Wrnty	£/Mb	Price
Micropolis	MIC4221W	2,100Mb	8.5ms	512k		3.5" HH	5yrs	£0.26	£547
Fujitsu	M2932Q	2,110Mb	10.0ms	512k	yes	3.5" HH	5yrs	£0.23	£486
Conner	CFP2107W	2,110Mb	8.5ms	512k	yes	3.5" 1"	5yrs	£0.28	£599
Conner	CFP2107W	2,110Mb	8.5ms	512k	yes	3.5" 1"	5yrs	£0.28	£599

Make	Model	Capacity	Access	Cache	AV	Size	Wrnty	£/Mb	Price
Conner	CFP4207W	4,220Mb	9.0ms	512k	yes	3.5" HH	5yrs	£0.16	£675
Conner	CFP4207WV4	4,220Mb	9.0ms	512k	yes	3.5" HH	5yrs	£0.19	£818
Micropolis	MIC3243W	4,300Mb	8.5ms	512k	yes	3.5" HH	5yrs	£0.17	£752
Fujitsu	M2934Q	4,350Mb	10.0ms	512k	yes	3.5" HH	5yrs	£0.16	£717

Make	Model	Capacity	Access	Cache	AV	Size	Wrnty	£/Mb	Price
Micropolis	MIC1991W	9,100Mb	12.0ms	512k		5.25" FH	5yrs	£0.1761	£515

Don't see what you're looking for? - Please ask

We can source a wide range of products not listed on these pages

Removable Drives

These drives are like floppies BUT are MUCH quicker and MUCH larger.

IDE	Product	Capacity	Int/Ext	Price
Make	EZ135	135Mb	int	£127

SCSI	Product	Capacity	Int/Ext	Price
Make	ZIP	100Mb	ext	£139
lomega	EZ135	135Mb	ext	£135
Sysquest	MCD525(mac)	540Mb	ext	£382
MCD	MCD580	540Mb	ext	£423
lomega	JAZ	1Gb	ext	£TBA
lomega	JAZ	1Gb	int	£TBA

Parallel Port	Product	Capacity	Int/Ext	Price
Make	IOZIP	100Mb	ext	£125
lomega	EZ135	135Mb	ext	£164

Hard Disk Trays

These trays allow you to slide hard disks out of your computer - just like a removable CD player in a car.

- This means you can ...
- move hard disks from one machine to another
- or one location to another
- and achieve the ultimate in data security.

IDE Tray	£35
SCSI Tray	£35

Tape Backup

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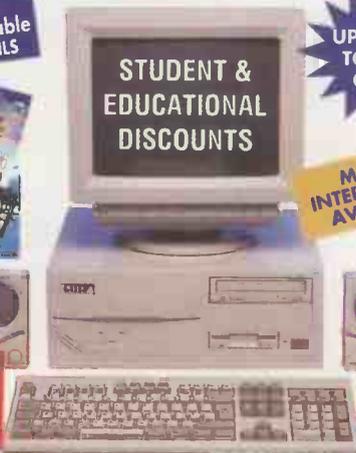
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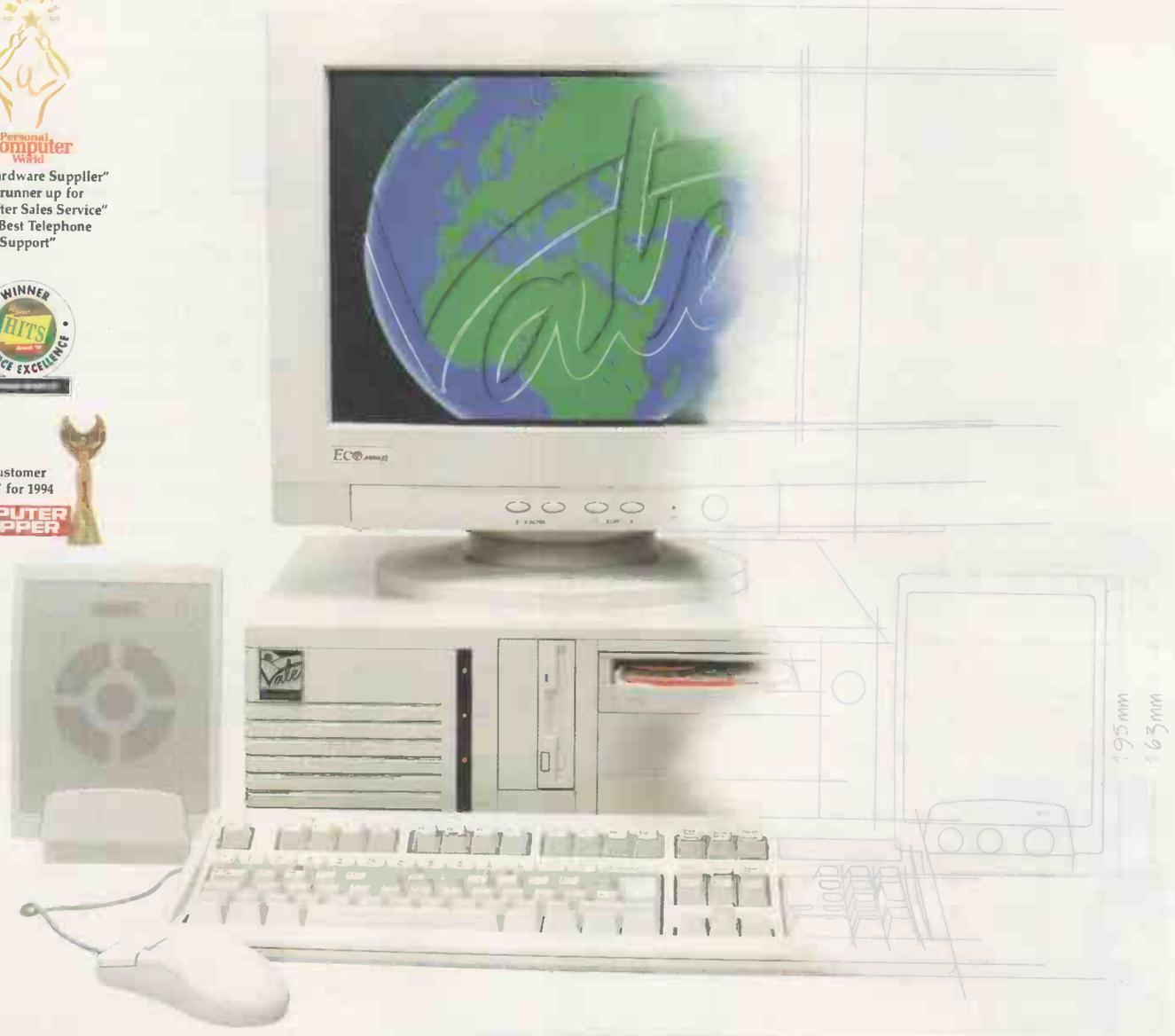
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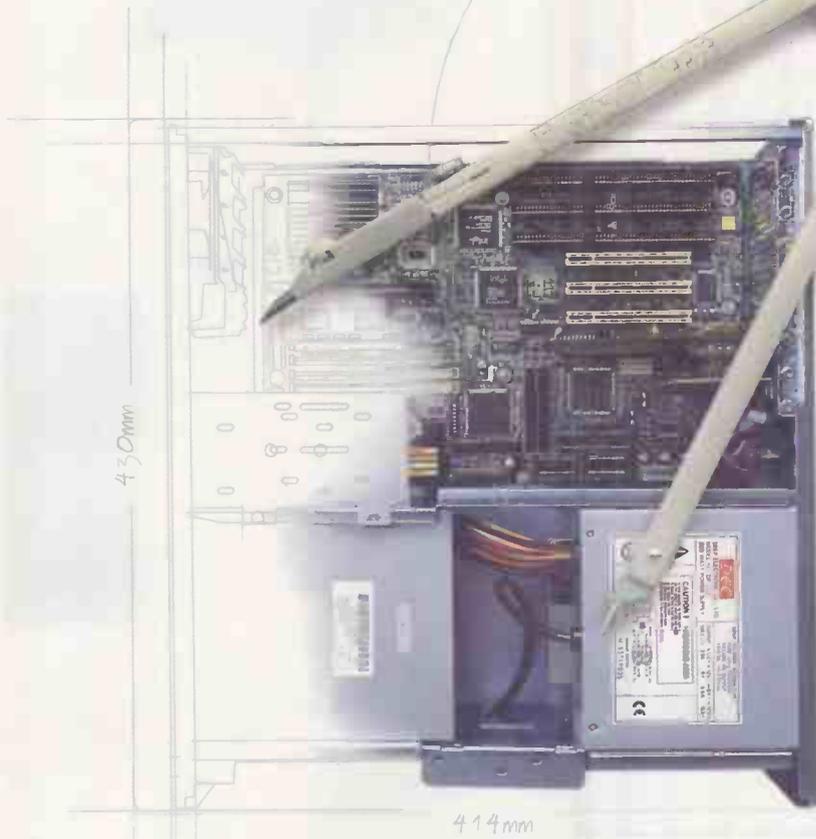


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	250MB	528MB
486dx2+66	£1199 ^{+VAT}	£1299 ^{+VAT}
486dx4+100	£1249 ^{+VAT}	£1349 ^{+VAT}

TFT Colour

	250MB	528MB
486dx2+66	£1499 ^{+VAT}	£1599 ^{+VAT}
486dx4+100	£1549 ^{+VAT}	£1649 ^{+VAT}

WARRANTY

Standard warranty is 12 months 'return to base' covering parts, with a lifetime warranty on labour. Or you can opt for our 'Total Care' package which replaces the existing warranty with 2 year care. If your Voyager should need attention during this period we will collect it and return it to you when repaired. Typical turn-around is 3 working days. This cover is just 12.5% of the cost of the notebook (without accessories) - for example, £112.38^{+VAT} for the 486dx2-66/250Mb monochrome model.

DISPLAY

A choice of display types is offered - LCD mono, Dual Scan colour and TFT colour. All are 9.5" VGA with 64 greyscales (mono model) or 256 colours (colour models). The display driver is 1Mb 32-bit VESA local bus with Windows acceleration. A port is provided for connection to an external monitor, with up to 1024 x 768 resolution.

CPU & RAM

Low power consumption CPUs are used to maximize battery life. 4Mb RAM is fitted as standard, and can be upgraded to 20Mb.

HARD DISK

The hard disk is removable, offering the ultimate in upgradeability and data security.

TRACKBALL

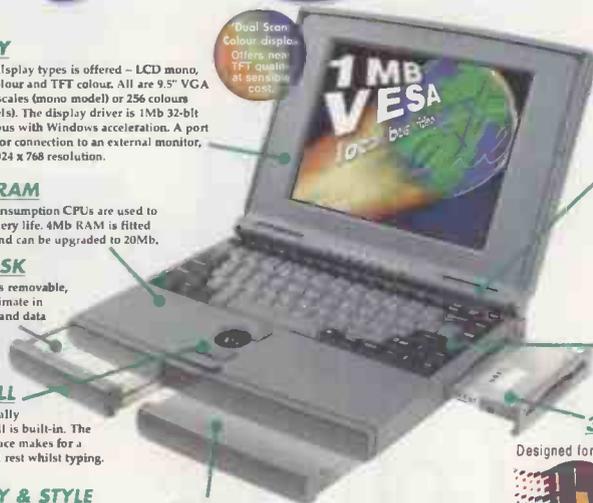
19mm ergonomically designed trackball is built-in. The surrounding surface makes for a comfortable hand rest whilst typing.

QUALITY & STYLE

The Voyager measures 286 x 226 x 34mm and weighs 2.4kg (mono model). The quality of fit and finish is amongst the best we have ever seen.

BATTERY

Nickel Metal Hydride battery for fast recharging and long life. Extensive power management features include doze, sleep and 'suspend to disk' modes.



SAVE £100!

We have a limited quantity of ex-demonstration Voyagers at a reduction of £100^{+VAT} from the normal price. Full warranty applies. Please call to check stocks before ordering.

EXPANSION PORTS

PCMCIA ports for use with two type II cards or one type III card. Rear panel connectors include serial port; EPP parallel port; SVGA monitor; and PS/2 mouse, keyboard or keypad. A further port enables fast connection to a docking station.

BUILT-IN AUDIO

Built-in microphone and speaker, with digitized audio recording/playback capability. A Yamaha music chipset (SoundBlaster and Windows Sound System compatible) allows for sound generation. There are sockets for external speakers and microphone.

KEYBOARD

Full function 86-key keyboard.

3.5" FLOPPY DRIVE

Designed for



Microsoft Windows 95

Each system includes your choice of Windows 95 or Windows 3.11 at no extra cost.

"It's toughness, excellent performance and good display make it a machine that we must honour with the PC today best buy award." Voyager 486dx2+66 Dual Scan Colour

PC today
BEST BUY
January 1995

VOYAGER OPTIONS

Additional primary NiMH battery	£89 ^{+VAT}
Upgrade from 4Mb to 8Mb RAM	£100 ^{+VAT}
Upgrade from 4Mb to 12Mb RAM	£200 ^{+VAT}
Upgrade from 4Mb to 20Mb RAM	£400 ^{+VAT}
PCMCIA V34 fax/modem	£199 ^{+VAT}
PCMCIA ethernet card	£139 ^{+VAT}
Vale Carry case	£30 ^{+VAT}
Vale System Traveller case	£49 ^{+VAT}
Docking station	£349 ^{+VAT}
Cigar lighter adaptor	£49 ^{+VAT}
Additional PSU	£49 ^{+VAT}
External keyboard	£29 ^{+VAT}
Zyfi2 amplified speakers	£29 ^{+VAT}

DOCKING STATION

The docking station for the Voyager has two drive bays (1x3.5" & 1x5.25"), three ISA expansion slots (2x full length & 1x 1/2 length), as well as permanent ports for monitor, keyboard, PS/2 mouse, serial, parallel, speaker, microphone and audio line-in.



Prima

Vale Prima - your budget is our concern.

Previously the Vale range has not included a budget Pentium® processor based PC so we thought it was time to prove a point! We set out to build a quality PC and sell it at a bargain price, whilst still offering a standard of equipment that allows us to maintain our award winning level of service and support. It's motherboard is based on the famous Intel 430FX PCIs (almost unheard of at this price) and is capable of expanding with your needs. In fact the beauty of this PC is that it is so upgradeable - who knows in a years time your P75 might have grown into a P166 with Pipeline-Burst cache and a mountain of EDO RAM.

With latest Intel **430FX** PCIs

- ◆ Integrated motherboard with Intel 430FX PCIs
- ◆ Intel Pentium® processor up to 166MHz
- ◆ Intel socket 7 for processor upgrades
- ◆ 4xPCI & 3x16-bit expansion slots
- ◆ On-board fast PCI IDE hard disk controller
- ◆ 8Mb EDO RAM (expandable to 128Mb)
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 1Mb PCI video card
- ◆ 14" SVGA MPR II monitor (0.28mm dot pitch)
- ◆ Multimedia models include a quad speed CD-ROM drive
- ◆ 3.5" 1.44Mb Floppy Disk Drive
- ◆ TÜV approved power supply with low noise fan
- ◆ EPA Energy Star compliant
- ◆ Choice of desktop or mini-tower case
- ◆ Full-tower case available at extra cost
- ◆ Mitsumi mouse and 'Windows95' keyboard
- ◆ Includes your choice of either Windows95, or MS-DOS 6.22 and Windows for Workgroups 3.11. Full manuals and disks supplied. "Introduction to Windows" manual supplied with Windows for Workgroups 3.11
- ◆ 14 day moneyback guarantee
- ◆ 1 year On-Site Maintenance for parts and labour
- ◆ Lifetime technical support hotline
- ◆ Lifetime labour warranty

NO DEPOSIT PERSONAL FINANCE

Prima P75/528Mb Microsoft Media 96 PC **£40.27** per month inc VAT

No deposit, 36 monthly payments, APR 18.5%. Total payable £1449.72 inc VAT. (Cash price £1126.83 inc VAT).

PRIMA MODELS

Please see page 4 for full details of Microsoft Media 96 and Lotus Multimedia Office 96 packs.

P 75	Standard	Media 96	Lotus Office 96
528Mb	£799^{+VAT}	£959^{+VAT}	£999^{+VAT}
1Gb	£849^{+VAT}	£1009^{+VAT}	£1049^{+VAT}
P 100	Standard	Media 96	Lotus Office 96
528Mb	£829^{+VAT}	£989^{+VAT}	£1029^{+VAT}
1Gb	£879^{+VAT}	£1039^{+VAT}	£1079^{+VAT}

P133 Add £100^{+VAT} to the price of P100 models
Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch. Multimedia models feature quad speed CD-ROM drives (see page 4).

Please note that actual products (including screen displays) may not exactly match the photographic representations. Industry standard practice is to quote a monitor's CRT size - the actual viewing area is approximately 1" less.



Designed for

Microsoft Windows 95

Each system includes your choice of Windows 3.11 or Windows 95 at no extra cost.

A Vale Prima Media 96 PC



Prestige ^{Triton}

With latest
Intel
430FX
PCiset



Vale Prestige – for a little bit more...

It is amazing what spending a few more pounds can do to the performance and pleasure of use of a PC. The addition of Pipeline-Burst cache (at this price!!!), the famous Diamond Stealth 64 Video card and a superb 15" micro-processor controlled monitor results in a specification that truly earns the title "Prestige".

- ◆ Integrated motherboard with Intel 430FX PCiset
- ◆ Intel Pentium® processor up to 166MHz
- ◆ Intel socket 7 for processor upgrades
- ◆ Fast PCI mode 4 IDE hard disk controller and drive (528Mb drive is mode 3)
- ◆ 8Mb fast page RAM (expandable to 128Mb)
- ◆ 256kb Pipeline-Burst cache
- ◆ 4xPCI & 3x16-bit expansion slots
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ Diamond Stealth 64DRAM 1Mb PCI video card
- ◆ 15" Vale EcoScan15 fully non-interlaced monitor (0.28mm dot pitch)
- ◆ Multimedia models include a quad speed CD-ROM drive
- ◆ 3.5" 1.44Mb Floppy Disk Drive
- ◆ TÜV approved Power Supply with low noise fan
- ◆ EPA Energy Star compliant
- ◆ Choice of desktop or mini-tower case
- ◆ Full-tower case available at extra cost
- ◆ Includes your choice of either Windows95, or MS-DOS 6.22 and Windows for Workgroups 3.11. Full manuals and disks supplied. "Introduction to Windows" manual supplied with Windows for Workgroups 3.11
- ◆ Mitsumi mouse and 'Windows95' keyboard
- ◆ 14 day moneyback guarantee
- ◆ 1 year On-Site Maintenance for parts and labour
- ◆ Lifetime technical support hotline
- ◆ Lifetime labour warranty

Pipeline-Burst
cache

15"
MONITOR

THE CASE FOR PIPELINE-BURST CACHE:

The most significant performance improvement since the Pentium processor!

Memory performance

Overall performance

"Memory performance" figures are taken with PC Bench 7.01. "Overall performance" figures are taken with Winstone 95. All tests conducted on a Vale Platinum Triton P133.



Asynchronous cache
Pipeline-Burst cache

Asynchronous cache
Pipeline-Burst cache

To get these...



"Overall, this is a well-specified, well-constructed computer with good expansion potential, plenty of bells and whistles and sharp performance. A hard combination to beat." February 1995 Vale Prestige

WHAT PC?

"The Evesham Vale Prestige PCI is well specified with a good build quality and good performance at a reasonable price. This machine is just what your business needs...and it comes from a reputable UK supplier." 1995 PC Awards "Best Mainstream Business PC" Vale Prestige

We fit these...



Hard disk

CORSAIR
MICROSYSTEMS

Intel approved cache modules
Pipeline-Burst cache



DIAMOND
MULTIMEDIA
Video card

Panasonic
Floppy & CD-ROM drive

Mitsumi
Mouse & Keyboard

With latest
Intel
430FX
PCiset

ELITEGROUP
Motherboard



Each system includes your choice of Windows 3.11 or Windows 95 at no extra cost.



Monitor The Vale EcoScan15 that is supplied with the Prestige and Platinum ranges is a superb quality micro-processor controlled 15" monitor. Its dark non-glare PST screen with "Edge-to-Edge" display gives as much as 30% greater useable picture area than most 14" models. An ingeniously simple digital push button system allows complete control over all display adjustments, including pin-cushion, trapezoid, parallelism and rotation, with on-screen representation of the settings. As it complies with the stringent Swedish MPR II safety standards and can display up to 1024x768 at a flicker-free 72Hz refresh rate it is especially kind to your eyes.

NO DEPOSIT PERSONAL FINANCE

Prestige P100/1Gb Lotus Multimedia Office 96 PC **£51.61** per month inc VAT
No deposit, 36 monthly payments, APR 18.5%. Total payable £1857.96 inc VAT. (Cash price £1444.08 inc VAT).

PRESTIGE MODELS

Please see page 4 for full details of Microsoft Media 96 and Lotus Multimedia Office 96 packs.

Model	Standard	Media 96	Lotus Office 96
P 75			
528Mb	£949+VAT	£1109+VAT	£1149+VAT
1Gb	£999+VAT	£1159+VAT	£1199+VAT
P 100			
528Mb	£979+VAT	£1139+VAT	£1179+VAT
1Gb	£1029+VAT	£1189+VAT	£1229+VAT
P 133			
528Mb	£1079+VAT	£1239+VAT	£1279+VAT
1Gb	£1129+VAT	£1289+VAT	£1329+VAT

P150 Add £80+VAT to the price of P133 models

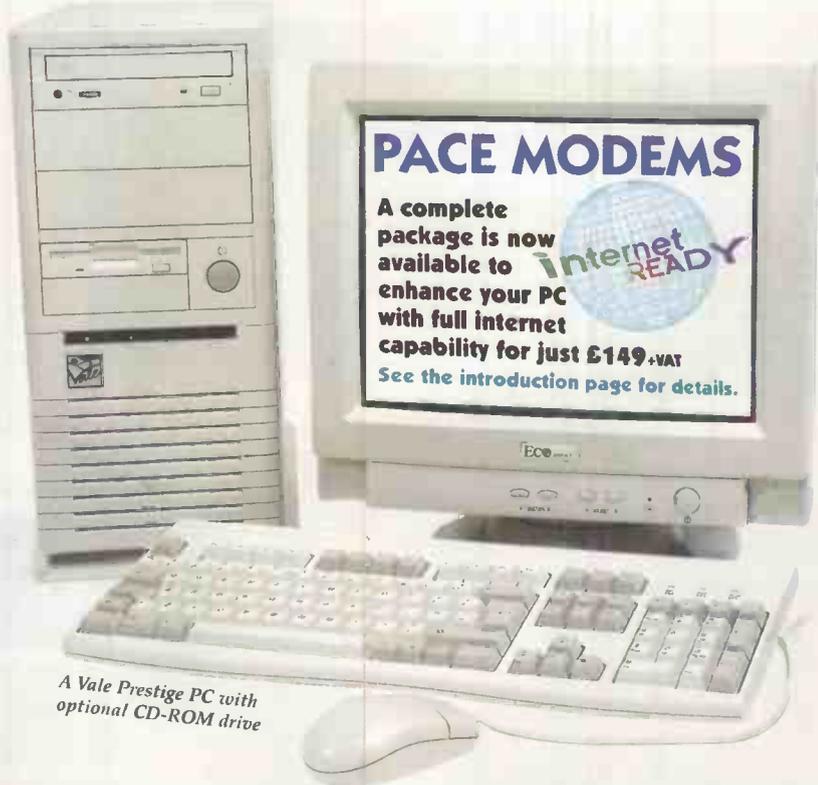
P166 Add £190+VAT to the price of P133 models

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch. Multimedia models feature quad speed CD-ROM drives (see page 4).

PRESTIGE OPTIONS

16Mb RAM instead of standard 8Mb	£110.00 +VAT
32Mb RAM instead of standard 8Mb	£360.00 +VAT
2Gb hard disk instead of standard 1Gb	£100.00 +VAT
15" Viewsonic 15GS monitor (69kHz scan)	£50.00 +VAT
17" Vale EcoScan17 monitor (as Vale Platinum SE)	£200.00 +VAT
Diamond Stealth 64VideoVRAM card (2Mb)	£120.00 +VAT
Stealth 64VideoVRAM upgrade to 4Mb	£120.00 +VAT
Diamond Motion Video Player accessory for Stealth 64VideoVRAM (gives MPEG decoding and gives upgrade to 4Mb)	£249.00 +VAT
Quad speed CD-ROM drive	£49.99 +VAT
Microsoft "Plus Pack" (see page 4)	£79.00 +VAT
"Internet ready" pack (see page 4)	£149.00 +VAT
Full-tower case	£50.00 +VAT
Basic installation/training service	£50.00 +VAT
Second year on-site maintenance (at time of purchase)	£69.00 +VAT
Second and third year on-site maintenance (at time of purchase)	£149.00 +VAT

PLEASE SEE PAGE 4 FOR VALE ACCESSORIES



A Vale Prestige PC with optional CD-ROM drive

BIRMINGHAM MILTON KEYNES
 EVESHAM



Platinum

Triton

BUSINESS RENTAL SCHEME

Platinum SE P166/2Gb Lotus Multimedia Office 96 PC **£76.07** per month +VAT

NO DEPOSIT PERSONAL FINANCE

Platinum P150/1Gb Lotus Multimedia Office 96 PC **£67.56** per month inc VAT
 No deposit. 36 monthly payments. APR 18.5%. Total payable £2432.16 inc VAT. (Cash price £1890.58 inc VAT).

Vale Platinum... the reviewers' favourite.

A giant killer. How does a relatively small company consistently produce award winning PCs that beat the multi-national mega corporations at their own game? The answer is quite simple - attention to detail. We use components that are chosen for performance, quality and feel; every component has been selected from leading suppliers to offer that rare quality, usability.

Pipeline-Burst cache

The Platinum has the following standard specification:

- ◆ 16Mb EDO RAM
- ◆ 256kb Pipeline-Burst cache
- ◆ Diamond Stealth 64DRAM 2Mb 64-bit video card
- ◆ Vale EcoScan15 monitor
- ◆ Panasonic CR-582 six speed CD-ROM drive

16Mb EDO RAM

PLATINUM MODELS

Please see page 4 for full details of Microsoft Media 96 and Lotus Multimedia Office 96 packs.

Model	Standard	Media 96	Lotus Office 96
P 100	1Gb £1319 +VAT	£1389+VAT	£1429+VAT
	2Gb £1419+VAT	£1489+VAT	£1529+VAT
P 133	1Gb £1419+VAT	£1489+VAT	£1529+VAT
	2Gb £1519+VAT	£1589+VAT	£1629+VAT
P 150	1Gb £1499 +VAT	£1569+VAT	£1609+VAT
	2Gb £1599+VAT	£1669+VAT	£1709+VAT
P 166	1Gb £1609+VAT	£1679+VAT	£1719+VAT
	2Gb £1709+VAT	£1779+VAT	£1819+VAT

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch. Please note that all models feature a six speed CD-ROM drive.

PLATINUM/PLATINUM SE OPTIONS

No CD-ROM drive (Platinum).....	deduct £79.00 +VAT
Upgrade to 32Mb EDO RAM.....	£250.00 +VAT
Upgrade to 512kb Pipeline-Burst cache (Platinum).....	£30.00 +VAT
1Gb SCSI hard disk instead of 1Gb IDE.....	£99.00 +VAT
2Gb SCSI hard disk instead of 2Gb IDE.....	£290.00 +VAT
Diamond Stealth 64VideoVRAM 2Mb card (Platinum).....	£85.00 +VAT
Stealth 64VideoVRAM upgrade to 4Mb.....	£120.00 +VAT
Diamond Motion Video Player accessory for Stealth 64VideoVRAM (gives MPEG decoding and gives upgrade to 4Mb).....	£249.00 +VAT
Matrox Millennium 2Mb video card (Platinum).....	£110.00 +VAT
Matrox Millennium 2Mb video card (Platinum SE).....	£25.00 +VAT
Matrox Millennium upgrade to 4Mb.....	£160.00 +VAT
Microsoft "Plus Pack" (see page 4).....	£79.00 +VAT
"Internet ready" pack (see page 4).....	£149.00 +VAT
Full-Tower case.....	£50.00 +VAT
Basic installation/training service.....	£50.00 +VAT
Second year on-site maintenance (at time of purchase).....	£69.00 +VAT
Second and third year on-site maintenance (at time of purchase).....	£149.00 +VAT

PLEASE SEE PAGE 4 FOR VALE ACCESSORIES

MONITOR UPGRADES

	PLATINUM	PLATINUM SE
15" Viewsonic 15GS (69kHz).....	£50.00 +VAT	N/A
17" Vale EcoScan17.....	£200.00 +VAT	N/A
17" iiyama Vision Master PC Magazine "Editors Choice" April '95.....	£300.00 +VAT	£100.00 +VAT
17" iiyama Vision Master PRO (0.25mm dot pitch Diamond/Iron tube).....	£360.00 +VAT	£160.00 +VAT
20" Vale.....	£699.00 +VAT	£499.00 +VAT
21" iiyama Vision Master.....	£1000.00 +VAT	£800.00 +VAT

Anatomic perfection...

To build a first class system, which consistently impresses users and reviewers alike, there is no option but to use the finest components throughout:

intel

- Motherboard
- ◆ Intel advanced Endeavour motherboard
 - ◆ Support for Windows95 'plug and play' environment
 - ◆ Support for native signal processing
 - ◆ Flash BIOS

DIAMOND MULTIMEDIA Video card

- ◆ Diamond Stealth 64DRAM 2Mb 64-bit video card (Platinum)
- ◆ Diamond Stealth 64VideoVRAM 2Mb 64-bit video card (Platinum SE)

- ◆ EPP and ECP capable printer port
- ◆ Two 16550 compatible UART driven high speed serial ports
- ◆ Joystick port
- ◆ On-board fast PCI enhanced IDE mode 4 hard disk controller

CREATIVE CREATIVE LABS, INC.

- ◆ Integrated sound using the Creative Labs vibra 16 chipset

- ◆ 3x PCI, 1xPCI/16-bit & 2x16-bit expansion slots

With latest intel 430FX PClset

- ◆ High quality case with good access for upgrades
- ◆ Choice of desktop or mini-tower case style
- ◆ Full-tower case style available at extra cost

- ◆ Intel Pentium® processor up to 166MHz
- ◆ Intel socket 7 for processor upgrades



Warranty

- ◆ 14 day moneyback guarantee
- ◆ 1 year On-Site Maintenance (normally next working day response) for parts and labour
- ◆ Lifetime technical support
- ◆ Lifetime labour warranty



Anatomy of a winner

CORSAIR MICROSYSTEMS Intel approved cache modules

- ◆ 256kb Pipeline-Burst cache (Platinum)
- ◆ 512kb Pipeline-Burst cache (Platinum SE)



- ◆ 16Mb EDO RAM, expandable to 128Mb

Designed for Software & Manuals

- ◆ Includes your choice of either Windows95, or MS-DOS 6.22 and Windows for Workgroups 3.11. Full disks and manuals supplied. "Introduction to Windows" manual supplied with Windows for Workgroups 3.11



Monitor The Vale EcoScan15 that is supplied with the Prestige and Platinum ranges is a superb quality micro-processor controlled 15" monitor. It's dark non-glare FST screen with 'Edge-to-Edge' display gives as much as 30% greater useable picture area than most 14" models. An ingeniously simple digital push button system allows complete control over all display adjustments, including pin-cushion, trapezoid, parallelism and rotation, with on-screen representation of the settings. As it complies with the stringent Swedish MPR II safety standards and can display up to 1024x768 at a flicker-free 72Hz refresh rate it is especially kind to your eyes. Platinum SE models use the larger Vale EcoScan17, which shares the same features but is also DDC-2 plug and play compatible.



Platinum SE

Triton

Vale Platinum SE: the editor's choice.

By enhancing the already highly specified Vale Platinum, we have created the computer that answers the dreams of the most demanding users, including the reviewers of Personal Computer World and PC Direct.



- ◆ Protects against short duration power cuts
- ◆ Protects against voltage sags and brownouts
- ◆ Adds internal surge protection
- ◆ Increases hardware reliability

Built-in Uninterruptible Power Supply

Power problems account for more lost data and down time than all other computer problems combined. Now all Vale Platinum models use the new Glitch Master™ on-line, short duration uninterruptible power supply. It is the ultimate built-in protection against spikes and momentary power interruptions of up to 2 seconds (which account for over 90% of all power disturbances). Furthermore, over half of all hardware failures are due to faulty power, so with Glitch Master™ your computer will last longer.



- ◆ Fast PCI enhanced IDE mode 4 hard disk drive **Hard disk**

- ◆ Panasonic 3.5" 1.44Mb Floppy Disk Drive



KEY TRONIC®

Keyboard

"Not only is it pleasantly curved and delightful to type on, but it's also the only one sporting the three extra keys that first appeared on the Microsoft keyboard..."
PC Pro, November 1995



- ◆ Panasonic six speed CD-ROM drive (Platinum)
- ◆ TEAC six speed CD-ROM drive (Platinum SE)



...and our legendary reputation for **SERVICE & SUPPORT...**

Wins these...



"Very high spec machine. A well deserved Editor's Choice." *March 1996*
Vale Platinum SE P150



"If you expect great things of such a PC, in terms of performance, you will certainly not be disappointed"
April 1996 Vale Platinum SE P166



May 1995 Vale Platinum P90

"The combination of an excellent multimedia platform and high all-round DOS and Windows performance, at a good price, makes the Vale Pentium an excellent multimedia PC, and a worthy Editors' Choice"



January 1995 Vale Platinum P90

"The Evesham Vale Platinum delivers excellent performance, a good feature set and an affordable price - a combination which is the hallmark of a PC Magazine Editors' Choice. In a market where compromise is all too common, the Evesham Vale Platinum is a winner."



"The Platinum took the top spot in our performance tests. The Diamond Stealth video system had a chance to show its true colours...Not only is the Platinum a top class machine, it's also good value for money."
February 1995 Vale Platinum P90



"Attention to detail made this machine a good all-rounder. Expensive but well specified, and a lightning performer too." *November 1995*
Vale Platinum Triton P90



"It's not the individual subsystems that makes the difference, but the combination of solidly performing components."
Recommended May 1996
Vale Platinum P100



January 1995
Vale Platinum P90 Media 95 PC



"The Vale Platinum Media 95 is an all too rare example of a quality multimedia PC that's well specified enough to keep up with today's growing software demands, yet cheap enough to make it a good buy for both home and business users."
PC Direct "The Best of Everything" supplement, Winter 1995
Vale Platinum P90 Media 95

The Platinum SE has the following enhancements to the standard Platinum:

- ◆ 512kb Pipeline-Burst cache
- ◆ Diamond Stealth 64VideoVRAM 2Mb 64-bit video card
- ◆ Vale EcoScan17 monitor (DDC-2 plug and play compatible)
- ◆ TEAC CD-56E six speed CD-ROM drive on all models

PLATINUM SE MODELS

Please see page 4 for full details of Microsoft Media 96 and Lotus Multimedia Office 96 packs.

Model	Standard	Media 96	Lotus Office 96
P 133	1Gb	£1749+VAT	£1859+VAT
	2Gb	£1849+VAT	£1959+VAT
	Standard	£1819+VAT	£1919+VAT
P 150	1Gb	£1829+VAT	£1939+VAT
	2Gb	£1929+VAT	£2039+VAT
	Standard	£1899+VAT	£1999+VAT
P 166	1Gb	£1939+VAT	£2049+VAT
	2Gb	£2039+VAT	£2149+VAT
	Standard	£2009+VAT	£2109+VAT

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch. Please note that all models feature a TEAC six speed CD-ROM drive.

SEE LEFT FOR PLATINUM SE OPTIONS



- 166MHz Pentium® processor
- Intel Triton chipset
- 16-bit sound
- 16Mb EDO RAM
- 17" Vale EcoScan monitor
- 2Gb mode 4 IDE hard disk
- 512kb Pipeline-Burst cache
- TEAC Six speed CD-ROM drive
- 2Mb Diamond Stealth 64VideoVRAM

£2039+VAT

A Vale Platinum SE

Please note that actual products (including screen displays) may not exactly match the photographic representations. Industry standard practice is to quote a monitor's CRT size - the actual viewing area is approximately 1" less.

CAMBRIDGE BRIDGEMILTON KEYNES

MILTON KEYNES
BIRMINGHAM
CAMBRIDGE
EVESHAM

Corporate & Network Services

How have these companies benefited from dealing with Evesham Micros?

GEC GCHQ SNAP-ON-TOOLS
BBC GROUP 4 MINISTRY OF DEFENCE

- Competitive pricing for everything from a single PC to a large network installation
- A single point of contact for all requirements from Evesham Micros
- Volume pricing available
- A range of business finance options including leasing
- Unrivalled after sales service
- Detailed product knowledge and market-place awareness
- Personal, efficient and friendly service at the end of the telephone
- Fully trained sales staff conversant with Microsoft Select program



Microsoft
SOLUTION PROVIDER
Authorised by Microsoft

Microsoft
CERTIFIED PROFESSIONAL
Product Specialist

Novell
Authorised Reseller

Novell
CNE

Corporate Sales Centres

EVESHAM 01386 769404
CAMBRIDGE 01223 323898
BIRMINGHAM 0121 446 5050
MILTON KEYNES 01908 230898

COMPUTERWEEKLY
Best "Product knowledge of sales staff" in "Quality of IT Suppliers 1995" survey.

Network solutions

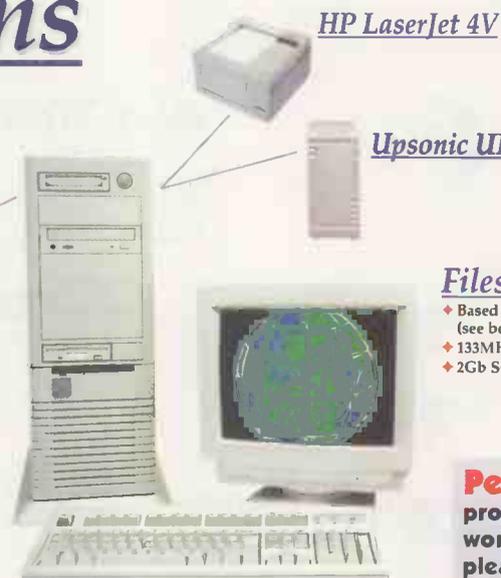
This is an example of a typical small department system, but remember that we can tailor our systems to suit your need.

10 Workstations

- ◆ Based on Vale Prestige (see page 6)
- ◆ 100MHz Pentium® processor
- ◆ 256kb Pipeline-Burst cache
- ◆ 8Mb RAM
- ◆ 1Gb IDE hard disk with PCI controller
- ◆ PCI ethernet card
- ◆ Diamond Stealth 64DRAM
- ◆ 1Mb PCI video card
- ◆ Vale 15" EcoScan15 monitor
- ◆ MS Office software



Kingston 16 port hub



HP LaserJet 4V

Upsonic UPS



Fileserver

- ◆ Based on Vale Fileserver (see below)
- ◆ 133MHz Pentium® processor
- ◆ 2Gb SCSI hard disk

10 user solution with Microsoft NT:

£17999+VAT

BUSINESS RENTAL SCHEME
£629.67 +VAT per month

10 user solution with Novell Netware 4.1:

£18499+VAT

BUSINESS RENTAL SCHEME
£647.16 +VAT per month

Installed and cabled from:

£1750+VAT

BUSINESS RENTAL SCHEME
£61.95 +VAT per month

Pentium® PRO processor based workstations - please call for details

RAID server

The Vale RAID server is a fault tolerant solution for critical business systems.

- ◆ Motherboard with Intel 430FX PCIset
- ◆ 133MHz Pentium® processor
- ◆ 512kb Pipeline-Burst cache
- ◆ 64Mb EDO RAM
- ◆ DPT PCI RAID controller with 4Mb cache
- ◆ 10Gb RAID array giving 8Gb useable space
- ◆ 4Gb HP Surestore DAT streamer
- ◆ Six speed SCSI CD-ROM drive
- ◆ PCI ethernet card
- ◆ 1Mb PCI video
- ◆ 14" SVGA monitor
- ◆ Dedicated server case
- ◆ Choice of operating system available at extra cost

£7699+VAT

BUSINESS RENTAL SCHEME
£269.34 +VAT per month

Dedicated server case:

- ◆ Twin redundant PSU system
- ◆ 12 drive bays
- ◆ Lockable access cover



Fileservers

Vale Fileservers offer a cost effective solution with the flexibility to meet your requirements

- ◆ Pentium® processor based models have Intel 430FX PCIset and 512kb Pipeline-Burst cache
- ◆ Pentium® PRO processor based models have Intel 450KX PCIset and 256kb integrated processor cache
- ◆ 16Mb EDO RAM
- ◆ Adaptec 2940 PCI SCSI controller and SCSI hard disk
- ◆ Six speed SCSI CD-ROM drive
- ◆ 2Gb HP Surestore DAT drive
- ◆ Full tower case with Gilitch Master™ short duration UPS
- ◆ Dedicated server case available at extra cost (see options)
- ◆ Choice of operating system available at extra cost (see options)
- ◆ 3COM 3C590 PCI ethernet card
- ◆ 1Mb PCI video
- ◆ 14" SVGA monitor

adaptec
PCI SCSI controller

Example: P133/2Gb fileserver

BUSINESS RENTAL SCHEME
£92.00 +VAT per month

FILESERVER MODELS

Pentium® processors	1Gb HDD	2Gb HDD	4Gb HDD
100MHz	£2199+VAT	£2499+VAT	£2739+VAT
133MHz	£2299+VAT	£2599+VAT	£2839+VAT
Pentium® PRO processors	1Gb HDD	2Gb HDD	4Gb HDD
150MHz	£2999+VAT	£3299+VAT	£3539+VAT
200MHz	£3199+VAT	£3499+VAT	£3739+VAT

FILESERVER OPTIONS

Upgrade to 32Mb EDO RAM.....£250.00 +VAT	MS Windows NT server software.....£479.00 +VAT
Upgrade to 64Mb EDO RAM.....£730.00 +VAT	Dedicated server case.....£300.00 +VAT
MS DOS 6.22 / Windows 3.11.....£69.00 +VAT	Novell Netware client/server software...from £499.00 +VAT



Voyager II



With Pentium® processor performance, PCI bus colour graphics, built-in 16-bit sound, and the option of an internal CD-ROM drive, the Voyager II notebook takes multimedia applications in it's stride.



This is a real screen shot, not simulated.

COMPUTER SHOPPER January 1996
 "There's no going back to a 640x480 screen once you've spent any time using a notebook with this higher resolution."

Computer BUYER RECOMMENDED April 1996
 "...commendably robust...Evesham Micros' excellent Seagate hard disk leaves others standing...It has better power management, it's better built and has a clearer screen...the Evesham's superior motherboard ties it all together for a faster system...a multimedia monster..."
Vale Voyager II P90 Dual Scan Colour

PC Direct May 1996
 "performance and power-saving options are extremely good...the fastest 90MHz Pentium notebook we have seen to date."
Vale Voyager II P90 TFT Colour



EXPANSION PORTS
 The Voyager II has PCMCIA ports for use with two type II cards or one type III card. Rear panel connectors include serial port (16550 compatible); EPP parallel port; SVGA monitor; PS/2 mouse or keyboard; MIDI/game port; TV set, and infra red data link. A further port enables fast connection to a port replicator/docking station.

SECURITY
 Anchor for Kensington security cable.

KEYBOARD
 The Voyager II uses a full function 86-key keyboard. Unlike many notebooks, it has a good solid feel.

BUILT-IN AUDIO
 The Voyager II really is multimedia ready. It has 16 bit stereo sound built in, together with stereo speakers and microphone. There are jacks for an external microphones, and stereo line in/line out. Audio utility software provided.

REMOVABLE HARD DISK
 The enhanced IDE hard disk is removable for data security and upgradeability.

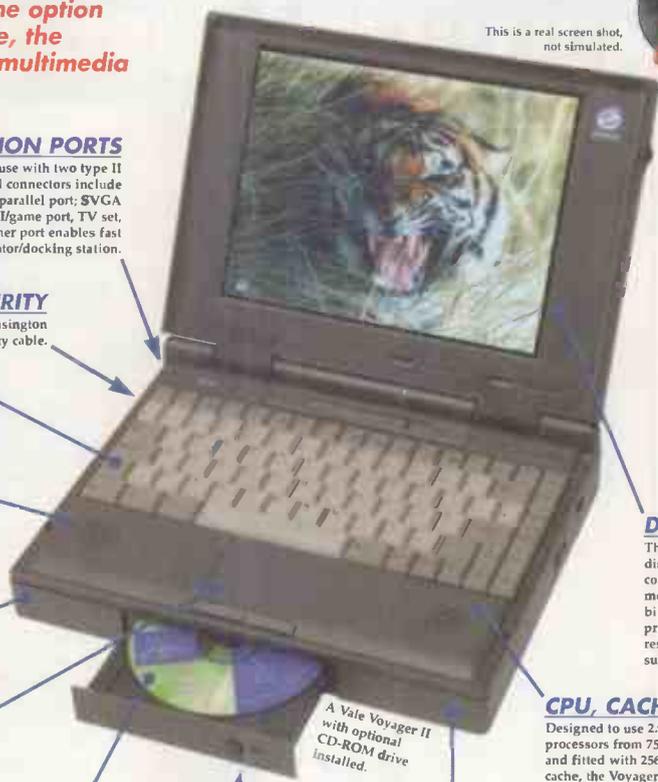
TOUCHPAD
 The built in touchpad, with palm rest, controls the cursor effortlessly and accurately.

CD-ROM DRIVE
 The optional quad speed CD-ROM drive replaces the floppy drive to make the Voyager II a self contained multimedia workstation.

3.5" FLOPPY DRIVE
 The built in floppy drive slides out to allow fitting of either the optional CD-ROM drive or auxiliary battery. The floppy drive can then be used via a cable (supplied with the CD-ROM drive).

CPU, CACHE & RAM
 Designed to use 2.9V Pentium processors from 75Mhz to 120Mhz, and fitted with 256k asynchronous cache, the Voyager II offers superb performance with maximum battery life. 8Mb RAM is fitted, and can be upgraded to a maximum of 64Mb.

BATTERY
 The Voyager II uses the very latest Lithium Ion technology for long life and no 'memory effect'. The batteries can be easily removed and replaced by a second unit. Extensive power management features include doze, sleep and 'suspend to disk' modes. The latter quickly saves your working environment to disk when the lid is closed, allowing you to re-load it later.



QUALITY & STYLE
 The Voyager II measures 295 x 225 x 49mm and weighs 3.3kg. The quality of fit and finish is amongst the best we have ever seen.

WARRANTY
 The Voyager II has 12 months 'return to base' warranty covering parts, with a lifetime warranty on labour.

Designed for
 Each system includes your choice of Windows 95 or Windows 3.11 at no extra cost.

Economy models

	528MB	1GB
P75	£1649 ^{+VAT}	£1849 ^{+VAT}

These models have a Dual Scan colour display, no cache, and use a Nickel Metal Hydride battery.

Multimedia
 If you choose a Voyager II with the optional CD-ROM drive, you can opt for one of our multimedia software bundles too (see page 4 of the advert for full details). Also included is a pair of ZylFi2 speakers for great sound.

MEDIA '96add £70^{+VAT}
Lotus Office 96add £110^{+VAT}

VOYAGER II OPTIONS

Internal quad speed CD-ROM drive.....	£199 ^{+VAT}
Additional primary battery.....	£169 ^{+VAT}
Auxiliary battery.....	£165 ^{+VAT}
Upgrade from 8Mb to 16Mb RAM.....	£299 ^{+VAT}
Upgrade from 8Mb to 24Mb RAM.....	£449 ^{+VAT}
Upgrade from 8Mb to 40Mb RAM.....	£899 ^{+VAT}
Port replicator.....	£149 ^{+VAT}
Docking station & port replicator.....	£399 ^{+VAT}
Cigar lighter adaptor.....	£49 ^{+VAT}
Additional PSU.....	£59 ^{+VAT}
External keyboard.....	£29 ^{+VAT}
ZylFi2 amplified speakers.....	£29 ^{+VAT}

Dual Scan Colour

	528MB	1GB
P75	£1799 ^{+VAT}	£1999 ^{+VAT}
P100	£1879 ^{+VAT}	£2079 ^{+VAT}
P120	£1999 ^{+VAT}	£2199 ^{+VAT}

TFT Colour

	528MB	1GB
P75	£2099 ^{+VAT}	£2299 ^{+VAT}
P100	£2179 ^{+VAT}	£2379 ^{+VAT}
P120	£2549 ^{+VAT}	£2749 ^{+VAT}

11.3" SCREEN
 P120 models with TFT colour have a large 11.3" screen.

VOYAGER II ACCESSORIES

PORT REPLICATOR & DOCKING STATION
 The Port Replicator has ports for monitor, keyboard, mouse, 2x serial, 1x parallel, DC power in, MIDI/game, audio output, and a compact SCSI connector - use it to connect your Voyager II quickly to the peripherals on your desk. The full Docking Station adds a 200W power supply, with two drive bays (1x 3.5" & 1x 5.25"), three 16-bit ISA expansion slots (2x full length & 1x half length), and two PCMCIA slots (1x type II & 1x type III).

TOTAL CARE WARRANTY
 Our optional "Total Care" package replaces the existing warranty with 2 year care. If your Voyager should need attention during this period we will collect it and return it to you when repaired. Typical turn-around is 3 working days. This cover is just 12.5% of the cost of the notebook (without accessories) - for example, £244.88^{+VAT} for the P75/528Mb dual scan colour model.

PCMCIA
 PCMCIA is the industry standard for expanding the capabilities of your notebook, whether it's a FAX/modem for a world of communications, or an ethernet card for talking to the rest of the office.

V34 bis FAX/Modem£199^{+VAT}
 PCMCIA Ethernet card.....£139^{+VAT}

NOTEBOOK CARRYING CASES

VALE Carry Case £30.00^{+VAT}
 A neat, compact padded case with carrying handle and detachable shoulder strap. Ideal for protection "out in the field".

Vale SystemTraveller £49.00^{+VAT}
 The complete luggage carrier for the modern business traveller.

- Thickly padded to protect your equipment
- Exterior dimensions 330x280x115mm
- Computer compartment
- Accessory/printer pocket
- Document pocket
- Cellular 'phone pocket
- Holders for diskettes, pens, business cards
- Adjustable padded divider
- Detachable shoulder strap

Evesham Micros
 Dept PECW, Unit 9, St Richards Road, Evesham, Worcs. WR11 6TD
 01386 765500 9am - 7pm Monday-Friday. 9am - 5.30pm Saturday. Mail Order Fax: 01386 765354 email: sales@evesham.co.uk

DELIVERY All orders are shipped by Insured Express Courier service at a charge of £8.00^{+VAT} - normally next working day after despatch (UK mainland only, others please call). Please allow 5 banking days for cheque clearance. Immediate clearance on Bank Drafts and Building Society cheques. Credit cards are not charged until the goods are despatched.

RETAIL SHOWROOMS
 Mon, Tue, & Sat, 9.00-5.30 Late night Wed-Fri 9.00-7.00
 EVESHAM: 01386 765500 MILTON KEYNES: 01908 230898
 CAMBRIDGE: 01223 323898 BIRMINGHAM: 0121 446 5050
 This advert is effective for the month of May 1996

AMERICAN EXPRESS, VISA, Access logos.

EARLY CLOSING
 Friday 31 May at 5.30pm
 for stocktaking

EVESHAM MICROS CAMBRIDGE BIRMINGHAM MILTON KEYNES

TWO GREAT 486 TINY PC PRICEBUSTERS WITH MULTIMEDIA OPTIONS



**GUARANTEED
LOWEST PRICES IN
THE UK!**

**WHY LET
OTHERS
CHARGE YOU
£££s MORE FOR
SIMILAR
SPECS?**

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SONIC FOTO CENTER 256 TOTTENHAM COURT RD LONDON W1A 9AD
Tel: 0171-636 7613

NOTTINGHAM SHOWROOM
UNIT 57 UPPER MALL (next to Boots)
THE VICTORIA CENTER NOTTINGHAM NG1 3QJ
Tel: 0115-941 9461

NEWCASTLE SHOWROOM
7 HIGH FRIARS
EDON SQUARE
NEWCASTLE NE1 7JB
Tel: 0191-261 5252

GLASGOW SHOWROOM
220 ARGYLE STREET
GLASGOW G2 7HA
Tel: 0141-204 2300

MANCHESTER SHOWROOM
VOYAGERS WALK (opp. Spoils)
ARNDALE CENTRE MANCHESTER M4 3AT
Tel: 0161-835 1611

BRISTOL SHOWROOM
UNION GALLERY (opp. Scenic Lift)
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CROYDON
CRO 1XH
Tel: 0181-760 0076

SAME DAY DESPATCH

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CALL FOR THIS MONTH'S SPECIAL OFFERS!

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821333**

PRICES EXCLUDE VAT AND DELIVERY

TINY
direct to you!



486DX2-66MHz Cache FULLY CONFIGURED SYSTEM

- 4MB RAM Upgradeable
- Supports EDO RAM
- 210MB HDD
- 14" VGA Mono Monitor
- PCI Local Bus 1MB Graphics Windows Accelerator Card
- PCI Enhanced IDE Controller
- 3.5" 1.44MB FDD
- Pentium P24T Upgradeable
- 5 spare PCI/ISA slots
- Maths Co-Processor
- Windows 95 Keyboard (16550 UART)
- 6 Storage Device Bays
- 1 x Parallel Ports
- High Quality Steel Desktop case



COLOUR OPTIONS CALL

FINANCE EXAMPLE
Total £417.74
inc. del & VAT
(less 10% discount)
£20.93 per month
over 24 months
APR 19.9%
Total Repayment
£548.73

£379

486DX4-100MHz Cache FULLY CONFIGURED SYSTEM

- 8MB RAM Upgradeable
- Supports EDO RAM
- 420MB HDD
- 14" SVGA MPR Full Scan Pin Cushion Monitor
- PCI Local Bus 1MB Graphics Windows Accelerator Card
- PCI Enhanced IDE Controller
- 3.5" 1.44MB FDD
- Pentium P24T Upgradeable
- 5 spare PCI/ISA slots
- Maths Co-Processor
- Windows 95 Keyboard (16550 UART)
- 2 x Fast Serial Ports (16550 UART)
- 6 Storage Device Bays
- 1 x Parallel Ports
- High Quality Steel Desktop case



£549

- 4MB RAM Upgradeable
- Supports EDO RAM
- 630MB HDD
- 14" SVGA MPR Full Scan Pin-Cushion Monitor
- PCI Local Bus 1MB Graphics Windows Accelerator Card
- PCI Enhanced IDE Controller
- 3.5" 1.44MB FDD
- Pentium P24T Upgradeable
- 5 spare PCI/ISA slots
- Maths Co-Processor
- Windows 95 Keyboard (16550 UART)
- 6 Storage Device Bays
- 1 x Parallel Ports
- High Quality Steel Desktop case



£499

- 8MB RAM Upgradeable
- Supports EDO RAM
- 1GB HDD with 128k cache
- 14" SVGA MPR Full Scan Pin Cushion Monitor
- PCI Local Bus 1MB Graphics Windows Accelerator Card
- PCI Enhanced IDE Controller
- 3.5" 1.44MB FDD
- Pentium P24T Upgradeable
- 5 spare PCI/ISA slots
- Maths Co-Processor
- Windows 95 Keyboard (16550 UART)
- 2 x Fast Serial Ports (16550 UART)
- 6 Storage Device Bays
- 1 x Parallel Ports
- High Quality Steel Desktop case



£599

MULTIMEDIA OPTION

- 8MB RAM Upgradeable
- Supports EDO RAM
- 630MB HDD
- 14" SVGA MPR Full Scan Pin Cushion Control Colour Monitor
- Multimedia Kit with QUAD Speed Multisession CD ROM Drive & 16 bit Stereo Soundcard with Speakers
- PCI Local Bus 1MB Graphics window Acc Card
- PCI Enhanced IDE Controller
- 3.5" 1.44MB FDD

SPECIAL OFFER
ON 6 SPEED
CD - CALL



£619

MULTIMEDIA OPTION

- 8MB RAM Upgradeable
- Supports EDO RAM
- 1GB HDD with 128k cache
- 14" SVGA MPR Full Scan Pin Cushion Control Colour Monitor
- Multimedia Kit with QUAD Speed Multisession CD ROM Drive & 16 bit Stereo Soundcard with Speakers
- PCI Local Bus 1MB Graphics window Acc Card
- PCI Enhanced IDE Controller
- 3.5" 1.44MB FDD

SPECIAL OFFER
ON 6 SPEED
CD - CALL



£669

FINANCE EXAMPLE
Total £721.38
inc. del & VAT
(less 10% discount)
£36.79 per month
over 24 months
APR 19.9%
Total Repayment
£951.45

TWO GREAT MULTIMEDIA BUNDLES

Microsoft

OFFERED WITH A VARIETY OF PACKS

Lotus Office 96



- ◆ Works 3 (for Windows 3.1) or Works 4 (for Windows 95) - Your choice, please specify which
- ◆ Encarta 96 (International Edition)
- ◆ Money
- ◆ Fine Artist
- ◆ Explorapedia
- ◆ Dinosaurs
- ◆ Golf
- ◆ Scenes
- ◆ Fury 3 (trial version)
- ◆ Windows Entertainment Pack



Lotus SmartSuite:
1-2-3, Word Pro, Approach
Freelance Graphics, Organizer

Productivity Software:
Quicken 3, CorelDraw! 4

Top Games Titles:
Dragon Love, MegaRace,
Theme Park,
FIFA International Soccer

Grolier Encyclopaedia:
Software Toolworks Grolier
Encyclopaedia for 1995 - version 7

Plus: Supervoice, Professor
Windows, Professor Training
Suite, Professor Multimedia;
Typing Tutor; Pilot Multimedia
including 'Interlude'

choice of
SmartSuite 4 for
Windows 3.1 or
SmartSuite 96 for
Windows 95
please specify



Upgrade
speakers in any pack to
Zyfi 2 PROs for a surcharge
of £20+VAT.

See the CD-ROM drives (below) for details of the complete packs. When ordering please quote pack number. We recommend a minimum 486sx33 system with MS DOS 6.x or Windows95 for these packs. Please note that bundled versions of software and sound cards are not full retail packs, and the software features on-line documentation. Occasionally we may supply vouchers for software titles which need to be redeemed with manufactures.

PANASONIC CR-581 QUAD SPEED CD-ROM DRIVE & PACKS

Drive only £49.99+VAT

Includes cables and driver software

- Enhanced IDE ATAPI interface
- Quad speed 600kb/sec sustained DTR
- Fast 190ms access
- Plug and Play compliant
- MPC and White Book (CDi) compatible
- Output from audio CDs via headphone
- Multi-session drive - compatible with Kodak Photo CD



March 1996



Drive and card only:

£98+VAT (pack 4a) with
Soundblaster 16 card

£148+VAT (pack 4b) with
Soundblaster AWE 32 Value

With ZyFi2 speakers and
Microsoft

£160+VAT (pack 5a) with
Soundblaster 16 card

£210+VAT (pack 5b) with
Soundblaster AWE 32 Value

With ZyFi2 speakers and
Lotus Office 96

£200+VAT (pack 6a) with
Soundblaster 16 card

£250+VAT (pack 6b) with
Soundblaster AWE 32 Value

NB - bare drives require sound card or motherboard with secondary IDE connector

PANASONIC CR-582 SIX SPEED CD-ROM DRIVE & PACKS

Drive only £79+VAT

Includes cables and driver software

- Enhanced IDE ATAPI interface
- Six speed 900kb/sec sustained DTR
- Fast 160ms access
- Plug and Play compliant
- MPC and White Book (CDi) compatible
- Output from audio CDs via headphone socket
- Multi-session drive - compatible with Kodak Photo CD



NB - bare drives require sound card or motherboard with secondary IDE connector



Drive and card only:

£127+VAT (pack 12a) with
Soundblaster 16 card

£177+VAT (pack 12c) with
Soundblaster AWE 32 Value

With ZyFi2 speakers and
Microsoft

£189+VAT (pack 13a) with
Soundblaster 16 card

£239+VAT (pack 13c) with
Soundblaster AWE 32 Value

With ZyFi2 speakers and
Lotus Office 96

£229+VAT (pack 14a) with
Soundblaster 16 card

£279+VAT (pack 14c) with
Soundblaster AWE 32 Value

TEAC CD-56E SIX SPEED CD-ROM DRIVE & PACKS

Drive only £100+VAT

Includes cables and driver software

- Enhanced IDE ATAPI interface
- Six speed 900kb/sec sustained DTR
- Fast 139ms access
- Plug and Play compliant
- MPC and White Book (CDi) compatible
- Output from audio CDs via headphone socket
- Multi-session drive - compatible with Kodak Photo CD



NB - bare drives require sound card or motherboard with secondary IDE connector



Drive and card only:

£148+VAT (pack 8a) with
Soundblaster 16 card

£198+VAT (pack 8c) with
Soundblaster AWE 32 Value

With ZyFi2 speakers and
Microsoft

£210+VAT (pack 11a) with
Soundblaster 16 card

£260+VAT (pack 11b) with
Soundblaster AWE 32 Value

With ZyFi2 speakers and
Lotus Office 96

£250+VAT (pack 10a) with
Soundblaster 16 card

£300+VAT (pack 10a) with
Soundblaster AWE 32 Value

ZYFI SPEAKERS

ZYFI COMPACT

The discrete and economical way to give your PC great sound.

- Built-in Stereo Power Amplifier
- 16 Watts PMPO (4 Watts RMS)
- Active or Passive use (active use requires batteries or optional mains adaptor)
- 3" Full Range Cone
- Magnetically shielded
- Volume Control
- Bass Booster
- Treble Booster

£12.00+VAT

ZYFI2 £29.00+VAT

'Zyfi2s are definitely a sound investment.' PC Answers 'Recommended' March 1995

- Built-in Stereo Power Amp
- 64 Watts PMPO (12 Watts RMS)
- Magnetically shielded
- Volume Control
- Tone control



RECOMMENDED
PC ANSWERS

ZYFI2 PRO

'These are the boys to add a bit of oomph to your PC.' PC Answers 'Recommended' March 1995

Rating 9/10. "Excellent value for money." PC Zone April 1995
Rating 9/10. "A lot of sound for the money" PC Plus April 1996

- Built-in Stereo Power Amplifier
- 120 Watts PMPO (36 Watts RMS)
- Magnetically Shielded
- Size 14x23x15cm
- Volume Control
- Bass control
- Treble control

£49.00+VAT

PLUS PACK

- ◆ Microsoft Plus - the ultimate tune-up for Windows95
- ◆ Microsoft Sidewinder 3D joystick
- ◆ Windows95 games: Simon the Sorcerer II, Command & Conquer, Screamer

only £79+VAT (Total RRP £189.64+VAT)



Please note that the software does not feature retail packaging.

SOUND CARDS

- Soundplus 16 SoundBlaster PRO compatible card with Panasonic and IDE CD-ROM interfaces.....£39.99+VAT
- Genuine Creative SoundBlaster 16 Value pack (IDE CD-ROM interface).....£67.00+VAT
- Genuine Creative SoundBlaster AWE32 Value pack (WaveTable and IDE CD-ROM interface).....£99.00+VAT

SoundBlaster AWE32 Value

Look out for our multimedia packs featuring the AWE32 Value - wavetable sound at a great price.

SPECIAL OFFER Last few Panasonic CR-562 double speed CD-ROM drives at **£33.99** Or bundled with Soundplus 16 card at **£69.99**

BIRMINGHAM CAMBRIDGE EVESHAM MILTON KEYNES

UPGRADES & ACCESSORIES

PROCESSORS

CPU UPGRADES

486dx2-66	£25.00 ^{+VAT}
486dx4-100	£49.00 ^{+VAT}
Motherboard support for 3.3V required.	
Intel 486dx2-66	£99.00 ^{+VAT}
Suits Vale PCs bought before Oct '94.	
Pentium P75	£90.00 ^{+VAT}
Pentium P90	£110.00 ^{+VAT}
Pentium P100	£120.00 ^{+VAT}
Pentium P120	£160.00 ^{+VAT}
Pentium P133	£220.00 ^{+VAT}
Pentium P150	£305.00 ^{+VAT}
Pentium P166	£415.00 ^{+VAT}
Heatsink and fan recommended for all above processors.	
CPU Heatsink	£3.00 ^{+VAT}
Fan & h/sink for 486	£10.00 ^{+VAT}
Fan & h/sink for Pentium processor	£9.00 ^{+VAT}

MEMORY SIMMS

1Mb 30-pin SIMM (3 chip) 70ns	£34.00 ^{+VAT}
4Mb 30-pin SIMM (3 chip) 70ns	£130.00 ^{+VAT}
4Mb 72-pin SIMM 70ns 32-bit	£50.00 ^{+VAT}
8Mb 72-pin SIMM 70ns 32-bit	£100.00 ^{+VAT}
16Mb 72-pin SIMM 70ns 32-bit	£260.00 ^{+VAT}
EDO RAM: 4Mb 72-pin SIMM 70ns 32-bit	£55.00 ^{+VAT}
EDO RAM: 8Mb 72-pin SIMM 70ns 32-bit	£110.00 ^{+VAT}
EDO RAM: 16Mb 72-pin SIMM 70ns 32-bit	£240.00 ^{+VAT}



PCI MOTHERBOARDS

SPECIAL PRICES

Our bulk purchase of motherboards allows us to offer you these special prices...

FOR '486 PROCESSORS (TYPE 7).....£80.00^{+VAT}

- Will accept most 486 CPUs up to DX4-100
- 3xPCI local bus slots
- 4xISA slots
- ZIF socket
- P24T upgradeable
- 256kb Cache
- On-board PCI IDE hard disk controller
- 2x 16550 compatible UART driven high speed serial ports
- EPP and ECP compatible parallel port
- Accepts 72-pin SIMMS.

Type 7 board with 486dx2*66 processor.....£105.00^{+VAT}

Type 7 board with 486dx4*100 processor...£134.00^{+VAT}

NB - all board + CPU offers include heatsink and fan.

FOR PENTIUM® PROCESSORS (TYPE 6).....£100.00^{+VAT}

- 2xPCI local bus slots
- 1xPCI/ISA bus slot
- 3xISA slots
- ZIF socket
- 256kb Cache
- On-board PCI IDE hard disk controller
- 2x 16550 compatible UART driven high speed serial ports
- EPP and ECP compatible parallel port
- Support for EDO RAM
- Accepts 72-pin SIMMS.

Type 6 board with P75 processor.....£190.00^{+VAT}

Type 6 board with P90 processor.....£205.00^{+VAT}

Type 6 board with P100 processor.....£220.00^{+VAT}

Type 6 board with P120 processor.....£260.00^{+VAT}

Type 6 board with P133 processor.....£320.00^{+VAT}

NB - all board + CPU offers include heatsink and fan.

Triton FOR PENTIUM® PROCESSORS (TYPE 8).....£190.00^{+VAT}

- Intel Advanced Endeavour board with Intel 430FX PCLset
- 3xPCI local bus slots
- 1xPCI/ISA bus slot
- 2xISA slots
- ZIF socket
- 256kb Pipeline-Burst Cache
- On-board PCI IDE hard disk controller
- 2x 16550 compatible UART driven high speed serial ports
- EPP and ECP compatible parallel port
- Support for EDO RAM, Pipeline-Burst cache and Native Signal Processing
- On-board sound with Creative Labs Vibra 16 chipset
- Accepts 72-pin SIMMS.

Type 8 board with P100 processor.....£305.00^{+VAT}

Type 8 board with P120 processor.....£345.00^{+VAT}

Type 8 board with P133 processor.....£405.00^{+VAT}

Type 8 board with P150 processor.....£485.00^{+VAT}

Type 8 board with P166 processor.....£595.00^{+VAT}

Upgrade to 512k Pipeline-Burst cache.....£30.00^{+VAT}

NB - all board + CPU offers include heatsink and fan.

MONITORS

Due to our bulk purchasing power for our own Vale PCs, we are able to offer the following high specification monitors at very competitive prices.



Vale EcoScan monitors

Our own family of 15" and 17" models, as illustrated above. They feature an ingeniously simple digital push button system which allows complete control over all display adjustments, including pin-cushion, trapezoid, parallelism and rotation, with on-screen representation of the settings.

- 0.28mm dot pitch
- Up to 65kHz horizontal scan
- 1280 x 1024 max. res.
- Fully non-interlaced
- 72Hz Flicker-Free at 1024x768
- MPR II and EPA compliant
- EcoScan17 is DDC-2 plug and play compatible

EcoScan15 ..£249^{+VAT} EcoScan17 ..£449^{+VAT}

iiyama Vision Master 17".....£549^{+VAT}

0.26mm dot pitch • 1600x1200 max • Up to 86kHz horiz. scan • 1260x1024 @ 80Hz refresh • MPRII and EPA compliant

3 year on-site maintenance for Vision Master 17".....£80^{+VAT}

iiyama Vision Master PRO 17".....£609^{+VAT}

0.25mm dot pitch DiamondTron tube • Up to 92kHz horiz. scan • 1600x1200 max resolution @ 72Hz flicker-free refresh • MPRII and EPA compliant

iiyama Vision Master 21".....£1249^{+VAT}

0.27mm dot pitch • Up to 94kHz horiz. scan • 1600x1200 max resolution @ 75Hz refresh • MPRII and EPA compliant

Viewsonic 14ES 14".....£180^{+VAT}

0.28mm dot pitch • 1024x768 max non-interlaced • 800x600 @ 72Hz refresh • EPA Energy Star compliant

Please note that industry standard practice is to quote a monitor's CRT size - the actual viewing area is approximately 1" less.

HARD DISKS

COST EFFECTIVE MASS STORAGE



Optional installation kit (5.25" mounting bracket kit plus cables).....£10.00^{+VAT}

IBM 100Mb (SCSI).....	£49.00 ^{+VAT}
Seagate 214Mb.....	£89.00 ^{+VAT}
Seagate ST3660A (IDE) 528Mb.....	£115.00 ^{+VAT}
Seagate ST51080A (IDE) 1Gb.....	£145.00 ^{+VAT}
Seagate ST32140A (IDE) 2Gb.....	£235.00 ^{+VAT}
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HD CONTROLLER CARDS



PROMISE CACHING HARD DISK CONTROLLERS

DC4030 (VL bus) c/w 0kb RAM (max. 16Mb).....£49.00^{+VAT}

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VIDEO CARDS

Why Diamond DIAMOND Video Cards? MULTIMEDIA

The highly acclaimed Stealth range has won many press accolades including the coveted PC Magazine "Editors Choice", and the new Stealth SE and Stealth 64 Video continue the tradition of delivering the best price/performance available. They are all based around S3 chipsets for superb Windows acceleration as well as class leading DOS performance, and come with the renowned InControl Tools utility for setting up the Windows environment.

Diamond Stealth SE 1Mb (PCI Bus).....	£65.00 ^{+VAT}
Diamond Stealth 64DRAM 1Mb (PCI Bus).....	£69.00 ^{+VAT}
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Diamond Stealth 64VideoVRAM 2Mb (VL Bus).....	£194.00 ^{+VAT}
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Upgrade to 4Mb for Stealth 64VideoVRAM.....	£120.00 ^{+VAT}
Diamond MVP accessory for Stealth 64Video, gives MPEG decoding and upgrade to 4Mb VRAM.....	£249.00 ^{+VAT}
Diamond Edge 2Mb DRAM.....	£239.00 ^{+VAT}
Diamond Edge 2Mb VRAM.....	£299.00 ^{+VAT}
Matrox Millennium 2Mb WRAM (PCI Bus).....	£229.00 ^{+VAT}
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TAPE BACKUP (OMEGA ZIP DISK DRIVE

ditto™ tape drives Top quality tape streamers available as either internal or a stand alone units. The stand alone versions simply connect to the PC's parallel port, with a through port for printer operation.

- ◆ Compatible with Novell and Lantastic networks
- ◆ Utilises the latest Travan technology
- ◆ Supplied with backup software for DOS/Windows
- ◆ Quoted capacities are with compression software supplied
- ◆ 2 year manufacturer's warranty



PC today "A superb combination of tape drive and software." PC Today, December 1993 (omega Tape250 Parallel Port Unit)

RUNNER-UP
HITS
Tape Backup Systems

800Mb Internal unit.....	£99^{+VAT}
Parallel port unit.....	£119^{+VAT}
Tape for ditto 800Mb.....	£29.00 +VAT
3.2Gb Internal unit.....	£225^{+VAT}
Parallel port unit.....	£289^{+VAT}
Tape for ditto 3.2Gb.....	£29.00 +VAT

Zip Disk is the newest, smallest, most portable drive. It works just like a hard drive, but the 100Mb cartridges give it unlimited expansion potential. It simply plugs into your parallel port in an instant, with a through port for printer operation.

3 DRIVES IN ONE:

- Expand your hard drive with unlimited capacity 100Mb at a time
- Take it with you Zip drive and disks are portable
- Backup your hard drive Quickly and easily



- ◆ 29ms seek time
- ◆ Up to 1Mb/sec data transfer
- ◆ Very compact (180mm x 136mm x 37mm)
- ◆ Light weight (approx 450g)
- ◆ Includes one 100Mb disk, and Zip tools software to help you organise your data
- ◆ Limited lifetime warranty on Zip disks

Inexpensive, reliable, and ready to help you organise everything. Use as many disks as you need. Software helps you keep track of it all. Work stuff. Home stuff. School stuff. Play stuff. Whatever.

ZIP DISK DRIVE.....ONLY £149.99^{+VAT}

100Mb Zip disk.....£16.95 +VAT

FX2000 Joystick £19.00+VAT

This recent addition to the highly acclaimed range of Suncom joysticks brings further advances in comfort and control. The pistol grip can be easily rotated to give perfect orientation for left or right handed use, while the unique "V" designed top fire button allows lightning fast response. Switchable autofire, throttle control and suction feet complete the package. Requires game port.

MSC Multi-System £69.00+VAT

EVERYTHING YOU COULD WANT FROM A JOYSTICK.

The Multi-System is three control systems in one. The sturdy base sits securely on your desktop with suction feet, and provides a nicely weighted steering wheel for driving games. The wheel un-clips to reveal bars which twist into position for either an aircraft yoke or bike handle bars. Whichever you use there are control buttons at your fingertips, and an aircraft throttle paddle. The four mounted pedal box gives you throttle and brake controls. Multi-System has a port for a second joystick. Requires game port.

It's a car!

It's a bike!

It's a plane!

FLIGHTSTICK £27.00+VAT

THE FLIGHTSTICK IS CONSISTENTLY REVIEWED AS THE BEST QUALITY JOYSTICK IN ITS CLASS

Test fly a Flightstick with your favourite simulator and you will know the meaning of control. Whether you're a novice or experienced combat pilot, flying skills will be improved and enemy kill rate will increase. Excellent construction - looks and feels like the real thing! Includes throttle control and 7ft long connection cable. Requires game port.

FLIGHTSTICK PRO £55.00+VAT

THE ULTIMATE COMBAT STICK FOR COMPUTER PILOTS!

The new Flightstick PRO from CH Products offers the ultimate in fingertip control. It has four fire buttons, and a four-way switch which allows you to control weapons, radar and viewing functions on more advanced software - all without taking your hand from the stick! With its top quality sturdy construction it is designed to last for years. Includes driver software and long connection cable. Requires game port.

VIRTUAL PILOT £62.00+VAT

THE MOST REALISTIC FLIGHT YOKE AVAILABLE FOR THE PC

Enjoy the ultimate realism in all flight simulation games with the Virtual Pilot, made in the USA by CH Products. Looking just like a real airplane yoke, it is designed for the ultimate precision, giving you superb control. Also ideal for driving games. Clamps to table top. Requires game port.

VIRTUAL PILOT PRO £72.00+VAT

The VIRTUAL PILOT PRO has all the best features of the award winning VIRTUAL PILOT. It adds four extra fire buttons and two four-way switches for unrivaled control in all combat and simulation games. Requires game port.

PRO PEDALS £75.00+VAT

Featuring dual operating modes for forward and back rudder motion, as well as pivot movement for driving games, the CH Products PRO PEDALS provide gamers with the most realistic flying and driving experience. They also include aircraft style toe-brakes, and independent accelerator and brake controls. They are designed to work with all CH Products joysticks and yokes, and are built with rugged components to withstand the toughest competitor. Requires game port.

GAME PORT CARD £12.50+VAT

Game port card for any of these joysticks and yokes. Works with any clock speed. Particularly recommended for 486sx4-100 and Pentium systems.

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Protect your installation from mains power faults with an Upsonic uninterruptible power supply.

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SYSTEM SERIES ON-LINE UPSs

- True on-line protection
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PAGE FAX/MODEMS

Internet ready

- Pace V34 28800bps external fax/modem
- Internet access software with free trial connection period
- 'SuperFax' fax software
- 'Tel-Me' information system software

What is Tel-Me

Tel-Me is an on-line information system, giving you direct access to key information sources. It is the first information system to use "Hardly On-Line" technology to minimise the time you spend connected - typically each call lasts less than 20 seconds. Currently 'Tel-Me' includes the following services (although more are being added all the time):

- News Instant updates from Press Association
- Credit checks Direct access to CCN files giving company financial information
- Company Information Financial information of limited and PLC companies
- Phone numbers Direct access to BT phone number database, giving a 50% cost saving compared with dialling 192
- Postcodes Direct access to Royal Mail's postcode database
- Weather Up to the minute forecasts from British Weather Services
- Train Timetable Direct access to BR timetable system
- Hotels, restaurants & leisure AA Travelogue hotel, restaurant and places to visit guide. Tel-Me gives you a 15% discount on hotel bookings
- Internet E-Mail Free E-Mail access to over 40 million Internet users worldwide
- Journey planner & traffic information journey planner based on AA's MileMaster 2 road database, plus AA Roadwatch for traffic conditions
- UK road and street maps Ordnance Survey maps down to street level
- Business classified Thomson Directories' business database

We supply the full version of Tel-Me (RRP £49.95+VAT). There is a monthly/subscription of £9.95+VAT and you also pay a small usage charge for accessing information (charge dependent on type of information), however as a starter we give you one month free subscription and usage credit of £30+VAT.

The complete solution.....£149+VAT

pace

- Pace Netlink (v32bis)£85+VAT
- Pace Netlink Gold (v34).....£169+VAT
- Pace fax/modem
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- Software to access Internet facilities
- FAX software
- "The Net" guide book

SPECIAL OFFER

All modems include Internet connection software with free trial connection period.

APPROVED for connection to telecommunication systems specified in the instructions for use subject to the conditions set out in them.

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COMPUTER SHOPPER BEST BUY
PERSONAL COMPUTER REVIEWERS CHOICE FEBRUARY 1993

Message Desk 34.....£195+VAT
Desktop Voice, Data and Fax Modem. Integrates your PC and your telephone to provide complete communications facilities.

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Novell compatible 16-bit network card.

Fully Novell authorised and tested.

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- NETBIOS compatible



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Pocket LAN adaptor

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A very stylish, comfortable and good quality mouse at a budget price. As used in our Vale Prima and Prestige ranges of PCs.



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Made for us by Mitsumi, this is the keyboard used in our Vale Prima and Prestige ranges of PCs. It has a full 102-key layout, plus the three extra Windows 95 keys. A very neat and attractive design, it is superb value for money.



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Take the strain out of typing.

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EVESHAM CAMBRIDGE BIRMINGHAM MILTON KEYNES

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- Choice of models, with genuine optical resolution up to 1200dpi
- All use *single-pass* scanning – much faster than models which scan each colour separately
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- SCSI expansion card interface supplied
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fast single pass models

ALL SCANNERS NOW HAVE TWAIN DRIVERS FOR WINDOWS 95



	Paragon 600/2 SP	Paragon 800 SP	Paragon 1200 SP
OPTICAL RESOLUTION:	300x600dpi	400x800dpi	600x1200dpi
INTERPOLATED RESOLUTION:	4800dpi	6400dpi	9600dpi
COLOUR DEPTH:	24-bit	30-bit	30-bit
FREE SOFTWARE:	ImagePals GO! TextBridge OCR £239+VAT	ImagePals GO! TextBridge OCR £299+VAT	ImagePals GO! TextBridge OCR £449+VAT
	Transparency adaptor for 600/2.....£139+VAT Automatic sheet feeder for 600/2...£195+VAT	Transparency adaptor for 800 & 1200£155+VAT Automatic sheet feeder for 800 & 1200...£249+VAT	

"Excellent value for money. The works for only £700." December 1993
PERSONAL COMPUTER

"The MFS6000C is a quality piece of hardware... Superb results."
April 1993
Personal Computer World

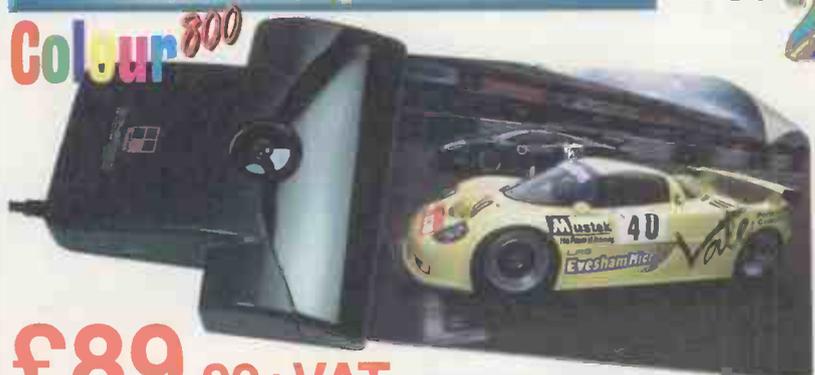
"The Mustek MFS-1200CX provides a good set of features at the lowest price in the test group... If you need an inexpensive high-resolution scanner, then the Mustek MFS-1200CX should be on your shortlist."
October 1994
PC MAGAZINE

Requirements: '386 or higher, Windows 3.1x, Mouse, Hard Drive and 256 colour SVGA graphics or higher. 600dpi model needs at least 4Mb RAM, other models need at least 8Mb RAM.

BIRMINGHAM

COLOUR HAND SCANNER

True **24-bit** colour, **800dpi**



£89.99+VAT or with 'parallel port' interface (see below) **£139.00+VAT**

COLOUR SCANNER FEATURES:

- Colour mode gives genuine 16 million colour, 800dpi scanning
- Greyscale mode with true 256 greyscales at up to 800dpi
- Halftone and Line-art modes at up to 800dpi

PACKAGE INCLUDES:

- HAND-HELD COLOUR SCANNER & INTERFACE CARD
- 'iPhoto Plus' top professional Windows based image scanning and photograph re-touching software
- 'Recognita GO-CR' powerful OCR Windows software, giving simple, efficient operation with highly effective results

Requires '386 or Higher, Windows 3.1x, at least 4Mb RAM, Mouse, Hard Drive and 256 colour SVGA graphics or higher.

256 GREYSCALE SCANNER

- Genuine 256 greyscale performance – not interpolated from 32 greyscales (Beware: Many scanners advertised as 256 greyscale are 32 greyscale, achieving 256 only by software interpolation)
- Photo-realistic quality monochrome scans, with actual shades and shadows, at up to 400dpi
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- Full 105mm wide scanning head
- Eight selectable scanning resolutions between 100 and 800dpi
- Variable brightness control ● Built-in scan speed indicator
- Includes "iPhoto Plus" top professional Windows based image scanning and photograph re-touching software, and "Perceive OCR" software



with internal interface card **£49.99+VAT**
with 'parallel port' interface (see below) **£99.99+VAT**

Requires '386 CPU or above with Colour Monitor, at least 4Mb RAM, Windows 3.1x, Hard Drive and Mouse.

WHAT PC? BEST BUY

"Superb quality results time after time. The ease of use is commendable and the bundled software offers brilliant value for money... We therefore recommend the Mustek without hesitation."
What PC?, August 1993

A4 COLOUR SHEETFED SCANNER

The simple, effective colour document scanning solution for office and home!

Expand your PC into a multi-purpose office tool – scan documents of all sizes for filing or faxing, or use with a printer for easy copying.

- Genuine 24-bit (16.7 million colour) scanning
- Also scans in 256 greyscale, Halftone and Line-art modes
- Genuine 300dpi resolution, interpolated to 1200dpi
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- 10 sheet automatic document feeder
- Very compact "small footprint" design
- Includes "iPhoto Plus" top professional Windows based image scanning and photograph re-touching software, and "Wordlinx" OCR software



with internal interface card **£169.00+VAT**

Requires '386 CPU or above with Colour Monitor, at least 4Mb RAM, Windows 3.1x, Hard Drive and Mouse.

SCAN SAMPLE SERVICE

TRY BEFORE YOU BUY To help with your choice of scanner we have prepared a sample disk pack (3 1/2" disks) for the scanners featured on this page. Each sample pack contains several images (Including the Car) scanned in various modes to provide an exact representation of each unit's capabilities – before you buy. A fact sheet is also included containing loading instructions, scanning info., and printed originals produced by the scanner of your choice for comparison. Please state which scanner you are interested in (greyscale, colour or flatbed).



Cost Per Pack **£5.00+VAT** incl delivery. Refundable on purchase of a scanner.

EXTERNAL SCANNER INTERFACE

Connect your scanner to your printer port!

This compact in-line interface box does away with the need to install an expansion card for your scanner, by simply plugging into the Parallel port – ideal for anyone who wants to transfer their scanner quickly between computers, as well as notebook owners and those who have simply run out of expansion ports. It has a throughport for printer operation (not suitable for bi-directional printers). Compatible with the Mustek Black & White, Greyscale, & 24-bit Colour hand-held scanners.



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- Wide selection of scalable fonts
- 512k built-in RAM, 32k buffer
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- 3 year manufacturer's warranty

HP DeskJet 660C

Inkjet Printer

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- 600 x 600dpi for precise black
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- Simultaneous use of black and colour cartridges
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- Prints on plain, glossy or recycled paper, transparencies, envelopes and labels
- Wide selection of Scalable fonts
- HP PrintSmart for Windows
- 512k built-in RAM, 32k buffer
- 3 Year manufacturer's Warranty

HP DeskJet 850C

Inkjet Printer

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PC MAGAZINE EDITOR'S CHOICE

HP DeskJet 850C "It's output was superb, it has performance and terrific features on its side, and it's economical to run. Its enhanced colour resolution of 800-by-800dpi out specifes any other printer. ... Few will be disappointed after buying this printer." October 1995

- 600 x 600 dpi black
- 300 x 300dpi colour printing
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- 6ppm black, up to 3ppm colour
- Print on plain, glossy or recycled paper, transparencies, envelopes and labels
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- 1000 page per month duty cycle
- 1 year manufacturer's warranty

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Inkjet Printer, Scanner, Fax

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 Pace NetLink 32 Internet pack Category 2 £79.00 +VAT
 Pace NetLink Gold 34 Cat 2 from £135.00 +VAT
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 V22bis modem, V29 Fax, PCMCIA from £25.00 +VAT
 V32bis modem, V17 Fax from £69.00 +VAT
- OTHERS**
 Iomega 800Mb tape drive (connects to parallel port) Category 2 £109.00 +VAT
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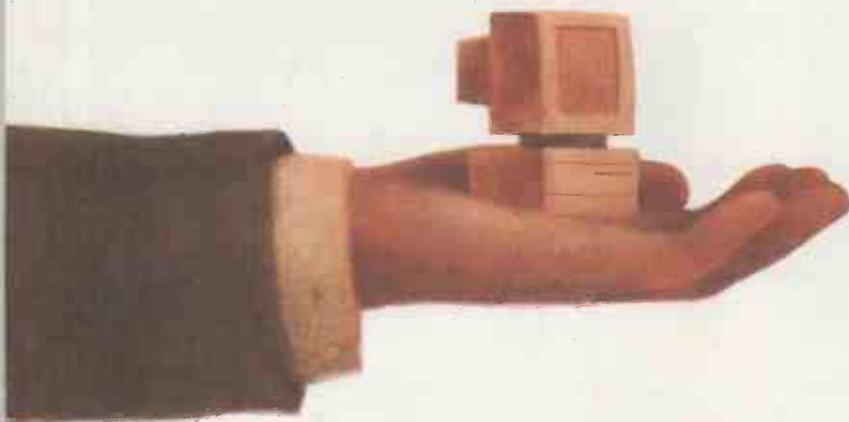
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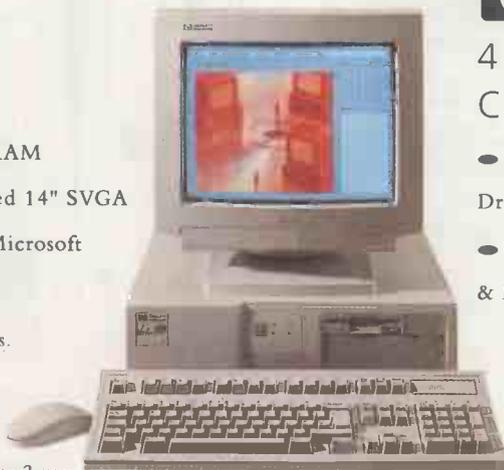
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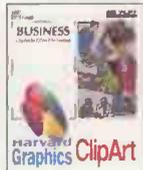
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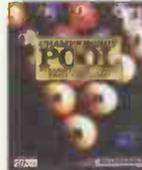
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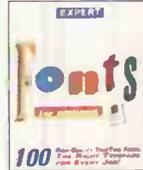
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MS AutoRoute Express Europe 3.5.....	£34	£39.95
MS Bookshelf Win 95.....	£39	£45.83
MS Beethoven Win CD.....	£19	£22.33
MS Best of Entertainment Win.....	£10	£11.75
MS Creative Writer Win.....	£19	£22.33
MS Dinosaurs Win CD.....	£19	£22.33
MS Dogs CD.....	£19	£22.33
MS Encarta 96 Win CD.....	£32	£37.60
MS Explorapead.....	£19	£22.33
MS Fine Artist v1 Win CD.....	£25	£29.38
MS Flight Simulator v5.1.....	£25	£29.38

Microsoft Money

	Price	inc VAT
MS G Wilson Haunted House Win.....	£24	£28.20
MS Golf v2 Win.....	£20	£23.50
MS Magic Bus - Human Body.....	£26	£30.55
MS Magic Bus - Solar System.....	£25	£29.38
MS Mozart Win CD.....	£19	£22.33
MS Musical Instruments.....	£19	£22.33
MS Multimedia Viewer v2 CD.....	£184	£216.20
MS National Art Gallery Win CD.....	£27	£31.73
MS Scenes Sierra Club.....	£13	£15.28
MS Scenes Outer Space.....	£13	£15.28
MS Scenes Impressionist.....	£13	£15.28
MS Sound Bits MGM Win.....	£13	£15.28
MS Sound Bits World Win.....	£13	£15.28
MS Sound Bits Hanna Barbara Win.....	£13	£15.28
MS Stravinski CD.....	£19	£22.33
MS Wine Guide.....	£20	£23.50
MS Oceans.....	£18	£21.15
MS How the Leopard got its spots.....	£20	£23.50
MS Creative Writer CD and Fine Artist.....	£38	£44.65
MS Easyball and Explorapead.....	£29	£34.08
MS Fury & MS Sidewinder.....	£49	£57.58
MS 3D Moviemaker NEW.....	£29	£34.08
MS Fury.....	£29	£34.08
MS Sidewinder.....	£26	£30.55
MS Money.....	£19	£22.33



Microsoft Encarta 96 CD

£32
+VAT



Microsoft Access v7 95 CCP

£82
+VAT



Microsoft Word v7 95 CCP

£82
+VAT



Microsoft Office 95 Professional CCP

£204
+VAT



Microsoft Publisher

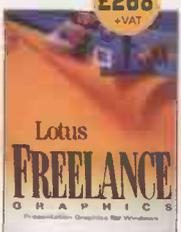
£61
+VAT

Lotus



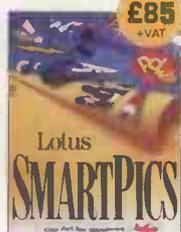
Lotus SmartSuite 96 special price for users of any Lotus product

£189
+VAT



Lotus Freelance graphics

£268
+VAT



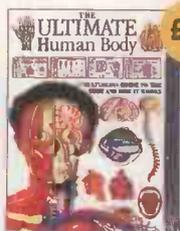
Lotus SmartPics

£85
+VAT

Lotus SmartSuite 96

- Includes five full-powered, top-rated applications: spreadsheet, word processor, database, presentation graphics and personal/group scheduling software.
- Tight integration enables you to complete cross-application tasks quickly and easily.
- Features such as TeamReview, TeamConsolidate and TeamMail help groups of people to work together more effectively.
- Lotus SmartCenter, your SmartSuite command center, helps you store, organise and access your applications, files, e-mail, documentation, help services and more.
- SmartSuite takes full advantage of Windows® 95, and has all of the productivity tools you need to get your job done.

	Price	inc VAT
1-2-3 v5 for Win.....	£230	£270.25
1-2-3 v5 upgrade.....	£89	£104.58
Approach v3 for Win.....	£85	£99.88
Freelance v2.1 Win.....	£268	£314.90
Freelance v4.0 DOS.....	£239	£280.83
Graph Writer v1.0.....	£99	£116.33
Manuscript v2.1.....	£269	£316.08
Organizer v2.1.....	£85	£99.88
ScreenCam.....	£85	£99.88
SmartPics.....	£85	£99.88
SmartSuite v4.....	£189	£222.08
Symphony v3.....	£99	£116.33
Word Pro Win.....	£79	£92.83
SmartSuite 96 3.5".....	£189	£222.08
SmartSuite 96 CD.....	£Call	



The Ultimate Human Body

£31
+VAT



Quicken v5 for Windows

£29
+VAT



Quicken v5 Deluxe

£45
+VAT

DORLING KINDERSLEY

	Price	inc VAT
Encyclopedia of Nature.....	£31	£36.43
Encyclopedia of Science.....	£31	£36.43
History of the World.....	£31	£36.43
PB Bears Birthday.....	£21	£24.68
The Ultimate Human Body.....	£31	£36.43
The Way Things Work.....	£31	£36.43
World Reference Atlas.....	£37	£43.48

BRODERBUND

Just Grandma and Me.....	£24	£28.20
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QUICKEN

	Price	inc VAT
Kid pick Studio.....	£24	£28.20
Arthur Teacher Trouble.....	£27	£31.73
Myst for Windows.....	£31	£36.43
Ruffs Bone.....	£31	£36.43
QuickBooks v3.....	£95	£111.63
Quicken v5.....	£29	£34.08
Quicken v5 Deluxe.....	£45	£52.88

SAGE

Ster Accountant Plus DOS v8.....	£275	£323.13
Ster Financial Controller.....	£535	£628.63
Ster Payroll II for Win v8.....	£139	£163.33

QUICKEN DELUXE

	Price	inc VAT
Ster Payroll II for DOS.....	£139	£163.33
Ster Bookkeeper DOS v8.....	£90	£105.75
Ster Job Costing.....	£109	£128.08
Ster Instant Accounting.....	£89	£104.58
Ster Accountant v8.....	£189	£222.08
Ster Instant Payroll.....	£69	£81.08
Ster +3 Accountant Plus.....	£272	£319.60
Ster +3 Bookkeeper.....	£89	£104.58
Ster +3 Account.....	£195	£229.13
Ster +3 Financial Controller.....	£375	£440.63
Global Beach Interactive Ferrari.....	£18	£21.15

PERIPHERALS



£137
+VAT

Omega Zip Drive

TAPE DRIVES & MEMORY

Tape Streamers Price inc VAT

Jumbo 1.4Gb	£185	£217.38
Omega Ditto 800Mb Int	£120	£141.00
Omega Ditto 3.2Gb Int	£199	£233.83
Omega Zip Drive Ext. Par	£137	£160.98
Omega Zip Drive Ext. SCSI	£137	£160.98
Traven T1000 800Mb	£105	£123.38
Traven T1000 E	£125	£146.88
Cartridges for above		ECall
HP Surestore CD writer		
4020i	£629	£739.08

Includes: SCSI-2 Controller card, 2 blank CD-R disks, 4x CD reader, 2x CD recorder



£550
+VAT

Agfa StudioScan IISI

RAM Memory Price inc VAT

1Mb Standard SIMM	£26	£30.55
4Mb Standard SIMM	£75	£88.13
4Mb 72 pin SIMM	£70	£82.25
8Mb 72 pin SIMM	£140	£164.50

SCANNERS

Agfa Scanners Price inc VAT

StudioScan IISI	£550	£646.25
Arcus II		ECall
SnapScan		ECall
StudioScan		ECall
DuoScan		ECall

HP Scanners Price inc VAT

HP ScanJet 4C PC	£599	£703.83
HP ScanJet 4S PC	£180	£211.50
HP ScanJet 4P PC	£327	£384.23

Epson Scanners Price inc VAT

GTX5000 Parallel	£325	£381.88
GTX5000 SCSI	£370	£434.75
GTX8500 SCSI	£548	£643.90
GTX9000 Parallel	£571	£670.93
GTX9000 SCSI	£650	£763.75
GT3000 Lapcat	£250	£293.75

Logitech Price inc VAT

Scanman 256	£68	£79.90
Scanman Easytouch 256	£98	£115.15



NEC MultiSync XV 15" Monitor

MONITORS Price inc VAT

NEC Monitors

NEC XV14 14"	£210	£246.75
NEC XV15 15"	£270	£317.25
NEC XE17 17"	£685	£804.88
NEC XE21 21"	£1125	£1321.88
NEC XP17 17"	£895	£1051.63

Taxan Monitors

400LR 14"	£177	£207.98
580LR 15" +	£262	£307.85
880LR 17"	£489	£574.58
885LR 17"	£595	£699.13
2100LR 21"	£1435	£1686.13



MrPC 28.8 External Modem

MODEMS Price inc VAT

Zoom		
Zoom 28.8 Int	£139	£163.33

MrPC Modems

14.4 Internal fax/data		
Modem	£59	£89.33
28.8 External fax/data		
Modem	£139	£163.33

US Robotics

Sportster 28.8 Ext	£165	£193.88
Sportster 28.8 PCMCIA		
XJack	£179	£210.33
Courier Turbo v34	Ext £262	£307.85
Courier Turbo v34	Int £280	£329.00
Sportster 14.4 Vi voice		
fax/data ext. Int	£95	£111.63

Pace

MicroIn fax32 int. V32 bis		
fax	£145	£170.38
Linnet 32 plus fx desktop		
V32 bis fax	£159	£186.83
Linnet message desk V32		
fax	£179	£210.33

PRINTERS



£580
+VAT

HP LaserJet 5P



£244
+VAT

Epson Stylus Colour II



£270
+VAT

NEC 610 Laser Plus



£237
+VAT

HP DeskJet 660C

HP LaserJet Price inc VAT

HP LaserJet 5Si	£1969	£2313.58
HP LaserJet 4 Plus	£845	£992.88
HP LaserJet 4M Plus	£1150	£1351.25
HP LaserJet 5SiMX	£2869	£3371.08
HP LaserJet 4V	£1389	£1632.08
HP LaserJet 4MV	£2025	£2379.38
HP LaserJet 5L	£339	£398.33
HP LaserJet 5P	£580	£681.50
HP LaserJet 5MP	£719	£844.83
HP OfficeJet LX	£459	£539.33
HP Colour LaserJet 5		
	£4195	£4929.13
HP Colour LaserJet		
5M	£5199	£6108.83

HP DeskJet Price inc VAT

HP DeskJet 3406 CSF		
	£167	£196.23
HP DeskJet 600	£143	£168.03
HP DeskJet 660C	£237	£278.48
HP DeskJet 850C	£309	£363.08
HP DeskJet 1600C	£812	£954.10
HP DeskJet 1600CM		
	£1218	£1432.33
HP CopyJet	£1949	£2209.08

Epson

DFX - 5000+	£1150	£1351.25
DFX - 8000	£1939	£2278.33
EPL 5500 (1Mb)	£356	£418.30

Price inc VAT

EPL5500 (2Mb)	£415	£487.63
FX870	£238	£279.65
FX1170	£295	£346.63
LX300	£92	£108.10
LX1050+	£179	£210.33
LQ300	£120	£141.00
LQ570+	£207	£243.23
LQ 870	£365	£428.88
LQ - 1070+	£291	£341.93
Stylus 820	£149	£175.08
Stylus 1000	£330	£387.75
Stylus 1500 (A2)	£534	£627.45
Stylus Pro	£344	£404.20
Stylus Pro XL (A3)	£799	£938.83
Stylus Color II	£244	£286.70
Stylus Color IIS	£169	£198.58

Canon Price inc VAT

BJ30	£136	£159.80
BJC7D	£199	£233.83
BJ230	£234	£274.95
BJ300	£344	£404.20
BJ330	£386	£453.55
BJC610	£313	£367.78
BJC210	£168	£197.40
BJC400	£219	£257.33

Printer Options

- Extra toner
- Extra ink cartridges
- Extra ribbons
- Extra software fonts
- RAM upgrades etc

Remember to order with your printer -

PRINTER CLEARANCE

NEC Price inc VAT

P30	£176	£206.80
P72	£370	£434.75
S610 Laser Plus	£270	£317.25
S660 Laser	£384	£415.20
S660i Laser	£540	£634.50
S3000 Colour	£650	£763.75

OKI Price inc VAT

400W GDI page printer	£247	£290.23
600EX page printer	£289	£339.58
610EX page printer	£379	£445.33
Laser 810EX	£570	£669.75

Star

LC 240	£85	£99.88
LC 240C	£99	£116.33
LC 100 sheet feeder	£41	£48.18
LC 240C colour ribbon	£5	£5.88

Citizen

ABC 24 Pin	£99	£116.33
ABC black ribbon	£5	£5.88

MULTIMEDIA / MODEMS



MrPC 14.4 Internal Modem

Operating at the 14.4 kbps standard for business communications, the MrPC internal fax modem offers error control and data compression throughput can easily reach 57,600bps.

£59 +VAT **£69.33** inc. VAT



MrPC 28.8 External Modem

The new MrPC 28,800 v34 external fax/data modem operates at the 28,000bps standard for business communications. This modem is 100% faster than 14.4 kbps modems. With error control and data compression, throughput can easily reach 115,200bps, external only.

£139 +VAT **£163.33** inc. VAT



Intel® PCMCIA Modem

The Intel fax modem is a credit card sized adapter that simply slides into the PCMCIA slot of a notebook computer for instant communications with fax machines and bulletin boards everywhere. The Intel PCMCIA fax modem is a type II card with 2400bps modem and 9600bps fax.

£29 +VAT **£34.08** inc. VAT



Multimedia Kit B

(Quad speed multimedia bundle)

- Quad speed IDE CD-ROM drive
- Connects directly to your IDE hard disk cable
- Audio cable included
- 16-bit Higher performance sound card
- Multimedia software
- Dual stereo speakers and PC joystick
- WinTutor 95 and Infopedia CD

£99 +VAT
£116.33 inc. VAT

Multimedia Kit C

(As kit B but with six speed CD-ROM drive)

£149 +VAT = **£175.08**

Multimedia Kit D

(As kit B but with eight speed CD-ROM drive)

£199 +VAT = **£233.83**



01282 777 888

Blackburn Road, Simonstone, Burnley BB12 7GT. Fax: 01282 777 209

Lines Open: Mon - Fri 9am - 5.30pm, Saturday 9am - 5pm



All prices are subject to VAT (17.5%) and delivery and may change without notice. Goods are normally delivered within a few days of cleared payment. All orders will be fulfilled within 28 days unless otherwise notified. No surcharges are made to Access, Visa, Amex or Switch. Goods are not supplied on a trial basis. Credit account orders are normally 3% extra. Errors and omissions exempted. Business user prices shown. End user enquiries welcome.



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MrPC

Tel: **01282 777 888**

Omega

SYSTEMS FROM MrPC



Omega P75 DT

- Intel® 75MHz Pentium® processor
- Intel socket 7 for future upgradeability
- 8Mb RAM (Max 128MB)
- 850Mb Enhanced IDE hard disk
- 3.5" 1.44Mb Floppy drive
- Enhanced parallel and 2 high speed serial ports
- Integrated 64-bit graphics (uses 1Mb RAM)
- Graphics chip supports motion video acceleration
- 14" High resolution .28dp NI SVGA screen
- Omega desktop system with 7 drive bays.
- PC Keyboard (mouse optional extra)

Multimedia models are £99 +VAT (£116.33 inc. VAT) extra and include quad speed IDE CD-ROM drive, 16-bit stereo sound card and twin stereo speaker system

Omega P100 DT

- Intel 100MHz Pentium processor
- Intel socket 7 for future upgradeability
- 8Mb RAM (Max 128Mb)
- 850Mb Enhanced IDE hard disk
- 3.5" 1.44Mb Floppy drive
- Enhanced parallel and 2 high speed serial ports
- Integrated 64-bit graphics (uses 1Mb RAM)
- Graphics chip supports motion video acceleration
- 14" High resolution .28dp NI SVGA screen
- Omega desktop system with 7 drive bays.
- PC Keyboard (mouse optional extra)

Multimedia models are £99 +VAT (£116.33 inc. VAT) extra and include quad speed IDE CD-ROM drive, 16-bit stereo sound card and twin stereo speaker system

Omega P120 DT

- Intel 120MHz Pentium processor
- Intel socket 7 for future upgradeability
- 8Mb RAM (Max 128Mb)
- 850Mb Enhanced IDE hard disk
- 3.5" 1.44Mb Floppy drive
- Enhanced parallel and 2 high speed serial ports
- Integrated 64-bit graphics (uses 1Mb RAM)
- Graphics chip supports motion video acceleration
- 14" High resolution .28dp NI SVGA screen
- Omega desktop system with 7 drive bays.
- PC Keyboard (mouse optional extra)

Multimedia models are £99 +VAT (£116.33 inc. VAT) extra and include quad speed IDE CD-ROM drive, 16-bit stereo sound card and twin stereo speaker system

£699

+VAT

£821.33 inc. VAT

£729

+VAT

£856.58 inc. VAT

£779

+VAT

£915.33 inc. VAT



MrPC DESKTOP SPECIAL OFFERS

These desktop systems are fully configured with quad speed multimedia and software and are available ready to ship at these special prices.

P75 Multimedia desktop

Multimedia model as above with:-

- 75MHz Pentium processor
- 8Mb RAM
- 850Mb Hard disk
- 14" NI screen
- PC Keyboard (mouse £9+VAT extra)
- Quad speed CD-ROM drive
- 16-bit sound card
- Stereo speakers
- PC DOS and shareware games
- Free OS/2 software bundle (on separate partition)

£769

+VAT

£908.58 inc. VAT

Windows® 95 model

As above but with Microsoft® Windows 95, Lotus Windows 95 software suite (instead of PC DOS and OS/2) plus mouse.

£80

EXTRA +VAT

£94.00 EXTRA inc. VAT



Omega P100 MT

- Intel 100MHz Pentium processor
- Intel socket 7 for future upgradeability
- 8Mb RAM (max 128Mb)
- 256k Pipeline burst cache
- 1Gb (1024Mb) Enhanced IDE hard disk
- 3.5" 1.44Mb Floppy drive
- Enhanced parallel and 2 high speed serial ports
- Integrated 64-bit graphics (uses 1Mb RAM)
- Graphics chip supports motion video acceleration
- 14" High resolution .28dp NI SVGA screen
- Omega mini tower system with 8 bays.
- PC keyboard (mouse optional extra)

Omega P133 MT

- Intel 133MHz Pentium processor
- Intel socket 7 for future upgradeability
- 8Mb RAM (max 128Mb)
- 256k Pipeline burst cache
- 1Gb (1024Mb) Enhanced IDE hard disk
- 3.5" 1.44Mb Floppy drive
- Enhanced parallel and 2 high speed serial ports
- Integrated 64-bit graphics (uses 1Mb RAM)
- Graphics chip supports motion video acceleration
- 14" High resolution .28dp NI SVGA screen
- Omega mini tower system with 8 bays.
- PC keyboard (mouse optional extra)

Multimedia models are £99 +VAT (£116.33 inc. VAT) extra and include quad speed IDE CD-ROM drive, 16-bit stereo sound card and twin stereo speaker system

£789 +VAT

£927.08 inc. VAT

£889 +VAT

£1044.58 inc. VAT



MrPC MINI TOWER SPECIAL OFFERS

These mini tower systems are fully configured with a massive 16Mb RAM, burst mode cache, quad speed multimedia and software and are available ready to ship at these special prices

P100 Multimedia mini tower

Multimedia model as above with:-

- P100 Processor
- 16Mb RAM
- 256k Burst cache
- 1GB (1024Mb) hard disk
- 14" NI screen
- PC keyboard (mouse £9+VAT extra)
- Quad speed CD-ROM
- 16-bit sound card
- Stereo speakers
- PC DOS & shareware games
- Free OS/2 software bundle (on separate partition)

£969 +VAT

£1138.58 inc. VAT

Windows 95 Model

As above but with 850Mb hard disk, 14.4 fax/data modem, Microsoft Windows 95, Lotus Windows 95 software suite (instead of PC DOS and OS/2) plus mouse

£80 EXTRA +VAT

£94.00 EXTRA inc VAT



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Blackburn Road, Simonstone, Burnley BB12 7GT. Fax: 01282 777 209

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MrPC Tailor Made Systems

Simply specify your required configuration of Omega system using the five stage process listed below. These systems do not include the free software included with our best buy multimedia systems listed.

1A. Select the processor base system

All bases include 1.44Mb floppy drive, 8Mb RAM, Integrated 64-bit SVGA graphics (uses 1Mb of RAM), enhanced IDE controller, fast serial and parallel ports and 102 keyboard.

	Price	inc VAT
Desktop model	£319 +VAT	£374.83
Mini tower model	£349 +VAT	£410.08

(Mini tower models now include 256k burst cache)

1B. Select the processor

Intel P75	£90 +VAT	£105.75
Intel P100	£120 +VAT	£141.00
Intel P120	£170 +VAT	£199.75
Intel P133	£220 +VAT	£258.50
Intel P150	£320 +VAT	£376.00
Intel P166	£470 +VAT	£522.25

2. Select the Enhanced IDE hard disk

850Mb	£130 +VAT	£152.75
1.0Gb	£160 +VAT	£188.00
1.6Gb	£210 +VAT	£246.75
2.0Gb	£260 +VAT	£305.50

3. Select the screen

All screens are SVGA NI colour.

14" SVGA .28dp	£160 +VAT	£188.00
15" SVGA .28dp	£230 +VAT	£270.25
17" SVGA .28dp	£460 +VAT	£540.50

4. Select the CD/multimedia options

Quad speed CD-ROM drive	£50 +VAT	£58.75
Six speed CD-ROM drive	£100 +VAT	£117.50
Eight speed CD-ROM drive	£150 +VAT	£176.25
16-bit Sound card	£30 +VAT	£35.25
4w Speakers	£10 +VAT	£11.75
15w Speakers	£30 +VAT	£35.25
70w Speakers	£60 +VAT	£70.50

5. Additional options

Windows 3.1	£29 +VAT	£34.08
MS DOS 6.22 & Windows 3.11 for Workgroups	ECall	
Windows 95	ECall	
RAM upgrade per 4Mb	£75 +VAT	£88.13
800Mb tape back-up	£150 +VAT	£176.25
3.2Gb tape back-up	£220 +VAT	£258.50
9624 Fax/data modem	£35 +VAT	£41.13
14.4 Fax/data modem	£70 +VAT	£82.25
28.8 Ext. fax/data modem	£140 +VAT	£164.50
Standard mouse	£9 +VAT	£10.58
Deluxe mouse	£19 +VAT	£22.33
Mouse mat	ECall	



Terms & Conditions: All prices exclude delivery and VAT at 17.5%. Courier delivery for systems is £25 +VAT. Prices and specifications are subject to change. Please check prior to ordering. Good are normally despatched within a few days of cleared payment. All orders will be fulfilled within 28 days unless otherwise notified. No surcharges are made to VISA, ACCESS, American Express or Switch. Goods are not offered on a trial basis. Credit account orders are normally 3% extra. Monitor Screen sizes are normally shown as the CRT tube size. Prices shown here are for business users and exclude VAT. Prices and specifications are subject to change. All goods sold subject to our conditions of sale copies of which are available at request. All trademarks acknowledged. E&OE.



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HEWLETT-PACKARD

HP DESKJET 340

£167 +VAT
£196.23 inc. VAT



- Superb portable with optional auto sheet feed and colour kit
- Prints up to 3ppm
- 600 x 600 dpi
- 6 Built-in fonts
- Built-in sheet feeder

Options
Colour kit.....£38 +VAT = £44.65 inc. VAT

HP DESKJET 600

£143 +VAT
£168.03 inc. VAT



- Standard HP DeskJet for affordable, high quality business printing
- 14 scalable fonts
- 16Kb buffer
- Prints up to 3ppm
- 600 x 600 dpi
- Built-in sheet feeder
- 3 year warranty

HP DESKJET 660C

£237 +VAT
£278.48 inc. VAT



- Colour DeskJet with simple operation and exceptional quality output
- 80Kb Buffer
- Prints up to 4ppm
- 600 x 300 dpi
- 6 Built-in typefaces
- Built-in sheet feeder
- 3 year warranty

HP DeskJet 850C...£314 +VAT = £368.95 inc. VAT

HP LASERJET 5L

£339 +VAT
£398.32 inc. VAT



- Entry level with 26 scalable fonts
- Prints upto 4ppm
- 300 dpi
- 1Mb RAM
- Max 8000 page per month

HP OFFICEJET LX

£459 +VAT
£539.33 inc. VAT



The HP OfficeJet combines printer, fax, PC fax, copier and scanner in one neat stylish package which is absolutely ideal for the small business or home office

HP DeskJet 1600C.....£814+ VAT = £956.45 inc. VAT
HP DeskJet 1600CPS. £1217+ VAT = £1429.97 inc. VAT

HP LASERJET 5P

£580 +VAT
£681.50 inc. VAT



- Entry level with 45 scalable fonts
- Prints upto 4ppm
- 600dpi
- 2Mb RAM

HP LaserJet 5MP....£709 + VAT = £833.07 inc. VAT

HP LASERJET 4 PLUS

£845 +VAT
£992.88 inc. VAT



- Ideal for business with 35 scalable fonts
- Prints upto 12ppm
- 600 dpi
- 2Mb RAM

HP LaserJet 4M Plus...£1150 +VAT =£1351.25 inc. VAT
HP LaserJet 4V.....£1389 +VAT =£1632.08 inc. VAT
HP LaserJet 4MV.....£2025 +VAT =£2379.38 inc. VAT

HP COPYJET

£1949 +VAT
£2290.07 inc. VAT



- Printer 7ppm black / 1ppmcolour / copier 4cpm black / 1cpm colour
- Text enhancement
- Enlarge / reduce scaling
- 1-99 Multiple copies and 180 sheet high capacity tray

HP LASERJET 5Si

£1969 +VAT
£2313.58 inc. VAT



- High speed with 45 scalable fonts
- Prints up to 16ppm
- 600 dpi
- 4Mb RAM
- Network printer

HP LASERJET 5Si MX

- As above with PostScript and 12Mb RAM

.....£2899 +VAT = £3406.32 inc. VAT

HP SUPPORTPACK

Prices vary with printer
CALL for details



- 3 year on-site maintenance
- Removes the trouble of arranging repairs
- Makes service support a fixed, known cost
- Prompt service when you need help
- Excellent value for money, no hidden costs
- Direct phone number for service

Telephone:

01282 777 888



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Saturday 9am-5pm

Blackburn Rd, Simonstone, Burnley, BB12 7GT. Fax: 01282 777 209

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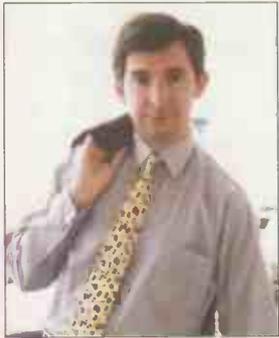
All prices are subject to VAT (17.5%) and Delivery and may change without notice. Goods are normally delivered within a few days of cleared payment. All orders will be fulfilled within 28 days unless otherwise notified. No surcharges are made to Access, Visa, Amex or Switch. Goods are not supplied on a trial basis. Credit account orders are normally 3% extra. Errors and omissions exempted. Business user prices shown. End user enquiries welcome.

MRPCHPBA

MEMORY BANK

at Powermark

WELCOME TO MEMORY BANK



I'm passionate about my company. I feel that it is important that the culture and ethos of the organisation is clear to you, our customers.

Mark Simon

Mark Simon
Chairman, Powermark plc



We've moved!

Memory Bank has moved to new, 28,000 sq.ft. purpose designed headquarters. The Powermark Centre is easy to get to and there is plenty of parking for personal callers.

Memory Bank, The Powermark Centre, The Waterfront, Elstree Road, Elstree, Herts WD6 3RP

New! Voice • Data • Fax • Message Modem

- DSVD - Digital Simultaneous Voice and Data
- Digital telephone and answering machine
- Built-in audio/midi 16-bit sound card

Windows 95
compatible

No other modem offers all these features!

Internet ready!

All the features of our standard 28.8 internal modem plus:

- Auto start modem in Windows
- Telegaming
- Fast configuration for games, audio, telegaming and modem in DOS
- On-line general help with context specific links
- Hardware configuration viewer

DIGITAL TELEPHONE AND ANSWERING MACHINE

- Full duplex speakerphone
- Automatic data/fax/voice discriminator
- Full featured call progress support, mute, music on hold, do not disturb
- Digital answering machine with 5:1 real time compression
- Variable speed message playback
- Remote message retrieval

AUDIO/MIDI SOUND CARD BUILT-IN

- 16-bit MPC level 2 compatible
- SoundBlaster Pro and Windows Sound System 2 compatible
- 32 voice wavetable synthesis
- CD audio playback

Introductory price only
£155

- On-screen audio mixer with VU meter
- MIDI Port (16 channels, in /out /through)
- Many sound and special effects

DSVD (Digital Simultaneous Voice and Data)

- Send data whilst talking on the same line
- Support for personalised helpdesk applications
- Pre-ITU standard Mwave DSVD at 14.4 Kbps
- Compatible with standard data modem applications

PACKAGE INCLUDES
Trio voice/fax/data software
Pipex Dial Trial
Compuserve Trial Pack
Tel-Me Lite
Comprehensive user manual
Telephone cable
10 year limited warranty

MBMOD288/V INTRODUCTORY PRICE £155

BANK

at
Powermark

MATCHED MEMORY THE LARGEST DIRECT MEMORY SUPPLIER

MATCHED MEMORY UPGRADES FOR TOSHIBA

Lower Prices

T1000/E/XE/LE, T1800, T1850C, T2000SX, T2000SXE, T2200SXE

2MB Card **HYPERCUT!** £29
4MB Card £113
8MB Card £212

T1600

2MB Card **HYPERCUT!** £69

T2100, T2100CS

4MB Card £139
8MB Card £255
16MB Card £499

T2105CS, T2130CS, CT, T2150 CDT

4MB Card £139
16MB Card £499

T2400CS, T2450, T2400CT, T3600

4MB Module £139
8MB Module **HYPERCUT!** £259

T3200SX/C

4MB Module £121

T3300SL

4MB Card **HYPERCUT!** £115

T4400, T6400 SX/C, DX/C

4MB Card £135
8MB Card **HYPERCUT!** £265

T1900, T1910, T1950CT, T1960, T3400CT, T4500, T4600, T4700CT, T4800CT,

4MB Module £159
8MB Module £279
16MB Module £499

T4850/4900

8MB £269

T5200/C & T8500/6400/6600

8MB Module £375
16MB Module £447

DYNAPAD T100X

6MB Card £219

DYNAPAD T200, T200CS

4MB Module £139

PROTEGE 610CT, T2130CS

8MB Module £329
16MB Module £599

NEW! SATELLITE PRO 400, 410 CDT

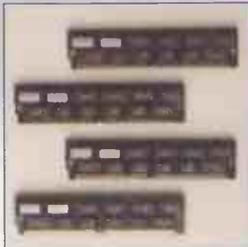
8MB Module £299

NEW! TECRA 700CT

8MB £359
16MB £619
32MB £1199

MATCHED MEMORY UPGRADES FOR HP

Lower Prices



• Authorised HP dealer
HP VECTRA 386/25 PC, 486 PC, 486s/20

4MB Kit £109
8MB Kit £185

HP VECTRA VL3 S/75/90/100, VE SERIES

8MB Kit £139
16MB Kit £269

HP VECTRA XU 5/75/90/100 VE SERIES

4MB Kit £69
8MB Kit £139
16MB Kit £259

HP VECTRA 500

8MB Kit £139
16MB Kit £269

HP PENTIUM PRO 180MHz/200ms

8MB Kit £149
16MB Kit £269
32MB Kit £599
64MB Kit £1349

HP NETSERVER 486 SERIES

8MB Kit £169
16MB Kit £299

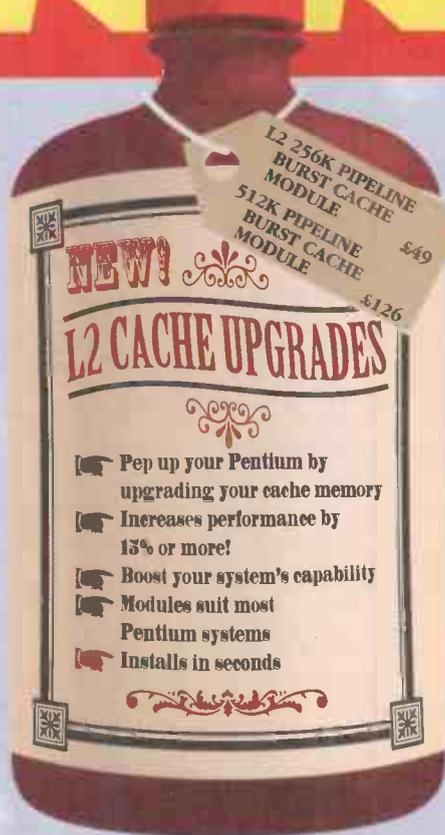
HP OMNIBOOK 530, 630C SERIES

4MB Module £149
8MB Module £289

NEW! HP OMNIBOOK 4000 SERIES

8MB Kit £215
16MB Kit £399

LIFETIME WARRANTY ON ALL MATCHED MEMORY



NEW! L2 CACHE UPGRADES

- Pep up your Pentium by upgrading your cache memory
- Increases performance by 15% or more!
- Boost your system's capability
- Modules suit most Pentium systems
- Installs in seconds

MATCHED MEMORY UPGRADES FOR OLIVETTI

Lower Prices

ECHOS P75/P90/P90S

4MB Kit £129
8MB Kit £289
16MB Kit £469

M290

4MB Kit **POWERCUT!** £129

M486/CP486

4MB Kit £120

PCS 11, 33

8MB Kit £179

M300-30

4MB Kit £99
8MB Kit £189

M400-10/40/60

4MB Kit £99
16MB Kit £366

MODULO RANGE

4MB Module £89
8MB Module £159
16MB Module £377

SUPREMA M6-600, 700

4MB Module £89
8MB Module £159

PCI/ISA PENITUMS

8MB Kit £138
16MB Kit £259

MATCHED MEMORY UPGRADES FOR ELONEX

Lower Prices

PC386SXM, SXB, 386/16, B/33

4MB Kit £119
8MB Kit £199

PC386 V/E, 486 V/E

4MB Kit **POWERCUT!** £119
8MB Kit **POWERCUT!** £169
16MB Kit **POWERCUT!** £319

WS RANGE

4MB Kit £89
8MB Kit £169
16MB Kit £389

PC433M, 450M, 466M

4MB Kit £119
8MB Kit £209
16MB Kit £369

PC-500 SERIES, PC-560M

8MB Module **POWERCUT!** £169
16MB Module £384

ELONEX 560F EISA

8MB Kit £169
16MB Kit £319

PC 575M/1, PC5120M/1, PC5133M/1

8MB Kit £129
16MB Kit £259

REGULAR SIMMS

30 PIN SIMMS

Type	Capacity	Speed	Price
256K x 9	256K	100ns	£11
256K x 9	256K	80ns	£11
256K x 16	256K	70ns	£20
1M x 9	1MB	80ns	£30
1M x 9 (SIP)	1MB	70ns	£37
1M x 9 (9cs)	1MB	70ns	£31
1M x 9 (3cs)	1MB	70ns	£26
1M x 9 (3cs)	1MB	60ns	£29
4M x 9 (3cs)	4MB	70ns	£84

Type	Capacity	Speed	Price
4M x 9	4MB	70ns	£84
4M x 9	4MB	60ns	£92
16M x 9	16MB	70ns	£429
16M x 9	16MB	60ns	£519

GOLD EDGED SIMMS

• Specified by many PC manufacturers - longer MTBF

1M x 9	1MB	70ns	£33
1M x 9	1MB	60ns	£43

72 PIN SIMMS

Type	Capacity	Speed	Price
256K x 36	1MB	70ns	£45
512K x 36	2MB	80ns	£74
1M x 32	4MB	70ns	£58
1M x 32	4MB	60ns	£69
1M x 36	4MB	80ns	£79
1M x 36	4MB	70ns	£73
1M x 36	4MB	60ns	£89
2M x 32	8MB	60ns	£129
2M x 32	8MB	70ns	£119
2M x 36	8MB	70ns	£139

Type	Capacity	Speed	Price
2M x 36	8MB	60ns	£149
4M x 32	16MB	70ns	£268
4M x 36	16MB	70ns	£334
4M x 32	16MB	60ns	£239
8M x 32	32MB	60ns	£539
8M x 32	32MB	70ns	£539
8M x 36	32MB	70ns	£639
8M x 36	32MB	60ns	£799
16M x 36	64MB	60ns	£1999

72 PIN EDO SIMMS

1M x 32 EDO	4MB	60ns	£43
2M x 32 EDO	8MB	60ns	£128
4M x 32 EDO	16MB	60ns	£285

72 PIN DIMMS

1M x 32	4MB	70ns	£109
2M x 32	8MB	70ns	£259
4M x 32	16MB	70ns	£419

Major market instability!
CALL FOR LATEST PRICES



Public Sector customers can purchase through HMSO by calling 01603 694153.

After Sales Technical Support
Telephone 0181-956 7711
Fax 0181-956 7478

Technical Sales
Order Lines

0181-956 7000
(100 lines)

MEMORY



Certificate no. FS 26535
We are regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

ISO9002 (Formerly BS5750) registered for the supply of computer, printer and workstation memory, processor and other upgrades.

HUGE STOCKS
Guaranteed next working day delivery on virtually all stock items for orders placed even up to 5.00pm.

TECHNICAL SALES PEOPLE
Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

FINANCIAL STABILITY
Memory Bank is the direct division of Powermark plc which has been supplying upgrades for over 5 years and has an annual turnover exceeding £23 million with a healthy balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices.

TECHNICAL SUPPORT
Dedicated after sales technical support teams on line to help with installation.

Major market instability! CALL FOR LATEST PRICES

VERY WELCOME
Save on delivery charges. We have plenty of parking too! Telephone the first to check our stock position on the items you want. We're open from 9.00am to 6.00pm Monday to Friday. Saturdays: 10.00am to 2.00pm.

Memory Bank
The Powermark Centre,
The Waterfront, Elstree Road,
Elstree, Hertfordshire WD6 3RP

Technical Sales
Fax 0181-956 7100
Email membank@powermark.com

Educational Sales
Fax 0181-956 7744
Email edsales@powermark.com

Customer Service
Tel 0181-956 7700
Fax 0181-956 7477

MEMORY



MATCHED MEMORY UPGRADES FEATURE

THE LARGEST DIRECT MEMORY SUPPLIER

Every month Memory Bank supply thousands of memory upgrades to thousands of satisfied customers, making us the largest direct supplier of memory in the United Kingdom.

Technical Sales
Order Lines

0181-956 7000
(100 lines)

Educational Sales
Order Lines

0181-956 7890

VISA

MasterCard



... and here's what some of our customers have said ...

Since placing a number of orders with your company I have found the service I have received to be excellent. In particular Andre Mason has been particularly helpful in dealing with my enquiries. Having decided to upgrade my computer I found Andre's advice and clarification invaluable.

The manner, competence, and efficiency of your team has been exemplary in an industry whose service standards in general need great improvement.

D Floyd
Surrey

MEMORY TUNES

When I'm 64 MB
Beatles

I Heard It On The
Banyan-Grape-
Vine
Marvin Gaye

I Shot The Serif
Eric Clapton



MATCHED MEMORY UPGRADES FOR IBM

Lower Prices

- Planar memory plugs directly onto system board
- Price instability - check latest offers on IBM matched memory before ordering



PS/2 30 - 286

2MB **HYPERCUT!** £69

PS/2 55SX, 60, 65SX/57SX/M57

4MB **POWERCUT!** £99

4MB Card **POWERCUT!** £99

8MB Card **POWERCUT!** £169

PS/2 90, 95, 95A

4MB Kit **POWERCUT!** £99

8MB Kit **POWERCUT!** £169

PS/2 95 ARRAY PENTIUM

8MB Kit £249

16MB Kit £548

PS/2 95XP

4MB Module **HYPERCUT!** £129

VALUEPOINT 6381, 6382

4MB **POWERCUT!** £99

8MB **POWERCUT!** £169

VALUEPOINT 6384 RANGE

4MB Kit **POWERCUT!** £99

8MB Kit **POWERCUT!** £169

PENTIUM VALUEPOINT PERFORMANCE SERIES

4MB Kit **POWERCUT!** £99

8MB Kit **POWERCUT!** £169

16MB Kit **POWERCUT!** £389

THINKPAD 300

8MB Module **HYPERCUT!** £229

THINKPAD 345CS/CT

4MB Kit **POWERCUT!** £129

8MB Kit **POWERCUT!** £245

THINKPAD 350, 350C

4MB Kit **POWERCUT!** £129

16MB Kit **POWERCUT!** £449

THINKPAD 355C, 355CS, 360, 360C, 360CS, 730T

4MB Kit £159

8MB Kit £299

THINKPAD 500, 510

4MB Kit **POWERCUT!** £99

8MB Kit **POWERCUT!** £229

THINKPAD 700, 720

4MB Kit **POWERCUT!** £137

8MB Kit **POWERCUT!** £249

THINKPAD 710

4MB Kit **POWERCUT!** £114

8MB Kit **POWERCUT!** £319

THINKPAD 750, 750C, 755C, 755CDV

8MB Kit **POWERCUT!** £275

16MB Kit **POWERCUT!** £499

THINKPAD 760, C, CD

8MB Kit **POWERCUT!** £329

PC466DX2, 100DX4

8MB Module **POWERCUT!** £169

TREKKA

2MB **POWERCUT!** £59

HURDLA, SPRINTA

4MB Kit **POWERCUT!** £119

16MB Kit **POWERCUT!** £389

PS/1 - PRO 486

4MB **POWERCUT!** £99

8MB **POWERCUT!** £179

CONSULTANT, ESSENTIAL, WILLOW, EXPERT SERIES

4MB **POWERCUT!** £99

8MB **POWERCUT!** £179

HOW MUCH MEMORY DO YOU NEED?

Minimum Requirement = Comfort Level = Optimum Performance

Windows 3.1 4 8 16 Numbers indicate Megabytes of memory required

Windows 95 8 12 20

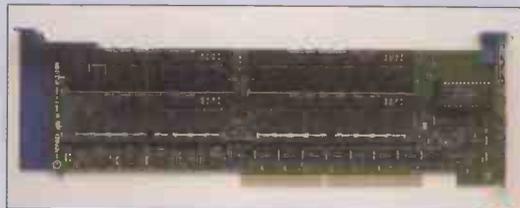
Windows NT 12 16 32

Windows AS 16 32 48

OS/2 Warp 4 12 20

Apple System 7.5 8 12 16

Source: manufacturers' figures



MATCHED MEMORY SIMM KITS

- Include:
- full installation instructions
 - anti-static wrist strap
 - dedicated support hotline
 - our famous double guarantee - full lifetime warranty and our 14 day 'no-quibble' money back guarantee

MATCHED MEMORY UPGRADES FOR IBM

Lower Prices

NEW! APTIVA SERIES

4MB Module **POWERCUT!** £75

8MB Module **POWERCUT!** £139

16MB Module **POWERCUT!** £299

PENTIUM APTIVA

16MB Kit **POWERCUT!** £259

PC 300 SERIES

4MB Module **POWERCUT!** £75

PC 350 SERIES

8MB Module **POWERCUT!** £139

16MB Module **POWERCUT!** £577

PC 700 SERIES

8MB Module **POWERCUT!** £159

1MB VRAM **POWERCUT!** £69

MATHS CO-PROCESSORS

INTEL 80387 SX (16 MHz → 20MHz) £53

INTEL 80387 SL (25 MHz) £53

INTEL 80387 DX (16 MHz → 33MHz) £56

CYRIX 80387 SX (16 MHz → 20MHz) £40

MATCHED MEMORY UPGRADES FOR VIGLEN

Lower Prices

- Complete range for Executive, Professional and Tower

GENIE 386SX

4MB Kit **POWERCUT!** £121

VIG II ELITE

4MB Kit **POWERCUT!** £139

VIG III LS (Type 1)

4MB Kit **POWERCUT!** £109

8MB Kit **POWERCUT!** £229

VIG III/25, III/33

4MB Kit **POWERCUT!** £121

8MB Kit **POWERCUT!** £238

16MB Kit **POWERCUT!** £366

NEW! PENTIUM

75/90/100/135MHz

8MB EDO Kit £135

16MB EDO Kit £269

EX 4DX33/50

4MB **POWERCUT!** £79

8MB **POWERCUT!** £367

VIG 4SX25, 4DX33, 4DX50, 4DX2-50, 4DX2-66

4MB Kit **POWERCUT!** £121

8MB Kit **POWERCUT!** £239

16MB Kit **POWERCUT!** £366

CONTENDER RANGE

4MB **POWERCUT!** £79

8MB **POWERCUT!** £149

GENIE 486VLB RANGE

4MB Module **POWERCUT!** £79

8MB Module **POWERCUT!** £149

16MB Module **POWERCUT!** £367

64MB Kit **POWERCUT!** £349

GENIE PCI RANGE

4MB Module **POWERCUT!** £79

8MB Module **POWERCUT!** £149

16MB Module **POWERCUT!** £367

MATCHED MEMORY UPGRADES FOR APPLE

Lower Prices

- Complete range stocked

Authorised Reseller



Certificate no. FS 26535

BS5750 registered for the supply of computer, printer and workstation memory, processor and other upgrades.

Powermark plc is regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

MATCHED MEMORY UPGRADES FOR APRICOT

Lower Prices

XEN 486SX-25, 486DX2-50, 486 DX2-66, PCM

4MB Module **POWERCUT!** £79

8MB Module **POWERCUT!** £149

16MB Module **POWERCUT!** £367

NEW! SHOGUN SERVER

16MB Kit **POWERCUT!** £289

32MB Kit **POWERCUT!** £699

LIFETIME WARRANTY ON ALL MATCHED MEMORY

MATCHED MEMORY UPGRADES FOR PACKARD BELL

Lower Prices

LEGEND 200/316SX

4MB Kit **POWERCUT!** £125

LEGEND 605, 900

4MB Kit £125

8MB Kit **POWERCUT!** £199

486 VLB, EXECUTIVE, ELITE RANGE

4MB Module **POWERCUT!** £79

16MB Module **POWERCUT!** £249

FORCE RANGE

4MB Kit **POWERCUT!** £79

16MB Kit **POWERCUT!** £249

MULTIMEDIA 486/586 RANGE

8MB Kit **POWERCUT!** £128

16MB Kit **POWERCUT!** £249

BEWARE

Beware of low grade 5 volt notebook

memory that reduces battery life by up to 40%.

Memory Bank only supplies 3.3 volt devices from market leaders with manufacturers' approvals.

memory that reduces battery life by up to 40%.

Memory Bank only supplies 3.3 volt devices from market leaders with manufacturers' approvals.

memory that reduces battery life by up to 40%.

Memory Bank only supplies 3.3 volt devices from market leaders with manufacturers' approvals.

Credit cards are not debited until despatch. VAT at 17.5% will be added to all prices. Non-defective returned goods subject to a restocking fee. Goods are not supplied on a trial basis.

DELIVERY CHARGES
See page 2

EARLY BIRD Order Bonus
See page 20



Everyone at Memory Bank passes through the Powermark Academy

BANK

at Powermark



MATCHED MEMORY UPGRADE FEATURE

THE LARGEST DIRECT MEMORY SUPPLIER

Every month Memory Bank supply thousands of memory upgrades to thousands of satisfied customers, making us the largest direct supplier of memory in the United Kingdom.

PCMCIA MEMORY

- All formats stocked: JEDEC, FLASH, OTPROM, DRAM, etc
- Check compatibility before ordering

256K SRAM	£48
512K SRAM	£74
1MB SRAM	£129
2MB SRAM	POWERCUT! £149
2MB FRAM	£139
4MB FRAM	£349

DRAM

- Call for devices not shown
- Full range of PROMs, SRAMs & ZIPs available
- 5 year warranty

64K x 1	120ns	£1.49
256K x 1	80ns	£2.50
256K x 4	70ns	£3.99
256K x 16	70ns SOJ	£16
1M x 1	80ns	£3.90
1M x 1	70ns	£4.50

VRAM

256K x 8	70ns SOJ	£20
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SRAM

32K x 8	15ns SRAM	£5.99
32K x 9	20ns SRAM	£12
128K x 8	20ns SRAM	£28
8K x 8	15ns SRAM	£8

MATCHED MEMORY UPGRADES FOR HP NOTEBOOKS AND PALMTOPS

Lower Prices

HP OMNIBOOK 300,425 SERIES

4MB Card	POWERCUT! £158
6MB Card	POWERCUT! £221

HP OMNIBOOK 530 SERIES

8MB Card	POWERCUT! £289
12MB Card	POWERCUT! £429

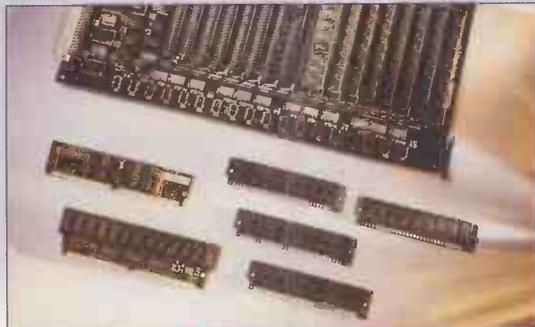
HP 95LX & 100LX

1MB	POWERCUT! £114
-----	-----------------------

**QUALITY!
QUALITY!
QUALITY!**

Being the largest direct supplier means we buy memory direct from world class manufacturers.

Memory Bank only supply factory original memory.



MATCHED MEMORY UPGRADES FOR AST

Lower Prices

ACENTIA 900N, 910N

4MB Module	POWERCUT! £159
8MB Module	POWERCUT! £309

ACENTIA 950

8MB Module	POWERCUT! £299
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BRAVO LCII, III

4MB Module	£99
8MB Module	£179

NEW! BRAVO LCP75, LCP100

8MB Kit	POWERCUT! £179
16MB Kit	POWERCUT! £299

PREMIUM, POWER PREMIUM

8MB Kit	POWERCUT! £249
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POWER EXEC 4/25/33

4MB Module	POWERCUT! £149
16MB Module	£449

BRAVO NOTEBOOK SERIES

4MB Kit	POWERCUT! £97
16MB Kit	POWERCUT! £435

BRAVO MS P/75, PREMMIA GX /P90/P100

8MB Kit	£179
16MB Kit	£299

MATCHED MEMORY UPGRADES FOR NOTEBOOKS & PALMTOPS

Lower Prices

ACERNOTE 730/ 735C/ 760C/ 750/ C

8MB	HYPERCUT! £149
-----	-----------------------

AT&T 200SAFARI 3151

4MB	HYPERCUT! £79
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SANYO 17NB, 18NB

2MB	POWERCUT! £59
4MB	POWERCUT! £119

SHARP PC 7700

4MB	POWERCUT! £119
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SHARP PC 6891

4MB	POWERCUT! £119
-----	-----------------------

PANASONIC CF1000

4MB Module	£198
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PANASONIC CF580

4MB Module	£119
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LIBREX V386SX

1MB → 4MB	£119
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DEC HI-NOTE RANGE

4MB Module	£139
8MB Module	£265

MATCHED MEMORY UPGRADES FOR AMSTRAD

Lower Prices

PC7286, 7386

2MB	£69
4MB	£139

PC7486 SLC

4MB Kit	£139
16MB Kit	£379

PC9486

4MB Kit	£99
16MB Kit	£399

ANB386SX

4MB Module	POWERCUT! £129
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386SX25 MEGA PC

4MB Kit	£129
8MB Kit	£199

NEW! PC9555i

8MB Kit	£167
16MB Kit	£329

MATCHED MEMORY UPGRADES FOR TANDON

Lower Prices

POSITIVE 386SX25, 386DX40, 486SX25, 486DX33

4MB Kit	£121
16MB Kit	£366

MEMORY TOOLS

- Complete range of anti-static products available
- ANTI-STATIC WRIST STRAP
- Essential when handling electrostatic devices £8
- IC EXTRACTOR TOOL £9
- SIMM TESTER £779
- WRIST STRAP TESTER £99



BEWARE

Beware of third party, low grade memory. Memory Bank only supply factory original memory.

MATCHED MEMORY UPGRADES FOR GRAPHICS CARDS

Diamond Stealth 64

1MB DRAM all versions	
1MB Upgrade Kit	£49

Diamond Stealth 64

2MB VRAM PCI and VLB	
1MB Upgrade Kit	£49

Orchid Kelvin 1MB DRAM

ISA and VLB versions	
1MB Upgrade Kit	£49

Taxan GTS Winboost

1MB DRAM PCI, VLB, ISA versions	
1MB Upgrade Kit	£49

Call for video card upgrades not listed here

MATCHED MEMORY UPGRADES FOR ZENITH

Lower Prices

MASTERSPORT SX

2MB	HYPERCUT! £59
-----	----------------------

ZSTAR 433 VL/P

2MB	HYPERCUT! £49
-----	----------------------

Z-NOTE 420/25/33

4MB Module	£149
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SUPERSPORT 386SX

2MB	HYPERCUT! £69
-----	----------------------

Z-SERVER/STATION/ 425/433/450

8MB Module	£279
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Z-SELECT SERIES

8MB Module	POWERCUT! £139
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Z-SERVER LT P60E, EX 450/E RANGE

8MB Kit	POWERCUT! £169
16MB Kit	POWERCUT! £309

Z-NOTEFLEX 486DX 33/50/66/100

8MB Module	POWERCUT! £259
16MB Module	POWERCUT! £444

MATCHED MEMORY UPGRADES FOR ICL

Lower Prices

ERGOPRO C450/75, E450/100

8MB Kit	POWERCUT! £230
16MB Kit	POWERCUT! £390

ERGOPRO X 450/75/ 100/133, X650/100

8MB Kit	POWERCUT! £230
16MB Kit	POWERCUT! £390

DRS 40, 45

2MB Kit	POWERCUT! £78
4MB Kit	POWERCUT! £156

ERGOPRO C4, D4

8MB Kit	POWERCUT! £172
16MB Kit	POWERCUT! £496

DRS M95

4MB Kit	POWERCUT! £540
32MB Kit	POWERCUT! £940

VALUEPLUS DL RANGE

4MB	POWERCUT! £135
-----	-----------------------

ZENO SERIES

4MB Kit	POWERCUT! £135
16MB Kit	POWERCUT! £390

Technical Sales Order Lines

0181-956 7000
(100 lines)

MEMORY

It's time once again to Ponder Memory Moments



with Professor Paul

Dear Professor Paul,
I currently have 4MB of RAM and I am in the process of upgrading my memory. I have heard that EDO is a new form of memory. Can I use this new form or am I tied to standard modules? Any upgrade that I make will mean the removal of the existing SIMMs.
Bemused in Belfast

Dear Bemused,
Perfect timing as I am testing EDO in my laboratory. Technology is a great thing, speed, speed, speed. The answer to your question is "yes", change to the next generation of SIMM. Some Pentium computers come ready equipped with EDO, soon to be the new standard. Two 8MB modules will enhance the performance of your memory and did you know that if you combine EDO SIMMs with burst cache RAM, your PC will fly; the perfect fusion of two elements. I'm thinking EDO, burst cache RAM, maybe Pentium 120, 1GB SCSI hard drive, 16MB RAM, monitor upgrades; with all that power... just think!
Yours, Professor Paul

Send your thoughts and queries to Professor Paul, c/o Memory Bank, The Powermark Centre, The Waterfront, Elstree Road, Elstree, Herts WD6 3RP or fax him on 0181 956 7100. You can also Email Professor Paul on: profpaul@powermark.com
Professor Paul makes every effort to answer your memory problems, but he cannot guarantee to reply to everyone.
Okay - So he's not a real professor but we think he should be!

Memory Bank
The Powermark Centre,
The Waterfront, Elstree Road,
Elstree, Hertfordshire WD6 3RP

Technical Sales
Fax 0181-956 7100
Email membank@powermark.com

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MEMORY



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MATCHED MEMORY UPGRADES FOR IBM PRINTERS

Lower Prices



IBM 4019 & 4019E	
3MB	£140
IBM 4029	
2MB	POWERCUT! £59
IBM 4039 & 4079	
4MB	POWERCUT! £99
8MB	POWERCUT! £159
LEXMARK OPTRA LX/L/R/RX	
4MB	£99
WINWRITER 200/400/600	
2MB	POWERCUT! £59



BEWARE!

Beware of economy memory modules that use ASIC parity generation. Memory Bank only supply SIMMs with genuine parity DRAMs.

MEMORY QUIZ

???????

"Your starter for 10MB"

1. What does MIPS stand for?
2. What does POTS stand for?
3. What does PANS stand for?

Answers on fax form page

MATCHED LASERPRINTER MEMORY

Price instability - check latest offers on laser printer memory before ordering

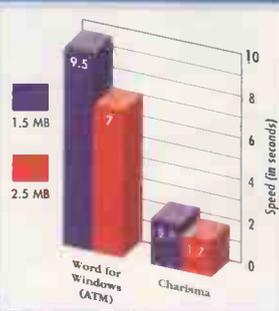
APPLE LASER WRITER	
SELECT 300/310,	
PRO 810, 600/630	
4MB	POWERCUT! £129
BROTHER HL 660, 1260	
2MB	£79
4MB	£119
BROTHER HL8/E/V,	
HL10, DPS	
2MB	£105
CANON NOTEJET 486,	
BN22/BJC-880	
4MB Module	POWERCUT! £119
CANON LBP4, 4+, LITE, SX	
2MB Board	£115
CANON LBP8II	
2MB	£95
CANON LBP8IV	
4MB	POWERCUT! £85
CANON LBP 860, 1260	
4MB	POWERCUT! £89
16MB	POWERCUT! £331
COMPAQ PAGEMARQ 15/20	
8MB Module	£211
16MB Module	POWERCUT! £399
EPSON EPL4000/4100/	
4300/8100	
2MB	£99
EPSON 5500	
1MB Module	£69
2MB Module	£129
EPSON EPL7000	
3MB	£125
EPSON ACTION LASER	
1600/1100	
4MB	£82
FUJITSU VM4, VM8	
4MB Module	£149
KYOCERA F800	
2MB	£109
KYOCERA FS400, 410,	
1500, 1550	
4MB	£89
NEC SILENT WRITER	
95/95FX/97/97FX	
2MB	£85
OKI LASER 400, 410E	
2MB	£105
OKI 800/820	
2MB	£109
OKI LASER 830/840/850	
2MB	HYPERCUT! £79
PANASONIC 4420, 4450i	
2MB	£95
PANASONIC 5410, 4440	
2MB	£109
TEXAS MICROLASER PS,	
MICROWRITER	
1MB	POWERCUT! £59

PRICE INSTABILITY!
CALL FOR LATEST OFFERS ON MEMORY BEFORE ORDERING

LASER PRINTER MEMORY - AN EXPLANATION

Increasing memory in your laser printer will enable it to print large, graphics intensive documents. Additional benefits include faster print spooling, faster printing speed and multiple font downloading.

This chart shows the improvement a single megabyte of printer memory can make. "Speed" represents the amount of time required to spool the document into the printer and get the full use of your PC back.



How much memory do you need?

Full page graphics	1MB - 2MB	4 - 5 PostScript fonts	4MB
Soft fonts	1MB	8 - 10 PostScript fonts	4MB
PostScript cartridge	1.5MB	Network printer sharing	4MB

MATCHED MEMORY UPGRADES FOR HP PRINTERS

Lower Prices



AUTHORISED RESELLER

LASERJET II, IID	
2MB	£109
4MB	£185
LASERJET IIP, III, IID, IIP	
2MB	£89
1MB	£179
LASERJET 5P, 5MP	
4MB	POWERCUT! £99
8MB Module	POWERCUT! £159
LASERJET IIIsi, 4, 4M,	
4si, 4MV, 4MP, 4P, 4V	
4MB	POWERCUT! £99
LASERJET 4L	
1MB	£49
DESKJET 500, 500c, 550	
256K	£39
DESKJET 520, 540, 560C	
256K Kit	£39
DESKJET 660C/PS	
4MB	£99
8MB	£169
DESKJET 1200 C/PS/1200,	
1600C	
2MB	£79
4MB	£99
8MB	£169
NETSERVER SERIES	
32MB Module	£699
DESIGNJET 600/650	
4MB	£99
PAINTJET XL300	
4MB	£99
8MB	£169
HP COLOUR LASERJET	
4MB Module	£99
8MB Module	£169
HP COPYJET, COPYJET M	
NEW! 4MB Module	£85
NEW! 8MB Module	£149
NEW! 16MB Module	£334

MATCHED MEMORY UPGRADES FOR DEC Workstations

Lower Prices

Call for models not listed here

MICROVAX 3100	
MODEL 30 & 40	
8MB Kit	POWERCUT! £379
DEC-SYSTEM 5100	
8MB Kit	POWERCUT! £379
32MB Kit	POWERCUT! £999
ALPHASTATION 200/400	
16MB Kit	POWERCUT! £289
32MB Kit	POWERCUT! £659

MATCHED MEMORY UPGRADES FOR SUN Workstations

Lower Prices

SPARC tested and approved

All Sun memory is individually tested

SPARC 1, 3/60, 3/80, 4/40, 4/60, 4/65, 4/75	
4MB Kit	POWERCUT! £121
16MB Kit	£479
SPARC ELC	
16MB Kit	POWERCUT! £387
SPARC STATION LX	
32MB Kit	POWERCUT! £899
SPARC 330, 370 & 390	
32MB Kit	POWERCUT! £999
SPARC SERVER 630MP,	
670, 690	
64MB Kit	POWERCUT! £1999
SPARCSTATION 10/20	
16MB	POWERCUT! £499

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Being the largest direct supplier means we buy memory direct from world class manufacturers. Memory Bank only supply factory original memory.



MATCHED MEMORY UPGRADES FOR IBM RISC Workstations

Lower Prices

Call for models not listed here

RISC SYSTEM 6000	
32MB Kit	POWERCUT! £1099
64MB Kit	£2199
448MB Kit	£14,619
32MB Memory Board	HYPERCUT! £1999
Memory Board (0MB)	HYPERCUT! £599
POWERSTATION/	
POWERSERVER 200	
8MB Kit	£179

MATCHED MEMORY UPGRADES FOR SILICON GRAPHICS Workstations

Lower Prices

POWER SERIES IRIS	
32MB Kit	POWERCUT! £999
PROFESSIONAL IRIS	
16MB	£799
INDIGO, 4D/30, 4D/35533	
64MB Kit	POWERCUT! £1314
CHALLENGE M/ POWER CHALLENGE SERIES	£Call
CRIMSON	
16MB Kit	HYPERCUT! £499
64MB Kit	HYPERCUT! £1499

Credit cards are not debited until despatch. VAT at 17.5% will be added to all prices. Non-defective returned goods subject to a restocking fee. Goods are not supplied on a trial basis.

DELIVERY CHARGES
See page 2

EARLY BIRD Order Bonus
See page 20



Everyone at Memory Bank passes through the Powermark Academy

BANK

at
Powermark



MATCHED MEMORY UPGRADE FEATURE

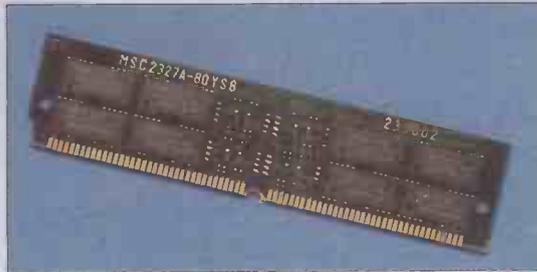
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Lower Prices

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1MB Board	£59
1MB Module	£25
4MB Add-on Module	£149
4MB Expansion Board	£189
SYSTEMPRO, DESKPRO	
486/33L, 50L & 486/25	
8MB Module	£229
32MB Module	POWERCUT! £899
SYSTEMPRO XL 486/50,	
PENTIUM	
256MB Board with 16MB	£449
256MB Board with 32MB	£729
DESKPRO 386	
1MB-2MB Board	£49
DESKPRO 386S	
1MB Module	HYPERCUT! £19
DESKPRO 386N, 386S/20	
4MB Module	£94
DESKPRO XL 5/60/75/90	
8MB Kit	£179
16MB Kit	£299
32MB Kit	£699
DESKPRO 386A/486,	
486/25M, 486S/33M, 486DX2	
64MB Board with 4MB	£159
64MB Board with 8MB	£229
DESKPRO XE & XL FAMILY	
8MB	£199
DESKPRO 5/90	
8MB Module	POWERCUT! £144
16MB Kit	POWERCUT! £299
PROLINEA 4/25S, 4/33, 4/50,	
4/66, NET 1, MT	
4MB	POWERCUT! £94
8MB	POWERCUT! £159
PROLINEA 5/75/90MX	
RANGE	
8MB Kit	£159
PROLINEA E SERIES	
8MB Kit	POWERCUT! £159
16MB Kit	POWERCUT! £299
PROLIANT 1000, 2000, 4000,	
PROLIANT PENTIUM	
16MB	POWERCUT! £319
PROSIGNIA VS SERIES	
8MB Kit	POWERCUT! £169
32MB Kit	POWERCUT! £719
LTE LITE 286	
4MB Module	£49
LTE LITE 386, 386s/20	
4MB Card	POWERCUT! £167
LTE LITE 20/25/25C/25E	
4MB Card	£139
8MB Card	£225
16MB Card	£465
LTE 5000, 5100	
8MB Card	POWERCUT! £249
16MB Card	POWERCUT! £459
32MB Card	POWERCUT! £899
LTE ELITE SERIES	
4MB Card	£155
8MB Card	£329
CONTURA 400 C/CX, 4100,	
410C/CX	
4MB Module	£159
8MB Module	£329
16MB Module	POWERCUT! £499
SLT 286	
1MB Card Module	£19
4MB Card Module	£99



MATCHED MEMORY UPGRADES FOR COMPAQ

Lower Prices

CONTURA 420, 430	
4MB Kit	£139
8MB Kit	£275
CONTURA 3/25/20/25C, 4/25	
4MB Card	£114
8MB Card	£259
CONTURA 4/25/25C	
4MB Card	HYPERCUT! £42
CONCERTO 4/25, 4/33	
8MB	£275
16MB	£459
AERO 4/25/33	
4MB	POWERCUT! £99
PRESARIO CDS 510, 720, 972,	
982, 990, 992	
4MB Kit	POWERCUT! £79
8MB Kit	POWERCUT! £149
16MB Kit	£295
PRESARIO 425, 633, 833, 850,	
866, 800 SERIES	
4MB	POWERCUT! £89
8MB	POWERCUT! £169
PRESARIO 700/900	
16MB Module	POWERCUT! £309
PRESARIO CDS 7106, 7170	
8MB Kit	POWERCUT! £149
16MB Kit	POWERCUT! £279
PROSIGNIA 500	
8MB Kit	POWERCUT! £169
16MB Kit	POWERCUT! £309

MATCHED MEMORY UPGRADES FOR TEXAS INSTRUMENTS

Lower Prices

TRAVELMATE 4000 SERIES	
4MB Module	£169
16MB Module	£799
TRAVELMATE 5000 SERIES	
8MB Module	£299
16MB Module	£589
NEW! TRAVELMATE 5100	
SERIES	
8MB Module	£299
16MB Module	£589
NEW! TRAVELMATE 5230	
SERIES	
8MB Module	POWERCUT! £249
16MB Module	£589
NEW! EXTENSA 550, CD,	
CDT	
8MB Module	POWERCUT! £215
16MB Module	POWERCUT! £425
32MB Module	POWERCUT! £845

MATCHED MEMORY UPGRADES FOR DELL

Lower Prices

320SL/325	
8MB Module	HYPERCUT! £199
325/D/P, 333/D/P	
2MB → 6MB	£79
2MB → 10MB	£149
POWERLINE	
WORKSTATION SERIES	
4MB Kit	£109
8MB Kit	POWERCUT! £154
16MB Kit	POWERCUT! £289
POWER DESKTOP SERIES	
4MB Module	£79
POWEREDGE SP/XE SERIES	
8MB Kit	£154
16MB Kit	£289
DIMENSION 4'	
4MB	POWERCUT! £79
16MB	POWERCUT! £367
DIMENSION XPS,	
P100C, 133C	
8MB EDO Kit	£135
16MB EDO Kit	£269
32MB EDO Kit	£607
DIMENSION XPS PRO	
200c-MT	
8MB Kit	POWERCUT! £128
16MB Kit	POWERCUT! £249
32MB Kit	POWERCUT! £577
DIMENSION XPS P166c	
8MB Kit	POWERCUT! £128
16MB Kit	POWERCUT! £249
32MB Kit	POWERCUT! £577
OMNIPLEX 466/50ME	
8MB Module	POWERCUT! £129
16MB Module	POWERCUT! £294
OMNIPLEX PENTIUM RANGE	
8MB Kit	£79
16MB Kit	£289
OPTIPLEX	
XL/XM/XMT 5/75/90/100	
16MB Module	£249
LATITUDE M SERIES	
4MB	POWERCUT! £99
8MB	POWERCUT! £199
LATITUDE XP SERIES	
8MB	£259
16MB	POWERCUT! £429
NETPLEX SERIES	
4MB Module	POWERCUT! £65
8MB Module	POWERCUT! £129
16MB Module	POWERCUT! £294
PERFORMANCE 4/33/50/66	
4MB	£65
8MB	£129

MATCHED MEMORY UPGRADES FOR ESCOM

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486 DESKTOP RANGE	
4MB Kit	POWERCUT! £65
16MB Kit	POWERCUT! £294
P90/100PCI	
8MB Kit	£128
16MB Kit	£249

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IMPERIAL G6 200MHz	
8MB Kit	POWERCUT! £128
16MB Kit	£399
32MB Kit	£799
MONARCH G6 200MHz	
8MB Kit	£128
16MB Kit	£249
32MB Kit	£577
PC 4SX-33	
4MB Module	POWERCUT! £65
16MB Module	£294
PC 4DX-33V,	
PC 4DX-66V	
4MB Module	£65
16MB Module	£294
32MB Module	£589
PC 4DX2-66P/V	
4MB Module	£65
8MB Module	£129
16MB Module	£294
32MB Module	£589
PC P5-60, P5-66,	
P90, P100	
8MB EDO Kit	£135
16MB EDO Kit	£269
32MB EDO Kit	£607
64MB EDO Kit	£1399
PC 4D-66, PC 4DX-100	
8MB Kit	£129
32MB Kit	£577
PS-120/133 ELITE,	
P90 PREMIUM SERIES	
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MEMORY

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(100 lines)

Educational Sales
Order Lines

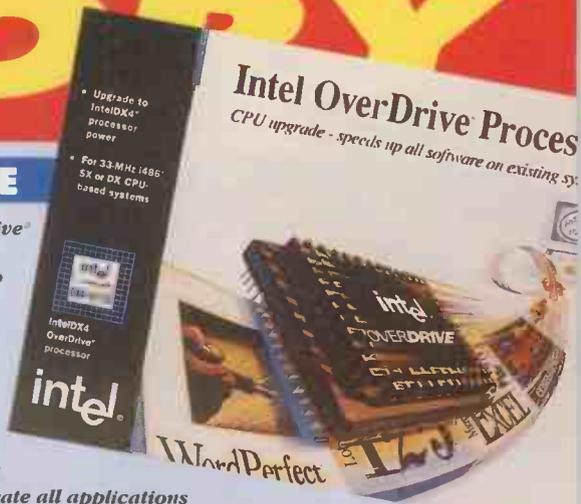
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956 7890**



INTEL OVERDRIVE® FEATURE



Intel OverDrive® processors enable you to take advantage of advanced technology on your existing upgradable Intel 486 CPU-based system. OverDrive® processors accelerate all applications running under MS-DOS, Windows, OS/2 and UNIX. Simply install the Intel OverDrive® processor into your existing system and watch your applications run at blazing speeds.



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- Give your PC 100MHz performance with the Intel DX4 OverDrive® processor
- For most 16, 20, 25, 33MHz Intel 486 SX or DX CPU-based systems
- Features Intel's "speed tripling" technology
- 16K on-chip cache memory
- On-chip maths co-processor
- The most powerful PC upgrade available
- Accelerates DOS, Windows, Windows 95, OS/2 and Unix application



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INTEL DX2 33MHz - 66MHz £86
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Dual socket PC DX2/3360DX2



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PROCESSOR



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P60 → P120

P66 → P133 DX5/P66133 £259

PENTIUM UPGRADE FOR

P75 → P125 DX5/P75125 £259

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The Pentium® OverDrive® processor is the newest and fastest member of the Intel OverDrive® processor family. It is the upgrade option for Intel SX2 and DX2® CPU-based systems and is the superior upgrade option for Intel 486SX and DX based systems. It is based on Intel's latest and most sophisticated Pentium® processor technology and features a superscalar architecture, which allows the execution of more than one instruction per clock cycle, 32K on-chip cache (one 16K code cache and one 16K data cache) and a faster floating point unit. It operates at two and a half times the speed of the system bus.

For example, when a Pentium OverDrive® processor is installed in a 33MHz Intel 486 DX based system, the integer unit, floating point unit and cache operate at 83MHz while the speed of the external bus remains at 33MHz, thus delivering Pentium® processor class performance.

INTEL P24T 63MHz DX5/P24163 **POWERCUT!** £99

INTEL P24T 83MHz DX5/P24T83 **POWERCUT!** £129



LOWER PRICES INTEL MOTHERBOARDS

With the advent of Microsoft Windows 95, speed of processing information is critical. Increasing your memory is part of the upgrade process but to fully complement a memory upgrade an Intel Pentium motherboard will make your PC really fly.

INTP150AUR	INTEL AURORA PENTIUM PRO 150MHz	£999
INTP133ATL	INTEL ATLANTIS PENTIUM 133MHz	£549
INTP152ZAP	INTEL ZAPPA 90MHz PENTIUM	£299
INTP100ZAP	INTEL ZAPPA 100MHz PENTIUM	£479
INTP133ZAP	INTEL ZAPPA 133MHz PENTIUM	£399
INTP90END	INTEL ENDEAVOUR 90MHz PENTIUM	£389
INTP133END	INTEL ENDEAVOUR 133MHz PENTIUM	£499

REAL HARD DRIVES

Famous hard drives...
Monte Carlo or Bust

Driving in Paris

When the fuel light has been on for just too long



DELIVERY CHARGES
See page 2

EARLY BIRD Order Bonus
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POWERMARK ACADEMY

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HARD DISK DRIVE FEATURE



Calluna
TECHNOLOGY



Maxtor

Quantum WESTERN DIGITAL



TOSHIBA PARTNERS

FUJITSU

MICROPOLIS

IDE HARD DISK DRIVES

Conner	CFS541	541MB	12.5ms	POWERCUT!	£127
Seagate	ST3330A	630MB	14ms		£135
Western Digital	AC2635	639MB	10ms		£129
Conner	CFS850A	850MB	14ms		£137
Western Digital	AC2850	853MB	10ms		£139
Conner	CFS1081A	1.0GB	12ms	POWERCUT!	£149
Western Digital	AC21000	1.0GB	10ms (mode 4)		£169
IBM	Pegasus	1.05GB	9ms (mode 4)		£169
Seagate	ST51080A	1.08GB	12ms (mode 4)		£162
Fujitsu	M1606T	1.09GB	10ms		£149

IBM	Deskstar	1.2GB	9ms (mode 4)		£181
Maxtor	71260AT	1.26GB	12ms		£209
Conner	CFS1275A	1.275GB	14ms	POWERCUT!	£169
Western Digital	AC21200	1.28GB	10ms (mode 4)		£177
Western Digital	AC31600	1.62GB	10ms	POWERCUT!	£209
Maxtor	71626AP	1.63GB	12ms	POWERCUT!	£199
Seagate	ST32140A	2GB	10.5ms		£239
Western Digital	AC32100A	2.1GB	12ms		£279
Western Digital	AC32500A	2.5GB	12ms		£379

SCSI HARD DISK DRIVES

IBM	Deskstar	1.05GB	9ms		£199
Seagate	ST51080N	1.05GB	12ms		£219
Quantum	Atlas	1.08GB	10ms		£223
IBM	Alleycat	2GB	POWERCUT!		£499
Micropolis	4221	2.05GB	8.5ms		£539
Conner	CFP2107	2.1GB	9ms		£469
Conner	CFP2105	2.1GB	11ms		£465
IBM	Ultrastar ES	2.1GB	8ms		£1193
Seagate	ST32151N Hawk-2	2.1GB	9ms		£555
Seagate	ST32550N Barracuda Fast SCSI 2	2.1GB	8ms		£665
Micropolis	1936	3.02GB	12ms		£999
Conner	CFP4207 Caymen	4.2GB	8ms		£859

Micropolis	3243	4.3GB	8.5ms		£1059
Seagate	ST15230N Hawk-4	4.3GB	9ms	POWERCUT!	£899
Seagate	ST15150N Barracuda Fast SCSI 2	4.3GB	8ms		£1035
Seagate	ST410800N Elite	9.09GB	8ms	POWERCUT!	£1699
Micropolis	1991	9.1GB	12ms		£1799

Audio Visual SCSI

Micropolis	4221AV	2.05GB	8.5ms		£549
Quantum	Atlas XP32150	2.1GB	8ms		£559
Micropolis	1936AV	3.02GB	12ms		£1029
Micropolis	3243AV	4.3GB	12ms		£799
Quantum	Grand Prix XP3430S	4.3GB	8ms		£699
Micropolis	1991AV	9.1GB	8.5ms		£1995

PCMCIA HARD DISK DRIVES (Type III)

Calluna	Calluna170	170MB	16ms		£289
Calluna	Calluna260	260MB	16ms		£379
Kingston	DPPCM/260	260MB	11ms		£439

2.5" HARD DISK DRIVES

2.5" IDE

Hitachi	DK212A/54	540MB	12ms		£209
Hitachi	DK212A/81	810MB	12ms		£329
Hitachi	DK212A/10	1.0GB	12ms		£499
Toshiba	MK1924FC	543MB	12ms		£239
Toshiba	MK2628FC	810MB	12ms		£391
IBM	85G3627	1.2GB	12ms		£595
Olivetti	NEW! ECHOS	1.3GB	12ms		£610
Toshiba	MK2720FC	1.35GB	13ms		£599

HARD DISK DRIVE ACCESSORIES

EXTERNAL CASES

SDCASE1/3	Single external device case (Half/Full height)	£89
SDCASE1/3-FW	Single external fast and wide device case	£129
SDCASE2/3	Dual external device case (Half/Full height)	£125
SDCASE4/3	Quad external device case (Half/Full height)	£228
SDCASE4/5-10	Quad external hot pluggable device case	£1099
SDCASE1/5-H	Single external device case for CD ROMs	£74

CABLES CONNECTORS AND CONVERTERS

SCSIC/2	Dual device internal SCSI cable	£7
SCSIC/3	3 way internal SCSI cable	£13
SCSICB/FW	Fast and Wide internal SCSI cable	£99
SCSITERM/A	SCSI active terminator	£27
SCSITERM/P	SCSI passive terminator	£12
IDEBCL	Dual device internal IDE cable	£7
CDNK/PAR	Parallel to SCSI converter (Centronics)	£109
CDNK/PAR-MD	Parallel to SCSI converter (Micro D)	£119
SIM/SCSIPCM-C	PCMCIA SCSI converter/controller (Centronics)	£109

EIDE CONTROLLER CARDS

ADAPTEC EIDE CONTROLLERS

EIDE-CD Kit	ISA	Single channel	£23
EIDE-AT32 Kit	ISA	Dual channel	£43
EIDE-AT42 Kit	ISA	Dual channel + floppy support	£44
EIDE-VLVP Kit	VLB	Dual channel, floppy, 2 x 16550 & EPP	£52

SCSI CONTROLLER CARDS

DPT

DPT 2021	16-bit SCSI II	ISA	Bare	£165
DPT 2022	32-bit SCSI II	E-ISA	Bare	£259
DPT 2124	32-bit SCSI II	PCI	Bare	£359

See Adaptec feature on page 12 for more controllers

HARD DISK SPECIAL OFFERS

Hitachi	510MB	2.5" IDE	£183
IBM	2.0GB	Alleycat SCSI (FW)	£499

Public Sector customers can purchase through HMSO by calling 01603 694153.



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Achieve the full potential of your 28.8 modem with our High Speed Serial Card



If you don't have a 16550 UART IC on your system board, your modem will run at only 50% of its maximum speed!

Here's how to check:

- 1) From C:\ prompt type MSD <enter>
- 2) Select C
- 3) If your system does not report with 16550 then you need a Powermark High Speed Serial Card

Our easily installed High Speed Serial Card gives you maximum performance.

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VERBATIM FEATURE

DISKETTES

3.5" HD 10 Pack £4
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20 Pack + 2 free! £8

DATA AND DAT CARTRIDGES

Unit 10 Pack
4mm 60m £9 £89
4mm 90m £11 £103
8mm 112m £9 £89

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CD-R 74 Min £10

PUP OF THE MONTH



Win 95
Advisor
(95WINADVSR95) £7
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£95 + VAT + carriage

TapeStor Travan

TapeStor Travan 800
External CONTRAV800/E £184
TapeStor Travan 800
Internal CONTRAV800/I £109
TapeStor Travan
3200 CONTRA32/I £195

Wide range of mini cartridge compatibility available on the market including QIC-80, QIC-3010, QIC-3020 as well as QIC, QIC-Wide and Travan TR-1, TR-2, and TR-3 media

**QIC-80
DC2120
SPECIALS!**

Single - only £3.99
10 Pack - £29

IOMEGA TAPE BACKUP FEATURE

IOMEGA®
Makers of Bernoulli

DITTO 800

- New, advanced Travan technology
- Backward compatible with 250, 350 and 420MB tapes
- 800MB capacity (with compression)
- Direct drive - no belt
- Network compatible

DITTO 800 INTERNAL

10DITTO800/I £117

DITTO 3.2GB DRIVE

INTERNAL 10TRAV3/I £225

PARALLEL 10TRAV3/E £291

QIC 3020 TAPES

(for 1.7GB) DC3020 £23

(QIC & WIDE) 420MB

DC5122 £12

TAPE ACCELERATOR

CARD IOMEGA/DATA £49

700MB DATA

CARTRIDGE DCMC3000 £17



DITTO 800 TRAVAN

IOMEGA JAZZ DRIVES

THE ULTIMATE CHOICE IN HARD DRIVES
Faster than most hard drives

- Provides 1GB of disk space on each compact cartridge
- Save up to 8 hours of CD-quality sound
- 150 colour photographs

1GB Internal
SCSI 10JAZ/SCSI £405
1GB External
Parallel 10JAZ/SCSI £481
1GB Cartridge 10JAZ/C £93

IOMEGA ZIP DRIVES

- Increase your hard drive capacity inexpensively on 100MB removable disks
- Provides high capacity mobile storage - use it at the office, at home, on the road, anywhere
- Excellent and easy for transferring information between two computers



IOZIP Parallel 10ZIP/P1 £149
IOZIP SCSI 10ZIP/SCSI £149
100MB Cartridge Single £14
5 Pack £65
10 Pack £120

SYQUEST STORAGE FEATURE



SyQuest®



SYQUEST SQ5200

SYQUEST REMOVABLE CARTRIDGE HARD DISK DRIVES

- Work like fixed drives yet provide unlimited capacity

SYQUEST 3.5" RANGE

- Choice of 105MB or 270MB formatted capacities on each cartridge

Unsurpassed warranties -
2 years on drives and 5
years on data cartridges

NEW! EZ135 DRIVES

135MB Removeable Disk Drive

SY0135/I EZ135 IDE Internal £133

SY0135/E EZ135 SCSI External £172

SY0135/C 135MB Cartridge £15

Free cartridge
with all
EZ135 disk drives

SYQUEST CARTRIDGES

Capacity	Form	Each	5 Pack
105MB	3.5"	£38	£180
270MB	3.5"	£42	£195
44MB	5.25"	£30	£140
88MB	5.25"	£34	£160
200MB	5.25"	£51	£245

SYQUEST REMOVABLE CARTRIDGE HARD DISK DRIVES

	Type	Capacity	Internal	External
SY0270/I	SyQuest 3.5" IDE	270MB	£252	-
SY0270/S	SyQuest 3.5" SCSI	270MB	£259	£332
SY0270/P	SyQuest 3.5" PARALLEL	270MB	-	£435
SY0288	SyQuest 5.25" SCSI	88MB	£169	£265
SY0200	SyQuest 5.25" SCSI	200MB	£258	£348

TANDBERG DATA FEATURE

The Market Leader in SCSI QIC Tape Drives



NEW!

Panther Mini4600

- 4.6GB of storage capacity
- 2GB per hour back up rate
- Plug and Play
- Bundled with Arcada for DOS, Windows, and Windows 95
- 3 year warranty
- Internal and external options available
- CE approved

Panther Mini2000
Internal TAND/P2000I £399
Panther Mini2000
External TAND/P2000E £489
Panther Mini4600
Internal TAND/P4600I £449
Panther Mini4600
External TAND/P4600E £559



DC 6000
format

NEW!

Tandberg Tape Streamers

	INTERNAL SCSI (Bare)	EXTERNAL SCSI KITS
Model 3600 250MB QIC Streamer TAND/250	£289	£446
Model 3800 525MB QIC Streamer TAND/525	£365	£499
Model 4100 1.2GB QIC Streamer TAND/1.2	£459	£499
Model 4220 2.5GB QIC Streamer TAND/2.5	£505	£589
Model 4222 5.0GB QIC Streamer TAND/5.0	£549	£629

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CHARGES
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Goods are not supplied on a trial basis



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A division of
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PACKARD

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- New, advanced TRAVAN technology
- 800MB capacity (with compression)
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- Fits into 3.5" or 5.25" drive bay

HP COLORADO

T1000e CMST51000

£105

/// **NEW!**

HP COLORADO

T1000EXT CMST51000/E

£125

/// **NEW!**

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- Very fast DAT drive system
- Capacity from 2GB to typically 8GB
- PC Magazine Editors' Choice

HP SureStore

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HP SureStore Tape 2000

ISA Kit HPSS2000/KIT £849

HP SureStore Tape 5000

Int HPSS5000/I

£639

HP SureStore Tape 5000

ISA Kit HPSS5000/KIT

£1699

HP SureStore Tape 6000

Int HPSS6000/I

POWERCUT! £765

HP SureStore Tape 6000

ISA Kit HPSS6000/KIT

£1819

HP SureStore Tape

12000 Int HPSS12000

£1879

HP SureStore Tape

12000 ISA Kit HPSS12000/KIT

£2199

HP COLORADO T1000



TRAVAN

HP COLORADO JUMBO

- Connects to your floppy controller
- Includes hardware and cables

JUMBO 1.36GB CMST51.36/I

£185

QIC 3020 DC3020

£23

FAST CONTROLLER

CARD CMST5.7C/20

£49

EXTERNAL

MOUNTING KIT CMST5E

£61

ISA Kit includes cable, cartridge, head cleaner & full software

AMACOM MASS STORAGE FEATURE

AMACOM PCMCIA EZCD CARD

6 SPEED CD ROM

- MPC II and Photo CD
- Connects to PCMCIA Type II & III

SIX SPEED

CD ROM CDAMA/EZCARD6 £359

QUAD SPEED

CD ROM CDAMA/EZCARD4 £279

Mass storage experts available for specialist advice

AMACOM DISKLITE

EXTERNAL 2.5" PARALLEL PORT HARD DRIVE

- Easy connection to parallel port
- Data transfer up to 900Kb/sec
- Printer port for concurrent printing
- Carry case included for mobility

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DISKLITE 540MB HDAMA/DL540 £339

DISKLITE 810MB HDAMA/DL810 £469

DISKLITE 1.2GB HDAMA/DL1.2 £655



DISKLITE

AMACOM PARALLEL EZCD

PARALLEL PORT CD ROM

- Easy connection to parallel port
- Ideal for notebooks
- Printer port for concurrent printing
- Built in power supply

EZCD QUAD CDAMA/EZCD4 £209

AMACOM EZ DISK

EXTERNAL 3.5" PARALLEL PORT HARD DRIVE

- Easy connection to parallel port

EZ DISK 850MB HDAMA/EZ850 £265

EZ DISK 1.2GB HDAMA/EZ1.2 £315

AMACOM EZ PARASCSI

CONNECTS ANY SCSI DEVICE TO PC PARALLEL PORT

- Transfer rate - up to 800Kb/sec
- Supports DAT, CD ROM, hard disk, optical and many more interfaces

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EZCD QUAD

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STORAGE & BACKUP

It's time once again to visit...



Dr Jane's Storage Surgery

Dear Dr Jane,
Not knowing much about computers, I wanted to clarify a few points with you before I buy a new hard disk drive. Presently I have 120MB, but I need to increase this before installing Microsoft Office 95. The most important thing to mention is that the hard disk has to be future proof, as far as possible. I hope that this is not asking too much but I work from home and my computer is essential to my expanding business.

Lost in Lowestoft

Dear Lost,

Do not despair as these symptoms are very common. The treatment is very simple and painless. I advise a SCSI hard disk drive together with a controller card. This will give you speed, performance, capacity, and expandability. Furthermore, Powermark can offer internal or external hard drive remedies. This prescription is tailor made for your needs:

A Future Domain SCSI card together with a Connor 1.0GB SCSI hard disk drive. All software and cables are provided.

If you have other specific requirements phone the surgery today.

Yours, Dr Jane

Send your thoughts and queries to Dr Jane, c/o Memory Bank, The Powermark Centre, The Waterfront, Elstree Road, Elstree, Herts WD6 3RP or fax her on 0181 956 7100. You can also Email Doctor Jane on: drjane@powermark.com

Dr Jane makes every effort to answer your storage problems, but she cannot guarantee to reply to everyone. We confess. Dr Jane has no doctorate - Yet!

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- Designed for Windows 95
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 - User friendly utility for quick and easy adapter installation and system configuration
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 - Disconnect/reconnect technique prevents performance being downgraded during multitasking operations
 - Drivers for all major platforms
MBCSI MSCSI £105
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CONTROLLERS**

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CONTROLLER IDE54/32E** £39
- IDE 32 BIT + FLOPPY
CONTROLLER IDE54/42E** £49
- EIDE 16 BIT CD ROM
CONTROLLER IDE54/E** £25

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CARTRIDGES
FEATURE**

	Each	10 Pack
DC6150	£12	£109
DC6250	£16	£143
DC6525	£18	£169
DC9100Magnus	£27	£249

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QIC	Capacity	Each	10 Pack
DC2120XL	350MB	£15	£139
QIC3010	700MB	£17	£185
QIC3020	1.7GB	£23	£209

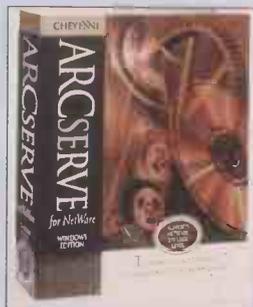
DAT	Length	Each	10 Pack
1.3GB	60m	£9	£89
2GB	90m	£11	£103
4GB	120m	£16	£147

Head Cleaner £26

CHEYENNE FEATURE

CHEYENNE

Cheyenne Software's mission is to provide problem-solving software that eases the pressures of network management. Cheyenne's products span a wide range of essential network and data management services including security, backup, management and communications supported on multiple operating systems



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- File Interleaving - provides for enhanced speed of backup
- Increased device capacity - offers multiple support to SCSI and tape devices

DATA MANAGEMENT

- Centralized Job Management
- Single installation for Multiple ARCserve servers
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- Windows 95 like interface

ARCserve 6 Windows for

- WorkGroups** ARC6/WGW £339
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ARCserve NT

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 - Compatible with multiple ARCserve environments
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- ARCserve for Windows NT Enterprise Edition** ARC6/ENT £575



CHEYENNE SERVER SUITE

Includes

- InocULAN Server based Anti - Virus on CD
- FAXserve 5 user NLM based fax solution
- ARCserve 25 user NLM backup software

ARCserve 6.0 for

- Netware** ARC6/N £299
- ARCsolo for Windows 95** ARC6/W95 £79
- ARCsolo for Windows** ARC6/W £69



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Ideal for portable PC users
These products are designed to connect to the serial port of a PC and/or portable and enables wireless file transfers. Includes Transit Software.



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 - High speed file transfer
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- AIRPORT 2000 DESKTOP CONNECTION** AIRPORT2000 £72
- AIRPORT 2500 COMBO KIT** AIRPORT2500 £117

adaptec

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The SlimSCSI adapter delivers high performance peripheral connections to your PCMCIA portable PC.



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 - Card & Socket software
 - 10Mb/sec data transfer
- SLIMSCSI PCMCIA CONNECTION** AHA460 £139

SCSI MASTER AHA1542CP



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Windows 95 compatible

High performance, host adapters support advanced features for desktop and network applications.

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- PCI
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- 10Mb/s transfer rate



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TOTAL CONNECT

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SCSI DIRECTION

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- Floppy support

EISA SCSI MASTER

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- **MINISCSI EPP** TRA358 £119
- Plugs into parallel port
- SCSI-Works software

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Goods are not supplied on a trial basis



**EARLY BIRD
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See page 20



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 - Single pass
 - Full Adobe Photoshop V3

UMAX

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 - Enhanced calibration
 - Full Adobe Photoshop V3

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- TEXTBRIDGE LITE** £39
- TRANSPARENCY ADAPTER** UMAX/TRANS £399



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 - Fully TWAIN compatible
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- AUTOMATIC DOCUMENT FEEDER** HPSJ4C/ADF £318
- TRANSPARENCY UNIT** HPSJ4C/TRANS £459

LOWER PRICES!

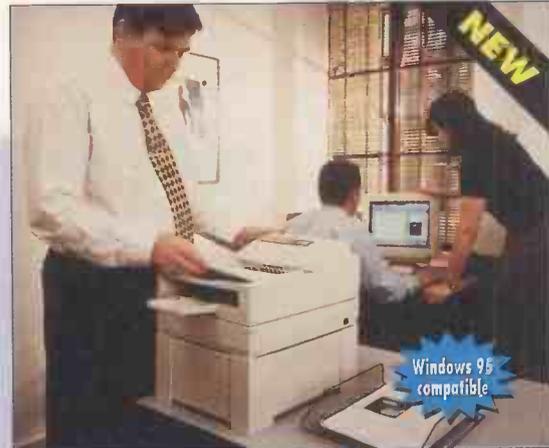
- HP SCANJET 4S** HPSJ4S £171
- A4 mono
- HP SCANJET 4P** £329

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HP SCANJET 4SI

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- HP SCANJET 4SI** HPSJ4SI £1649
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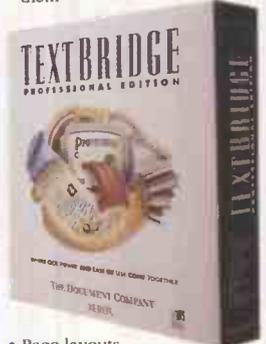


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have said ...

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the technical advice in
this difficult area
excellent, thank you.*

D Melville
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*I write just to say how
much I appreciate the
sales and technical
support I have
received from your
Sanjay Vaid during
my recent foray into
the jungle of PC
upgrading.*

*Thanks again for
your high quality and
very prompt service.*

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LX**

The complete office solution

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- Integrated fax
- Photocopier
- Scanner

HP OFFICEJET LX HP OFFICEJET LX £495

**HP DESKJET
600C** **NEW!**

- 600 x 600 dpi, REt
- High resolution in colour

Lotus Wordpro
1 month Compuserve
FREE trial included

HP DJ600 HPDJ600C £191

**HP DESKJET
660C** **NEW!**

- 600 x 600 dpi in black
- 14 TrueType fonts

Lotus Wor pro
1 month Compuserve
FREE trial included

HP DESKJET
660C HPDJ660C £255



HP DESKJET 660C

**HP LASERJET
5P**

- 6 pages per minute
- 600 dpi, REt, microfine toner
- 2MB RAM, up to 50MB

HP LASERJET 5P HPPLUS/P £598

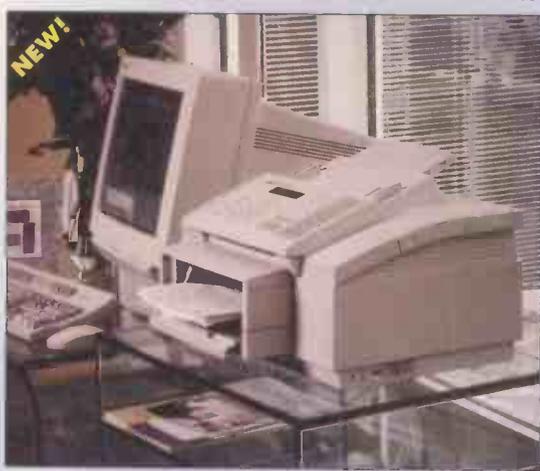
HP LASERJET
5MP HPPLUS/MP £749

**HP LASERJET
5Si**

- 24 pages per minute
- 600 dpi
- 4MB RAM

HP LASERJET 5Si HPPLUS/Si £2089

HP LASERJET 5SiM HPPLUS/SiM £2999



HP OFFICEJET LX

**HP DESKJET
340**

- 600 x 600 dpi in black
- Up to 3 pages per minute in black
- 13 scalable Windows fonts

HP DESKJET 340
NOW WITH CUT SHEET
FEEDER HPDJ340 £178

COLOUR KIT
UPGRADE HPDJ340COLUG £35

3 YEAR ON-SITE
WARRANTY HPWARR/DJ340 £47

**HP DESKJET
1200C**

- 600 x 300 dpi
- Up to 6 pages per minute in black

HP DESKJET
1200C HPDJ1200C £651

HP DESKJET
1200C/PS HPDJ1200/PC £1029

**HP DESKJET
1600C**

- 600 x 600 dpi in black
- 4MB RAM

HP DESKJET
1600C HPDJ1600C £844

**HP LASERJET
4V**

- A3 paper handling
- 8 pages per minute in A3, 12 in A4
- Delivery: £27 on this printer

HP LASERJET 4V HPPLUS/V £1414

HP LASERJET 4MV HPPLUS/V £2044

HP LASERJET
4V 500 SHEET TRAY
SYSTEM HPPLUS/SHEET £299

3 YEAR ON-SITE
WARRANTY HPWARR/L4V £245

**Matched Memory
Kits for HP
Printers on page 7**

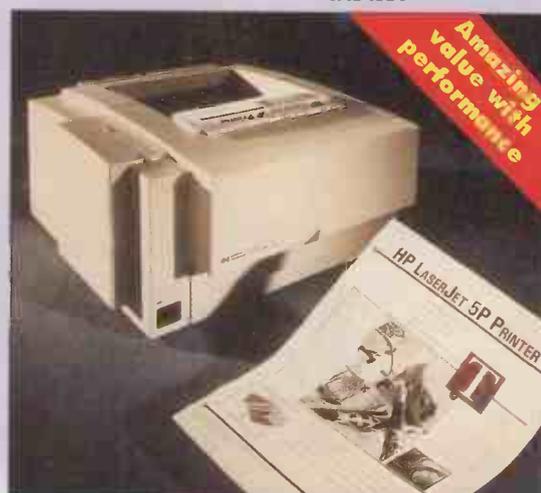


HP DESKJET 1600C

**HP DESKJET
850C**

- 600 x 600 dpi in black
- Up to 6 pages per minute in black
- 45 TrueType fonts

HP DESKJET 850C HPDJ850C £329



HP LASERJET 5P

**HP LASERJET
5L**

- 4 pages per minute
- 600 x 600 dpi in black
- 1MB RAM
- New innovative style case

HP LASERJET 5L HPPLUS £359

HP COPYJET

- 600 x 300 dpi in black (300 x 300 colour)
- 7 pages per minute (3 in colour)
- Scaling facility: 50% to 400%
- 180 sheet paper tray

HP COPYJET HPFCOPYJET £1988

5MB memory as standard
(expandable to 53MB)



HP COPYJET

- POSTSCRIPT HPFCOPYJET/P £2448
- 7MB memory as standard (expandable to 39MB)

HP SupportPack

- Onsite warranty by HP engineers
- Recommended for all HP Laserjets & Deskjets

14 Credit cards are not debited until despatch VAT at 17.5% will be added to all prices. Non-defective returned goods subject to a restocking fee. Goods are not supplied on a trial basis

DELIVERY CHARGES
See page 2

EARLY BIRD Order Bonus
See page 20



Everyone at Memory Bank passes through the Powermark Academy

'ECO-FRIENDLY'

EPSON PRINTER FEATURE

EPSON®

STYLUS COLOR IIS INKJET

- A4 colour & monochrome at 720 dpi
- 2.5 pages per minute in black (1ppm in colour)
- Photo real colour and crisp clear black



STYLUS COLOR IIS

- 100 sheet feeder
- Custom Windows driver provided
- 3 year return to base warranty

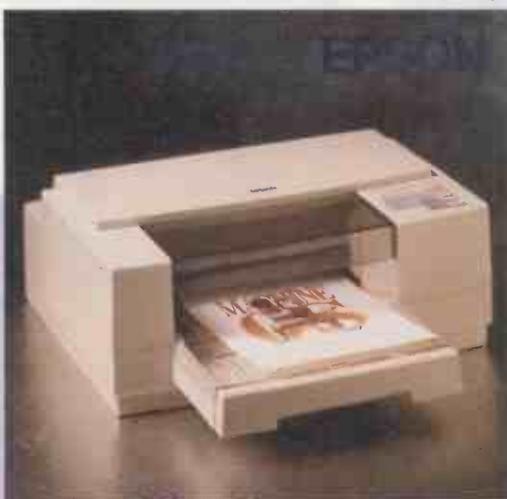
STYLUS COLOR IIS EPSON/STYLUSIIS £187

STYLUS PRO INKJET

Making superb presentation quality printing achievable and affordable - *in house*. Made possible with Epson's 'MicroDot' technology.

- A4 colour printing
- 720 x 720 dpi
- 3 pages per minute in black (1.5ppm in colour)
- MicroDot technology for enhanced print quality
- Windows & Mac drivers provided
- Low maintenance with long life ink cartridge
- 1 year return to base warranty
- Network & Postscript options available

STYLUS PRO EPSON/STYLUSP £359



STYLUS PRO

STYLUS COLOR II INKJET

Ideal for those who frequently print business reports, flyers, promotional literature and press releases from their PC or MAC.

- A4 colour at 720 x 720 dpi
- 4 pages per minute in black (2ppm in colour)
- Photo real colour and crisp clear black



STYLUS COLOR II

- 100 Sheet feeder
- Custom Windows & Mac drivers provided
- 3 year return to base warranty

STYLUS COLOR II EPSON/STYLUSII £247

'Following up a highly acclaimed product is no easy feat but the Stylus Color II manages to fill the shoes of its predecessors admirably'

(What Personal Computer - Best Buy, November 1995)

STYLUS 820 - INKJET

Offering a superb 720 dpi output quality, the Stylus 820 is a monochrome printer for personal users who need affordable black printing to professional quality standards.

- A4 mono output at 720 dpi
- 2.5 pages per minute
- Epson MicroWeave technology removes banding
- Colour upgrade available
- Custom Windows drivers included
- 3 year return to base warranty

STYLUS 820 - INKJET £149

The Epson Stylus range of inkjet printers delivers superior quality colour printing. The Epson philosophy is one of adopting and delivering advanced printing technology.

EPL - 5500 LASER

The ultra compact 600 dpi, HP PCL5e compatible, high speed business laser



EPL - 5500

- Ultra compact laser - weighs just 5kg
- Advanced pre printing features eliminates paper wastage
- Epson MicroGray and extra fine toner technology offers 77 greyscale printing
- Network compatible
- 150 sheet feeder
- 6 pages per minute
- 1MB memory as standard (expandable to 32MB)
- 1 year return-to-base warranty

EPL - 5500 EPSON/EPL5500 £365

2MB and 5MB versions available - call

GT5000 FLATBED SCANNER

- 300 dpi (2400 dpi after firmware interpolation)
- Parallel or SCSI interface
- A4 scan area



GT - 5000

GTX-5000 WINP SCANNER (PARALLEL) EP5GT5000/WINP £319

- Includes Corel PhotoPaint 5, Corel Draw 4 & XCDMS

GTX-5000 WINS SCANNER (SCSI) EP5GT5000/WINS £369

- Includes Corel PhotoPaint 5, Corel Draw 4 & XCDMS

GTX-8500 WINP SCANNER (PARALLEL) EP5GT8500/WINP £495

- Includes Adobe Photoshop LE & XCDMS

GTX-8500 WINS SCANNER (SCSI) EP5GT8500/WINS £579

- Includes Adobe Photoshop LE & XCDMS

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PRINTERS



Certificate no. FS 26535

ISO9002 (Formerly BS5750) registered for the supply of computer, printer and workstation memory, processor and other upgrades. We are regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

HUGE STOCKS
Guaranteed next working day delivery on virtually all stock items for orders placed even up to 5.00pm.

TECHNICAL SALES PEOPLE
Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

FINANCIAL STABILITY
Memory Bank is the direct division of Powermark plc which has been supplying upgrades for over 5 years and has an annual turnover exceeding £23 million with a healthy - balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices.

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Dedicated after sales technical support teams on line to help with installation.

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We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.

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All products supplied by Memory Bank carry manufacturers' warranties and full Powermark plc guarantees.

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Save on delivery charges - there's plenty of parking too! Telephone first to check our stock position on the items you want. We're open from 9.00am to 6.00pm Monday to Friday. Saturdays: 10.00am to 2.00pm.

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VISA

MasterCard



**DOG OF THE
MONTH**

ARF!



Corel Office
Companion (CORCD/OFF) £39

**PUP OF THE
MONTH**

YAP!



Win 95
Advisor
(95WINADVISOR95) £7
with any purchase over
£95 + VAT + carriage

All modems supplied
by Memory Bank are
BABY APPROVED

Comms experts
available for
specialist
advice



**MASTER
QUIZZY**

Famous
quiz
show
sayings...

ULLL-Reeka-ka-ka
Shooting Stars
Coo-Coo-Coo-Coo
Shooting Stars
I really want to see
those fingers
Shooting Stars

HAYES MODEM FEATURE

Hayes™



ACCURA 288 V.34 + FAX

OPTIMA + FAX

- Business Modems**
- Voice/data/fax discrimination
 - Voice answerphone
 - Faxback
 - Remote voice and fax messaging retrieval
 - 8:1 data compression
 - Security: Dial-back / UK caller ID
 - Flash ROM

ACCURA + FAX

- Message Modem**
- Voice/data/fax discrimination
 - Voice answerphone
 - Faxback
- Internet Kit**
- 30 day free access
 - Email software
 - 16/32-bit Mosaic Internet browser
 - Internet guide
 - UK-wide coverage

HAYES MODEMS The industry standard

Windows 95
compatible

Model	V32bis	V32terbo	V34	MODEM2-4	V42	V42bis	MINI5	Fax	Internal	External
HAAC14 ACCURA 144 + FAX144	●	●	●	●	●	●	●	●	-	£89
NEW! Internet Kit Deluxe	●	●	●	●	●	●	●	●	-	£163
HAAC28 ACCURA 288 + FAX	●	●	●	●	●	●	●	●	-	£184
NEW! Internet Kit Deluxe	●	●	●	●	●	●	●	●	-	£184
NEW! Voice/data/fax message modem	●	●	●	●	●	●	●	●	-	£229
HAOP14/V OPTIMA 144	●	●	●	●	●	●	●	●	POWERCUT!	£229
NEW! Voice/data/fax business modem	●	●	●	●	●	●	●	●	POWERCUT!	£349
HAOP28/V OPTIMA 288	●	●	●	●	●	●	●	●	POWERCUT!	£349
Voice/data/fax business modem	●	●	●	●	●	●	●	●	POWERCUT!	£349
HAOP28/P OPTIMA 288 PCMCIA	●	●	●	●	●	●	●	●	-	£195
HAULT14 ULTRA 144 X.25/V25bis	●	●	●	●	●	●	●	●	POWERCUT!	£299
HAULT5DN ULTRA ISDN 64K System Adapter	●	●	●	●	●	●	●	●	-	£299

See page 21 for details



OPTIMA 144 + FAX

BT MODEM FEATURE

Now
with BT
Internet
access!

BT



BT PROLOGUE V34EX DESKTOP MODEM

'A compact fax/data modem
at a very reasonable price'
Personal Computer World, February 1996

The new Prologue is a fully
featured modem with a host
of advanced features

- Pass-through phone socket for convenient line sharing
- Digital display of - line speed - condition of call - call progress



Now only
£159

- Remote access/ configuration
 - Password protected security
 - Call back request
 - 28,800 data (V34/V.fc), 14.4 fax
 - V42bis data compression (up to 115.2Kbps)
 - MNP10 error correction for improved performance over poor lines
 - Includes access to BT Helpline
 - High tolerance power surge / thunderstorm protection
 - 5 year warranty
- Includes:** Delrina WinFax, full BT Internet software and serial cable
- BT PROLOGUE
DESKTOP V34 BTPRO/V34** £159

BT PROLOGUE PCMCIA MODEM

Offers laptop users the latest
communications technology

- Built-in line interface
- Remote access
- Password protected security
- Flash EPROM
- 16550 UART buffer
- Internet access

BT PROLOGUE
PCMCIA 14.4
V32bis BTPROL/14.4P £149
BT PROLOGUE 28.8
PCMCIA V34 BTPROL/V34P £199

All BT modems
have a
5 year warranty



BT PROLOGUE PCMCIA 14.4/28.8



The BT
Prologue
edges ahead of its rivals
because it looks like (and
acts like) a much more
expensive modem...its
digital line speed indicator
is a breath of fresh air'

Credit cards are not
debited until despatch
VAT at 17.5% will be added to all prices.
Non-defective returned goods subject to
a restocking fee.
Goods are not supplied on a trial basis



**DELIVERY
CHARGES**
See page 2

**EARLY BIRD
Order Bonus**
See page 20



**POWERMARK
ACADEMY**

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Memory Bank
passes through the
Powermark
Academy

MULTITECH MODEM FEATURE



DX

MULTIMODEM II ZDX SERIES

- Desktop unit
- Group 3/Class 2 (TR29) fax
- V.17 fax compatible
- PSTN only
- V42 (lap-M) error correction
- V42bis data compression
- MNP to Level 5
- Asynchronous operation
 - AT command set (Hayes compatible)
- Free Multiexpress fax and comms software for windows
- 10 year warranty
- Available in 28.8bps (V34) and 14.4bps (V32bis)



MULTIMODEM II MT2834 ZDX

MULTIMODEM II SERIES

- Desktop unit/metal enclosure
- Group 3/Class 2 (TR29) fax
- PSTN and 2W/4W leased line
- Leased line dial-backup with auto-restoral
- Security call-back (30 no.)
- V42 (lap-M) error correction
- V42bis data compression
- MNP to Level 5
- V25bis async/sync
- Free Multiexpress fax and comms software
- 5 year warranty
- Available in 28.8bps (V34) and 14.4bps (V32bis)



MULTIMODEM II MT2834LTI

Comms experts available for specialist advice



MULTIMODEM LTI SERIES

- PCMCIA card
- V17 & Group 3 fax
- V42 Lap-M error correction
- V42bis data compression
- MNP level 5
- Asynchronous operation
- Free Multiexpress fax & comms software
- 5 year warranty
- Available in 28.8bps (V34) and 14.4bps (V32bis)

MULTITECH MODEMS

Model	V32bis	V32terbo	V.34	MNP2-4	V42	V42bis	MNP5	Fax	Simultaneous voice & data	Int	Ext
MULTI28	●	●	●	●	●	●	●	●	●		£339
MULTI28/1	●	●	●	●	●	●	●	●	●	£147	
MULTI/PCM	●	●	●	●	●	●	●	●	●		£139
MULTI/PCMV34	●	●	●	●	●	●	●	●	●	POWERCUT!	£165
MULTI14P	●	●	●	●	●	●	●	●	●	POWERCUT!	£259
MULTI14	●	●	●	●	●	●	●	●	●	POWERCUT!	£259
MULTI28Z	●	●	●	●	●	●	●	●	●	POWERCUT!	£149

Technical Sales
Order Lines

0181-956 7000
(100 lines)

MODEMS

Achieve the full potential of your 28.8 modem with our High Speed Serial Card



If you don't have a 16550 UART IC on your system board, your modem will run at only 50% of its maximum speed!

Here's how to check:

- 1) From C:\ prompt type MSD <enter>
- 2) Select C
- 3) If your system does not report with 16550 then you need a Powermark High Speed Serial Card

Our easily installed

High Speed Serial Card gives you maximum performance.

MBSERIAL/2A £27

Save £8 - Only £19 when purchased with any modem

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MasterCard



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- 1) From C:\ prompt type MSD <enter>
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- 3) If your system does not report with 16550 then you need a Powermark High Speed Serial Card

Our easily installed High Speed Serial Card gives you maximum performance.

MBSERIAL/2A £27

Save £8 - Only £19 when purchased with any modem

ZOOM MODEM FEATURE

ZOOM

Personal Computer World:
Editor's Choice
Award Dec '93 and
June '93

Windows User:
Best On Test,
February 94

ZOOM MODEMS

Model	V32	V32bis	V34	MNP2-5	V42	V42bis	Fax	Internal	External
ZOOM144X	14.4X	●	●	●	●	●	●	POWERCUT!	£75
ZOOM144I	14.4I	●	●	●	●	●	●	POWERCUT!	£74
ZOOM144/MAC	14.4X MacPak	●	●	●	●	●	●	POWERCUT!	£98
ZOOM288X	28.8X	●	●	●	●	●	●	POWERCUT!	£129
ZOOM288I	28.8I	●	●	●	●	●	●	POWERCUT!	£119
ZOOM288/MAC	28.8X MacPak	●	●	●	●	●	●	POWERCUT!	£139



ZOOM 14.4 & 28.8 MODEMS

- Remote configuration
- Extended status reporting with 15 LED lights (14.4X and 28.8x only)

- High speed 14,400 bps fax and up to 28,800 bps data transmission with V.42bis and MNP 2-5
- 5 year warranty
- Buffered 16550 UART to prevent data overruns (14.4I and 28.8I only)

PSION MODEM FEATURE



All modems supplied by Memory Bank are BABT APPROVED

PSION DACOM MODEMS

Model	V32bis	V.F.C.	V34	MNP2-4	MNP10	V42	V42bis	MNP5	Fax	PC Card
PSIONDP32	V.32bis Gold Card	●	●	●	●	●	●	●	●	£149
PSIONDP34	V.34 Gold Card	●	●	●	●	●	●	●	●	POWERCUT! £191
PSIONMET14	V.32bis Meteor	●	●	●	●	●	●	●	●	£169
PSIONMET28	V.34 Meteor	●	●	●	●	●	●	●	●	£199

Windows 95 compatible

FREE Internet book with every V.34 Gold Card (while stocks last)

GOLD DRIVE PC Card DRIVER



- Internal device reads any PC Card
 - Fits into any 3.5" drive bay
 - Front loading
 - Reads Type I, II and III cards
 - Easy to use
 - Easy to install
 - 5MB/sec data transfer rate
- GOLD DRIVE PC Card DRIVER** POWERCUT! £99

FAX AND MODEM ADAPTER FEATURE

FAX FRIEND

The fax friend is a revolutionary, user friendly device which allows connection of a fax or modem/PC, telephone and answer machine to a single telephone line.

- Automatic fax and data switch
- Remote control of your fax or modem from any telephone extension in a building
- PBX compatible with or without DDI
- No rewiring needed - simply plug into any existing telephone socket
- The top selling fax and data switch in the UK



- Save on the cost of having a dedicated line and additional rental charges
- 3 year warranty

FAX FRIEND AVRO/FRIEND £49

Only £45 when purchased with any modem!

INTERNATIONAL MODEM ADAPTER KIT

Access over 150 national telephone systems world wide including most of the Far and Middle East, Western Europe, Scandinavia, America and Canada.

- Perfect for International business travellers
- Simple connections for all users
- All connections are modular and simply plug together
- Supplied with a handy travel bag

INTERNATIONAL MODEM ADAPTER AVRO/ADAPTER £ 41

Also available
SCANAFAX
FOR SCANNERS AVRO/SCAN £34
SCANAFAX WITH
WINFAX LITE AVRO/SCAN-W £40



POWERMARK ACADEMY

Everyone at Memory Bank passes through the Powermark Academy



DELIVERY CHARGES See page 2

EARLY BIRD Order Bonus See page 20



POWERMARK MODEM FEATURE



powermark
Modems



Internet ready

Limited Offer!
2 FREE Internet books with every Powermark 28.8 modem

Breakthrough Technology!
DSVD Voice Data Fax Modem
with full wavetable sound card
See page 1 for details

Top quality, fully featured, Internet ready, BABT approved modems brought to you at unbeatable prices from Memory Bank. All modems feature Auto-Dial and Auto-Answer to ensure ease of use. Error correction and data compression provide enhanced reliability and improved throughput of data giving you complete piece of mind whilst saving you money.

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MODEMS

Achieve the full potential of your 28.8 modem with our High Speed Serial Card



If you don't have a 16550 UART IC on your system board, your modem will run at only 50% of its maximum speed!

POWERMARK MODEMS

Model	V32bis V34	MDP2-5 V42	V42bis Fax	Internal	External
MBMOD144 MBM144	●	●	●	£63	£67
MBMOD288 MBM288	●	●	●	£109	£119

HSSC10 - 2 Port High Speed Serial Card
• Dual 16550 UART serial connection
• Enables shorter communication times and therefore reduces costs
• Save £8 when purchased with any modem

All Powermark modems are **BABT APPROVED**

All Powermark modems come complete with:

- Pipex Dial Trial
- 10 year warranty
- Winfax Lite (upgradable to Winfax Pro for Windows 95)
- Free introductory subscription to Compuserve - your gateway to the Internet
- Tel-Me software
- Comit Lite for Windows
- Delrina Dosfax Lite
- Comprehensive user manual
- Telephone cable
- Serial cable and AC adapter (with external models)

U.S. ROBOTICS MODEM FEATURE



The Intelligent Choice in Information Access

U.S. ROBOTICS MODEMS

Model	V32bis V32terbo V34	MDP2-4 V42	V42bis	MDP5	HST Cellular	Fax	Internal	External
USR5P14/VI Sportster Vi 14.4 + Voice	●	●	●	●	●	●	£105	£89
USR5P28 Sportster 28,800 V.34 Vi + Fax	●	●	●	●	●	●	POWERCUT!	£157
USR5P28/VI-E Sportster VI + Fax	●	●	●	●	●	●	£157	£157
USR5P28/MAC Sportster 28,800 V.34 Mac + Fax	●	●	●	●	●	●	POWERCUT!	£165
USRCDV/A Courier Dual Standard V.34 + Fax	●	●	●	●	●	●	£239	£239
USRCDV/B Courier Dual Standard V.34 + Fax	●	●	●	●	●	●	POWERCUT!	£238
USRJACK/P Sportster XJACK +Internet	●	●	●	●	●	●	£159	£159
USRSERIAL/2 PowerPort High Speed Dual Async Serial Card. Recommended for turbo and V34 modems to prevent bottleneck of data							£49	£49



SPORTSTER VI 14.4 +VOICE

SPORTSTER Vi 14.4 FAX MODEM

- Personal voice mail
- Fax on demand facilities
- Remote voice & fax retrieval
- FREE trial of Compuserve
- FREE trial of AOL on-line services

NEW! SPORTSTER 28,800 PCMCIA XJACK fax/data modem

- Unique XJACK connector
- Direct connection to telephone lead
- Automatic power down
- Ideal for notebook PCs
- Access to the Internet



SPORTSTER XJACK PCMCIA

SPORTSTER Vi 28,800 fax modem

- V34 at 28,800 bps
- Personal voice mail
- Fax on demand facilities
- Remote voice & fax retrieval
- FREE trial of Compuserve
- FREE trial of AOL on-line services

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FREE with every Sportster

- FREE trial with COMPUSERVE
- Free trial of AOL on-line services
- One month's free trial with COMPUSERVE
- Free access to the ACC call service. Save up to 25% on BT basic rates for national and international calls
- QuickLink II fax and data software
- Modem 9-25 pin serial cable and 9-25 pin serial converter for external Sportster
- Telephone cable



SPORTSTER VI 28,800 + FAX MODEM

Here's how to check:
1) From C:\ prompt type MSD <enter>
2) Select C
3) If your system does not report with 16550 then you need a Powermark High Speed Serial Card
Our easily installed High Speed Serial Card gives you maximum performance.

MBSERIAL/2A £27

Save £8 - Only £19 when purchased with any modem

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Catches the
ROM!

**FREE
CD ROM**

WITH EVERY
TELEPHONE
ORDER PLACED
BEFORE 1.00PM
When ordering just
ask for your **FREE**
CD ROM as it is
not shipped
automatically

HURRY!
STOCKS ARE VERY
LIMITED



**FREE
Baseball Cap**
worth £4.95

With every order
over £500
When ordering just ask for
your **FREE** baseball cap as it
is not shipped automatically.

ISDN FEATURE

YET ANOTHER SERVICE FROM MEMORY BANK

What is ISDN?

Put simply, it's a telephone line, like the ones you use everyday, only it's digital and more powerful. It allows you to send and receive any amount of information in a variety of forms, such as voice, data and video all around the world.

Why ISDN?

ISDN has a multitude of uses for all types of business users.

Data transfer

Whether you are transferring data files between offices or between home and the office, ISDN has the distinct advantage in that it's digital, resulting in faster call set-up and quicker transmission speeds.

Speed

Every application that you will use from data transfer, desk top conferencing to accessing the Internet will benefit from ISDN technology.

It's approximately 7 times quicker than using conventional analogue lines, providing the absolute clarity of public networks at a fraction of the cost.

As a result, more and more people are having ISDN lines installed - more than 1 in 4 exchange lines installed by BT are ISDN.

With an ISDN line - you can use:

- Internet
- Video conferencing
- Voice applications
- Data transfer

... **F A S T E R**

Working with



Cost

ISDN delivers true competitive advantage

for business and non business users.

ISDN can benefit people in different ways, resulting in lower call charges.

Just look at the figures!

ISDN v. PSTN

ISDN		PSTN	
Dialing	2 seconds	Dialing	11-15 seconds
Handshake	-	Handshake	15 seconds
Clear	0 seconds	Clear	5-7 seconds

FAXING

London ⇨ Japan 20 page A4 document

Analogue Group 3 fax machine	20 minutes	£8.74
ISDN Group 4 fax machine	1 minute	£2.10

DATA TRANSFER

Global fax transmission, 60 page document, Paris ⇨ Edinburgh

Conventional telephone line (PSTN)	23 minutes	£6.95
ISDN solution	25 seconds	55p

You don't have to be a large company or business to benefit from these cost savings. Lines are available on an individual basis. There is no other qualification use other than an ISDN terminal adapter.

BT ISDN SOLUTIONS

BT IGNITION TERMINAL ADAPTER

**Special
offer
£329!**

BT's Ignition ISDN Terminal Adapter with fast file transfer is simple yet effective integrated communications package. It allows users to exploit the benefits of digital communications to the full, and enjoy unparalleled levels of flexibility, quality and speed.

For total flexibility, the BT Ignition also has two analogue sockets. You can use one ISDN 2 channel for data transfers and the other as a regular phone, fax or modem line

ALL YOU NEED IN ADDITION IS AN ISDN 2 LINE
Here are some of the benefits:

- BT Helpline & ISDN Bulletin Board
- 64K sync DTE per channel (with 128K bonding option)
- Supports point to point protocol, MSN, CLI and sub-addressing
- V42bis data compression for up to 115.2Kbps asynchronous
- Simultaneous voice & data with 2 analogue ports for phone or fax
- Cables and HyperAccess Lite software included
- V110 & V120 Rate Adaption
- 2 year warranty



BT IGNITION TERMINAL ADAPTER £329
(for limited period only)

ISDN experts available for specialist advice

Credit cards are not debited until despatch. VAT at 17.5% will be added to all prices. Non-defective returned goods subject to a restocking fee. Goods are not supplied on a trial basis



**DELIVERY
CHARGES**
See
page 2

**EARLY BIRD
Order Bonus**
See page 20



Everyone at
Memory Bank
passes through the
Powermark
Academy

ISDN FEATURE

Most frequently asked questions about ISDN

- Q Is it available in my area?**
A YES. 98% of the UK has access to ISDN.
- Q How quickly can it be installed?**
A Once you have given your details, a BT engineer can come out at your convenience to install the line, usually within 6 to 10 working days.
- Q What equipment do I need for connection?**
A Depending on the application, all you may need is an ISDN Terminal Adapter and line.
- Q Is it only for large companies?**
A NO. Anyone can have ISDN - whether for home or business use.
- Q Is it very expensive?**
A NO. There is a standard installation cost of £400 and line rental of £84 per quarter. This will soon be recouped once you start using ISDN as it is much quicker than analogue technology. (See comparison table.)
- Q What are the benefits of buying from Memory Bank?**
A Choice and technical knowledge. We'll help you choose the best line option together with the right Terminal Adapter.
- Q Do I save money if I order from BT?**
A NO. Our rates are identical to BT's.
- Q Who will install my ISDN line?**
A BT.
- Q Who do I pay?**
A You pay BT for the installation and the call charges - just like an ordinary telephone bill.

ISDN SERVICE OPTIONS

ISDN 2

This is the basic rate service. It is designed to meet the needs of home users and small organisations. ISDN 2 delivers two 64K channels.

ISDN 30

ISDN 30 is BT's primary rate service. It is aimed at a wide range of companies and organisations since it is available with a minimum of 6 channels. This can then be increased, one channel at a time, up to 30 channels. It offers advanced facilities such as:

- DDI
- Call barring
- Sub-addressing

HOW TO ORDER

3 EASY STEPS TO GET ON THE

'DIGITAL SUPERHIGHWAY'

HERE'S HOW TO GET CONNECTED:

- Step 1** - Call our ISDN specialists to help you choose which service option and Terminal Adapter is best for you
- Step 2** - We will arrange for a BT engineer to install your ISDN line at a convenient time to you.
- Step 3** - Connect your Terminal Adapter to your PC and switch on!

We can provide you with the complete solution, the Terminal Adapter and the ISDN line

All it takes is one simple phone call- We'll do the rest

Ring **0181 956 7000** to place your order with Memory Bank



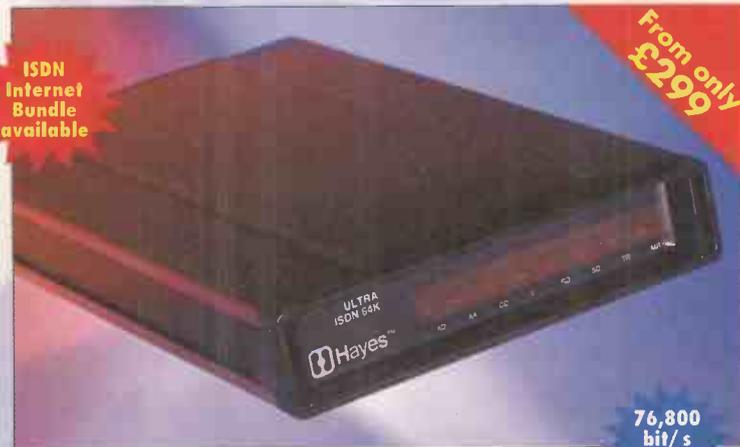
HAYES ULTRA ISDN SOLUTIONS



HAYES ULTRA-ISDN WITH INTERNET ACCESS

At last! A low cost ISDN terminal adapter packaged complete with Hayes Smartcom for Windows and everything that is needed to get onto the Internet including one month free ISDN access to the 'net. The ISDN Value Pack option contains all of the above plus Hayes ESP high performance serial port and serial cable to make sure that your PC can keep up with ISDN.

Hayes ULTRA-ISDN 64K Terminal Adapter outperforms most other single B channel adapters by transferring data at up to 76,800



bit/s without using data compression. Both V.120 and V.110 ISDN rate adaption protocols are supported.

HAYES ULTRA-ISDN 64K TERMINAL ADAPTER
HAYES ISDN VALUE PACK

76,800 bit/s ISDN

£299
£349

ISDN Internet Bundle available

From only £299

ISDN

Technical Sales Order Lines

0181-956 7000
(100 lines)



Certificate no. FS 26535



ISO9002 (Formerly BS5750) registered for the supply of computer, printer and workstation memory, processor and other upgrades. We are regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

HUGE STOCKS
Guaranteed next working day delivery on virtually all stock items for orders received even up to 5.00pm.

SAVE ££££££ with ISDN!

Memory Bank has been supplying upgrades for over 10 years and has an annual turnover exceeding £23 million with a healthy balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices.

TECHNICAL SUPPORT
Dedicated after sales technical support teams on line to help with installation.

CORPORATE & PUBLIC SECTOR
We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.

FULL MANUFACTURERS' WARRANTIES
All products supplied by Memory Bank carry manufacturers' warranties and full Powermark plc guarantees.

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Customer Service
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Fax 0181-956 7477



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Fax 0181-956 7478

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Educational Sales
Order Lines

0181-956 7890

VISA

MasterCard



MOBILE COMMS FEATURE

GSM/PCN Cellular data cards

Nokia GSM Cellular	
Data Card for Nokia 2110	£435
Satelcom GSM Cellular	
Data Card for Sony CMDX 1000 & Siemens	£399
Communicate GSM	
Cellular Data Card for Motorola 8200 and 8400	£329
Panasonic GSM	
Cellular Data Card for G400	£449
Philips GSM Cellular	
Data Card for Philips 747	£439
Orange PCN Cellular	
Data Card for Orange Nokia 2140	£389

Mobile data software

Apple GSM connection kit for PowerBook 500 series	
	£139
Lotus CC: Mail Mobile	
	£159
Phonelink Tel-Me	
	£39
Delrina Winfax Pro 4.0	
	£89
Delrina Communications Suite	
	£129

RACAL ISDN FEATURE

DAP range now with PPP & Multilink Access

RACAL

Bring your business partners closer, faster with a comprehensive range of low cost plug and play ISDN solutions from Racal - Datacom



X.TOLL ISA

- Windows 95, NT, 3x(TA only)
 - 128Kbps data throughput
 - Plug and Play
 - No memory Space
 - Half size card for ISA and EISA
 - Synchronous and Asynchronous PPP
- X.TOLL ISA RACDOLL/I £249



X.TOLL PCMCIA ISDN

- PCMCIA type II
 - Plug and Play
 - 128Kbps data throughput
 - Windows 95, NT, 3x(TA only)
- X.TOLL PCMCIA ISDN RACTOLL/PCM **POWERCUT!** £449

ISDN APPLICATIONS

- Internet access
- E-mail access
- On-line teleworking
- Remote network access
- Simultaneous analogue and data
- Video conferencing

EXTERNAL ISDN ADAPTORS

- Data & Analogue model
 - Data model
 - High Speed V24 port
 - Plug and Play
 - Sub-second connection time
 - Bundled with Transend software
 - Calling line identification
 - Multiple subscriber numbering
- DAP 6200 RACDAP6200 from £399
DAP 6300 RACDAP6300
- Dual port from £475



The Racal Datacom Solution

ISDN offers direct access to the core of the telephone network. Standard modems utilize older analogue technology with maximum speeds of 28.8Kbps. The Racal range of ISDN products utilize leading edge digital technology allowing you to directly access the digital telephone network which can operate at up to 64Kbps (more with compression). The net result is considerable cost savings.

	Typical 14.4Kbps modem	Typical 28.8Kbps modem	Racal DAP6300 ISDN
Speed	14.4Kbps	28.8Kbps	115.2Kbps
File Transfer	43 minutes	23 minutes	10 minutes
Call Charge	£3.53	£1.81	£0.80
Annual Call Charge	£1,771	£907	£401
Typical Annual Line Rental	£132	£132	£336
Total Annual Charges	£1,903	£1,039	£737
Annual Savings by using the Racal DAP6300	£1,166	£302	

THE COST SAVINGS

ISDN	£	Standard Phone Line (PSTN)	£
ISDN 2 Line Installation	£400	Standard Line Installation	£99
ISDN 2 Line Rental	£84	Standard Line Rental	£34
Total	£484	Total	£123

Call charges (National daytime rate) £5 per hour

BREAK EVEN OVER 12 MONTHS

Example 1

Replace one PSTN with ISDN Installation	£400
Rental	£200
Total	£600

Call time to recover costs:
120 hours or 2.5 hours per week

Example 2

Replace 2 Standard lines with ISDN 2 (Using DAP6200 with 2 analogue lines and ISDN)	
Installation	£400
Rental	£64
Total	£464

Call time to recover costs:
93 hours or 1.5 hours per week

Order your ISDN line exclusively from Memorybank!

Credit cards are not debited until despatch VAT at 17.5% will be added to all prices. Non-defective returned goods subject to a restocking fee. Goods are not supplied on a trial basis



DELIVERY CHARGES
See page 2

EARLY BIRD
Order Bonus
See page 20



Everyone at Memory Bank passes through the Powermark Academy

BANK

at
Powermark

MOTOROLA ISDN FEATURE

NEW! ISDN OFFICE SOLUTION

Ideal for home and remote office users. Offers a totally integrated solution at a price unmatched by any other ISDN terminal adapter.

4 times faster than the quickest analogue modem



The BitSURFR Pro is a feature rich, 128kbps ISDN terminal adapter that enables home and remote office professionals to increase productivity and cut costs by reducing the time required to transfer files. It also eliminates the need for multiple phone lines.

- Ideal for
- Internet 'surfing'
 - Telecommuting
 - Desktop Videoconferencing
 - Remote LAN access



- The BitSURFR Pro can combine two B channels into a single faster link through a process called 'Bonding' allowing for ultra fast transfer rates of up to 128Kbps. Simply connect to the serial port of your PC or Macintosh.
- With Multi-link PPP technology, for high speed connection to the Internet over ISDN, the BitSURFR Pro will combine the two channel for faster data transmission and allocate a channel as needed for voice or analogue communications.

The Motorola ISDN Office Solution includes:

- Motorola BitSURFR Pro 128Kbps terminal adapter
- Communications and Internet software
- Interactive instruction disk
- PC based Configuration Manager utility with on-screen instructions
- Help Guide to help you through set up procedures
- Cables and connectors

MOTOROLA ISDN OFFICE SOLUTION MOTO/ISDN £329

MOTOROLA MODEM FEATURE



MOTOROLA MODEMS

Model	V32bis	V32terbo	V34	MNP2-4	V42	V42bis	MCPPS	Fax	Voice	External
MOT034/ON	3400 Online	●	●	●	●	●	●	●	●	£160
MOT034/MAC	3400 Pro Mac	●	●	●	●	●	●	●	●	POWERCUT! £154
MOT034*	3400 Pro PC	●	●	●	●	●	●	●	●	POWERCUT! £139

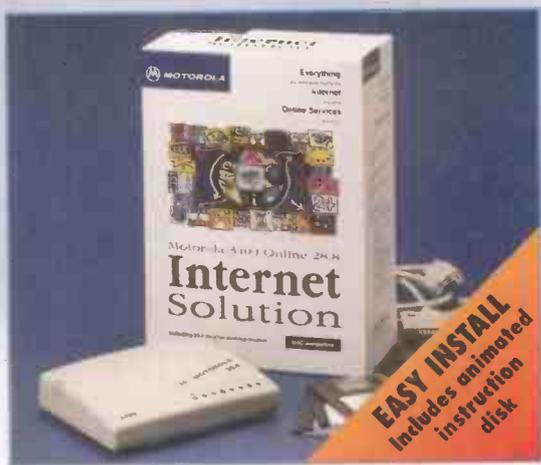
Windows 95 compatible

3400 ONLINE & PRO MODEMS

- Motorola RISC Technology
- Twice the speed of V.32bis 14.4bps technology
- Automatically selects the fastest possible line speed
- Robust performance over standard telephone lines
- Data error correction and data compression
- Fax error correction
- Phone number directory

- ➔ Speed 28,800 bps the fastest standard available
- 🌐 True V.34 worldwide compatibility
- 📞 Complete with all necessary cabling
- 📄 Includes popular fax and communications software
- 📖 Comprehensive user manual included
- ☎ Telephone support helpline

Easy install - includes animated instruction disk



Motorola 3400 Online 28.8 Internet Solution complete with all hardware and software that you need to get your PC online to the Internet!

- Internet software
- Protocol software
- File transfer software
- WorldWide Web browser software
- Electronic mail software
- Newsgroup software
- Interactive online game
- Internet phone software licence



EASY INSTALL
Includes animated instruction disk

Comms experts available for specialist advice

Technical Sales Order Lines

0181-956 7000
(100 lines)

ISDN & MODEMS



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TECHNICAL SALES PEOPLE
Our sales people are the best. They are trained specialists in their chosen field - multimedia, memory of all types, mass storage, networking and communications.

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(100 lines)

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956 7890**

VISA

MasterCard



APC FEATURE

APC
AMERICAN POWER CONVERSION



BACK-UPS PRO PLUG & PLAY

SMART UPS RANGE

UPS-APCS4	450VA	£229
UPS-APES10	1000VA	£399
UPS-APCS22	2200VA	£859

BACK UPS

UPS-APCB2	250VA	£84
UPS-APCB4	400VA	£107
UPS-APCB6	600VA	£149

BACK UPS PROS

UPS-APCB/PRO2	280VA	£94
UPS-APCB/PRO4	420VA	£149
UPS-APCB/PRO6	650VA	£207
UPS-APCB/PRO12	1250VA	£338
UPS-APCB/PRO14	1400VA	£437

BACK UP PROS WITH

PLUG & PLAY

POWERCHUTE

UPS-APCB/PRO2+	280VA	£114
UPS-APCB/PRO4+	420VA	£164
UPS-APCB/PRO6+	650VA	£211

POWERCHUTE SOFTWARE

For Netware	UPS-PCHUTE	£49
For Unix	UPS-PCHUTE/UNIX	£69
For Windows NT	UPS-PCHUTE-WT	£49
For OS/2	UPS-PCHUTE/OS	£59



POWERMANAGER

INTEL NETWORKING FEATURE

ETHEREXPRESS PRO/100 ADAPTER FAMILY

The Intel EtherExpress PRO/100 range of network cards are the total performance solution for networking your high end client and servers over 10 and 100Mbps Ethernet LANs.

Designed for systems using the Intel Pentium processor with PCI bus architecture, they are network adapters that can dramatically improve your total system performance.

- Lowest CPU utilization and seamless migration from 10Mbps to 100Mbps Fast Ethernet
- 100BASE-TX full duplex capability
- PRO/100 PCI LAN adapter allows for twice the bandwidth
- Auto negotiation - senses the highest common speed and configuration.

ETHEREXPRESS PRO/100 (PCI) ADAPTER	INETPRO100/P	£114
ETHEREXPRESS PRO/100 (PCI) ADAPTER - 5 pack	INETPRO100/P/5	£459
ETHEREXPRESS PRO/100 (PCI) ADAPTER - 20 pack	INETPRO100/P/20	£1699

LIFE TIME WARRANTY

INTEL ETHEREXPRESS PRO



- Superior performance via concurrent processing, large 32k buffer and 32-bit instructions
- 90 day money back guarantee and limited lifetime warranty

ETHEREXPRESS PRO 10+ (PLUG & PLAY)

	BNC	R/45	AUI	Unit	5 Pack
EPI16-TP INETP/TP		•	•	£59	£279
EPI16C INETP/C	•			£71	£329

Special limited offer - see opposite

ETHEREXPRESS FLASH PRO 10+ FLASH (PLUG & PLAY)

	BNC	R/45	AUI	Unit	5 Pack
EFP16-TP INETFP/TP		•	•	£69	£325
EFP16C INETFP/C	•			£81	£359

INTEL LANDESK MANAGEMENT SUITE V2.01

- Integrated desktop management applications including: software distribution and metering, inventory and remote control, printer management, traffic monitoring, powerful reporting and much more
- Powerful data capture and reporting

LANDESK MANAGER SUITE V2.1 (CD)	INTLANDESK	£349
LANDESK MANAGER V2.01 5 USER (3.5")	INTLDNGRS/5	£675



intel®

INTEL LANDESK VIRUS PROTECT 3.0

Intel's newest version of LANdesk Virus Protect provides a mechanism which can prevent viruses from propagating and spreading, while keeping network overhead at a minimum and reducing management effort. NEW! Virus firewall combines Integrity Shield, Clean Room certification and real time scanning technologies for unrivalled protection. NEW! Integrity Shield protects critical target directories. Continuous virus protection against known and unknown viruses, mutations of existing strains.

INTEL LANDESK - VIRUS PROTECT 3.0 INTLANDVIR £445



INTEL NETPORTEXPRESS XL PRINT SERVER

The high performance print server for multi-protocol networks. Supports Novell NetWare, UNIX and Macintosh network printing environments simultaneously. It connects up to three printers anywhere on your LAN, so it's easy to respond to changing users' needs.

- Print throughput of up to 180 KBps
- Simultaneously (multi-protocol) supports up to 3 protocols on up to 3 attached printers
- Software upgradable with Flash memory



Networking
experts
available for
specialist
advice

INTEL EXPRESS STACKABLE HUB

	Unit 3 Pack	
NETPORT XL BNC/TP	INNPEXL	INNPEXL/3
	£285	£799

NETPORT XL TOKEN RING	INNPEXL-TR	£449
-----------------------	------------	------

...ALSO AVAILABLE

	Unit 3 Pack	
NETPORT EL BNC/TP	INNPXL	INNPXL/3
	£245	£699

NETPORT EL TOKEN RING	INNPXL-TR	£389
-----------------------	-----------	------

- 100Mbps performance at 10Mbps prices
 - Intel Express 100BASE - TX Stackable Hub offers true connectivity for bandwidth hungry networks.
 - 100 Mbps increases response 10 fold
 - Flexible upgradable design allows stacking of up to 6 100BASE TX hubs
 - Full compliance with IEEE 802.3
- INTEL EXPRESS STACKABLE HUB INNETXP/HUB £2099

24

Credit cards are not debited until despatch. VAT at 17.5% will be added to all prices. Non-defective returned goods subject to a restocking fee. Goods are not supplied on a trial basis.



**DELIVERY
CHARGES**
See page 2

**EARLY BIRD
Order Bonus**
See page 20



**POWERMARK
ACADEMY**

Everyone at
Memory Bank
passes through the
Powermark
Academy

BANK

at
Powermark

POWERMARK COMBO NETWORK ADAPTER FEATURE



powermark

Networking

MBNET PCMCIA

- Credit card sized PCMCIA Ethernet card
- Use of EPA Energy Star components
- Uses NE2000 drivers



It runs with NetWare

Windows 95 compatible

NEW! PLUG & PLAY NETWORK KIT

- Personal Netware (2 user)
- 2 x 2000C/P
- 2 x Terminator
- 2 x T-piece
- 5m cable

PLUG & PLAY NETWORK KIT MBNETKIT/2 £79

ADD ON 1 NODE KIT

- Personal Netware
- 1 x 2000C/P
- 5m cable

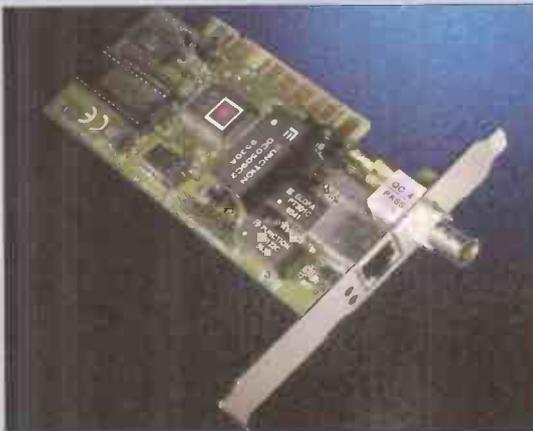
ADD ON ONE NODE KIT MBNETKIT/+1 £47

Network experts available for specialist advice

MBNET32PCI PLUG AND PLAY

- Ideal for high-performance system application
- BNC and RJ45
- Complies to PCI local bus specification
- Supports Windows 95 Plug & Play function
- High performance Bus Master architecture with DMA Buffer Management Unit
- Low power consumption
- Comprehensive software drivers for most popular networking systems including Novell NetWare, Microsoft LAN Manager, Windows for Workgroups, Windows NT, SCO UNIX,
- Auto BNC and RJ45 detection

SINGLE MBNET32PCI £65
5 PACK MBNET32PCI/5 £300



MBNET32PCI

NEW! MBNET 2000C/P PLUG AND PLAY

- Improved performance by full-duplex capability (20Mbps) with full downward compatibility
- Green Ethernet Chipset
- Includes McAfee anti-virus
- Full duplex design doubles the performance of standard NE2000 cards
- Plug and Play, auto-setup IRQ and I/O
- Jumper or software configuration
- Auto-detection for media
- Auto-detection for ISA bus
- Supports 8 IRQs and 8 I/Os
- Diagnostic program
- Smart remote boot ROM
- Uses NE2000 drivers - needs no additional drivers

SINGLE MBNET2000C/P £28
5 PACK MBNET2000C/P/5 £133

NEW! MBNETHUB/8 HUB

- 8 port hub
- Automatic partitioning of bad ports
- Hub status LEDs for diagnostic use
- Conforms to IEEE 802.3 10 base 2, 10 base 5 & 10 base T standards
- Automatic polarity protection

MBNETHUB/8 £69



- Conforms to IEEE 802.3 and fits into Type I, II and III PCMCIA slots
- BNC/UTP auto-detection
- Supports NetWare, LAN Manager, Windows for Workgroups and Packet Driver for TCP/IP
- Two LED indicators

SINGLE MBNET/PCM £79
5 PACK MBNET/PCM/5 £355

INTEL NETWORKING FEATURE



INTEL ETHER EXPRESS PRO/10+

For superior networking performance with full or half duplex functionality, make the connection with Intel's new EtherExpress PRO/10+ ISA adapters.

Advanced features include:

- Full duplex capable
- When connected to a full duplex hub, the EtherExpress PRO/10+ will allow you to optimise the performance of your

Pentium processor based PCs even further by virtually doubling the available bandwidth of the wire.

- 32Kb of buffer memory gives your high powered PCs a big networking performance edge
- Management tools for remote accessing
- Simple installation. Plug and Play for effortless configuration with automatic downloading of drivers from the server (available in Novell environments)
- FlashWorks available for centralised file updating and pre booting virus scanning
- Limited life time warranty

NEW!

INTEL ETHER EXPRESS PRO/10+ (TP)

INETP	SINGLE	£89
INETP/STP	5 PACK	£399
INETP/20TP	20 PACK	£1299
INETP/80TP	80 PACK	£4500



Massive savings on pack prices

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Email edsales@powermark.com

Customer Service
Tel 0181-956 7700
Fax 0181-956 7477

NETWORKING



Public Sector customers can purchase through HMSO by calling 01603 694153.

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VISA

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Achieve the full potential of your 28.8 modem with our High Speed Serial Card



If you don't have a 16550 UART IC on your system board, your modem will run at only 50% of its maximum speed!

Here's how to check:

- 1) From C:\ prompt type MSD <enter>
- 2) Select C
- 3) If your system does not report with 16550 then you need a Powermark High Speed Serial Card

Our easily installed

High Speed Serial Card gives you maximum performance.

MBSERIAL/2A £27

Save £8 - Only £19 when purchased with any modem

XIRCOM FEATURE

Xircom

CREDIT CARD TOKEN RING ADAPTER IIps

- High-performance, memory-saving SmartRing software
- 16 or 4 Mbps software selectable ring speed

PS-CT2-16CTP (TP) XIRPCM/TR

£299



PS-CT2-16CTP (TP)

CREDIT CARD ETHERNET+ MODEM V34

Simultaneous Ethernet/803.2 LAN plus 19,200 bps data and 14,400 bps send/receive fax modem operation in one slot

/// **NEW!** V34 COMBO CARD (TP) XIRPCM34/T-FM

£319

/// **NEW!** V34 COMBO CARD (BNC) XIRPCM34/B-FM

£339

/// **NEW!** V34 COMBO CARD (COMBO) XIRPCM34/C-FM

£349

CEM2-10BT (TP) XIRPCM/T-FM

£215

CEM2-10B2 (BNC) XIRPCM/B-FM

£229

CEM2-10BC (COMBO) XIRPCM/C-FM

£245

PCMCIA ETHERNET

BNC XIRPCM/B

£127

TP XIRPCM/T **POWERCUT!**

£109

COMBO XIRPCM/C

£131



POCKET ETHERNET ADAPTER III

- Universal connection for all notebook, laptop and desktop PCs
- Enhanced Parallel Port (EPP) capable
- Requires no internal slots

Networking experts available for specialist advice

PE3-10B2 (BNC) XIRPE £185

PE3-10BT (TP) XIRPE/TR £185

PE3-10BC (COMBO) XIRPED £198

New range of PCMCIA / wireless products available
Call for details

3COM FEATURE

3Com

The leaders in networking technology

3C503 RANGE

Standard 8-bit or selectable 16-bit card. Shared memory architecture and 8K buffer.

3C509 RANGE

	BNC	RJ45	AUI	Unit	5 Pack
3C509	●	●	●	£66	£309
3C509TP	●	●	●	£66	£309
3C509C	●	●	●	£77	£329

3C529 RANGE

MCA Etherlink III Cards.

3C529 RANGE MCA EtherLink III cards

	BNC	RJ45	AUI	Unit	5 Pack
3C529	●	●	●	£144	£699
3C529TP	●	●	●	£144	£699
3C529C	●	●	●	£149	£699

3C592 RANGE 32-bit EISA interface using Parallel Tasking Architecture

	BNC	RJ45	AUI	Unit	5 Pack
3C592	●	●	●	£149	£689
3C592TP	●	●	●	£149	£689

3C509 RANGE

16-bit high performance, low component cards.

3C579 RANGE

32-bit EISA interface using Parallel Tasking Architecture.

/// **NEW!**

3C595 & 3C597 RANGE

3C589 RANGE PCMCIA cards

	BNC	RJ45	AUI	Unit	5 Pack
3C589T POWERCUT!	●	●	●	£111	£490
3C589C POWERCUT!	●	●	●	£131	£634

TOKEN RING PCMCIA

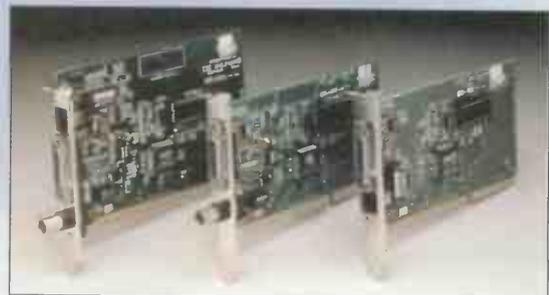
		Unit	5 Pack
3C689	TokenLink III 16/4	£289	£1399

3C590 RANGE PCI Bus Master adapters

	BNC	RJ45	AUI	Unit	5 Pack
3C590TP	●	●	●	£97	£419
3C590C	●	●	●	£106	£478

3C595 & 3C597 RANGE

/// NEW! 3C595TX	PCI, 100 BASE-T	£111	£499
/// NEW! 3C597TX	EISA, 100 BASE-T	£106	£478



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at
Powermark

TAXAN FEATURE MONITORS



TCO92 compatible

NEW!
Built-in
Multimedia
features

TAXAN

Taxan. The market leading monitor brand in the UK offering a comprehensive range of high performance and quality display solutions. For display quality, accuracy, ease of use, safety, reliability and value for money, Taxan are the preferred choice for graphics professionals and home users.

Personal
Computer
World
**HIGHLY
CONSIDERED**

TAXAN 730 TCO-S (WINDOWS 95 PLUG & PLAY)

	Size	Dot pitch	Resolution at up to:	Frequency	Tube		
TX400LR	14"	0.28mm	800 x 600	60Hz	Conventional	POWERCUT!	£189
TX410LR	14"	0.28mm	1024 x 768	60Hz	Conventional	POWERCUT!	£197
TX580+LR	15"	0.28mm	1280 x 1024	60Hz	FST	POWERCUT!	£283
TX730LR	17"	0.28mm	1280 x 1024	60Hz	FST	NEW!	£489
NEW!	TX730 TCO-S Multimedia Monitor						
	17"	0.28mm	1280 x 1024	75Hz	FST		£514
	• Built-in speakers • Microphone and headphone sockets • Volume/mute control						
TX740LR	17"	0.26mm	1280 x 1024	75Hz	FST		£568
NEW!	TX740 TCO-S Multimedia Monitor						
	17"	0.26mm	1280 x 1024	75Hz	FST		£590
	• Built-in speakers • Microphone and headphone sockets • Volume/mute control						
TX895LR	17"	0.25mm	1600 x 1200	67Hz	Trinitron	POWERCUT!	£841
TX1080LR	20"	0.28mm	1600 x 1200	65Hz	Conventional	POWERCUT!	£849
TX2100LR	21"	0.30mm	1600 x 1200	75Hz	Diamondtron		£1374
TXCV100	9.4"	0.30mm	640 x 480	72Hz	TFT LCD Colour		£1659



TAXAN 1080LR

The Ergovision series offers compatibility with the US EPA Energy Star programme as well as the VESA DPMS and TCO 92' Power Management standards. All monitors are also Macintosh compatible (Macintosh cable required). Now with 2 year warranty. On site warranty available on request.

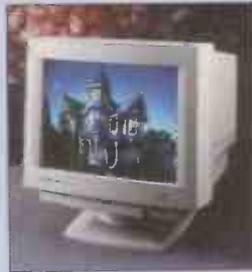
Monitor experts
available for
specialist advice



TAXAN 410LR



TAXAN 580+LR
(WINDOWS 95 PLUG & PLAY)



TAXAN 730LR
(WINDOWS 95 PLUG & PLAY)

TAXAN GRAPHICS CARDS

POWERED BY



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GTS WINBOOST (DRAM)

ISA	1MB DRAM	£83
ISA	2MB DRAM	£117
VLB	1MB DRAM	£83
VLB	2MB DRAM	£117
PCI	1MB DRAM	£83
PCI	2MB DRAM	£117



GTS WINTURBO

- With Windows 3x & Windows 95 software MPEG player
- Windows 95 Plug & Play

- Up to 100Hz flicker free display
- Windows motion video accelerator
- Up to 16.7 million colours



- Easy installation with no DIP switches



GTS WINBOOST

WINTURBO ACCELERATORS

GTS WINTURBO (VRAM)

ISA	2MB VRAM	£194
ISA	4MB VRAM	£308
VLB	2MB VRAM	£194
VLB	4MB VRAM	£308
PCI	2MB VRAM	£194
PCI	4MB VRAM	£308

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NETWORKING
& MONITORS

Aaron's Answers



Dear Aaron,

Windows runs very fast on my friend's PC, even though we have identical models. All the configuration is the same, and nothing springs to mind. Why should this be, is it the machine that is at fault or is it just a quirk?

Bill Wildered

Dear Bill,

Just a thought - Have you set the virtual memory option under EMM386 in the control panel? If not, change the setting to either permanent or temporary. Don't forget the 32-bit disk access option as well. Since your friend has the same machine, have you thought of a processor upgrade, memory upgrade and even Microsoft Windows 95? Then your friend will be envious of you!

Yours, Aaron

Send your questions to Aaron's Answers, c/o Memory Bank, The Powermark Centre, The Waterfront, Elstree Road, Elstree, Herts WD6 3RP or fax him on 0181 956 7100. You can also Email Aaron on: aaron@powermark.com

Aaron makes every effort to answer your problems, but he cannot guarantee to reply to everyone.

Memory Bank
The Powermark Centre,
The Waterfront, Elstree Road,
Elstree, Hertfordshire WD6 3RP

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**DOG OF THE
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ARF!



Corel Office
Companion (CORD/OFF) £40

**VIDEO
CARDS**

TV BUSTER PRO

EXTERNAL VTB/E £69

NEW! REELMAGIC MAXIMA

REELMAGIC/MAX £189

- Watch VideoCDs on your PC
- Resolution up to 1280 x 1024
- Includes bundled software

MIRO VIDEO PCI

20TD LIVE MIRO20TD/L £345

MIRO VIDEO

20SD TWIN MIRO20TD/TWIN £549

MIRO CONNECT 34 £249

MOVIE

MACHINE II MOVIE/MACHII £475

MOVIE MACHINE

PRO MOVIE/MACHP £299

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MATROX MILLENNIUM MGA

2 MB WRAM PCI £255

MATROX MILLENNIUM MGA

4 MB WRAM PCI £349

MATROX MILLENNIUM MPEG

+ VIDEO CAPTURE £239

STB VELOCITY 64V 2MB EDO

VRAM PCI/VLB £209

STB VELOCITY 64V 4MB EDO

VRAM PCI/VLB £339

NEW! STB 64 VIDEO

1MB EDO DRAM VLB/PCI £129

2MB EDO DRAM VLB/PCI £149

HITACHI MONITOR FEATURE

HITACHI

Hitachi is one of the world's largest manufacturer of computer monitor tubes. With a \$5.5 billion spend on R&D last year, Hitachi is strategically placed to bring to the market the very latest in computer screen technology.

The current product range offers users a choice of technologically advanced, high performance and attractively priced computer monitors.



HITACHI 17MVXPro2

The new 17MVXPro 2 boasts a super fine dot pitch of .22mm, and a 1280 x 1024 resolution at 77Hz which you would expect from a professional CAD or DTP monitor but not for £529. Its quality is validated by being one of the few monitors available with TCO92 approval.

NUTEK



HITACHI 15MVXValue

NATURAL COLOURS



1st year on-site



	Code	Size	Dot pitch	Resolution	Refresh	Tube	
15MVXValue	HITMON/15MVX	15"	0.24mm	1280 x 1024	60Hz	FST, Energy Star	£249
NEW! 17MVXPro2	HITMON/17MVX/PRO2	17"	0.22mm	1280 x 1024	77Hz	FST, TCO92, Nutek	£529
CM2096	HITMON/CM2096	20"	0.27mm	1280 x 1024	75Hz	Standard, Energy Star	£855
CM2011	HITMON/CM2011	20"	0.24mm	1280 x 1024	75Hz	Standard, Energy Star	POWERCUT! £959
CM2111	HITMON/CM2111	21"	0.22mm	1600 x 1200	75Hz	FST, Nutek	£1389
CM2112	HITMON/CM2112	21"	0.22mm	1600 x 1280	80Hz	FST, Nutek, TCO92	£1599

All Hitachi monitors offer full EC safety and ergonomic compliance. All models are PC, Macintosh and Workstation compatible (when supplied with the appropriate adapter) and come with a 3 year warranty (1st year on-site).

VIEWSONIC MONITOR FEATURE



VIEWSONIC 21PS

ViewSonic has become synonymous with providing superior advanced colour monitors. ViewSonic are dedicated to innovative design and manufacture of high quality monitors. As a result they have gained the respect and acknowledgement of blue chip companies and European industries. ViewSonic's range of monitors are designed for users of every requirement, from the Economy range for the home user to the Graphics and Professional range for office and professional users.

ViewSonic®

The Multimedia range has integrated speakers for true multimedia use.



VIEWSONIC 17GS

	Code	Size	Dot pitch	Resolution	Frequency	Tube	
14ES	VIEW/14ES	14"	0.28mm	1024 x 768	60Hz	FST	£185
15ES	VIEW/15ES	15"	0.27mm	1024 x 768	77Hz	FST	£270
15G	VIEW/15G	15"	0.27mm	1280 x 1024	70Hz	FST	£320
15GS	VIEW/15GS	15"	0.27mm	1280 x 1024	65Hz	FST	£339
17GS	VIEW/17GS	17"	0.27mm	1280 x 1024	65Hz	FST	£569
20G	VIEW/20G	20"	0.28mm	1600 x 1280	60Hz	FST	£1039

Multimedia series with built-in speakers

15GA	VIEW/15GA	15"	0.27mm	1280 x 1024	65Hz	FST	£368
17GA	VIEW/17GA	17"	0.27mm	1280 x 1024	65Hz	FST	£609
17EA	VIEW/17EA	17"	0.28mm	1280 x 1024	65Hz	FST	£540

Professional series

17PS	VIEW/17PS	17"	0.25mm	1600 x 1280	60Hz	FST	£679
21PS	VIEW/21PS	21"	0.25mm	1600 x 1280	60Hz	FST	£1399



VIEWSONIC 17GA
PerfectSound™

Monitor experts
available for
specialist advice

28

Credit cards are not debited until despatch. VAT at 17.5% will be added to all prices. Non-defective returned goods subject to a restocking fee. Goods are not supplied on a trial basis.



**DELIVERY
CHARGES**

See page 2

**EARLY BIRD
Order Bonus**

See page 20



**POWERMARK
ACADEMY**

Everyone at
Memory Bank
passes through the
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POWERMARK MONITOR FEATURE



powermark
Monitors

New from Memory Bank - top quality monitors packed with leading edge features at very low prices.

MBMON15 DELUXE

15" FLATTER SQUARER TUBE MONITOR (MPRII)

We have tested this monitor with some of the best known names and it has exceeded all expectations and comes out as one of the best for picture quality, image sharpness and vivid colours. With a maximum non-interlaced resolution of 1024 x 768 at 0.28 dot pitch this monitor will give you true image likeness in all your applications.

Top quality, low radiation, non-glare, non-interlaced monitor with Energy Star power saving. Flatter squarer tube and Invar mask give even crisper fuller screen images.

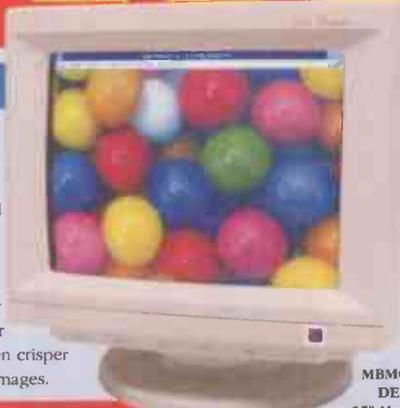
15" minimum recommended screen size for Windows 95

All Powermark monitors are MPRII compliant and feature EPA Energy Star power saving

EXCLUSIVE MONITORS AT LOW, LOW PRICES!



MBMON17 DELUXE 17" Monitor



MBMON15 DELUXE 15" Monitor

MBMON17 DELUXE

17" FLATTER SQUARER TUBE MONITOR WITH OSD

To really get the most out of Windows 95, choose our high quality 17" monitor with OSD (On Screen Display). With a maximum non-interlaced resolution of 1280 x 1024 at 0.28 dot pitch you can be sure that Powermark's fully featured 17" monitor will meet all your demands and at an unbelievably low price too!

	Size	Dot pitch	Resolution	Frequency	Features	
MBMON15	15"	0.28mm	1024 x 768	65Hz	FS, NG, IM, TSB	£219
MBMON17	17"	0.28mm	1280 x 1024	64Hz	FS, NG, IM, OS, TSB	£369
MBMON20	20"	0.28mm	1600 x 1280	82Hz	DF, IM, AS, TSB, DIG	£829
MBMON21	21"	0.28mm	1600 x 1280	82Hz	FS, DF, IM, TSB, DIG	£989

KEY NG = Non-glare, FS = Flatter Squarer Tube, IM = Invar Mask, OS = On Screen Display, TSB = Tilt and Swivel Base, DIG = Digital Control, AS = Anti-Static, DF = Double Focus

AVERMEDIA FEATURE

AverKey 3

- PC & Apple Mac compatible (Auto Mode Detection)
- Complete 'PLUG-IN-AND-GO' hardware solution (no awkward software required)
- Ideal for business, education & training, video recording
- 100% flicker-free picture filter using full screen buffer
- Displays simultaneously on monitor & TV/video device
- 2 x zoom provides a clear screen even at distance



All CE approved

Resolutions up to 800 x 600

AverKey Plus

- Compatible with all PCs with a VGA output, including portables & notebooks



- Built-in Flicker-Free Filter
- New 6 line buffer providing picture stability greater than competing "budget" converters (typically with only 4 line buffers)
- Displays simultaneously on VGA monitor and TV/video device
- Underscan & Overscan functions (in DOS & Windows) to fit different display devices
- Supports all IBM standard VGA modes and true colour modes (256/32K/64K/16M colours)
- Output : Composite RCA, S-Video; VGA



Bundled with award-winning PC authoring software "ACTION"

- Freeze frame function allows the presenter to operate the computer independent of the presentation
- Full Underscan & Overscan to fit different displays
- Bundled with award-winning PC authoring software "ACTION"
- Output: Composite RCA; S-Video; SCART RGB; VGA

AVERKEY 3 AVERKEY3 £249

AVERKEY PLUS AVERKEY/PLUS £97

Aver VideoEditor

- Complete PC video editing package with computer/video overlay and VGA to TV converter
- Single time video titling, editing and videotape recording
- Control the video source and videotape recorder on the PC
- Add titles, graphics, animations & video images onto live video
- Capture still video images on-screen for use as picture icons
- Playback edited video on TV and record to VCR

- Simultaneous display on both the computer & TV monitors
- Partition videos into groups of individual video clips
- Capture single frames of video clips
- Arrange video clips in any order by 'drag and drop'
- Supports Sony's RC time code
- Review the final edited video



- Flicker-free picture quality on TV
- Supports composite video and S-video for TV display

AVER VIDEOEDITOR AVER/VIDEOEDITOR £399

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MONITORS & MULTIMEDIA



Certificate no. FS 26535



ISO9002 (Formerly BS5750) registered for the supply of computer, printer and workstation memory, processor and other upgrades. We are regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

HUGE STOCKS
Guaranteed next working day delivery on virtually all stock items for orders placed even up to 5.00pm.

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Memory Bank is the direct division of Powermark plc which has been supplying upgrades for over 5 years and has an annual turnover exceeding £23 million with a healthy balance sheet.

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We only supply products from leading manufacturers and at low, low prices.

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We welcome orders from corporate, education and public sector organisations. Just fax or phone your order number.

FULL MANUFACTURERS' WARRANTIES
All products supplied by Memory Bank carry manufacturers' warranties and full Powermark plc guarantees.

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NEW!
SONY MDH-10 DATA DRIVE



- Optional PCMCIA interface
- Rewriteable - 140MB
- MiniDisc audio compatible

£499

New!

- Voice
- Data
- Fax
- Message

Modem



- DSVD - Digital Simultaneous Voice and Data
- Digital telephone and answering machine
- Built-in audio/midi 16-bit sound card

£155
See page 1

CD ROM DRIVES, SOUND CARDS AND SPEAKERS FEATURE

RECORDABLE CD ROMS

- NEW!** PLASMON CDR4220 INTERNAL CDPLAS/24W £849
 - NEW!** PLASMON CDR4220 EXTERNAL CDPLAS/24E £899
 - Record dual speed
 - Playback quad speed
 - INCAT CD PRO software
- HEWLETT PACKARD**
- 4020i CDH4020i £799
 - 4020e CDH4020e £859

VIDEO CARDS

- TV BUSTER PRO EXTERNAL VVB/E** £69
- NEW!** REELMAGIC MAXIMA REELMAGIC/MAX £189
- Watch VideoCDs on your PC
- MIRO VIDEO PCI 20TD LIVE MIRO20TD/LIVE** £329
- MIRO VIDEO 20SD TWIN MIRO20TD/TWIN2P** £529
- MIRO CONNECT 34** £249
- MOVIE MACHINE II MOVIE/MACHII** £475

SPEAKERS

- Quality speakers supplied as matched pairs
- CREATIVE LABS SBS 300 STEREO SPEAKERS PWR/SB300** £79
- 10 watts
- LABTEC CS150 SPEAKERS LABTECCS150** £7
- SCREENBEAT SONY SPEAKERS PWR/CSB100** £72
- TRUST SW10 SPEAKERS PWR/TRUST/SW10** £20
- 80 Watts
- YAMAHA YST-M10 PWR/SPK/YAMAHA** £49
- 10 watts per channel
 - 80Hz - 20KHz frequency
- YAMAHA YST-SW10 SUB WOOFER YAM/MSW10** £79

CD ROM ACCESSORIES

- QUALITY DISK CADDY CDRC/1** £5
- 10 PACK CDRC10** £45
- CD ROM BLANK DISKS (700MB) CDPHB** £10

NEW! ULTRA PERFORMING GRAPHICS CARDS

- MATROX MILLENNIUM MGA 2 MB WRAM PCI** £255
- MATROX MILLENNIUM MGA 4 MB WRAM PCI** £349
- MATROX MILLENNIUM MPEG + VIDEO CAPTURE** £239
- STB VELOCITY 64V 2MB EDO VRAM PCI/VLB** £209
- STB VELOCITY 64V 4MB EDO VRAM PCI/VLB** £339
- NEW! STB 64 VIDEO 1MB EDO DRAM VLB/PCI** £129
- 2MB EDO DRAM VLB/PCI** £149



PLUG & PLAY CD ROM RECORDER

SOUND BOARD HARDWARE

- ANALOGUE Y CABLE YCBL** £11
- MIDI ADAPTER MID/TC** £21
- DESK MICROPHONE SBMC** £11
- HEADPHONES SHHD** £9

CD ROM DRIVES

	Product Code	Type	Speed	Transfer rate	Access	Loading	Cache	Interface	Intc	Ext
NEW!	Powermark MBCDROM	IDE	Q	600Kb/sec	190ms	Tray	256Kb	E-IDE	£58	-
NEW!	Powermark MBCDROM/6	IDE	6	900Kb/sec	150ms	Tray	256Kb	E-IDE	£95	-
	Creative 6 speed Plug & Play BLASTERCD/6X	IDE	6	600Kb/sec	150ms	Tray	256Kb	E-IDE	£125	-
	Goldstar GCD-R540B CDG540B	IDE	Q	600Kb/sec	220ms	Tray	128Kb	E-IDE	£59	-
NEW!	Goldstar GCD-R560B CDG0R560B	IDE	6	900Kb/sec	150ms	Tray	256Kb	E-IDE	£79	-
NEW!	Goldstar GCD-R580B CDG0R580B	IDE	8	1200Kb/sec	110ms	Tray	256Kb	E-IDE	£109	-
	Mitsumi FX400 CDMIFX4	IDE	Q	600Kb/sec	230ms	Tray	128Kb	E-IDE	£49	-
NEW!	Mitsumi FX600 CDMIFX6	IDE	6	900Kb/sec	150ms	Tray	256Kb	E-IDE	£109	-
NEW!	NEC 4X4C CDH4X4C	IDE	Q	600Kb/sec	250ms	Tray	256Kb	E-IDE	£179	-
	Pioneer 124X CDP124	IDE	Q	600Kb/sec	150ms	Tray	256Kb	E-IDE	£99	-
NEW!	TEAC CD56E FULL KIT CDTEAC56E	IDE	6	900Kb/sec	139ms	Tray	256Kb	E-IDE	£138	-
	Toshiba XM5402B CD15402	E-IDE	Q	600Kb/sec	190ms	Tray	256Kb	E-IDE	£61	-
	NEC 6Xi/e CDH6X	SCSI	6	900Kb/sec	150ms	Caddy	256Kb	16-bit SCSI	£275	£303
NEW!	Panasonic 504B CDPAS04B	SCSI	Q	600Kb/sec	150ms	Tray	128Kb	16-bit SCSI	£104	-
	Pioneer DRM624X CDPDRM624X	SCSI-II	Q	670Kb/sec	150ms	Caddy	256Kb	16-bit SCSI	£394	£469
	Pioneer DRU124X CDPDRU124	SCSI	Q	660Kb/sec	150ms	Tray	256Kb	16-bit SCSI	£169	£219
	Plextor 6x CDPLEX/6	SCSI	6	900Kb/sec	115ms	Caddy	512Kb	16-bit SCSI	£275	£303
NEW!	TEAC CD56S SCSI CDTEAC56S	SCSI	6	900Kb/sec	139ms	Tray	256Kb	16-bit SCSI	£199	-
NEW!	Toshiba XM-3701B CD13701B	SCSI-II	6	1000Kb/sec	135ms	Caddy	256Kb	16-bit SCSI	£249	-

Recordable CD ROMs available - call for details

Key to drive speeds: D=Double, Q=Quad, T=Triple, 6=Six speed

HAUPPAUGE FEATURE

WIN/TV CELEBRITY

THE NEW GENERATION... the best choice for Multimedia Video! Perfect colour digitising from Hauppauge.

Works with all VGA and SVGA cards up to 1280 x 1024 with up to 16.7 million colours, requiring no feature connector. No memory size limitations make this the easiest overlay/capture card to install. Ideal for displaying full motion TV.

- Fast 320 x 240 lossless AVI clip capture
- Integrated TV tuner/teletext
- Square Pixel (CCIR 601) support
- Resizable TW window from full screen down to icon size
- Professional Teletext application supports DDE to your spreadsheets

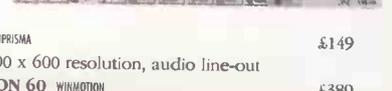


- WIN/TV CELEBRITY WINTVCELEB** £255
- VIDEO OUT MODULE FOR WIN/TV CELEBRITY WIN/VIDOUT** £149
- WIN/CINEMA 95 WINTVCINEMA** £175

WIN/TV PRISMA WINTVPRISMA £149

- 640 x 480, up to 800 x 600 resolution, audio line-out

NEW! WIN MOTION 60 WINMOTION £389



Everyone at Memory Bank passes through the Powermark Academy

DELIVERY CHARGES
See page 2

EARLY BIRD Order Bonus
See page 20



BANK

at **Powermark**

POWERMARK MULTIMEDIA FEATURE



powermark
Multimedia

Limited Special Offer!
Now with additional
FREE CD ROM
game pack!

Lower Prices!



POWERMARK MULTIMEDIA KITS

POWERMARK MULTIMEDIA KIT POWERCUT! £119

- Quad speed CD ROM drive
- Sony, Mitsumi, Panasonic interface
- 16-bit sound card
- Stereo speakers
- Microphone
- CD ROM game pack

NEW! POWERMARK 6 SPEED MULTIMEDIA KIT POWERCUT! £149

- Six speed CD ROM drive
- Sony, Mitsumi, Panasonic interface
- 16-bit sound card
- Stereo speakers
- Microphone
- CD ROM game pack

POWERMARK VALUE AUDIO KITS

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- 16-bit sound card

NEW! 6 SPEED VALUE AUDIO KIT POWERCUT! £125

- Six speed CD ROM drive
- Sony, Mitsumi, Panasonic interface
- 16-bit sound card

Multimedia experts available for specialist advice

POWERMARK 16-BIT PLUG & PLAY SOUND CARD

- 3D SOUND
- SoundBlaster compatible
- IDE interface
- Integrated MIDI interface
- 20 voice music synthesizer
- Wave table synthesizer
- Upgrade connector

MSB16 POWERMARK 16-BIT PLUG & PLAY SOUND CARD £45

MSWAV WAVE TABLE UPGRADE FOR SOUND CARD £35



POWERMARK CD ROM DRIVES

MSQRDM POWERMARK QUAD CD ROM DRIVE £58

- Quad speed CD ROM drive
- 600Kb/sec transfer rate
- 190ms access time
- Top quality design
- Tray loading

MSQRDM/6 POWERMARK SIX SPEED CD ROM DRIVE £95

CREATIVE LABS FEATURE

SOUNDBLASTER CARDS

NEW! SOUNDBLASTER AWE 32 FULL PLUG & PLAY SB32AWE/IDE £151

- IDE interface
- Next generation SoundBlaster card offering unbelievable sound quality

NEW! SOUNDBLASTER DISNEY KIT SBDISNEY/KIT £Call

- 16-Bit sound card PnP
- Quad speed CD ROM
- Disney interactive software

SOUNDBLASTER AWE VALUE PLUG & PLAY SB32AWE/IDEV £97

NO ASP CHIP WAVEBLASTER II WBLSTII £79

SOUNDBLASTER 16 VALUE IDE SB16B/IDE £59

PHONEBLASTER V34

- 3 in 1 card**
- V34 fax modem
 - Integrated sound card
 - Voicemail & fax software included
 - BAPT approved
- PHONEBLASTER V34 SBPHONE** £259

MULTIMEDIA KITS

NEW! CREATIVE LABS LOTUS KIT SBQUAD/KIT £237

HOMESTUDIO KIT HOMESTUDIO £289

NEW! DISCOVERY QUAD SPEED KIT PLUG & PLAY SBDIS/AXKIT £189



SOUNDBLASTER AWE32 FULL PnP

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SHAREVISION

PC300 SHAREPC300 £299
Easy to use audio conferencing over a regular telephone line

VIDEO BOARDS

VIDEOBLASTER RT300 VBLSTR300 £215

VIDEOBLASTER SE100 VBLST/SE £135

VIDEOBLASTER MP400 VBLSTMP400 £119

MULTIMEDIA KITS

NEW! GAMEBLASTER 32 VALUE KIT GAMEBLASTER/V £151

NEW! GAMEBLASTER 32 AWE KIT GAMEBLST/AWE £239

NEW! PERFORMANCE PACK SBPERFORMANCE £285

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MONITORS, MULTIMEDIA & CD ROM DRIVES



1509002 (Formerly BS5750) registered for the supply of computer, printer and workstation memory, processor and other upgrades. We are regularly assessed by the British Standards Institution to ensure compliance with the quality standard.

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Guaranteed next working day delivery on virtually all stock items for orders placed even up to 5.00pm.

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MEMORY

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PUP OF THE MONTH



Win 95
Advisor
(95WINADVISOR95) £7
with any purchase over
£95 + VAT + carriage

... and here's what some of our customers have said ...
Although we have dealt with your organisation once or twice in the past it was not until we used you again recently that it dawned on us just how much better you are at looking after your customers than many of your major competitors.
...we hope to place the major part of our business with you in the future and hope that you will maintain your excellent standards.

A D Forrester
Devon

MEMORABLE GAGS



Punchlines to old, old, old favourites
...I dunno, Haven't caught one yet
...You can't wash your hands in a buffalo
...and the gorilla said 'I'm not surprised at those prices'

If you can't remember the stories to these then contact Quentin Quizzy and he'll be happy to oblige.

NEC FEATURE

NEC

New from NEC!
**4 disk
CD ROM Player**

ONLY
£179



NEC, leading innovator in the CD-ROM market, offers a comprehensive range of drives to meet the needs of all users. First to market with double and quad speed CD ROM drives, NEC has now introduced the first quad speed jukebox drive - the Multispin 4X4c

Multispin 4X4c

- IDE
 - 600Kb/sec transfer rate
 - 250ms access time
 - 128Kb cache
 - Slot loading
- NEC 4X4c
CD ROM DRIVE (CNR44C) £179

Multimedia experts available for specialist advice

NEW! TEAC 6 SPEED CD ROM DRIVE FEATURE

TEAC 6 SPEED CD ROM DRIVE

- Full Kit versions
- 900Kb/sec transfer rate
 - Seek time 110ms
 - Access time 139ms
 - Tray loading
 - CD ROM XA, Photo CD and CD-I compatible
 - Audio output
 - Windows 95 compliant
 - 256Kb buffer
 - IDE interface
 - Can be mounted vertically or horizontally
- FULL INTERNAL IDE KIT (With IDE cable and interface card) CDT6ACS6E £142
BARE IDE DRIVE (Drive and Drivers only) £99
INTERNAL SCSI KIT CDT6ACS6S £199

TEAC

Personal Computer World
EDITOR'S CHOICE



WIN A CD ROM DRIVE!

Simply purchase any product over £50 from Memory Bank and answer the following question and you could win a Teac 6 speed CD ROM drive.

What is the internal buffer of the TEAC 6 speed CD ROM drive?

- A. 64Kb
- B. 256Kb
- C. 128Kb

THERE WILL BE ONE LUCKY WINNER EACH MONTH FROM NOW UNTIL 31/05/96

Ask our Technical Sales Team for details of the offer when you place your order

Terms and conditions

1. Competition open to persons aged 18 and over, and excludes entry from employees and any suppliers associated with Powermark plc or any of its company divisions.
2. Only one prize draw entry per person per prize.
3. Only one prize per month until the end of the competition.
4. No cash alternatives can be offered.
5. One correct entry will be picked out each month until the 31/05/96.
6. The winners name will be published in the following month's advertisement.
7. The winner will be notified within 14 days of the draw each month.

INNOVATIVE COMMUNICATIONS FEATURE

Innovative Communications present the portable CD ROM drives for Windows 95



The CyberRomCD dual is a slimline, slick looking portable PC Card drive that is fully Windows 95 compatible and can be used as a stand alone CD audio player. CyberRomCDs are truly portable with three power options from batteries, notebooks source or AC adapter.



CyberRomCD Dual speed £245



CyberRomCD Quad Speed £269

CyberRomCD	slimline dual speed	CYBERROM2X	£245
CyberRomCD	quad speed	CYBERROM4X	£269
CyberRomCD	six speed	CYBERROM6X	£309
CyberManCD	slimline dual with built-in sound	CYBERMAN	£369
MultiRomCD	quad speed 4 CD ROM changer - parallel port		£379
MultiRomCD	quad speed 4 CD ROM changer with built-in sound - parallel port		£439

Credit cards are not debited until despatch VAT at 17.5% will be added to all prices. Non-defective returned goods subject to a restocking fee. Goods are not supplied on a trial basis



DELIVERY CHARGES
See page 2

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CASIO DIGITAL CAMERA FEATURE



The perfect presentations tool

Quick View. Instant Images. Infinite Potential.
The New Casio QV-10 Digital Camera.

The Casio Quick View Shoot▶Review▶Edit▶View

- Presentations
- Reports
- Visual Databases
- Desktop Publishing
- Visual Memos
- E-Mail
- Internet Web Page Creation

Simply capture the shot you want then review it instantly on the LCD screen.

Package includes camera, PC or Mac software and cables, video cable, batteries, case, cleaning cloth, mains adaptor and operating instructions.

CASIO QV-10 DIGITAL CAMERA £398



Images can be downloaded to PC/Mac, laptop or TV/video

Features

- Built-in high resolution colour 1.8" TFT LCD screen
- 96 image memory
- Transfer images to PC/Windows - Apple Mac - TV/Video
- 270 degree lens rotation
- Any image delete function
- Multi image display
- Close-up macro lens
- Exposure correction control
- 16.7 million colours (24 bit)
- Multi format file storage
- Self timer
- Compact lightweight design (less than 200 grams)
- Mains adapter included

CASIO

VIDEOLOGIC FEATURE



A new generation of leading price/performance 64-bit Windows accelerators... expandable with low-cost multimedia options



	300	400	700
GrafixStar Windows Accelerators			
64-bit Graphics Controller	S3 Trio64	S3 Trio64V+	S3 Vision968
Performance	85+ million Wm	95+ million Wm	110+ million Wm
Memory	DRAM 1-2	DRAM 1-2	VRAM 2-4
Max Resolution	1280 x 1024	1600 x 1200	1600 x 1200
AVI Acceleration	Optional	Standard	Standard
Software MPEG playback	No	Yes	Yes
SmartTools Software	Yes	Yes	Yes
Video upgrade	VMC Controller	LPB on-board	VMC Controller
Bus	PCI/VLB	PCI	PCI/VLB
	1MB - £83	1MB - £88	2MB - £235
	2MB - £125	2MB - £129	4MB - £387
Order Code	VIDGS/300	VIDGS/400	VIDGS/700
Multimedia upgrade option cards	• MPEG Player • Captivator Pro • Captivator Pro TV	• MPEG Star	• MPEG Player • Captivator Pro • Captivator Pro TV
1MB upgrade VIDGS/300/400	£47	£47	
GrafixStar 300/400/700 VMC Controller VIDGS/VMC	£39	£39	£39
GrafixStar 700 2MB upgrade & VMC Controller VIDGS/VMC2MBUG			£149



Multimedia upgrade options

	MPEG Player	Captivator Pro	Captivator ProTV	MPEG Star
Description	Hardware playback of MPEG-1	Still/video display & capture	Still/video display & capture plus TV tuner	Hardware playback of MPEG-1
Graphics Card required	GrafixStar 300/700	GrafixStar 300/700	GrafixStar 300/700	GrafixStar 400
Video bus	Requires VMC Controller daughtercard	Requires VMC Controller daughtercard	Requires VMC Controller daughtercard	Attaches directly to GrafixStar 400
Code	VIDGS	VIDGS	VIDGS	VIDGS
	£199	£165	£199	£79

Windows 95 compatible

MPC 3 compliant

MULTIMEDIA

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Authorised Partner

As a Microsoft Solution Provider, Memory Bank can provide 'Select' agreements for volume purchases of Microsoft applications, systems and server products.

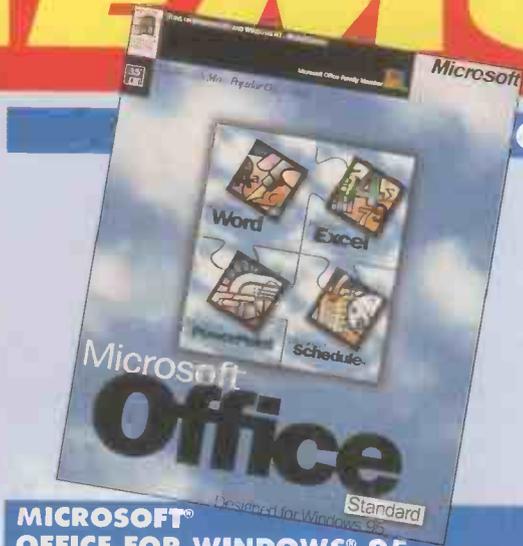
Contact our Microsoft Select team for details.

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Memory Bank and Microsoft can help you! The *Open Licence* is easily the most efficient and flexible way to acquire a comprehensive selection of the world's leading software. It makes licensing software incredibly simple and straightforward. The *Open Licence* gives you volume purchasing power for ordering and reordering Microsoft software for up to two years. It's an easy, one-step process to acquire software licences, product upgrades, and ongoing software maintenance. You can choose the right amount of products that fit your organisation, today and tomorrow. *Maintenance* enables you to immediately take advantage of innovations offered by new versions of Microsoft. Call our Microsoft Open Licence Division for details

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MICROSOFT OFFICE FOR WINDOWS 95

Microsoft Office for Windows 95 gives access to powerful tools, for powerful accomplishments.

ATTENTION ALL STUDENTS! Microsoft Office Pro 95 Special Student Licence Pack - only £85

Available to students aged 16 or over who are engaged in full or part-time education (subject to verification by Microsoft)

Microsoft Windows for Students:	Windows 95 AND Windows NT Workstation 3.51 £42 (install one or other or user can set to dual boot)
Microsoft Office for Students:	Office Professional for Windows 95 OR Office 4.2 £85 for Macintosh
Microsoft Developer Tools for Students:	Visual Basic Professional AND Visual C++ Professional £85
Microsoft Works for Students:	Works for Windows 95 OR Works for Macintosh £25
Microsoft Publisher for Students:	Publisher for Windows 95 £25

How to order

1. Purchase Student License Pack from Memory Bank (this is a voucher only)
 2. Complete the voucher and get it signed by the institution to which you are enrolled. The institution must be DfEE recognised
 3. Post completed form to Microsoft
- Once Microsoft has validated the form they will send you, usually within 14 days, the appropriate software (on CD ROM only and without documentation. Floppy versions and manuals can be purchased at extra cost)

CONDITIONS

If Microsoft reject your licence form, you may return the pack to Memory Bank for a refund less a 20% restocking fee and carriage charges.

When your student status ends, your licence is automatically terminated. Further conditions apply

Office for Windows 95

In Microsoft Office Standard for Windows 95, you get: Excel, Word, PowerPoint and the new Microsoft Schedule+.

- IntelliSense technology does routine tasks for you
- Type a help request in your own words and the Answer Wizard gives you the answer you need

3.5" Disk	£336
CD ROM	£336
1 Site Licence	£286
Upgrade CCP	£141
Upgrade CCP CD	£141
Upgrade CCP 1 Site Licence	£120
Competitive Upgrade	£165
Comp. Upgrade CD	£165

MICROSOFT ACCESS FOR WINDOWS 95

Access for Win 95	£226
Access for Win 95 1 SL	£195
Access for Win 95 UP CCP	£82
Access for Win 95	
UP CCP 1 SL	£70
Access for Win 95 UP	£107

Office Professional for Windows 95

Microsoft Office Professional offers next-generation integration. All the features of Microsoft Office Standard plus Access, a powerful relational database. Build complex intuitive databases or use the built in Tips and Wizards for storing simple data.

- Filter by Form/Selection
- Compatible with all other major database software
- Built in database strings

3.5" Disk	£429
CD ROM	£429
1 Site Licence	£369
Upgrade CCP	£209
Upgrade CCP CD	£209
Competitive Upgrade	£249
Comp Upgrade CD	£249

MICROSOFT SCHEDULE+ FOR WINDOWS 95

Put time on your side with Microsoft Schedule+ for Windows 95	
Schedule+ for Win 95	£79
Schedule+ for Win 95 1 SL	£68

MICROSOFT OFFICE 95 FEATURE

Microsoft

MICROSOFT WORD FOR WINDOWS 95

Microsoft Word for Windows 95 helps make everyday writing tasks more automatic and complex tasks simple. It also provides tools to create and distribute documents in an increasingly connected world.

Save time with Microsoft Word for Windows 95, with features like the integrated Address Book and grammatical Find and Replace.

- Get your work done faster with Word's full 32-bit support and the new interface and user assistance of Windows 95
- Readily access addresses for letters, memos and faxes

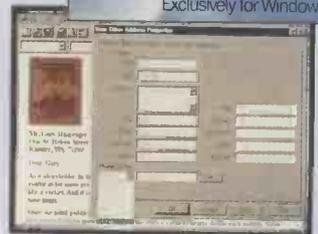
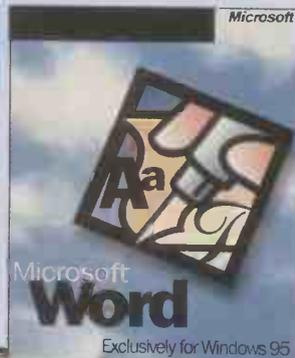
Word for Win 95	£229
Word for Win 95 1 SL	£197
Word for Win 95 UP CCP	£83
Word for Win 95	
UP CCP 1 SL	£72
Word for Win 95 CUP	£109

MICROSOFT EXCEL FOR WINDOWS 95

- Enhanced IntelliSense technology, more intuitive help, and integration with Windows 95 make your spreadsheet tasks easier



Excel for Win 95	£229
Excel for Win 95 1 SL	£199
Excel for Win 95 UP CCP	£84
Excel for Win 95	
UP CCP 1 SL	£73
Excel for Win 95 CUP	£109



MICROSOFT POWERPOINT FOR WINDOWS 95

- Type a help request in your own words, and the Answer Wizard finds the answer



- Bring your presentation to life with extended animated builds, sounds and more!
- Take meeting notes and assign action items on the spot with the Meeting Minder
- Let a remote audience review your presentation over the network

PowerPoint for Windows 95

3.5" Disk	£229
1 Site Licence	£199
Upgrade CCP	£84
Upgrade CCP 1 Site Licence	£72
Competitive Upgrade	£121

KEY

CCP	Compliance Checking Product	MS	Microsoft Product
CD	CD ROM	SL	Site Licence
CUP	Competitive Upgrade	UP	Upgrade
DOS	DOS Version	Vxx	Version
		WIN	Windows Version

34

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See page 2

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Do check compatibility before ordering. Faulty software replaced through Powermark Customer Service. Opened software cannot be returned.



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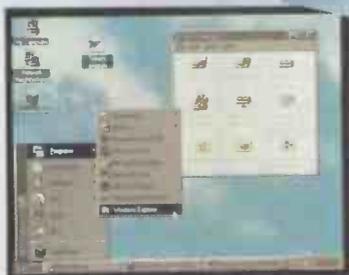
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Microsoft Windows 95 makes everything you do with your computer faster and easier.

Microsoft® Windows® 95:
Your open door to doing more.

Everything you do is easier and faster opening up a world of new possibilities

- **Easier.** Navigate your system quickly with easy-to-use tools, including the Start button, taskbar, and Windows Explorer
- **Plug and Play.** Frees you from manually setting up Plug and Play-compatible hardware devices
- **Long File Names.** More descriptive file names - up to 250 characters long
- **Faster.** Faster file and disk access, and faster printing, thanks to the 32-bit architecture of Windows 95®
- **Compatible.** Works with your current software - 16-bit programmes and drivers for Windows.



- **Multitask.** Work on several tasks at once with fast, new 32-bit programmes that support pre-emptive multitasking and multithreading
- **The Microsoft Network.** It's an easy-to-use online service with e-mail, news, Internet access and more
- **One-Stop In-Box.** Microsoft Exchange is your one-stop in-box that makes it easy



to view and work with such things as electronic mail from multiple sources, faxes, documents and bulletin boards

- **Network-Ready.**
- **Mobile.** Get the most from your portable PC features such as Dial-up networking, Battery Monitor and Plug and Play support for PCMCIA cards and docking stations
- **Better Video.** Enjoy larger, smoother video

MICROSOFT WINDOWS 95
UPGRADE 3.5" FLOPPY £59

MICROSOFT WINDOWS 95
UPGRADE CD ROM £59

MICROSOFT PLUS! 3.5" FLOPPY £29
MICROSOFT PLUS! CD ROM £29

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NEW! MICROSOFT ENCARTA® 1996

- New 40 country fact boxes, covering climate, religion, economy, geography, musical styles and more
- Over 9 million words, 8,000 photo-graphs, 300,000 links, 26,000 articles and over 15,000 multimedia elements with 100 minutes of video and animation
- Now on screen link to the Concise Oxford Dictionary - 140,000 definitions

ENCARTA 1996 £32

AUTOROUTE EXPRESS

UK and Ireland V4 floppy	£35
UK and Ireland V4 CD ROM	£39
Europe V4 floppy	£29
Europe V4 CD ROM	£39



MICROSOFT® HARDWARE FEATURE

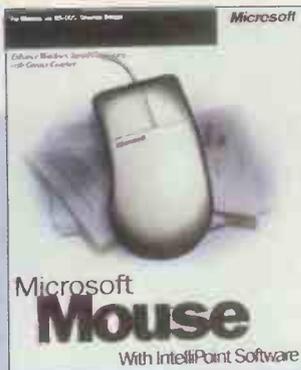
MICROSOFT® MICE

- **MICROSOFT MOUSE 2.0**
- Plug and Play with Windows 95
- Ergonomically designed
- Teflon 'gliders' - moves smoother and swifter
- New improved IntelliPoint software

MICROSOFT MOUSE 2.0 £34

MICROSOFT® HOME MOUSE £24

- 18 FREE games!



Microsoft®

MICROSOFT® NATURAL KEYBOARD

- Ready for Windows 95
- 104 key design
- IntelliType software - customisable for improved Windows based performance



MICROSOFT NATURAL KEYBOARD £64

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£4 WHEN YOU
SPEND OVER £100
+ VAT AND CARRIAGE
(ONE CD PER ORDER)

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Consulting
Detective

Music Mentor
Recording Session

Creation Stories

Digital Love

Diggers

Dungeon Hack

Money Money Money

Where in the World is
Carmen Sandiego?

Kids Read The tale of
Peter Rabbit



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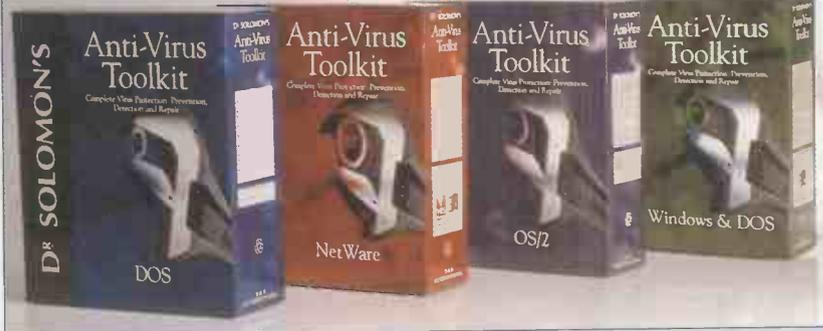


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LOTAPPROX	Lotus Approach V3 WIN	£81
MSACC	MS Access V2.2 WIN	£229
MSACC/W2CCUG	MS Access V2.2 WIN CCP UP	£82
MSACC/DEVKIT	MS Access V2.2 Developers Kit WIN	£229
MSACC/7SL	MS Access V2.2 SL	£199
MSFOX/3OW	MS Foxpro V2.6 Standard WIN	£71
MSFOX/PROW	MS Foxpro V3.0 WIN 3.5	£139
BOR/PARASW	Paradox V5 WIN	£219
BOR/PARASW/UG	Paradox V5 WIN UP	£162
SUPERBASE/95/W	Superbase 95 WIN	£199

NAVIGATION PACKAGES

AUTOR/GW/CD	MS Autoroute Plus GB CD	£279
AUTOR/EXPEURW	MS Autoroute Express Europe V4	£45
AUTOR/GW	MS Autoroute Plus GB WIN	£259
AUTOR/GW/CD	MS Autoroute Plus GB WIN CD	£299
AUTOR/EXPG/W	MS Autoroute Express GB	£33

FAX FORM - 0181 956 7100 - FAX FORM - 0181 956 7100 - FAX FORM

To: Memory Bank, The Powermark Centre, The Waterfront, Elstree Road, Elstree, Herts WD6 3RP

Please rush me:

Qty	Description	Price
_____	_____	£ _____
_____	_____	£ _____
Account No. _____	+ Carriage	£ _____
I enclose a cheque for £ _____	+ 17.5% VAT	£ _____
payable to Powermark plc	TOTAL	£ _____
(Please write your guarantee card number on the reverse of the cheque)		

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Have you ordered from Powermark before? YES/NO
Where did you see this form? *Memory Bank Preview / Magazine Advertisement*
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Answers to quiz:
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2. Plain Old Telephone Systems
3. Pretty Awesome New Stuff

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BEST BUY

Aries Universa
Awarded Best Buy in
Computer Shopper



When a PC carries the Aries brand you know you are going to get the system you really want, at the price you really want, without sacrificing features or quality.

Based on our extensive experience with customers' requirements and the ever-increasing demands of today's software, we introduce a new line of PCs for your home and office - the Aries MEDIA series.

These new full-featured multimedia systems optimise the performance of the Pentium processor by featuring the Intel Triton Chipset motherboard and pipelined burst cache.

All systems come with free bundled software, and we offer the option of including the world's best selling integrated package - Microsoft Office at quite remarkable prices.

Now in our 24th year, Watford Electronics has built an enviable reputation supplying systems of quality and reliability to home, office, education and government users alike.

Built to the most exacting standards, offering lots of expansion for the future and backed by the UK's premier computer dealer. You really can't buy better. Anywhere.

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UNIVERSA PC SYSTEMS

- ◆ Intel advance Triton chipset Motherboard with an Intel Pentium® Processor
- ◆ 8Mb RAM expandable to 128Mb
- ◆ 256K Pipeline Burst Cache RAM
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- ◆ Plug & Play support for Windows 95
- ◆ Processor upgradable to Pentium 200MHz using Type 7 ZIF Socket
- ◆ 64 bit 1Mb PCI Graphics Controller Card
- ◆ 3.5" 1.44Mb Floppy Drive
- ◆ On-board fast PCI Enhanced IDE hard disk controller
- ◆ Dual 16550 UART Serial ports and an Enhanced EPP parallel port
- ◆ 3 x PCI & 4 x ISA 16bit expansion ports (One shared)
- ◆ 102 key Enhanced Keyboard
- ◆ Desktop PC Case
- ◆ 14" EnergyStar MPRII Low Radiation, Non-Interlaced Colour Monitor (0.28mm dp)
- ◆ MS DOS v6.22 & MS Windows v3.11 optional MS Windows 95
- ◆ SIX Year Warranty consisting of: 12 months On-Site Parts & Labour Warranty & Five years (return to base) Labour Only Warranty

ARIES UNIVERSA SERIES

Description	Price	Finance per month from
P5-P75	£789	£42
P5-P100	£869	£46
P5-P120	£899	£47

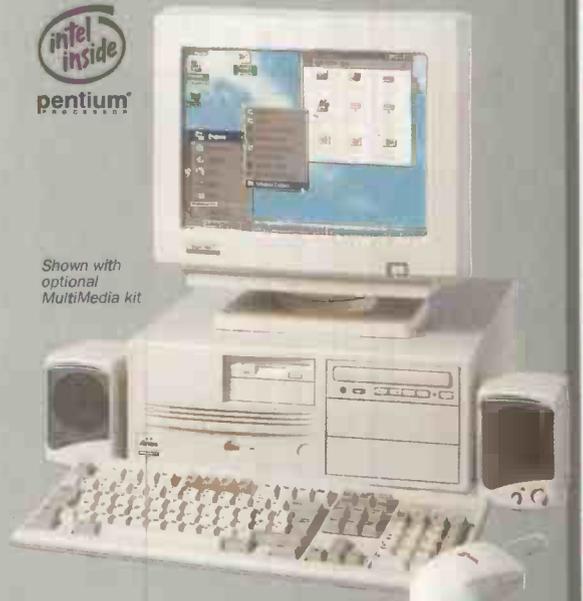
LOW COST FINANCE 18.5%
Available on all Aries PC's - See example below

OPTIONAL UPGRADES

US-01	8Mb to 16Mb RAM Upgrade	£98
US-02	8Mb to 24Mb RAM Upgrade	£199
US-03	8Mb to 32Mb RAM Upgrade	£299
US-20	Upgrade to Aries EnergyPro 15" Micro.Controller 1280x1024 NI Monitor	£89
US-21	Upgrade to Aries EnergyPro 17" Micro.Controller 1280x1024 NI Monitor	£259
US-30	Upgrade 1 year to 3 years On-Site Maintenance	£119



Shown with optional MultiMedia kit



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MICROSOFT OFFICE

SPECIAL OFFER PRICE - CALL FOR DETAILS



Pre-Loaded for your convenience

APR 18.5%

Finance calculation example: Cash Price: £799 + VAT = £938.83 Deposit: 10% £93.88 and 24 equal payments of £41.84 Total Price: £1098.04 Finance is available subject to status. Be sure you can afford the payments prior to entering into an agreement. Price excludes carriage

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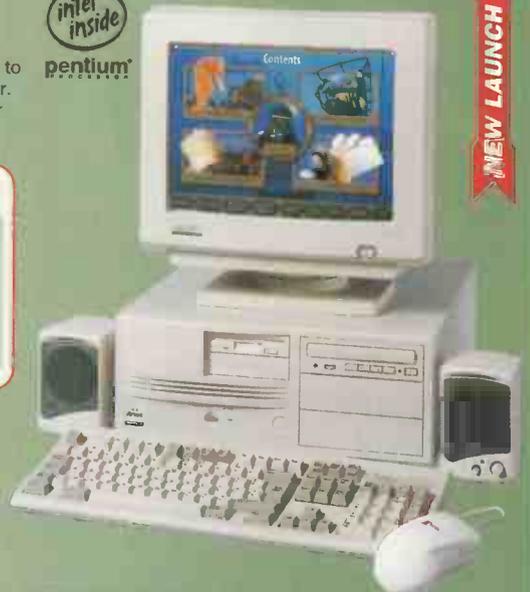
HOME MEDIA SERIES

- ◆ Intel advanced Triton chipset Motherboard with an Intel Pentium® Processor
- ◆ 8Mb RAM expandable to 128Mb
- ◆ 256K Pipeline Burst Cache RAM
- ◆ 850Mb Fast Hard Disk Drive
- ◆ QUAD Speed 4X CD ROM Drive
- ◆ 16 bit Sound Blaster Compatible Sound Card
- ◆ Aries 10W Hi Fi Stereo Speakers
- ◆ CD Bundle Pack (as Illustrated)
- ◆ Plug & Play support for Windows 95
- ◆ Processor upgradable to Pentium 200MHz using Type 7 ZIF Socket
- ◆ 64 bit 1Mb PCI Video Graphics Card
- ◆ 3.5" 1.44Mb Floppy Drive
- ◆ On-board fast PCI Enhanced IDE hard disk controller
- ◆ Dual 16550 UART Serial ports and an Enhanced EPP parallel port
- ◆ 3 x PCI & 4 x ISA 16bit expansion ports (One shared)
- ◆ 102 key Enhanced Keyboard
- ◆ Desktop PC Case
- ◆ 14" EnergyStar MPRII Low Radiation, Non-Interlaced Colour Monitor (0.28mm dp)
- ◆ MS DOS v6.22 & MS Windows v3.11
- ◆ SIX Year Warranty consisting of: 12 months On-Site Parts & Labour Warranty Five years (return to base) Labour Only Warranty

Superb performance at exceptional prices. These new Aries Home Media systems incorporate a host of advanced features for improved performance including the Intel Triton chipset motherboard and pipelined burst cache to unleash the full power of the Pentium processor. With a QUAD speed multimedia kit and SIX year warranty, they represent incredible value.



NEW LAUNCH



ARIES HOME MEDIA SERIES

Description	Price	Finance per month from
P5-P75	£899	£47
P5-P100	£969	£51

OPTIONAL UPGRADES

HM-01 8Mb to 16Mb RAM Upgrade	£98
HM-02 8Mb to 24Mb RAM Upgrade	£199
HM-03 8Mb to 32Mb RAM Upgrade	£299
HM-20 Upgrade to Aries EnergyPro 15" Micro.Controller 1280x1024 NI Monitor	£89
HM-21 Upgrade to Aries EnergyPro 17" Micro.Controller 1280x1024 NI Monitor	£259
HM-30 Upgrade 1 year to 3 years On-Site Maintenance	£119



Windows 95 option - see below for details

MS OFFICE 95 PACK



+ Easy Tutor Windows 95 Tutorial **£169**

Software pack shots for illustration purposes only.

Aries

BUSINESS MEDIA SERIES

NEW LAUNCH



Aries Business Media systems make no compromise on quality or performance while continuing Aries reputation for superb value. With Pentium processors up to 133MHz ensuring stunning speeds, a SIX speed multimedia kit and Videologic 64-bit graphics you really can't buy better.

ARIES BUSINESS MEDIA SERIES

Description	Price	Finance per month from
P5-P100	£1049	£55
P5-P120	£1099	£58
P5-P133	£1149	£60

OPTIONAL UPGRADES

BM-01 8Mb to 16Mb RAM Upgrade	£98
BM-02 8Mb to 24Mb RAM Upgrade	£199
BM-03 8Mb to 32Mb RAM Upgrade	£299
BM-20 Upgrade to Aries EnergyPro 15" Micro.Controller 1280x1024 NI Monitor	£89
BM-21 Upgrade to Aries EnergyPro 17" Micro.Controller 1280x1024 NI Monitor	£259
BM-30 Upgrade 1 year to 3 years On-Site Maintenance	£119

- ◆ Intel advanced Triton chipset Motherboard with an Intel Pentium® Processor
- ◆ 8Mb Fast EDO RAM expandable to 128Mb
- ◆ 256K Pipeline Burst Cache RAM
- ◆ 1Gb (1000Mb) Fast Hard Disk Drive
- ◆ SIX Speed 6X CD ROM Drive
- ◆ 16 bit Sound Blaster Compatible Sound Card
- ◆ Aries 25W Hi Fi Stereo Speakers
- ◆ CD Bundle Pack (as illustrated)
- ◆ Plug & Play support for Windows 95
- ◆ Processor upgradable to Pentium 200MHz using Type 7 ZIF Socket
- ◆ Videologic GrafixStar 300 64 bit PCI Graphics Card with 1Mb Video
- ◆ 3.5" 1.44Mb Floppy Drive
- ◆ On-board fast PCI Enhanced IDE HD controller
- ◆ Dual 16550 UART Serial ports and an Enhanced EPP parallel port
- ◆ 3 x PCI & 4 x ISA 16bit expansion ports (One shared)
- ◆ 102 key Enhanced Keyboard
- ◆ Desktop PC Case
- ◆ 14" EnergyStar MPRII Low Radiation, Non-Interlaced Colour Monitor (0.28mm dp)
- ◆ MS DOS v6.22 & MS Windows v3.11
- ◆ SIX Year Warranty consisting of: 12 months On-Site Parts & Labour Warranty Five years (return to base) Labour Only Warranty

MS WINDOWS 95 OPTION

- ◆ MS Windows 95
- ◆ 105 key Windows 95 Keyboard
- ◆ Easy Tutor 95 Tutorial CD (worth £30)

All of the above for Only **£15.95**

Valid at the time of purchase. Items substitute MSDOS & Windows v3.11 & 102 key keyboard.



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PROFESSIONAL MEDIA SERIES

NEW LAUNCH



THE ULTIMATE PERFORMERS

Looking for the fastest PC's around? The search is over. The Aries Professional Media systems have arrived. Fast. Powerful. Built to run your toughest applications at staggering speeds and designed for the increasingly strenuous demands of today's business PC user. Professional Media systems feature the latest Intel Triton chipset designed to get the ultimate performance from the Pentium processor. Combine this with 16Mb of high speed EDO-RAM and Pipeline Burst Cache and you have a system that is probably the finest example of Power Computing available anywhere.

ARIES PROFESSIONAL MEDIA SERIES

Description	Price	Finance per month from
P5-P120	£1399	£73
P5-P133	£1469	£77
P5-P150	£1599	£84
P5-P166	£1649	£86

- ◆ Intel advanced Triton chipset Motherboard with an Intel Pentium® Processor
- ◆ 16Mb EDO RAM expandable to 128Mb
- ◆ 256K Pipeline Burst Cache RAM
- ◆ 1.2Gb (1,200Mb) Fast Hard Disk Drive
- ◆ Aries V34 28,800 baud Internet/Fax Modem Solution
- ◆ EIGHT Speed 8X CD ROM Drive
- ◆ 16 bit Creative Sound Blaster 16 Sound Card
- ◆ Aries 80W Digital Plus Stereo Speakers
- ◆ CD Bundle Pack (as illustrated)
- ◆ Plug & Play support for Windows 95
- ◆ Processor upgradable to Pentium 200MHz using Type 7 ZIF Socket
- ◆ VideoLogic GrafixStar 300 64 bit PCI Graphics Card with 2Mb Video RAM
- ◆ 3.5" 1.44Mb Floppy Drive
- ◆ On-board fast PCI Enhanced IDE hard disk controller
- ◆ Dual 16550 UART Serial ports and an Enhanced EPP parallel port
- ◆ 3 x PCI & 4 x ISA 16bit expansion ports (One shared)
- ◆ 102 key Enhanced Keyboard
- ◆ Midl Tower PC Case
- ◆ 14" EnergyStar MPRII Low Radiation, Non-Interlaced Colour Monitor (0.28mm dp)
- ◆ MS DOS v6.22 & MS Windows v3.11
- ◆ SIX Year Warranty consisting of:
 - 12 months On-Site Parts & Labour Warranty
 - Five years (return to base) Labour Only Warranty

OPTIONAL UPGRADES

PM-01	16Mb to 24Mb EDO RAM Upgrade	£199
PM-02	16Mb to 32Mb EDO RAM Upgrade	£399
PM-03	16Mb to 64Mb EDO RAM Upgrade	£POA
PM-06	2Gb IDE Hard Disk Drive instead of 1Gb	£149
PM-10	Upgrade to GrafixStar 700 2Mb VRAM Graphics Card	£78
PM-15	Upgrade to Full Tower Case	£45
PM-20	Upgrade to Aries EnergyPro 15" Micro.Controller 1280x1024 NI Monitor	£89
PM-21	Upgrade to Aries EnergyPro 17" Micro.Controller 1280x1024 NI Monitor	£259
PM-22	Upgrade to 17" Panasonic PanaSync TX-D1733 Monitor	£299
PM-30	Upgrade 1 year to 3 years On-Site Maintenance	£135

MS WINDOWS 95 OPTION

- ◆ MS Windows 95
 - ◆ 105 key Windows 95 Keyboard
 - ◆ Easy Tutor 95 Tutorial CD (worth £30)
- All of the above for Only £15.95***

* Valid at the time of purchase. Items substitute MS-DOS & Windows v3.11 & 102 key keyboard.



- INTERNET - Free 30 Days
- TEL-ME - £30 Credit
- FREE CD - Get Connected



CD BUNDLED SOFTWARE

Included with all Systems

- ◆ Funk & Wagnalls New Enclopaedia (29 volumes)
- ◆ World Atlas
- ◆ US Atlas
- ◆ The ChessMaster 3000
- ◆ Mavis Beacon Teaches Typing
- ◆ Microsoft Golf (3.5")
- ◆ Webster's Dictionary
- ◆ Webster's English Usage Dictionary
- ◆ Webster's Dictionary of Quotations
- ◆ Webster's Biographical Dictionary
- ◆ Roget's 21st Century Thesaurus

OPTIONAL BUNDLE

- ◆ MS Encarta 96 UK EDITION
- ◆ Serif PagePlus v3 OR PagePlus HomeOffice '95 (pls specify)
- ◆ MS Musical Instruments
- ◆ MS Golf (3.5")
- ◆ World Atlas
- ◆ US Atlas
- ◆ The ChessMaster 3000
- ◆ Mavis Beacon Teaches Typing

* Only when purchased with an Aries Media PC system. Supplied instead of the Standard CD Bundle.



£39*

MS OFFICE 95 PACK



+ Easy Tutor Windows 95 Tutorial **£169**
Software pack shots for illustration purposes only.

APR **18.5%**

Finance calculation example: **Cash Price: £799 + VAT = £938.83 Deposit: 10% £93.88 and 24 equal payments of £41.84 Total Price: £1098.04** Finance is available subject to status. Be sure you can afford the payments prior to entering into an agreement. Price excludes carriage

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WORKBOOK® TFT COLOUR NOTEBOOK

The First Sub £1000 Fully Specified TFT Notebook

The New Aries WorkBook offers outstanding value even by Watford's standards. Blazing colours and crisp, vibrant images you only get with a TFT screen, together with the superb performance of the 100MHz 5x86 processor. And all for under £1,000! What's more, it comes equipped with PCMCIA slots, touchpad pointing device and a 16 bit stereo sound system.



Infra Red Communication Port - IrDA standard (option)

PCMCIA Slot - 2 x Type II OR 1 x Type III

340Mb Removable Hard Disk Drive

Built-in Stereo Speakers

Advanced power management

Built-in TouchPad Pointing Device

Built-in Microphone

Simultaneous Display Capabilities

5x86-100MHz Processor

MS-DOS v6.22 & Microsoft Windows v3.11

Docking Station Port

16-bit Stereo Sound System

Rechargeable Battery

4Mb RAM on-board expandable to 20Mb

- ◆ 5x86 - 100MHz Processor
- ◆ 4Mb RAM expandable to 20Mb
- ◆ 340Mb Removable Hard Disk Drive
- ◆ 1.44Mb 3.5" Floppy Drive
- ◆ 9.5" Active Matrix TFT LCD Screen
- ◆ 32 bit VL Bus Video Accelerator with 1Mb Video RAM
- ◆ Advance Power Management
- ◆ LCD Status Indicator
- ◆ Fully modularised Design
- ◆ Built-In TouchPad pointing device
- ◆ 16 bit SoundBlaster compatible Stereo Sound System
- ◆ Built-in Stereo Speakers and a Microphone
- ◆ Jacks for Stereo Line In/Line Out & Ext. Microphone
- ◆ Serial Infra Red Communication Port - IrDA (opt.)
- ◆ Serial & Enhanced Bi-Directional Parallel Port
- ◆ PCMCIA Slots - 2 x Type II or 1 x Type III
- ◆ External Super VGA Monitor Port
- ◆ Simultaneous Display capabilities
- ◆ External PS/2 keyboard connector
- ◆ Rechargeable NiMH Battery Pack
- ◆ MS DOS v6.22 & MS Windows v3.11

ARIES WORKBOOK®
5x86-100MHz

WorkBook®741 - A
4Mb RAM/340Mb HD

WorkBook®741 - B
8Mb RAM/540Mb HD
with MS Office 4.2

Description
TFT Active Matrix
Colour 9.5" Display

Price

£999

Finance
per month from

£38

Price

£1299

Finance
per month from

£49



OPTIONS & UPGRADES

4 to 8Mb RAM Upgrade	£159	Upgrade to 810Mb HD	£169
4 to 12Mb RAM Upgrade	£249	Upgrade to 1Gb HD	£249
4 to 16Mb RAM Upgrade	£369	Spare Battery Pack	£89
4 to 20Mb RAM Upgrade	£479	Additional Power Adaptor	£58
Upgrade to 540Mb HD	£79	15W External Speakers	£25

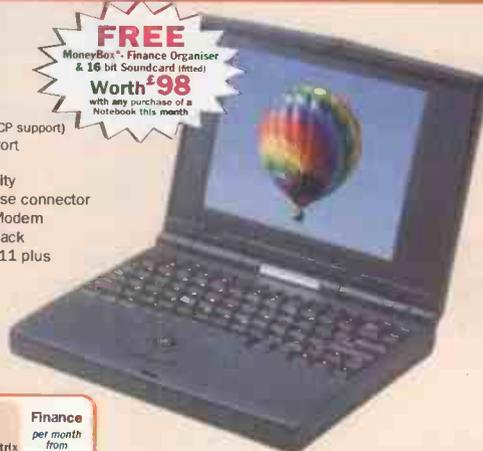


7000 NOTEBOOK SERIES

More features than many desktop PC's

- ◆ 4Mb RAM expandable to 32Mb
- ◆ 340Mb Removable Hard Disk Drive
- ◆ Advanced Power Management
- ◆ LCD Status Indicator
- ◆ Fully Modularised Design - Upgradable CPU, LCD, Removable Hard Disk & Keyboard
- ◆ 1Mb VESA Bus Video with accelerator
- ◆ Advance PMU Function
- ◆ Mono/Stereo 16 bit Sound System (Optional)
- ◆ Audio (In/Out) with volume control
- ◆ Built-in Speaker/Microphone (requires sound system)
- ◆ 1.44Mb 3.5" Floppy Drive
- ◆ 82 key QWERTY Keyboard
- ◆ 19mm Trackerball
- (Optional Track-point device)
- ◆ PCMCIA slots (2 x Type II/1 x Type III)
- ◆ Hi-Speed 16C550 Serial Port
- ◆ Enhanced Parallel Port (EPP/ECP support)
- ◆ External Super VGA Monitor Port (1024x768 256 Colours)
- ◆ Simultaneous Display capability
- ◆ External Keyboard/PS/2 Mouse connector
- ◆ Optional Internal 14.4K Fax/Modem
- ◆ Rechargeable Ni-MH Battery Pack
- ◆ MS-DOS v6.22 & Windows v3.11 plus MoneyBox* Personal Finance Organiser
- ◆ Weight: 3kg
- ◆ Carrying Case

FREE
MoneyBox* Finance Organiser
& 16 bit Soundcard (limited)
Worth*98
with any purchase of a
Notebook this month



ADVANCED POWER MANAGEMENT

FLEXIBLE PCMCIA

LOW POWER 3.3V

BUILT-IN-SOUND

SUPERB PERFORMANCE

EXTERNAL STATUS INDICATOR

INTERNAL STATUS INDICATOR PANEL

REMOVABLE HARD DISK DRIVE

Office Comms Upgrade **£125**

Docking Station with 4x CD-ROM **£399**

Please Call for Details

7000 Series Display	7100 10" Mono 64 Grey Scale	Finance per month from	7300 10" Colour Dual Scan	Finance per month from	7400 10" Colour TFT Active Matrix	Finance per month from
SL 486DX4-100	£999	£42	£1299	£53	£1849	£72

Notebook shown here with 19mm Trackerball with 2 buttons supplied as standard. Optional TrackPoint Control Stick available.

APR **18.5%**

Finance calculation example: Cash Price: £999 + VAT = £1173.83 Deposit: 10% £117.38 and 36 equal payments of £37.75 Total Price: £1476.38 Finance is available subject to status. Be sure you can afford the payments prior to entering into an agreement. Price excludes carriage

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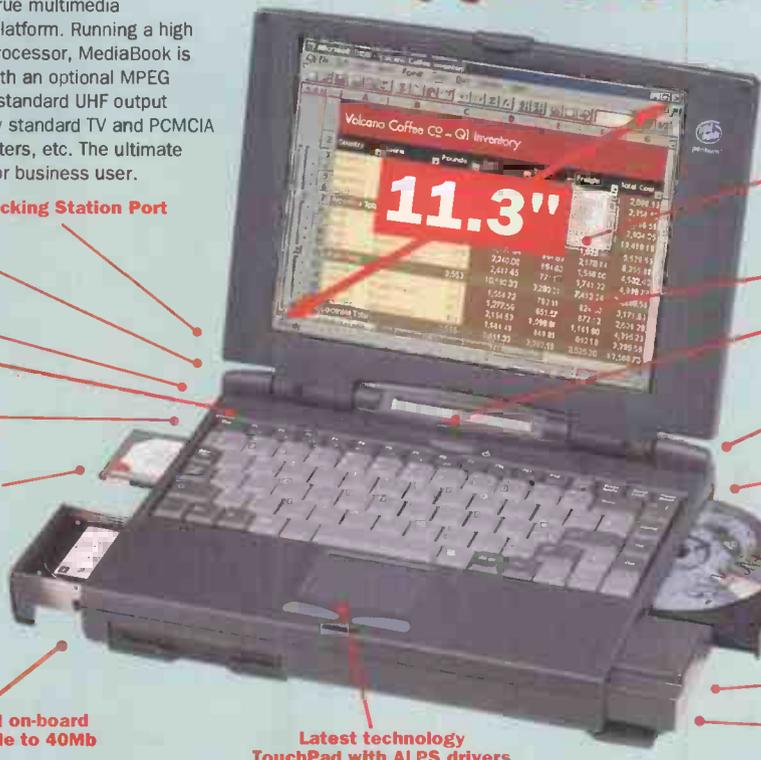
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The Ultimate Portable MULTIMEDIA Solution

The Aries MediaBook brings true multimedia capabilities to the notebook platform. Running a high performance Intel Pentium® processor, MediaBook is the ideal presentation tool, with an optional MPEG module for video playback, a standard UHF output enabling you to display on any standard TV and PCMCIA slots for adding network adapters, etc. The ultimate portable for the power home or business user.



- 11.3"** Dual Scan or Active Matrix TFT LCD Screen
- Super VGA 800 x 600 256 Colour Display
- LCD Status Display
- Infra Red Communication Port - IrDA standard
- Microsoft Windows 95 (with manual/CD)
- Quad Speed 4x CD ROM
- Removable Battery
- Multiple-mode power management scheme
- Latest technology TouchPad with ALPS drivers
- Removable Hard Disk Drive
- 8Mb RAM on-board expandable to 40Mb
- Intel Low Powered 2.9V Pentium Processor
- PCMCIA Slot - 2 x Type II OR 1 x Type II and 1 x Type III
- Built-in Stereo Speakers
- TV Port
- Kensington Security Cable Lock Anchor
- Docking Station Port

Processor

- ◆ Intel Low Powered 2.9V Pentium Processor
- ◆ Intel Pentium P75MHz or P100MHz Processors
- Processors upgradable using ZIF socket

Memory

- ◆ 8Mb RAM on-board expandable to 40Mb
- ◆ 256K Level 2 Write-Back Cache, Pipeline Burst SRAM

Storage

- ◆ 540Mb Removable Hard Disk Drive
- ◆ 1.44Mb 3.5" Floppy Drive

Multimedia - CD ROM Drive/Sound System

- ◆ QUAD Speed 4X CD ROM Drive
- ◆ 16 bit Stereo Sound System
- ◆ Sound Blaster, Sound Blaster Pro and MS Sound System for Windows compatible
- ◆ Built-in Microphone
- ◆ Built-in Stereo Speakers
- ◆ Optional MPEG Module: Supports MPEG related video formats such as CDI, VideoCD etc.

Display/Video System

- ◆ 11.3", Super VGA 800 x 600 - 256 Colours Dual Scan DSTN or Active Matrix TFT LCD Screen
- ◆ Supports up to 1024 x 768 - 256 Colours mode on external monitor
- ◆ Simultaneous display of both screen & external video
- ◆ Windows GUI accelerator
- ◆ Full power management
- ◆ PCI Bus Colour Graphics Interface with 1Mb Video RAM
- ◆ Optional Software MPEG drivers

Pointing Device/Keyboard

- ◆ Latest technology TouchPad with ALPS drivers
- ◆ Both external PS/2 mouse (optional) and integral TouchPad can work concurrently
- ◆ Windows 95 105 Key Keyboard

I/O Ports

- ◆ Infra Red Communication Port - IrDA standard
- ◆ Built-in TV Port
- ◆ MIDI/Game Port
- ◆ PCMCIA Slot - 2 x Type II OR 1 x Type II and 1 x Type III
- ◆ 16550 UART Hi-Speed Serial Port
- ◆ EPP/ECP Hi-Speed Parallel Port
- ◆ External auto-sensed PS/2 keyboard/mouse port
- ◆ Jacks for Stereo Line In/Line Out & Ext. Microphone

Power Management

- ◆ Multiple-mode power management scheme
- ◆ APM 1.1 support
- ◆ Static Suspend
- ◆ Suspend to HDD
- ◆ Modem ring and any key triggered resume
- ◆ Battery gas gauge support
- ◆ Suspend or warning on low battery

Security

- ◆ Kensington Security Cable Lock Anchor
- ◆ MASTER Password support
- ◆ Password protection for Set-up entry screen

Operating System/Bundled Software

- ◆ Microsoft Windows 95 (with manual/CD)
- ◆ Easy Tutor 95 - Interactive Windows 95 Training CD (Worth £30)
- ◆ Optional MS DOSv6.22/Windows v3.11
- ◆ Optional MS Windows NT

Warranty

- ◆ THREE Year Warranty consisting of : 12 months Parts & Labour Return to Base & 2 years Return to Base Labour only Warranty



The Aries MediaBook is the best connected multimedia Notebook available

SPECIAL OFFER



MS Office 95 + Easy Tutor 95 £99*



MS Office Professional 95 £199*

*Only available at the time of purchase. Pack shots shown for illustration purposes only.

OPTIONS AND UPGRADES

8 to 16Mb RAM Upgrade	£219	Spare Battery Pack	£89
8 to 24Mb RAM Upgrade	£399	MPEG Option Module	£TBA
8 to 40Mb RAM Upgrade	£749	Additional Power Adaptor	£58
Upgrade to 810Mb HD	£99	15W External Speakers	£25
Upgrade to 1Gb Hard Disk	£179	Notebook Carrycase	£29

LOW COST FINANCE 18.5%

Available on all Aries Notebooks - See example below

The Intel Inside and Pentium Processor logos are trademarks of the Intel Corporation

8Mb RAM 540Mb Hard Disk	MediaBook753 - 75 Intel Pentium® 75MHz Power Saving Processor		MediaBook753 - 100 Intel Pentium® 100MHz Power Saving Processor	
	Price	Finance per month from	Price	Finance per month from
Dual Scan Colour 11.3" Display	£1799	£68	£1899	£72
TFT Active Matrix Colour 11.3" Display	£2099	£79	£2199	£83

APR **18.5%**

Finance calculation example: Cash Price: £999 + VAT = £1173.83 Deposit: 10% £117.38 and 36 equal payments of £37.75 Total Price: £1476.38 Finance is available subject to status. Be sure you can afford the payments prior to entering into an agreement. Price excludes carriage

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AMAZING Networking Offers

GENIUS ETHERNET PRODUCTS

GE2000 II Ethernet Adapter

The GE2000 II is a 16-bit Ethernet card which is 100% Novell NE2000 compatible. Installation is simple - just plug in and run the easy to use setup software.

- ◆ BNC and UTP connections (AUI optional)
- ◆ 35% faster than Novell NE2000 card
- ◆ Supports NetWare, WFWG & TCP/IP

Single: £24 5 pack: £109



£24

Personal NetWare & GE2000 Card
 Genius GE2000 II Ethernet card
 and Novell Personal NetWare software*
SPECIAL OFFER PRICE £42



GE2500+ PCI Ethernet Adapter

The GE2500+ is a new high performance Ethernet adapter for use in PCI based computers. Uses bus mastering for low CPU & Bus utilization, thus improving overall performance.

- ◆ BNC and UTP connections (AUI option)
- ◆ Software configurable & auto media detect
- ◆ Supports NetWare, WFWG, PCNFS & TCP/IP

Single: £45 5 pack: £215

E3000 II Parallel Port Adapter

The E3000 II is a parallel port Ethernet adapter offering higher performance than any similar priced model available.

- ◆ BNC and UTP connections as standard
- ◆ Through connection for local printer
- ◆ Simultaneous printer & LAN connectivity
- ◆ PS/2 mouse port power lead or mains PSU

Single: £55 5 pack: £260

ME3000 II PCMCIA Ethernet Card
 A high performance Ethernet adapter for use in notebooks with a PCMCIA slot. Has both BNC and UTP connections.
SPECIAL OFFER PRICE £75



£45



GE2000 PnP Ethernet Adapter

The GE2000PnP is a 16-bit NE2000 compatible Ethernet adapter which support the new Plug & Play standard, and is ideal for use with MS Windows 95 operating system.

- ◆ Plug & Play NE2000 compatible card
- ◆ BNC and UTP connectors as standard
- ◆ Supports NetWare, WFWG, PCNFS & TCP/IP
- ◆ Full duplex transmission

Single: £25 5 pack: £119

GH4080/GH4160 Ethernet Hubs

The GH4080 and GH4160 are compact, stylish UTP Ethernet hubs, providing either 8 or 16 ports. The units are ideal for small to medium size workgroup applications.

- ◆ 8 or 16 UTP ports, 1x BNC connection
- ◆ Compact size and very lightweight
- ◆ Daisy chain port for stacking hubs together
- ◆ LED indicators display port status

GH4080: £74 GH4160: £149



£25

GE2000 PnP Ethernet Adapter

The GE2000PnP is a 16-bit NE2000 compatible Ethernet adapter which support the new Plug & Play standard, and is ideal for use with MS Windows 95 operating system.

- ◆ Plug & Play NE2000 compatible card
- ◆ BNC and UTP connectors as standard
- ◆ Supports NetWare, WFWG, PCNFS & TCP/IP
- ◆ Full duplex transmission

Single: £25 5 pack: £119

Top quality products from Genius' No. 1 UK supplier

ETHERNET CABLING

Length	1m	3m	5m	10m	15m	20m	30m	50m	100m	300m
Thin Ethernet	£3	£5	£6	£9	£12	£15	£22	£27	£32	£115
UTP	£3	£6	£9	£11	£13	£16	£19	£27	£32	£122

UPS SYSTEMS

BackUPS Series (Offline)	
BK280 - 280VA	£95
BK600 - 600VA	£157
SmartUPS Series (Line Interactive)	
SU250 - 250VA	£168
SU700 - 700VA	£225
SU1000 - 1kVA	£388
SU1400 - 1.4kVA	£597
SU2200 - 2.2kVA	£995
PowerChute Plus software (state OS) from	£45
Hewlett Packard	
PowerWise L600 - 600VA Backup UPS	£249
PowerWise L900 - 900VA Backup UPS	£389
PowerWise 1000VA Smart UPS	£629
PowerWise 2100VA SmartUPS	£949
PowerWise Assistant software	from £89

TOOLS & CONNECTORS

Connectors	1-9	10+
50ohm BNC Male Crimp Plug	£0.95	£0.85
50ohm BNC T-connector	£1.70	£1.60
50ohm BNC In-line Coupler	£1.65	£1.60
50ohm BNC Terminator	£0.90	£0.80
50ohm BNC Terminator & Earth	£1.20	£1.10
RJ45 Male Crimp Plug	£0.35	£0.30
Thin Ethernet Socket Systems		
Safertap Outlet - surface or flush mount	£18	
Safertap 2.5m drop lead	£17	
Safertap Outlet & 2.5m drop lead	£33	
AMP Thinner Tap Outlet	£17	
AMP Thinner Tap 2.5m drop lead	£15	
UTP Cabling Accessories		
Dual RJ45 Outlet - flush mount	£14	
24way 19i RJ45 Patch Panel	£124	
Tools and Accessories		
Thin Ethernet BNC Crimp Tool	£12	
Thin Ethernet Cable Stripper	£7	
RJ45 Crimp Tool	£12	
Round Cable Stripper	£11	

NOVELL NETWARE

No of Users	5	10	25	50	100	250	Manuals
NetWare 3.12	£439	£962	£1280	£1940	£2690	£4895	£155
NetWare 4.1 CD	£415	£969	£1435	£2045	£2865	£5950	£135

Education and Upgrade Packs available - call **01582 745555** for details

ETHERNET ADAPTERS

16-bit ISA Ethernet Adapters	Connections	SingleCard Pack	Five Card Pack
3Com Etherlink III - 3C509B	BNC	CNA0610 £64	CNA1900 £305
3Com Etherlink III - 3C509B-Combo	BNC/UTP/AUI	CNA0630 £73	CNA1920 £315
Aries NE2000 II	BNC/UTP	CNA0040 £22	CNA1710 £104
Genius GE2000 II	BNC/UTP	CNA1130 £24	CNA0940 £109
Genius GE2000 Plug & Play	BNC/UTP	CNA2130 £25	CNA2140 £119
Intel EtherExpress Pro 10	BNC/UTP	CNA1260 £62	CNA1270 £289
Intel EtherExpress Pro 10 Flash	BNC/UTP	CNA1280 £69	CNA1290 £319
Novell NE2000+	BNC	CNA1510 £48	CNA2070 £215
Novell NE2000+ UTP	UTP	CNA1250 £48	CNA2080 £215
SMC Elite 16C Ultra	BNC/UTP/AUI	CNA0890 £62	CNA1210 £344
SMC EtherEZ	BNC/UTP	CNA2620 £62	CNA2660 £335
32-bit EISA Ethernet Adapters			
3Com Etherlink III - 3C579B	BNC/AUI	CNA0710 £139	CNA1950 £675
3Com Etherlink III - 3C579B-TP	UTP/AUI	CNA0720 £139	CNA1960 £675
Genius E1320	BNC/UTP/AUI	CNA1370 £145	CNA0980 £759
Intel EtherExpress 32C Flash	BNC/UTP	CNA1420 £155	
SMC EtherPower	BNC/UTP	CNA2160 £179	CNA2170 £799
MCA (PS/2) Ethernet Adapters			
3Com Etherlink III - 3C529B	BNC/AUI	CNA0730 £139	CNA1930 £709
3Com Etherlink III - 3C529B-TP	UTP/AUI	CNA0740 £139	CNA1940 £709
Genius E1162M	BNC/UTP/AUI	CNA1360 £129	CNA0960 £699
32-bit PCI Ethernet Adapters			
3Com Etherlink III - 3C590B-Combo	BNC/UTP	CNA0430 £98	CNA0440 £439
D-Link DE-530CT	BNC/UTP	CNA2710 £78	
Genius GE2500+	BNC/UTP	CNA2110 £45	CNA2120 £215
Genius GF100TX 10/100	UTP	CNA2950 POA	CNA2960 EPOA
Intel EtherExpress Pro/10	BNC/UTP	CNA2180 £109	
SMC EtherPower	BNC/UTP	CNA1240 £89	CNA2700 £425
Parallel Port Ethernet Adapters			
D-Link DE-620CT	BNC/UTP	CNA1660 £89	
Genius E3000 II	BNC/UTP	CNA1145 £55	CNA1230 £260
SMC EliteNote	BNC/UTP	CNA1630 £149	
PCMCIA Ethernet Adapters			
3Com Etherlink III - 3C589B-Combo	BNC/UTP	CNA1490 £124	
D-Link DE-650CT	BNC/UTP	CNA2720 £95	
Genius ME3000 II	BNC/UTP	CNA1620 £72	CNA1770 £352
SMC EliteCard	BNC/UTP	CNA2630 £123	

HUBS/REPEATERS

3Com	TP	BNC	AUI	SNMP	
LinkBuilder TP12	12	-	1	-	£229
LinkBuilder FMS II	12	opt	1	opt	£389
Aries					
EH-8	8	1	-	-	£119
EH-16	16	1	1	-	£279
EH-32	32	1	1	-	£435
Genius					
GH4080 Palmtop	8	1	-	-	£74
GH4160 19" rack	16	1	-	-	£149
GH1000 19" rack	12	1	1	opt	£249
GR5050 Palmtop	-	3	1	-	£115
ER5020 19" rack	-	2	2	-	£122
ER5040 19" rack	-	4	4	-	£225
Hewlett Packard					
AdvanceStack 8U	8	opt	opt	opt	£135
AdvanceStack 12U	12	opt	opt	opt	£349
AdvanceStack 24U	24	-	1	-	£589
SMC					
Elite 3812TP	12	1	1	opt	£399
Tiger TP6	6	-	1	-	£145
Tiger TP12	12	-	1	-	£244
Tiger CX3	-	3	1	-	£219

ETHERNET TRANSCEIVERS

Excel		
10base2 BNC Transceiver		£22
10baseT RJ45 Transceiver		£22
Genius		
E6000 10baseT RJ45 Transceiver		£22
E6001 10base5 "N" Transceiver		£26
E6002 10base2 BNC Transceiver		£22
E6003 10base5 Tap Transceiver		£38

PRINTER SERVERS

Genius		
GPS300 Pocket Netware Server		£96
HBM Print Servers		
A range of multiprotocol Ethernet printer servers, catering for all protocols including NetWare, WFWG, NT, Unix, TCP/IP.		
All models have BNC and UTP connections.		
HB21ILC In Line (1 x Parallel)		£259
Multiserve (2 x Parallel, 1 x RS232)		£275
Hewlett Packard		
JetDirect - Internal for LJ/4SI		£277
JetDirect - External		£225
Intel		
NetPort Express EL		£245
NetPort Express XL		£285
Note: above are for use with Novell NetWare only		

PEER TO PEER NETWORKING

MS Windows 95 Networking Kits
 Thinking of upgrading to the new Windows 95 and also networking your PCs? Why not take advantage of these special packs we have put together at very special prices.

Net95 Kit 1 - 2 User Upgrade Kit	£159
Net95 Kit 2 - 3 User Upgrade Kit	£239
Net95 Kit 3 - 5 User Upgrade Kit	£399
Net95 Kit 4 - Additional User Upgrade Kit	£85

All kits include Ethernet card, software, 5m cables and connectors

Personal NetWare Networking Kits

Link up to 30 PCs with Novell's low cost peer-to-peer software, and have shared access to hard disks, printers, CD ROM all at the click of a mouse button. With support for both DOS and MS Windows, it is the ideal solution for small scale installations.

NePW Kit 1 - 2 User Kit	£89
NePW Kit 2 - 5 User Kit	£210
NePW Kit 3 - Additional User Kit	£49
NePW Kit 4 - 1 User Notebook Kit	£109

All kits include Ethernet card, software*, 5m cables and connectors
 *Software supplied will be cosmetically different from above

NETWORKING SOFTWARE

Lotus cc:Mail R2.0 Mobile WIN	£109
Lotus cc:Mail R2.0 Desktop WIN	£65
MS Windows for Workgroups v3.11	£89
MS Windows for Workgroups Add-On WIN	£41
MS Windows for Workgroups Add-On DOS	£43
MS Windows NT v3.5 Server	£595
MS Windows NT v3.5 Workstation	£225
MS Mail v3.2 PC Server	£299
Novell Personal NetWare - 1 User	£45
Sage MainLan v4 - 1 User	£49

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- ◆ Includes: Interface card, PhotoFinish 3.0, Media Mate presentation software, Smart Page Direct OCR software, TWAIN compliant software, User's manuals.

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MOUSE 3+ including driver only £12

Designed for maximum comfort with a raised centre that fits the hollow of your palm. Includes powerful Imaging software: PC Paintbrush for Windows, Media Mate Presentation Software, MouseMate Driver and Pad.



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ScanMate Colour

"As perfect as a hand scanner will ever be"

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800 dpi
24 bit Colour

- ◆ Brilliant colour - add the power of brilliant 24 bit true colour images to your DTP and presentation packages
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- ◆ High resolution - up to 800 dpi gives you superb image quality
- ◆ Powerful OCR - included SmartPage Direct means you'll never have to re-key data again.
- ◆ TWAIN compliant - Lets you use the scanner with all the TWAIN compatible products
- ◆ Includes: Interface card, PhotoFinish 3.0, Media Mate presentation software, SmartPage Direct OCR software, TWAIN compliant software, User's manuals

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As above but 1600 dpi and including Morph Editor CD **£114**

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Powerful scanning for professional image processing. While Stocks last.

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BY MICROTEC

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- ◆ Includes other valuable features, such as document annotation, keyword search, and Quick Panel utility for one-button execution of tasks.
- ◆ Scans at 300 x 300 dpi resolution
- ◆ Connects through parallel port, eliminating the need for an additional interface card (unlike other page scanners that use proprietary cards on a serial interface)
- ◆ Optional 10-page auto document feeder available for continuous text scanning
- ◆ Accommodates various document sizes from business-card size to 8.5" x 14"
- ◆ Runs under IBM or compatible 386, 486, Pentium, or PS/2 system, with 4MB RAM and 10MB hard disk space.
- ◆ Runs under Windows 3.1 or higher; compatible with Win 95.

ARIES SCANMAKER E3

The Aries ScanMaker E3 is a 24-bit single-pass scanner that combines the strengths of previous Microtek best-selling scanners. Faster and more economical, the E3 is our newest scanner and heralds the second wave of economical, lower-priced machines.

- ◆ 2,400 dpi*
- ◆ Single Pass Scanner
- ◆ 24 bit Colour
- ◆ SCSI II Compatible
- ◆ Adaptec SCSI II interface Card
- * interpolated
- ◆ Bundled Software consisting of:
 - ScanWizard
 - Image-In Easy Pack
 - OmniPage LE OCR Software
 - Easy SCSI Software Pack

Acclaimed Software Makes Scanning a Breeze
At the heart of the ScanMaker E3 & E6 is the ScanWizard, the widely praised and easy-to-use scanning software. With its intuitive interface and quick image-preview and image-correction functions, ScanWizard takes the guesswork out of the scanning process, showing users what actual scans will look like.



£249

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ARIES SCANMAKER E6



The ScanMaker E6 is a single-speed 30-bit high-resolution scanner. With an optical resolution of 600 x 1200 dpi, large legal-size scanning bed, and an incredibly low price, the E6 offers the best value among 30-bit scanners on the market today. Especially appealing to anyone looking for high quality and top value.

£349

- ◆ 4,800 dpi*
- ◆ Single Pass Scanner
- ◆ 30 bit Colour
- ◆ SCSI II Compatible
- ◆ Adaptec SCSI II interface Card
- ◆ Bundled Software consisting of:
 - ScanWizard
 - Image-In Easy Pack
 - OmniPage LE OCR Software
 - Easy SCSI Software Pack
- * interpolated

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Delrina WinFax Pro v4.0	£54
Delrina WinFax Pro v4.1 Ntwk Starter Pk (1 server 2 Users)	£176
Delrina WinFax Pro v4.1 NW - 5 User Pack	£289
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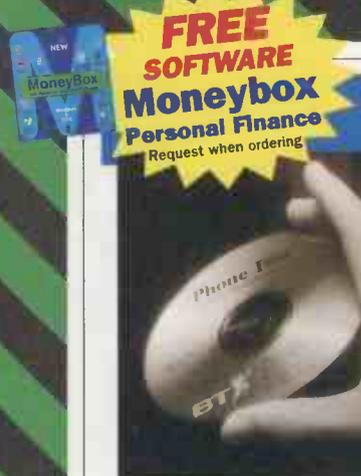
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S&S Dr. Solomons AV Toolkit WIN Monthly Upg	£145
S&S Dr. Solomons AV Toolkit WIN Quarterly Upg	£69
Symantec Norton Anti-Virus DOS/WIN v3	£69
Symantec Norton Anti-Virus for WIN 95	£42
Symantec Norton Anti-Virus for WIN 95 CCP Upg	£27
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Canon LBP430W	4ppm	£354
Canon LBP460	4ppm	£272
Canon LBP1260	12ppm	£880
Epson EPL3000*	4ppm	£334
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HP CopyJet	4ppm	£1949
HP LaserJet 4MV	16ppm	£2048
HP LaserJet 4V	16ppm	£1412
HP LaserJet 5+		£POA
HP LaserJet 5L	4ppm	£344
HP LaserJet 5P	6ppm	£589
HP LaserJet 5MP	6ppm	£724
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HP LaserJet 5Si MX	24ppm	£2989
HP LaserJet Colour	8ppm	£4175
HP LaserJet 5C Colour		£4175
HP LaserJet 5M Colour		£5322
Kyocera FS400 S/Bin	4ppm	£346
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Kyocera FS1550		£852
Kyocera FS1600		£1045
Lexmark Optra E Model A		£445
Lexmark Optra R+		£985
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NEC SuperScript 610+*	6ppm	£259
NEC SuperScript 660i*	6ppm	£555
NEC SuperScript Colour 3000*		£655
OKI OL600ex*	6ppm	£296
OKI OL610ex*	6ppm	£372
OKI OL810ex*	8ppm	£649
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Panasonic KX-P4430**	5ppm	£459
Panasonic KX-P4440**	10ppm	£678
Panasonic KX-P6100	5ppm	£265
Panasonic KX-P6150	6ppm	£309
Panasonic KX-P6500	6ppm	£340
Star Win Type 4000	4ppm	£286

On-site warranty: * = 1 Year ** = 2 Years

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Brother HL631	£70	-	-	-
EPL5200/5600	£49	£115	£199	-
HP III/IIIP/IIID	£65	£112	£145	-
HP II/IID	£70	£115	£175	-
HP IIISI	-	£85	£129	£229
HP 4/4M/4P/4MP	-	-	£109	£215
HP 4L/4ML	£59	-	-	-
HP 5L	£65	£110	£155	-
KX-P4410/4430	£99	£199	-	-
KX-P4420/4450i	£65	£109	£165	-
KX-P4400/5400	£75	£110	£165	-
OKI OL400e	£108	£118	-	-

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Type	Toner	Drum	Dev
Brother HL600 Series	£22	£99	-
Canon/Star 4s	£51	-	-
Canon LBP-8 IV	£65	-	-
Canon LBP-8III	£46	-	-
EPL4000/4100/4300	£89	£117	-
EPL5200	£105	-	-
EPL7100/7500/8100	£147	-	-
Fujitsu VM600	£85	-	-
Fujitsu VM800	£115	-	-
Fujitsu VM4	£29	£149	£89
HP III/IIIP/IIID	£47	-	-
HP III/IIIP	£51	-	-
HP IIIISI/4Si/MX	£75	-	-
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HP 4L/4ML/4P/4MP	£45	-	-
HP 4V/MV	£109	-	-
HP 5L	£39	-	-
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Kyocera FS400	£16	-	-
NEC 610	£69	-	-
NEC S60/60P/62P/90/95	£105	-	-
OKI OL400/800	£19	£165	-
OKI OL400e	£17	£129	-
KX-P4410/30	£29	£98*	£98
KX-P4440	£32	£98*	£115
KX-P4420	£24	£57	£57
KX-P4450/50i/51/55	£19	£75	£60
KX-P4400/5400	£10	£55	-
KX-P6100/6150	£11	£98	-
Qume Crystalprint	£99	£189	-
Star LS-5	£68	-	-
Star Wintype	£68	-	-

*Includes Ozone Filter

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LaserJet 4 JetDirect Ethernet Card	£339
Ozone filter for KX-P4420	£9
Ozone filter for KX-P4450/4455	£20

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Epson LX300	80col	£95
Epson LX1050+	132col	£181
Epson FX870	80col	£237
Epson FX2170	132col	£371
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Panasonic KX-P3696	80col	£259
Star LC15	132col	£188
Star LC100C	80col	£95
Star LC90	80col	£78
Star LC7211 Flatbed	110col	£249

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Citizen ABC Mono	80col	£99
Citizen ABC Colour	80col	£120
Citizen Swift 200 Mono	80col	£135
Citizen Swift 200 Colour	80col	£145
Citizen Swift 330X	132col	£309
Epson LQ300	80col	£119
Epson LQ570+	80col	£207
Epson LQ870	80col	£365
Epson LQ1070+	132col	£291
Epson LQ2170	132col	£465
Epson DLQ3000	132col	£779
NEC P3Q	132col	£188
NEC P62	80col	£315
NEC P72	132col	£385
Panasonic KX-P2023	80col	£110
Panasonic KX-P2124	80col	£191
Panasonic KX-P2135 Colour	80col	£124
Panasonic KX-P3626	132col	£258
Star LC24-15 II	132col	£246
Star LC240 Mono	80col	£89
Star LC240 Colour	80col	£108
Star XB24-200 Colour	80col	£332
Star XB24-250 Colour	132col	£399

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Manufacturers Original Ribbons Only

Type	Black	Colour
Canon BJ10ex/BJ10sx	£13	-
Canon BJ30	£10	-
Canon BJ200/BJ230	£15	-
Canon BJ300/BJ330	£11	-
Canon BJC70	£9	£14
Canon BJC600	£9	£6.50
Canon BJC800	£14	£18
Canon BJC4000 Ink Tank	£7	£13
Citizen 120D+	£4	-
Citizen Swift 200/240/ABC	£4	£11
Citizen Swift 24X	£8	£18
Epson LX100	£4.45	-
Epson LX400/LX850/FX870	£3.95	-
Epson LX1050/FX1170	£4.95	-
Epson LQ100	£5.35	-
Epson LQ150	£5.35	£15.25
Epson LQ570/870	£4.50	-
Epson LQ1070/1170	£5.40	-
Epson LQ2550	£8	£16.20
Epson SQ870/SQ1170	£26	-
Epson Stylus Colour	£12.10	£25
Epson Stylus Colour II/IIIs	£13.95	£19.80
Epson Stylus 800/1000	£9	-
Epson Stylus 820	£13.95	-
Fujitsu B100/B200	£18	-
HP DeskJet 500 Series	£19	£21
HP DeskJet 600/660	£20	£23
HP DeskJet 850	£22	£20
HP DeskJet 310/320	£13	£21
HP DeskJet 1200C	£19	£23
HP DeskJet 1600	£22	£23
HP PaintJet	£16	£18
HP PaintJet XL300	£16	£18
Kaga/Taxan KP810/815	£5	-
NEC P3Q/P32Q	£8	-
NEC P62/72/90	£8	£14
Panasonic 1150/1170/1180	£7	-
Panasonic 2180/23/24/35	£7	£14
Panasonic 1624/2624	£8	-
Panasonic KXP3626/3696	£11	-
Star LC10/LC20/LC100	£5	£9
Star LC100/200	£5	£11
Star LC24-20/24-100/24-200	£5	£12
Star LC24-30	£8	£12
Star XB24/ZA200/ZA250	£5	£12
Star SJ48	£15	-
Star SJ144 Thermal	£6	£8

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Canon BJ30	80col	£138
Canon BJ210	80col	£174
Canon BJ230	132col	£237
Canon BJ300	80col	£349
Canon BJ330	132col	£388
Canon BJC70	80col	£217
Canon BJC600e	80col	£310
Canon BJC610	80col	£313
Canon BJC800	32col	£879
Canon BJC820	32col	£1195
Canon BJC4100	80col	£221
Citizen ProJet IIC	80col	£205
Citizen Printiva 600C	80col	£295
Epson Stylus 820	80col	£162
Epson Stylus 1000	132col	£316
Epson Stylus Colour Pro A4	80col	£385
Epson Stylus Colour Pro XL	132col	£805
Epson SQ1170	132col	£590
Epson SQ1500	132col	£POA
Epson Stylus 1500	132col	£553
Epson Stylus Colour IIs	80col	£162
Epson Stylus Colour II	80col	£234
HP DeskJet 340 Mono	80col	£169
HP DeskJet 400		£POA
HP DeskJet 600 Mono	80col	£146
HP DeskJet 660C	80col	£243
HP DeskJet 850C	80col	£330
HP DeskJet 1600	80col	£830
HP OfficeJet LX	80col	£468
Lexmark Jetprinter 1020	80col	£169
Lexmark WinWriter 100	80col	£265
Lexmark WinWriter 150C	80col	£229
Lexmark 2070		£295
OKI OJ300 Colour	80col	£226
OKI OL2010 Colour	80col	£255
Star SJ144	80col	£178
Star Wintype 800C Thermal	80col	£592

SHEET FEEDERS

Canon BJ10ex/BJ10sx	£40
Canon BJ300	£86
Canon BJ330	£96
Citizen Swift 24/200/240	£75
Epson LX400	£69
Epson LQ570/LQ870	£47
Epson LQ1070/LQ1170	£89
HP DeskJet 310/320	£48
NEC P20/P220	£59
NEC P3Q/P32Q	£85
Panasonic 1170/1180/1123	£59
Panasonic 1124i/1124/2124	£79
Panasonic 1824/2824	£128
Panasonic KX-P2135	£30
Star LC100	£69
Star LC200	£69
Star LC240/LC24-200	£69

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◆ Canon BJ10ex/BJ10sx/BJ200/BJ200ex/BJ230	
2 pack	£10
5 pack	£24
◆ Canon BJ10ex/BJ10sx	
1x Original Cartridge + 3 Refills	£36
◆ HP DeskJet 500 Series STD Capacity	
2 pack	£8
5 pack	£20
◆ HP DeskJet 500 Series High Capacity	
2 pack	£17
◆ HP DeskJet 500C/550C/560C	
1x Cartridge + 1 each (3) Colour Refill	£39
◆ Epson Stylus 800/800+/1000	
2 pack	£9
◆ Epson Stylus 300	
2 pack	£10

ACCESSORIES

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Canon BJ10sx Battery Pack	£32
Epson OK Serial Interface	£29
Epson SK Serial Interface	£75
Epson 32K Serial Interface	£95
Epson LQ100 Tractor Unit	£29
Epson LX300 Colour Kit	£29
Epson Stylus 820 Colour Kit	£75
HP DeskJet FX Emulation Cartridge	£49
HP DeskJet IBM Emulation Cartridge	£57
HP DeskJet 500 256K RAM Cartridge	£75
HP DeskJet 320 Battery Pack	£33
HP DeskJet 320/540 Colour Kit	£28
HP DeskJet 320 Parallel Cable	£12
HP DeskJet 600 Colour Kit	£29
Panasonic Serial Interface	£49
Panasonic 32K Buffer	£16
Panasonic 2180/2123 Colour Kit	£30
Star 8K Serial Interface - LC Range	£52
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Dustcovers for 132col printers	£9
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Manual Printer Sharers

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2in/1out	£12	£13
2in/2out	£28	£29
3in/1out	£15	£17
4in/1out	£24	£26

Auto Parallel Printer Sharer Buffers

Type	OK	256K	1Mb
2in/1out	£29	-	-
2in/2out	-	£105	£134
4in/1out	£45	-	-
4in/2out	£69	£124	£149
8in/1out	£79	-	-

Auto Serial Printer Sharer Buffers

Type	OK	256K	1Mb
2in/1out	£27	-	-
2in/2out	-	£124	-
4in/1out	£44	-	-
4in/2out	£69	£147	-
8in/1out	£62	-	-

RAM Expansion for above Auto Sharers

RAM Module	256K	1Mb	2Mb
	£59	£78	£124

Pocket Buffers

Parallel Flash Buffer	256K	1Mb	2Mb
	£65	£98	£119
Parallel Fast Flash Buffer		£85	£125
RS232 Plotter Buffer		£155	£184
			£330

IMPACT CONVERTER

Serial to Parallel & Parallel to Serial	£49
As above with 256K buffer	£55
IEEE-488/Centronics Converter	£49
RS232 to RS422 Converter	£37
Parallel Line Extender	£37

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PC Parallel - 18 wire	£4	£8	£13
PC Parallel - 25 wire	£5	£10	£15
25 'D' Male/Male	£4	£8	£13
25 'D' Male/Female	£5	£9	£14
36 Centronics Male/Male	£8	£10	£15
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Pioneer DRUA124X	£78
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Six Speed	
Aries 6X IDE CD-ROM Drive (256k Cache)	£52
Aztech CDR1141	£59
Creative 6X Drive	£69
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Goldstar GCD-R560B	£59.95
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Goldstar GCDR850B	£99.95
Aztech CDA868	£99.95
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Toshiba 4X SCSI XM5401B	£110
Six Speed	
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NEC 6XE External SCSI 2	£339
Plextor 6X Internal SCSI	£254
Toshiba 6.7X Internal SCSI XM3701B	£225

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Travelspin 2X Portable CD-ROM KXL-D720X	£239
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EZ CD Card x4 quad Speed PCMCIA	£289
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Internal 4X CD Rec.Kit CDR102	£699
External 4X CD Rec.Kit CDR102	£799
Panasonic	
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Amacom EZ CD 4X CD-ROM	£225

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Nakamichi NBR7 7CD Jukebox	£189
NEC 4x4 disk auto changer CDR-251	£169

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Multimedia Home CD 4X	£265
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Discovery 4X	£189
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- ◆ Serif PagePlus v3.0 or PagePlus HomeOffice 95 (please specify)
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- ◆ MS Golf v1.0 (3.5")
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- ◆ US Atlas
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Typhoon PC Radio FM Card	£25

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2Mb Stealth 64 Video DRAM	£112
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2Mb Hercules Stingray 64 Video PCI Bus	£144
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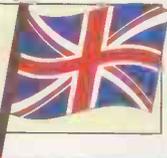


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Sportster 28,800 Internet Special	£154	£154
Courier V.34	£231	£231
Sportster 28800 Xjack PCMCIA	£155	£155

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CABLES & ACCESSORIES

Single 40w Internal IDE cable £6
Dual 40w Internal IDE cable £8
Single 50w Internal SCSI cable £8
Dual 50w Internal SCSI cable £9
50w - 50w Amphenol SCSI cable £16
25w - 50w Amphenol SCSI cable £16
SCSI 1-2 50W H/D to 50W Amphenol Cable £25



IDE Hard Disk Drives
ST9420AG 420Mb 2.5" 16ms £175
ST3630A 631Mb 3.5" 14ms £115
ST9816A 810Mb 2.5" 16ms £275
ST51080A 1.0Gb 3.5" 10ms £132
ST51270A 1.2Gb 3.5" 10ms £145
ST32140A 2.1Gb 3.5" 10ms £199

SCSI Hard Disk Drives
ST51080N 1.0Gb 3.5" 12ms £176
ST32151N 2.1Gb 3.5" 9ms £442
ST32550N 2.1Gb 3.5" 8ms £569
ST15150N 4.2Gb 3.5" 8ms £879
ST15230N 4.2Gb 3.5" 8ms £674

3.5" IDE HARD DRIVES

Western Digital
AC2850 850Mb 10ms £119
AC31200 1.2Gb 10ms £149
AC31600 1.62Gb 10ms £185
AC32100 2.11Gb 10ms £229
AC32500 2.559Gb £309

Conner
CFS850A 850Mb 12ms £119
CFS1275A 1.27Gb 11ms £145
CFS1621A 1.6Gb 11ms £179

Fujitsu
M1606T 1.08Gb 12ms £145
M2934S 4.3Gb 10ms £689

Hewlett Packard
C5273AK 2.0Gb £239
C5271A 1.6Gb £199
C5272AK 1.3Gb £179

IBM
Deskstar EIDE 1.2Gb 12ms £162
Deskstar EIDE 1.7Gb 12ms £205

Maxtor
7850AV 850Mb 12ms £123
710844AP 1.084Gb 11ms £129
71336AP/A 1.33Gb 11ms £145
71626AP 1.62Gb 11ms £175
72004AP/A 2.004Gb 11ms £199

Quantum
Trailblazer 850Mb 12ms £120
1208AT 1.2Gb 11ms £145

2.5" HARD DISK DRIVES

IBM
DPRA20810 810Mb 11ms £320
DPRA21215 1.2Gb 11ms £489

Hitachi
DK211A-51 510Mb 11ms £175
DK212A-81 810Mb 11ms £259
DK212A-10 1.0Gb 10ms £365

Toshiba
MK1924FC 540Mb 12ms £205
MK2628FC 810Mb 12ms £379

3.5" SCSI HARD DRIVES

Conner
CFP1080S 1.0Gb 10ms £167
CFP2105S 2.15Gb 9ms £389
CFP4207S 4.22Gb 9ms £669

Fujitsu (2 year Warranty - 2Gb+ - 5 year Warranty)
M1603SA 545Mb 11ms £124
M1606SA 1.1Gb 10ms £179
M2903SA 2.0Gb 12ms £455
M2934S 4.3Gb 10ms £689

IBM (5 year warranty)
84G9001 1.0Gb 10ms £195
74G7044 2.0Gb 8ms £399
74G7045 4.0Gb 8ms £959
74G7073 5.25Gb 8ms £1125

Quantum
Fireball 1.08Gb 9ms £172
Atlas 2.1Gb 9ms £499
Grand Prix 4.3Gb £659

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SCANNERS ▸ INPUT DEVICES ▸ MEMORY ▸ CPU

SCANNERS

Epson
A4 Flatbed 24bit colour scanner supplied with Picture Publisher LE, OmniPage Direct OCR, interface & Cables

Model	Parallel	SCSI
GTX5000	£292	£345
GTX8500	£464	£538
GTX9000	£562	£645
LapCat	£229	

Genius
EasyScan 256 £49
ScanMate Colour SE 24-bit 800dpi £89
ScanMate Colour Pro 1600dpi £108

Hewlett-Packard
HP CopyJet £1949
A4 Flatbed Scanner supplied with Corel PhotoPaint, Caere OmniPage LE, DeskScan II and PaintPort Software

4S Mono	4C Colour	4SI Mono
£165	£593	£1575

Logitech
ScanMan Colour £113
ScanMan EasyTouch - Parallel £105
ScanMan PowerPage £289
Scanman 256 for Windows £69
ScanPad £12

MICE

Aries
Excel MK3 2 Button Serial Mouse £8

Creative
Aero Mouse £65
Aero Pen £65
Aero Duet £78

Genius
EasyMouse 2B Serial £8
EasyScroll 3B Serial £29
MouseOne 2B - PS/2 £9
Mouse 3 £12
Mouse 3+ £16
HiMouse - Serial £17
HiMouse - Serial & PS/2 £17

Logitech
Chroma Mouse - Serial & PS/2 £24
MouseMan Sensa - Serial & PS/2 £36
MouseMan - Bus £41
MouseMan Cordless - Serial & PS/2 £47
Pilot Mouse - Serial & PS/2 £16
MouseMan 3B - Serial & PS/2 £31
MouseMan 96 - 3 button Mouse Combo £27

Microsoft
MS Mouse v2 - Serial or PS/2 £34
MS Home Mouse £27

JOYSTICKS

PCMCIA
Games (Joystick) Card. Ideal for Notebook Computers £45

CH Products
Flightstick £26 Flightstick Pro £47
Virtual Pilot Yoke £54
Virtual Pilot Pro Yoke £61

Gravis
Analog £21 Analog Pro £26
Advanced Game Pad £17

Logitech
Wingman £23 Wingman Extreme £29
Wingman Warrior £10A

Microsoft
Sidewinder 3D Analogue £19
Sidewinder 3D Pro £35

Suncom
Suncom FX3000 £25
Command Control Pad £12
G-Force Flight Yoke £29

Excel CS200 PC Joystick
A high quality analogue PC joystick with Turbo Switch **Offer Price £11**

KEYBOARDS

Aries 102 Key UK Keyboard £12
Aries Windows 95 105 Key Keyboard £18
Aries Click-Action Alps Keys Professional £29

Aries Advance keyboard - Designed for Windows 95 enhanced keyboard soft touch and silent, tactile feedback, adjustable wristpad for a comfortable support and rest.
Special Offer £21.95

KeyPro a Programmable Keyboard with LCD Calculator, Diagonal Cursor keys and Keylock, Professional £35
KeyTrack Keyboard with built-in Trackerball, Alps Keys £39
Cherry G83-6000 Membrane £18
Cherry G81-3000 Soft-Touch £21
MS Natural Keyboard £59
All Keyboards have 102 Keys

TRACKERBALLS

Genius
HiPointTrackerball - Serial & PS/2 £19
HiTrak Trackerball - Serial & PS/2 £22

Logitech
Pilot TrackMan £24
Trackman Voyager £44
TrackMan II Combo - Serial & PS/2 £39
Trackman Portable - Serial & PS/2 £39

CONTROLLER CARDS

16-bit ISA Bus
CEA0110 Multi I/O - 2S/1P/G £12
CEA0290 Multi I/O -IDE/FDD/2S/1P/1G £11
CEA2400 Multi I/O - 2S (16550) /1P £18
CEA0230 2 x IDE/2x FDD Controller £9
CEA0100 Dual RS232 Serial Card £11
CEA2410 Single 16550 RS232 Serial Card £26
CEA0300 Game (Joystick) Port Card £8

VESA Local Bus
CEA2060 Multi I/O-IDE/FDD/2S/1P £12
CEA1610 Enhanced IDE/FDD/2S/1P £15
CEA1900 IDE/FDD/2S(16550)/1P £26

PCI Bus
CEA1890 Enhanced IDE Controller £16

ADAPTEC

- 348 Mini SCSI Plus (Parallel SCSI Adaptor) £78
- 358 Mini SCSI Plus (ENH SCSI Adaptor) Remote Control £108
- 1460 Controller Kit - PCMCIA (inc S/W) £125
- 1505 Altra Total CD Kit £35
- 1515 Altra Total Connect Kit £59
- 1542 Controller only - ISA £127
- 1542 Controller Kit - ISA (inc Cables & S/W) £153
- 2742 Controller Kit - EISA (inc Cables & S/W) £222
- 2920 PCI SCSI Kit £109
- 2940 PCI SCSI Ultra Wide Kit £209
- 2940 Controller Kit - PCI (inc Cables & S/W) £158
- 3940 PCI SCSI Multi-Channel Kit £289
- Adaptec AIRPORT 1000 Infra Red £59
- Adaptec AIRPORT 2000 Infra Red £69
- Adaptec AIRPORT 2500 Infra Red £115

DIGITISING TABLETS

Genius
Easy Painter £56
New Sketch 1212 - 12"x12" £115
New Sketch 1812 - 18"x12" £179
New Sketch 1812D - 18"x12" £199

MEMORY (RAM) SIMMS

PRICES SLASHED

30pin SIMM			
CRA1190	1M x 8		£25
CRA0270	1M x 9	3-chip	£20
CRA1160	1M x 9	9-chip	£29
CRA0280	4M x 9		£79
72pin 32-bit (Non Parity)			
CRA0300	1M x 32	4Mb	£43
CRA0380	2M x 32	8Mb	£79
CRA0410	4M x 32	16Mb	£189
CRA0430	8M x 32	32Mb	£399
72pin 36-bit (Parity)			
CRA0320	1M x 36	4Mb	£68
CRA0740	2M x 36	8Mb	£145
CRA0310	4M x 36	16Mb	£286
CRA0390	8M x 32	32Mb	£649
72pin 32-bit EDO			
CRA0450	1M x 32	4Mb	£75
CRA0460	2M x 32	8Mb	£136
CRA0470	4M x 32	16Mb	£289

SIMM Converter
Converts 4 x 30pin SIMMS to 1 x 72pin SIMM.
Can use 3 or 9 chip to give 32 or 36bit.
Special Offer Price £28

PROCESSORS (CPU)

INTEL			
486DX4-75	£49	486DX4-100	£56
Pentium P75	£76	Pentium P100	£142
Pentium P120	£184	Pentium P133	£230
Pentium P150	£316	Pentium P166	£460
Pentium Pro 150MHz			£449
Pentium Pro 180MHz			£620
Pentium Pro 200MHz			£699

OTHERS
SGS 486DX2-66 5V £19
Texas 486DX2-66 3V3 £19
AMD 486DX4-100 3V3 £49
AMD 486DX4-120 3V3 £56
AMD 5x86-P75 3V3 £59
Cyrix 5x86™-100 3V3 £45
Cyrix 6x86™-100 3V3 £159
Cyrix 6x86™-P133 £164
Cyrix 6x86™-P150 £239
Cyrix 6x86™-P166 £410

CPU Cooling Fans/Heatsink
486DX £9 Pentium £11

DX4 Adaptor Card

Plug any 486DX4 processor into a standard motherboard with this adaptor.
Special Offer Price £29

INTEL OVERDRIVES

486DX4-75 £84 486DX4-100 £109
Pentium 63 £105 Pentium 83 £135
P.S. When ordering, please specify type required, replacement or upgrade socket type

MOTHERBOARDS

CEA5120: 486 VL Bus, 256K Cache, ZIF Socket, 3 VESA, 4 ISA - 2 x 72 & 4 x 30 pin SIMM £65
CEA5040: 486 VL Bus, 128K Cache, ZIF Socket, 3 VESA, 4 ISA - 4 x 72 pin SIMM £59
CEA5030: 486 VL Bus, 256K Cache, ZIF Socket, 3 VESA, 4 ISA - 4 x 72 pin SIMM £69
CEA5110: 486 PCI, 256K Cache, ZIF, Enh. IDE, Enh. Parallel/Hi-Speed 16550 Serial £96
CEA5080: Pentium P75/90/100, 256K Cache, Enh. IDE/Enh. Parallel/Hi-Speed 16550 Serial £119
CEA5075: Pentium P75 to P200 MHz 256K Intel Triton, EDO RAM with 256K Pipeline Cache fitted £128



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All goods supplied carry a minimum of 12 months return to base warranty (unless stated otherwise). On certain products this will entail dealing directly with the manufacturers, Watford Electronics reserves the right to repair or replace a faulty item after 14 days of purchase. If within 14 days after purchase, but before using the product, you realise that the product is unsuitable, please call our returns dept. for a Returns Authorisation Number. We shall be happy to refund the cost of the item. However, software packages must be unopened. In these circumstances there will be a restocking fee of £10 or 15% whichever is higher.

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MS 95VL	DX2-66	DX4-100
MONO	£749	£775
DUAL SCAN	£975	£995

Example Total Price for Mono DX2-66 Model inc. Delivery & VAT is £897.70



intel
inside
pentium
PROCESSOR

P100 D/SCAN
from only
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per month
APR 19.9%

MS5400 Pentium P100 Multimedia Portable

Built-in CD-ROM, PCI bus, 2Mb video RAM

- Intel Pentium P100 processor upgradable to 133MHz
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- 256Kb Secondary Cache on-board
- 11.3" Dual Scan or 10.4" / 12.1" TFT Active colour screen
- 8Mb Ram upgradable to 32Mb
- Built-in Quad Speed CD-ROM Drive
- 510Mb User removable 'pocket-size' hard disk
- Built-in floppy drive (user removable)
- Rechargeable internal removable NiMH battery
- PCMCIA Slot: Type III or 2 x Type II
- Built-in 2 button Trackpad and console style joypad
- 32-bit PCI Video Card with 2Mb Video RAM
- Built-in 16-bit stereo sound card, stereo speakers and hands-free microphone (Windows and Soundblaster compatible)
- LCD Display showing machine status
- Universal AC Charger & Auto-Sensing Mains Adapter & Carry Case
- Advanced Power Management
- 12 Months Return To Base Warranty

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MS 5400	P100	P133
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TFT ACTIVE 10.4"	£1899	£2045
TFT ACTIVE 12.1"	£2149	£2295

Example Total Price for DualScan P100 Model inc. Delivery & VAT is £2072.70

Notebook Upgrades

RAM upgrade per Mb	add £35	5400 HDD upgrade : 510Mb to 810Mb	add £85	5400 additional drive inc. carrier : 1.2Gig	add £395
MS DOS 6.22 & MS Windows 3.11	add £49	5400 HDD upgrade : 510Mb to 1.2Gig	add £249	External 14" Low Rad Monitor	add £169
Windows 95 on CD-ROM	add £69	5400 additional drive inc. carrier : 340Mb	add £149	External 15" Low Rad Monitor	add £259
95VL HDD upgrade : 340Mb to 510Mb	add £35	5400 additional drive inc. carrier : 510Mb	add £225	External Dual Speed PCMCIA CD-ROM	add £199
95VL HDD upgrade : 340Mb to 810Mb	add £135	5400 additional drive inc. carrier : 810Mb	add £295	External Full-Size 102 Key Keyboard	add £10

Finance Example: 95VL mono DX2-66 is £749 + vat = £880.08 total cash price (collected). Deposit is 10% followed by 36 equal monthly payments of £28.77 (APR 19.9% - Variable). Written quotation available on request.

Phone Microsave Systems on
0121-765-4685
or fax your order on **0121-765-4688**
Unit 1, Olton Wharf, Richmond Road, Olton, Solihull, West Mids. B92 7RN.

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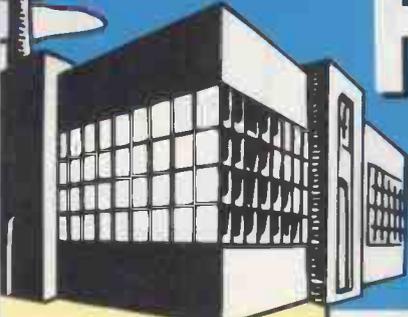
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Darryl Beresford
Purchasing Manager

2 MONITORS



Smile CA-2111 21" FST Monitor

- 21" Non-Glare, Flat Square Tube
- 1600 x 1280 (Non-Interlaced) Resolution
- 0.28mm Dot Pitch
- 380 x 285mm Display Size
- Scan Freq.: Horiz. 30KHz - 82KHz Vert. 50Hz - 100Hz
- Video Bandwidth: 130MHz
- Microprocessor-based control with LCD Display
- Analog RGB (0.7/1.0 Vp.p) HV Separate Composite or Sync on Green
- 15 Pin D-sub Connector BNC * 5, Detached Signal Cable, Macintosh Quadra/PowerPC Adaptor (optional)
- MPR-II Compliant
- 2 Year warranty, 1st Year on site on ALL Smile monitors

M062 Smile 21" FST Monitor£999

Smile MA-0933 9" VGA Monitor

- 9" Non-Glare Etched
- 640 x 480 Resolution
- 165 x 120mm Display Size
- Scan Freq.: Horiz. 31.5KHz Vert. 60Hz - 70Hz
- Video Bandwidth: 30MHz
- Analog RGB (0.7 Vp.p, 75 ohm) Separate Sync, TTL Positive or Negative
- 15 Pin D-Sub Connector
- 110-240 VAC 60/50Hz
- Ideal For EPOS Systems
- VR Control
- 2 Year warranty, 1st Year on site on ALL Smile monitors



M05 Smile 9" VGA Monitor£85

Smile CA1414VL 14" FST Monitor

- 14" Non-Glare Etched
- 1280 x 768 (Non-Interlaced) Resolution
- 0.28mm Dot Pitch
- 250 x 185mm Display Size
- Scan Freq.: Horiz. 30KHz - 65KHz Vert. 50Hz - 90Hz
- Video Bandwidth: 45MHz
- VR Control
- 15 pin D-sub Connector Macintosh Quadra/PowerPC Adaptor (optional)
- MPR-II Compliant
- Analog RGB (0.7 Vp.p, 75ohm) Separate Sync, TTL Positive or Negative
- 2 Year warranty, 1st Year on site on ALL Smile monitors



M025 Smile 14" VGA Monitor£169

Smile CA1516CL 15" FST Monitor

- 15" Non-Glare, Flat Square Tube
- 1280 x 1024 (Non-Interlaced) Resolution
- 0.26mm Dot Pitch
- 260x 195mm Display Size
- Scan Freq.: Horiz. 30KHz - 65KHz Vert. 50Hz - 100Hz
- Video Bandwidth: 80MHz
- Microprocessor-based control with LCD Display
- Analog RGB (0.7Vp.p, 75ohm) Separate Sync, TTL: Positive or Negative
- MPR-II Compliant
- 2 Year warranty, 1st Year on site on ALL Smile monitors



M041 Smile 15" VGA Monitor£249

Smile CA1716CL 17" FST Monitor

- 17" Non-Glare, Flat Square Tube
- 1280 x 1024 (Non-Interlaced) Resolution
- 0.26mm Dot Pitch
- 260x 195mm Display Size
- Scan Freq.: Horiz. 30KHz - 65KHz Vert. 50Hz - 100Hz
- Video Bandwidth: 80MHz
- Microprocessor-based control with LCD Display
- Analog RGB (0.7Vp.p, 75ohm) Separate Sync, TTL: Positive or Negative
- MPR-II Compliant
- 15 Pin D-sub Connector Macintosh Quadra/PowerPC Adaptor (optional)
- 2 Year warranty, 1st Year on site on ALL Smile monitors



M050 Smile 17" VGA Monitor£419

Smile CA0913DL 9" Non-Glare Monitor

- 9" Non-Glare
- 1024 x 768 Resolution
- 0.28mm Dot Pitch
- 165 x 120mm Display Size
- Scan Freq.: Horiz. 30KHz - 40KHz Vert. 50Hz - 100Hz
- Video Bandwidth: 45MHz
- Analog RGB (0.7 Vp.p, 75 ohm) Separate Sync, TTL Positive or Negative
- 15 Pin D-sub Connector (Macintosh PowerPC Adaptor (optional))
- MPR-II Compliant
- Microprocessor-Based Control with LED Indicator
- 2 Year warranty, 1st Year on site on ALL Smile monitors



M09 Smile 9" Colour Monitor£259

Smile CA1516SL 15" FST Monitor

- 15" Non-Glare, Flat Square Tube
- 1280 x 1024 (Non-Interlaced) Resolution
- 0.28mm Dot Pitch
- 260 x 195mm Display Size
- Scan Freq.: Horiz. 30KHz - 65KHz Vert. 50Hz - 100Hz
- Video Bandwidth: 80MHz
- Microprocessor-based control with LCD Display
- 15 pin D-sub Connector Macintosh Quadra/PowerPC Adaptor (optional)
- MPR-II Compliant
- 2 Year warranty, 1st Year on site on ALL Smile monitors



M032 Smile 15" Colour Monitor£239

Smile CA1716SL 17" FST Monitor

- 17" Non-Glare, Flat Square Tube
- 1280 x 1024 (Non-Interlaced) Resolution
- 0.28mm Dot Pitch
- 310 x 230mm Display Size
- Scan Freq.: Horiz. 30KHz - 65KHz Vert. 50Hz - 100Hz
- Video Bandwidth: 100MHz
- Analog RGB (0.7Vp.p, 75ohm) Separate Sync, TTL Positive or Negative
- Microprocessor-based control with LCD Display
- MPR-II Compliant
- 2 Year warranty, 1st Year on site on ALL Smile monitors



M045 Smile 17" VGA Monitor£389

Smile CA-2011 20" FST Monitor

- 20" Non-Glare, Flat Square Tube
- 1280 x 1024 (Non-Interlaced) Resolution
- 0.28mm Dot Pitch
- 360 x 270mm
- Scan Freq.: Horiz. 30KHz - 65KHz Vert. 50Hz - 90Hz
- Video Bandwidth: 100MHz
- 15 Pin D-sub Connector
- Analog RGB (0.7/1.0 Vp.p) HV Separate
- Microprocessor-based control with LCD Display
- Power Save Facility (with indicator)
- MPR-II Compliant
- 2 Year warranty, 1st Year on site on ALL Smile monitors



M060 Smile 20" Colour Monitor£799



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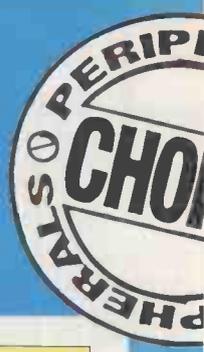


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ViewSonic 17GS - 17" Flat Square Colour Monitor With Plug & Play+



ViewSonic®



ViewSonic 17EA - 17" Multimedia Colour Monitor



The ViewSonic 17GS is a 17" flat square colour monitor which features a super contrast screen. By incorporating glass with a lower transmission rate, cross-over and colour wash-out is minimised. The pixels are well-defined creating a greater contrast and more depth and brilliance to colours. Plug and Play+ support for Windows 95 is included which offers an automatic configuration of the graphics controller. OnView™ is featured for controlling screen adjustments such as contrast, pincushion, degauss, colour tuning, colour temperature, frequency display and much more. An ARAG® glass surface with an anti-reflection, anti-glare screen uses a multilayer process to refract light away from the viewer while maintaining the resolution quality of the displayed image.

- Plug and Play+ support for Windows 95
- 0.27 Dot Pitch
- Video bandwidth 86MHz (typical)
- Display Area up to 320 (h) x 240mm (v)
- OnView™ controls for adjusting screen images
- Strict Swedish TCO certification

The ViewSonic 17EA is a multimedia colour monitor with Plug & Play+ support for Windows 95 which, when used with a compatible video card, automatically sets and produces optimal viewing characteristics such as refresh rates and image processing. The ViewSonic 17EA provides superior performance with an ultra-high refresh rate, which provides the ultimate in flicker free viewing: 85Hz refresh rate at 1,024 x 788 Maximum resolution 1,280 x 1,024. Even at the highest resolutions, this monitor with its 0.28mm dot pitch, offers images that are exceptionally crisp. An anti-static and anti-glare screen coating reduces reflection and glare, while maintaining the resolution quality.

V17GS ViewSonic 17GS Colour Monitor 17"£539

Model Shown 17GS-17" with Plug & Play

V17EA ViewSonic 17EA Colour Monitor 17"£509

CODE	MODEL	SIZE	DOT PITCH	RESOLUTION	FREQUENCY	WARRANTY	PRICE
Economy Series							
M027	V14ES	14"	0.28mm	800 x 600	72Hz	1 Year On-Site	£185
M031	V15ES	15"	0.28mm	1024 x 768	77Hz	1 Year On-Site	£269
Graphic Series							
M039	V15G	15"	0.28mm	1024 x 768	77Hz	3 Yrs (1 Year On-Site)	£319
M033	V15GS	15"	0.27mm	1024 x 768	85Hz	3 Yrs (1 Year On-Site)	£339
M047	V17GS	17"	0.27mm	1024 x 768	85Hz	3 Yrs (1 Year On-Site)	£539
M065	V20G	20"	0.28mm	1280 x 1024	77Hz	3 Yrs (1 Year On-Site)	£1039
Multimedia with Built-in Speakers							
M036	V15GA	15"	0.27mm	1024 x 768	85Hz	3 Yrs (1 Year On-Site)	£379
M048	V17EA	17"	0.28mm	1024 x 768	76Hz	3 Yrs (1 Year On-Site)	£509
M049	V17GA	17"	0.27mm	1024 x 768	85Hz	3 Yrs (1 Year On-Site)	£599
Professional Series							
M044	V17PS	17"	0.25mm	1280 x 1024	77Hz	3 Yrs (1 Year On-Site)	£669
M070	V21PS	21"	0.25mm	1280 x 1024	77Hz	3 Yrs (1 Year On-Site)	£1399



Model Shown 17EA-17" Multimedia Colour Monitor

MONITORS

CODE	MODEL	TYPE	DOT PITCH	RESOLUTION	PRICE
SONY MONITORS					
M076	CPDSFX1	15" COLOUR	0.25mm	1280 x 1024 NI	£297
M081	GDM17SF1	17" COLOUR	0.25mm	1280 x 1024 NI	£549
M085-D	GDM17SE1	17" COLOUR	0.25mm	1600 x 1200 NI	£785
M090-D	GDM20SEV	20" COLOUR	0.30mm	1280 x 1024 NI	£1295
M095-D	GDM20SE1	20" COLOUR	0.30mm	1600 x 1200 NI	£1395



CODE	MODEL	TYPE	DOT PITCH	RESOLUTION	PRICE
TRUST MONITORS					
M07	CM200	14" MONO	0.28mm	800 x 600	£59
M012	CM2431	14" COLOUR	0.39mm	1074 x 768	£149
M017	CM2528D	14" COLOUR	0.28mm	1074 x 768 NI	£179
M036	CM3028D	15" COLOUR	0.28mm	1280 x 1024 NI	£299
M048	Viewer 17	17" COLOUR	0.28mm	1600 x 1200 NI	£479
M061	CM5031	20" COLOUR	0.31mm	1024 x 768 NI	£725
ADI MONITORS					
M024	ProVista	14" COLOUR	0.28mm	1074 x 768 NI	£155
M024-1	3V	14" COLOUR	0.28mm	1074 x 768 NI	£185
M034	4V	15" COLOUR	0.28mm	1280 x 1024 NI	£249
M036	4GP	15" COLOUR	0.26mm	1280 x 1024 NI	£269
M042	5EP	17" COLOUR	0.28mm	1280 x 1024 NI	£449
M043	5AP	17" COLOUR	0.26mm	1280 x 1024 NI	£459



THE GrafixStar™ RANGE

- S3 Vision968 high performance graphics accelerator
- Free MPEG Playback Software
- 2Mb High Performance VRAM (upgrade to 4Mb)
- 32-bit VESA or PCI local bus
- 5 Years Manufacturers' Warranty
- Drivers supplied include: Windows 3.1, Windows for Workgroups, IBM OS/2 2 and 3.0
- DCI compliant drivers for accelerated playback of Indeo, CinePak, AVI clips, and more.

GrafixStar™	300	400	700
64bit Graphics Controller	S3 TRI064	S3 TRI064V+	S3 VISION968
Performance	85+ MILLION Wm	95+ MILLION Wm	110+ MILLION Wm
Memory	DRAM 1MB	DRAM 1MB	VRAM 2-4MB
Maximum Resolution	1280x1024	1600x1200	1600x1200
AVI Acceleration	Optional	Standard	Standard
Software MPEG Playback	No	Yes	Yes
Bus Type	PCI/VLB	PCI	PCI/VLB
1MB PRICE	£69	£65	NA
2MB PRICE	£99	£89	£169
CODE	V85	V86	V95

Diamond Edge 3D Multimedia Accelerator

A revolutionary, highly integrated multimedia accelerator that combines fully-immersive, totally-interactive game play and killer Windows 95 acceleration in one economical package.

- Photo-realistic 3D graphics accelerator for Windows 95
- Fast True-Colour 2D graphics acceleration
- 16-bit hardware wavetable audio (32 voices)
- Fully compatible with SEGA PC games, with two ports for SEGA Saturn pads
- FREE software inc. Virtua Fighter Remix from SEGA PC, Descent: Destination Saturn, and NASCAR Racing
- Digital video playback MPEG

V100	DIAMOND EDGE 3D 1MB DRAM	£199
V105	DIAMOND EDGE 3D 2MB DRAM	£239
V110	DIAMOND EDGE 3D 2MB VRAM	£299
V115	DIAMOND EDGE 3D 4MB VRAM	£399

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Mark Nash
Sales Manager

SCSI HARD DISK DRIVES

FUJITSU 2GB SCSI HARD DISK DRIVE

- Fast, reliable 2Gb of storage
- 512k cache
- Incredibly fast 8.9ms access time
- 7200rpm spin speed
- 5 Year manufacturer's warranty

2GB SCSI £399

NEXT-DAY DELIVERY!

FUJITSU



3.5" E-IDE DRIVES

MAXTOR ENHANCED IDE HARD DISK DRIVES

- Fast, reliable storage
- Up to 512k cache
- 3 Years manufacturer's warranty
- Ideally suited for upgrading to Windows 95 or Windows NT
- access times as low as 10ms
- * Available in 1, 1.3, 1.6 and 2Gb

Maxtor



2GB HARD DRIVE £209

CODE	MODEL	CAPACITY	CACHE	ACCESS TIME	WARRANTY	PRICE EX VAT
MAXTOR						
HD38-M	7850AV	850MB	64k	12ms	3 YEARS	£127
HD39-M	71084A	1GB	64k	12ms	3 YEARS	£129
HD40-M	71260AV	1.2GB	256k	12ms	3 YEARS	£137
HD41-M	71336A	1.3GB	256k	12ms	3 YEARS	£139
HD43-M	71626AP	1.6GB	256k	12ms	3 YEARS	£179
HD44-M	72004A	2GB	256k	12ms	3 YEARS	£209
CONNER						
HD30-C	CFA540A	540MB	64k	14ms	2 YEARS	£109
HD38-C	CFS850A	850MB	128k	14ms	2 YEARS	£129
HD40-C	CFS1275A	1.27GB	64k	14ms	2 YEARS	£149
QUANTUM						
HD38-Q	TRAILBLAZER	850MB	128k	14ms	2 YEARS	£127
HD39-Q	FIREBALL	1GB	128k	14ms	2 YEARS	£129
HD40-Q	FIREBALL	1.2GB	128k	12ms	2 YEARS	£149
SEAGATE						
HD30-S	ST3660A	525MB	64k	12ms	3 YEARS	£109
HD34-S	ST3630A	635MB	64k	12ms	3 YEARS	£119
HD39-S	ST31220A	1GB	256k	12ms	3 YEARS	£139
HD40-S	ST31270A	1.2GB	256k	12ms	3 YEARS	£159
HD44-S	ST32140A	2GB	256k	12ms	3 YEARS	£219
WESTERN DIGITAL						
HD30-W	AC2540	540MB	64k	11.5ms	3 YEARS	£109
HD35-W	AC635	635MB	64k	11.5ms	3 YEARS	£129
HD38-W	AC2850	850MB	64k	10ms	3 YEARS	£135
HD39-W	AC21000	1GB	128k	10.5ms	3 YEARS	£142
HD40-W	AC31200	1.2GB	64k	10ms	3 YEARS	£149
HD43-W	AC31600	1.6GB	128k	10ms	3 YEARS	£199
HD44-W	AC22100	2.1GB	128k	10ms	3 YEARS	£225
FUJITSU						
HD39-F	M1605T	1GB	64k	12ms	2 YEARS	£129

CODE	MODEL	CAPACITY	CACHE	ACCESS TIME	WARRANTY	RPM	PRICE
CONNER							
HD45-C	CFP1080S	1GB	256k	11ms	3 YEARS	5400	£175
HD55-C	CFP2105S	2GB	512k	8.5ms	5 YEARS	5400	£439
HD60-C	CFP4207S	4GB	512k	9ms	5 YEARS	7200	£689
QUANTUM							
HD45-Q	FB1080S	1GB	128k	12ms	2 YEARS	-	£169
HD55-Q	2100S	2GB	512k	9.5ms	5 YEARS	-	£435
HD60-Q	GP4280S	4GB	512k	8.6ms	5 YEARS	-	£725
SEAGATE							
HD45-S	ST31231N	1GB	512k	9ms	5 YEARS	-	£179
HD55-S-D	ST32430N Hawk	2.1GB	512k	9ms	5 YEARS	-	£439
HD56-S-D	ST32550N Barra	2.1GB	512k	8ms	5 YEARS	-	£569
HD60-S-D	ST15150N Barra	4GB	-	8ms	5 YEARS	-	£909
HD61-S-D	ST15230N Hawk	4GB	512k	8ms	5 YEARS	-	£679
HD65-S-D	ST410800N Elite	9GB	512k	8ms	5 YEARS	-	£1749
FUJITSU							
HD55-F	M2932S	2GB	512k	10ms	3 YEARS	-	£399
HD60-F	M2934S	4GB	512k	10ms	5 YEARS	-	£629
MICROPOLIS							
HD55-MS	4221	2.1GB	512k	8.5ms	5 YEARS	-	£499
HD55-MS AV	4221AV	2.1GB	512k	8.5ms	5 YEARS	-	£539
HD60-MS D	3243	4.3GB	512k	8.5ms	5 YEARS	-	£669
HD60-MS AV-D	3243AV	4.3GB	512k	8.5ms	5 YEARS	-	£749
HD65-MS D	1991	9.1GB	512k	12ms	5 YEARS	-	£1349
HD65-MS AV-D	1991AV	9.1GB	512k	12ms	5 YEARS	-	£1449

HARD / FLOPPY DRIVE ACCESSORIES

CODE	DESCRIPTION	PRICE
UT10	3.5" TO 5.25" HARD DRIVE MOUNTING RAILS	£2.50
UT5	REMOVABLE IDE HARD DRIVE MOUNTING KIT (LOCKABLE)	£9.75
UT6	REMOVABLE SCSI HARD DRIVE MOUNTING KIT (LOCKABLE)	£26
AC35	IDE CABLE (2 HDD)	£2
AC30	INTERNAL SCSI CABLE (3 DEVICE)	£4
FLOPPY DRIVE ACCESSORIES		
UT11	3.5" TO 5.25" FLOPPY MOUNTING KIT	£2
AC40	LONG 5 HEAD FLOPPY CABLE	£2.50

2.5" IDE DISK DRIVES

TOSHIBA 540MB 2.5" IDE HARD DISK DRIVE

- Fast, reliable 540Mb of storage
- Fast 12ms access time
- Ideal for portables

TOSHIBA

810MB 2.5" £299

CODE	MODEL	CAPACITY	ACCESS TIME	PRICE
TOSHIBA				
N040-T	MK1924T-C	540MB	12ms	£199
N044-T-D	MK1926F-C	810MB	12ms	£299

FLOPPY DISK DRIVES

CODE	DESCRIPTION	PRICE
DRIVES		
FD5	MITSUMI 1.44MB 3.5" FLOPPY DISK DRIVE	£16
FD5-S	SONY 1.44MB 3.5" FLOPPY DISK DRIVE	£19
FD1D	MITSUMI 1.2MB 5.25" FLOPPY DISK DRIVE	£31
ACCESSORIES		
UT11	3.5" TO 5.25" FLOPPY MOUNTING KIT	£2
AC40	LONG 5 HEAD FLOPPY CABLE	£2.50



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BACKUP DEVICES

COLORADO TRAVAN T1000 TAPE DRIVE

- 800Mb capacity (with compression)
- Fits into 3.5" or 5.25" drive bay
- Up to 9.5Mb/min backup speed
- Backward compatible with QIC-80 & QIC-40
- TRAVAN technology



COLORADO
MEMORY SYSTEMS INC.

CODE	DESCRIPTION	TAPE TYPE	INT./EXT. PRICE
T11/T16	Jumbo DJ35/Trakker 350MB	B	£59 / £129
T13/T17	Jumbo DJ25/Trakker 700MB	D	£125 / £195
T65/T66	Travan T1000/Trakker T1000e Travan 800MB	A/E	£99 / £119
T67	Jumbo DJ50 (inc. controller & W3.11 backup software)	F	£179 / N/A

IOMEGA DITTO TAPE DRIVE

- Top quality tape streamers
- Compatible with Novell and Lantastic networks
- Utilises the latest Travan technology
- Available as internal or stand alone
- 2 year manufacturer's warranty



I-MEGA

CODE	DESCRIPTION	TAPE TYPE	INT./EXT. PRICE
T7	DITTO 420MB	C	£75 / N/A
T80/T85	DITTO 800MB	E	£89 / £99
T47	DITTO-1700MB	F	£179 / N/A
T48/T49	DITTO 3200MB	I	£199 / £295

Seagate TAPESTOR 800MB TRAVAN

- Available as internal or stand-alone units
- Backup Exec software (DOS & Win)
- 800Mb Travan cartridge
- Interface cable
- 9.5Mb/minute backup rate
- Backward compatible with QIC80 & AccuTrak compatibility



CODE	DESCRIPTION	TAPE TYPE	INT./EXT. PRICE
T60/T61	TapeStor 800 Travan 800MB	E	£89 / £185

Seagate TAPESTOR 4000 FALCON (SCSI)

- Up to 4Gb capacity
- Backup Exec software (DOS & Win)
- SCSI Interface
- Use for single PC or networks
- Up to 54Mb/minute backup rate
- Fully compatible with QIC3060 and QIC-WIDE 100 standards
- Cartridge 400, 900



4GB BACK-UP £289

CODE	DESCRIPTION	TAPE TYPE	INT./EXT. PRICE
T62/T63	TapeStor 4000 Falcon	E	£289 / £419

Seagate TAPESTOR TRAVAN 3200

- Internal backup device
- Backup Exec software (DOS, Win & Win 95)
- 3.2Gb Travan cartridge
- Interface cable
- 38Mb/minute backup rate
- Backward compatible with QIC80, QIC3010, QIC3020, QIC, QIC-WIDE, Travan TR1, TR2, TR3 media



CODE	DESCRIPTION	TAPE TYPE	PRICE
T90	TapeStor 3200 3.2GB	E, I	£199

Seagate TAPESTOR 4000 BALI (EIDE)

- Up to 4Gb capacity
- EIDE Interface
- Backup Exec software (DOS & Win)
- Use for single PC or networks
- Up to 54Mb/minute backup rate
- Cartridge 400, 900
- Fully compatible with QIC3060 and QIC-WIDE 100 standards



CODE	DESCRIPTION	TAPE TYPE	PRICE
T64	TapeStor 4000 Bali	E	£289

BACKUP / REMOVABLES

5

TAPES & MEDIA

CODE	DESCRIPTION	TYPE	PRICE	CODE	DESCRIPTION	TYPE	PRICE
T40	Form.ted DC2120	A	£7	T47	11700 Tape	F	£21
T41	DC2120XL	B	£12	T43	4mm DAT 90m	G	£7
T42	QIC-WIDE	C	£12	T44	8mm DAT 112m	H	£6
T45	MC3000XL	D	£15	T48	TR3	I	£29
T46	TR1	E	£20	T49	QW3080 4Gb	J	£19



SEAGATE DAT 2GB INTERNAL DAT DRIVE

Seagate

Seagate's DAT family offers the highest performance and most reliable backup solution in its class. The Seagate range provides an unequalled balance of features storing up to 8Gb on a single 4mm tape.

CODE	DESCRIPTION	CAPACITY	TAPE TYPE	PRICE
T53	Seagate 2GB DAT Internal Drive	2GB	G	£499
T54	Seagate 8GB DAT Internal Drive	8GB	H	£599
T55	Exabyte 4200	4GB	G	£529

REMOVABLES DRIVES

IOMEGA 100Mb ZIP DRIVE

A cost-effective medium, ideal for storage, backup and data transport. It works like a hard drive, but with the flexibility of a cartridge drive.

- Expand your hard drive without limits
- Parallel or SCSI • Size 180 x 136 x 37mm
- 29ms seek time
- Interchangeable 100Mb Disks (200Mb with compression)



CODE	DESCRIPTION	INTERFACE	PRICE
T70	ZIP Drive 100MB	PARA. PORT	£139
T71	ZIP Drive 100MB	SCSI	£139
T72	100MB Pre-Formatted ZIP Disk	-	£10
T73	100MB Pre-Formatted ZIP Disk (5-Pk)	-	£49
T74	100MB Pre-Formatted ZIP Disk (10-PK)	-	£89
T76	ZIP Zoom Card	-	£33
OP26	JAZ Internal Drive 1GB	SCSI	£369
OP30	JAZ External Drive 1GB	PARA. PORT	£449
OP35	JAZ Disk (Single)	-	£85
OP40	JAZ Disk (5-Pack)	-	£375
OP45	JAZ Jet Pro	-	£164
OP50	JAZ Jet Interface	-	£85

THE NEW PD SYSTEM 2-IN-1 CD-ROM AND OPTICAL DRIVE FROM PANASONIC

The PD System is a combined Quad Speed CD-ROM Drive and 650Mb rewritable Optical Disk Drive. It features removable 650Mb optical media for fast archiving or distribution.

- SCSI-2 Interface
- Supports majority of host adaptors
- Supports Video-CD and CD-i movie

Panasonic



CODE	DESCRIPTION	INTERFACE	PRICE
CD200	PD Drive 650MB: Bare Internal Drive	SCSI	£345
CD210	PD Drive 650MB Kit (inc. interface & software)	SCSI	£359
CD215	PD Drive 650MB: Bare External Drive	SCSI	£449
CD205	PD Drive 650MB Optical Disk	N/A	£32

FUJITSU DynaMO Optical Drive

- Unlimited storage - simply add cartridges as your need increases.
- 230Mb standard optical media • 100% reliable • 100% re-usable
- Use like a floppy • Fast 30ms access time • 2.1Mb/sec data transfer



CODE	DESCRIPTION	INTERFACE	PRICE
OP5	230MB Internal Optical Drive	SCSI	£299
OP6	230MB External Optical Drive	PARALLEL PORT	£549
OP25	230MB Optical Media	NA	£17.50

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help you better understand what is on offer to you. ”



Mike Naylor
Technical Support Manager

MEMORY

**72-PIN 1x32
4MB SIMM
£39**

**72-PIN 2x32
8MB SIMM
£79**

CODE	SIZE	DESCRIPTION	SPEED	PRICE
30-PIN MEMORY				
ME5	1MB	1 x 9	70ns	£19
ME10	4MB	4 x 9	70ns	£69
72-PIN NON-PARITY MEMORY				
ME15	4MB	1 x 32	70ns	£39
ME20	8MB	2 x 32	70ns	£79
ME25	16MB	4 x 32	70ns	£159
72-PIN WITH-PARITY MEMORY				
ME17	4MB	1 x 36	70ns	£69
ME22	8MB	2 x 36	70ns	£129
ME27	16MB	4 x 36	70ns	£299
ME35	32MB	8 x 36	70ns	£469
72-PIN EDO MEMORY				
ME18	4MB	n/a	60ns	£45
ME24	8MB	n/a	60ns	£95
ME29	16MB	n/a	60ns	£229

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Choice SIMM Converter

- Adapts 30-pin SIMMS to 72-pin SIMM sockets
- Expands the number of 72-pin slots
- Reliable and easy to install
- Has memory-protection logic
- Available in Left & Right-Hand Versions
- 4 & 8 Chip Versions

SS10	4 Chip Left-Hand	£19
SS05	4 Chip Right-Hand	£19
SS20	8 Chip Left-Hand	£29
SS15	8 Chip Right-Hand	£29

6 MEMORY/CPUS

VIDEO CARDS

CODE	DESCRIPTION	MEMORY	MAX MEM.	BUS TYPE	PRICE
V5	Generic 256K	256K	256K	ISA	£16
V10	Generic 512K	512K	512K	ISA	£21
V15	Generic 1Mb	1MB	1MB	ISA	£37
V32	Cirrus Logic 5429	1MB	2MB	VLB	£43
V44	BTC 32BIT	1MB	1MB	PCI	£39
V51	BTC 64BIT	1MB	2MB	PCI	£49
V47	ALI 32BIT	1MB	1MB	PCI	£35
V45	TRIDENT 9440 32BIT	1MB	2MB	PCI	£42
V46	CIRRUS LOGIC 5430 32	1MB	2MB	PCI	£45
V49	CIRRUS LOGIC 5436 64	1MB	2MB	PCI	£49
V49-M	CIRRUS LOGIC 5440 64 MPEG	1MB	2MB	PCI	£59
V53	DIAMOND STEALTH SE	1MB	2MB	PCI/VLB	£59
V55	DIAMOND STEALTH 64D	1MB	2MB	PCI/VLB	£69
V57	DIAMOND STEALTH 64 DRAM	1MB	2MB	PCI/VLB	£85
V62	DIAMOND STEALTH 64 VRAM	2MB	4MB	PCI/VLB	£189

BTC 1628 64-Bit PCI VGA

- ARK2000PV VGA graphic chipset
- 32-Bit PCI interface (PCI 2.0 fully compatible)
- 64-bit engine • 64-bit memory data path
- Up to 1600 x 1200 in 256 colours
- GUI accelerator for Windows 95, 3.1X, NT and OS/2 2.X, Warp
- 1MB standard VGA memory on-board (upgrade to 2MB)
- Driver support includes: Windows 95 & 3.1X, PCCAD 6.0, Versa CAD/386 2.1, Windows NT 3.1 & 3.5, OS/2 2.X & Warp



V51 **BTC 1628 64-Bit PCI VGA Card**£49

BTC 1618 32-Bit PCI VGA

- Entry level card with Avance ALG2302 graphic chipset
- 32-Bit PCI interface (PCI 2.0) • 32-bit graphics engine
- 32-bit memory data path • 1MB standard VGA memory on-board
- Driver support includes: Windows 95 & 3.1X, Windows NT 3.5, OS/2 Warp, AutoCAD, 3D Studio. • Up to 1024 x 768 (256 colours)

V44 **BTC 1618 32-Bit PCI VGA Card**£39

CYRIX 6x86 PROCESSOR

- Unbeatable Performance: It's so powerful that at 100MHz it rivals the performance of a 133MHz Pentium system.
- Proven Compatibility: We certify the Cyrix 5x86 fully software compatible - tested against 100s of the most popular utilities, games, and operating systems
- Sixth Generation Technology: The 6x86 includes advanced sixth-generation features not even found on a Pentium processor! The Cyrix 6x86 blows through processing bottlenecks and takes you to new levels of speed and performance.
- Optimized For Your Current Software: You'll be amazed at the speed of your current software, pushing your productivity upwards
- Ready For The Newest 32-bit Software: Don't worry about software upgrades, meets the demands of Windows 95 and 32-bit software.
- A History Of Quality: With a proven track record of building groundbreaking processors, you can rely on Cyrix to run today's - and tomorrow's - software faster.

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**CYRIX
6X86-P120+
£155**

CODE	MAKE	TYPE/MODEL	SPEED	CACHE	VOLTAGE	PRICE	CODE	MAKE	TYPE/MODEL	SPEED	CACHE	VOLTAGE	PRICE
486 CPUs													
C10	INTEL	SX	25MHZ	8K	5V	£9	C150	INTEL	PENTIUM	150MHZ	16K	3.3V	£289
C30	CYRIX	DX/2	66MHZ	8K	5V	£15	C166	INTEL	PENTIUM	166MHZ	16K	3.3V	£379
C31	IBM	DX/2	66MHZ	8K	3.3V	£14	C140	CYRIX	6X86-P120+	100MHZ	16K	3.3V	£155
C39	T.I.	DX/2	80MHZ	8K	3.3V	£18	C145	CYRIX	6X86-P133+	120MHZ	16K	3.3V	£189
C44	AMD	DX/4	100MHZ	8K	3.3V	£35	C160	CYRIX	6X86-P150+	133MHZ	16K	3.3V	£339
C46	CYRIX	DX/4	100MHZ	8K	3.3V	£30	C165	CYRIX	6X86-P166+	133MHZ	16K	3.3V	£489
C50	AMD	DX/4	120MHZ	8K	3.3V	£49	HEAT SINKS & FANS						
C51	AMD	5X86	133MHZ	16K	3.3V	£49	HS10	486 HEAT SINK & FAN				£3.50	
C110	CYRIX	5X86	100MHZ	16K	3.3V	£39	HS20	PENTIUM HEAT SINK & FAN				£4.50	
C115	CYRIX	5X86	120MHZ	16K	3.3V	£69	CODE SPEED WITH O/D SOCKET WITHOUT O/D SOCKET						

586 / PENTIUM CPUs

C75	INTEL	PENTIUM	75MHZ	16K	3.3V	£75	OD5/6	SX/2 50MHZ		£75		£75
C90	INTEL	PENTIUM	90MHZ	16K	3.3V	£99	OD10/11	DX/2 50MHZ		£78		£78
C100	INTEL	PENTIUM	100MHZ	16K	3.3V	£119	OD15/16	DX/2 66MHZ		£84		£84
C120	INTEL	PENTIUM	120MHZ	16K	3.3V	£149	OD20/21	DX/4 100MHZ		£115		£115
C133	INTEL	PENTIUM	133MHZ	16K	3.3V	£209	OD25/30	Pentium 63/83MHZ				£129 / £175



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MOTHERBOARDS

Choice Triton PCI Pentium Motherboard

Choosing the correct motherboard for your needs

When choosing a motherboard compatibility and upgradeability is the key. Beware motherboards that can't be upgraded or are built with unfamiliar components or standards. Ensure that the processor socket will support all the major processor types. Make sure the Chipset is 100% compatible - choosing an Intel Triton™ chipset for example, is a sure way of ensuring future processor compatibility. Make sure the motherboard can support EDO RAM and Fast Page Mode.

Master Mode PCI Slots

This motherboard features three Master mode slots offering total compatibility with any PCI add-on card. Bus Mastering is where a card will process it's own functions directly on the card without drawing processing power from the CPU.

16Bit ISA Slots

These slots ensure all existing add-on or peripheral cards already on the market, or operating in your existing system will work in your new PC.

BIOS

When choosing a motherboard ensure the BIOS that is supplied is FLASH upgradeable. This enables you to update the BIOS via a floppy diskette, ensuring future compatibility with new chips, add-on cards etc.

Processor socket

An Intel Socket 7 (ZIF) allows the CPU to be upgraded or replaced without specialist tools.



CELP Socket

This socket allows external cache memory modules to be added to the motherboard.

FDD Interface

This interface allows a floppy or tape drive to be connected to the motherboard.

Dual PCI IDE Interface

Onboard support for ATA specifications up to mode 4, allowing up to 4 IDE devices to be connected to the motherboard (2 off each interface).

72-pin SIMM Sockets

These slots allow the motherboard to use 72-pin SIMM memory 4 x Autobanking SIMM sockets in multiple configurations which accepts standard or EDO memory.

High Performance Ports

When choosing a motherboard specify 16550 compatible serial ports as this allows high speed serial devices to be connected to your PC such as fax / modems, terminal adaptors etc. This motherboard features an enhanced Parallel port EPP/ECP offering bi-directional communication.

NOW ONLY
£69
CODE: M93

MOTHERBOARDS 7

Voltage Regulator Module

This part of the motherboard is for an external module to be plugged in, changing the CPU voltage thus allowing it to work with future processor technology.

CM1 256k Cache Upgrade Module £10

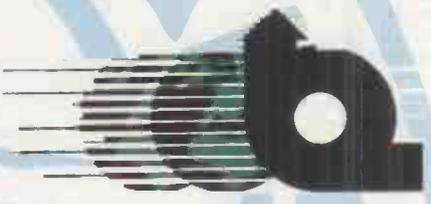
CM2 256k Pipeline Burst Module £15

MOTHERBOARDS

GIGA-BYTE MOTHERBOARD

The very best in innovative design and reliability for performance motherboards.

- Pentium 75-166MHz Processors support (socket 7)
- 256k installed pipeline Burst cache
- Intel PCI chipset
- 4 x PCI and 4 x ISA slots
- 6 x 72-pin SIMM sockets (Max 128Mb)
- Supports EDO RAM
- Integrated Super I/O
- Standby and Suspend mode support
- Award Flash BIOS



GIGA-BYTE

M92-D GIGA-BYTE MOTHERBOARD ..£109

CODE	BUS TYPE	NO. OF SLOTS	NO. SIMM SLOTS	MAXIMUM MEMORY	CACHE ON-BOARD	PRICE
486 MOTHERBOARDS						
M37	486 BOARD	VLB	3 ISA 3VLB	4 X 72PIN	128MB 256K	£49
M44	486 BOARD	PCI	4ISA 3PCI	2 X 72PIN	128MB W/B FUNCTION	£39
M40	486 BOARD	PCI	4ISA 3PCI	2 X 72PIN	128MB 256K	£55



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MOTHERBOARD BUNDLE

CHOICE MOTHERBOARD BUNDLE

At Choice we realise that many of our customers have either a 386 or 486 system that they wish to upgrade to Pentium performance. With this in mind, we have put together the following bundle which offers Pentium power at a much lower price than if buying the required items separately. The bundle includes:

- Choice Triton Pentium PCI Motherboard
- 256k Pipeline Burst Module
- 1Mbyte PCI Graphics Card
- Intel™ Pentium 100MHz CPU
- 4 Chip SIMM Saver
- Heat Sink and Fan



BUNDLE SAVING
£26.50

Call Choice
01909 530 242
or FAX 01909 530 261

Choice Motherboard Bundle.....£239
Retail Individual Parts Price Total ...£265.50



“Get Factory Prices Direct From Choice Peripherals”

Choice Peripherals Units 1&2, Highgrounds Way, Rhodesia, Worksop, Notts, S80 3AF.

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minimum of fuss and hassle. ”



Mike Naylor
Technical Support Manager

8 COMPONENTS

CASES & KEYBOARDS

Denco D60 Chassis

- Eye-catching lights indicating Turbo, Power and Hard Disk Activity
- PS/2 Type Power Supply with TUV CE-Approval
- High quality construction
- Fully shielded to ensure compliance with new EMC regulations



D607 Desktop D602 Medium Tower D603 Mini Tower



DENCO
International Ltd.



CODE	DESCRIPTION	PRICE
NEW RANGE! D60 SERIES CASES		
CS100	Denco D603 Mini Tower with PSU	£49
CS105	Denco D607 Desktop with PSU	£49
CS110	Denco D602 Medium Tower with PSU	£65
VALUE SERIES (INC. 200W PDWER SUPPLY)		
CS02	200W PS2 Type Power Supply	£14
CS5	Value Mini Tower & LED	£24
CS10	Value Desktop & LED	£26
CS15	Value Full Tower & LED & 230W PSU	£39



BTC 5140 Keyboard

A sleek design and enhanced layout for Windows 95 means this keyboard sets a new standard in convenience and productivity. BTC's tactile switch technology, plus a solid, stylish design make the keyboard outstanding value. Like all BTC keyboards it is FCC and CE approved and backed by one of the world's premier keyboard manufacturers.

FROM £9



BTC 7931 Keyboard

The BTC 7931 keyboard provides special keys for computers using the Windows 95 operating system. A curved profile, rubber-capped key-switches and extra wide Enter and Backspace keys are other attractive features. The 7931 is the perfect choice for users who want high quality, Windows 95 support and good value. Like all BTC keyboards it is FCC and CE approved and backed by one of the world's premier keyboard manufacturers.

FROM £13



CONTROLLERS

BUSLOGIC FLASHPOINT FROM £129



BusLogic FlashPoint™ LT

The ultimate PCI desktop I/O controller.

The BusLogic® FlashPoint™ is designed and optimized for high performance PC workstations running Windows 95 and other multitask operating systems. With the latest in SCSI technology, FlashPoint LT provides a single-chip board featuring 8-bit SCSI data transfers of up to 20MB/second and Plug and Play with SCAM (SCSI Configured Automatically) Level 1, Buslogic's unique SeqEngine™ technology provides built-in SCSI automation and features reduced command overhead for superior desktop performance. Also offered by FlashPoint is "Green PC" support with BusLogic's GreenLogic™ technology which reduces power consumption when the SCSI bus is idle.

- Ultra SCSI transfer of up to 20Mbps • Optimised for 32-bit applications
- Compatible with SCSI-2 architecture NOW
- Supports all major operating systems and up to 7 peripheral devices

IC5-BL	BUS LOGIC KT445C VLB 32BIT SCSI ADAPTOR	£99
IC10-BL	BUS LOGIC BT946C PCI SCSI ADAPTOR	£129
IC15-BL	BUS LOGIC KT545C ISA 16BIT SCSI ADAPTOR	£139
IC20-BL	BUS LOGIC KT946C PCI SCSI ADAPTOR	£149



CODE	DESCRIPTION	PRICE
ISA I/O CARDS		
IC80	IDE 2FDD/2HDD	£6
IC87	AT I/O CARD 1P, 1G, 1S (16550 UART)	£7
IC90	ISA SUPER I/O CARD 2FDD/2HDD/2S/1P/1G	£7
VLB I/O CARDS		
IC60	Vesa Super I/O (M3) 4HDD/2FDD/2S/1P/1G E-IDE	£11
IC65	Vesa Super I/O (M3) 4HDD/2FDD/2S (16550 UART)/1ECP/1EPP	£14
IC55	Vesa Super I/O (M3,4,5) 4HDD/2FDD/2S/1P	£22
PCI IDE CARDS		
IC05	PCI IDE Card	£11
IC05	PCI IDE CMD Chipset (Mode 3, 4 & 5)	£21
SCSI CONTROLLER CARDS		
IC50	PCI NCR SCSI Controller	£39
IC15	VESA SCSI Controller	£53
IC22	Future Domain PCI SCSI Kit	£98
IC94	VESA E-IDE & SCSI Controller (comes with Adaptec Chipset & EZSCSI S/W)	£99
ADAPTEC CONTROLLER CARDS		
IC25	Adaptec 1542 CP ISA SCSI Controller Card Only	£115
IC30	Adaptec 1542 CP ISA SCSI Controller Kit	£154
IC35	Adaptec 2842 Vesa Local SCSI Controller Kit	£149
IC40	Adaptec 2742T EISA SCSI Controller Kit	£224
IC45	Adaptec 2940 PCI SCSI Controller Kit	£157
IC46	Adaptec 2940 Ultra Wide SCSI Controller Kit	£209

K20	Fujitsu 4870 Click Keyboard	£18
K25	Fujitsu 4700 Click Keyboard	£26
K30	Microsoft Natural Keyboard	£59
AC45	PS/2 Keyboard Adapter	£5
K31	Windows 95 Ergonomic Shape Keyboard	£28
K32	Windows 95 Ergonomic Keyboard & Built in Trakker	£36
K5	BTC 102 Key UK Keyboard	£9
K33	BTC 104 Key Windows 95 UK Keyboard	£11
K35	BTC 102 Key High Quality Keyboard	£13
MICE		
M10	2-Button Serial Mouse with driver software	£4
M11	Logitech Pilot Mouse	£15
M12	Mitsumi High Quality Serial Mouse	£6
M15	Microsoft Ergonomic Mouse 2.0	£16

Microsoft Natural Keyboard

- Unique contoured design - encourages a balanced, more natural hand & wrist position
- 104 key design - extra function keys
- Intellitype software



CABLES & ACCESSORIES

CODE	DESCRIPTION	PRICE
AC5	1.5m Parallel Printer Cable	£2
AC10	5m Parallel Printer Cable	£3
AC20	4-1 Auto Printer Switch Box	£14
AC25	25 Pin Male to 25 Pin Male Cable (suit. for above printer switch box)	£2
AC40	Floppy Disk Cable	£2.50
AC35	IDE Cable	£2.50
AC50	PC to Monitor Power Cable	£3
AC55	Brit. Mains 3 Pin Fused Power Cable	£3
AC60	Keyboard Extension Cable	£3.50
AC65	VGA/SVGA Monitor Extension Cable	£3
AC45	PS/2 Keyboard Adaptor (Std. keyboard to PS/2)	£3
AC70	High Quality Mouse Mat	£2



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SCANNERS

Umax Vista S12

UMAX

- Optical Resolution 600x1200dpi
- Maximum Resolution 9600x9600dpi
- Analog Gamma Design for capturing more details producing output quality superior than 30-bit scanners
- Parallel Image Processing Design for fast scanning speed
- Bundled with VistaScan, the user-friendly scanner software
- Includes MagicMatch Colour Calibration Profiles and Kodak CMS for accurate Colour from scan, display to print
- Optional Transparency Adapter and Optional Automatic Document Feeder
- Includes Presto, an Integrated software for scan, copy, fax, e-mail, image editing and filing



UMAX VISTA S12 LE £573

sc20-u Umax Vista S12 LE.....£573

Umax Vista S6E

UMAX

- Optical Resolution 300x600dpi
- Maximum Resolution 4800x4800dpi
- 24-bit colour, single pass colour CCD
- Includes VistaScan, the user-friendly scanner interface
- Includes MagicMatch profiles and KodakCMS
- Bundled with Presto!, the document handling software that integrates fax, print, e-mail, OCR and tiling functions
- Optional Transparency Adapter Sheet feeder
- Network capability within PC and MAC environment
- All Umax Scanners are supplied with 16-bit ISA SCSI card, Presto Office Suite which includes Image editing, OCR, Archiving, e-mail and Fax & Copy Software



UMAX VISTA S6E £269

sc5-u Vista S6E.....£269
 sc10-u Vista S6E LE.....£279
 sc15-u Vista S6E Pro.....£723
 sc25-u Vista S12 Plus.....£673
 sc30-u Vista S12 Pro.....£997

Scanera Hand-Held Scanner

- 16.7 Million Colours
- 400dpi Resolution, interpolation up to 800dpi
- Auto-installation on both hardware and driver setting
- Full TWAIN Scan width 105mm (4.3")
- Scan Mode: 24-bit dither colour 256 Greyscale Black & White



SCANERA 800dpi SCANNER £65

sc85 Scanera Hand-Held Scanner.....£65

CODE	DESCRIPTION	SCANNER TYPE	MAX SCAN SIZE	MAX RES	MAX NO. COLOURS	S.WARE INCLUDES	PRICE
TRUST SCANNERS							
sc10	Ami-Colour	Hand-held		400dpi	16.8 Mil	Scanjet Utility	£79
sc15	1200	Flatbed	A4/US Legal	1200dpi	16.8 Mil	Wordlinc OCR	£265
sc20	2400SP	Flatbed	A4/US Legal	2400dpi	16.8 Mil	Wordlinc OCR	£365
sc50	9600SP	Flatbed	A4/US Legal	9600dpi	16.8 Mil	Wordlinc OCR	£480
sc55	4800 Compact	Flatbed	A4	4800dpi	16.8 Mil	Wordlinc OCR	£399
sc25	Transparency Kit for 2400/9600						£173

EPSON SCANNERS

sc30	Epson 8500	Flatbed	A4/US Legal	3200dpi	16.8 Mil	Inst. soft only	£439
sc35	Epson 8500 SCSI	Flatbed	A4/US Legal	3200dpi	16.8 Mil	Inst. soft only	£459
sc35	Transparency Kit for 8500						£389



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COMMUNICATIONS

CODE	DESCRIPTION	INT./EXT.	V32	V32bis	V34	V42	V42bis	VOICE	PRICE
CHOICE FAX/MODEMS (NON-BABT)									
F150	14,400	INT.	✓	✓		✓	✓	✓	£49
F155	28,800	INT.			✓	✓	✓	✓	£99
F160	14,400	INT.	✓	✓		✓	✓	✓	£39
F165	28,800	INT.			✓	✓	✓	✓	£85
F170	28,800	EXT.			✓	✓	✓	✓	£115
F175	14,400	EXT.			✓	✓	✓	✓	£95
F180	PCMCIA 14,400	INT./EXT.	✓	✓		✓	✓	✓	£79
F185	PCMCIA 28,800	INT./EXT.			✓	✓	✓	✓	£129
TRUST FAX/MODEMS									
F25	14,400	INT.		✓			✓		£59
F65	14,400	EXT.		✓			✓		£75
F66	28,800	INT.		✓			✓		£119
F67	28,800	EXT.		✓			✓		£129
US ROBOTICS FAX/MODEMS									
F80	Sportster 14,400	INT.		✓			✓		£89
F85	Sportster 14,400 Vi	EXT.		✓			✓	✓	£89
F90	Sportster 28,800	INT.		✓	✓		✓		£165
F95	Sportster 28,800 Vi	EXT.		✓	✓		✓	✓	£165
F100	WorldPort Pocket Dual	EXT.		✓	✓		✓		£125
F115	WorldPort PCMCIA 2496	EXT.		✓	✓		✓		£129
F120	WorldPort PCMCIA V34	EXT.		✓	✓		✓		£165
PAGE FAX/MODEMS									
F125	Pace V.34 Internet Kit	INT.		✓	✓		✓		£139

Choice Unique 28,800 Voice Fax Modem

- V34 28,800kbps with record and playback mode
- G3 14,400 send and receive fax
- True hardware data compression and error correction
- Asynchronous operation
- Fax Class 1 & 2 commands, enhanced 'AT' command set
- V42bis, MNP 5 Data Compression
- V42, MNP2-4 Error Correction
- Comes with Bitware F/D/V (fax/data/voice) software which includes: managed faxing, Fax-On-Demand, Fax Mailbox, Voice Mail, Data Communications, Mini-Bulletin Board System and Pager Notification.



28,800 VOICE £115

NETWORKING

CODE	DESCRIPTION	BUS	BNC	RJ45	AUI	PRICE
N5	Choice Jumperless	ISA	YES	NO	YES	£16
N10	Choice Combi Card	ISA	YES	YES	NO	£18
N15	Choice VLB Combi Card	VLB	YES	YES	NO	£46
N40	Choice PCI Combi Card	PCI	YES	YES	NO	£49
N63	3COM 3C509 BNC	ISA	YES	NO	NO	£59
N83	3COM 3C509 RJ45	ISA	NO	YES	NO	£59
N103	3COM 3C509 Combi	ISA	YES	YES	NO	£69
N113	3COM 3C509 BNC 5-Pack	ISA	YES	YES	NO	£289
N153	3COM 3C509 RJ45 5-Pack	ISA	NO	YES	NO	£276
N154	3COM 3C509 Combi 5-Pack	ISA	YES	YES	NO	£325
N155	3COM EISA BNC	EISA	YES	NO	NO	£129
N20	Pocket LAN Adaptor	PARA. PORT	YES	YES	NO	£49
N25	PCMCIA Ethernet Adaptor	PCMCIA	YES	YES	NO	£79

CODE	DESCRIPTION	PRICE
HUBS & REPEATERS		
N30	Trust 8-Port Smart Hub	£92
N35	Trust 16 Port Smart Hub	£169
N80	Trust 2 Port Ethernet Repeater	£104
N85	Trust 6 Port Ethernet Repeater	£219
N100	Mini size Ethernet Hub 4Port	£59
N105	Mini size Ethernet Hub 8Port	£79
N100	Standard size Ethernet Hub 16Port	£139

CODE	DESCRIPTION	PRICE
CABLES & TOOLS, ETC		
N55	100M RG58 Coax Cable	£21
N90	UTP 1000ft Cable-Easy Pull Box Stranded Cat 5	£60
N95	RJ45 Crimp Tool	£7
N70	BNC Crimp Plug	£1
N71	BNC T-Piece	£1
N72	BNC In-Line Coupler	£1
N73	BNC Terminator-50 Ohm	£1
N91	UTP 3MTR Drop Connector Cable - Cat 5	£3
N92	UTP 5MTR Drop Connector Cable - Cat 5	£4
N93	UTP 7MTR Drop Connector Cable - Cat 5	£5
N94	UTP/RJ45 Crimp Plug	£0.25

CODE	DESCRIPTION	PRICE
TRUST ENERGY PROTECTOR SERIES OF SMART UPS		
N89	Energy Protector 400VA UPS	£104
N96	Energy Protector 650VA UPS	£139
N97	Energy Protector 1200VA UPS	£242
N98	Energy Protector Monitor Card & Shutdown Software	£15

NETWORKING / COMMS

9

Kingston ISA & PCI Combo Cards

Kingston

- QStart™ Installation Utility with Mouse Support - ready to go with just four mouse clicks
- Supports more than 30 popular network operating systems Inc. Windows, OS/2 Warp and Novell
- Individually tested with Lifetime Warranty
- NE2000 Compatible - guaranteed



ISA COMBO £25

CODE	DESCRIPTION	PRICE
N205	ISA Combo Card	£25
N205	PCI Combo Card	£59
N210	8 Port Hub	£95
N215	8 Port Stackable Hub	£105
N220	16 Port Hub	£175

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Andrew Meads
Assistant Logistics Manager

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An 8X CD-ROM DRIVE FOR UNDER £100!!!



Octek 8x CD-ROM Drive - CDR688

Enter the decade of ">1 MByte/Sec" with Octek 8x CD-ROM drive - CDR688. Experience a blast of the ultimate multimedia system power! The latest Octek 8x CD-ROM drive moves faster than almost any competitors - all at sustained 1200 KBytes/Sec (mode 2).

You no longer have to wait ages before the computer uploads your desperately needed data from the CD-ROM which is perfect for intense file and database functions.

It is not only the best in performance, but also the best value CD-ROM in the UK. Get the most out of your system's multimedia capabilities and all of your applications with Octek 8x CDR688!

CODE: CD800 **£99**

- Interface Panel Play / Skip Track Control
- Enhanced IDE Interface / ATAPI
- Transfer Rate (sustained): **1200KBytes/sec (mode 2)**
- Seek Time : 180ms
- Motorised Tray Loading Mechanism (No Caddy Required)
- Audio Playback Capability (Headphone Output with Volume Control)
- CD-ROM XA Ready
- Multi-Session Photo-CD Available
- MPC II (Multimedia PC Available)
- MS-DOS CD-ROM Extensions Available
- Built-in Type
- CD-I Movie Compatible
- 5 1/4" Half-Height Design
- Auto Loading and 3-way Eject

Choice 4/6/8 Speed IDE CD-ROM Drives

CHOICE QUAD SPEED IDE £34!



INCLUDES AUDIO CABLE & SOFTWARE

- 190ms Access Time
- Quad Speed
- 600kb Transfer Rate
- Full Warranty

CD103 Choice Quad Speed IDE.....£34
CD125 Choice Six Speed IDE.....£49
CD800 Choice Eight Speed IDE.....£99

Panasonic CR582 Internal Six Speed CD-ROM Drive

CHOICE QUAD SPEED IDE £34!



Panasonic

- Fast 600KB/s data transfer rate
- 200ms access time
- Fast IDE interface
- Tray loading
- Digital audio output
- MPC2 and PhotoCD compatible

CD115 Panasonic CR582 Six Speed.....£69

BTC Six/Eight Speed CD-ROM Drive



BTC SIX SPEED £59!



- Includes high quality internal IDE CD-ROM Drive
- ATAPI-IDE Interface • CD-i, Video-CD ready
- Supports ISO 9660 (High Sierra), CD-ROM/XA, Multisession Photo-CD, CD+ (Enhanced CD)
- Complies with MPC level-3 standard
- Motorised loading tray design (no caddy required)
- User-friendly front panel for CD-Audio control
- Supports 8 & 12cm CDs

SUPPORTS WINDOWS 95 & OS/2 WARP 3.0

CD103 BTC Six Speed.....£59
CD103-2 BTC Eight Speed.....£119

10 MULTIMEDIA

DON'T FORGET!
Our prices exclude VAT

ROCKFIRE JOYSTICKS AND JOYPADS

Fire Dragon

- For IBM compatibles
- Ergonomically designed for left and right handers
- Left and right throttle controls
- Fire speed control enhances fire power
- A-B-C-D change switches • Large, stable base



CODE: J35 **£29**

Glide Zipper I & II InfraRed Remote Controllers

- For IBM compatibles
- Super sensitive infrared remote control
- Automatic power-off function
- Multi-purpose LED • Glide Zipper II features controllers for arcade-type V.S. games and independent turbo and auto-fires for A & B



GLIDE ZIPPER I CODE: J35 **£17** GLIDE ZIPPER II CODE: J40 **£29**

FireBat Reversible JoyPad

- For IBM compatibles
- Innovative shape for left/right-handers
- High-speed turbo function
- Highly accurate control
- 8-directional control capability



CODE: J20 **£6.50**

UniPad High Performance JoyPad

- For IBM compatibles
- High-speed turbo function
- Highly accurate control capability
- Ergonomic design
- 8-directional control



CODE: J15 **£6.50**

JF Shuttle JoyPad - For The Professional

- For IBM compatibles
- Unique shape, comfortable to hold
- A+B and C+D combined function keys
- TA<>C, TB<>D convertibility
- C & D turbo functions



CODE: J40 **£17**

Silver Shuttle Keyboard Emulator Control Pad

- For IBM compatibles
- Substitute keyboard for playing games
- No interface or driver required
- Digital signal process for stability
- 4-mode combination/fully programmable



CODE: J30 **£21**

CODE	MODEL	INTERFACE	SPEED	TRANSFER RATE	LOADING MECH	PRICE
CD-ROM DRIVES						
CD30	Panasonic Quad	IDE	4	600Kbs	Tray	£39
CD75	Mitsumi FX-4000	IDE	4	600Kbs	Tray	£35
CD77	Toshiba XM5302B	IDE	4	600Kbs	Tray	£69
CD78	NEC Quad Speed	IDE	4	600Kbs	Tray	£69
CD81	Vertos 400	IDE	4	600Kbs	Tray	£39
CD82	Goldstar Quad	IDE	4	600Kbs	Tray	£39
CD91	Pioneer DR-AU124X-5	IDE	4.4	675Kbs	Tray	£69
CD92	Trust Carousel Quad	IDE	4	600Kbs	Tray	£39
CD85	Generic 5 Speed	IDE	5	750Kbs	Tray	£45
CD100	Aztech Six Speed	IDE	6	900Kbs	Tray	£59
CD125	Choice 6 Speed	IDE	6	900Kbs	Tray	£49
CD160	Choice Eight Speed	IDE	8	1050Kbs	Tray	£99
CD105	Toshiba XM3601B Ext	SCSI	4	600Kbs	Tray	£195
CD45	Pioneer Quad	SCSI	4	600Kbs	Tray	£195
CD79	Toshiba XM5301B	SCSI	4	600Kbs	Tray	£149
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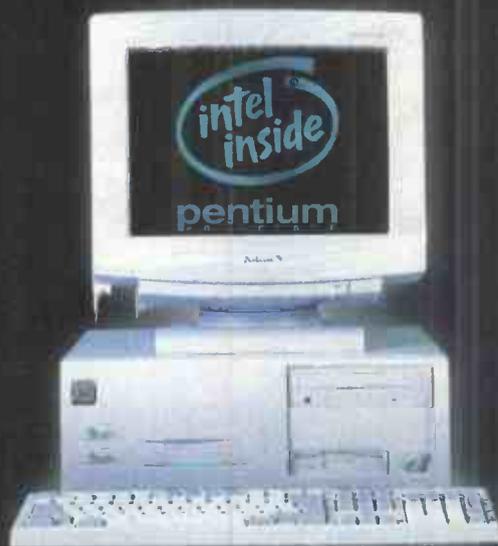
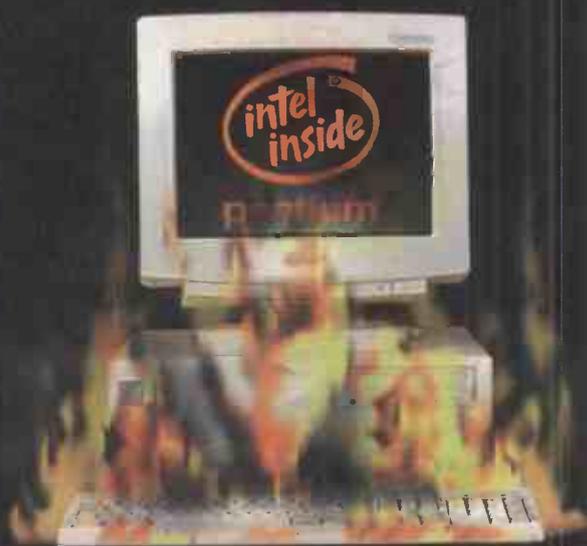


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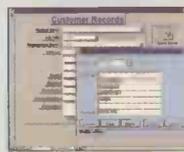


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QA5001 Quick Address Lite CD

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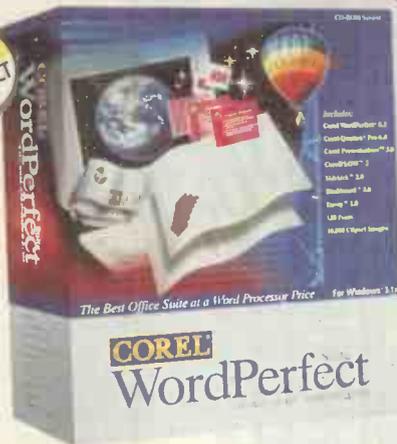


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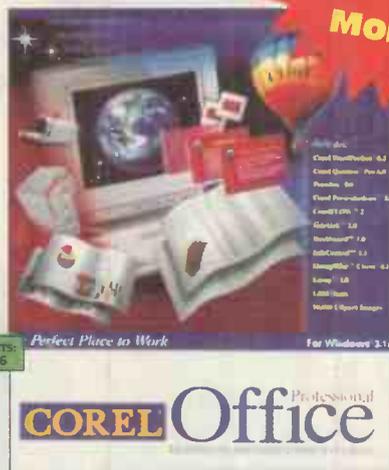
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Infoworld, March 18, 1996

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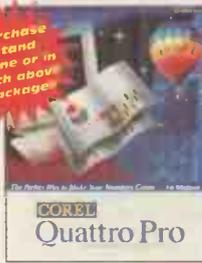
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COR162 Corel Presentations **£49**

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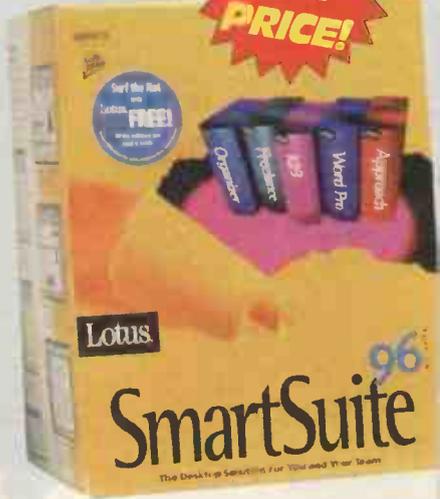
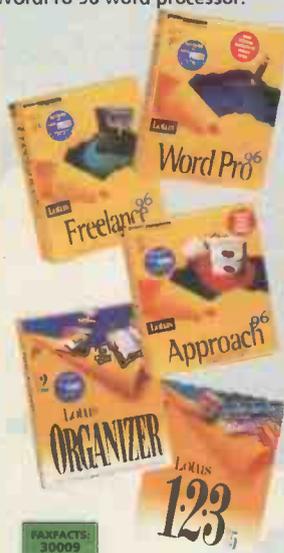
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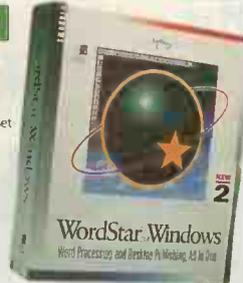
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- over 100 full-motion videos, 3D animations and presentations; complete content of the 26 volume encyclopedia, over 35,000 articles, 7,000 photos and illustrations over 14 hours of sound; fast, easy printing and copying of all pictures and articles; up-to-date interactive world atlas and on-line dictionary.

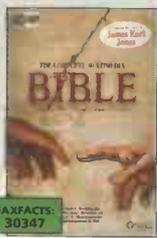


(Excluding VAT £26.95)
COM009 Multimedia Encyclopedia **£31⁶⁷**

The Complete Windows CD Multimedia Bible

A whole new way to experience the Bible - King James version, ideal for religious education students and the whole family.

The Compton's Complete Multimedia Bible is aimed at educating children from the age of twelve onwards, and for refreshing the memory of adults. The Bible comes to life on this interactive CD-ROM filled with biblical maps and inspirational video footage, plus characters, stories, and parables. Hear your favourite passage and the Ten Commandments read by actor James Earl Jones. Imagine having the complete King James Bible fully cross-referenced so that you can search by topic, idea, definition, or history from Genesis to Revelation. Features include: Maps, guides, characters, stories and much more.



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- FEATURES
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 - Interactive tutorial by Eddie Kantar, Jr.
 - Multiple skill levels
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SOF139 Bridge Companion (Excluding VAT £14.95) **£17⁵⁷**

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Software Warehouse recently donated £5,000 plus software and peripherals to the Anthony Nolan Bone Marrow Trust. We would like to thank Microsoft, Lotus, IMSI, RMG, CA and others for their support

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Q What is Microsoft Student Licensing ?

A This is a new licensing program aimed at students aged 16 and above in full or part education at a recognised institution studying for a recognised qualification.

Q Why is Microsoft launching this program ?

A Two Key reasons

1. To provide cost effective Microsoft products to students
2. Promotes the use of Microsoft products in meeting student IT needs.

Q What products are available ?

A There are 5 products available initially in the student license range

- Microsoft Windows for students: Windows 95 AND Windows NT (currently available as install one or other/or you can set dual boot)
- Microsoft Office Pro 95 for Windows OR Office for Macintosh

• Microsoft Development Tools for student: Visual Basic AND Visual C++ Professional Edition.

• Microsoft Works for Students: Works for Windows 95 OR Works for Macintosh

• Microsoft Publisher for Students: Publisher for Windows 95.

Q How are the products delivered ?

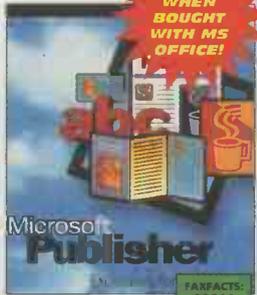
A The student purchases a license pack which contains a purchasing form which must be completed and validated by the school, university or college that the student is enrolled with. Validation will be by Course Lecturers or Administration departments and this process is to ensure eligibility for Student Licenses. Once the purchasing form is completed it is sent to Microsoft and the product fulfilment pack is sent direct to the student by post.

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Designed for Microsoft Windows 95

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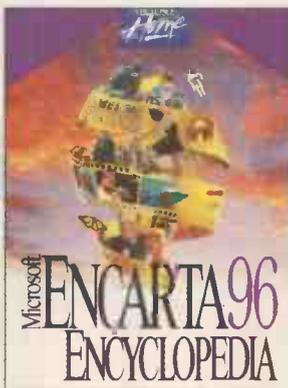
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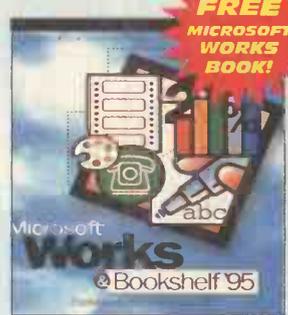
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Designed for Microsoft Windows 95

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Designed for Microsoft Windows 95

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Designed for Microsoft Windows 95

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Designed for Microsoft Windows 95

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FAKFACTS: 30040

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Alpha Five makes you more productive than any other database because you can build sophisticated applications without programming. Other Windows databases give you a collection of database tools and leave you to figure out how to use them. But Alpha Five goes further, because common database functions are pre-built into the program. The package includes 30 Database Table Templates that give you a headstart whenever you need to define a new database table. For example, choose from to-do lists customer information lists, product lists and more.

Alpha Five Version 2 and Windows 95 team up to bring you MULTI-TASKING! You have the ability to launch multiple sessions of Alpha Five, and to perform separate operations in each session. NEW Version 2, has been designed exclusively for Windows 95, and gives full 32-bit power. A 16-bit version is included in the box, in the shape of Alpha Five Version 1, for those who haven't upgraded to Windows 95

YOU GET:

- Easier-to-use Interface
- 32-Bit Architecture for blazing speed
- Query by Form
- New Genies to Make Tasks Easy
- Templates give you Pre-Built Solutions
- Much More

Your database tables and sets, layouts and saved operations are each organised in different tabs.

The convenient toolbar at the top of the screen gives you push-button access to your Alpha Five commands.

Each database object is represented by an icon. Activate it by double-clicking. Edit it by right clicking and choosing from sub-menus.

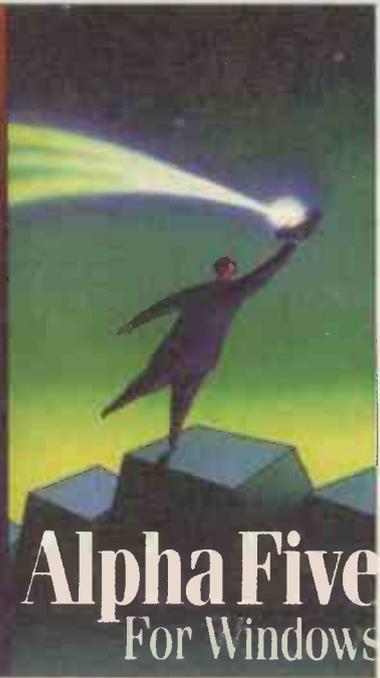


NEW PRODUCT

Includes over 30 database table templates

The Powerful Database That Anyone Can Use!

- Solves database problems like:
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 - Product Lists
 - Inventory Management
 - Accounts
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 - Address Lists
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 - Project Lists
 - Contact Lists
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 - Invoice Lists
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 - Expense Lists
 - Budget Lists
 - Checklist Lists



Alpha Five For Windows

Alpha Five V2

£70⁴⁴

FACTS: 30318

STOCK CODE: ALP005



KidSecure Turns your home PC into a great, manageable family computer

Give Kids access to THEIR Software... Not YOURS!

Your computer is great. The kids can do their schoolwork on it. You can manage the household finances. The trick is controlling WHO is doing WHAT.

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KidSecure makes your home PC into a great family computer.



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- Mail List Manager: Organise mailing lists for business or home use.
- Club Membership: Manage your club's membership list, keep track of donations and dues.
- Home Budget: Take control of your income and expenses with Home Budget, analyse your spending habits
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- Contact Manager
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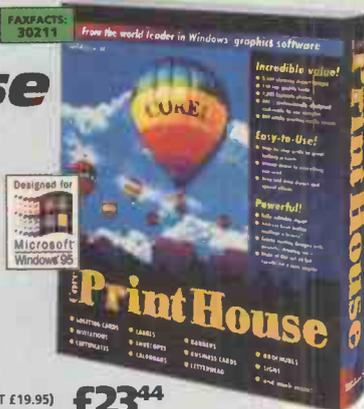
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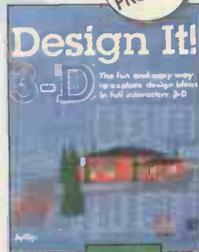
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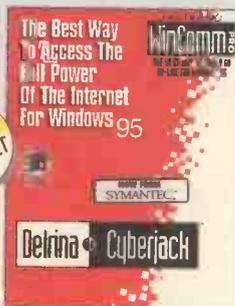
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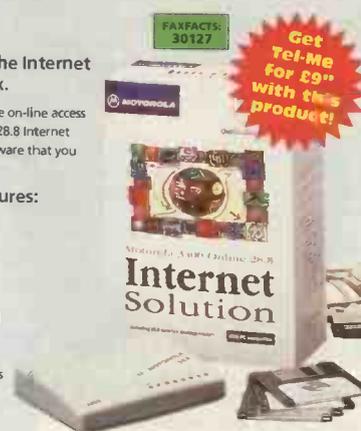
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WebTalk offers full-duplex audio capabilities, providing sound quality that is two-way and comparable to that of a telephone connection. WebTalk is designed for simple installation and use. When used in combination with the "Connect & Play™" feature of Quarterdeck Mosaic, WebPhone gives users virtually instant access to the Internet. WebTalk utilises a standard phone line and 14.4 kbps or higher speed modem. Comes with 2 licenses.

WEB002 Quarterdeck WebTalk (Including VAT £41.07) **£34.95**

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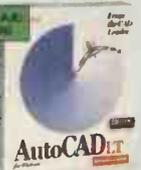


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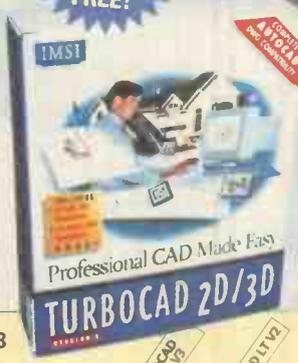
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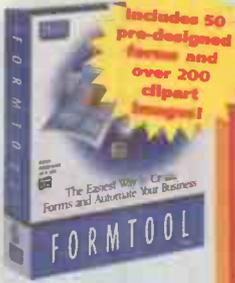
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Turn your PC into a Super Computer. RAM Doublers may give you more memory, but what about performance, reliability and speed? Hurricane not only gives you more memory but also provides a mountain of performance enhancements to make Windows run faster and more efficiently, plus the best analysis tools anywhere! Using its exclusive WinGuard™ technology, Hurricane gives you a Heap Expander to provide you with virtually unlimited system resources, Virtual, Sector & Print Caches to speed up your PC, plus a Screen Accelerator and RAM Drive to really get your system moving. See now why PC Magazine gave Hurricane its coveted Editors' Choice award in a group test of all major 'RAM doubling' products. Don't waste money on a whole selection on memory and system enhancement packages. Get Hurricane - the most comprehensive system optimising package available. Windows 3.1 and NEW Windows 95 versions in same box.

- 10-50% performance improvement for Win 3.1 & Win 95
- 90% performance improvement of 16Mb RAM computer with just 8Mb RAM

The end result is that in a multiple-application environment, the active application gets more than double the memory that it would get normally. And, when you run a single large program it gets the most efficient use of the memory you have.

Hurricane Tools

- Heap Expander - "Doubles" your RAM and provides unlimited resources.
- Global DOS Memory Manager - prevents out of memory messages
- Virtual and Sector Caches - speeds up file access
- Print Cache - Speeds up printing
- Screen Accelerator
- RAM Drive - Shares memory with Windows applications

Discover™ For Windows

Detailed information on software, memory, system, disk drives & benchmarks.

WinGauge™

Real-time performance monitor, providing information on all critical system resources.



How does Hurricane get more memory?

Hurricane provides more memory in 2 ways. First, Hurricane provides virtually unlimited system resources. This is accomplished by dynamically mapping system resources in and out of the 64K resource heaps, and by allocating the heaps on a per-application basis. Second, Hurricane provides more physical memory (RAM) in 3 ways:

- 1, Hurricane searches your programs for unused regions and "discards" them.
- 2, Hurricane locates unused ranges of memory and compresses them and returns the memory to the common pool.
- 3, Hurricane provides "memory sharing" which allows your applications to use all of your memory, when they need to, and the caching and spooling software to use the memory when the applications don't need it.

"It's hands down the best package around"

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"Hurricane is one of the most comprehensive products we've seen, and it provides the best performance"

PC World

"The most powerful and complete Windows performance and analysis tool"

Micro Mart

"Essential equipment for today's Windows PC"

PC Magazine

"Hurricane's toolkit puts others to shame. Indeed, it's almost worth buying just for the Discover Information tool. Hugely configurable...highly recommended"

Computer Buyer

"Doubles" memory	Yes
Lets you run more applications at once	Yes
Lets you run larger single programs than you could before	Yes
Reduces Swap-File access when running multiple applications	Yes
Increases Windows performance	Yes (10-50%)
Eliminates "out of memory" errors due to conventional memory overflow	Yes
Provides access to up to 300K of upper memory	Yes
Cleans up memory objects left by applications	Yes
Automatically compacts Windows Global Heap	Yes
Provides real-time memory protection for system components	Yes
Provides dynamic memory sharing between applications and 32Bit File Access cache	Yes
Provides memory shared 32 bit caching & spooling for CD-ROMs, floppies & printing	Yes
Special pentium and DX2/4 system speed up	Yes
Screen Accelerator / Dynamic RAM Drive	Yes
Integrated system analysis and information tool	Yes

Charity Donation



Software Warehouse recently donated £5,000 plus software and peripherals to the Anthony Nolan Bone Marrow Trust. We would like to thank Microsoft, Lotus, IMSI, RMG, CA and others for their support

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FACTS: 30254

£39⁹⁵ (Inc. VAT £46.94)

RMG18 Hurricane

d-Time for Win 95, or 3.1/DOS

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Accelerate your CD-ROM drive to perform as fast as your hard drive with d-Time and dramatically improve the performance of your multimedia system! Now you can run Windows multimedia titles at the speed you've always wanted - without spending the cash needed to buy a faster CD-ROM drive. d-Time is the hottest new technology that can make your CD-ROM drive run virtually as fast as your hard disk. It doesn't matter what make or speed of CD-ROM drive you have, d-Time will accelerate it.

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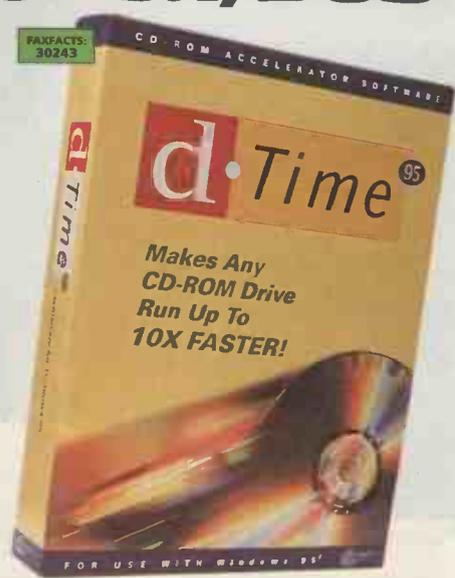
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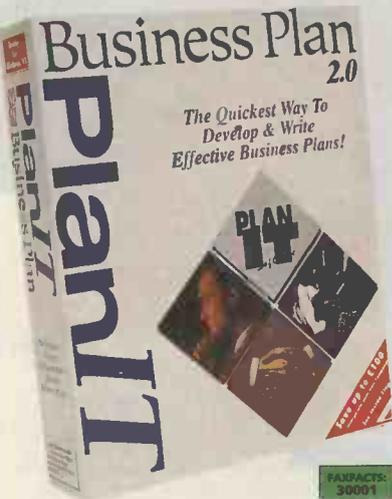
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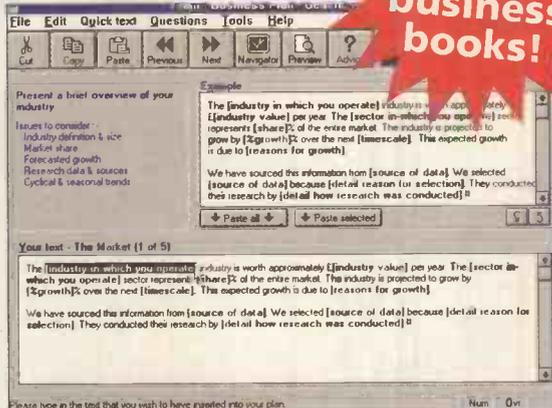
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- Marketing Research & P.R.
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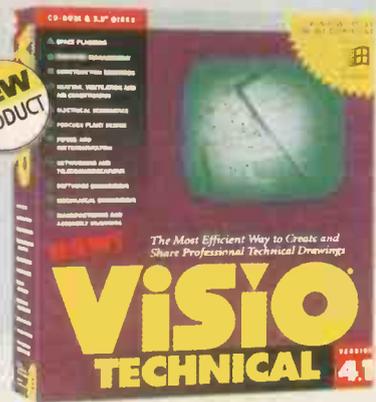
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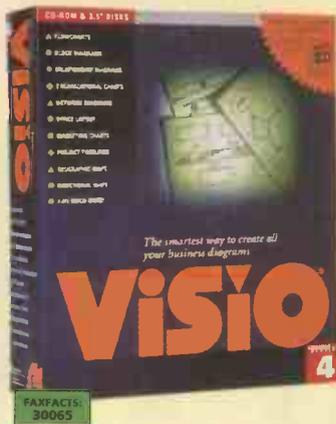
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Visio 4.0 CCP Upgrade **£59**
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*See page 2 for call charges

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Advanced Flowcharts More than 260 shapes for flowcharting	Chemical Engineering Accurately display plant equipment & facilities
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Shape Libraries **£39** each
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Visio Shapes for Network Equipment contains 15 stencils with almost 500 SmartShapes for creating logical and physical network diagrams. Creating rack assembly diagrams and detailed network schematics is as easy as drag and drop. Select a chassis from a vendor-specific stencil, drop network cards into the chassis and add cabling. With Visio's award winning SmartShapes Technology, the cards snap into slots in the rack and stay glued in place even when you move the rack. Cables also stay connected automatically. Equipment is scaled relative to the rack and other pieces of equipment. Online help makes it easy to learn more about any SmartShape.

Visio Shapes for Network Equipment Includes stencils for the following vendors: 3Com, AT&T, Bay Networks, Cabletron, Chipcom, Cisco, Compaq, DEC, Hewlett Packard, IBM & Kalpana.

Visio Network Equipment **£69** (Including VAT £82.83)

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Create quality graphics with CorelXARA!

The easy-to-use illustration program for debutants and pro's alike.

CorelXARA is an ultra-fast vector and bitmap illustration program for the beginner and professional alike. The easy-to-use interface, online tutorial, dynamic fill editing, colour styles and linked colours make creating graphics quick and easy. Optimise your productivity with lightning-fast redraw and powerful drag and drop colours, fills, line clipart, textures, smooth dithering of graduated fills, graduated transparency and anti-aliasing to create a realistic rendered image. Including over 10,000 clipart images, 300 textures, 500 photos plus 500 TrueType and Type 1 fonts, CorelXARA is the perfect complement to any graphics package or DTP application.

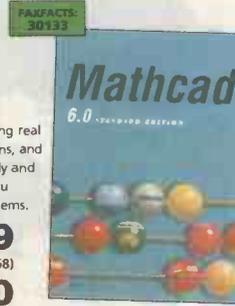


COR133 CorelXARA! **£129** (Inc. VAT £151.58)

Mathcad V6 Standard Edition

The powerful calculation software package for technical professionals!

Mathcad V6 is the powerful calculation package that solves problems using real math notation. The ideal package for engineers, scientists, mathematicians, and more. Combine your advanced math work with text and graphics - quickly and easily. This is the first complete problem-solving environment that lets you explore, analyse, test, refine and document even the most complex problems.



MAT012 Mathcad V6 Standard Edition **£169** (Inc. VAT £198.58)
 MAT005 Mathcad 6.0 Prof..... **£340** (Inc. VAT £399.50)

Decorate borders with Ornamatica

The fun way to automatically create ornamental borders for adverts, menus, posters, certificates, invitations and a host of other DTP projects.

Quickly create your own decorative borders for use in DTP, graphics and word processing. No artistic skills required; by simply dragging a graphic onto the border you can automatically produce the sides, the corners or the whole border as required. Individual elements can be resized and rotated individually or in groups. No more stretching pre-drawn borders to fit.

Over 5,000 design elements and clipart images included for borders of all kinds... from simple milled lines, through ornate certificates, victoriana, and traditional designs, to complex thematic illustrations.

Includes tiles for special themed borders - party, xmas, weddings, certificates. Imports WMF graphics to utilise existing clipart collections for even more possibilities - you can even create borders from company or project logos.

Compatible with all Windows DTP, WP and graphics packages.



STOCK CODE: ORNO01
 (Inc. VAT £35.19) **£29⁹⁵**

CorelDRAW! 3

Excellent type manipulation and drawing features plus CorelChart, Corel PhotoPaint and CorelSHOW.

(Inc. VAT £49.35) **£42**
 COR038 CorelDRAW! 3 CD

CorelDRAW! 4

Comprehensive page layout, and illustration tools as well as CorelMOVE animation software. Also includes 18,000 clip art images, colour separation, Corel PhotoPaint, CorelSHOW, CorelChart.

(Inc. VAT £98.64) **£83⁹⁵**
 COR012 CorelDRAW! 4 CD

CorelDRAW! 5

As CorelDraw! V.4 but with 825 fonts, 22,000 clip art image, 100 royalty-free photos on CD-ROM, and much more.

COR031 CorelDRAW! 5 (3-5) CD **£194⁹⁵** (Including VAT £229.07)

CorelDRAW! 6

The World's Premier 32-Bit Drawing Software

New for Version 6 is increased speed and power, a Multiple Document Interface MDI, which allows many documents to be open at once or many different views of the same document, and fully customisable hot keys and a status bar. There is greater ease of use with Wizards and Tutor notes as well as increased precision to 0.1 micron. CorelDRAW! Version 6 includes CorelDRAW! 6, Corel Photo-Paint 6, CorelPresents, CorelDream 3D PLUS 9 Powerful Utilities! And now there's 90 days FREE technical support from Corel - You can't go wrong!

COR124 CorelDRAW! 6 - U/G from V5 on CD (Including VAT £163.27) **£138⁹⁵**
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Call us! we will not be beaten on Corel!



Illuminatus V3 - Make Multimedia work for you!

Illuminatus gives you everything you need to make multimedia work for you!

Illuminatus gives you everything you need to create your own "edutainment" programs for kids, catalogues and newsletters on disk, computer-based training, special material for special needs, interactive curriculum vitae, multimedia encyclopedias, audio-visual greetings cards, multimedia scrapbooks and more without the need for any programming skills.

Quickly and easily combine text and graphics!

You can quickly and easily combine text, graphic, sound, animation, video and actions onto screen-sized pages. Publish interactive multimedia documents on all kinds of floppy disk and CD-ROM. It's as easy to use as a DTP program but as powerful as an authoring tool.

Supports industry standard multimedia formats

Illuminatus v3 supports industry-standard multimedia formats including PCX, BMP, TGA, TIFF, Kodak PhotoCD, WAV, Midi, AutoDesk Animator FLC/FLI files, Microsoft AVI Video and MPEG motion video.

Includes Free CD-ROM!

Illuminatus includes over 5,000 clipart images, sound files, animations, icons and buttons plus over 100 professional-quality multimedia publications for you to adapt for highest-quality interactive programs in moments. Full tutorials are included.



Compatible with both Windows 3.1 and Windows 95

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EVERYTHING FOR YOUR PC - NEXT DAY!

4 Great utilities from Quarterdeck!



Multiply your memory by three with MagnaRAM 2

Run more programs. Run larger programs. Run Windows faster with MagnaRAM™ 2.

Powerful configurable 32-bit memory multiplier MagnaRAM can multiply your memory by up to three times, maximising memory available to Windows. No spending money on RAM chips. No chips to install, no technicians to pay. No down time. Run more and larger programs with MagnaRAM's ultra-safe data compression technology. MagnaRAM is fully configurable to allow you to maximise speed and memory and with a graphical screen shows you how your system's memory and performance has improved.

What does MagnaRAM do ?

"Memory multiplying" is the software technology that maximises memory available to windows.

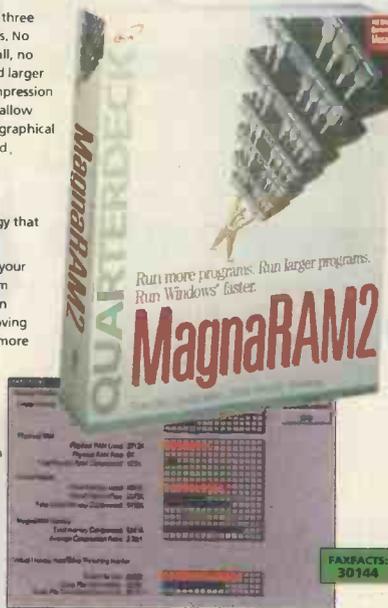
Quarterdeck MagnaRAM dramatically increases your available windows memory to give you maximum power. By combining ultra-safe data compression technology with a proprietary method for improving virtual memory speed, MagnaRAM lets you run more and larger programs, faster.

MagnaRAM can multiply your memory by up to 3x times.

Why you need MagnaRAM

You may not realise it, but your Windows system isn't running as well as it could. So your not you're not being as productive as you could. Here's why:

When Windows runs out of physical RAM chips, it looks to your hard drive to store data in 'virtual memory'. Of course, virtual memory is not as fast as RAM so your system slows down. Sometimes, available memory gets so low, that Windows freezes and displays the dreaded "out of memory" message. MagnaRAM solves these problems by providing more memory space for your programs.



STOCK CODE: MAG021

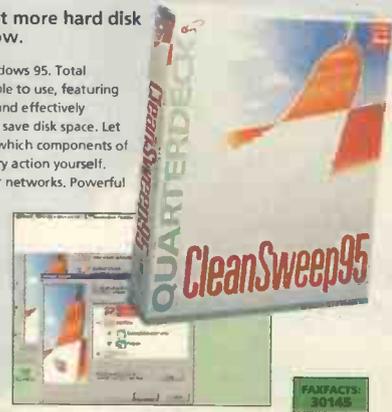
£27⁹⁵ (Inc. VAT £32.84)

Save mega-bytes with CleanSweep™ 95! The Powerful Uninstaller from Quarterdeck

Total Cleanup for Windows 95. Get more hard disk space and better performance - now.

The essential 32-bit uninstaller program for Windows 95. Total 'cleanup' for Windows 95. Cleansweep 95 is simple to use, featuring automated wizards. Cleansweep 95 completely and effectively removes any 16- and 32-bit programs and files to save disk space. Let Cleansweep 95's automated wizards determine which components of a program to remove...or choose to confirm every action yourself. Cleansweep 95 includes full support for all major networks. Powerful options! - Cleansweep can seek out and collect your unwanted programs and files and place them into complete packages which can be:

- deleted safely and completely
- backed up to any location on a local drive or the network
- archived so they can be brought back with a mouse click
- moved to another location on a local drive or the network
- transported onto another machine, for example your laptop.



Get rid of clutter

Your hard disk is crammed with megabytes of useless files. Unused fonts and system files. Unneeded program files. Old leftovers. And sometimes, files you just don't use that often. CleanSweep 95 monitors your system, and at your command will safely hunt down and remove these needles, space-stealing files, saving megabytes of hard disk space.

Fully Windows 95 compatible

Cleansweep 95 is fully compatible with Windows 95, operating as a true 32-bit program. In fact, CleanSweep 95 is the world's first 32-bit uninstaller. And, CleanSweep works perfectly with the Windows 95 Add/Remove function while greatly enhancing.

Get rid of leftover 16 bit components

CleanSweep 95 safely cleans up all leftover 16-bit components in the windows 95 system to make it manageable and fast.

STOCK CODE: CLE010

£26⁹⁵ (Inc. VAT £31.67)

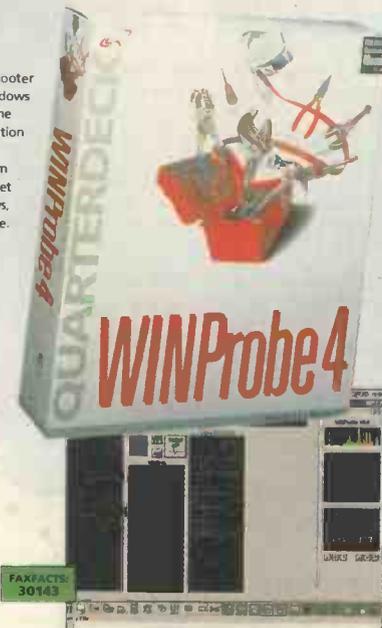
Speed up your system with WINProbe 4

Operate your system at peak performance.

Quarterdeck WINProbe, troubleshooter toolbox, is essential for every Windows and Windows 95 user. Diagnose the source of hardware and configuration problems. Optimise Windows configurations and get your system operating at peak performance. get complete information on Windows, Windows 95 and installed software.

WINProbe also includes great value bonus software:

- A complete Windows and Windows 95 uninstaller to rid your PC of unwanted programs and files.
- CD CertifyPro, the CD troubleshooter toolbox
- INI and Registry editor for Window and Windows
- Quarterdeck Mosaic, the fastest way to get on the World Wide Web
- Bonus packs products are on CD-ROM. 3.5 diskettes available



FAXFACTS: 30143

Make Windows fly

Winprobe uncovers the secrets to faster Windows and Windows 95 operation. Simply click on the Tune-Up button and Winprobe gives you hundreds of suggestions on how to speed up your system.

STOCK CODE: WIN060

£39⁹⁵ (Inc. VAT £46.94)

Increase your PC's performance with the new QEMM 8

The only memory manager you'll ever need.

The new QEMM 8 gets you more memory for Windows 95, Windows 3.1 and DOS. Defeat dreaded "out of memory" errors and increase performance. Memory Multiplying maximises your available Windows memory. Resource Manager gives you more Windows 3.1 resources, and System Memory Management squeezes up to 634K of the 640K ensuring Windows and DOS get and give you a detailed look under the hood of your PC with Manifest for Windows & DOS.

More memory for programs, networks and multimedia

- Get better performance and fewer "out-of-memory" errors QEMM frees incredible amounts of crucial conventional memory needed by DOS and Windows to work correctly. Plus lots of new features for Windows 95
- Fewer crashes and memory problems. QEMM takes into account troublesome software, so your system runs better
- Load more DOS programs and work better in Windows. QEMM finds more conventional memory needed by Windows and DOS
- Disk compression without the memory penalty. QEMM's exclusive stealth technology saves 40K of precious DOS memory for Double Space or Drive Space users.
- No more memory headaches! After installing QEMM you'll have lots of memory for CD-ROM drivers, soundcard drivers and games. QEMM is recommended by many games makers.



FAXFACTS: 30142

Memory is precious, without enough, your PC is slow and programs run out of memory. You need more than just RAM chips. You need QEMM for total 32-bit memory management - whether you're running Windows 95, Windows 3.1 or DOS.

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PC-cillin 95 - Complete anti-virus protection for the Internet, and Windows 95!

The most effective virus protection you can get!

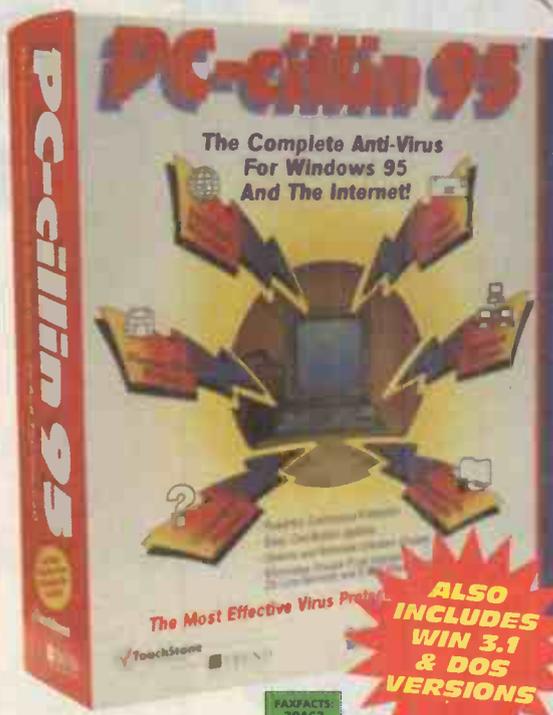


Your old anti-virus package can't protect you anymore. Windows 95 and the Internet have rearranged the map of modern computing. With it's sophisticated communication and multi-tasking capabilities, Windows 95 has become a virtual breeding ground for new viruses - meaning that you need powerful, continuous protection. PC-cillin keeps you covered.

It provides complete virus protection for Windows 3.1 and 95 users. Its exclusive, high powered technology monitors every possible virus source, from Internet file transfers and incoming e-mail attached files to networks and shared folders. PC-cillin's comprehensive coverage can catch Internet viruses before they attack your server, plus it can scan more types of compressed files than any other package. Intelligent protection means that if a virus is detected PC-cillin automatically increases your system's defence to prevent reinfection. PC-cillin is the only anti-virus program that has the power to effectively and automatically guard your Windows system

Is your system protected?

	PC-cillin	Norton Anti-Virus for Windows 95	McAfee VirusScan 95
Checks e-mail attached files from the Internet and other on-line services	Yes!	No	No
Automatically adjusts protection	Yes!	No	No
Easy, one button virus pattern updates	Yes!	No	No
Monitors shared folders	Yes!	No	No
Detects & removes unknown viruses	Yes!	No	No
No. of compressed file types scanned	6	2	1
Includes Windows 3.1 & DOS versions	Yes!	No	No



PC-cillin 95

£39⁹⁵ (Inc. VAT £46.94)
STOCK CODE: RMG009

The all-in-one Windows problem solver - WINcheck✓It 4.0

WINcheck✓It 4.0 for Windows 95 and Windows 3.1 - Now with a powerful uninstall utility!

Be Sure You Don't Have a Hardware Problem!

When something goes wrong, the first question is: is it Hardware or Software? If you have got a hardware failure, you'll need to have someone repair it. But if the problem is a setup or compatibility issue, you can often fix it yourself, perhaps with a little technical help over the telephone.

- Tests Main System Board
- Tests Serial and Parallel I/O Ports
- Test Hard Drive
- Test Floppy Drive
- Tests Memory (RAM)

Recovery That Works Even When Windows Won't!

Not all change is good. Sometimes installing a new application, updating the operating system, or even the changes YOU make, just don't work. WINcheck It will help you undo these changes:

- Restore WIN.INI and other system files from Windows or DOS
- Find Hardware Changes
- Restore CMOS Settings
- Find DOS or Windows Setup Changes
- Cut & Paste Between INI Files

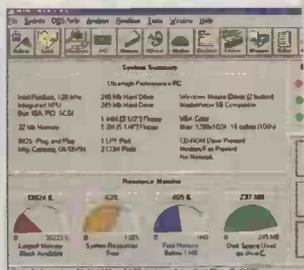
Make Room for More Programs & Data Files!

Let WINcheck It help you with your housekeeping. Over time, every hard drive accumulates a lot of unnecessary files - such as temporary files, duplicates, old versions of applications, and setup programs that are no longer needed. Use WINcheck It to quickly identify unwanted files and clean up disk space. WINcheck It finds unnecessary files:

- Duplicate Files
- Empty Files
- Empty Directories
- Files by Extension
- Files by Size
- Files by Date & Time
- Program Item Icon
- Program Executable
- Files in Related Program Directory
- Related INI Files
- Files in Related Working Directory

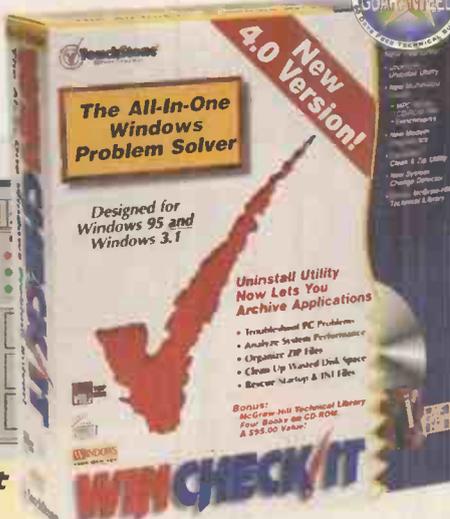
Get Rid of Unwanted Windows Applications!

Everyone has them - Windows applications that don't work right, or that you just don't use any more. But getting rid of them isn't easy because the programs and their related files may be scattered throughout several directories! WINcheck It presents you with a list of your current program groups, then helps you identify and delete the following files for any program item, with your permission, of course!



WINcheck✓It features:

- Improved Uninstaller with program archiving options for safer uninstalling
- New One-of-a-kind CD-ROM diagnostic
- Improved Clean & Zip utility
- New comprehensive Modern Diagnostic
- Win 3.1 and Win 95 compatible
- New multimedia benchmarks for thorough system performance testing



STOCK CODE: WIN096

£38⁹⁵ (Inc. VAT £45.77)

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- 7 No hidden surcharges
- 8 Free technical support
- 9 Award-winning service
- 10 8am-8pm (Mon-Fri)

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EVERYTHING FOR YOUR PC - NEXT DAY!

FastMove! Makes transfers between PCs simple!

Copies files from one PC to another, FastMove! Includes all necessary software and cables. More than ever people are using multiple PCs - a system at work, a PC at home, a notebook for travelling.

With all this increased mobility, users need a fast but safe, powerful but easy to use, feature rich but inexpensive way to keep their files up-to-date across multiple PCs.

FastMove! shows you which files need to be updated, then allows you to select just the ones you want and preview the exchange of files before it occurs.

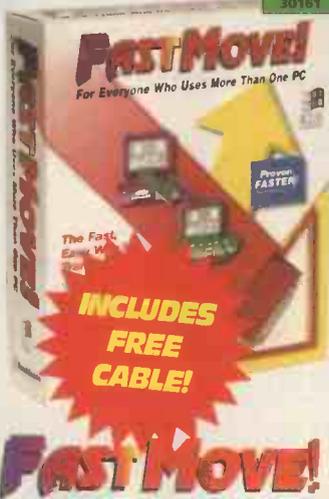
The graphic interface lets you synchronise PCs and drag-and-drop selected files without leaving the main screen. A state of the art virus remover scans each file as it's transferred, keeping your PC safe from contamination. Despite the virus scan, the transfer across FastMove!s PC-to-PC parallel port cable still averages over 20% faster than other transfer methods.

STOCK CODE: FAS013

£39⁹⁵ (Inc. VAT £46.94)

FastMove Features Include:

- Supports simple one-way transfers or full two-way synchronisation
- As you transfer, FastMove! scans each file for viruses
- Free virus scan updates available on Touchstone's BBS and on-line forums
- 20% faster than Laplink™ (parallel)



Transfer Method	Transfer Time
FastMove	35secs
Laplink	3m 14secs
SmartSync	5m 13secs
LapLink Serial	5m 18secs

← Best Worst →
Tests were performed by XXCAL Inc. an independent testing lab with files totalling 10Mb using Windows 3.1 and a standard parallel port unless otherwise stated.

The complete anti-virus protection Toolkit!

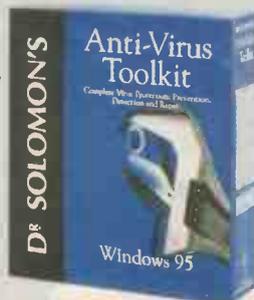
Dr. Solomon's Anti-Virus Toolkits are the UK's number one anti-virus utilities.

They are industry-renowned for combating all known viruses in DOS, OS/2, Windows, Netware and now Windows 95 systems. Dr. Solomon's range of Anti-Virus Toolkits provide the best answer to the serious problems posed by viruses. Each toolkit is made up of basic programs geared to locate, identify and destroy existing viruses and then protect your system.

WINGUARD - on-access scanner to check all files and disks before access is allowed.

FINDVIRUS - on-demand scanner with the ability to carry out a more extensive check - even inside compressed files.

VIRUS GUARD - memory resident TSR only requires 9k of memory and can be loaded high. Checks every program for viruses before it is opened or copied.



Why choose Dr Solomon's Anti-Virus Toolkit?

- Widely recognised as the most effective anti-virus product
- Award winning technology • Finds more viruses and finds them faster
- Simple to install and easy to use
- Comes complete with both on-line and paperback Virus Encyclopedia containing detailed information on hundreds of viruses and what they do.
- Restores boot and partition sectors and CMOS after known and unknown infections • Scans archived or compressed files, those downloaded from bulletin boards and CD-ROM collections
- FREE technical support - 7 days a week, 24 hours a day
- Monthly or quarterly updates via post, CompuServe, CIX, Internet or BBS

The UK's No.1 Anti-Virus Utilities!
Now available on all platforms

50L002	Dr Sol Antivirus Win + DOS Qrtly	£65	(Including VAT £76.38)
50L023	Dr Solomons Antivirus Toolkit Win 95.....	£72	(Including VAT £84.60)
50L011	Dr. Solomans 5 User Starter Pack	£174	(Including VAT £204.45)
50L037	Dr. Sol Antivirus For Netware Server	£239	(Including VAT £280.83)
50L026	Dr Sol Antivirus For Windows NT Server.....	£81	(Including VAT £95.18)
50L012	Dr Solomons 10 User Starter Pack	£273	(Including VAT £320.78)

Symantec utilities software!

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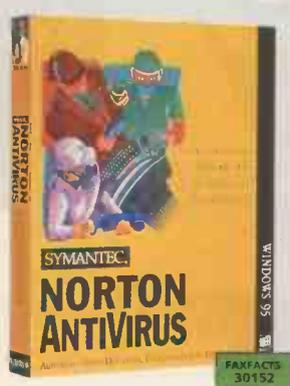
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Norton AntiVirus

The right cure, right now!

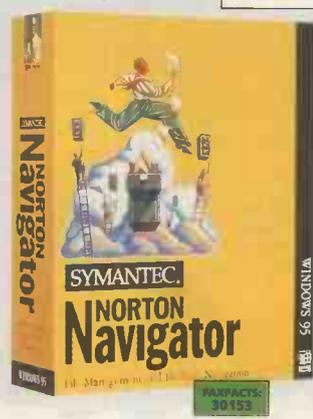


NortonAntiVirus provides complete virus protection for Windows 95 in one simple, easy to use package that detects, destroys and prevents virus infections. It works automatically in the background, watching for suspicious disk activity and detecting viruses before they can damage your files.

NOR034	Norton AntiVirus	£45	(Including VAT £52.88)
NOR035	AntiVirus Trade-Up.....	£27	(Including VAT £31.73)

Norton Navigator

One click to go anywhere!



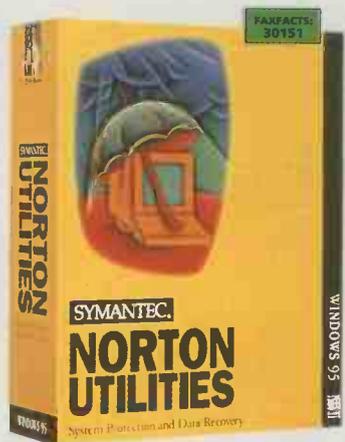
Norton Navigator puts file management at your fingertips, making Windows 95 significantly faster and easier. You can zip or unzip any file in one third of the time that it would take to use a separate application, simply by dragging and dropping. You can access Navigator's file management tools from the Open/Save dialog box of almost any application or from the Windows 95 explorer. You can even access Internet FTP sites directly from the file manager.

NOR036	Norton Navigator 3.5.....	£66⁹⁵	(Including VAT £78.67)
NOR037	Navigator Trade-Up.....	£33⁹⁵	(Including VAT £39.89)

Norton Utilities

Automatically protect your data with the most comprehensive Windows 95 utilities

Norton Utilities includes the most advanced, comprehensive tools available for system protection and data recovery - true 32-bit utilities with proven award winning technology that recovers data when others can't. Norton Utilities optimises and defragments your disks to improve access times and enhance the chance of full recovery in the event of a crash. Norton System Doctor runs in the background, constantly monitoring vital system resources and data integrity to ensure stability and reliability, and automatically taking corrective action when needed damaged resources.



NOR031	Norton Utilities for Windows 95 3.5"	£74	(Including VAT £86.95)
NOR033	Norton Utilities for Windows 95 CD	£82	(Including VAT £96.35)
NOR032	Utilities Trade-Up	£47	(Including VAT £55.23)

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PowerDesk

PowerDesk makes Win 95 work the way you do

PowerDesk ExplorerPlus is a more powerful explorer for your desktop.

ExplorerPlus is an enhanced and expanded version of the Windows 95 Explorer and provides powerful file management and navigation capabilities in one utility. ExplorerPlus also includes popular Windows 3.1 features that were omitted.

FEATURES

- Enhanced toolbar
- Customise the ExplorerPlus toolbar to include the file management functions you use most often.
- Built-in Zip file management
- The fastest, easiest way to zip and unzip files
- DOS Command Line
- Enter DOS commands quickly without opening a DOS window
- Drivebar
- Access any drive with a single click
- Viewer Pane
- A fully Integrated Quick View. View a list of files in seconds by scrolling through them
- Windows 95 required



FAKFACTS: 30208

Makes Windows 95 work the way you do.

POWERDESK



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Uninstaller

The No.1 selling Windows cleanup software

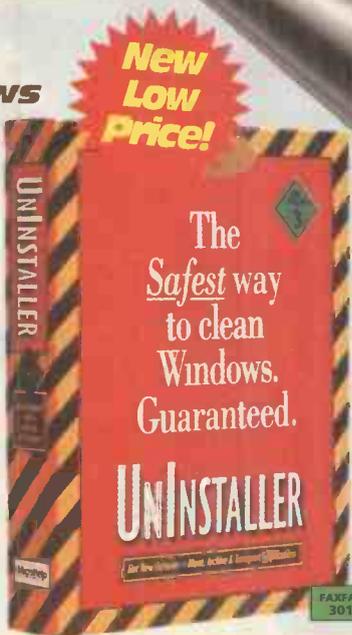
Clean up your Windows system safely with Uninstaller, the 1994-5 Best Seller. Every Windows application hides bits of itself throughout your system. This not only takes up valuable memory and disk space but can lead to system failures if not dealt with effectively. Deletion is complicated by the fact that files that seem to belong to one program are often shared with others. That's why the only completely safe way of removing programs and files is with Uninstaller. But not only can Uninstaller uncover hidden files lurking in your system and remove them safely but its unique technology also allows you to move applications with their supporting files plus archive seldom-used programs. Reclaim wasted disk space and organise your files properly with Uninstaller, now available in both 32-bit and 16-bit versions.

Move applications and supporting data files Controls unruly directory structures by relocating applications to new directories or drives. Keeps all related files intact and updates all Windows settings. Put stuff where you want it. Take advantage of a second hard drive. Organise your system.

Archive seldom-used applications and restore them quickly with a single click. Archive saves disk space by compressing and storing the programs you only use once in a while on your hard drive or floppies. The program's icon stays on your desktop marked as an archive - just click to restore.

Transport applications to other PCs with no re-install hassle.

Need to take office work home? No problem. Transport replicates the applications and data you need to your home PC or laptop with a click. All preferences stay intact - no need to reinstall. True application portability, finally. Also includes two new modules, 'Disk Data' and 'Windows Cleanup'. Keep tabs on your hard drive space with Disk Data, a colour-coded graphical display shows which files and applications are eating up disk space. With Windows Cleanup you can remove Windows files, fonts, drivers, wallpaper, sounds and screen savers. Before deciding to delete or not, you can view or do a trial run.



New Low Price!

The Safest way to clean Windows. Guaranteed.

UNINSTALLER

FAKFACTS: 30114

Features, Functions and Fail-Saves

- Duplicate File Finder - Duplicate File Finder discovers wasteful duplicated files throughout your system. Also, filters find all files with by type, date, size and location.
- Orphan Finder - Tracks down and eliminates "orphan" files left behind by applications you deleted manually before you got Uninstaller. You'll be amazed at the megabytes you discover!
- INTClean - Scrubs unneeded entries from Windows INT files to enhance your system's performance.
- Backups - A safe and simple backup and restore option in case you accidentally uninstall something you need.
- Disk Data - Your map through the jungle. Colour-coded graphics reveal which drives and directories are hogging disk space.

STOCK CODE: UN1005

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First Aid 95 for Windows 95

Automatically fixes Windows crashes and over 1,000 known problems in Windows 3.11 and Windows 95. It will also clean your Windows system, remove clutter and improve performance.

It can take hours to track down even a simple problem in your Windows system. When you call Technical Support you're put on hold for ages and when you finally get to speak to someone, it's difficult to explain the problem accurately, let alone implement a solution.

The makers of First Aid analysed thousands of Windows problems and then built the unique "AutoFix" technology to automatically sense and actually fix thousands of problems in your Windows system. Running in the background, First Aid pops up when it senses a problem and tells you what the problem is in plain English. Then, a click on "AutoFix" corrects the problem. No other product available can do this!

Works with Windows 3.11 and 95
First Aid V2 works with both Windows 3.11 and Windows 95! So, before you upgrade to Windows 95, make sure your system is ready with First Aid. Once you've installed Windows 95, First Aid will continue to monitor your system to assure optimal performance.

Fixes Windows crashes
When a program on your PC crashes it means frustration and a complete loss of work. With First Aid 95, you won't see cryptic messages or lose all your work since the last time you saved it. First Aid 95 actually intercepts most crashes and lets you save your work in all open applications!

Automatically fixes over 1,000 problems in Windows 3.11 & 95

It's maddening when you can't get the spell checker to work or the multimedia system to play. There are so many configuration files, drivers and settings to mess around with that it's virtually impossible to try and fix the problem. With First Aid, you won't have to because it uses a built-in extensive knowledge base to fix problems.

Cleans your Windows system to improve performance
It's easy for your Windows system to become cluttered with unwanted applications, icons and fonts. These not only take up disk space, they also slow down your PC. First Aid can: Uninstall applications, Clean Up configuration files, Tune Up the PC for optimal performance, and FIX problems.

FREE On-Line Updates!
As newer applications are released and more problems and remedies are identified, CyberMedia continually enhances the knowledge base to support these.

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First Aid now comes complemented by a powerful uninstaller application to keep your system uncluttered.

FIR007 First Aid for 95 3.5"
RMG015 First Aid for 95 CD



Works on both Windows 95 and 3.11



First Aid 95

FAKFACTS: 30002

WHAT THE PRESS ARE SAYING ABOUT FIRST AID 95

"...takes the headaches out of installing multimedia peripherals."
Erica Schroeder, PC Week

"I put First Aid to the test by hiding a common DLL file... Predictably, Windows balked. But First Aid came to the rescue, searching my hard disk, finding the misplaced DLL, and copying it to where it belonged. Pretty amazing."
Steve Bass, PC World

"...easy to use, comprehensive, and efficient... First Aid would be an excellent addition to any PC system."
Daniel Brown, Info World

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Vista S6E Colour Scanner

The high speed, colour flatbed scanner which networks within PC environments.

For high resolution, quality scans! For use by both entry-level and novice users in DTP AND graphic design, document management and OCR, Vista S6E features an optical resolution of 300 x 600 dpi and a maximum interpolated resolution of 4000 dpi, through the Ultra View Technology. Built with a 24-bit single-pass colour CCD, Vista-S6E captures 16.8 million colours. By using the microstepping technology, Vista-S6E not only reduces scanning time, but also lower acoustic noise, making it a quiet and fast working companion.

Vista-S6E comes complete with the user-friendly scanning software, Vistascan automates scanning controls to a single process, e.g. - auto-deskew to automatically adjust scanned images to an upright position and auto-crop to automatically crop out unwanted image portions. All adjustments are immediately shown on the interactive colour preview window. Vista-S6E incorporates MagicMatch profiles and Kodak CMS precision colour manager in the VistaScan driver. By a click of the button, users can get consistent colours from scan, display to print. Even entry-users can get good-quality scans.

The S6E enables networking capability through its driver, VistaScan, allowing users to distribute, share and file documents effectively. When more than one scanner is connected, all clients (having access right) can activate any designated scanner right at their desktop. It's completely compatible with Novell, windows for Workgroup, LAN Manager and all networking systems supporting NET BIOS.

- Optical resolution: 300 x 600 dpi
- Max. resolution: 4800 x 4800dpi
- 24-bit colour, single-pass colour CCD
- Includes VistaScan, the user-friendly scanner Interface
- Includes magicMatch profiles and Kodak CMS
- Bundled with Presto! the document handling software that integrates fax, print, e-mail, OCR and filing functions
- optional Transparency adaptor and optional Automake, Document feeder
- Network capability with in PC and Mac environment



Buy S6E Scanner & Textbridge Pro for £369!

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vis067 S6E Scanner & Presto Office Suite & PhotoShop LE ..	£297	(Inc. VAT £348.98)
vis077 S6E Scanner & Presto Off. Suite & Textbridge Pro U/G	£369	(Inc. VAT £433.58)

Paintshop Pro V3.12

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Paintshop Pro is a highly popular graphics conversion program that now includes full photo-editing facilities. New tools include clone brush, crayon, chalk and user-definable brushes. Special effects and filters include Contrast, Emboss, Wind, Perspective, plus support for Adobe plug-ins. Paintshop Pro offers the features of packages many times its price! You can quickly convert between image formats either singly or in batches. Paintshop Pro supports all major graphics formats including PCX, IPI, TGA, PNG, PSD, PhotoCD, CDR and WMF-licensed to use patented GIF and TIF format images. You can capture Windows screens as a whole or as a selection. Supports TWAIN scanners, and includes free browser and sample photos.

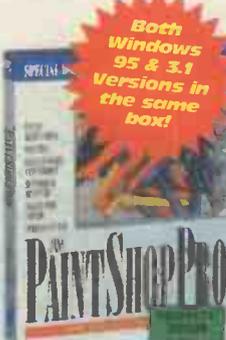
PAI003 Paintshop Pro V3.0 **£49⁹⁵**
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With the award-winning TextBridge Pro you can reproduce the paper documents that you use every day including faxes, photocopies and dot matrix into fully editable text, just as if you retyped them yourself. At the touch of a button you can scan even the most complex documents directly into your favourite word processing application - even documents with pictures, multiple columns and cell tables! TextBridge combines its simple "one button" operation with the accuracy, speed and power needed for the most demanding document management tasks.

Textbridge lets you convert paper documents to electronic files on your PC. You can then edit, store and distribute the text within Windows applications. It features the highest level of accuracy, and at a fraction of the cost of other quality OCR packages. Supports almost any scanner on the market.

Features

- html output for creating your own Web pages.
- Retains your original document layout and text flow with full editability - even for documents containing pictures, tables and text. (For users of Word 6 or higher and WordPerfect 6 or higher)
- Retains table formatting and allows you to fully edit the data.
- DocuRT™ recognition engine for superb accuracy, speed and auto-processing.

- Instant Access OCR™ lets you easily scan and recognise documents from any of your favourite applications
- Dynamic training helps improve accuracy for extra-tough documents. Training information is completely re-usable for batches of similar documents.

UPGRADE STOCK CODE: TEX004 **£129**

TEX003 TextBridge Pro Win 95, Win 3.x & Win NT	£259	(Inc. VAT £304.33)
TEX002 TextBridge Classic Win 3.x Only	£64⁹⁵	(Inc. VAT £76.38)

PRIMAX The leaders in scanners!

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Primax Greyscale Hand Scanners

The Primax greyscale scanners scan at 100/200/300 and 400 dpi and have a wider than normal scan width of 105mm. The 32 greyscale scanner will actually scan up to 256 using software emulation. The 256 greyscale scanner scans at true 256 greyscales via its hardware.

PR1101 Primax 32 Greyscale.....	£39⁹⁵	(Including VAT £46.94)
PR1102 Primax 256 Greyscale	£49⁹⁵	(Including VAT £58.69)

Primax Colour Hand Scanner

The Primax Colour Hand Scanners scan at up to 400dpi resolution. They are able to scan black and white, greyscales and 24-bit true colour (16.8 million colours). They come with a high-speed, 16-bit interface card.

PR1103 Primax Colour **£89⁹⁵** (Including VAT £105.69)

Primax Colour Mobile Scanners

The mobile version includes all the features as the handscanners, but also includes motorised rollers. This unique feature allows a handscanner to perform at the same accuracy as a flatbed scanner. You simply place the scanner on the image to be scanned and press the start button on-screen, and the scanner automatically moves itself across the image. It determines the speed of scanning with reference to computer speed and image complexity. This is absolutely essential for colour or greyscale images. It also connects to your parallel port, making it ideal for use with portables or in offices where more than one person needs to scan images and documents.

PR1104 Primax Colour Mobile	£129⁹⁵	(including VAT £152.69)
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FAKFACTS: 30322

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Epson Stylus Color IIs

The Stylus COLOR IIs is a very compact and affordable printer. It is also versatile. When you want colour - you have Epson's acclaimed photo-real Stylus colour at 720dpi. And by simply snapping in a black cartridge, you have a high quality black-only printer. Photo-real colour is easily achieved because each printer comes complete with a custom driver that automatically fine-tunes colour contrast for accurate reproduction of photographic images or illustrations.

FAKFACTS: 30323

£162⁹⁵
(Inc. VAT £191.47)

Epson Stylus Color II

The Stylus Color II offers high 720x720dpi resolution delivering photo-real colour output on a wide range of materials such as plain, coated and gloss papers and OHP transparencies. The Stylus II features a built-in black cartridge in addition to the four colour cartridges. This saves time by eliminating cartridge swapping and greatly reduces the cost of printing black-only documents and letters as black is printed from black ink as opposed to a four colour combination.

FAKFACTS: 30324

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(Inc. VAT £277.24)

Epson Stylus Pro

The Stylus Pro offers enhanced 720x720dpi photo-real colour output with MicroDot technology, making it ideal for printing photographic images and high quality business graphics. Epson MicroWeave, Epson MicroFeed and Epson Error Diffusion enable vibrant colours, subtle graduated tones and strong contrasting shades to be rendered with remarkable precision. The Stylus Pro prints on plain, coated and gloss papers, envelopes and OHP transparencies and features optional postscript emulations and network interfaces.



FAKFACTS: 30339

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EP5040 Epson Stylus Pro.....

FREE SOFTWARE! Buy either the Epson Stylus Color IIs or the Epson Stylus Color II and get Micrografix Works and Epson CardMaker (RRP £99) FREE!

LX300 Dot Matrix

The ultimate entry level printer. The LX300 offers fast print speeds, NLQ output, comprehensive paper handling, optional colour upgrade, auto loading, quiet operation and a dazzling low price.



FAKFACTS: 30236

£92 (Inc. VAT £108.10)

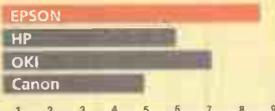
EP5023 Epson LX300.....

EPSON No-1 for support!

Customer Support Telephone Numbers

Unlike many other printer manufacturers, Epson offer a UK hotline open 8am to 7pm daily to handle any problems you may experience installing or operating your printer. There are dedicated lines for scanners, the Stylus and Laser printers. As you can see from the Romtec report Epson service is second to none.

Romtec 1995 Support Satisfaction Survey



Compare the EPSON Stylus Inkjet and decide for yourself...

PRINTER MODEL	EPSON Color Stylus IIs	HP DeskJet 600C	Canon BJC 4000
Maximum Mono Resolution	720 x 720dpi	600 x 600dpi	360 x 360dpi
Maximum Colour Resolution	720 x 720dpi	300 x 300dpi	360 x 360dpi
Warranty	3 Years	3 Years	1 Year
Price	£163	£237	£214

GT-5000 Scanner

The Epson GT-5000 flatbed scanner is an incredible combination of powerful colour scanning technology and incredible software. Capture full 24Bit colour and 256 greyscales at up to 2400dpi (interpolated) by simply clicking a button.

Then with powerful software like CorelDRAW! 4, Xerox Colour Document Management Suite and Xerox TextBridge you can photo-edit images, OCR your documents, fax or e-mail files and even (with a colour printer) use your GT-5000 as a colour copier.



FAKFACTS: 30235

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EP5025 GT-5000 SCSI... **£351**
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Maximum Resolution	600dpi	600dpi
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MIR015 Miro Video DC1 Plus **£279**



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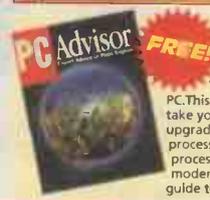
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SIMMxxx 4MB x 32 60NS 72 Pin EDO.....	16MB.....	£283
SIMMxxx 4MB x 36 70NS 72 Pin.....	16MB.....	£290

Memory prices are falling at the moment. Please call for the latest low prices! We have a dedicated sales team for the supply of memory products. They are equipped with the latest databases that will help provide you with the correct memory for your PC, we are able to supply memory for all IBM Compatibles.

FREE 32 PAGE INSTALLATION GUIDE



Software Warehouse, in conjunction with PC Advisor, the UK's favourite PC magazine, have produced a 32 page, colour guide.

Take away the fear of upgrading your PC. This guide will answer all your questions and take you step by step through the process of upgrading your memory, installing a new processor, hard disk drive or modem. Buy any processor, memory upgrade, hard disk drive or modem and get this complete Installation guide totally free.

SOUND & MULTIMEDIA

MULTIMEDIA KITS

SOU019 Gameblaster Cd Kit 4X.....	£239
SOU030 S/Blast Cd16 Discovery 4X.....	£189
SOUXXX Performance C32 6x Kit.....	£329

SOUND CARDS

SOU018 Creative S/Blaster Awe32 IDE.....	£149
SOU015 Creative S/Blaster 16PnP IDE.....	£59
SOU00X Creative S/Blaster 32 PnP IDE.....	£96
GRA013 Gravis UltraSound Max.....	£128
MIR010 Miro Pcm 1 Pro.....	£88
MIR011 Miro Soundwave 16 Bit WW.....	£88
MIR014 Miro PCM10 Sound Card.....	£81
MIR012 Microconnect 34 Wave.....	£239
POR001 Portable Sound Plus.....	£128
PR116 Primax Bravo 16 Bit Fm.....	£63
PR117 Primax Waveblate 32.....	£95

Soundblaster AWE 32 PnP

Over 128 real instruments and sounds, the Soundblaster includes an IDE CD-ROM interface and Windows 95 support. With digital effects processing, 16-bit quality sound and SoundFont technology make new instruments and sounds.



SOU027 Creative S/Blaster Awe32 IDE..... **£149**

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SPK004 Altec Ac50 Speakers.....	£64
SPK005 Altec Ac150 Subwoofer.....	£87
LAB002 Labtech Power Speakers.....	£19
MIC099 Microphone.....	£24
PR053 Primax 60W Pmpo.....	£29
PR054 Primax 120W Pmpo.....	£43
PR055 Primax 240W PMPo Speakers.....	£49
PRO008 Pro Digital Speakers.....	£29
SBE001 Screenshot Speakers.....	£12
YAM002 Yamaha M10 Speakers.....	£44
YAM001 Yamaha 103 with Sub Woofer.....	£79
SPK001 Zy-Fi Stereo Speakers.....	£25
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SPK001 Zy-Fi Stereo Speakers..... **£25**

HARD DRIVES, BACKUP & OPTICAL STORAGE

Western Digital Drive Kits

The Western Digital range of hard drive kits offer, the highest level of quality backed by a three year warranty.

A major step forward in upgrading your PC - these drive kits contain everything you need to easily extend the storage capabilities of your PC; A Caviar 3.5" quick access time drive, rails, screws, 5 1/4" chassis, manuals and installation disk. The Western Digital installation disk will even get around the limitations on drive partition sizes, set by DOS, allowing your new drive to be configured as one large partition (no need for separate drive letters). The cost per megabyte of these new storage devices, is in fact now cheaper per megabyte than a floppy!



WES0007 Western Digital 850MB IDE Kit.....	£149
WES008 Western Digital 1.2 GB IDE Kit.....	£169
WES010 Western Digital 1.6 GB IDE Kit.....	£215
WES015 Western Digital 2.1 GB IDE Kit.....	£259

Please note: Before buying bare drives, please check you have the necessary cables and fixings, as they do not come with individual drives. You will also need a screwdriver and remember to power down your PC before removing the cover.



Pictured right are the Western Digital Caviar drives (without top cases!). These high quality drives come with a 3 year manufacturers warranty.

WES003 IDE Western Digital AC2850A 850Mb.....	£129
WES005 IDE Western Digital AC3312 1280Mb.....	£169
WES014 IDE Western Digital AC31600 1.6Gb.....	£195

HARD DRIVES

WES007 WD 850Mb Full Kit.....	£149
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WES015 WD 2.1Gb Full Kit.....	£259
WES009 WD 1.6Gb Bare Drive.....	£245
WES005 WD 1.2Gb Bare Drive.....	£169
MAX018 Maxtor 540Mb Full Kit.....	£129
MAX019 Maxtor 850Mb Full Kit.....	£149
MAX020 Maxtor 1.2Gb Full Kit.....	£212
MAX020 Maxtor 545Mb IDE.....	£195
QUA019 Quantum SCSI 540 Mb.....	£309
QUA022 Quantum 850 Mb.....	£129
QUA023 Quantum SCSI 2.1Mb.....	£469

OPTICAL STORAGE

SEA005 Seagate 520Mb SCSI.....	£165
IOM021 Jaz Drive SCSI Int.....	£349
IOM023 Jaz Drive SCSI External 1Gb.....	£449
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PIN009 Pinnacle Sierra 1.3Gb Ext.....	£149.99
PIN010 Pinnacle Tahoe 230Mb Ext.....	£59.99
PAN002 Panasonic MD 1.5 Gb drive.....	£49.99
PAN007 Panasonic PD system.....	£249
PAN009 Panasonic PD system Int. U/E.....	£396
PAN010 Panasonic 650Mb disks.....	£25
SYQ004 Syquest EZ 135 ext. SCSI.....	£169
SYQ005 Syquest EZ 135 int. IDE.....	£49
SYQ006 Syquest EZ 135 disks.....	£15



The Omega Zip Drive is the affordable, personal storage devices needed to move and store your valuable data.

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COL006 Colorado D135/350Mb Int.....	£79	TAN002 Tanberg Panther 250Mg Ext.....	£640
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COL011 Colorado Trakker 700Mb Ext.....	£199	WAN002 Wangdat 3200 4Gb Internal SCSI.....	£645
COL012 Colorado T1000 800Mb Int.....	£149	WAN003 Wangdat 3400 8Gb Internal SCSI.....	£645
EXA001 Exabyte 250T 2Gb Int.....	£559	WAN004 Wangdat 3100 2Gb Ext Scsi.....	£643
EXA002 Exabyte F51Ge 2 Gb Ext.....	£689	WAN009 Wangdat 3200 4Gb Ext Scsi.....	£685
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* See page 2 for call charges

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All prices below are subject to VAT at 17.5%

INPUT DEVICES

MICE & TRACKBALLS

PR11X	3 Button Serial Blue, White or Red	£5
STY001	IMSI Pc Stylus (Psz)	£29
SY5001	IMSI System Mouse	£15
STY002	IMSI Stylus (Serial)	£29
MOU005	IMSI Mini Trackball	£25
LOG02K	Logi Sensa Wood or Pearl	£38
LOG02K	Logi Sensa Leopard or Black	£38
LOG030	Logi Mousman Sensa Black	£38
LOG03K	Logi Chroma Mouse Orange or Blue	£24
LOG03K	Logi Chroma Mouse Blue or Green	£24
LOG003	Logitech Cordless Mouse	£53
LOG010	Logitech Trackman II	£42
LOG020	Logitech Pilot Mouse II	£17
LOG022	Logitech Pilot II Ps/2	£19
LOG015	Logitech Pilot Trackball	£29
LOG035	Logitech My Mouse	£22
LOG036	Logitech Trackman Voyager	£48
LOG037	Logitech Trackman Vista	£43
LOG038	Logitech Trackman Live	£99
LOG011	Logitech Trackman Portable	£32
LOG039	Logitech Mouseman Combo	£34
MIC202	Ms Home Mouse (Serial) '95	£21
MIC301	Ms Mouse Ps2/Serial Comb '95	£25
PET001	Petmouse Ps2 Version	£14
PET002	Petmouse Serial	£14

LOGITECH



MouseMan® 96

A 3 button sloping case mouse with dented buttons, this shape offers the most natural position for hours of comfortable work. As a combo mouse it can be connected to either the serial or PS/2 port. Logitech includes MouseWare 7.1 - a totally new generation driver, specially tuned to get the most out of Win'95. The main feature of MouseWare 7.1 is HyperJump used as a mini control centre with the most commonly used functions i.e. open, close, resize and scroll - simply click the middle button.

LOG042 MouseMan96 .. £29

INPUT DEVICES

Graphic Artpad II from Wacom

Professional graphics tablets for designers, illustrators and Graphic Artists.

ArtPad II has all the features of a mouse and more but needs less space than an average mousemat. It functions as easily as using paper, pencil and an eraser by just pointing, clicking and dragging. Freehand drawing, painting or writing becomes simple.

ArtPad II includes the lightweight UltraPen Eraser which is pressure sensitive and operates without cords or batteries. With drawing and painting applications like CorelDRAW/ Dabbler and Painter you can vary line thickness, colour intensity or other tool properties by pressing harder with the pen.

- ArtPad will work with any application your computer might throw at it
- You can allocate functions to the switch on the side for example, when you are in Windows it will simulate the right mouse button. You can also use it for macros, function-keys and so on.
- ArtPad registers how hard you press with the UltraPen. In many programs you can vary line thickness or colour intensity by varying the pressure - just as you can with a pencil.

WAC001	Wacom ArtPad II	£129
WAC003	Wacom ArtPad II + Painter	£389
WAC002	Wacom A5 Tablet	£294
WAC005	Wacom A5 Tablet + Painter 4	£499
WAC007	Wacom A3 Tablet + Menu Overlay	£569
WAC010	Wacom A4 Tablet + Painter	£545

Come and try the Wacom artpad in most of our stores. See page 3 for your nearest Software Warehouse store.

Wacom ArtPad II from £129!



FAKFACTS: 30112

NEW OFFER

NETWORKING

WNC002	Ce-Lan 2000Combo Win95P&P	£22
WNC003	Ce-Lan PCMCIA Type II Combo	£79
WNC001	Ce-Lan Ne2000 Combo	£26
WNC004	Ce-Lan Pocket Ethernet Combo	£63
ETH004	Ethernet Card 8 Port Hub	£24
DLK002	DLink DE220C BNC	£39
DLK005	DLink DE220CT MCA BNC-TP	£59
DLK006	DLink DE330CT BNC-TP	£99
DLK008	DLink DE550CT PCMCIA BNC	£99
DLK009	DLink DT220 Token Ring ISA	£229
GEN010	Genius GE2000 II Combo	£29
GEN011	Genius 2500 PCI Bus Combo	£74
GEN012	Genius Pocket Combo £300	£59
GEN013	Genius PCMCIA Combo	£98
GEN014	Genius GH4080 8 Port Hub	£98
KIN015	Kingston 108-T 168t ISA	£39
KIN018	Kingston NE2000 ISA Combo	£26
KIN019	Kingston EISA NE3200 Combo	£139
KIN020	Kingston Pocket Lan Combo	£149
KIN021	Kingston PCMCIA 10 Base T	£29
KIN022	Kingston PCMCIA 10 Base 2	£29
PCM007	Ethernet Coax	£199
PCM008	Ethernet 10 Base T	£149



KIN018 Kingston NE2000 ISA Combo .. £26

UPS

UPS001	APC Back UPS Pro PNP 280	£114
UPS002	APC Back UPS Pro PNP 420	£158
UPS003	APC Back UPS Pro PNP 650	£192
UPS004	APC Smart 250i 250V	£169
UPS005	APC Smart 400i 400V	£239
UPS006	APC Smart 700i 700V	£269
UPS007	APC Smart 1400i 1400V	£329



UPS001APC Back UPS Pro PNP 280 .. £114

MODEMS & PCMCIA

HAY008	Accura 28B V34/Fac/Fax	£189
BTO001	BT Ignition ISDN TA	£479
BTO002	BT Prologue V32 PCMCIA	£149
BTO003	BT Prologue V34 PCMCIA	£219
BTO004	BT Prologue V34 External	£169
HAY001	Hayes Optima 14.4 + Fax	£249
HAY002	Hayes Optima 2400	£220
HAY004	Hayes Optima 96 + Fax	£255
HAY005	Hayes Ultra 24	£289
HAY006	Hayes Ultra 96	£423
HAY009	Hayes Accura 144 + Fax 144	£139
CAB001	Modem Cable 25M/9fM	£9
CAB002	Modem Cable 25M/25f	£9
MOT002	Motorola 3400 Pro 28.8	£139
ONL001	Motorola On Line Internet	£154
PAC015	Pace Netlink 14.4	£85
PAC016	Pace Netlink Gold 28.8	£153
PAC003	Pace Linnet 32 Plus Fx	£159
PAC005	Pace Linnet Quad Fx	£124
PAC007	Pace Microin Fx32-Pocket	£169
PAC008	Pace Microin Fx32-Pc Card	£139
SP002	Spideman Vs Fax Modem	£259
USR001	Sporster Ext14.4	£95
USR002	Sporster IntL 14.4	£106
USR015	Sporster Mac/Fax 14.4	£108
USR012	Sporster 28.8 Ext.	£155
USR017	Sporster 28.8 VI Voice	£99
ZOO003	Zoom 14.4 Le Internal	£69
ZOO004	Zoom 14.4 Xe External	£79
ZOO005	Zoom V34 Le 28.8 Internal	£119
ZOO006	Zoom V34 Xe 28.8 External	£129



PS1002 Psion Goldcard v34 .. £192

USR017 Sporster 28.8 Vi .. £156

BTO004 BT Prologue V34 .. £169

See page 12 for features

SCANNERS

DEX089	Dexxa Colour Handheld	£129
GEN020	Genius Scanmate 256	£59
GEN021	Genius Scanmate Colour Se	£119
PR1102	Primax 256 Greyscale	£50
PR1103	Primax Colour Scanner	£90
PR1104	Primax Colourmobile Direct	£130
PR1105	Primax Datapen	£160
PR1120	Primax Colourmobile Office	£129
PR1129	PrimaxPaperease	£199*
LOG013	Scanman Easy Touch	£99
LOG006	Scanman 256	£78
LOG007	Scanman Colour	£149
LOG016	Logitech Powerpage	£286
LOG040	Logitech Scanman Pagescan Colour	£299
SCAxxx	Microtek Scanmaker E3/E6	£294
MUS001	Mustek 600	£319
MUS002	Mustek 1200	£449
PAG030	Umax Page Office	£230
VI5061	Paperport By Visioneer	£299
PR1127	Primax Flatbed Scanner	£267
SIC001	Sicos Colour Page	£199
UC1260	UC1260 Flatbed Scanner	£899
VI5040	SuperVista 512 Scanner	£569
VI5050	Vista T630 Flat Bed Scanner	£299
EPS024	Epson GTS000 Parallel	£299
EPS025	Epson GTS000 SCSI	£351



PR1129 PrimaxPaperease .. £119*

VI5040 SuperVista 512 .. £569

PR1105 Primax Datapen ..

See page 26 for features

CD-ROM DRIVES

Innovative Communications present the portable CD-ROM Drives for Windows 95

CyberRom Dual Speed

A truly portable CD-ROM Drive which requires no power supply or batteries as it powers from the notebook's battery supply. Fully Windows 95 compatible.

NEW OFFER

FAKFACTS: 30032

cy8002CyberRom Dual Speed .. £245

CyberRom Quad Speed

This 'plug and play' Windows 95 compatible PC Card CD ROM Drive has the required performance for use with video, large applications and animation plus it ships complete with its own power supply.

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FAKFACTS: 30034

cy8002CyberRom Quad Speed .. £269

CyberRom CD 6 Speed

The first portable 6 speed 'plug and play' Windows 95 compatible PC Card CD ROM Drive on the market. Offers the ultra fast transfer rates that you would require from a 6 speed drive and comes complete with power supply.

NEW OFFER

FAKFACTS: 30246

cy8002CyberRom CD 6 Speed .. £309

CyberRomCD Quad Speed4 CD ROM changer-parallel port .. £379

CyberMan Dual Speed with built in 16-bit sound

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FAKFACTS: 30364

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CyberRomCD Quad Speed4 CD ROM changer with built in sound-parallel port .. £439

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For more information see page 16

Quad Speed CD-ROM Drive

d Time for Win95 or Win 3.1 (separately) .. £29**

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- Microsoft Windows95 compatible
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Quad Speed CD-ROM Drive .. £39

Six Speed CD-ROM Drive.

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6 Speed CD-ROM Drive .. £59

Aztech six speed	£79
Aztech eight speed	£129
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Parallel four speed	£179
NEC four speed (4 disks)	£179
NEC six speed (int./ext.)	£239 / £349

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SYM008	Winfax Pro 7.95 CD (page 12)	\$41
SYM007	Winfax Pro 7.95 3.5	\$69
WIN039	Winfax Pro V4 (page 12)	\$54
WIN040	Winfax Net Start Kit V4.1	\$76
WIN090	Winfax Scanner New	\$239
WIN091	Winfax-Scanner U/G	\$220
DEL023	Winfax Pro Server V4.1	\$97
TRIO03	Trio Datafax 5 User & Server	\$69

DATABASE

ACT004	Act For Windows V2	\$138
ACT007	Act V2 Last Page (4 Node)	\$379
ACT008	Act V2 10 User License	\$149
ACT005	First Act	\$65
ALP005	Alpha 5 For Windows V2 (page 10)	\$60
GR006	The Complete Home Guide	\$25
ASK001	Askam	\$93
ASK002	Askam V1 - V2 Upgrade	\$54
BOR023	Borland Reportsmith V2.5	\$59
CLM003	Claris Filemaker Pro V2.1	\$90
CLA005	Claris Filemaker Pro 2.1 5 User	\$359
CLA011	Claris Filemaker Pro 3	\$179
CLA015	Claris Filemaker Pro 3 U/G	\$99
DA005	Database Express (Win)	\$199
DA011	Database Developer	\$199
DA025	Database V1	\$224
KEY005	Key Database	\$29
MIC285	Ms Access For Windows 95	\$225
LOT062	Lotus Approach V3	\$83
LOT063	Lotus Approach V3 U/G	\$76
MIC076	Ms Access V2 Tool Kit V2	\$249
MIC146	Ms Access 2.0	\$81
MIC174	Ms Access V2 C/P U/G	\$81
MIC175	Ms Access Solutions Pack	\$36
MIC282	Ms Access V2 Educational	\$129
MIC285	Ms Access For Windows 95	\$225
PAR015	Paradox Runtime (Win) V5	\$239
BOR021	Paradox V5, Devol Tools	\$149
PAR018	Paradox V5	\$95
PAR019	Paradox V5 U/G Comp U/G	\$99
PAR025	Paradox 7 for 95 U/G 3.5	\$69
PAR026	Paradox 7 for 95 U/G 3.5	\$79
QA002	Q & A For Windows	\$142
QA004	Q & A For Windows 3 User Lic	\$259
RA002	Radix Address Program	\$149
BOR026	Reportsmith S/L	\$169
SID004	Sidekick For Win 95	\$29
SI0028	Superbase 4 V2 Developer	\$29
SI0029	Superbase 4 V2 Developer	\$159
SUP005	Superbase V2.0	\$606
SUP007	Superbase V2 Dev Edition	\$606
TRA008	Tracker (Stand Alone)	\$200
TR002	Tracker 3 User Network	\$606
TRA010	Tracker 10 User Network	\$1100
BOR105	Visual Database For Win	\$209
MIC322	MS Visual FoxPro V3.0 Pro	\$312
MIC323	MS Visual FoxPro V3.0 Stand	\$199
MIC327	MS Visual FoxPro V3.0 Stand, U/G	\$69
MIC339	MS Visual FoxPro V3.0 Pro U/G	\$199
MIC038	MS Visual FoxPro 2.5 Mip	\$214
MIC039	MS Visual FoxPro 2.5 20Mip	\$349

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ACR001	ABC Flowchart V4	\$239
ACR005	ABC Flowchart V4.0 U/G	\$189
ACR002	ABC Flowchart V4.0 U/G	\$99
ACR003	ABC Flowchart V4.0 U/G	\$99
ACR007	ABC Graphics Suite U/G '95	\$100
ACR005	ABC Graphics Suite Win '95	\$100
COR034	CORE Flow	\$49
COR132	Core Flow v3 for '95 New!	\$95
RGI017	Easy Flow 3 '95	\$89
HA023	Easy Flow 3 '95	\$89
VS060	Visio 4 (Page 20)	\$99
VS068	Visio Technical C/P U/G (Page 20)	\$99
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VS027	Visio Petroleum Engineering	\$99
VS018	Visio Software Diagrams (ADV) (Page 20)	\$99
VS016	Visio Space Planning Lib (Page 20)	\$99
VS059	Visio V4.0	\$59

DTP

ALD002	Aldus Aldus Persuasion V2.1	\$79
ALD007	Aldus Aldus Persuasion V2.1	\$249
BIT001	Bitstream Make-Up	\$57
COR044	Corel Ventura V5 U/G CD	\$60
COR045	Corel Ventura V5 CD	\$60
COR047	Corel Ventura V5 Floppy	\$289
CRE020	Creator	\$79
FIR003	First Press For Windows	\$19
FON001	Fonts Windows	\$29
GST001	GST Publishing Partners	\$79
GST002	GST Pressworks 2	\$25
HAR024	Harvard Asap	\$89
OR001	Ornamenta (page 19)	\$39
INT016	Internet Publishing Kit CD	\$72
MIC022	Micrograph Designer V4.1	\$287
MIC073	Ms Publisher V2	\$65
MIC074	Ms Publisher Designer Pak	\$69
MIC317	Ms Publisher V3.0 3.5*	\$62
MIC318	Ms Publisher V3.0 CD	\$62
PAG021	Page Plus for 95 (page 18)	\$30
PAG022	Page Plus for 95 (page 18)	\$30
PAG023	Page Plus Photo Plus	\$29
PAG027	Page Plus 3 Pub Suite U/G (page 18)	\$60
EL0015	Page Plus V2 Pub Suite	\$30
PAG005	Pagemaker V4 Pro Edu Ec	\$1,654
PAG014	Pagemaker V5 Educational	\$1,199
PAG018	Pagemaker Classic	\$35
PAG019	Pagemaker Artwork V3	\$26
PAG012	PagePlus Font Pack	\$26
QUA003	Quark Express V3.32 (Win)	\$600

GRAPHICS

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3D001	3D Design	\$229
3DF001	3D FX By Asymtix	\$39
ADD003	Add Depth	\$99
ADD002	Add Impact	\$69
ADO006	Adobe Photoshop V3	\$382
ADO014	Adobe Premier V4	\$348
ADO003	Adobe Artist 2	\$69
ADO001	Adobe Illustrator	\$69
COR038	Corel Draw 3 On CD (page 21)	\$42
COR012	Corel Draw 4 CD (page 21)	\$84
COR003	Corel Draw 4 3.5*	\$105
EL0018	Corel Draw 5 U/G from V3	\$254
COR030	Corel Draw 5 CD	\$278
COR033	Corel Draw 5 CD U/G from V4	\$115
COR032	Corel Draw 5 3.5* U/G from V4	\$145
COR031	Corel Draw 5 U/G from V3	\$254
COR031	Corel Draw 5 CD U/G from V3 (page 21)	\$195
COR122	Corel Draw 6 95 CD (page 21)	\$259
COR123	Corel Draw 6 U/G from 3 of 4 (page 21)	\$225
EL0019	Corel Draw 6 95 CD	\$259
VS056	Double Vision	\$30
DRA007	Drawplus V2.0 (CD) (page 19)	\$30
ELA001	Electric Reality	\$249
FR006	Fractal Painter V3	\$153
FR007	Fractal Painter 3.0	\$296

IMAGING

IMAA001	Imagepal 2	\$143
COR12	Corel Draw 6 U/G from V5 (page 21)	\$1,639
COR054	Corel PhotoPaint 5 Plus CD	\$48
COR133	CorelXARA New!	\$129
COR040	Corel Sampler	\$8
DES012	Designer Powerpack C/P CD	\$199
DES014	Designer Powerpack CD	\$345
DES013	Designer Powerpack U/G CD	\$154
JAG001	Jaggies Are Gone	\$69
KAI001	Kai's Power Tools (HW/SW)	\$99
LOT069	Lotus Smartarts Windows	\$84
MAC009	Macromedia Director V4	\$750
MAC010	Macromedia Freehand	\$399
MED003	Media Studio	\$199
PAG029	Monster Cd Frontier	\$9
MOR004	Morph For Windows	\$89
MRG010	Morph Movies On CD	\$37
PAI003	PaintShop Pro (page 26)	\$50
PAI004	PaintShop Pro + Kpt 5e	\$70
PAI002	Pk Paintbrush + Paints	\$25
PER021	Perform For Windows	\$47
PH0201	PhotoFinish V4	\$29
RAY004	Ray Dream Designer 4	\$29
SIM009	Simply 3D + Corel 3 Bundle	\$62
SIM008	Simply 3D 1.0	\$43
SIM007	Simply 3D Superpack	\$89
HAR011	Spotlight	\$204
SU001	Style Imaging	\$204
TOP008	FastForms for Win 95 (page 14)	\$25
TRU003	TrueSpace By Calligra (page 18)	\$149
TRU004	TrueSpace V2.0 (page 18)	\$369
VS054	Visual Reality V1.5	\$99
VS055	Visual Reality V2.0	\$99
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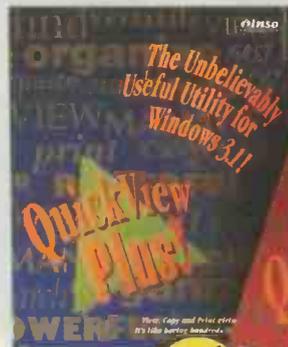
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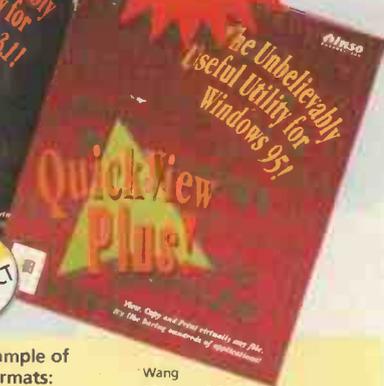
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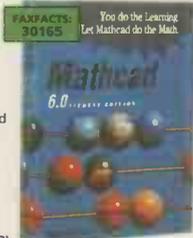
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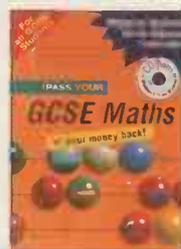


MAT007 Mathcad 6.0 Student **£34⁹⁵** (Including VAT £41.07)

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MAT015 Pass Your GCSE Maths **£19⁹⁵** (Inc. VAT £23.44)

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SSEYO® Koan® Pro V1.2

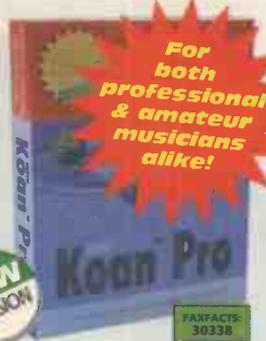
The hottest music product on the market

Create fascinating, ever-changing MIDI music on your PC through the highly original and award-winning Koan Pro Windows music authoring system. From music 'installations' and desktop music production through to personalised website soundtracks, use Koan Pro to power your creativity.

"This product can seriously stimulate your musical creativity" Computer Shopper, March 1996

Koan Pro is ideal for the creation of beautiful ambient, techno and futuristic music. All users of multimedia PCs can take advantage of the range of features available in this intriguing and far reaching music creativity software package.

"...Koan Pro is light years ahead...it takes the art of algorithmic composition further than it has ever been before" The Mix, March 1996



For both professional & amateur musicians alike!

NEW VERSION

FAKFACTS:
30338

And arguably the coolest music on the web

Koan files authored with Koan Pro generally range in size from less than 1Kb to 20Kb and even the smallest pieces can play for over 8 hours! Put them on your website - they can be played back by anyone who has downloaded the freely available Koan Web or Koan Plug-in for Netscape Navigator 2.0 from the SSEYO website (see the site for details - <http://www.sseyo.com>)

"...(Web) music publishing from the PC is such a unique concept that Koan Pro is your only choice" Future Music Magazine, December 1995

Koan Pro supports any General MIDI/GS soundcard. It has special extra features for the Creative Labs AWE32 and SB32, TDK MusicCard (PC Card), Roland SCC1 and Yamaha D850XG soundcards. Also provides patch caching for Advanced Gravis Ultrasound/Max soundcards. Can be used with external MIDI synths via MIDI OUT port (not supplied) No musical keyboard required.

- Windows 95 and Windows 3.1 versions in one box
- SSEYO Koan Plus V1.2 album player and Albedit album editor utility (Koan / MIDI files)
- Range of rhythm templates • 220 page manual • Facility to record output to MIDI file

1st choice - Gear of the Year 1995 - Desktop Music, Future Music Jan 1996

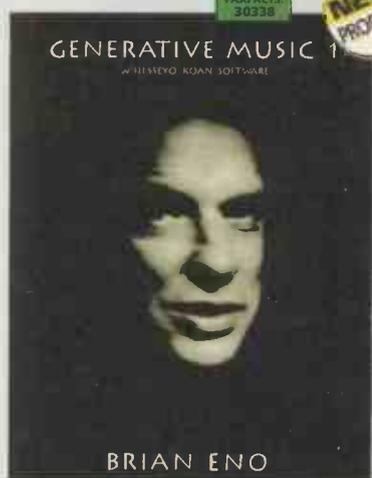
SEY001 Koan Pro V1.2 for Windows 3.1/95 **£129⁹⁵** (Including VAT £152.69)

Brian Eno Generative Music 1

With SSEYO® Koan® Software!

"The works I have made with Koan symbolise the beginning of a new era of music. There are now three musical alternatives; live music, recorded music and generative music. Generative music enjoys some of the benefits of both it's ancestors. Like live music it is always different. Like recorded music it is free of time-and-place limitations - you can hear it when and where you want. I really think it is possible that our grandchildren will look at us in wonder and say: 'you mean you used to listen to exactly the same thing over and over again?'"

Brian Eno 1996



Brian Eno is the 1996 BRITs Producer of the Year for *Outside* by David Bowie, and pioneer of ambient music. Brian Eno's Generative Music 1 was produced with Koan Pro (opposite)

Includes 12 Brian Eno Koan files with SSEYO Koan Plus V1.2 (Win 95/3.1 versions) on floppy disk. Requires Creative Labs Sound Blaster 32/AWE32 soundcard or TDK MusicCard.

SEY002 Generative Music 1 **£37⁹⁵** (Including VAT £44.59)

A massive 39,000 items in stock across 4,000 different product lines. Nobody delivers faster!

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For ordering information and terms & conditions, see page 2.



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At UK Flex we specialise in supplying computer peripherals and software to business. Whether you need a ZIP drive or a memory module we can advise and supply all leading brands, next day. We're backed by one of the computer industry's largest plcs, so we can guarantee very low prices across a massive range of peripherals.

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Ordering Prices are subject to change and availability. VAT will be charged at a rate of 17.5% on all orders (including packaging). We do not charge credit cards until the goods are ready for despatch. Goods paid for by cheque are dispatched on receipt if Transax service is requested (please add 1.5% of the total order value to your cheque amount for Transax). Alternatively allow seven working days to clear. Orders by Purchase Order are accepted by fax or post for Govt. Depts, Education, MOD, Health Authorities, all Subject to Status. Goods ordered by post or fax will be priced at the current price on the day they are received. Place your order for "in-stock" items up to 7pm and we will ship same day via next-day delivery service (as long as credit card authorisation is obtained and harring system failure). This service is part of the £7.95 (+VAT @ 17.5%) freight charge for UK mainland deliveries that is associated with your order. Order's over 7kg will be charged at £12. All delivery times quoted are only estimates. All orders are shipped by courier and a signature will be required upon delivery. UK delivery charges for small items are £7.95, Highlands of Scotland and Islands £12 (2 day service), Northern Ireland £8 (2-3 days service), Eire £15 (2-3 days service), Isle of Man and Channel Islands £18 (2-3 days service). International charges on request.

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UK Flex has recently been awarded ISO 9002 Quality Assured Certification. Guaranteeing you consistently high levels of service.

CONSUMABLES

FREE Windows '95 Diagnostics with every 10 Verbatim HD Disks!

Each Verbatim diskette is individually certified 100% error free. All floppies are pre-formatted to save you time and 100% data accuracy. A typical Datalife diskette will perform an average of 30 million revolutions - almost ten times the industry standard. Verbatim operates a highly developed burnishing process to produce an optimum surface finish. This makes for perfect contact between your floppy drives' read head and the floppy, reducing wear and adding to data safety, no wonder Microsoft use Verbatim disks exclusively for their products!



FlexPrice £3⁵⁰

Verbatim Laser Toner Cartridges

Compatible with all major laser printers, Verbatim's Laser Toner Cartridges are manufactured to stringent quality standards ensuring your printed output is of the best possible quality. These cartridges are designed to exceed the performance of the original - not just match it.



FlexPrice £41

Optical Disks & Data Cartridges

3.5" & 5.25" Optical Disks

5.25" Rewritable 2.6Gb	£65
5.25" Rewritable 2.3Gb	£59
5.25" Rewritable 1.3Gb	£45
5.25" Rewritable 1.2Gb	£42
3.5" Rewritable 640Mb	£29
3.5" Rewritable 540Mb	£27

Data Cartridges

DC9250 2.5Gb QIC Data Cartridge	£19
DC9200 2.0Gb QIC Data Cartridge	£18
DC9120 1.2Gb QIC Data Cartridge	£17
DC9100 1Gb QIC Data Cartridge	£16
MC3020XL 700Mb / 1.4Gb Mini Cartridge	£19
MC3010 XL 350Mb/700Mb Mini Cartridge	£16

Helical Scan Cartridges

90m DAT DL/90 2/4Gb	£6
60m DAT DL/60 1.3Gb	£5

CD Recordable Optical Disks

74 Minute CD-R Disk	£6.95
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MONITORS

MAG Innovation

15" & 17" Ultra High Resolution Digital Control Multi Frequency Colour Monitors
MAG Innovation



These new monitors from MAG Innovation use the latest Trinitron tube producing a 0.26mm crisp dot pitch. These monitors are multi-frequency analogue colour with advanced micro-processor based digital controls, scanning up to horizontal frequencies of 65KHz.

These high-quality, high-spec monitors meet the demands of both the home and business user and are ideally suited for the professional designer, publisher or DTP user where high quality images are a necessity.

DX1795 Monitor

Features

- Multi-scanning at horizontal frequencies of 30 KHz to 64 KHz, vertical frequencies to 50Hz to 100Hz
- 17 inch picture tube with Flat Square Technology
- INVAR shadow mask for enhanced brightness and contrast
- 0.26mm fine dot pitch
- OSD (OnScreen Display) Control menu
- 13 Preset and 8 User Programmable modes
- ZBO Zero-Border-Over scanning for edge to edge display
- Compatible with standard IBM VGA, extended VGA, Super VGA modes as well as newly proposed VESA ergonomic standards
- Compatible with Apple Macintosh II
- MPR II compliant
- Windows 95 compatible

FlexPrice £469

DX1595 Monitor

Features

- Multi-scanning at horizontal frequencies of 30 KHz to 65 KHz
- 15 inch high-contrast picture tube
- 0.28mm dot pitch flat screen CRT
- Microprocessor-based design with digital controls
- TCO 92' compliant (with optional panel)
- A palette of unlimited colours
- Compatible with standard IBM VGA, extended VGA, Super VGA modes as well as newly proposed VESA ergonomic standards
- Compatible with IBM XGA
- Universal auto-switched power supply
- Removable tilt-swivel base
- Windows 95 compatible
- VESA DDC 2B compliant

FlexPrice £269

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Tel. 01675 465120



All prices exclude VAT and delivery. See terms and conditions.

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UPGRADING



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UPGRADING

Intel Pentium® OverDrive® Processor Upgrades

Better Performance For Today's and Tomorrow's Applications!

Today's software applications - both at the office or in the home - are demanding greater processing power than ever. Spreadsheets can never calculate fast enough and graphics always redraw too slowly. If you attempt to run Windows 95 on your Intel486™ processor-based PC, you'll find that features such as multitasking will tax your system beyond belief. That's why you need to consider the Intel Pentium® OverDrive® Processor Upgrade.

The Advantage of Pentium-Based Performance

The Pentium OverDrive processor is the highest-performance OverDrive processor upgrade available. It features Pentium processor superscalar architecture, enhanced on-chip cache and faster floating point, a 32-bit bus interface, and an on-package voltage regulator and fan heatsink. It also offers a 3:2 bus ratio, that operates the OverDrive processor at two and a half times the speed of the system bus. A system upgrade with a Pentium OverDrive processor delivers a substantial performance increase to most Intel 486 CPU-based systems. For example, an upgraded IntelDX2 66-MHz CPU-based system will realise more than a 50% performance increase in most typical applications (performance results depends on your system configuration and the applications used).

A wide range of upgrade options to choose from



Upgrading an IntelDX2 66-MHz System

In addition to providing improved performance for today's software applications, upgrading with a Pentium OverDrive processor gives your system enough power for more demanding operating systems like Windows 95 and

emerging communications and video applications. Increased processing power also makes games more fun.

By upgrading your CPU, keyboard and control, responsiveness improves as well as the quality and detail of the graphics. In fact, many of today's games are designed to offer different levels of detail based on the performance of your systems CPU. These games will recognise your system's Pentium OverDrive processor upgrade and automatically turn on key graphic features without sacrificing performance.

IntelDX2 and IntelDX4 Overdrive processor upgrades

Also available are these OverDrive upgrades. The IntelDX4 OverDrive processor is a mainstream CPU upgrade for Intel486 SX and DX-based CPU-based systems. It features "speed tripling" technology, a larger 16K cache and an on-chip math coprocessor, as well as an on-package voltage regulator and heatsink.

The IntelDX2 OverDrive processor is the entry-level CPU upgrade designed for Intel486 SX and DX CPU-based systems. It features "speed doubling" technology, an on-chip math co-processor, and an attached heatsink fan.



New Low Upgrade Prices

Frequently Asked Questions About the Intel Pentium® OverDrive® Processor

What is a Pentium® OverDrive® processor?

The Pentium OverDrive processor is the highest-performance OverDrive processor upgrade available today. It provides a simple, inexpensive performance upgrade for most IntelSX2™ and IntelDX2™ systems, as well as a superior upgrade option for many Intel486™ SX and DX CPU-based systems.

Is the Pentium OverDrive processor really a Pentium® processor?

Yes, it is a true Pentium processor. It is based on 3.3 volt, 6 micron Pentium processor technology, the same used by the range of 75-120MHz Pentium processors available today. In addition to featuring Pentium processor superscalar architecture, enhanced on-chip cache and faster floating point, it also offers a 32-bit interface, an on-package voltage regulator and fan heatsink, and a 5:2 core:bus ratio that operates the OverDrive processor at two-and-a-half times the speed of the system bus.

How much of a performance increase will be gained with a Pentium Overdrive processor?

In comparing the relative performance of the Pentium Overdrive processor with an Intel DX2-66MHz CPU-based system, the Pentium Overdrive processor has an iCOMP (Intel Comparative Microprocessor Performance) index of 581, representing a 96 percent increase over the Intel DX2-66MHz system (iCOMP index 297). The Pentium Overdrive processor delivers a substantial performance increase for many of today's applications (see table below left). For example, an upgraded Intel DX2-66MHz CPU-based system will realise more than a 50 percent performance increase across most typical applications like Word for Windows, CorelDRAW and Quicken for Windows (depending upon the system configuration and applications used).



The Pentium™ OverDrive processor is available in four versions, based on your system's bus speed

Present System	Pentium® OverDrive® Processor Upgrade	Stock Code	Price
33-MHz Intel486 - or - 66 MHz IntelDX2™	83-MHz Pentium OverDrive Processor	INT019	£139
25-MHz Intel486 - or - 50 MHz IntelSX2™ - or - IntelDX2	63-MHz Pentium OverDrive Processor	INT018	£99
60-MHz Intel Pentium™ 66 MHz Intel Pentium™	120 / 133-MHz Pentium Pro OverDrive Processor	INT048	£249
75-MHz Intel Pentium™	125-MHz Pentium OverDrive Processor	INT049	£259



NEW Pentium Overdrive Processors for Pentium Systems

NEW Intel Pentium Pro Overdrives for Pentium PCs

Work even harder. Play even faster. The new Pentium Pro upgrade processors offer Pentium PC owners the chance to make their PCs EVEN FASTER. If you are currently using a 60MHz, 66MHz or 75MHz Pentium processor then you can upgrade to a 120/133MHz or 125MHz Pentium Pro Overdrive.

FlexPrice 120/133MHz Pentium OverDrive Processor **£249**

MEMORY

Buy SIMMS The FlexWay

At UKFlex, we don't just sell any old SIMM, we use the very best in technology. All our SIMMS are manufactured by leading manufacturers including Samsung, Fujitsu, IBM and Texas Instruments. All come with a 5 year warranty. Not only is the memory of the very best quality, but it is also supplied in individual boxes, with full fitting instructions. We also include a reprint from PC Advisor magazine, that many of our customers have found very useful when installing SIMMS. As if that wasn't enough, we offer a full technical support service for all of our valued customers.

£10 off any memory module when bought with Processor upgrade

30 Pin Simms

Type	Capacity	Speed	Price
1 x 9-3 chip	1Mb	70ns	£29
1 x 9-9 chip	1Mb	70ns	£31
4 x 9-3 chip	4Mb	70ns	£89
4 x 9-9 chip	4Mb	70ns	£99
16 x 9	16Mb	70ns	£429

72 Pin Simms

Type	Capacity	Speed	Price
1 x 32	4Mb	70ns	£49
1 x 32	4Mb	60ns	£98
1 x 36	4Mb	70ns	£74
1 x 36	4Mb	60ns	£85
2 x 32	8Mb	60ns	£99
2 x 32	8Mb	70ns	£94

72 Pin Simms Cont'd

Type	Capacity	Speed	Price
2 x 36	8Mb	60ns	£165
4 x 32	16Mb	70ns	£215
4 x 32	16Mb	60ns	£235
4 x 36	16Mb	70ns	£290
4 x 36	16Mb	60ns	£300
8 x 32	32Mb	60ns	£680
8 x 32	32Mb	70ns	£695
8 x 36	32Mb	70ns	£680
8 x 36	32Mb	60ns	£695

72 Pin EDO Simms

4Mb	£59
8Mb	£114
16Mb	£283

In order to always offer the lowest prices on memory, prices will fluctuate from the above. Please call for the latest low prices before placing your order.

2

Tel. 01675 465120



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All prices exclude VAT and delivery. See page 1 for terms and conditions.

UPGRADING & CARDS



PCMCIA FlexReader

A convenient front loading PCMCIA Card reader

This new UK Flex device comes complete with a full suite of card and socket services, this ensures universal compatibility with PCMCIA-compliant cards. Supplied with a 16 bit host adaptor delivering a data transfer rate of 5 Mbytes a second. The reader supports type I, II & III cards.



FlexPrice £89

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Enhanced 2HDD, 2S, 1P 1G.....	£26
Enhanced 2FDD/4HDD, 2S (High Speed), 1P.....	£45

Buslogic SCSI Controllers

KT510 ISA 16Bit Full Kit.....	£83
KT445C VLB 32Bit Full Kit.....	£159
BT545C ISA 16Bit.....	£169
KT545C ISA 16Bit Full Kit.....	£179
KT930 PCI Ultra SCSI.....	£169
BT640A MCA 32Bit SCSI W!.....	£229
BT747C EISA SCSI 2.....	£239
KT747C EISA SCSI 2 Full Kit.....	£249

Adaptec SCSI

1505 Total CD Full Kit.....	£45
1510 ISA 16Bit Full Kit.....	£59
1522 ISA 16Bit Full Kit.....	£99

PCI Controllers	Bus	Drive Type	Features	Price
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CMD6400R PCI Pro IDE 3/4	PCI	4 x IDE	winRAID	£28
CMD6401 PCI Pro + IDE 3/4	PCI	4 x IDE	2S/IP/IG 16550	£49
CMD6500 PCI SCSI-2	PCI	7 x SCSI	NEW PRODUCT	£157
CMD6520 PCI SCSI-2 Cache	PCI	7 x SCSI	33MB/sec NEW	£188
Promise DC5030 IDE Cache	PCI	4 x IDE	NEW PRODUCT	£118

VESA Controllers	Bus	Drive Type	Features	Price
CMD6210 Mode 3/4/5 I/O	VLB	4 x IDE, 2 x FI	2S/IP	£24
CMD6212 VL Pro 3/4/5 I/O	VLB	4 x IDE, 2 x FI	winRAID	£39
CMD6213 VL 3/4/5 I/O	VLB	4 x IDE, 2 x FI	2S/IP 16550	£46
CMD6222 VL 3/4/5 I/O	VLB	4 x IDE, 2 x FI	2S/IP/IG 16550	£48
Promise EIDE 2300 + I/O	VLB	4 x IDE, 2 x FI	2S/IP/IG 16550	£48
Promise EIDE 4030 Cache I/O	VLB	4 x IDE, 2 x FI	2S/IP/IG 16550	£109
Promise DC 420 Cache I/O	VLB	2 x IDE, 2 x FI	2S/IP / SRAM	£81
Promise DC 440VL SCSI/I/IDE	VLB	7 x SCSI 2 x IDE FI	2S/IP/IG	£142
VL220 Mode3 IDE Cache I/O	VLB	4 x IDE 2 x FI	2S/IP/IG	£71

ISA Controllers	Bus	Drive Type	Features	Price
Promise DC200 Cache	ISA	4 x IDE 2 x FI	LBA Support	£64
Iwill SIDE 2610 I/O	ISA	2 x IDE 2 x FI2.88	2S/IP 16550 x 2	£31
Iwill SIDE 2605 I/O	ISA	N/A	2S/IP 16550 x 2	£29
Iwill SIDE 2615 I/O	ISA	2 x IDE 2 x FI2.88	4S/2P 16550 x 4	£89

SCANNING

Visioneer Paperport

The fastest way to get paper into your PC!

PaperPort is compact and it can scan an A4 page in as little as six seconds! It then instantly displays the digital image on your screen. Once you've got your scanned document you can fax it, file it, edit it, copy it, or send it via e-mail. You can scan at either 200 or 400 dpi. PaperPort comes with a range of software including desktop and drag-and-drop metaphors which help organise, manage, locate, fax, edit and print documents. Store your documents in familiar file folders using long file names and find them using keywords, titles and dates. It also includes WordScan OCR software which converts scanned documents into editable text.



FlexPrice £239

Umax

With the SuperVista S12, you can achieve a better image quality than a 30-bit scanner.

The UMAX SuperVista S12 features 600 x 1200 dpi and an analog gamma design for capturing more details and producing output quality superior to 30-bit scanners. Also includes parallel image processing for fast scanning speed and Presto!, an integrated software for scan, copy, fax, e-mail, image editing and filing.

The UMAX S6E is the perfect entry level flatbed at an unbeatable price.

An outstanding specification at an incredible price. The S6E offers scan resolutions of upto 4800dpi and comes complete with SCSI interface and all the necessary software to get you up and running instantly. Included with all UMAX scanners is OCR, archiving, fax, E-Mail, and image editing software.

UMAX S12.....	£575. ⁹⁵	Document Feeder.....	£399. ⁹⁵
UMAX S6E.....	£297. ⁹⁵	Transparency V6.....	£349. ⁹⁵
UMAX MIRAGE.....	£5,999	Transparency V12.....	£399. ⁹⁵



SCANNING

PRIMAX PAPEREAZE only £119⁹⁵

Primax Paperease

A True A4 Scanner that connects to your parallel port

The Primax Paperease scanner also offers the functions of a photocopier and fax machine. For faxing simply scan the document you wish to copy into your fax software. If you'd like a hard copy of your document, just drag it into the print icon...it's as easy as that to print! And this at a rate of up to 10 full pages per minute. Includes SoftFile software.



FlexPrice £119.⁹⁵

Primax DataPen

Simply the fastest way of entering text and, on average, 20-30 times faster than using the keyboard. Run the DataPen over the text and it will input text from where the cursor lies. The OmniFont OCR software runs in the background and allows it to recognise any font between 8pt and 22pt text size. It can be used in all applications running under Windows. There's even a spell checker in 11 languages. The DataPen is easy to install and connects to your standard parallel port. It's the simplest way to input selected text.



FlexPrice £119.⁹⁵

SICOS Colour A4 Page Scanner

The SICOS A4 scanner is ideal for image and OCR scanning.

It comes complete with Textbridge V.2 and PhotoPlus software. Features include: 16.8 colours - 256 grey scale - Up to 1200 dpi - full A4 page - 3.5 pages per minute - 16 bit ISA interface supplied. At UK Flex's price of only £199, you couldn't even buy the included software cheaper!



FlexPrice £199

SICOS DMS 2000 A4 Scanner

The TWIN-compatible DMS 2000 (document Management System) is the solution for your digital office. Text is converted and made available within minutes for your favourite word processor.

The DMS can even fax, copy or archive data. The integrated software package lets you set it up to launch automatically other Windows programs, as soon as a sheet of paper is inserted. Make high quality copies of your documents onto any printer using the integrated copy software. Included with the DMS 2000 is the award-winning OCR software Textbridge as well as archiving and faxing software.

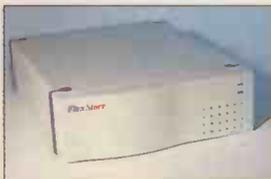


FlexPrice £99

Epson	Epson GT5000 Parallel.....	£299	Logitech	Logitech 256 Scanner.....	£69
	Epson GT5000 SCSI.....	£351		Logitech EasyTouch.....	£103
	Epson GTx8500 Parallel.....	£489		Logitech Scanman Colour Pro.....	£118
	Epson GTx8500 SCSI + Postscript L3, Omnipage Effect.....	£569		Logitech PageScan Colour.....	£268
	Epson GTx8500 SCSI + Adobe Photoshop V3 Full Version.....	£769	Primax	256 GreyScale.....	£56
UMAX	Vista S6E.....	£298		16.8 Million Colour.....	£90
	Vista S12.....	£576		16.8 Million Colour Mobile (with feeder).....	£140
	PageOffice.....	£239		16.8 Million Colour Office (with feeder).....	£170
				DataPen.....	£119



Flexstore Parallel Hard Drives



The Flexstore Parallel Hard Drives offer maximum portability at low low prices

With sizes available from 850Mb to 2Gb, these make the ideal storage solution for notebook users who need extra hard disk space or in fact anyone who needs to transport data from machine to machine. These drives come complete with all cables and software needed for Windows 3.1x and Windows 95 systems. The cases are made from a tough lightweight plastic, keeping the weight down for easier carrying, ideal for those notebook users on the move.

Flexstore 850Mb	£239
Flexstore 1Gb	£269
Flexstore 2Gb	£399

FlexPrice

Iomega Zip Drive

Don't move data without it!

The Iomega Zip Drive is the affordable, personal storage device needed to move and store your valuable data. Each Zip 100Mb diskette costs only £15, making these disks the most cost-effective way to store data or move information from one location to another.

FlexPrice £149



Verbatim Optidriver™ MO Drives

From the market leader in MO media, Verbatim now introduce the total solution for all your "plug and play" optical needs

- Solves all your data and multi-media storage problems
- No data corruption, tape run-offs or head crashes
- 700 KB per second write time and 2 MB per second read time
- Over 4 times the speed of most CD-ROM drives
- Full ISO approval
- Utilises Fujitsu state-of-the-art technology
- Each drive comes complete with full connectivity kit and 1 FREE piece of verbatim 230 Optical media

FlexPrice

Optidriver	Price
3.5" 230 MB "PC" External Kit	£429.00
3.5" 230 MB "PC" Internal Kit	£349.00
3.5" 230 MB "MAC" External Kit	£389.00
3.5" 230 MB "MAC" Internal Kit	£329.00

HARD DRIVES

Why Buy Hard Drives From UK Flex?

Firstly you are assured of a low, low price. Secondly, we ship all drives complete with full-colour fitting instructions. Also your drive will be supplied with a reprint from PC Advisor magazine on installing hard drives. For advice on selecting a drive or system compatibility, please call our technical sales team who will be more than happy to help.

NOTEBOOK/2.5" DRIVES

Seagate	Seagate	Price
ST9420AG 420Mb	16ms - 19ms	£199
ST9816AG 810Mb	16ms - 19ms	£286
TOSHIBA		
MK1924FC 520Mb	12ms - 12.7ms	£209
MK2628FC 810Mb	12ms - 19ms	£369
MK2720FC 1.3Gb	12ms - 19ms	£499

Hitachi	Price	
DK221A-34 340Mb	12ms - 12.7ms	£159
DK211A-51 510Mb	12ms - 19ms	£219

HARD DRIVES

Western Digital IDE	WESTERN DIGITAL	Price
AC2850 850Mb	10ms - 64k	£139
AC31200 1.2Gb	10ms - 64k	£189
AC31600 1.6Gb	10ms - 64k	£244

Quantum IDE	Quantum	Price
Traillblazer 850Mb	14ms - 256k	£169
Firehall 1.0Gb	12ms - 256k	£180

Seagate	Seagate	Price
ST51080A	1.0Gb - 12ms - 256k	£158

Conner IDE	CONNER	Price
CFA850A 850Mb	12ms - 256k	£139
CFA1275A 1.2Gb	12ms - 256k	£179

Maxtor IDE	Maxtor	Price
7850A 850Mb	12ms - 64k	£139
71260AT 1.2Gb	12ms - 256k	£159

SCSI & Fast Wide SCSI Hard Drives

Seagate SCSI	Seagate	Price
ST31230N 1.0Gb Hawk	9ms - 512k	£259
ST32430N 2.0Gb Hawk	9ms - 256k	£529
ST32550N 2.1Gb Barracuda	8ms - 1Mb	£649
ST15230N 4.0Gb Hawk	8ms - 1Mb	£779
ST15150N 4.0Gb Barracuda	8ms - 1Mb	£1,129
ST410800N 9.0Gb Elite	9ms - 1Mb	£2,139

Seagate Fast Wide SCSI	Seagate	Price
ST32430W 2.0Gb Hawk	9ms - 512k	£449
ST32550W 2.1Gb Barracuda	9ms - 512k	£650
ST15230W 4.0Gb Hawk	9ms - 512k	£690
ST15150W 4.0Gb Barracuda	8ms - 512k	£951

Quantum SCSI	Quantum	Price
XP32150S 2.1Gb	9ms - 1Mb	£589
XP3430IS 4.3Gb	9ms - 512k	£739

Micropolis SCSI	Price	
M4221 2.0Gb Fast SCSI 2	9ms - 512k	£519
M4221AV 2.0Gb AVFast SCSI 2	8.5ms - 512k	£586
M3243 4.2Gb Fast SCSI 2	9ms - 512k	£730
M11991 9.0Gb Fast SCSI 2	9ms - 512k	£1,399
M11991AV 9.0Gb AVFast SCSI 2	8.5ms - 512k	£1,456

Fujitsu SCSI	FUJITSU	Price
M2684S 532Mb	12ms - 256k	£139
M1606SA 1.1Gb	10ms - 256k	£175

Conner SCSI	CONNER	Price
CFP1080S 1.1Gb	11ms - 256k	£180
CFP2105 2.1Gb	9ms - 512k	£450
CFP2107 2.1Gb	9ms - 512k	£495
CFP4207 4.2Gb	9ms - 512k	£739

Iomega Jaz Drive

The ideal solution for storing, transporting and playing multimedia applications.

Backup a one gigabyte hard disk in as little as 5 minutes. Jaz is the 5 minute solution to upgrading hard drives. Simply plug the Jaz drive into a SCSI port for an instant second hard drive - one that works faster than most and has a full gigabyte of capacity, a Jaz Insider drive fits into any available 3.5" drive bay.



FlexPrice
INT £379 EXT £469

HP SureStore CD-Writer 4020I

Eliminate the complicated process of CD mastering, it's perfect for both the office (create permanent archives, distribute information, ideal for multimedia) and home (archive important personal documents, create your own audio CDs, view Photo CDs, transport large files to and from the office) Easily copy files to CD-R media with Easy-CD. From the Windows File Manager, simply highlight those files or directories you want copied to CD and tell it to write to CD!



FlexPrice £699

HP SureStore Tape 2000

2 GB DAT drive for reliable, easy to use data protection

- Key Features:**
- 2 GB of native unattended backup in just over 3 hours
 - HP's reliable DAT technology
 - Read after write verification for a high level of data integrity
 - Low-cost media
 - Industry-standard DDS format
 - Includes Colorado Backup for Windows
 - Compatible with a wide range of operating systems and software solutions
 - HP service and support



FlexPrice
INT £519 EXT £589

EXABYTE - 8700

The compact, complete 8mm tape drive system.

- Feature**
- Comprehensive, plug and play system
 - Backup software on CD ROM
 - Exabyte 2 year warranty
 - Host adapter and cabling SCSI utilities
- Benefit**
- Fast installation, simple operation select the application you need
 - Reliability, low cost of ownership
 - Industry-standard interface
 - Easy remote management of SCSI devices



FlexPrice
£1299

FreeCOM Power CD

- External plug'n play CD-ROM drive
- Quad-speed & double-speed models
- Pass-through printer output port
- Supports all common parallel ports (including EPP)
- Data transfer rate up to 600 KB/s with EPP port (300 for double-speed model)
- 250 ms average access time
- CD-Audio and headphone output
- Reads data, audio and photo CDs
- MPC-compliant, multi-session compatible
- DOS, Windows 3.x, OS/2 WARP compatible



FlexPrice £159

HP Colorado T1000E

Parallel Color Tape system.

- Latest minicartridge tape technology (Travan™)
- Protect your data from unforeseen disasters, viruses or hard drive failures
- Easily transfer files between different systems
- One-button backup for simplicity and ease-of-use
- Tape Librarian tells you what tape contains the file you want
- Operating speeds up to 9.5 MB/minute
- Connects to existing parallel port
- Colorado Backup for Windows and DOS Software included



FlexPrice £119

Tape Drive Internal		Price
UKCON081	Conner Tape 420	420MB 9MB-min £79
UKCON082	Conner Tape 800	800MB 9MB-min £119
UKCOL006	HP Jumbo DJ-35	340MB 9MB-min £79
UKCOL012	HP Travan T1000 New!	800MB 9MB-min £105
UKCOL008	HP Jumbo DJ-50	1.36GB 15MB-min £174
UKSUR049	HP Surestore 2000 SCSI	2GB 10MB-min £519
UKSUR050	HP Surestore 5000 SCSI	4GB 20MB-min £599
UKSUR051	HP Surestore 6000 SCSI	8GB 56MB-min £749
UKEXA001	Exabyte 250I	2GB 28MB-min £349
UKEXA011	Exabyte 8505XL	14GB 56MB-min £1399
UKIOM080	Iomega Ditto 420	420MB 9MB-min £89
UKIOM081	Iomega Ditto Travan 800	800MB 9MB-min £115
UKIOM082	Iomega Ditto 3200	3.2GB 16MB-min £204
Tape Drive External		Price
UKCOL022	HP T1000E New! PP	800MB 8MB-min £119
UKSUR052	HP Surestore 2000 SCSI	2GB 10MB-min £589
UKSUR053	HP Surestore 5000 SCSI	4GB 20MB-min £619
UKSUR054	HP Surestore 6000 SCSI	8GB 56MB-min £759
UKEXA002	Exabyte 250I E	2GB 28MB-min £489
UKEXA033	Exabyte 8505XL ST	14GB 56MB-min £1,499
UKIOM085	Iomega Ditto Travan 800 Easy PP	800MB 8MB-min £115
UKIOM086	Iomega Ditto 3200E PP	3.2GB 12MB-min £199
UKMSU010	MicroSolutions BackPacK 800T PP	800MB 8MB-min £149

CD-ROM Drives	Parallel Quad Speed	£159
Aztech Six Speed	Parallel Six Speed	£199
Aztech Eight Speed	NEC Internal Six Speed	£239
Goldstar Quad Speed CD ROM Drive	NEC External Six Speed	£349

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The Business Mail Order Company

NETWORKING



UKFlex

The Business Mail Order Company

NETWORKING

Netware Web Server

Turns your NetWare server into an Intranet/Internet publishing server!



NetWare Web Server software lets you publish documents on internal corporate networks and on the World Wide Web, enabling your company to establish an Internet presence easily and cost-effectively. Implemented as a set of NetWare Loadable Modules (NLMs), NetWare Web Server converts your NetWare 4.1 server into a powerful platform for publishing HyperText Markup Language (HTML) pages. It leverages existing systems to integrate your NetWare network with the Internet, giving your business a powerful new way to communicate.

Stake your claim on the World Wide Web.

The World Wide Web is the fastest-growing service on the Internet today. It offers an almost unlimited potential for companies to market their products and services, as well as communicate more easily and effectively with customers, investors, employees, manufacturers and other individuals. NetWare Web Server is an easy way for you to take advantage of the exciting opportunities that the Web offers. With a simple installation and configuration process that takes less than 10 minutes, NetWare Web Server gives your company a powerful Web publishing solution. It runs on your existing NetWare 4.1 servers, so you get all the capabilities you need to create, publish and browse Web documents for a minimal investment.

Gives you easy entry to the world of electronic publishing.

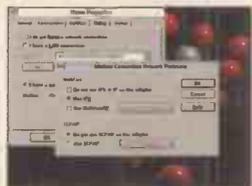
Because this solution is based on NetWare 4.1, you don't have to learn or invest in any UNIX-based operating systems and tools to participate in the world of the Internet. Simply use WordPerfect® 6.1 Internet Publisher to create Web documents right from your WordPerfect word processing software. The documents are automatically converted to HTML, the standard format of the Web, eliminating the need to learn the HTML authoring language. This flexible solution allows you to publish Web documents whether your NetWare network is connected to the Internet or not. You may choose to start by publishing documents for internal company use only, then publish documents for Internet users later on when your company acquires an Internet connection. NetWare Web Server supports all the common features of the World Wide Web, so you get a full-featured Web server without having to buy a UNIX system. It includes support for forms, the Remote Common Gateway Interface (R-CGI), access controls and logging, as well as BASIC and PERL script interpreters.

Delivers scalable, fault-tolerant solution.

NetWare Web Server takes advantage of NetWare 4.1 Symmetric Multiprocessing (SMP) capabilities. If you have resource-intensive applications such as databases running on the server, or expect a large number of "hits" from Internet users, you may choose to run NetWare Web Server on one of the many NetWare 4.1 SMP hardware platforms on the market. You may alternatively choose to run NetWare Web Server on NetWare SFT III, ensuring that data is protected and your Web server stays up and running 24 hours a day, seven days a week. NetWare Web Server is part of an integrated Internet solution from Novell. LAN WorkPlace/E 5 for MS Windows™ and DOS complements NetWare Web Server by providing a powerful suite of applications for easy, concurrent access to information on TCP/IP, NetWare and the Internet. As the worldwide leader in networking, PC LAN-to-UNIX integration and desktop TCP/IP solutions, is uniquely positioned to help you capitalise on the exciting opportunities the Internet offers.

Features

- 10 minute installation and configuration
- Server security through NDS
- Access controls and logging
- Graphical user interface to administration
- WordPerfect Internet Publisher
- Netscape Navigator (single-user license)
- BASIC script interpreter
- PERL script interpreter
- Remote Common Gateway Interface (R-CGI)



FlexPrice £499

Netware Mobile

NetWare™ Mobile® lets Windows users work with their network resources anywhere in the world, whether they are remotely connected to their network or working offline. This powerful software makes true mobile computing a reality by letting you take selected network data with you on your mobile computer, then updating the files upon reconnection. NetWare Mobile masks the complexity of location-specific configuration details, making it a snap to dial into your NetWare network as well as TCP/IP hosts and the Internet. Network administrators get powerful graphical administration tools that make it easy to configure and manage mobile users and data, as well as maintain NetWare security.

FlexPrice

- 1 User **£79**
- 5 User **£279**
- 25 User **£1149**

We are fully authorised to advise and sell Novell products and VLA agreements. We are also able to install Novell Networks on-site. For assistance in designing and implementing Networks please call our team.

Novell Network 3.12 5-user	£395	Novell Network 4.1 CD 5-user	£415
Novell Network 3.12 10-user	£962	Novell Network 4.1 CD 10-user	£943
Novell Network 3.12 25-user	£1,143	Novell Network 4.1 CD 25-user	£1,389
Novell Network 3.12 50-user	£1,940	Novell Network 4.1 CD 50-user	£1,349
Novell Network 3.12 100-user	£2,540	Novell Network 4.1 CD 100-user	£2,820
Novell Network 3.12 250-user	£4,575	Novell Network 4.1 CD 250-user	£5,409

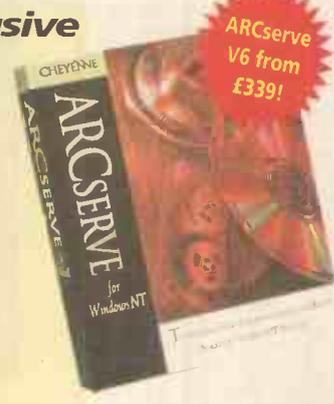
Novell Network 3.12 is also available on CD. Please call for larger site licenses and pricing on Novell Personal NetWare.

New ARCserve v6.0 for Netware

Undoubtedly the fastest, most powerful and reliable backup solution for Novell NetWare available today! For NetWare 3.x and 4.x users - local or wide area, there can be no other choice, just look at some of the newest features listed below.

Features exclusive to Cheyenne

- Fully NDS Compliant & NetWare 4.1 certified
- Increased performance of backup and restore - Parallel streaming, Tape cascading, File Interleaving and Push Agents
- High Reliability features - Hardware fault tolerance RAID1 & RAID5, Disaster recovery system restoration and intelligent NLM loader
- Storage Management - Auto Pilot tape rotation system, Disk Grooming and Media Pooling Management System
- Easy to use - Cue Cards and Windows '95 interface

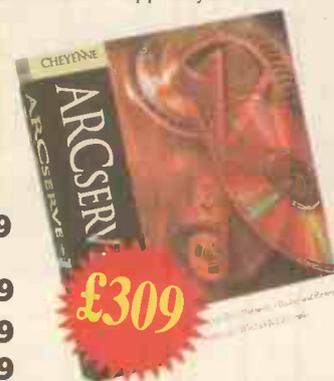


ARCserve v6.0 Workgroup Edition - up to 25 users	£339
ARCserve v.6.0 Enterprise Edition - 25 users and over	£819

ARCserve NT v2.01 - another world leading product

The same user interface as with all ARCserve products - for ease of use and familiarity. Full backup and restore features and a host of storage management features to help protect your NT server.

- Full Microsoft Back Office support including Microsoft SQL server, Exchange server, SMS and SNA server
- Designed for enterprise management
- Full backup of NetWare servers including bindery and NDS from NT
- Protocol independent NetBui, IPX/SPX or TCP/IP
- Anti-virus scan before backup to tape



ARCserve for Windows NT	£309
ARCserve for Windows NT Enterprise Edition	£549
ARCsolo Win 95	£59
ARCsolo Win 3x	£59

Kingston Networking Cards

Two new network adapters from Kingston



The new EtherRx LC and EtherRx PCI network cards from Kingston Technology offer the best performance and warranty and now at an unbeatable low price. Features for the new cards include support for over 30 network operating systems. They are also supplied with 'QStart', Kingston's installation configuration and utility disk.

EtherRx LC Combo Ethernet (RJ45/BNC)	£26
EtherRx LC Combo Ethernet (RJ45/BNC) 20 pack	£458
EtherRx PCI Combo Ethernet (RJ45/BNC)	£60



Kingston
TECHNOLOGY CORPORATION

3 COM Etherlink III 3C509 ISA BNC	£67	SMC Elite Ultra ISA RJ45	£59
3 COM Etherlink III 3C509 ISA RJ45	£67	SMC Elite Ultra ISA BNC	£59
3 COM Etherlink III ISA COMBO	£78	SMC Elite Ultra ISA COMBO	£63
3 COM Etherlink III 3C579 EISA BNC	£139	Novell NE1000 8Bit ISA	£75
3 COM Etherlink III 3C579 EISA RJ45	£139	Novell NE2000 Plus 16Bit BNC	£55
DLINK DE6200CT Ethernet Card BNC/TP	£90	Novell NE2000 Plus 16Bit RJ45	£55
DLINK DE220C Ethernet Card TP	£49	Novell NE2000 Plus 16Bit COMBO	£65
DLINK DE220T Ethernet Card TP	£59	Novell NE2000 Plus 5-pk 16Bit COMBO	£269
DLINK DE220CT Ethernet Card BNC/TP	£75	EtherRx LC Combo Ethernet (RJ45/BNC)	£25
DLINK DE320CT MCA Ethernet Card BNC/TP	£89	EtherRx LC Combo Ethernet (RJ45/BNC) 20 pk	£458
DLINK DE530CT PCI Ethernet Card BNC/TP	£99	EtherRx PCI Combo Ethernet (RJ45/BNC)	£59
DLINK DE530CT PCI Ethernet Card BNC/TP	£99		
DLINK DT120 Token Ring ISA	£229		

5

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All prices exclude VAT and delivery. See page 1 for terms and conditions.

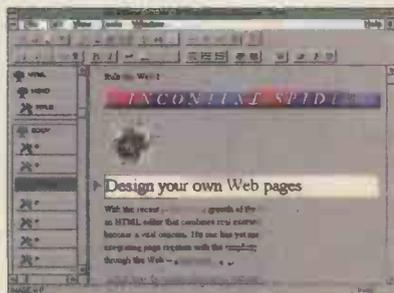
InContext Spider

The Windows-based HTML editor that makes it easy to create and edit documents for the World Wide Web.

With just a few simple steps your page is on the Web. You can add your own graphics. And with a built-in spell checker, you needn't worry about your typing skills. If that doesn't sound easy enough, there are dozens of pre-formatted home pages to get you started. You don't need to know HTML - with InContext Spider it's all taken care of. The three leading browsers are fully integrated, making cruising the Web simplicity itself. You can even create hypertext links to other Web sites with a single command. So if you're looking for the most user friendly way to get your stuff on the Web, look no further. Create Web pages with drag-and-drop ease or select from one of our pre-designed templates. Just point and click on the button bar and start typing. Insert images and create links to other Web sites while you're browsing. Import word processing documents or download other Web sites to use a template for your own. Make your pages come alive with Netscape and Microsoft and Internet Explorer extensions. Add background colour and sound, moving objects, video, scrolling marquee text and more for real interactivity. Create forms, tables and frames with ease to get the most out of your Web site. InContext Spider will make sure your HTML is perfect so that your Web pages will look great in any browser. For the most advanced features, embed Shockwave animation, Java script, and MPEG video - a multimedia experience your visitors will never forget. InContext Spider is advanced Web page creation made easy.



What do you want to put on your Web page?



With the click of a button...

- Insert paragraphs, headings, lists and any other HTML element
- Insert graphics
- Insert links and anchors
- Spell check your pages

InContext Spider's Web Manager makes it easy...

- Insert and manipulate hypertext links while editing
- Browse links from within InContext Spider
- Download any Web page directly into InContext Spider
- Preview your pages in the browser while you work
- Handles both relative and absolute links

InContext Spider gives you...

- An integrated WWW browser - Spider Mosaic
- All the standard editing and navigation tools you expect
- In-line graphics viewing
- Web pages that are always valid HTML
- Sophisticated searching utilities
- Lots of pre-designed Web pages and examples to get you started
- Context-sensitive HTML help

System Requirements

- Win 3.1, 3.11 or 95
- 8 MB RAM recommended
- 386 or above
- 10Mb of hard drive space

It's so easy!

Just a few simple steps puts your page on the Web. If you're in a hurry, there are loads of pre-formatted home pages to choose from.

You don't have to be an HTML expert

You don't even have to know what it means. InContext Spider ensures that your HTML's perfect and supports the latest versions. You just have to type, point and click.

Integrated Browsers

Your favourite is supported. Mosaic, Netscape and the Internet Explorer from Microsoft. See pages as you build them, and insert links to other interesting sites as you find them.

Free with InContext Spider Version 1.1 CD ROM

Includes free connection software from both CompuServe and Netcom.

ThumbsPlus organises and locates graphics files, displaying them in easy-to-manage "thumbnails".

BestWeb Lite lets users build user-friendly, point-and-click interfaces for database files.

Map This! lets users create and edit image maps for the World Wide Web.

Adobe™ Acrobat™ Reader for Windows allows users to view, navigate and print PDF (portable Document Format) files.

FlexPrice £59⁹⁵

InContext WEBAnalyzer for Win 95

With easy Web site maintenance and power browsing, WEBAnalyzer untangles the Web!

InContext WEBAnalyzer, lets surfers save on telephone bills by downloading Web sites and browsing offline. Web masters can use InContext WEBAnalyzer to find and fix broken links quickly. The unique Wavefront display shows you everything a site has to offer so that you can select exactly what you want.

InContext WEBAnalyzer shows you everything you need for fast and easy Web site maintenance, including broken links and duplicated documents. Ensure that your company's presence on the World Wide Web looks the best it can. The interactive views show the site the way you want including every link to and from a page, the file type and page on a site. Right mouse button click on any file to view it in your browser or to fix any errors with your Web page editor.

WEBAnalyzer's live report feature provides a detailed summary including possible reasons why the links are broken. Power browse faster and at your leisure by downloading any Web site to your hard drive. Save time by customising WEBAnalyzer to view the way you want and multitask to analyze many sites at the same time. Use the file view to sort information, see a site by date last modified, titles, file types and more.



2 Hot New Products!

- Browse where you want, when you want
- Speed up your browsing
- Download sites during off-peak hours to view them later
- Save hours maintaining your site by quickly locating errors and missing links

If You Surf The Web

- See only what you want, in an easy-to-read graphic format.
- Don't wait for large graphics files to load. Use the filters to download and browse only the information you need.
- Save time and money by downloading during off-peak hours to view at your convenience.
- Power surf faster by browsing Web pages on your hard drive.
- Organise your online time by mapping a site before going to your desired destination.

If You Have A Web Site

- Fix any errors quickly and easy by launching any HTML editor or Web page publishing software, such as InContext Spider™.
- Print or view live, hyperlinked reports that clearly display in your browser all the information you need for any Web site.
- Fully compatible with leading browsers including Netscape Navigator™, Microsoft Internet Explorer™ and Mosaic™
- Designed for Windows™ 95 so you can take advantage of multi-tasking and 32 bit capability.

Wavefront

The unique Wavefront graphics shows you everything a site has to offer, including links, images, text and pages. It makes finding errors and maintaining your Web site easy.

LinkView

Shows all in links and out links for the Web page you're reviewing. This helps you get a better overview of the Web site and, with your editor, fix any broken links.

Fileview

Fileview lets you view web site information sorted by date last modified, file types, title, size and more. Right mouse button click to view these files immediately in your browser, without going through the whole site.



System Requirements

- Win 95
- 8Mb RAM 12 recommended
- 3Mb Hard Disk Drive space

FlexPrice £79⁹⁵

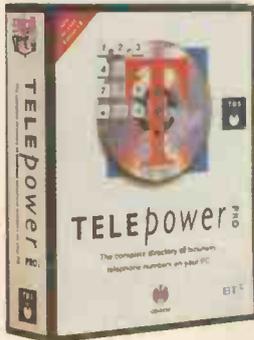
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The Business Mail Order Company

COMMS & INTERNET



Telepower™ Pro



Telepower is the quick and easy way to find business telephone numbers, saving you time and money.

1.5 million calls are made to Directory Enquiries each day and of these calls 80% relate to business number enquiries. This information alone indicates the demand for a product such as Telepower Pro.

Telepower Pro comprises a single CD-ROM which holds 2.4 million telephone numbers and fax numbers of the 1.9 million UK businesses registered with BT, along with business subscribers to many other cable and public telephone networks. The BT business database is the single most up-to-date source of business trading sites and their telephone numbers in the UK. Annual updates of Telepower Pro ensure the product is at least as up-to-date as any published directory and provides the opportunity to develop long term loyalty and additional revenue.

Multi-User licenses are granted by issuing a release code for the required number of users. All licenses are issued from the single user product, minimising administration and the requirement to hold costly stock. Multi-User, single site licenses are available, as follows.

Multi-User License Pricing.

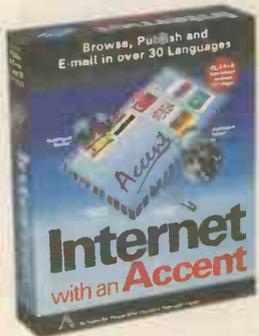
Users	12 Month License
Up to 10	£299
Up to 25	£399
Up to 50	£499
Up to 100	£699
Up to 200	£899
Unlimited	£1,100

Benefits

- Windows compatible CD-ROM product
- Rapid and powerful search capability
- One-off cost with no usage charges
- Annual updates, providing current data
- Keyword or fuzzy matching techniques
- National and international dialling code look-up facility for convenience

FlexPrice £35

Internet with an Accent™



Browse, publish and send e-mail in over 30 languages!

Until today, Internet browsers let you surf in any language...as long as it was English. Internet with an Accent is the first Internet package that allows you to reach a global audience.

Now you can make the Web truly World Wide with Internet with an Accent.

- Discover opportunities all over the world - not only where English is spoken!
- Communicate in the language you and your customers understand.
- Access information on the Web, regardless of language
- Talk to your employees in their own languages wherever they are

Internet with an Accent has four major components: a stand alone browser, an e-mail editor, a WYSIWYG publishing tool and an add-on viewer. Internet with an Accent suite has everything you need to read and write on the Internet in over 30 languages.

Internet with an Accent comes with full text and graphic support and menus in over 15 languages.

Typing Languages Include:

Arabic, Belorussian, Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hebrew, Hungarian, Icelandic, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Swiss German, Turkish, and Ukrainian. In addition, you can browse Japanese Web pages using the Accent Multilingual Mosaic.

Accent Multilingual Mosaic™ Browser

Surf the Web in over 30 languages including Western European, Central European, Arabic, Cyrillic and Japanese. You can use Internet with an Accent multilingual browser no matter what language version of Windows 3.1 or Windows 95 you are using. Enjoy expanded language capabilities such as multiple language pages and multilingual menus.

Accent Multilingual Mailpad™

Create, send, receive and edit e-mail in over 30 languages.

Accent Multilingual Publisher™

Create HTML Web pages containing any of over 30 languages - even English.

Accent Multilingual Viewer™

Read multilingual e-mail documents created by any Accent word processor or the Accent Multilingual Mailpad.

FlexPrice £39

UKFlex

The Business Mail Order Company

COMMS & INTERNET

Pace Message Desk 34



3-in-1 communications : voice, fax and data

Pace's new Message Desk 34 gives you complete communications in one. At their simplest, they turn your computer into an answer phone, a fax and a modem. Used to the full, a Message Desk 34 provides up to 1,000 voice and fax mailboxes, network fax and data communications and sophisticated fax-on-demand system - all from a single telephone line. The Pace MessageDesk is the ultimate modem for total data transmission, or accessing the Internet at high speed.



FlexPrice Int/Ext £179

Sportster Vi

The new look Sportster Vi, the latest addition to the market-leading Sportster range, not only provides faxing and data facilities for e-mail or Internet access, but also acts as a complete message centre, ensuring you get the message every time. The Sportster Vi 28,000 Fax modem with Personal Voice Mail provides you with multiple voice and fax mailboxes, and will even allow you to listen to your voice messages remotely.



Sportster Vi speeds you along the Information Super-highway at 28,000bps and with free Quicklink II data and fax software included you can be up and running within minutes of taking it out of the box. The US Robotics Sportster Vi is BAPT approved and supplied with a 5 year warranty and free lifetime technical support.

FlexPrice Sportster 14.4 External Vi £85.95

Sportster 14.4 Internal £104.95

Sportster 28.8 V34 External Vi £154.95

Sportster 28.8 V34 Internal £154.95



ZOOM Fax/Modem

Award winning V34 for only £119.95

Supporting advanced features like remote configuration and callback security the ZOOM Fax/Modem offers unbeatable value for money. Personal Computer World have in fact awarded the ZOOM Modem Editor's Choice 2 years in a row. Choose from either Internal or External and both are supplied with a 5 year warranty.



FlexPrice ZOOM V34 28.8 Internal £119.95

ZOOM V34 28.8 External £129.95

PSION Dacom Gold Card Modems

The portable data communications solution from Psion.

The Psion Dacom Gold Cards let you add fax and data to your notebook, giving you high-speed file transfer, real remote LAN access and guaranteed compatibility.

Available in a high-speed V34+ fax version and a V32bis+ fax version - Europe's leading PCMCIA Data+ fax modem!



FlexPrice V32 14.4 Gold Card £149.95

V34 28.8 Gold Card £189.95

V34 28.8 Gold Drive PCMCIA Reader £99.95

Manufacturer	Description	Speed	Fax	Internal	External
Creative	Creative PhoneBlaster	28.8	Yes	£219	-
Hayes	Accura 28.8 V34	28.8	Yes	£159	£159
Hayes	Accura 14.4	14.4	Yes	£99	£99
Miro	Miro Connect 34 Wave	28.8	Yes	£238	-
Motorola	Motorola 3400 Pro 28.8	28.8	Yes	-	£140
Motorola	Motorola On Line Internet	28.8	Yes	-	£155
B.T.	BT Prologue V34 EX desktop	28.8	Yes	-	£155
USR	Worldport Cellular V32	14.4	Yes	-	£125
USR	Worldport Cellular V34	28.8	Yes	-	£159
USR	Courier V34	28.8	Yes	£239	£239

7

Fax orders. 01675 464685

7 Roman Way, Coleshill Industrial Estate, Coleshill, Warks, B46 1HG



Tel. 01675 465120



All prices exclude VAT and delivery. See page 1 for terms and conditions.



Dr Solomon's Support Software

Enhance the profile of your business!

Dr Solomon's Support Software is an automated helpdesk system that allows your support staff to log, respond to and track their support calls more effectively. As part of your customer service strategy, Dr Solomon's Support Software can provide major benefits in terms of speed of response and cost-efficiency.



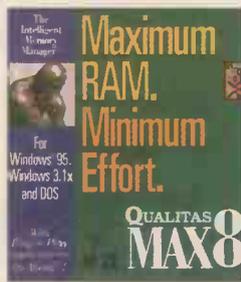
FlexPrice

New user License	Existing User License
3 user £599	2 user £179
10 user £1029	5 user £389
20 user £1399	10 user £699

- Intuitive Windows interface promotes ease of use.
- Automation enables your support function to become more responsive.
- Excellent value for money.

Qualitas MAX 8

- Run More Applications at One Time
- Reduce "Out of Memory" Messages
- Maximise Windows Performance
- Run Memory-Hungry DOS Applications Under Windows 95



Qualitas MAX 8 is a memory manager and system resource manager - all in one! No other solution for Windows 95, Windows 3.1x or DOS improves system performance easily and safely. That means smooth Windows-based installation and configuration and more available RAM, without complications, to run more applications at one time.

Maximum RAM with New Go Ahead™ Technology

Go Ahead... open another window
Windows does a good job of managing system resources. New Go Ahead helps Windows do a great job! Even with systems with large amount of memory, Windows requires low DOS memory for every single application. This leaves you with "out of system resources" errors even though you still have plenty of total memory remaining. What's going on?
New Go Ahead helps manage system resources efficiently by forcing Windows to use extended memory instead of DOS for application resources. The result is more open Windows application for you! Together with Qualitas's time-tested WinSmart and DOSMAX technologies, you get the maximum possible amount of memory for both Windows and DOS applications running in Windows!

Greater Power and Flexibility Compatible With All Popular Environments

Qualitas MAX8 provides a solution for all environments from Windows 95 to Windows 3.1x to DOS.

Faster and Easier

New setup and maximise for Windows - Qualitas MAX 8 lets you do all your system configuration from inside Windows.

Toolbox - provides you with a simple way to custom configure Qualitas Max 8 for your machine. Also includes complete uninstall feature.

MAXedit - Allows you to easily edit any file from within Windows.

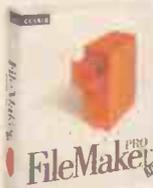
MAXmeter - Displays available Windows resource in a convenient toolbar format.

FlexPrice £19⁹⁵

FileMaker Pro 3.0

You won't find a more versatile database program than Filemaker™ Pro.

With Filemaker Pro 3.0, an array of sophisticated graphics tools gives you access to powerful layout and organisational features without having to learn complicated programming commands. You can instantly sort and search through your data by any criteria you choose - to create and update mailing lists, prepare invoices and purchases orders, and manage a host of other functions from inventory to sales reports and project tracking.



FlexPrice

FileMaker Pro 3.0	£179
FileMaker Pro 2.1 for Win 3.1	£89
FileMaker Upgrade (Comp & Version)	£99

NEW! ClarisWorks 4.0 for Windows

The all-in-one choice for every business, home and education project.

New ClarisWorks 4.0 has an all-in-one design that completely integrates word processing, spreadsheet, database, drawing, painting and presentation functions. So you learn just one program - not half a dozen separate ones. You'll also appreciate the way it works, from its consistent menus to the effortless way it combines words, graphs, tables, images and even video on a single page.

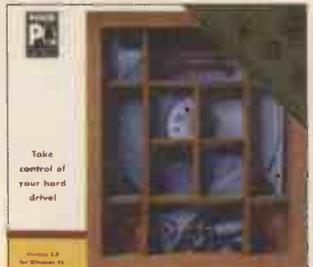


ClarisWorks 4.0 Win 95	£99	ClarisWorks 3.0 Win 3.1	£99
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PartitionMagic 2.0

Presenting the easiest way to optimise your hard drive.

Dividing a hard drive into several partitions lets you efficiently organise operating systems, programs and data. Partitions can also help you protect valuable data from new or unstable applications or operating systems. Until now, modifying partitions was a nightmarish task demanding that you back up your data, delete existing partitions, create and format new partitions, re-install the operating system and finally, restore the data (which hopefully wasn't destroyed along the way). If you wanted to modify your configuration, you had to repeat the entire, daylong process.



PartitionMagic

Presto! With PartitionMagic 2.0 optimising a hard drive without destroying data is as easy as clicking your mouse. Now even novice computer users can visually create, format, shrink, expand and move hard-disk partitions in minutes.

The Power to organise your hard drive.

It's ironic. Your big hard drive, instead of saving you time, can actually waste it by making you search for important documents among a quagmire of files and directories. PartitionMagic helps you put that chaos under control. For the first time, you can use partitions as flexible, super-directories to organise and protect your ever-growing number of operating systems, applications and data.

Placing your data files in a separate partition makes it much easier and faster to perform regular back-ups. By installing operating systems in separate partitions, you can easily migrate to Windows 95 or OS/2 without burning your bridges.

A partition can be a safety barrier as well. Test new or unstable programs in separate partitions, then shrink and move them out of the way when you're done. Use multiple partitions on your home PC as a magical force field to protect your valuable work projects from kids and their computer games.

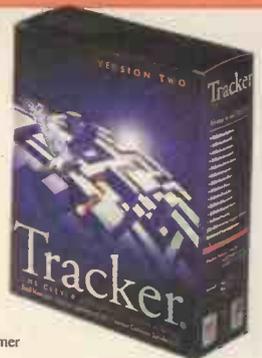
FlexPrice £49

Tracker V2

The award winning contact manager that's a dream to use.

Tracker Version 2 will help you to be more successful in business - which is, after all, about people contacts. It immediately enables you to organise your contacts in the way you want, so you can keep track of what's going on. It's totally integrated and easy-to-use.

Whether you have a single user system or a whole department to cater for, Tracker 2 has all the customer database and mail merge functions you'll need - it'll even check your records for duplications. This sophisticated Windows package enables you to search easily on non-exact data to find records quickly - which is what you need for telemarketing operations and customer service departments.



You can improve customer service with Tracker's powerful database management systems. You can enhance communications using Tracker's own word processor, or in conjunction with other leading business software, to give you immediate response letters, documents, direct faxes and E-Mail. You can

FlexPrice

Tracker V2 (Stand Alone)	£199⁹⁵
Tracker V2 (5 User Network)	£599⁹⁵
Tracker V 2 (10 User N/wk)	£1099⁹⁵

use it's Time Manager to plan more effectively, schedule meetings and appointments, issue reminders and boost your productivity.

DATABASES

MS Access Dev Toolkit V2	£225
MS Access MLP 1 User	£210
MS Access v2	£224
MS Access v2 CCP U/G	£82
MS Access Solution Pack	£36
MS Access Win '95	£5
MS Access CCP U/G '95	£89
MS Vis. FoxPro v3 Std.	£129
MS Vis. FoxPro v3 Pro	£312
MS Vis. FoxPro v3 Pro	£323
MS Vis. FoxPro v3 Std. U/G	£69
MS Vis. FoxPro v3 Pro. U/G	£199
MS Vis. FoxPro v3 Pro. U/G CD	£199

MS Visual Basic V4 Std	£65
MS Visual Basic V4 Pro CD	£299
MS Visual Basic V4 Pro U/G	£110
MS Visual Basic V4 Pro U/G CD	£110
MS Visual Basic V4 Pro C/U	£195
MS Visual Basic V4 Pro C/U CD	£195
MS Visual Basic Enterprise CD	£619
MS Visual Basic Enterprise U/G	£635
MS Visual C++ V4 With Subs CD	£329
MS Visual C++ V4 Subs U/G	£249

Win NT Workstation	£218
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Win NT SQL Server Client MLP	£114
Win NT Server Client MLP	£29
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Win NT Workstation MLP	£199
Win NT Server MLP	£449
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Windows '95 MLP	£57
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MS Plus MLP	£25
MS SQL Workstation NT	£369
MS SQL Server NT U/G	£369
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LANGUAGES

MS C++ V4 Pro CCP U/G CD	£169
MS Visual C++ V2 CD	£245
MS Visual C++ V4 CD	£245
MS Visual Basic V4 U/G	£35

PROJECT MANAGEMENT	
MS Project v4.0	£282
MS Project v4.0 MLP	£269
MS Project v4.0 CCP U/G	£84
MS Project '95	£294
MS Project '95 MLP	£269
MS Project '95 CCP U/G	£84





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COMPUTERS

**ALL HARD DRIVES
& MEMORY MODULES
REDUCED IN PRICE**

(See inside for details)



**TEST
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IQ & WIN
£10**

(See page 3 for details)

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THE OFFICIAL PC & UPGRADE GUIDE

Start

MAY 96

VOLUME 8

HARD DRIVE PRICES TAKE A TUMBLE

We haven't become the UK's largest Hard Drive retailer by chance. We're out in front because we offer a superb array of stock and a level of customer service that most suppliers can only dream of.

But we're also unbeatable on price. If you want proof of that just take a look through the pages of this month's catalogue. You'll see that we haven't just reduced prices on selected Hard Drives - we've reduced prices on them all.



BEING SECOND BEST ISN'T AN OPTION

While we pride ourselves on keeping prices ultra-competitive, we know that real value for money means giving customers the reassurance, quality, support and service they need. That's a philosophy which runs through everything we do - from the extra checks we carry out on all our Infinite custom-built PCs to an impressive array of warranties.

MEMORY PRICES WITHOUT PARALLEL

This month our price initiative doesn't end with Hard Drives. You'll also find that our memory modules (and there are a lot of them) are all down in price too. But don't worry we haven't cut any corners when it comes to back-up and support.

SMC PROVIDES A 7 DAY NO QUIBBLE REFUND GUARANTEE

This does not apply to PC systems, printers, software and carriage charges. E&OE. Prices and specifications subject to change without notice. Please ask our advice before ordering to avoid any foreseeable incompatibility problems. All trademarks acknowledged. SMC Computers PLC terms and conditions on request. This does not effect your statutory rights. Prices exclude delivery.

NO HIDDEN EXTRAS FROM SMC

Prices in RED Exclude VAT

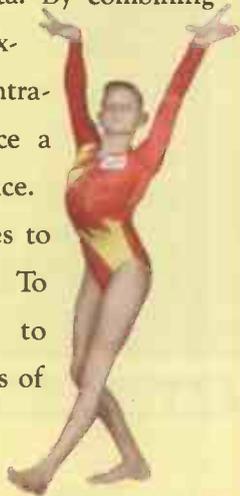
Prices in Black Include VAT

EVERY PERFORMER NEEDS BACK-UP

As an SMC customer you're backed by a series of guarantees - including our 7 day 'no quibble' refund on components and a 30 day exchange or refund option for faulty goods. With a combination like that, no wonder we're a regular award winner.

WE'VE GOT OLYMPIC AMBITIONS

SMC is delighted to be the sole sponsor of Annika Reeder, the British and Commonwealth Gymnastics Champion. This summer, she takes on the world at the 1996 Olympics in Atlanta. By combining grace with power, and flexibility with rigid concentration she aims to produce a medal winning performance. Like Annika, SMC strives to be the best in its field. To achieve that, we have to please the toughest judges of all - our customers.



IS YOUR IQ UP TO WINNING £10

At SMC we like to think that our Infinite custom-built PCs are pretty powerful. But there is one piece of equipment that's faster and more versatile than any of them - and that's the human brain (at least that's what the text books say).

So, here's the SMC IQ Test. Just answer the 5 questions below, return the completed form to us and if you're one of the first 100 people to get all 5 questions correct you'll win £10. Even if the questions give you a headache, please don't forget to complete the personal details section.

QUESTIONS

Q.1 Tick the odd one out
 SIMMS RAM BYTES HERTZ

Q.2 Complete the following sequence
1, 4, 9, 16 _____ ?

Q.3 Find the missing word
GRAND (FATHER) CHRISTMAS
HALFWAY () WIFE

Q.4 Insert the missing item
286, 386SX, _____ 486SX, 486DX

Q.5 Which is the odd one out ?
 EVE BOOK NOON
 MADAM PEEP

Title _____ Name _____

Address _____

_____ Post Code _____

Tel: _____

Fax: _____

Return this entry form to: SMC Computers plc, FREEPOST 1300
253-257 Farnham Road, Slough, Berkshire SL2 1HA.

No purchase necessary. One entry per household. This competition is not open to anyone under 18, employees of SMC Computers, their agents or anyone else connected with the running of the competition. No correspondence will be entered in to. The judges' decision is final. The winner will be notified by post. Competition ends May 20th 1996. Not available in Eire. All entrants will be added to the SMC database for future mailings.

IF YOUR FUTURE DEPENDS ON IT

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SMC ANNOUNCES THE VERY PERSONAL COMPUTER



P133 NETWORK FILE SERVER Ex VAT £1859 Inc VAT £2184.33

The power at the heart of your network. This PC offers total data security and comes with a full tower case that enables complete expandability.

- Pentium 133MHz CPU
- 16Mb RAM
- 2Gb DAT Drive
- 2 Gb Fast SCSI-2 Hard Drive
- PCI Combo Network Card

VIDEO PROCESSING STATION Ex VAT £1089 Inc VAT £1279.58

Produce and edit your own video library and presentations using your VCR, camcorder and computer generated images and sounds with this professional-style video editing suite.

- Pentium 90MHz CPU
- 8Mb RAM
- Special AV 1Gb Hard Drive
- 16 bit SoundBlaster Card
- Creative Labs VideoBlaster RT300
- TV Coder Hardware

MIDI MUSIC MACHINE Ex VAT £859 Inc VAT £1009.33

For every budding Beethoven (or Blur soundalike). Create, edit and play-back your own compositions, with or without a MIDI instrument, using Windows based software.

- Pentium 75MHz CPU
- 8Mb RAM
- Yamaha speakers (High-fidelity)
- 32-Voice Sound Card (Roland & General MIDI compatible)

CREATIVE MULTIMEDIA Ex VAT £849 Inc VAT £997.58

Take your first steps into the exciting world of multimedia with probably the best value for money PC around!

- Pentium 75MHz CPU
- 8Mb RAM
- Creative Labs 6 speed CD-ROM Drive
- 16 bit SoundBlaster Card
- Speakers
- 2Mb Diamond Stealth 64 PCI graphics card

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CUSTOMER CARE FAX
01753 535175

Pre-building a standard range of computers, in the hope that one fits the bill, goes against everything we believe in. We like you to tell us what you want. All SMC PCs undergo a series of rigorous tests. This includes a 48 hour burn-in period. And when the tests are complete a second engineer double-checks the system, just for safety's sake. All come with a 5 year warranty - with on-site maintenance for the first 12 months. Better still, this custom build service costs you absolutely nothing.

Here's a selection of some recently built Infinite PCs. If one of them meets your needs that's great. If not, just fill in the form on the back page of this brochure, fax or post it to us, and we'll send you a no-obligation quotation ASAP. If you don't know what you want, just call. We'll only be too happy to help.



CHOOSE YOUR MONITOR

To give you an even wider choice Infinite systems are listed without monitors. Select your preferred display from our range overleaf.

TELECOMMUNICATIONS CENTRE Ex VAT £849 Inc VAT £997.57

This high-performance PC gives you an advanced answerphone, fax and modem all-in-one with the capability of handling telephone calls whilst you work in another application.

- Pentium 75MHz CPU ● 8Mb RAM ● Creative Labs 16-bit Sound Card
- 28.8 Fax Modem

WINDOWS POWER PLUS WORKSTATION Ex VAT £989 Inc VAT £1162.08

Engineered specifically to get the most from your Windows software this system will make your Windows applications move like lightning.

- Pentium 100MHz CPU ● 16Mb RAM ● Quad Speed CD-ROM Drive
- 1Gb EIDE Hard Drive ● 2Mb Matrox Millennium Graphics Card

5 YEAR WARRANTY ON ALL CUSTOM BUILT SYSTEMS



ALL SYSTEMS ARE SUPPLIED WITH:

- PCI Motherboard, 1Mb Graphics & EIDE Controller
- Fast Serial and Parallel Ports ● RAM upgradeable to 128Mb
- 540 Mb EIDE Hard Disk ● Full Documentation

STANDARD COMPONENTS UNLESS OTHERWISE STATED

SMALL BUSINESS SYSTEM Ex VAT £529 Inc VAT £621.58

This system is ideal for word processing, accounts and spreadsheets. Future business growth is easily accommodated in this industry-standard machine.

- 486DX2 66MHz CPU ● 4Mb RAM ● 540Mb Hard Drive ● Fully upgradeable

INTERNET SPECIAL Ex VAT £769 Inc VAT £903.58

Join the 'Information Superhighway' with our net surfer. This machine's combined features make it an ideal way to join the fastest growing communications network in the world.

- 486 100MHz CPU ● 8Mb RAM ● 28.8 Fax Modem ● Internet Software

THE HOME OFFICE Ex VAT £1029 Inc VAT £1209.08

Handle all your work from the comfort of your own home.

- Pentium 100MHz CPU ● 8Mb RAM ● 1Gb Hard Drive ● Tape Back-Up
- Quad Speed CD-ROM Drive ● 28.8 Fax Modem

EASY DTP Ex VAT £829 Inc VAT £974.08

All you need to create professional quality documents quickly and easily.

- Pentium 90MHz CPU ● 8Mb RAM ● 850Mb Hard Drive ● Quad Speed CD-ROM Drive
- Microsoft Publisher & Works ● CD inc 10,000 Clipart images

P120 GAMES MACHINE Ex VAT £1159 Inc VAT £1361.83

Serious performance for the serious game player.

- Pentium 120MHz CPU ● 16Mb RAM ● 1Gb Hard Drive ● 2Mb DRAM Graphics Card
- Quad Speed CD-ROM Drive ● SoundBlaster WaveTable Sound Card ● Speakers ● Joystick ● 13 software titles including: Dark Forces, Full Throttle, FX Fighter and FIFA Soccer

ON ALL SYSTEMS



ALL PENTIUM-BASED SYSTEMS NOW INCLUDE PIPELINE BURST CACHE AS STANDARD

CHOOSE EITHER WINDOWS 3.11 OR WINDOWS 95

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SALES FAX
01753 524443



**SPECIFICATION UP 25%.
PRICE DOWN £180.**



THE NEW P166 OLYMPUS II ONLY £2119 Ex VAT
Inc VAT
£2489.83

YOU NAME IT, SMC MAKE IT.

If the tailor-made systems shown here don't suit your needs, don't worry. Simply turn to the back of this brochure and use the 'SPECIFY YOUR OWN INFINITE PC' form to tell us exactly what you want. Isn't it refreshing to find a company that gives you real freedom of choice.



SMC Computers is a member of the Confederation of Maintenance Protection

This means that, in addition to obtaining a high-quality system built exactly to your requirements, you have an on-site warranty insured against the failure of any participant and unrivalled peace of mind when choosing your system.



**NO HIDDEN EXTRAS
FROM SMC**

Prices in RED Exclude VAT
Prices in Black Include VAT

Last month we took the Olympus I and improved its performance by 25%. This month, we've taken £180 off the price. That's a further 7.5% off the selling price. So now the Olympus II is market leader on two fronts. Specification and value for money.

Take a close look and you'll see why it's achieved a Winstone '96 rating of 90.

- Intel Pentium 166MHz processor
- Intel Endeavour motherboard
- 2Mb WRAM Matrox Millennium Graphics Card
- 6 Speed CD-ROM
- Pipeline Burst Cache
- 17" IIYAMA MF-8617E monitor - 0.26mm dot pitch, 1280 x 1024 resolution
- 16Mb EDO memory
- Two Seagate ST51270A 1.2Gb Drives.

That's the P166 Olympus II. Scorching performance at a price that won't burn a hole in your pocket. True to our tailor-made philosophy you can alter the spec. We just think that improving the Olympus II would be a Herculean task.

THE WINSTONE RATING

The Winstone Rating has been developed by Ziff Davis created to give customers the most comprehensive benchmark test of a PC's performance.

Winstone 96 assesses a system's performance by running the 13 most commonly used Windows based applications and asking it to handle real world tasks. Winstone 96 times how long the PC takes to complete these tasks. It then compares these times with those achieved by a base system. The result is a weighted overall score. The higher the score, the quicker the machine.

You can select any of the monitors when purchasing a complete system.

Just add the price to the system price.

MONITORS

Inc VAT

SONY

CPD155F2 - 15 inches, 0.25mm dot pitch, 1280 x 1024 Max. res	£304	£357.20
GDM17SE2 - 17 inches, 0.25mm dot pitch, 1600 x 1200 Max. res	£749	£880.08
GDM17SF2 - 17 inches, 0.26mm dot pitch, 1280 x 1024 Max. res	£509	£598.08
GDM20SE1 - 20 inches, 0.30mm dot pitch, 1600 x 1200 Max. res	£1299	£1526.33

NEW

IIYAMA

MF-8617E - 17 inches, 0.26mm dot pitch, 1280 x 1024 Max. res	£485	£569.88
MT-9017E - 17 inches, 0.25mm dot pitch, 1600 x 1200 Max. res	£549	£645.08
MF-8221E - 21 inches, 0.28mm dot pitch, 1600 x 1200 Max. res	£1099	£1291.33
MT-9021E - 21 inches, 0.30mm dot pitch, 1600 x 1200 Max. res	£1179	£1385.33

AOC

AOC4NLR - 14 inches, 0.28mm dot pitch, 1024x768 Max. res	£159	£186.83
AOC5LLR - 15 inches, 0.28mm dot pitch, 1280x1024 Max. res	£229	£269.08
AOC7CLR - 17 inches, 0.28mm dot pitch, 1280x1024 Max. res	£399	£468.83

GOLDSTAR

GS1505DM - 15 inches, 0.28mm dot pitch, 1024x768 Max. res	£205	£240.88
GS1527DM - 15 inches, 0.28mm dot pitch, 1280x1024 Max. res	£242	£284.35
GS1727DM - 17 inches, 0.28mm dot pitch, 1280x1024 Max. res	£405	£475.88
GS2010DM - 20 inches, 0.28mm dot pitch, 1600x1280 Max. res	£845	£992.88

NEW

PANASONIC

TX1733 - 17 inches, 0.27mm dot pitch, 1280x1024 Max. res	£449	£527.58
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TAXAN

K17EV885 - 17 inches, 0.26mm dot pitch, 1600x1200 Max. res	£559	£656.83
K20E1080 - 20 inches, 0.28mm dot pitch, 1600x1200 Max. res	£825	£969.38

NEW

PHILIPS

14C - 14 inches, 0.28mm dot pitch, 1024 x 768 Max. resolution	£157	£184.48
15B - 15 inches, 0.28mm dot pitch, 1024 x 768 Max. resolution	£249	£292.58
17A - 17 inches, 0.27mm dot pitch, 1280 x 1024 Max. resolution	£657	£771.98
20B - 20 inches, 0.28mm dot pitch, 1280 x 1024 Max. resolution	£789	£927.08
20C - 20 inches, 0.31mm dot pitch, 1280 x 1024 Max. resolution	£699	£821.33
20T - 20 inches, 0.26mm dot pitch, 1280 x 1024 Max. resolution	£1097	£1288.98
21B - 21 inches, 0.28mm dot pitch, 1600 x 1200 Max. resolution	£1315	£1545.13

All the above monitors are non-interlaced unless otherwise stated. All monitors are Energy Star compliant.



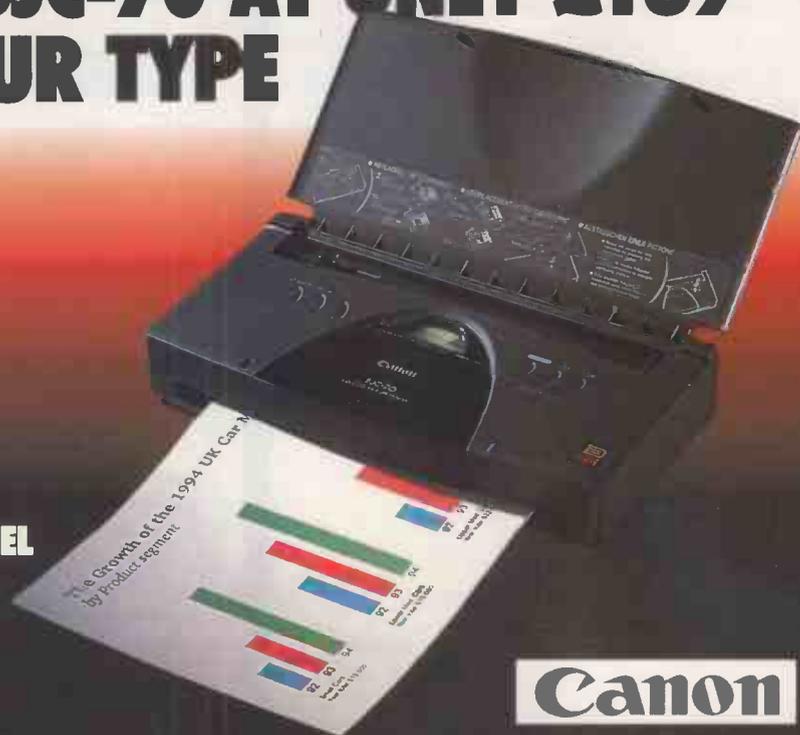
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- **SMALLEST COLOUR BUBBLE JET PRINTER**
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- **2 PAGES PER MINUTE**
- **LCD PRINTER CONTROL PANEL**
- **BUILT-IN SHEET FEEDER**



Canon

Ex VAT £189 Inc VAT £222.08

LASER PRINTERS

Ex VAT Inc VAT

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Hewlett Packard- 5L 600dpi, 4ppm	£343	£403.03
Hewlett Packard- 5P 600dpi, 6ppm	£579	£680.33
Hewlett Packard- 5MP 600dpi, 6ppm	£715	£840.13
Hewlett Packard- 4+ 600dpi, 12ppm	£895	£1051.63



**HEWLETT
PACKARD**

HP LASERJET 5L

600dpi, 4ppm **£343** **£403.03**

CANON

Canon LBP460- 600dpi, 4ppm	£269	£316.08
Canon LBP1260- 600dpi, 12ppm	£733	£861.28

EPSON

Epson EPL5500 - 600dpi, 6ppm	£355	£417.13
Epson EPL9000 (A3) - 600dpi, 8ppm	£1075	£1263.12
Epson EPL9000PS (A4) - 600dpi, 8ppm	£1449	£1702.58

BROTHER

Brother HL630 - 300dpi, 6ppm	£288	£338.40
Brother HL631 - 300dpi, 6ppm	£325	£381.88
Brother HL660 - 600dpi, 6ppm	£434	£509.95
Brother HL1260 - 600dpi, 12ppm	£839	£985.83



brother. HL 660 **£439** **£515.83**

600dpi, 4ppm, Enhanced Memory Management
35 Scalable Fonts, 2Mb RAM,
Straight Paper Path Technology

OKI

OKi OL600EX - 600dpi, 6ppm	£288	£338.40
OKi OL610EX - 600dpi, 6ppm	£369	£443.58
OKi OL810EX - 600dpi, 8ppm	£645	£757.87

PANASONIC

Panasonic KXP6100GD1 - 300dpi, 6ppm	£262	£307.85
Panasonic KXP6150 - 300dpi, 6ppm	£319	£374.82

INKJET PRINTERS

Ex VAT Inc VAT

HEWLETT PACKARD

Hewlett Packard DeskJet 340 - 600dpi, 3ppm	£166	£195.05
Hewlett Packard DeskJet 600 - 600dpi, 4ppm	£144	£169.20
Hewlett Packard DeskJet 660C - 600dpi, 4ppm	£239	£280.83
Hewlett Packard DeskJet 850C - 600dpi, 6ppm	£315	£370.13
Hewlett Packard DeskJet 1600C - 600dpi, 8ppm	£815	£957.63



**HEWLETT
PACKARD**

Officejet LX - Inkjet Printer, Fax, Foto Copier, Scanner **£485** **£569.88**

CANON

Canon BJ30 - 360dpi, 277cps	£134	£157.45
Canon BJ70C - 360dpi, 376cps	£189	£222.08
Canon BJ200EX - 360dpi, 3ppm	£149	£175.08
Canon BJ230 - 360dpi, 248cps	£235	£276.13
Canon BJC4000 - 360dpi, 248cps	£215	£252.63
Canon BJC610E - 720dpi, 1ppm (colour)	£309	£363.07
Canon BJ300 - 360dpi, 360cps (On site warranty)	£349	£410.08
Canon BJ330 - 360dpi, 360cps (On site warranty)	£389	£457.08
Canon BJC800 - 360dpi, 600cps (On site warranty)	£895	£1051.62

EPSON

Epson Stylus 820 - 720dpi, 2.5ppm	£155	£182.13
Epson Stylus IIs - 729dpi, 2.5ppm	£169	£198.58
Epson Stylus Pro - 720dpi, 3ppm	£345	£405.38
Epson Stylus Pro XL(A3) - 720dpi, 3ppm	£797	£936.48
Epson Stylus Pro II - 720dpi, 4ppm	£258	£303.15

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PRINTER CONSUMABLES

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LASER TONER CARTRIDGES

HEWLETT PACKARD

Hewlett Packard LaserJet II/III/IIIi/IIIid - HP92295A	£49	£52.58
Hewlett Packard LaserJet IIP Plus/IIIP - HP92275A	£59	£69.33
Hewlett Packard LaserJet 4V/4MV - HP3900A	£109	£128.08
Hewlett Packard LaserJet IIIsi/4si - HP92291A	£89	£104.58
Hewlett Packard LaserJet 4/4M - HP92298A	£78	£91.65
Hewlett Packard LaserJet 4L/4ML/4P/4MP - HP92274A	£55	£64.63
Hewlett Packard LaserJet 5L - HPC3906A	£45	£52.88
Hewlett Packard LaserJet 5P/5MP - HPC3903A	£65	£76.38

BROTHER

Brother HL 630/631/660 - BR7833	£23	£27.03
Brother HL 1260 - BREP/ED	£73	£85.78

PANASONIC

Panasonic KXP4450/51/55 - PANKXP450	£25	£29.38
Panasonic KXP4420 - PANKXP451	£29	£34.08
Panasonic KXP4410/30/40 - PANKXP453	£35	£41.13
Panasonic KXP4400/5400 - PANKXP455	£12	£14.10

INKJET/BUBBLEJET INK CARTRIDGES

HEWLETT PACKARD

Hewlett Packard DeskJet 660C - HP51629A, Black	£19	£22.33
Hewlett Packard DeskJet 660C - HP51649A, Colour	£24	£28.20
Hewlett Packard DeskJet 850C/1600C - HP51645A, Black	£19	£22.33
Hewlett Packard DeskJet 850C - HP51641A, Colour	£19	£22.33
Hewlett Packard DeskJet 1200C/1600C - HP51640A, Black	£19	£22.33
Hewlett Packard DeskJet 1200C/1600C - HP51640C, Cyan	£21	£24.68
Hewlett Packard DeskJet 1200C/1600C - HP51640M, Magenta	£21	£24.68
Hewlett Packard DeskJet 1200C/1600C - HP51640Y, Yellow	£21	£24.68

CANON

Canon BJC4000 - CANBC21, All colours	£35	£41.13
Canon BJ10e/BJ20 - CANBC01, Black	£15	£17.63
Canon BJ200/BJ230 - CANBC02, Black	£17	£19.98
Canon BJC600/BJC600e - CANBJ1201BK, Black	£9	£10.58
Canon BJC600/BJC600e - CANBJ1201C, Cyan	£9	£10.58
Canon BJC600/BJC600e - CANBJ1201M, Magenta	£9	£10.58
Canon BJC600/BJC600e - CANBJ1201Y, Yellow	£9	£10.58

DOT MATRIX PRINTERS

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EPSON

Epson LX300 - 80 columns, 9 pin, 264cps, 4Kb Buffer	£95	£111.63
Epson FXB70 - 80 columns, 9 pin, 342cps, 24Kb Buffer	£239	£280.83
Epson FX1170 - 136 columns, 9 pin, 342cps, 24Kb Buffer	£295	£346.63
Epson LQ300 - 80 columns, 24 pin, 240cps, 8Kb Buffer	£119	£139.83
Epson LQ570 - 80 columns, 24 pin, 210cps, 8Kb Buffer	£208	£244.40
Epson LQ870 - 132 columns, 24 pin, 275cps, 8Kb Buffer	£365	£428.88
Epson LQ1070 - 132 columns, 24 pin, 210cps, 8Kb Buffer	£292	£343.10
Epson LQ2170 - 136 columns, 24 pin, 240cps, 8Kb Buffer	£465	£546.38

PANASONIC

Panasonic KXP1150 - 80 columns, 9 pin, 240cps, 4Kb Buffer	£89	£104.58
Panasonic KXP2023 - 80 columns, 24 pin, 192cps, 14Kb Buffer	£109	£128.08
Panasonic KXP2135 - 80 columns, 24 pin, 320cps, 20Kb Buffer	£124	£145.70
Panasonic KXP3626 - 136 columns, 24 pin, 300cps, 40Kb Buffer	£259	£304.33

SCANNERS

Inc VAT

HEWLETT PACKARD

HP ScanJet 4S - Serial interface, Feeder, 256 grey mono, 200dpi	£165	£193.88
HP ScanJet 4P - SCSI, 300dpi	£319	£374.82
HP ScanJet 4C - SCSI interface, Feeder, 30-bit colour, 600dpi	£595	£699.13

EPSON

Epson GTX5000 - Parallel interface, Flatbed, 24-bit colour, 400dpi	£298	£350.15
Epson GTX5000 - SCSI interface, Flatbed, 24-bit colour, 400dpi	£349	£410.08
Epson GTXB500 - Parallel interface, Flatbed, 24-bit colour, 400dpi	£470	£552.25
Epson GTXB500 - SCSI interface, Flatbed, 24-bit colour, 400dpi	£545	£640.38

EPSON GTX9000

Includes Adobe Photoshop
Xerox Management Software - (Including OCR)

£815

£957.63



Epson GT18500 (inc Adobe Photoshop), SCSI interface, Flatbed, 24bit col, 400dpi	£719	£844.83
Epson GTX9000 - Parallel interface, Flatbed, 30-bit colour, 600dpi	£568	£667.40
Epson GTX9000 - SCSI interface, Flatbed, 30-bit colour, 600dpi	£649	£762.58
Epson GT19000 (inc Adobe Photoshop), SCSI interface, Flatbed, 30bit col, 600dpi	£815	£957.63
Logitech Scanman 256 - XT/AT Card interface, Handheld, 256 Grey Mono, 400dpi	£59	£69.33
Logitech Scanman Easy Touch - Parallel interface, Handheld, 256 Grey Mono, 400dpi	£99	£116.33
Logitech Scanman Colour - XT/AT Card, Handheld, 24-bit colour, 400dpi	£115	£135.13
Logitech PageScan Colour - Parallel, 24-bit colour, 200dpi	£269	£316.08



SCANMAN easy touch

Parallel interface, Handheld, 256
Grey Mono, 400dpi £99 £116.33



HP SUPPORT PACKS

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DeskJet/DeskWriter Mono - H5461A	£40	£47.00
DeskJet Portables - H5463A	£40	£47.00
OfficeJet - H5470A	£102	£119.85
DeskJet/DeskWriter Colour - H5466A	£65	£76.38
1200C/LJ, 4L, ML/DJ 1600C - H5473A	£105	£123.38
PointJet - H5473A	£105	£123.38
5P/5MP - H5476	£142	£166.85
LaserJet 4 Plus/4M Plus - H5479A	£180	£211.50
LaserJet 4V/4MV - H5482A	£235	£276.13
Colour LaserJet - H5505A	£1280	£1504
LaserJet 4Si/4Si MX - H5492A	£530	£622.75
DesignJet 750/755 - H5729A	£599	£703.83
DesignJet 230/250C/600/650C - H5489A	£420	£493.50

SCANNERS

ScanJet Mono - H5468A	£85	£99.88
ScanJet Colour - H5475A	£140	£164.50



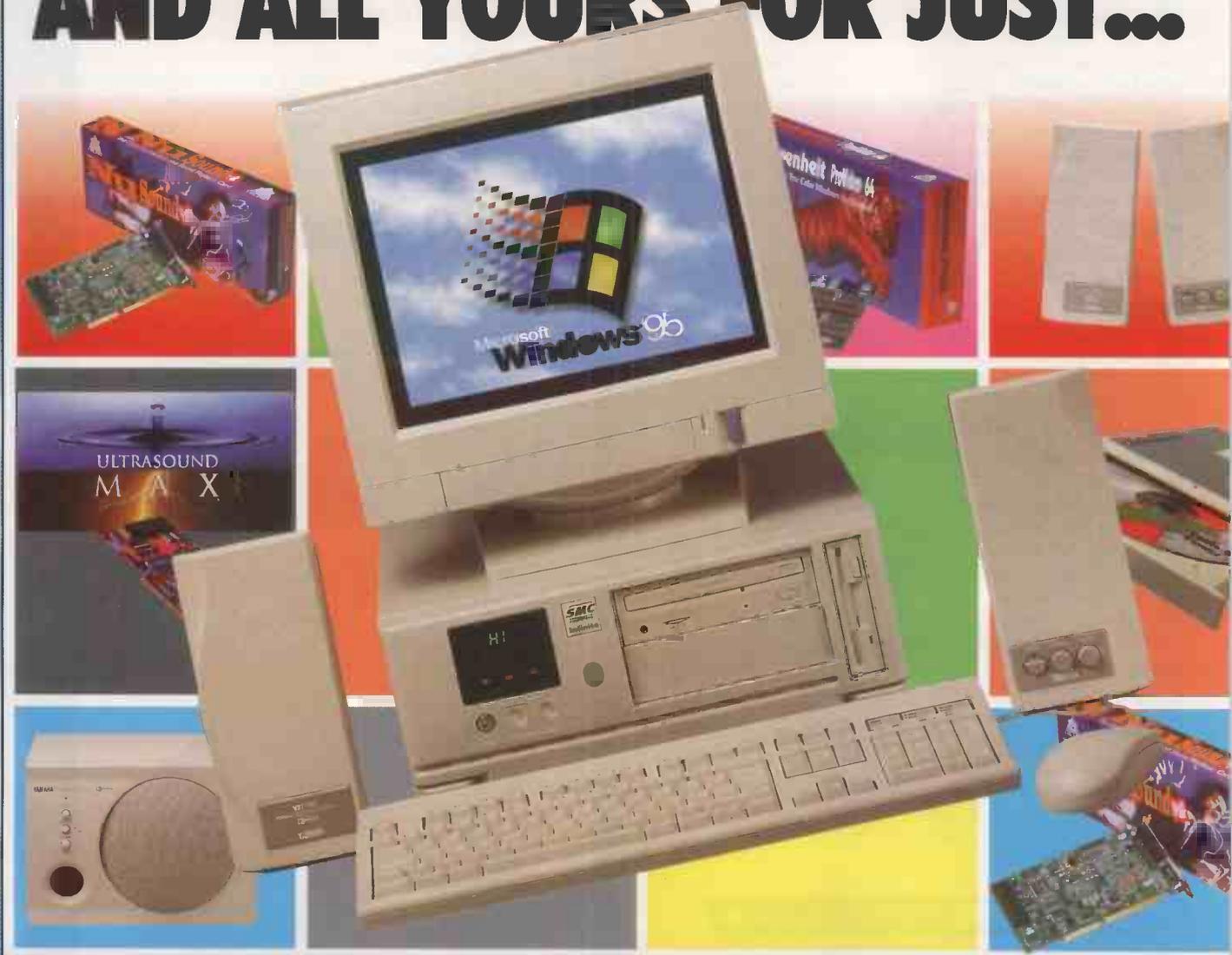
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VideoBlaster RT300 - Display/capture real time video, compression up to 30fps, built-in i750, 320x240 at 30fps	£199	£233.83
VideoBlaster MP400 - Full MPEG 1 format playback, CD video playback to 32,000 colours	£109	£128.08
TV Coder (external) - Display VGA screens on TV or video, works with desktops and laptops, 800x600, 64,000 colours	£108	£126.90

NEW 3D GRAPHICS CARDS

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DIAMOND EDGE 3D

Has built-in sound card with wavetable and MPEG playback capability plus free games.

Diamond Edge 2120XL - 1Mb EDO DRAM, STG2000 processor	£179	£210.33
Diamond Edge 2200XL - 2Mb EDO DRAM, STG2000 processor	£214	£251.45
Diamond Edge 3240XL - 2Mb VRAM, NVIDIA - NV1 processor	£275	£323.12
Diamond Edge 3400XL - 4Mb VRAM, NVIDIA - NV1 processor	£383	£450.03

NB: These Graphics Cards are optimised for Windows 95 applications and DOS applications running from Windows 95.

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Discovery Quad Speed - SB16 IDE Sound Card, Quad Speed CD Drive <i>Software includes Win 95 Tutorial, How To...Computers, Accent, Brief History of Time, Nascar, Global Language, Funschool, Virtual Pool, DK Title.</i>	£169	£198.58
GameBlaster Value - AWE32 Value Sound Card, Dual Speed CD Drive <i>Software includes Destination Saturn, Doom (Episode 1), Heretic (Episode 1), Warcraft SE, Nascar, Theme Park - plus FX2000 Joystick.</i>	£135	£158.63
GameBlaster 32 Quad Speed - SB32 Sound Card, Quad Speed CD Drive <i>Software includes Nascar, Virtual Pool, FIFA Soccer, Slipstream, FX Fighter, Retribution, Dark Forces, Full Throttle, Magic Carpet, Little Big Adventure, Alone in the Dark I & II, Theme Park - plus FX2000 Joystick.</i>	£215	£252.63
"Disney Kit" - SB16 Plug 'n' Play, 4 x Speed CD Drive, <i>Software includes Lion King Animated Storybook on CD ROM for Windows, Lion King Print Studio for Windows, Lion King Screen Scenes for Windows</i>	£175	£205.63
Performance 32 6 x Kit - SB32 Plug 'n' Play, 6 x Speed CD Drive, CS 100 Speakers, Telex Microphone	£259	£304.33

NEW

NEW

DIAMOND

Multimedia Kit 8000 - Diamond 16 bit, 32 voice Plug & Play SB 16 compatible Sound Card, Eight Speed CD Drive <i>Software includes Rebel Assault, Myst, Sim City 2000, Magic Carpet, Compton's Interactive Encyclopaedia.</i>	£449	£527.58
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NB: All kits are subject to change by the manufacturers. All kits include speakers, cables and installation guides.

GRAPHICS CARDS

Inc VAT

VLB

Diamond Stealth 64 Video, 2Mb VRAM - 24 bit True Colour, Full Screen Video, 30 FPS	£169	£198.58
Diamond Stealth 64 Video, 4Mb VRAM - 24 bit True Colour, Full Screen Video, 30 FPS, upto 1600 x 1200	£265	£311.38
Orchid Kelvin MPEG, 1Mb DRAM - 1280 x 1024 Full Screen Video, 24 bit True Colour, 30 FPS, Audio & Video Playback	£89	£104.58
Orchid Kelvin MPEG, 2Mb DRAM - 1280 x 1024 Full Screen Video, 24 bit True Colour, 30 FPS, Audio & Video Playback	£125	£146.86
Orchid Fahrenheit Pro Video, 2Mb VRAM - Digital Video Disply Full Screen, 30 FPS, 1024 x 768 Video, 1280 x 1024 Graphics, Audio & Video Playback	£159	£186.83
Orchid Fahrenheit Pro Video, 4Mb VRAM - Digital Video Disply Full Screen, 30 FPS, 1024 x 768 Video, 1280 x 1024 Graphics, Audio & Video Playback	£189	£222.08

PCI

Diamond Stealth 64 1Mb DRAM - 1280 x 1024 upto 16.7 million colours @ 1152 x 864, Refresh 120Hz	£79	£92.83
Diamond Stealth 64 2Mb DRAM - 1280 x 1024 upto 16.7 million colours @ 1152 x 864, Refresh 120Hz	£105	£123.38
Diamond Stealth 64 Video 2Mb VRAM - 24 bit True Colour Full Screen, Video Scaling, 30 FPS upto 1600 x 1200	£175	£205.68
Diamond Stealth 64 Video 4Mb VRAM - 24 bit True Colour Full Screen, Video Scaling, 30 FPS upto 1600 x 1200	£267	£313.73
Orchid Kelvin Video, 1Mb DRAM	£77	£90.48
Orchid Kelvin Video, 2Mb DRAM	£125	£146.88
Orchid Fahrenheit Pro Video, 2Mb VRAM - Digital Video Disply Full Screen, 30 FPS, 1024 x 768 Video, 1280 x 1024 Graphics, Audio & Video Playback	£159	£186.83
Orchid Fahrenheit Pro Video, 4Mb VRAM - Digital Video Disply Full Screen, 30 FPS, 1024 x 768 Video, 1280 x 1024 Graphics, Audio & Video Playback	£189	£222.08
Diamond Edge 3D (Win'95 Only), 1Mb DRAM - 1024 x 768, upto 1600 x 1200, Built-in soundcard, Support for Sega Saturn Game Pads	£179	£210.33
Diamond Edge 3D (Win'95 Only), 2Mb DRAM - 1024 x 768, upto 1600 x 1200, 16 million Colours, Built-in soundcard, Support for Sega Saturn Game Pads, 16 million Colours	£214	£251.45
Diamond Edge 3D (Win'95 Only), 2Mb VRAM - 1024 x 768, upto 1600 x 1200, Built-in soundcard, Support for Sega Saturn Game Pads	£275	£323.13
Diamond Edge 3D (Win'95 Only), 4Mb VRAM - 1024 x 768, upto 1600 x 1200, Built-in soundcard, Support for Sega Saturn Game Pads	£383	£450.03
Matrox MGA Millennium 2Mb VRAM	£205	£240.88
Matrox MGA Millennium 4Mb VRAM - upto 16 bit True Colour, Full Scaling of images	£295	£346.63
Matrox MGA Millennium 8Mb VRAM - upto 1600 x 1200 16.7 million colours, 120Mb/sec, Processing-Video	£POA	£POA

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CD ROM & PD DRIVES

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EIDE/ATAPI Interface

Goldstar GCD-540B - Quad Speed, 190ms, 600Kb/s, 128Kb Cache, Tray loading, Audio cable	Internal.....£45	£52.88
Mitsumi FX-400 - Quad Speed, 250ms, 600Kb/s, 256Kb Cache, Tray loading, Audio cable	Internal.....£45	£52.88
NEC CDR-273 - Quad Speed, 190ms, 600Kb/s, Tray loading	Internal.....£45	£52.88
Panasonic Quad Speed CR-581	Internal.....£39	£45.83
Pioneer DR-UA124X - 4.4 Speed, 150ms, 614Kb/s, 128Kb Cache, Tray loading, Audio cable	Internal.....£45	£52.88
Creative Blaster CD 6x - Six Speed, 220ms, 900Kb/s, 256Kb Cache, Tray loading, Audio/Data cable	Internal.....£79	£92.83
Axtech Zeta 6x - Six Speed, 225ms, 1050Kb/s, 256Kb Cache, Tray loading	Internal.....£69	£81.08
NEW Goldstar CD ROM - GLD-R560B Six Speed, 160 ms, 900Kb/s, Tray loading, Manual, Drivers, Audio cable	Internal.....£69	£81.08
NEW Goldstar CD ROM - GCD-R580B Eight Speed, 150 ms, 1.2Mb/s, Tray loading, Manual, Drivers, Audio cable	Internal.....£109	£128.08
NEW Mitsumi CD ROM - FX600D Six Speed, 160 ms, 900Kb/s, Tray loading, Manual, Drivers, Audio cable	Internal.....£79	£92.83

SCSI INTERFACE

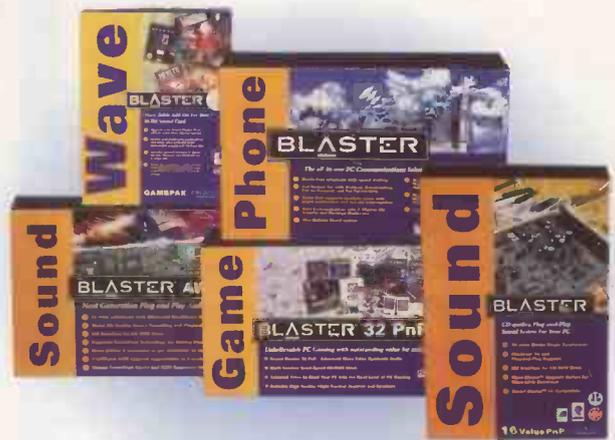
NEC 6x - Six Speed, 145ms, 900Kb/s, 256Kb Cache, Caddy loading	Internal.....£219	£257.33
	External.....£345	£405.38
Panasonic CR-504B - Quad Speed, 190ms, 612Kb/s, 256Kb Cache, Tray loading	Internal.....£92	£108.10
Pioneer DR-U124X - 4.4 Speed, 150ms, 600Kb/s, Tray loading, Audio cable	Internal.....£155	£182.13
Pioneer DRM-624X 6 disc - 4 Speed, 150ms, 600Kb/s, Magazine loading, Audio cable	External.....£339	£398.33
Plextar 4Plex - Quad Speed, 170ms, 600Kb/s, 256Kb Cache, Caddy loading, Data cable	Internal.....£179	£210.33
Plextar 6Plex - Six Speed, 145ms, 900Kb/s, 256Kb Cache, Caddy loading	Internal.....£225	£264.37
	External.....£285	£334.88
Toshiba XM5301x - Quad Speed, 190ms, 600Kb/s, 256Kb Cache, Tray loading	Internal.....£109	£128.08
Toshiba XM3701x - 6.7 Speed, 135ms, 1005Kb/s, 257Kb Cache, Tray loading	Internal.....£169	£198.58
	External.....£249	£292.58

PD DRIVE

Panasonic LF1004 CD/Optical - Quad Speed, 195ms, 600Kb/s, 256Kb Cache, Tray loading, Audio/Data cable	Internal.....£325	£381.88
	External.....£429	£504.08
Optical Media for Panasonic LF1004	Internal.....£39	£45.83
Panasonic LF1000HK Kit CD/Optical - Quad Speed, 195ms, 600Kb/s, 256Kb Cache, Tray loading, Audio/Data cable	Internal.....£365	£428.88
	External.....£469	£551.08

PARALLEL PORT INTERFACE

Backpack quad speed CD ROM from Micro Solutions - 250ms, 700Kb/s max, Tray loading, Data cable	External.....£237	£278.48
Backpack quad speed CD ROM with Microsoft sound - 250ms, 700Kb/s, Tray loading, Data cable	External.....£305	£360.73



SOUND CARDS

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CREATIVE LABS

PhoneBlaster - Integrated message centre, SB16 Sound Card, 28.8bps Modem, IDE CD-ROM interface	£209	£245.58
SB16 Plug 'n Play - 16-bit, Record & Playback, built-in amp, Free Win 3.1/Win 95 Software, Joystick Interface, IDE CD-ROM Interface	£59	£69.53
SB32 Plug 'n Play - 32 Voice WaveTable, upgradeable to 28Mb RAM, Windows 95 Plug 'n Play support, IDE CD-ROM interface	£99	£116.33
AWE32 Plug 'n Play (replaces full pack) - As above plus Windows 3.1x & 95 Software, WaveBlaster adaptor, built-in Adsp, MIDI cable	£149	£175.08
MIDI Blaster - MT32 compatible, can be used on any MIDI device, plays up to 20 notes simultaneously	£92	£108.10
WaveBlaster II - Adds on to SB16 Pro/Awe32, 128 instruments, 6 drum kits, 2Mb ROM sampling	£69	£81.08

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NUSOUND Pnp

Windows 95 Plug 'n Play

Simultaneous Recording and Playback

5 Channel Mixing 46 Special Effects

SoundBlaster Compatible

IDE & Panasonic CD-ROM Interface

£105 Ex VAT £123.38 Inc VAT

WaveBooster - 2Mb sample Wave Effects booster for cards with WaveBlaster connector, supports General & MT32 MIDI	£22	£25.85
WaveBooster 4FX - As above but with 4Mb sample	£33	£38.78

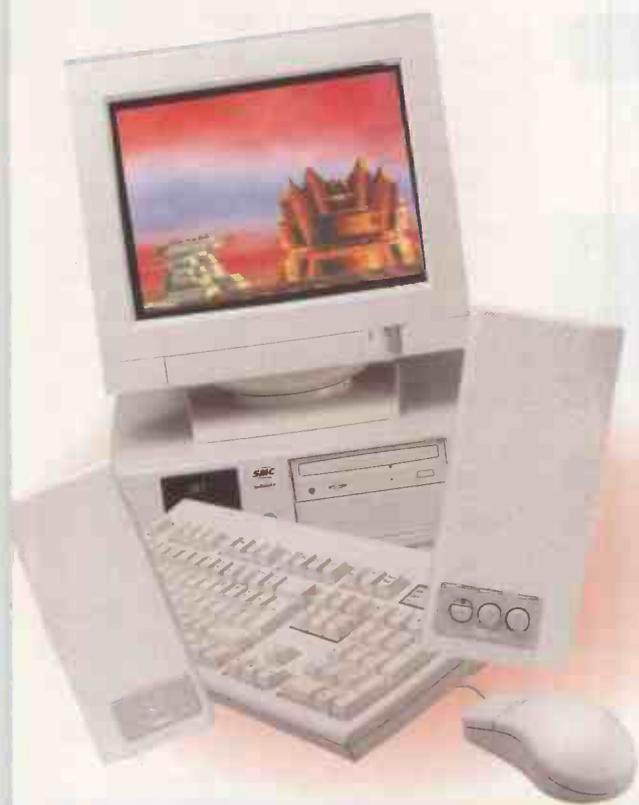
GRAVIS

Ultrasound Plug 'n Play - Upgradeable RAM banks (to 8Mb), DOS & Windows utilities, 100Mb of games and demos, DDSP technology, 32 voice wavetable, 32 digital channels, IDE CD-ROM interface	£109	£128.08
Ultrasound Plug 'n Play Pro - As above plus 512Kb memory	£135	£158.63



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OPTICAL & CD ROM RECORDERS etc. Inc VAT

OPTICAL DRIVES

Fujitsu M2512A - 230Mb, 237Kb cache, 2.1Mb/s, 18ms	Internal.....£289	Internal£339.58
Panasonic LF7304 - 1.5Gb, 512Kb Cache, 1.5Mb/s, 45ms	Internal.....£1459 External£1519	Internal ..£1714.33 External ..£1784.83
Hewlett Packard C1716T Dual Capacity - 650Mb, 512Kb Cache, 1Mb/s, 8.3ms	Internal.....£1379	Internal ..£1620.33
Hewlett Packard C2550A Dual Capacity - 1.3Gb, 1.6Mb/s, 1.6ms	External£1529	External ..£1796.58

OPTICAL MEDIA

230Mb for Fujitsu M2512A	Internal.....£18	Internal£21.15
650Mb for Panasonic LF1004	Internal.....£35	Internal£41.13
1.3Gb HP C1716T, HP C2550A	Internal.....£67	Internal£78.73
1.5Gb for Panasonic LF7304, LF7300B	Internal.....£95	Internal£111.63

CD-ROM RECORDERS

Yamaha CD-100 - Quad Speed, 650Mb, 512Kb Cache, 614Kb/s, 800ms	Internal.....£989 External£1099	Internal ..£1162.08 External ..£1291.33
Philips CDD522 - Dual Speed, 650Mb, 2Mb Cache, 352Kb/s, 1000ms	External£1279	External ..£1502.83
HP SureStore 4020i Kit - Dual Speed Record, Quad Speed Play, 650Mb, 1Mb Cache, 600Kb/s, 800ms	Internal.....£649	Internal ..£762.58
Corel CRC Software - Windows CD recording software. Supports most CD standards	Internal.....£59	Internal£69.33
Blank writeable CDs (10 pack) - 650Mb (74 mins)	Media.....£100	Medio£117.50

CD-ROM JUKEBOXES

Pioneer DRM-624X - 4 Speed, 6 CDs, 1 Drive, 600Kb/s, 150ms	External£339	External£398.33
Pioneer DRM-1804X - Quad Speed, 18 CDs, 3 Drives, 600Kb/s, 300ms	External£1349	External ..£1585.08
Pioneer DRM-5004X - Quad Speed, 500 CDs, 1 Drive (max 4), 600Kb/s, 280ms	External....£13,999	External £16,448.83

SPEAKERS

C&C DSSS8 - 80 watt	£45	£52.88
Creative Labs SBS300 - 10 watt	£69	£81.08

YAMAHA

SS510 SUB WOOFER SPEAKER
£74 Ex VAT £86.95 Inc VAT

Yamaha M10 - 10 watt	£39	£45.83
Yamaha S5510 sub woofer (requires standard speakers) - 25 watt	£74	£86.95

CD ROM ACCESSORIES

EIDE Data Cable for up to 2 drives	£10	£11.75
CD-ROM Caddy (spare drive caddy)	£9	£10.58
Sound cables: NEC	£8	£9.40
Panasonic	£8	£9.40
Toshiba 3x4 for 3xxx series	£8	£9.40
Toshiba 4x4 for 4xxx series	£8	£9.40
Toshiba 4x4 for 5xxx series	£8	£9.40
Gravis Toshiba	£8	£9.40

These cables are only available when purchasing a CD-ROM Drive.



CD-ROM TOWERS

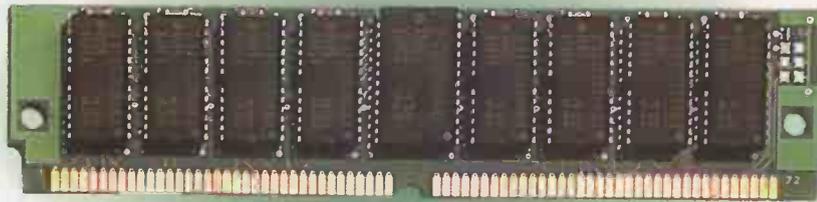
3704SA - Includes 4 Toshiba XM3701B Drives	External£1499	External ..£1761.33
3708SA - Includes 8 Toshiba XM3701B Drives & Special Controller	External£2699	External ..£3171.33

SALES HOTLINE TEL
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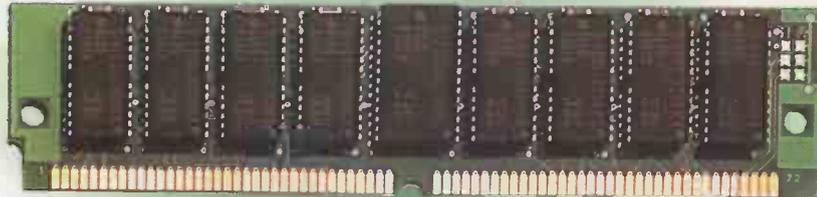
SALES FAX
01753 524443



CAN YOU SPOT THE MEMORY THAT NEEDED TO BE RECALLED...?



72 PIN SIMM ACTUAL SIZE. CHIP CONFIGURATIONS MAY VARY.



...WE DID.

Unfortunately, you can't tell if a memory module is absent-minded just by looking at it.

So, it's reassuring to know that at SMC we haven't forgotten the importance of quality control. By instigating more frequent batch checks and tougher tests we aim to maintain the quality of our goods, and safeguard our hard won reputation for reliability.

Our range of SIMMS and Matched Memory is exhaustive. And because we stock in depth we can guarantee swift delivery times and very competitive prices.

Unlike other suppliers we won't have a convenient memory block if you need our help. All SMC customers have access to a superb level of technical support.

Best of all, you only need to take a glance at our prices to see that you won't pay any extra for an extra special service. In fact, once you've done business with us, we think you'll recall us again and again and again.

SIMMS - 30 PIN

Inc VAT

Note: Standard 9 & 36-bit SIMMS have full parity checking. BP SIMMS simulate normal parity with Logic parity but there may be compatibility problems with some systems.

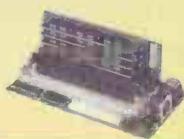
	60ns	70ns	80ns
1Mb			
BP Parity, 1Mb x 9bit, 3 Chip	n/a	£21 £24.68	
Full Parity, 1Mb x 9bit, 3 Chip	£26 £30.56	£22 £25.86	£26 £30.56
Full Parity, 1Mb x 9bit, 9 Chip	£28 £32.98	£25 £29.38	£27 £31.73
4Mb			
BP Parity, 4Mb x 9bit, 3 Chip	n/a	£83 £97.53	
Full Parity, 4Mb x 9bit, 3 Chip	£82 £96.35	£169 £198.58	
Full Parity, 4Mb x 9bit, 9 Chip	£93 £109.28	£77 £90.48	£118 £138.65
16Mb			
BP Parity, 16Mb x 9bit, 9 Chip	n/a	£385 £452.37	

SIMMS CONVERTER

Inc VAT

These converters are supplied with an instruction manual, a lifetime warranty and full technical support. They are suitable for most PCs, require no special tools and are available 'Left' or 'Right' handed for back-to-back fittings.

4 x 30 pin to 1 x 72 pin - Height 2.1"	£29	£34.08
8 x 30 pin to 1 x 72 pin - Height 3.21"	£45	£52.88
2 x 72 pin to 1 x 72 pin - Height 1.7"	£49	£57.58



DIMM savers are also available: Please call for latest prices

SIMMS - 72 PIN

Inc VAT

Note: Standard 9 & 36-bit SIMMS have full parity checking. BP SIMMS simulate normal parity with Logic parity but there may be compatibility problems with some systems.

	60ns	70ns	80ns
1Mb			
Full Parity, 256k x 36bit	n/a	£135 £158.63	
2M			
Full Parity, 512k x 36bit	n/a	£59 £69.33	
4Mb			
Non Parity, 1Mb x 32bit	n/a	£139 £163.32	£105 £123.38
BP Parity, 1Mb x 36bit	n/a	£65 £76.38	
Full Parity, 1Mb x 36bit	£65 £76.38	£67 £78.73	£95 £111.63
8Mb			
Non Parity, 2Mb x 32bit	n/a	£79 £92.83	
BP Parity, 2Mb x 36bit	n/a	£119 £139.83	
Full Parity, 2Mb x 36bit	£125 £146.87	£119 £139.83	
16Mb			
Non Parity, 4Mb x 32bit	n/a	£185 £217.38	
BP Parity, 4Mb x 36bit	n/a	£245 £287.88	
Full Parity, 4Mb x 36bit	£259 £304.33	£249 £292.58	
32Mb			
Non Parity, 8Mb x 32bit	n/a	£419 £492.33	
Full Parity, 8Mb x 36bit	n/a	£455 £534.63	
EDO Memory			
4Mb, Non Parity, 1Mb x 32bit	£53	£62.28	
8Mb, Non Parity, 2Mb x 32bit	£98	£115.16	
16Mb, Non Parity, 4Mb x 32bit	£229	£269.08	
32Mb, Non Parity, 8Mb x 32bit	£569	£668.57	£POA

EDO Memory requires Motherboard support.

SMC PROVIDES A 7 DAY NO QUIBBLE REFUND GUARANTEE

This does not apply to PC systems, printers, software and carriage charges. E&OE. Prices and specifications subject to change without notice. Please ask our advice before ordering to avoid any foreseeable incompatibility problems. All trademarks acknowledged. SMC Computers PLC terms and conditions on request. This does not effect your statutory rights. Prices exclude delivery.

NO HIDDEN EXTRAS FROM SMC

Prices in RED Exclude VAT
Prices in Black Include VAT

Making the perfect match

Matched memory modules from SMC are designed to the original manufacturers specifications. So they will slot perfectly into your PC with the minimum of fuss. It's important to remember that although some system modules may look similar they are generally specifically configured for a particular system. All our matched memory upgrades are supplied with a full 5 year warranty. When ordering don't forget to ask about our free anti-static wrist straps to ensure safer installation.



Right across the board

We can supply system matched memory for PCs built by the world's leading manufacturers - including AST, Ambra, Apple, Apricot, Canon, Compaq, Dell, Elonex, Escom, Gateway, Hewlett Packard, IBM, NEC, Toshiba and Zenith. Don't worry if your PC isn't listed here. We cater for many more systems and our memory module experts will be only too happy to help.

MATCHED MEMORY - IBM

Inc VAT

SYSTEM	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb
Ambra series, Hurdla 486			£99 £116.33		£345 £405.38		
Sprinto 486, Enterprise 486			£99 £116.33		£345 £405.38		
Hurdla 386SX, Sprinta 386	£57 £66.98			£196 £230.30	£345 £405.38		
Enterprise 386 slim	£57 £66.98			£196 £230.30	£345 £405.38		
Ambra Trekka 386SL	£73 £85.78						
Ambra Sprinta II			£87 £102.23	£188 £220.90	£415 £487.63		
Aptiva 300, 500, 7000 series			£39 £45.83	£79 £92.83	£185 £217.38	£419 £492.33	
PS/1 286	£69 £81.08						
PS/1 Consultant 2133-G11/13, 2155-G14, Essential, Expert M	£77 £90.48		£87 £102.23	£188 £220.90			
PS/1 Advisor, Consultant Investor, Willow, Essential	£77 £90.48		£87 £102.23	£188 £220.90	£415 £487.63		
Expert S series, ValuePoint			£95 £111.63		£308 £361.90		
PS/1 Pro 386SX model 57/56 series							
Multimedia model 67/77							
Multimedia PreMmio 76/77							
Model E9533 range,							
Server Model 85 9585 90XP		£77 £90.48	£87 £102.23	£188 £220.90			
PS/2 35LS/SX/40SX	£45 £52.88	£73 £85.78	£88 £103.40	£239 £280.83			
PS/2 50/502 series	£45 £52.88	£73 £85.78	£88 £103.40				
PS/2 55SX/55LS/60/60SX							
Expansion board 0-16Mb		£179 £210.33	£209 £245.58				
Model 70/80 series (option 1)	£45 £52.88	£73 £85.78	£129 £151.58				
Expansion board 0-16Mb		£169 £198.58	£217 £254.98				
Model 70/80 series (option 2)			£88 £103.40	£239 £280.83	£415 £487.63		
Expansion board 0-64Mb			£219 £257.33	£356 £418.30			
Server model 95XP (ECC)			£99 £116.33	£189 £222.08			
Server model 95			£99 £116.33	£189 £222.08	£499 £586.33		
95 Array series (ECC)			£99 £116.33	£189 £222.08	£499 £586.33		
Pentium Aptiva (kits)				£78 £91.65	£158 £185.65	£370 £434.75	£850 £984.65
RS6000 PowerServer 220 series			£87 £102.23	£188 £220.90			
PS/2 Model 53			£87 £102.23	£188 £220.90			
RS6000 PowerServer 250 series			£87 £102.23	£188 £220.90	£415 £487.63	£889 £1044.58	
X Station 120/130	£45 £52.88	£73 £85.78					
X Station 130			£88 £103.40				
PS/2 CL57SX	£77 £90.48		£87 £102.23	£188 £220.90			
Thinkpad 350, 350c, 700, 720, 750, 755			£115 £135.13	£325 £381.88	£429 £504.08		
Thinkpad 760				£249 £292.58	£468 £549.90		
PS/2 Model L40SX, Note 182	£79 £92.83	£115 £135.13		£255 £299.63			
PS Note 2141, N82	£79 £92.83	£115 £135.13					
Portable PS/2 P75 series	£77 £90.48	£87 £102.23					
Portable PS/2 P70 series module			£88 £103.40				
P S/270 Expansion board 2-14Mb	£169 £198.58						

ALL MEMORY PRICES REDUCED

Buy 5 or more SIMMS and
SAVE £1.00 per Mb

Eg: 5 off 1Mb x 3 70ns = £115 (£135.13) Full price = £120 (£141)
Offer only applies when buying SIMMS of the same type

Not sure which module to use ?

Our sales staff can quickly identify the right memory for your system.
Call SMC for the best in memory upgrades.

30 PIN ACTUAL SIZE. CHIP CONFIGURATIONS MAY VARY.



For more copies of this catalogue,
please call our sales line

IF YOUR FUTURE DEPENDS ON IT

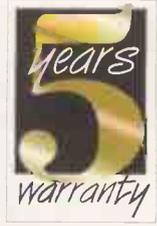
SMC COMPUTERS PLC, 253-257 FARNHAM ROAD, SLOUGH, BERKSHIRE SL2 1HA

SMC
COMPUTERS

MATCHED MEMORY - COMPAQ

Inc VAT

SYSTEM	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb
Deskpro 286e, 386/20, 25, 20e, 25e	£51	£59.93	£137	£160.98				
Deskpro 386/25M, 33M	£44	£51.70	£59	£69.33	£87	£102.23	£119	£139.83
Deskpro 486s/16M, 25M, 33M, 50M, 66M	£44	£51.70	£59	£69.33	£87	£102.23	£119	£139.83
Deskpro 3/25i, 33, 4/25is, 33i, 66i	£44	£51.70	£59	£69.33	£87	£102.23	£119	£139.83
Deskpro 386/33		£85	£99.88					
Deskpro 386S/16, 386s	£57	£66.975		£112	£131.60			
Deskpro 386/20, 20N, 386N		£59	£69.33	£87	£102.23			
Deskpro 386/33L, 486/25, 33L, 50L		£85	£99.88		£219	£257.33	£995	£1169.13
Deskpro 450, 466, 4100			£39	£45.83	£79	£92.83	£185	£217.38
Deskpro 5/60, 60XE, 60M, 66M					£234	£274.95	£449	£527.58
Deskpro 575, 590, 5100					£78	£91.65	£158	£185.65
Deskpro XE 4/33, 33S, 50, 66, 100		£69	£81.08	£67	£78.73	£119	£139.83	
Deskpro XL 450, 466, 560, 566, 575, 590, 5100			£123	£144.53	£185	£217.38	£429	£504.08
Enhanced Prolineo 425, 433, 33s, 50, 50s, 66, 100		£69	£81.08	£67	£78.73	£119	£139.83	£393
Presario 425, 433	£41	£48.18	£69	£81.08	£67	£78.73	£119	£139.83
Presario 633, 650, 660		£69	£81.08	£67	£78.73	£119	£139.83	£393
Presario 833 CDS, 850, 866		£69	£81.08	£67	£78.73	£119	£139.83	£393
Presario 520, 720, 920, 924			£39	£45.83	£79	£92.83	£185	£217.38
Presario CDS-510, 520, 524, 720, 860, 920, 924			£39	£45.83	£79	£92.83	£185	£217.38
Presario CDTV-520, 528, 920			£39	£45.83	£79	£92.83	£185	£217.38
Presario CDS-774, 972, 982, 992, CDTV-978			£67	£78.73	£119	£139.83	£393	£461.78
Prolineo 1000 486DX2/66, 1000R				£119	£139.83	£393	£461.78	£796
Prolineo 1000 5/60, 2000 486/50, 5/66, 90, 2000R						£449	£527.58	£885
Prolineo 4000 486/50, 4000 5/66, 90, 100, 4000R 5/100						£449	£527.58	£885
Prolineo 1500 5/75, 100, 120, 1500R				£185	£217.38	£429	£504.08	£795
Prolineo 3/25S, 3/25ZS		£64	£75.20	£227	£266.73			
Prolineo Net 1/25s, 33s		£69	£81.08	£67	£78.73	£119	£139.83	
Prolineo 4/25s, 33, 33s, 50, 66, 100 CDS	£41	£48.18	£96	£112.80	£39	£45.83	£79	£92.83
Prolineo 575, 590, 51000 (pairs)				£78	£91.65	£158	£185.65	£370
Prolineo MT 4/33s, 50, 66		£96	£112.80	£67	£78.73	£119	£139.83	£393
Prosignia 486/33, 486DX2/66	£44	£51.70	£59	£69.33	£87	£102.23	£119	£139.83
Prosignia 300 5/75, 500 5/90, 5/90					£185	£217.38	£429	£504.08
Prosignia VS 486SX/33, DX/33, DX2/66			£67	£78.73	£119	£139.83	£393	£461.78
Prosignia Server 5/60					£449	£527.58	£885	£1039.88
Systempro 386/33, 486/33		£85	£99.88		£219	£257.33	£995	£1169.13
Systempro 486/33-1E, 1020e, 2040e, 680e		£85	£99.88		£219	£257.33	£995	£1169.13
Systempro LT 386/25, 33, 486SX/25, 33, DX2/50			£87	£102.23	£119	£139.83		
Systempro XL 486/50, Pentium					£268	£314.90	£476	£559.30



SMC'S 5 YEAR WARRANTY PROVES THE QUALITY OF ALL MEMORY SUPPLIED.



Not sure which module to use?

Our sales staff can quickly identify the right memory for your system. Call SMC for the best in memory upgrades.



30 PIN SIMM ACTUAL SIZE. CHIP CONFIGURATIONS MAY VARY.

Being the Best takes power

Memory upgrades for all popular PCs.

We can supply memory modules for PCs from all the major manufacturers. If you cannot find your system listed here, please call our components sales team.

**CUSTOMER CARE TEL
01753 550999**

**CUSTOMER CARE FAX
01753 535175**

MATCHED MEMORY - COMPAQ

Inc VAT

LAPTOPS	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb		
Concerto 4/25, 4/33			£139	£163.33	£229	£269.08	£488	£573.40
Contura 3/20, 25, 25C	£69	£81.08	£119	£139.83	£249	£292.58		
Contura 4/25, 25, 25C, 25CX			£122	£143.35	£189	£222.08	£459	£539.33
Contura 400C, 400CS, 410C, 410CX			£105	£123.38	£188	£220.90	£465	£546.38
Contura Aero 4/25, 4/33C			£97	£113.98	£225	£264.38		
Lite 4/25, 25C, 25E, 33C			£119	£139.83	£225	£264.38	£439	£515.83
LTE Elite 4/40C, 40CX, 50E, 50CX, 75C, 75CX			£139	£163.33	£229	£269.08	£488	£573.40
LTE Lite 20, 25, 25C, 25E	£88	£103.40	£129	£151.58	£222	£260.85	£459	£539.33
LTE Lite 5000					£249	£292.58	£429	£504.08
LTE 386S/20			£159	£189.83				
SLT 386, 386s, 20	£99	£116.33	£139	£163.33				

Canon

DELL

ELONEX

Panasonic

TOSHIBA

COMPAQ

ES.COM

LEXMARK

Viglen

GATEWAY2000

hp HEWLETT PACKARD

Intel overdrive options for many of the systems listed.



Please call for details and prices

MATCHED MEMORY - DELL

Inc VAT

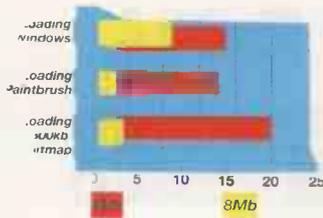
SYSTEMS	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb			
4000/XE Series model 4033, 4050, 4066				£134	£157.45	£498	£585.15	£910	£1069.25	
Dimension 425si, 433i/si										
450i, 466i, XPS 450V, 466V			£39	£45.83		£185	£217.38			
Dimension XPS P60, P90, P100				£78	£91.65	£158	£185.65	£370	£434.75	
Dimension P75T, P90T				£177	£207.98	£437	£513.48	£657	£771.98	
Low Profile Power Desktop 486 P Series	£35	£41.13	£88	£103.40		£249	£292.58			
NetPlex 486/25s, 33s, 33d, 50d, 66d			£39	£45.83	£79	£92.83	£185	£217.38		
OmniPlex 433ME, 450ME, 466ME, 4100ME				£78	£91.65	£158	£185.65	£370	£434.75	
OmniPlex 560/ME, 566/ME, 590/ME				£134	£157.45	£238	£279.65	£498	£585.15	
OptiPlex 486e, s/L, L, s/MX, MX series			£39	£45.83		£185	£217.38			
OptiPlex XL 590, XM 590, XMT 590				£78	£91.65	£158	£185.65	£370	£434.75	
Performance 486 s/L, L, s/M, M, T series			£39	£45.83		£185	£217.38			
Performance 425s/ME, 433/ME										
433s/ME, 450/ME/466ME				£134	£157.45	£238	£185.65	£498	£585.15	
Power Desktop 486 D series	£35	£41.13	£88	£103.40		£249	£292.58			
PowerEdge SP 486 series				£134	£157.45	£238	£185.65	£498	£585.15	
PowerEdge SP Pentium series				£134	£157.45	£238	£185.65	£498	£585.15	
PowerEdge XE 433, S, 450, 466				£78	£91.65	£158	£185.65	£370	£434.75	
PowerEdge XE 560, 566, 590, 51000				£134	£157.45	£238	£185.65	£498	£585.15	
Powerline Workstation DE, SE series DE/2										
Precision 486			£70	£82.25	£118	£138.65	£134	£157.45	£238	£185.65
System 316SX, LT, 320LT, LX, SX (Rev1), 325SX										
System 320SX (Rev2), 325D, P, 333D, P, 433P	£39	£45.83		£95	£111.63					
System 425TE, 433TE			£79	£92.83	£144	£169.20	£199	£233.83	£397	£466.48
XPS 486 Midsize 466, 100				£39	£45.83		£185	£217.38		
XPS P60 FS					£78	£91.65	£158	£185.65	£370	£434.75
LAPTOPS										
Laptop 316, 325NC, 325N		£86	£101.05							
Latitude M series				£138	£162.15	£268	£314.90	£478	£561.65	
Latitude 425/33/50/C/CX				£127	£149.23		£449	£527.58		
Latitude XP				£138	£162.15	£195	£229.13	£389	£457.08	

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01753 550333

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01753 524443

SMC
COMPUTERS

The difference 4MB makes



To find out the difference that 4Mb of memory can make, SMC conducted a series of tests using one of its own 486DX2-66 PCs. The results were startling. As the graph above shows, adding just 4Mb of memory to the system resulted in a dramatic speed increase.

With more and more power hungry software packages being released every day, it makes sense to consider a memory upgrade now. To find out how even a small increase in your PC's RAM capabilities can dramatically improve its performance, call our Technical Sales line today.



Static Electricity WARNING

Memory modules and processor chips are particularly sensitive to static electricity and can easily be damaged. When fitting memory you should ensure that you have discharged any static. The most effective way of ensuring this is to wear an anti static wrist strap. Alternatively you can touch the casing of your PC (provided it is connected to the mains but NOT turned on.)

Anti-Static Wrist Strap

Anti-static wrist-straps will protect your memory modules during installation - earthing your body by connecting it with a metal object such as your PC. These straps are free and available on request from SMC when ordering your memory modules.

MATCHED MEMORY - AST

DESKTOPS	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb
Advantage 386SX/20, 386SX/25			£219	£257.33		
Advantage Pro 386 486 series	£81	£95.18				
Advantage Adventure 486 series	£76	£89.30	£99	£116.33	£149	£175.08
AdvantagePro 486 series	£76	£89.30	£99	£116.33	£149	£175.08
Advantage Plus 486 series			£125	£146.88	£229	£269.08
Bravo 486/25, 486/33	£95	£111.63				
Bravo LC 3/33s	£81	£95.18				
Bravo LC 486 series	£76	£89.30	£99	£116.33	£149	£175.08
Bravo LC II 8111 486 series	£76	£89.30	£99	£116.33	£149	£175.08
Bravo LP & MT 486 series	£76	£89.30	£99	£116.33	£149	£175.08
Bravo MS, MS-L, MS-T 486 series				£149	£175.08	£389
Bravo MS, MS-L, MS-T, MT Pentium series				£149	£175.08	£389
Manhattan			£78	£91.65	£158	£185.65
Manhattan SMP					£669	£786.08
Manhattan G560 & V series				£399	£468.83	£795
Premium II 386SX/20, 386SX/25		£139	£163.33			
Premmia 486 standard, MTE & SE series		£139	£163.33		£399	£468.83
Premmia P/60 MTE P/60 & se P/60 series		£139	£163.33		£399	£468.83
Premmia GX P/90, P/100				£195	£229.13	£389
Premmia LX P/60				£149	£175.08	£389
Premmia MX 4/66d, 4/100i, P/60, P/75				£149	£175.08	£389
LAPTOPS						
Advantage Explorer		£139	£163.33		£489	£574.58
Ascentia 800N, 810N		£137	£160.98		£274	£321.95
Ascentia 900N, 910N		£129	£151.58		£274	£321.95
Ascentia 950N				£294	£345.45	£554
Bravo NB		£139	£163.33		£489	£574.58
PowerExec EL, SL, SL-C, C, SL, Colour, Colour Plus		£97	£113.98		£249	£292.58

MATCHED MEMORY - ZENITH

SYSTEMS	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb
Mastersport 386SL Range		£75	£88.13			
Mastersport 386SX		£88	£103.40			
ZDS-600NL series		£75	£88.13			
Slimsport	£49	£57.58	£75	£88.13		
Supersport 286	£49	£57.58				
Supersport 286E	£49	£57.58	£75	£88.13	£159	£186.83
Z386-SX, SX20, Z325SX			£59	£69.33	£219	£257.33
Z300/400 series			£59	£69.33	£219	£257.33
Z-Server Range, - LT Z-Station 500				£149	£175.08	£197
Z-Station 325SH, 325SN	£44	£51.70		£107	£125.73	
Z-Station 420-EH/N, 420S-SH/N	£44	£51.70		£107	£125.73	
425SH, 422DEH, 450EN, 400+	£44	£51.70		£107	£125.73	
Z-Select 100 series					£375	£440.63

MATCHED MEMORY - GATEWAY

SYSTEMS	4Mb	8Mb	32Mb	64Mb
4SX, 4DX, 4DX2, 4DX-33E, 4DX2-50E, 4DX2-66E	£67	£78.73		£249
4SX-V, 4DX-V, 40X-2V local bus series / P40 series			£249	£292.58
PS series-incd PS-90, 100, 133, 166 (EDO kits)		£106	£124.55	£196

Please Note: Configurations may vary, please consult our memory specialists before ordering

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Prices in Black Include VAT



Not sure which module to use ?

Our sales staff can quickly identify the right memory for your system. Call SMC for the best in memory upgrades.



MATCHED MEMORY - TOSHIBA

LAPTOPS	2Mb	4Mb	8Mb	16Mb	24Mb	32Mb
Portege 610CT			£289 £339.58	£559 £656.83		£1395 £1639.12
Satellite Pro 400			£289 £339.58	£559 £656.83		£1395 £1639.12
T1000LE	£79 £92.83	£127 £149.23	£235 £276.13			
T1000SE, T1000XE	£79 £92.83					
T1200XE	£77 £90.48					
T1600	£77 £90.48					
T1800, T1850, T1850c	£77 £90.48	£127 £149.23	£235 £276.13			
T1900, C, T1910, CS, T1950, C, CS, CT, T1960C, CS, CT		£129 £151.58	£197 £231.48	£438 £514.65		
T200, T200CS		£129 £151.58	£197 £231.48	£438 £514.65		
T2000, T2000SX	£77 £90.48	£127 £149.23	£235 £276.13			
T2000SE, T2200SX	£77 £90.48	£127 £149.23	£235 £276.13			
T2100, CS, CT, T2105, CS, CT, T2150CDS, CDT, T2155		£89 £104.58	£197 £231.48	£459 £539.33	£839 £985.83	
T2110, T2130, T2150		£89 £104.58	£197 £231.48	£459 £539.33	£839 £985.83	
T2400CS, CT, T2450CT		£87 £102.23	£197 £231.48	£459 £539.33		
T3100a	£87 £102.23					
T3100SX	£82 £96.35	£139 £163.33				
T3200, T3200SX	£75 £87.90	£127 £149.23				
T3200SXC	£75 £87.90	£137 £160.98				
T3400, CT, T3600CT		£125 £146.88	£195 £229.13	£469 £551.08		
T4400SX, SXC, C, DX, C, SX	£79 £92.83	£149 £175.08	£245 £287.88	£429 £621.58		
T4500, C, T4600, C, T4700CS, CT, T4800CT, T485CT, 4900CT		£129 £151.58	£197 £231.48	£438 £514.65		£1229 £1444.08
T5200, C	£79 £92.83					
T6400SX, SXC, DX, DXC	£79 £92.83	£149 £175.08	£245 £287.88	£429 £621.58		£995 £1169.13
T6600C, C/CD, C/CDV		£149 £175.08	£245 £287.88	£429 £621.58		£995 £1169.13
T8500 Desktop	£79 £92.83		£297 £348.98			
Terra			£399 £468.83	£679 £1146.80		£1069 £1279.58

MATCHED MEMORY - ESCOM

SYSTEMS	4Mb	8Mb	16Mb	32Mb	64Mb
486-DX2, 66i VESA/Primo Desktop series	£88 £103.40		£308 £361.90		
486 DX4/100 PCI 70ns		£67 £78.73	£249 £292.57	£455 £534.63	
Pentium PCI P60, P75, P100, P120, P133 mini tower series 60 ns		£130 £152.75	£250 £293.75	£518 £608.65	£910 £1092.50
Pentium PCI P75, P90 multimedia mini tower series 60 ns		£130 £152.75	£250 £293.75	£518 £608.65	£910 £1092.50
Pentium PCI P75, P90 desktop series 60 ns		£130 £152.75	£250 £293.75	£518 £608.65	£910 £1092.50
Pentium PCI P100, P120, P133 tower series 60 ns		£130 £152.75	£250 £293.75	£518 £608.65	£910 £1092.50
Pentium PCI P100 multimedia tower series 60 ns		£130 £152.75	£250 £293.75	£518 £608.65	£910 £1092.50

Please Note: Configurations may vary, please consult our memory specialists before ordering

PC WORKSHOP

If you want someone to carry out a PC repair or fit a new component for you, just give us a call. Our technicians know the products we sell inside out and under normal circumstances we can operate a next day service. Simply refer to the installation prices and give our sales hotline a call to book your PC into the SMC workshop.

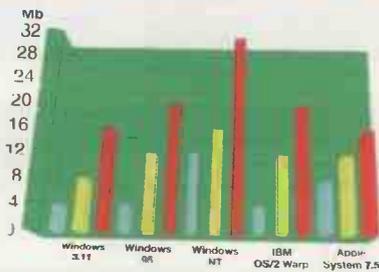


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What will it take?

Operating systems memory required



MATCHED MEMORY - ELONEX

SYSTEMS	Inc VAT				
	4Mb	8Mb	16Mb	32Mb	64Mb
PC420, PC425, PC433 series	£88	£103.40	£308	£361.90	
PC450/1, PC466M/1, PC4100M/1 PCI series (8Mb, 32Mb, & 64Mb are kits)	£67	£78.73	£249	£292.58	
PC560M/1, PC575M/1, PC5120M/1, PC5133M/1 (standard memory)		£134	£157.45	£238	£279.65
PC560M/1, PC575M/1, PC5120M/1, PC5133M/1 (60ns EDO memory kits)		£106	£124.55	£196	£230.30
				£498	£585.15
				£710	£1069.25
				£1138	£1337.15

Please Note: Configurations may vary, please consult our memory specialists before ordering

MATCHED MEMORY - VIGLEN

SYSTEMS	Inc VAT				
	4Mb	8Mb	16Mb	32Mb	64Mb
486 Contender-Executive, Professional series	£88	£103.40	£308	£361.90	
486EX Deskside tower, Desktop series, VIG Tower series	£88	£103.40	£308	£361.90	
486 Genie-Executive, Professional, Micro, PCI	£88	£103.40	£308	£361.90	
Pentium Genie PCI P5-75, 90, 100, 120, 133 (Standard memory)		£134	£157.45	£238	£279.65
Pentium Genie PCI P5-75, 90, 100, 120, 133 (60ns EDO memory kits)		£106	£124.55	£196	£230.30
Pentium P60-P166 Multimedia series (Standard memory)		£134	£157.45	£238	£279.65
Pentium P60, P75, P90, P100, P166 Multimedia series (60ns EDO memory kits)		£106	£124.55	£196	£230.30
				£498	£585.15
				£710	£1069.25
				£1138	£1337.15

Please Note: Configurations may vary, please consult our memory specialists before ordering

MATCHED MEMORY - PRINTERS

MODEL	Expansion boards				Modules			
	1+Mb	2+Mb	3+Mb	4+Mb	1Mb	2Mb	4Mb	8Mb
CANON								
LB-4, LBP-4 Lite, LBP-4Plus	£88	£103.40	£112	£131.60				
LBP-4SX			£112	£131.60				
LBP-8II	£62	£72.85	£72	£84.60	£133	£156.28		
LBP-8III, LBP-8III Plus	£89	£104.58	£119	£139.83	£139	£163.33		
HEWLETT PACKARD	1+Mb	2+Mb	3+Mb	4+Mb	1Mb	4Mb	8Mb	
Laserjet II, IID		£72	£84.60		£133	£156.28		
Laserjet II, IIP, IID, IIP		£6	£81.08		£128	£150.30		
Laserjet 4L						£38	£44.65	
Designjet 600/650						£67	£78.73	£119
Laserjet 4M, 5i, SIMX, 5Si, 5SiMX						£67	£78.73	£119
Laserjet 5L						£97	£113.98	
PANASONIC	1+Mb	2+Mb	3.5+Mb	4+Mb	1Mb	2Mb	4Mb	
KX-P4110, KX-P443D	£69	£81.08	£89	£104.58	£159	£186.33	£169	£198.58
KX-P4450	£66	£77.55						
KX-P4420, KX-P4450i, KX-P4451	£67	£78.73	£87	£102.33	£149	£175.05	£155	£182.13
KX-P4440, KX-P5410	£63	£74.03	£98	£115.15	£179	£210.33		
IBM/Lemork	1+Mb	2+Mb	3.5+Mb	1Mb	2Mb	4Mb	8Mb	
PS4019, 4019E	£75	£88.125	£125	£146.88	£139	£163.33		
LEMARK 5e, 6, 6A, 10, 10A					£47	£55.23	£74	£89.95
4029, 4037SE					£47	£55.23	£74	£89.95
PS4079, 4039 series						£114	£133.95	£224
								£263.20

Making the perfect match

Matched memory modules from SMC are designed to the original manufacturers specifications. So they will slot perfectly into your PC with the minimum of fuss. It's important to remember that although some system modules may look similar they are generally specifically configured for a particular system.

All our matched memory upgrades are supplied with a full 5 year warranty. When ordering don't forget to ask about our free anti-static wrist straps to ensure safer installation.



Right across the board

We can supply system matched memory for PCs built by the world's leading manufacturers - including AST, Ambra, Apple, Apricot, Canon, Compaq, Dell, Elonex, Escam, Gateway, Hewlett Packard, IBM, NEC, Toshiba and Zenith. Don't worry if your PC isn't listed here. We cater for many more systems and our memory module experts will be only too happy to help.

Intel overdrive options for many of the systems listed.



Please call for details and prices

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POWER AT THE HEART OF YOUR PC

At SMC, we stock a wide range of processors, from the latest Intel Pentiums to advanced CPUs from some of the world's leading names like Cyrix and AMD. Add to that a broad sweep of motherboards and heat sinks and you'll soon realise that if you're looking for real value for money, you don't have to look any further.



PROCESSORS

Inc VAT

486

Cyrix 486DX2-66 - 66Mhz, 168-pin, 3.3v	£19	£22.33
AMD 486DX4-100 - 100Mhz, 168-pin, 3.3v	£49	£57.58

PENTIUM

Intel Pentium P75 - 75Mhz, 296-pin, 3.3v	£76	£89.30
Intel Pentium P90 - 90Mhz, 296-pin, 3.3v	£119	£139.83
Intel Pentium P100 - 100Mhz, 296-pin, 3.3v	£144	£169.20
Intel Pentium P120 - 120Mhz, 296-pin, 3.3v	£179	£210.33
Intel Pentium P133 - 133Mhz, 296-pin, 3.3v	£229	£269.08
Intel Pentium P150 - 150Mhz, 296-pin, 3.3v	£309	£363.08
Intel Pentium P166 - 166Mhz, 296-pin, 3.3v	£449	£527.58

PENTIUM PRO PROCESSORS

6X86 Intel Pentium Pro 200Mhz	£649	£762.58
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NEW

MOTHERBOARDS - 486

Inc VAT

All motherboards are fitted with Controllers for Floppy Drives, 4 EIDE devices, 1 Enhanced Parallel and Fast Serial Ports except the VESA Bus versions of TMC 486 based boards.

TMC

TMC 3 x VESA Bus, 4 x ISA, 486 CPU, B socket, OPTI Chipset, AMI Award BIOS, 4 x 30 pin, 2 x 72 pin, 128Mb max memory	£69	£81.08
TMC 3 x PCI Bus, 4 x ISA Bus, 486 CPU, ALI Chipset, AMI Award BIOS, 4 x 72 pin, 128Mb max memory	£79	£92.53

MOTHERBOARDS - PENTIUM

Inc VAT

TMC

TMC 4 x PCI Bus, 3 x ISA Bus, Pentium CPU, C socket, Intel Triton Chipset, AMI Award BIOS, 4 x 72 pin, 128Mb max memory	£119	£139.53
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INTEL

Intel Atlantis 07-31-1300 - 3 x PCI Bus, 2 x ISA Bus, 1 x ISA/PCI Bus, Pentium CPU (Socket 7), C socket, Intel Triton Chipset, AMI BIOS, 4 x 72 pin, 128Mb max memory	£205	£240.88
Windows 95 Plug n Play, built-in sound and ATI 64-bit graphics, zero cache (see below for options)		
Intel Endeavour 07-31-1005 - 3 x PCI, 2 x ISA, 1 x ISA/PCI Bus, Pentium CPU (P75-133 + 120 O/d), C socket 5, Intel Triton Chipset, AMI BIOS, 4 x 72 pin, 128Mb max memory	£135	£158.63
Intel Endeavour 01-31-1007 - 1 x ISA/PCI Bus, 3 x PCI, 2 x ISA, Pentium CPU (P75-133 + 120 - 166 O/d), C socket 7, Intel Triton Chipset, AMI BIOS, 4 x 72 pin, 128Mb	£145	£170.38
Intel Aurora ATX - Pentium Pro Socket 8, D Socket, 150/166/180/200MHz, 4 x 72 pin SIMM, 128 Mb max memory, 4 x PCI 2/3 ISA Slots, On-Board 16 bit Sound Board, built-in PS2 Mouse/Motherboard style connectors, 2 x Serial, 1 x Parallel Port	£499	£586.33
Windows Plug n Play, Bus mastering, sound board, zero cache (see below for options) Cache memory for Atlantis/Endeavour Motherboards only available when purchasing Motherboard.		
07-95-0251 - 256Kb Asynchronous	£35	£41.13
07-95-0253 - 256Kb Pipeline burst	£59	£69.33

CPU SOCKET TYPES

A = ZIF-DX2 + Pentium Overdrive. B = ZIF-DX4 + Pentium Overdrive. C = Pentium processor. D = Pentium Pro Processor.

INTEL OVERDRIVE

Inc VAT

FOR 486 BASED SYSTEMS

SX/DX25 to DX2-50 - 50Mhz, 169-pin, single socket, 5v	£69	£81.08
SX/DX25 to DX2-50 - 50Mhz, Overdrive, Dual socket, 5v	£69	£81.08
SX/DX25 to DX4-75 - 75Mhz, 169-pin/Overdrive, Single & Dual socket, 5v	£89	£104.58
SX/DX33 to DX2-66 - 66Mhz, 169-pin, Single socket, 5v	£77	£90.48
SX/DX33 to DX2-66 - 66Mhz, Overdrive, Dual socket, 5v	£77	£90.48
SX/DX33 to DX4-100 - 66Mhz, 169-pin, Single socket, 5v	£109	£128.08
SX/DX33 to DX4-100 - 66Mhz, Overdrive, Dual socket, 5v	£109	£128.08
P63 Pentium O/D (SX/DX25) - 63Mhz, P24T 238-pin, P24T Pentium O/D socket, 5v	£99	£116.33
P83 Pentium O/D (SX/DX33) - 83Mhz, P24T 238-pin, P24T Pentium O/D socket, 5v	£129	£151.58

FOR PENTIUM BASED SYSTEMS

Pentium 120/133 O/D (P60/P66) - 120Mhz/133Mhz, 273-pin, Socket 4, 5v	£249	£292.58
Pentium 125 O/D (P75) - 125Mhz, 296-pin, Socket 5/7, 3.3v	£249	£292.58

NEW

HEAT SINKS

Inc VAT

Fan assisted units only available when purchasing CPU.

486 processor	£7	£8.23
Pentium 75-166	£9	£10.58
Pentium Pro	£14	£16.45



CYRIX 386-486

Inc VAT

Cyrix 386SX25 - 486 50 - 25Mhz, 168-pin, 3.3v	£135	£158.63
Cyrix 386DX25 - 486 50 - 25Mhz, 237-pin, 3.3v	£135	£158.63
Cyrix 386DX33 - 486 66 - 33Mhz, 237-pin, 3.3v	£146	£171.55

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THEY MAY BE HARD DRIVES BUT THEY'RE EASY TO INSTALL

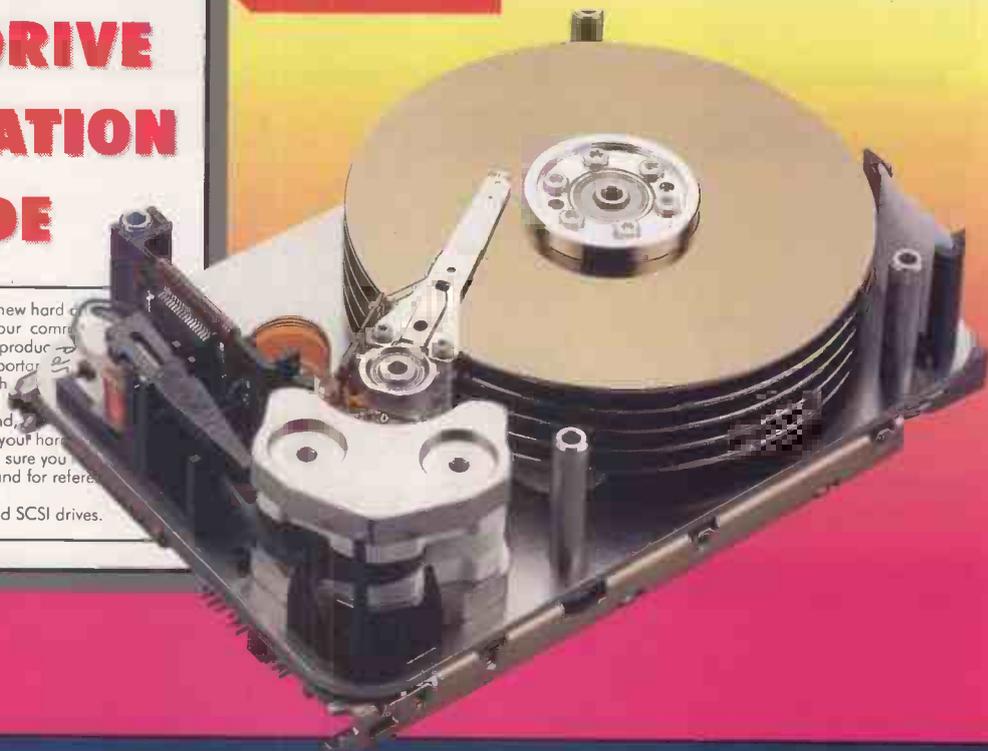


HARD DRIVE INSTALLATION GUIDE

Thank you for purchasing your new hard drive from SMC Computers. As part of our comprehensive total customer service, we have produced this guide to assist you. It contains important information which will give you a smooth installation. This is intended as a guide and prices may vary slightly depending on your hardware and PC system manufacturers. Make sure you have your system and DOS manuals to hand for reference.

The guide covers IDE / EIDE and SCSI drives.

FREE
WITH EVERY HARD
DRIVE PURCHASED



SCSI CONTROLLER CARDS - KITS

	£	Inc VAT
Adaptec AHA2920, PCI Bus, Micro-D, supp up to 7 Devices	£102	£119.85
Adaptec AHA1515UTC, ISA Bus, 25 Pin D-type, supp up to 7 Devices	£57	£66.98
Adaptec AHA1542CP, ISA Bus, Micro-D, supp up to 7 Devices + FDD	£157	£184.48
Adaptec AHA2842VL, VESA Bus, Micro-D, supp up to 7 Devices + FDD	£155	£182.13
Adaptec AHA2825VL, VESA Bus, Micro-D, supp up to 7 Devices (+2 EIDE) + FDD	£89	£104.58
Adaptec AHA2940, PCI Bus, Micro-D, supports up to 7 Devices	£165	£193.88
Adaptec AHA2940W, (Fast Wide SCSI), PCI Bus, Wide SCSI, supp up to 7 Devices	£195	£229.13
Adaptec AHA3940, PCI Bus, Micro-D, supports up to 14 Devices	£275	£323.13
Adaptec AHA3985, Raid (Raid 5, 1, 0, 0/1), PCI Bus, Micro-D, supports up to 21 Devices	£469	£551.08
Adaptec AHA1640, MCA Bus, Micro-D, supports up to 7 devices	£195	£229.13
Adaptec AHA2742, EISA Bus, Micro-D, supp up to 14 Devices + FDD	£235	£276.13
Adaptec APA1460, PCMCIA, Micro-D, supp up to 7 Devices	£119	£139.83
Data Technologies DTC3280, ISA Bus, Centronics 50 way, supp up to 7 Devices + FDD	£59	£69.33
Future Domain 1610MCD, ISA Bus, 25 pin D-type, supp up to 7 devices	£45	£52.88
SP328VL, VESA Bus, Micro-D, supports up to 7 devices + FDD	£99	£116.33

Kits are Adaptec products only.



SCSI CABLES

External

	£	Inc VAT
25-pin to 50-pin Centronics	£18	£21.15
50-pin Centronics to 50-pin Centronics	£18	£21.15
50-pin Centronics to 50-pin Centronics *	£23	£27.03
Micro D to 50-pin Centronics	£35	£41.13
Micro D to 50-pin Centronics*	£38	£44.65
Micro D to 25-pin D	£36	£42.30
Micro D to Micro D	£38	£44.65
Wide SCSI to Wide SCSI	£100	£117.50

All SCSI cables measure 1 metre except those marked with an *.
All these cables measure 2 metres.



Internal

	£	Inc VAT
Single drive, 19 inches	£8	£9.40
Dual drive, 38 inches	£10	£11.75
Triple drive, 38 inches	£15	£17.65
Custom made to order, as required	£POA	£POA

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When you buy a Hard Drive from SMC you get something no other company offers - a free 16 page, easy to follow Installation Guide containing everything you need to ensure a trouble free set up. It covers:

- Getting started
- IDE Hard Drive Installation
- CMOS configuration
- Installing into a system without a translating BIOS
- Installing into a system with a translating BIOS
- SCSI Hard Drive installation
- SCSI Hard Drive configuration
- Basic Troubleshooting
- Creating a bootable floppy disk

What else would you expect from a company that prides itself on always giving its customers more for their money ?



WIDE SCSI HARD DISK DRIVES

Inc VAT

2.1Gb Seagate - ST32550W, 8ms, 512k Cache	£589	£692.08
4.0Gb Seagate - ST15230W Hawk, 10.5ms, 512k Cache	£739	£868.33
4.0Gb Seagate - ST15150W Barracuda, 8ms, 1Mb, Cache	£929	£1091.58
4.35Gb Micropolis - MIC3243W, 9ms, 512k Cache	£749	£880.08
9.0Gb Micropolis - MIC1991W, 12ms, 512k Cache	£1435	£1686.13

All SCSI Hard Drives come with a 5 year warranty.



SCSI MOUNTING KITS

Inc VAT

Removable drive caddy for 3.5" drives. Requires 5.25" mounting bay (Part No. 79-97-3502)	£35	£41.13
Metal version of above plus high performance drive support (Part No. 79-97-3504)	£69	£81.08
Mounts 3.5" drive into a 5.25" bay. All screws supplied. No slide rails (Part No. 79-95-1135)	£10	£11.75

SCSI/SCSI-2 HARD DISK DRIVES

Inc VAT

545Mb Fujitsu - M1603S, 10ms, 512k Cache	£119	£139.83
852Mb Quantum - TB2850S Trailblazer, 14ms, 128k Cache,*	£133	£156.28
1.0Gb Conner - CFP1080S Filepra, 9ms, 256k Cache (Inc AV)*	£165	£193.88
1.0Gb Fujitsu - M1606SA, 10ms, 512k Cache	£168	£197.40
1.0Gb IBM - 85G3623, 10.5ms, 512k Cache	£164	£192.70
1.0Gb Quantum - FBL1080S Fireball, 12ms, 128k Cache,*	£168	£197.40
1.0Gb Seagate - ST51080N, 10.5ms, 128k Cache	£179	£210.33
1.0Gb Seagate - ST31231N Hawk 2, 10.5ms, 512k Cache	£225	£264.38
2.0Gb Fujitsu - M2932S, 10ms, 512k Cache	£435	£511.13
2.0Gb IBM - 85G3683, 8.5ms, 512k Cache	£395	£464.13
2.0Gb Micropolis - MIC4221 Taurus 2, 9ms, 512k Cache	£437	£513.48
2.0Gb Micropolis - MIC4221AV Gold, 8.5ms, 512k Cache (Inc AV)	£477	£560.48
2.1Gb Conner - CFP2105S Filepra, 11ms, 256k Cache, (Inc AV)*	£389	£457.08
2.1Gb Conner - CFP2107S Filepra, 9ms, 512k Cache, (Inc AV)	£435	£511.13
2.1Gb HP - C3725S, 9ms, 256k Cache	£395	£464.13
2.1Gb Quantum - XP32150S Atlas, 8ms, 1Mb Cache	£515	£605.13
2.1Gb Seagate - ST32430N Hawk 2, 10.5ms, 512k Cache	£439	£515.83
2.1Gb Seagate - ST32550N Barracuda, 8ms, 512k Cache (Inc AV)	£529	£621.58
2.2Gb Quantum - VP32210S Capella, 8.5ms, 512k Cache (Inc AV)	£435	£511.13
4.0Gb Fujitsu - M2934S, 10ms, 512k Cache	£669	£786.08
4.0Gb IBM - 74G704S, 9ms, 512k Cache (Inc AV)	£959	£1126.83
4.0Gb Seagate - ST15230N Hawk 4, 10.5ms, 512k Cache (Inc AV)	£675	£793.13
4.0Gb Seagate - ST15150N Barracuda 4, 8ms, 1Mb Cache (Inc AV)	£859	£1009.33
4.2Gb Conner - CFP4207S Filepra, 9ms, 512k Cache, (Inc AV)	£669	£786.08
4.3Gb Quantum - XP34301S Grand Prix, 8.6ms, 512k Cache (Inc AV)	£655	£769.63
4.3Gb Quantum - XP34300S Atlas, 8ms, 2Mb Cache	£695	£816.63
4.35Gb Micropolis - MIC3243 Capricorn 4, 9ms, 512k Cache	£669	£786.08
4.35Gb Micropolis - MIC3243AV Gold, 8.5ms, 512k Cache (Inc AV)	£755	£887.13
5.2Gb IBM - 74G7037, 8ms, 512k Cache (Inc AV)	£1035	£1216.13
9.0Gb Micropolis - MIC1991 Scaprio 9, 12ms, 512k Cache,*	£1375	£1615.63
9.1Gb Micropolis - MIC1991AV Gold, 12ms, 512k Cache (Inc AV)	£1435	£1686.13
9.0Gb Seagate - ST410800N, Elite 9, 11ms, 1Mb (Inc AV)	£1395	£1639.13



All SCSI Hard Drives come with a 5 year warranty except those marked with an *.

All these come with a 3 year warranty.



EXTERNAL BOXES

Inc VAT

73-97-3152 - 1 x 3.5"HH/FH, 40 watt, Fast Wide Ext. Interface	£169	£198.58
73-97-3113 - 1 x 3.5"HH/FH, 40 watt, Centronics Ext. Interface	£85	£99.88
73-97-3133 - 1 x 3.5"HH/FH, 40 watt, Micro D Ext. Interface	£115	£135.13
73-97-3213 - 2 x 3.5"HH/FH, 65 watt, Centronics Ext. Interface	£112	£131.60
73-97-3233 - 2 x 3.5"HH/FH, 65 watt, Micro D Ext. Interface	£136	£159.80
73-97-3413 - 4 x 3.5"HH/FH, 2 x 65 watt, Centronics Ext. Interface	£225	£264.38
73-97-3422 - 4 x 3.5"HH/FH, 2 x 65 watt, Micro D Ext. Interface	£245	£287.88
73-97-3114 - 1 x 3.5"HH/FP, 30 watt, Centronics Ext. Interface	£85	£99.88
73-97-6114 - 1 x 5.25"FH, 65 watt, Centronics Ext. Interface	£115	£135.13
73-95-9412 - 2 x 5.25"HH, Conversion Kit for 73-97-6114	£15	£17.63
73-97-5116 - 1 x 5.25"HH, 40 watt, Centronics Ext. Interface	£80	£94.00
73-97-5114 - 1 x 5.25"FH, 30 watt, Centronics Ext. Interface	£89	£104.58
73-97-5134 - 1 x 5.25"FH, 30 watt, Micro D Ext. Interface	£109	£128.08
73-97-6215 - 2 x 5.25"FH, 2 x 65 watt, Centronics Ext. Interface	£205	£240.88
73-95-9524 - 4 x 5.25"HH, Conversion Kit for 73-97-6215	£25	£29.38
73-97-6315 - 3 x 5.25"FH, 3 x 65 watt, Centronics Ext. Interface	£275	£323.13
73-95-9536 - 6 x 5.25"HH, Conversion Kit for 73-97-6315	£35	£41.13
73-97-6415 - 4 x 5.25"FH, 4 x 65 watt, Centronics Ext. Interface	£425	£499.38

All boxes are TUV approved and come with a 3 year warranty. Wide SCSI options are available on selected models. Please call for details.

SCSI DRIVES FITTED FREE WITH BOX PURCHASE. CALL FOR DETAILS.

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REMOVABLE DRIVES

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SYQUEST 3.5" DRIVES

30-73-0135 - 135Mb, IDE (Internal) Interface, 2.4Mb per second	£129	£151.58
35-73-3135 - 135Mb, SCSI (External) Interface, 2.4Mb per second	£159	£186.83
30-73-0270 - 270Mb, IDE (Internal) Interface, 2.4Mb per second	£229	£269.08
35-73-3270 - 270Mb, SCSI (Internal) Interface, 2.4Mb per second	£225	£264.38
37-73-3270 - 270Mb, Parallel port, 2.4Mb per second	£389	£457.08

CARTRIDGES

95-73-3105 - 105Mb, Media	£30	£35.25
95-73-3135 - 135Mb, Media	£15	£17.63
95-73-3270 - 270Mb, Media	£35	£41.13

SYQUEST 5.25" DRIVES

35-73-5088 - 88Mb, SCSI (Internal) Interface, 2.4Mb per second	£139	£163.33
35-73-5200 - 200Mb, SCSI (Internal) Interface, 5Mb per second	£225	£264.38

CARTRIDGES

95-73-5044 - 44Mb, Media	£27	£31.73
95-73-5088 - 88Mb, Media	£30	£35.25
95-73-5200 - 200Mb, Media	£45	£52.88

IOMEGA ZIP DRIVES

35-35-0100 - 100Mb, SCSI (External) Interface, 1.24Mb per second	£142	£166.85
37-35-0100 - 100Mb, Parallel port, 1.25Mb per second	£139	£163.33

CARTRIDGES

95-35-0101 - 100Mb, Single	£12	£14.10
95-35-0103 - 100Mb, 5 Pack	£50	£58.75
95-35-0105 - 100Mb, 10 Pack	£92	£108.10

BACKPACK PARALLEL PORT DRIVES

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1.2Gb	£385	£425.38
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A Syquest or Iomega Removable Drive system from SMC will give you ever increasing drive capacity. Cartridges are extremely durable, easy to exchange, and ideal for data security, archiving, backup and transfer.

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Connect any IDE/EIDE Hard Drive to any standard Parallel Port. Ideal for Notebook/Laptop users & for exchanging/sharing data.

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Ontrack Disk Manager when purchased with a hard drive	£15	£17.63
Ontrack Disk Manager full retail version	£35	£41.13
Ontrack Drive Rocket when purchased with a hard drive	£12	£14.10
Ontrack Drive Rocket full retail version	£17	£19.98
Ontrack Drive Rocket tester disk	FREE	

SMC is an official distributor of Ontrack software

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NEW

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All with 1 year warranty

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IDESPC, ISA Bus, 2HDD/2FDD, Stordard I/O Port	£14	£16.45
ADP60, ISA Bus, 2HDD, LBA Support	£29	£34.08
ADP60F, ISA Bus, 2HDD/2FDD, LBA Support	£35	£41.13
Promise DC - 4030VL2, VESA Bus, 4HDD/2FDD, LBA Support	£79	£92.83

EIDE

Promise EIDEMAX, ISA Bus, 2HDD, ATAPI/CD-ROM, LBA Support	£25	£29.88
EIDEVLB/SUPER I/O, VESA Bus, 4HDD/2FDD, ATAPI/CD-ROM, Fast I/O Port	£35	£41.13
Promise DC2300+ Cache, VESA Bus, 4HDD/2FDD, ATAPI/CD-ROM, Fast I/O Port, LBA Support	£39	£45.83
Promise 4030+ Cache, 4x HDD, 1x ATAPI/CD-ROM, Fast I/O Port, LBA Support	£99	£116.33

EIDE/CD ROM

Future Domain 16002CD, ISA Bus, ATAPI/CD-ROM	£19	£22.33
Future Domain 16030/CD 32, ISA Bus, 4HDD, ATAPI/CD-ROM, LBA support	£45	£52.88

IDE CABLES

Inc VAT

CABLES

Single Drive, 40 Way Ribbon, 12.5", 2 x IDC40	£8	£9.40
Dual Drive, 40 Way Ribbon, 20" (4" gap), 3 x IDC40	£10	£11.75
Custom made to order, 40 Way Ribbon, up to 20"	£POA	£POA

IDE MOUNTING KITS

Inc VAT

79-97-3102 - Removable drive caddy for 3.5" drives.

Requires 5.25" mounting bay

79-95-1135 - Mounts 3.5" drive into a 5.25" bay.

All screws supplied. No slide rails.

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Enhanced IDE (or ATA) has been designed to overcome the limitations of the standard IDE interface. It offers some significant advantages:

- Drive capacities over 528Mb
- More than two drives per system
- Other drives inc Tape, CD-ROM & Removable
- Faster transfer rates



IDE/EIDE HARD DISK DRIVES

Inc VAT

3.5" drives

540Mb Conner CFS541A, 64k Cache, 14ms	£119	£139.83
545Mb Fujitsu - M1612T, 64k Cache, 11ms	£122	£143.85
630Mb Seagate - ST3630A, 120k Cache, 14ms	£122	£143.85
630Mb Western Digital - AC2635A Caviar, 64k Cache, 10ms	£119	£139.83
850Mb Conner - CFS850A Filepro, 256k Cache, 12ms	£127	£149.23
850Mb Quantum - TB2850AT Trailblazer, 128k Cache, 14ms	£127	£149.23
850Mb Western Digital - AC2850A Caviar, 64k Cache, 10ms	£127	£149.23
1.0Gb IBM - 84G8998, 512k Cache, 11ms	£149	£175.08
1.0Gb Fujitsu - M1614T, 64k Cache, 14ms	£135	£158.63
1.0Gb Seagate - ST51080A Decathlon, 128k Cache, 11ms	£135	£158.63
1.0Gb Western Digital - AC21000A Caviar, 128k Cache, 10ms	£135	£158.63
1.2Gb Conner - CFS1275A Filepro, 64k, 15ms	£149	£178.08
1.2Gb Seagate - ST51270A Medalist, 128k Cache, 12ms	£149	£175.03
1.2Gb Quantum - FBL1280AT Fireball, 128k Cache, 11ms	£149	£175.08
1.2Gb Western Digital - AC21200 Caviar, 128k Cache, 10ms	£149	£175.08
1.6Gb Conner - CFS1621, 64k, 14ms	£185	£217.38
1.6Gb Maxtor - 71626AP, 128k Cache, 12ms, 2 year warranty	£185	£217.38
1.6Gb Western Digital - AC31600A Caviar, 128k Cache, 10ms	£185	£217.38
2.0Gb Seagate - ST32140A Medalist, 128k Cache, 10.5ms	£219	£257.33
2.0Gb Western Digital - AC32000A, 128k Cache, 12ms	£298	£346.63

NEW
NEW

NEW

2.5" drives

(These drives have a 44-pin connector. Please check your system for compatibility).

520Mb Seagate - ST9546AG Marathon, 128k Cache, 16ms	£249	£292.88
543Mb Toshiba - MK1924FC, 128k Cache, 13ms, 2 year warranty	£205	£240.88
810Mb IBM - 84G3012	£299	£351.33
810Mb Toshiba - MK1928FC, 128k Cache, 13ms, 2 year warranty	£299	£351.33
1.3Gb Toshiba - MK2720FC, 128k Cache, 13ms, 2 year warranty	£499	£586.33
2.5Gb Western Digital - AC32500A, 128k Cache, 12ms	£389	£457.08

NEW
NEW

All the above Hard Disk Drives come with a 3 year warranty unless otherwise stated.

FLOPPY DRIVES

Inc VAT

STANDARD INTERNAL

3.5" - 1.44Mb, 3.5"HD/DD, 3.5"LP	£25	£29.38
5.25" - 1.2Mb, 5.25"HD/DD, 5.25"HH	£39	£45.83
3.5"/5.25" Dual Disk - 1.44Mb/1.2Mb, 3.5"/5.25"HD/DD, 5.25"HH	£89	£104.58

INTERNAL MOUNTING KITS & CABLES

79-95-1339 - Mounts 3.5" drive in 5.25" bay. Inc screws and rails	£8	£9.40
79-95-1339 - As above plus HDD/FDD power connector converter	£12	£14.10
Dual floppy cable - 3.5" & 5.25"	£10	£11.75

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3.5" Parallel port drive - 1.44Mb, 3.5"HD/DD, External	£109	£128.08
5.25" Parallel port drive - 1.2Mb, 5.25"HD/DD, External	£119	£139.83



BREAKING THE BIOS BARRIER

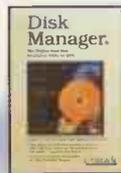
Many branded PCs, such as those from companies like Compaq, IBM and Apricot (as well as certain older clone PCs), do not possess a BIOS with user definable hard drive setup options.

As a result, you are limited to the type and size of Hard Drive that can be fitted. As the UK's largest Hard Drive supplier SMC aims to give you real freedom of choice. So SMC stocks two products which will help you break the BIOS barrier.

Disk Manager from Ontrack will initialise, partition and prepare almost any IDE Hard Drive without the need for additional drivers and can be used alongside most operating systems - including Windows 95.

If you're looking for a hardware alternative, there's the ADP60 Controller Card. Replacing your existing Controller it allows any Drive up to 2Gb to run on virtually any 286, 386 or 486 system. It's suitable for DOS and Windows 3.x, is quick and easy to install and can be supplied with or without Floppy Controller.

NB: Both the ADP60 and Disk Manager do not work with 'auto-detect' BIOS systems.



DISK MANAGER

Ideal for systems in which the BIOS does not allow for large hard disk drives.

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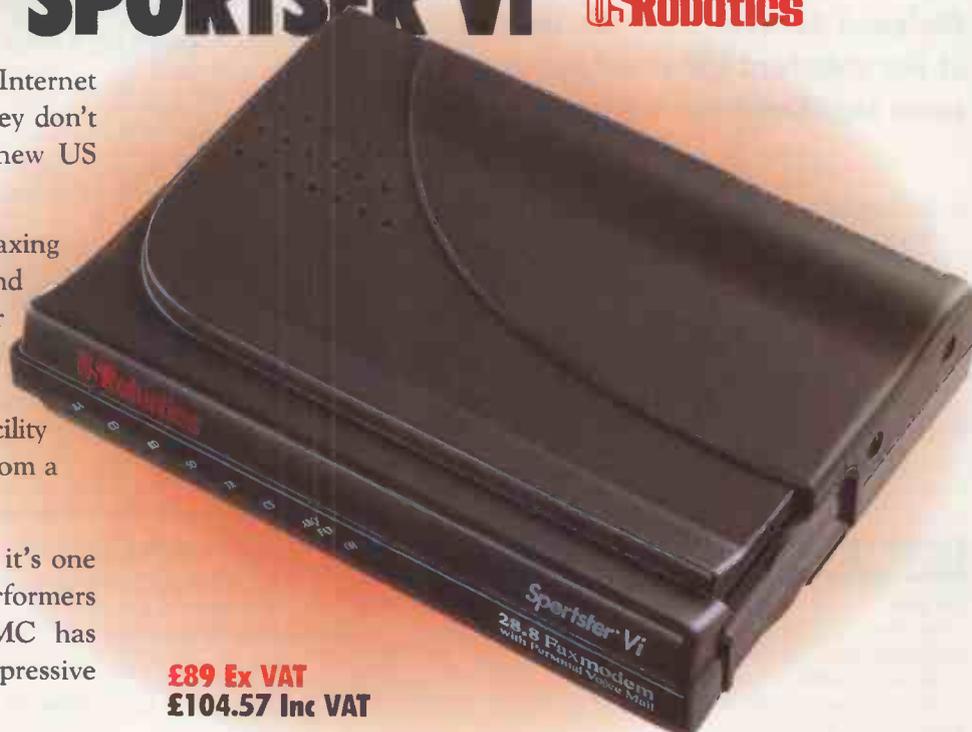
EXPLORE THE INTERNET WITH THE NEW SPORTSTER Vi

US Robotics

If you want to get on the Internet you need a modem - and they don't come any better than the new US Robotics Sportster Vi.

In addition to including faxing and data facilities for e-mail and Internet access, the Sportster Vi also offers Personal Voice Mail, multiple voice and fax mailboxes and even the facility to listen to voice messages from a remote location.

In the world of modems, it's one of the most impressive performers around. Which is why SMC has come up with an equally impressive price - from just £89.



£89 Ex VAT
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MODEMS



Inc VAT

US Robotics

NEW
NEW

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Sportster 28.8, 28,800bps Data Speed, 14,400bps Fax Speed, Internal	£155	£182.13
Sportster 14.4Vi, 14,400bps Data/Fax Speed (with voice mail software), External	£89	£104.58
Sportster 28.8Vi, 28,800bps Data Speed, 14,400bps Fax Speed (with voice mail software), External	£155	£182.13
Courier V34 + Fax, 28,800bps Data Speed, 14,400bps Fax Speed, Internal	£235	£276.13
Courier V34 + Fax, 28,800bps Data Speed, 14,400bps Fax Speed, External	£235	£276.13
Worldport V32, 14,400bps Data/Fax Speed, External	£125	£146.88
Worldport V34, 28,800bps Data Speed, 14,400bps Fax Speed, External	£159	£186.83
Pace		
Linnet 32 Plus FX, 14,400bps Data/Fax Speed, External	£145	£170.38
Linnet 34FX, 28,800bps Data Speed, 14,400bps Fax Speed, External	£149	£175.08
Linnet Message Desk, 14,400bps Data/Fax Speed (with Answerphone facility), External	£149	£175.08
Micralin FX 32 Plus, 14,400bps Data/Fax Speed, Internal	£135	£158.63
Micralin FX 32 Plus, 14,400bps Data/Fax Speed, External	£139	£163.33
Micralin FX 34 Plus, 28,800bps Data Speed, 14,400bps Fax Speed, Internal	£135	£158.63
Micralin NB32 PCMCIA, 14,400bps Data/Fax Speed, External	£139	£163.33

MODEMS



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V32 Plus PC, 14,400bps Data/Fax Speed, External	£119	£139.83
V32 Plus PCMCIA, 14,400bps Data/Fax Speed, External	£129	£151.58
V34 Plus Fax, 28,800bps Data Speed, 14,400bps Fax Speed, External	£199	£233.83
V34 Plus PC, 28,800bps Data Speed, 14,400bps Fax Speed, External	£205	£240.88
V34 Plus PCMCIA, 28,800bps Data Speed, 14,400bps Fax Speed, External	£215	£252.63
Motorola		
3400 Online, 28,800bps Data Speed, 14,400bps Fax Speed (with Internet Software), External	£149	£175.08
3400 Pro, 28,800bps Data Speed, 14,400bps Fax Speed, External	£135	£158.63
Hayes		
Accura 14.4, 14,400bps Data/Fax Speed, External	£95	£111.63
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Creative Labs		
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BackUPS 1250VA - for multiple systems, longer runtime, telecom, minis, 25 mins runtime (full load), 8 mins (half load), 1250VA/900w	£329	£386.58
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SmartUPS 700VA - for Tower servers and engineering workstations, 20 mins runtime (full load), 6 mins (half load), 600VA/400w	£229	£269.08
SmartUPS 1000VA - for CAD/CAM, engineering workstations and servers, 20 mins runtime (full load), 7 mins (half load), 900VA/630w	£375	£440.63
SmartUPS 1400VA - for multiple servers, telecom equipment, 22 mins runtime (full load), 7 mins (half load), 1400VA/900w	£495	£581.63
SmartUPS 22000VA - for minicomputers, multiple servers, 22 mins runtime (full load), 8 mins (half load), 2200VA/16000w	£849	£999.58
Powerchute s/w - Netware software for mode II	£49	£57.58
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SMC 86-95-1331 - BNC 'T' piece	£6	£7.05



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Cherry G81 3000 Lamb - 105 keys, 5-pin DIN connector, soft touch	£29	£34.08
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Trackman Portable - 9-pin serial, 3 buttons, 200dpi	£32	£37.60
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SMC E32 - EISA Bus, for high end workstations/servers	£139	£163.33	
SMC E16MCA - MCA Bus, for IBM workstations/small servers	£125	£146.88	
3COM			
3COM 509 - 16-bit ISA Bus, for high end workstations/servers	£65	£76.38	£65 £76.38 £75 £88.13
3COM 579 - EISA Bus, for high end workstations/servers	£139	£163.33	£139 £163.33
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3COM 590 - PCI Bus, for high end workstations/servers			£99 £116.33
COMPLEX			
Complex V16 - 16-bit ISA Bus, for workstations/small servers.	£33	£38.78	

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SMC 70-97-0300 - Super-Slimline Desktop, 100w PSU, 2 x 3.5" bays	£52	£61.10
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ATX - Midi Tower, 200w PSU, 4 x 3.5", 3 x 5.25" bays (All cases are CE Approved)	£POA	

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01-90-5005 ArcServe, Netware-Windows, 5 User/server	£159	£186.83
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Note: We can also supply Arc Serve for DOS-based NetWare systems plus 100, 250 and 500 user NetWare networks. Versions for many other operating systems including UNIX & SUN are also available. Please call for more details and prices.

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Jumbo DJ50, 1.3Gb, 17Mb/min, tape type K		
Incl. controller & Windows 3.11 software, Internal	£149	£205.08
Jumbo DJ50, 1.3Gb, 17Mb/min, tape type K		
Incl. controller & Windows 3.11 software, External	£216	£253.80

COLORADO ACCESSORIES

External Box (Converts Internal Unit to External)	£45	£52.88
AB 11 external Jumbo port adaptor (Pass-through port connect to floppy cable)	£22	£25.85
FC-20 Jumbo Controller Card (ISA 8/16-bit Dedicated Controller Card)	£45	£52.88
Backup Software for Win 3.11 (Windows 3.11 dedicated backup software)	£39	£45.83
Backup Software for Unix/Xenix (Unix/Xenix dedicated backup software)	£75	£88.13
Backup Software for OS/2 (OS/2 dedicated backup software)	£79	£92.83

WANGTEK

5150PK Kit (non-SCSI), 250Mb, 6.7Mb/min, tape type C/D, Internal	£289	£339.58
5252ES, 525MB, 12Mb/min, tape type D/E, Internal	£319	£374.83
51000ES, 1Gb, 17Mb/min, tape type D/E/F, Internal	£449	£527.58

PARALLEL PORT

All drives run from standard ports and have a pass-through port for printers.

Trakker T1000E Travan, 800Mb, 8Mb/min, tape type A/B, External	£119	£139.83
Backpack 800 Travan, 800Mb, 8Mb/min, tape type A/B, External	£139	£163.33

PARALLEL PORT ACCESSORIES

Trakker Carry Case	£39	£45.83
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CONNER

TST 800R Travan, 800Mb, 9.5Mb/min, tape type A, Internal	£105	£123.38
TST 800EP Travan Parallel Port, 800Mb, 9.5Mb/min, tape type A, External	£169	£198.58
TSM 1700R, 1.7Gb, 19Mb/min, tape type L, Internal	£159	£186.83
TSM 3200R, 3.2Gb, 19Mb/min, tape type L, Internal	£189	£222.08
TSM 4000R-A EIDE, 4.0Gb, 54Mb/min, tape type M, Internal	£299	£351.33
TSM 4000R-S SCSI, 4.0Gb, 54Mb/min, tape type M, Internal	£289	£339.58
TSM 4000ES-S SCSI, 4.0Gb, 54Mb/min, tape type M, External	£439	£515.83

TAPE SELECTOR CHART

Inc VAT

TAPE TYPE		
A T1000	£23	£27.03
B1 DC2120 unformatted	£9	£10.58
B2 DC2120 pre-formatted	£11	£12.93
C DC6150	£12	£14.10
D DC6250	£15	£17.63
E DC6525	£15	£17.63
F DC9100	£24	£28.20
G DAT 4mm 90metre	£8	£8.23
H DAT 4mm 120metre	£14	£16.45
I DC2120XL pre-formatted	£16	£18.80
J1 DC3000XL unformatted	£17	£19.98
J2 DC3000XL pre-formatted	£22	£25.85
K DC1400	£28	£32.90
L TR3	£POA	POA
M QW3080XLF	£POA	POA
ACCESSORIES		
DAT (4mm TCDAT) 4mm Tape Cleaner	£12	£14.10

DAT DRIVES

Inc VAT

Use the Tape Selector chart to identify the tape you need.

HEWLETT PACKARD

C1534 (replaces HP 35470A) 2Gb, 11Mb/min, tape type G, Internal	£429	£504.08
C1534, 2Gb, 11Mb/min, tape type G, External	£529	£621.58
C1536 (replaces HP 35480A) 4Gb, 22Mb/min, tape type G, Internal	£499	£586.33
C1536, 4Gb, 22Mb/min, tape type G, External	£599	£703.83
C1533A, 8Gb, 44Mb/min, tape type G/H, Internal	£639	£750.83
C1533A, 8Gb, 44Mb/min, tape type G/H, External	£739	£868.33
C1553A Autoloader, 48Gb, 44Mb/min, tape type G/H, Internal	£1469	£1726.08
C1553A Autoloader, 48Gb, 44Mb/min, tape type G/H, External	£1569	£1843.58

HEWLETT PACKARD SURESTORE

Surestore 2000, 2Gb, 11Mb/min, tape type G, Internal	£525	£616.88
Surestore 2000, 2Gb, 11Mb/min, tape type G, External	£605	£710.88
Surestore 5000, 4Gb, 22Mb/min, tape type G, Internal	£609	£715.58
Surestore 5000, 4Gb, 22Mb/min, tape type G, External	£699	£821.33
Surestore 5000, 4Gb, 22Mb/min, tape type G, (Complete Kit) External	£1599	£1878.83
Surestore 6000, 8Gb, 44Mb/min, tape type G/H, Internal	£689	£809.58
Surestore 6000, 8Gb, 44Mb/min, tape type G/H, External	£779	£915.33
Surestore 6000, 8Gb, 44Mb/min, tape type G/H, (Complete Kit) External	£1789	£2102.08
Surestore 12000E Autoloader, 48Gb, 44Mb/min, tape type G/H, External	£1789	£2102.08
Surestore Warranty (HP 3 Year on site additional warranty)	£235	£276.13

WANGDAT

3100, 2Gb, 11Mb/min, tape type G, Internal	£499	£586.33
3100, 2Gb, 11Mb/min, tape type G, External	£599	£703.83
3200, 4Gb, 22Mb/min, tape type G, Internal	£579	£680.33
3200, 4Gb, 22Mb/min, tape type G, External	£679	£797.83
3400DX, 8Gb, 44Mb/min, tape type G/H, Internal	£665	£781.38
3400DX, 8Gb, 44Mb/min, tape type G/H, External	£765	£898.88

CONNER

4320, 2Gb, 11Mb/min, tape type G, Internal	£529	£621.58
4350, 2Gb, 11Mb/min, tape type G, External	£639	£739.08
4324, 4Gb, 22Mb/min, tape type G, Internal	£585	£687.38
4354, 4Gb, 22Mb/min, tape type G, External	£685	£804.88
4326, 8Gb, 44Mb/min, tape type G/H, Internal	£629	£739.08
4356, 8Gb, 44Mb/min, tape type G/H, External	£729	£857.58

SONY

SDT-2000E, 2Gb, 11Mb/min, tape type G, Internal	£489	£574.58
SDT-5200, 5Gb, 22Mb/min, tape type G/H, Internal	£545	£640.38
SDT-5000, 4.8Gb, 22Mb/min, tape type G/H, Internal	£699	£821.33
SDT-7000 Quad, 4.8Gb, 44Mb/min, tape type G/H, Internal	£749	£880.08
TSL-7000 Autoloader, 64Gb, 22Mb/min, tape type G/H, Internal	£1749	£2055.08



USE THIS CHART TO IDENTIFY THE TAPE YOU NEED.

HP SURESTORE

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MEMORY

- 4Mb
- 8Mb
- 16Mb
- 32Mb
- 64Mb
- Non-Parity
- Parity
- EDO

HARD DRIVE

- Interface**
- EIDE
 - SCSI-2
 - 540Mb
 - 850Mb
 - 1.0Gb
 - 1.6Gb
 - 2.0Gb
 - Other (please specify)

PROCESSOR

- 486**
- DX2-66
 - DX4-100
- Intel Pentium®**
- P75
 - P90
 - P100
 - P120
 - P133
 - P150
 - P166

FLOPPY DRIVE

- 3.5" 5.25"
- Dual - 3.5" & 5.25"

SOUND CARD

- SoundBlaster**
- SB16
 - SB32
 - AWE32
 - Other (please specify)

CD ROM DRIVE

- Interface**
- EIDE SCSI-2
 - X4 Speed
 - X6 Speed
 - X8 Speed

KEYBOARD

- 102 Key
- Cherry 102 Key
- Win 95 Ready 105 Key

GRAPHICS CARD

- 1Mb DRAM
- 2Mb DRAM
- 2Mb VRAM
- 4Mb VRAM
- Other (please specify)

MONITORS

- All monitors are SVGA non-interlaced
- 14" 15"
 - 17" 20"
 - 21"
 - Other (please specify)

CASE

- Desktop
- Mini Tower
- Full Tower

SPEAKERS

- None
- 10 Watt
- 80 Watt

MODEM

- Internal**
- 14.4Kb/s
 - 28.8Kb/s
- External**
- 14.4Kb/s
 - 28.8Kb/s

PRINTER Please specify your choice

OPERATING SYSTEM

- DOS-6.22 & Windows 3.11
- Windows 95

Other options

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- Intel® 75MHz processor
- 8Mb RAM (max 128Mb)
- 850Mb EIDE hard disk
- 1.44Mb floppy drive
- 64-bit graphics
- 105 keyboard and mouse
- 14" SVGA .28dp NI screen
- Includes all the listed software
- Multimedia model (shown) includes quad speed CD-ROM, 16-bit sound card, speakers and additional CD software and is only £100+VAT=£117.50 Inc VAT extra.

£799 plus VAT

Pre-loaded Software

Software is pre-loaded with on-line documentation. Pack shots shown for illustration only.

- Microsoft® Windows 95
- Lotus Windows 95 software suite
- Word Pro 96 for Windows 95
- Approach 96 for Windows 95
- 1-2-3 v5 spread sheet
- Organizer v2
- SmartPics graphics
- GSP Pressworks desktop publishing
- GSP Designworks art & graphics
- Pacio 2000 Business Accounts
- GSP Homewise home & personal utilities
- GSP Money personal finance package

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Multimedia Model Powerstation 1:

As shown above with quad speed CD-ROM, 16-bit sound card, twin speakers, 64-bit integrated graphics (uses 1Mb RAM), PC joystick. Also includes 5 CD multimedia titles

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Please read ordering information inside prior to ordering.

See inside for full details.... See inside for full details....

Multimedia Time Machines 96

The new Multimedia Time Machines 96 are powerful, high specification Pentium® systems from Colossus, the UK's leading manufacturer of high performance PC systems. These state of the art systems feature a minimum of 16Mb or 32Mb RAM and have been optimised for Microsoft® Windows® 95. Excellent business software from Lotus and other leading manufacturers is included together with a range of educational and leisure software. All are fully multimedia ready with fitted quad, six or eight speed CD-ROM drives, top quality sound cards and a superb range of CD multimedia titles. All systems include 28.8 fax and Internet pack (14.4 on P100 model) allowing these systems to function as a powerful fax machine and allowing you to get on-line to services such as

CompuServe and the Internet. At these amazing prices with interest free credit available for a limited period, these top brand systems are without doubt the best computer solutions for the serious home, professional and small business user. Add a quality printer pack (available on interest free credit) for a complete solution.

Time Machines 96 -

Key Features

- Top Colossus brand high specification systems
- 16Mb RAM minimum
- 256k burst mode cache
- P100 to P166 processors
- 28.8 fax/data/Internet modems (14.4 on P100 model)
- Large 15" or 17" screens
- High spec CD-ROM multimedia with premium speakers & microphone
- The best software bundle in the UK

System Specification

- Intel® 100, 120, 133 or 166MHz Pentium processor
- 16Mb or 32Mb RAM expandable to 128Mb
- 256k burst mode cache
- 850Mb, 1.08Gb, 1.6Gb or 2.0Gb fast Enhanced IDE hard disks with upto 256K cache
- 1.44Mb floppy drive.
- Cases: Model 96-3 Colossus desktop case with 7 drive bays; Models 96-1, 96-2, 96-5 & 96-6 Colossus midi-tower case with 8 bays. Models 96-7 and 96-8 Colossus full-tower case with 9 drive bays
- Graphics: 64-bit integrated graphics with video acceleration (Integrated graphics use 1Mb of system RAM; switchable to 2Mb to give more colours and higher resolutions). 2Mb DRAM graphics card on model 96-5; 2Mb or 4Mb 'VRAM' graphics card on model 96-6, 96-7, and 96-8.
- 15" or 17" SVGA low radiation colour screen
- 105 Windows 95 keyboard and Microsoft compatible mouse
- Microsoft Windows 95 with manuals
- 12m warranty extendable to 5 years

Multimedia Hardware

- Quad speed, six speed or eight speed IDE CD-ROM drive
- 16-bit high quality sound card. Orchid 3D wavetable sound card on models 96-6, 96-7 and 96-8.
- Twin premium stereo speaker (15 watt) system with separate A/C adapter
- PC joystick
- PC microphone

Fax & Data Modem

- Included with all models
- 28.8 External BABT approved fax & data modem (14.4 internal modem on P100 model)

3.2Gb Tape back-up on models 96-7 and 96-8

***APR 0% INTEREST FREE CREDIT**

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Multimedia Time Machine 96-1
100MHz Pentium

100MHz Pentium Colossus midi tower with 16Mb RAM, 256k burst mode cache, 850Mb hard disk, quad speed CD-ROM, 14.4 BABT modem, integrated 64-bit PCI graphics and large 15" NI screen

£49 Per Month

£206.70 deposit and 24 monthly payments of £66 OR
£614.70 deposit and 24 monthly payments of £49. Total price £1499 +VAT = £1790.70 inc delivery & VAT. APR 0%



Multimedia Time Machine 96-2
120MHz Pentium

120MHz Pentium Colossus midi tower with 16Mb RAM, 256K burst mode cache, 1.08Gb hard disk, quad speed CD-ROM, integrated 64-bit PCI graphics, 28.8 external modem and large 15" NI screen

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£609.70 deposit and 24 monthly payments of £59. Total price £1699 +VAT = £2025.70 inc delivery & VAT. APR 0%



Multimedia Time Machine 96-3
133MHz Pentium

133MHz Pentium Colossus desktop with 16Mb RAM, 256K burst mode cache, 1.08Gb hard disk, quad speed CD-ROM, integrated 64-bit PCI graphics, 28.8 external modem and large 15" NI screen

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- Lotus Windows 95 Software Suite
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- Lotus SmartPics graphics

General Business/Home Office Software

- GSP Pressworks desktop publishing pack
- GSP Designworks art & graphics pack
- Pacioli 2000 Business Accounts
- GSP Money personal finance package
- TurboCAD for Windows
- Organize Your Way
- Picture This! graphics pack
- Masterclips SE clipart
- GSP Homewise home & personal utilities

Included with all systems. Software is pre-loaded with on-line documentation. Pack shots shown for illustration only.

Educational Software

- Fun School 4, Fun School Maths, Fun School Spelling, Fun School Paint & Create
- Flying Fingers typing tutor
- EZ Language French, German and Spanish

Multimedia CD Software

- EZ Language multimedia CD
- Infopedia encyclopaedias & reference books
- WinTutor Windows 95 multimedia tutorial
- BodyWorks v5 Educational/Medical multimedia CD
- Semerc Educational National Curriculum School Suite CD including GraphPlot graphics pack, Sheetwise spread sheet, Treasure Chest clipart
- Shareware CD pack including Doom and many other games
- Play & Learn Educational CD
- Time Almanac



**Multimedia Time Machine 96-5
133MHz Pentium**

133 MHz Pentium Colossus midi tower with 16Mb EDO RAM, 256K burst mode cache, 1.6Gb hard disk, six speed CD-ROM, graphics card with 2Mb RAM, 28.8 external modem and large 15" NI screen

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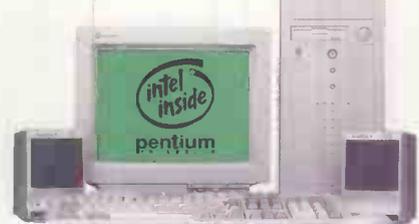
**Multimedia Time Machine 96-6
133MHz Pentium**

133 MHz Pentium Colossus midi tower with 16Mb EDO RAM, 256K burst mode cache, 2.0Gb hard disk, six speed CD-ROM, graphics card with 2Mb 'VRAM' video, Orchid wavetable 3D sound card, 28.8 external modem and large 15" NI screen

£89 Per Month

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15" to 17" Upgrade **£199 +VAT = £233.83 inc VAT**



**Multimedia Time Machine 96-7
166MHz Pentium**

166 MHz Pentium Colossus full tower with 16Mb EDO RAM, 256K burst mode cache, 2.0Gb hard disk, eight speed CD-ROM, graphics card with 4Mb 'VRAM' video, Orchid wavetable 3D sound card, 28.8 external modem, 3.2Gb tape back-up system and large 15" NI screen

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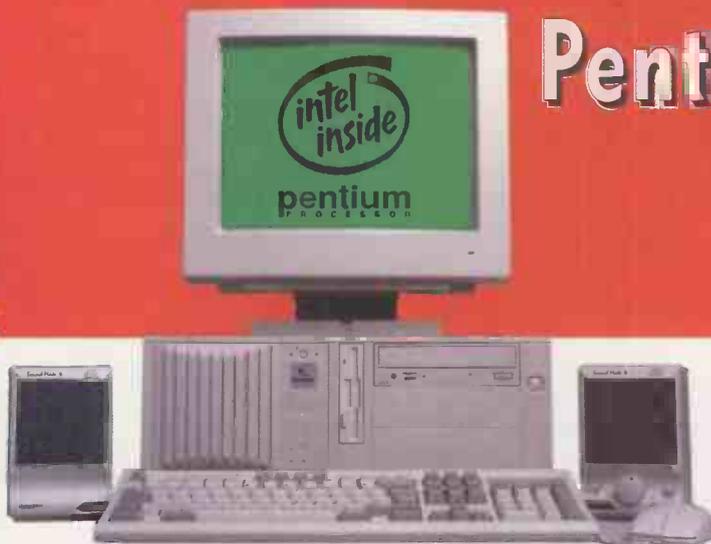
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- Intel® 75MHz Pentium processor
- 8Mb RAM (expandable to 128Mb)
- 850Mb enhanced IDE (fast ATA) hard disk
- 3.5" 1.44Mb floppy drive
- PCI bus with 4 PCI slots
- Integrated 64-bit PCI bus graphics (uses 1Mb of RAM)
- 14" SVGA 0.28dp colour screen (15" optional)
- Enhanced PCI IDE hard and floppy controller
- Parallel, 2 fast serial and keyboard ports
- Expandable desktop case
- 5 Drive bays and 7 expansion slots (4 PCI)
- 102 Enhanced keyboard
- Software bundle including Lotus SmartSuite worth over £1000 (see below) with our best buy multimedia models only

£729 plus VAT
£856^{.58} inc VAT

100MHz Pentium 850 DT

- Intel 100MHz Pentium processor
- 8Mb RAM expandable to 128Mb
- 850Mb enhanced IDE (fast ATA) hard disk with 256K hard disk cache
- 3.5" 1.44Mb floppy drive
- PCI bus with 4 PCI slots
- Integrated 64-bit PCI bus graphics (uses 1Mb of RAM)
- 14" SVGA 0.28dp colour screen (15" optional)
- Enhanced PCI IDE hard and floppy controller
- Parallel, 2 fast serial and keyboard ports
- Expandable desktop case
- 5 Drive bays and 7 expansion slots (4 PCI)
- 102 Enhanced keyboard
- Software bundle including Lotus SmartSuite worth over £1000 (see below) - FREE with our best buy multimedia models only

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- Intel 120MHz Pentium processor
- 8Mb RAM expandable to 128Mb
- 850Mb enhanced IDE (fast ATA) hard disk with 256K hard disk cache
- 3.5" 1.44Mb floppy drive
- PCI bus with 4 PCI slots
- Integrated 64-bit PCI bus graphics (uses 1Mb of RAM)
- 14" SVGA 0.28dp colour screen (15" optional)
- Enhanced PCI IDE hard and floppy controller
- Parallel, 2 fast serial and keyboard ports
- Expandable desktop case
- 5 Drive bays and 7 expansion slots (4 PCI)
- 102 Enhanced keyboard
- Software bundle including Lotus SmartSuite worth over £1000 (see below) - FREE with our best buy multimedia models only

£809 plus VAT
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Quad multimedia models + £99 plus VAT = +£116.33
15" 0.28 dp NI screen +£70 plus VAT = +£82.25

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75MHz Pentium processor, 850Mb, 8Mb system with 14" 0.28dp screen, mouse, Windows® 95 and Lotus Windows 95 software suite.

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75MHz Pentium processor, 850Mb, 8Mb system with quad speed CD-ROM, 16-bit sound card and OS/2 and Lotus SmartSuite bundle shown below. (no screen or speakers)

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Please select required speakers, screen and mouse

BEST BUY Multimedia Desktop D
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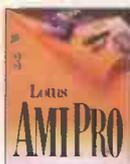
Please Note: Mouse is not included with this range as a choice of different mice is available from as low as £9 + VAT (£10.58 inc VAT).

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This superb range of pre-loaded and ready to use software applications includes, the superb multi-tasking 32-bit version of Lotus SmartSuite for OS/2, IBM OS/2 Warp, Pacioli 2000 Business Accounts, Fun School, the best shareware games and other programmes. It is included FREE with our Best Buy OS/2 multimedia systems.



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Omega



100MHz Pentium 850 MT

- Intel 100MHz Pentium processor
- 8Mb RAM expandable to 128Mb
- 256k Burst mode cache
- 850Mb Enhanced IDE (fast ATA) hard disk with 256K hard disk cache
- 3.5" 1.44Mb floppy drive
- PCI bus with 4 PCI slots
- Integrated 64-bit PCI bus graphics (uses 1Mb of RAM)
- 14" SVGA 0.28dp colour screen (15" optional)
- Enhanced PCI IDE hard and floppy controller
- Parallel, 2 fast serial and keyboard ports
- Expandable midi tower case
- 5 Drive bays and 7 expansion slots (4 PCI)
- 102 Enhanced keyboard
- Software bundle including Lotus SmartSuite worth over £1000 (see below) - FREE with our best buy multimedia models only

£789 plus VAT
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1.08Gb models£879 plusVAT = £1032.83
16Mb RAM models£150 plusVAT = +£176.25
Quad multimedia models+£99 plusVAT = +£116.33

133MHz Pentium 850 MT

- Intel 133MHz Pentium processor
- 8Mb RAM expandable to 128Mb
- 256k Burst mode cache
- 850Mb Enhanced IDE (fast ATA) hard disk with 256K hard disk cache
- 3.5" 1.44Mb floppy drive
- PCI bus with 4 PCI slots
- Integrated 64-bit PCI bus graphics (uses 1Mb of RAM)
- 14" SVGA 0.28dp colour screen (15" optional)
- Enhanced PCI IDE hard and floppy controller
- Parallel, 2 fast serial and keyboard ports
- Expandable mid tower case
- 5 Drive bays and 7 expansion slots (4 PCI)
- 102 Enhanced keyboard

£889 plus VAT
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1.08Gb models£979 plusVAT = £1150.33
16Mb RAM models£150 plusVAT = +£176.25
Quad multimedia models+£99 plusVAT = +£116.33

166MHz Pentium 850 MT

- Intel 166MHz Pentium processor
- 8Mb RAM expandable to 128Mb
- 256k Burst mode cache
- 850Mb Enhanced IDE (fast ATA) hard disk with 256K hard disk cache
- 3.5" 1.44Mb floppy drive
- PCI bus with 4 PCI slots
- PCI bus graphics
- 14" SVGA 0.28dp colour screen (15" optional)
- Enhanced PCI IDE hard and floppy controller
- Parallel, 2 fast serial and keyboard ports
- Expandable midi tower case
- 5 Drive bays and 7 expansion slots (4 PCI)
- 102 Enhanced keyboard

£1139 plus VAT
£1338.33 inc VAT

1.08Gb models£1229 plusVAT = £1444.08
16Mb RAM models£150 plusVAT = +£176.25
Quad multimedia models+£99 plusVAT = +£116.33
28.8 Extended modem +£140 plusVAT = +£164.50

BEST BUY

Multimedia Base E

Midi-tower model with 100MHz Pentium processor, 256k burst mode cache, massive 16Mb RAM, 10.8Gb hard disk, quad speed CD-ROM, 16-bit sound card, OS/2, Lotus SmartSuite and software bundle shown below. (no screen or speakers)

£829 Plus VAT
£974.08 inc VAT

Please select required speakers, screen and mouse

BEST BUY

Multimedia Tower E

New midi-tower model with 100MHz Pentium processor with 256k burst mode cache, 1.08Gb RAM, 10.8Gb hard disk, massive 16Mb RAM, quad speed CD-ROM, 16-bit sound card, stereo speakers, OS/2 and Lotus SmartSuite and software bundle shown below, includes 14" .28dp screen

£999 Plus VAT
£1173.83 inc VAT

Finance from under **£44** * Per Month
See example

*Finance Example Multimedia Desktop D: Cash purchase: £799 +VAT =£968.20 Inc. delivery & VAT. Credit Purchase: 10% (£96.82) deposit and 24 equal monthly payments of £43.57. Total price £1142.50 including delivery & VAT. Finance is available subject to status. Written details are available on request. Be sure you can afford the payments before entering into a credit agreement.

*APR **19.8%**



Pacioli 2000 Business Accounts is a full-featured package that outperforms many packages costing over £500



IBM OS/2 Warp v3 is the latest and most powerful 32-bit, multitasking operating system



PC DOS 7 (full version) is the latest version of DOS and gives you upto 40K more RAM than version 6.22



Fun School 4 covers the essential elements of the national curriculum



Fun School Maths educational package covering all the essentials



Doom virtual reality graphics game - the world's most popular game



Raptor Flight simulator / warship shoot'em up action crazed guns blazing game



Blake Stone graphics adventure game set in a high tech space station



Epic Pinball professional arcade game with all the usual features

Sales Lines Open:
Mon - Fri
8.30am - 7.00pm
Sat 9.00am - 5.00pm

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TIME
Computer Systems Ltd.



Multimedia Powerstation

The new Multimedia Powerstation models from Time come with a high specification which has been optimised for Windows® 95 and includes fast Intel® Pentium® processors, a minimum of 8Mb or 16Mb RAM, large hard disks upto 2.0Gb, fast controllers and plenty of expansion potential.

All are fully multimedia ready with fitted quad speed or six speed CD-ROM drives, 16-bit sound cards, an excellent range of educational CD titles including BodyWorks v5, Infopedia Encyclopaedia and Reference books, and WinTutor 95 Windows tutorial. Many systems also include powerful fax/data/Internet modems which are essential for todays business and home needs.

Also included is the best business software from Lotus, GSP and Pacioli which will handle all your requirements for word processing, filing, number crunching, organizing, graphics, accounts and desktop publishing. At these special introductory prices, with the finance option from under £55 per month these systems are simply unbeatable.

System Specification

- Intel 75, 100, 120, 133 or 166 MHz Pentium processor
- 8Mb or 16Mb RAM expandable to 128Mb
- 850Mb, 1.08Gb, 1.6Gb or 2.0Gb fast Enhanced IDE hard disks with upto 256K cache
- 1.44Mb floppy drive.
- Cases: Model 1 and 2- Omega desktop a case with 7 bays; Model 6- Colossus desktop case with 7 drive bays; Models 4, 5, 8 & 9 Colossus midi tower case with 8 bays.
- 64-bit graphics (integrated graphics use 1Mb of system RAM; switchable to use 2Mb RAM on 16Mb systems to give more colours and higher resolutions). 2Mb DRAM graphics card on model 8; 'VRAM' graphics card on model 9 with s3 968 processor
- 14", 15" or 17" SVGA low radiation colour screen
- PC keyboard and Microsoft® compatible mouse
- Microsoft Windows 95 with manuals.
- 12m warranty extendable to 5 years
- 14.4 BABT modem on models 2 & 4.
- 28.8 external modem on models 8B & 9

Multimedia Hardware

- Quad or six speed IDE CD-ROM drive
- 16-bit high quality sound card. Orchid 3D wavetable sound card on model 8
- Twin stereo speaker system (4w)
- PC joystick

Pre-loaded Software**

Included with all systems. Software is pre-loaded with on-line documentation. Pack shots shown for illustration only.

Lotus Windows 95 Software Suite

- Lotus Word Pro 96 for Windows 95 word processing package
- Lotus Approach 96 for Windows 95 database system
- Lotus 1-2-3 v5 spread sheet
- Lotus Organizer v2
- Lotus SmartPics graphics

- GSP Pressworks desktop publishing pack
- GSP Designworks art and graphics pack
- Pacioli 2000 Business Accounts
- GSP Homewise home and personal utilities
- GSP Money personal finance package

Multimedia CD Software

- Infopedia encyclopaedias and reference books
- WinTutor Windows 95 multimedia tutorial
- BodyWorks v5 educational/medical multimedia CD
- Semerc educational national curriculum school suite CD including Graphplot graphics pack, Sheetwise spread sheet, Treasure Chest clipart
- Shareware CD pack including Doom and many other games

APPROVED for communication systems specified in the conditions of use subject to the conditions of use in them.

**ALL OFFERS
END 31st MAY**



Multimedia PowerStation 1
75MHz Pentium
75MHz Pentium with 8Mb RAM (7Mb free), 850Mb hard disk, quad speed CD-ROM, integrated 64-bit graphics and 14" .28dp screen

£899 plus VAT

£1056.33 inc VAT

Model 2A

As above but with 14.4 fax\data modem£979 plusVAT (=£1150.33)



Multimedia PowerStation 4
100MHz Pentium
100MHz Pentium Colossus midi tower with 16Mb RAM, 256k burst mode cache, 850Mb hard disk, quad speed CD-ROM, internal 14.4 fax/data modem, integrated 64-bit PCI graphics, and 14" .28dp screen

£1099 plus VAT

£1291.33 inc VAT

NEW LOWER PRICE!



Multimedia PowerStation 5
120MHz Pentium
120MHz Pentium Colossus midi tower with 16Mb RAM, 256K burst mode cache, 1.08Gb hard disk, quad speed CD-ROM, integrated 64-bit PCI graphics, and 14" .28dp screen

£1139 plus VAT

£1338.33 inc VAT

28.8 External modem +£140 plusVAT (=£164.50)



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Computer Systems Ltd.

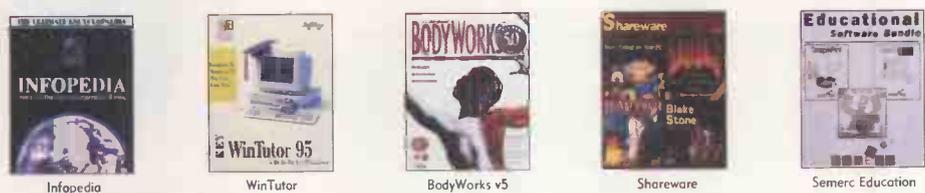
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Granville House, Blackburn Rd, Simonstone, Burnley, BB12 7GT

Sales Lines Open:
Mon - Fri
8.30am - 7.00pm
Sat 9.00am - 5.00pm



Finance from under **£54.15** Per Month *Finance Example Cash Purchase: £999 +VAT =£1203.20 inc. delivery & VAT. Credit Purchase: 10% (£120.32) deposit and 24 equal monthly payments of 54.15. Total Price 1419.92 inc. delivery & VAT. APR 19.8%. Finance is available subject to status. Written details are available on request. Be sure you can afford the payments before entering into a credit agreement. ***APR 19.8%**



Immediate Payment or Credit at APR 19.8% Pre-Configured 'Ready To Ship' Systems



Multimedia PowerStation 6
133MHz Pentium
133MHz Pentium Colossus desktop with 16Mb RAM, 256K burst mode cache, 1.08Gb hard disk, quad speed CD-ROM, integrated 64-bit PCI graphics, and 14" .28dp screen



Multimedia PowerStation 8
133MHz Pentium
133MHz Pentium Colossus midi tower with 16Mb EDO RAM, Intel Triton chipset, 256K burst mode cache, 1.6Gb hard disk, six speed CD-ROM, graphics card with 2Mb DRAM, and 14" .28dp screen



Multimedia PowerStation 9
133MHz Pentium
133MHz Pentium Colossus midi tower with 16Mb EDO RAM, Intel Triton chipset, 256K burst mode cache, 2.0Gb hard disk, six speed CD-ROM, graphics card with 2Mb 'VRAM' video RAM, 28.8 external modem and 15" .28dp screen

£1199 plus VAT **£1399** plus VAT **£1869** plus VAT
£1408.83 inc VAT **£1643**.83 inc VAT **£2196**.07 inc VAT

28.8 External modem +£140 plusVAT (=£164.50)

Model 8B with 28.8 external modem and 15" SVGA NI screen £1599+VAT (=£1878.83)

Model 10 with Intel P166 processor, full tower case, 4Mb RAM, 3.2Gb tape back-up £2469+VAT(=£2901.07)

Sales Lines Open:
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Fax: 01282 77 07 01. All prices exclude VAT at 17.5% and delivery at £25 +VAT (£29.38). *Finance prices include delivery and VAT. **All software applications are pre-loaded or on CD. Pock shots shown for illustration purposes only. Printed manuals and back-up media are available as options. Products are subject to availability. Prices and specifications are subject to change without notice. PC monitor sizes refer to tube size and not visible diagonal. E&OE.



Buy Now... Pay Later

These Multimedia Power PC systems are full-feature high performance systems that come complete with the best business software from Lotus, GSP and Pacioli which will handle all your requirements for word processing, filing, number crunching, organizing, graphics, accounts and desktop publishing.

These systems are available on interest free credit over 6 months. Pay just 10% deposit and the rest after 6 months.

6 months interest free credit

System Specification

- Intel® 75, 100 or 120MHz Pentium® processor
- 8Mb or 16Mb RAM expandable to 128Mb
- 850Mb or 1.08Gb enhanced IDE hard disks with up to 256K cache
- 1.44Mb floppy drive.
- Cases: P75 Model - Omega desktop case with 7 bays; Models P100 & P120 Colossus midi tower case with 8 bays.
- Graphics: 64-bit integrated graphics with video acceleration. This uses 1Mb of system RAM; switchable to use 2Mb RAM on 16Mb systems to give more colours and higher resolutions.
- 14" or 15" SVGA low radiation colour screen
- PC keyboard and Microsoft® compatible mouse
- Microsoft Windows® 95 with manuals
- 12m warranty extendable to 5 years
- 14.4 BAPT modem on P75 and P100 models

Multimedia Hardware

- Quad speed IDE CD-ROM drive
- 16-bit high quality sound card
- Twin stereo speaker system
- PC Joystick

Pre-Loaded Software**

Included with all systems. Software is pre-loaded with on-line documentation. Pack shots shown for illustration only.

- Lotus Windows 95 Software Suite
 - Lotus Word Pro 96 for Windows 95 word processing package
 - Lotus Approach 96 for Windows 95 database system
 - Lotus 1-2-3 v5 spread sheet
 - Lotus Organizer v2
 - Lotus SmartPics graphics
- GSP Pressworks desktop publishing pack
- GSP Designworks art and graphics pack
- Pacioli 2000 Business Accounts
- GSP Homewise home and personal utilities
- GSP Money personal finance package

Multimedia CD Software

- Infopedia encyclopaedias and reference books
- WinTutor Windows 95 multimedia tutorial
- BodyWorks v5 educational/medical multimedia CD
- Semerc educational national curriculum school suite CD including Graphplot graphics pack, Sheetwise spread sheet and Treasure Chest clipart
- Play & Learn educational pack
- Quicken v4 multimedia CD
- EZ Language multimedia CD
- Time Almanac CD
- Shareware CD pack including Doom and many other games

***APR 0% INTEREST FREE CREDIT**

Example: Multimedia Power PC P100: Cash purchase £1279+VAT = £1532.20 inc VAT & delivery. Credit purchase: £153.22 deposit, then pay nothing for 6 months. After six months pay the rest. Total price £1279 +VAT = £1532.20 inc VAT & delivery. APR 0%. Interest free credit is available subject to status. Written quotations are available on request. Be sure you can afford the payments before entering into a credit agreement.



Multimedia Power PC P75

75MHz Pentium desktop

75MHz Pentium with 8Mb RAM (7Mb free), 850Mb hard disk, quad speed CD-ROM, 14.4 fax/data modem, integrated 64-bit graphics and 14" .28dp screen

£1079 plus VAT

£1297^{.20} inc VAT & delivery

Pay Just £129.72 deposit

Multimedia Power PC P100

100MHz Pentium midi tower

100MHz Pentium Colossus midi tower with 16Mb RAM, 256k burst mode cache, 850Mb hard disk, quad speed CD-ROM, 14.4 fax/data modem, integrated 64-bit PCI graphics, and 14" .28dp screen

£1199 plus VAT

£1438^{.20} inc VAT & delivery

Pay Just £143.82 deposit

NEW LOWER PRICE!

Multimedia Power PC P120

120MHz Pentium midi tower

120MHz Pentium Colossus midi tower with 16Mb RAM, 256k burst mode cache, 1.08Gb hard disk, quad speed CD-ROM, integrated 64-bit PCI graphics, and 14" .28dp screen

£1239 plus VAT

£1485^{.20} inc VAT & delivery

Pay Just £148.52 deposit

28.8 BAPT modem **£140 +VAT = £164.50**
15" .28dp SVGA NI screen **£99 +VAT = £116.33**



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Multimedia Colour Notebooks From Texas Instruments With Intel® Pentium® Processors

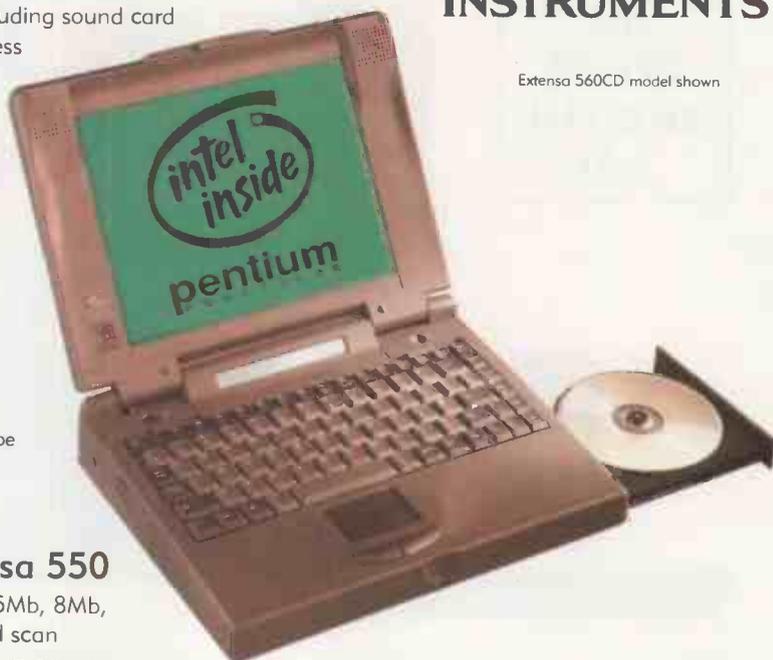
The new multimedia notebooks from Texas Instruments feature fast Intel 75MHz Pentium processors, large 520Mb, 810Mb or 1.2Gb hard disks and a minimum of 8Mb RAM. Our most popular model (Extensa 560CD) also includes a superb dual scan colour screen, full-feature multimedia including sound card and quad speed CD-ROM drive and excellent business software from Novell at just £1699 +VAT (£1996.33 inc VAT).

 **TEXAS
INSTRUMENTS**

Extensa 560CD model shown

System Specification

- Intel 75MHz Pentium processor
- 8Mb RAM expandable to 40Mb
- 525Mb, 810Mb or 1.2Gb IDE hard disk
- 1.44Mb floppy drive
- 10.4" dual scan or TFT colour screen
- 1Mb local bus graphics
- Double speed or quad speed internal CD-ROM drive on CD models only (interchangeable with floppy)
- All standard interfaces including enhanced parallel, 16550 serial, external VGA, PS/2 keyboard, mouse port, PCMCIA type III slot, audio in/out, microphone in, serial infra-red port and 16-bit PCI bus
- 16-bit stereo sound card on CD models
- NiMH battery
- Built-in touchpad
- Microsoft® Windows® 95
- Novell PerfectOffice software suite (only with CD models)
WordPerfect word processing package
Quattro Pro for Windows spreadsheet
Presentations graphics package
Envoy document system
InfoCentral organizer
GroupWise electronic mailing system



Extensa 550

P75, 525Mb, 8Mb,
dual scan

No multimedia, CD-ROM drive or
PerfectOffice

£1249 Plus
VAT

£1467^{.58} inc VAT

New P100 model £1299 +VAT = £1526.33 inc VAT

Extensa 550CD

P75, 525Mb, 8Mb, dual scan,
double speed CD-ROM drive

With multimedia and PerfectOffice
software

£1599 Plus
VAT

£1878^{.83} inc
VAT

Limited Stocks

Extensa 560CD

P75, 810Mb, 8Mb, dual scan,
quad speed CD-ROM drive

With multimedia and PerfectOffice
software

£1699 Plus
VAT

£1996^{.33} inc
VAT

Extensa 550CDT

P75, 525Mb, 8Mb, TFT colour,
double speed CD-ROM drive

With multimedia and PerfectOffice
software

£1999 Plus
VAT

£2348^{.83} inc
VAT

Limited Stocks

Extensa 560CDT

P75, 1.2Gb, 8Mb, TFT colour,
quad speed CD-ROM drive

With multimedia and PerfectOffice
software

£2099 Plus
VAT

£2466^{.33} inc
VAT



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Fax: 01282 77 01 01. All prices exclude VAT at 17.5% and delivery at £25 +VAT (£29.38). *Finance prices include delivery and VAT. **All software applications are pre-loaded or on CD. Pack shots shown for illustration purposes only. Printed manuals and back-up media are available as options. Products are subject to availability. Prices and specifications are subject to change without notice. PC monitor sizes refer to tube size and not visible diagonal. E&OE.



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VOICE FAX MODEMS

The Latest Communications Technology

★ INTERNET SPECIAL OFFER! ★

With every purchase you may take advantage of our special Internet offer. Full 12 months unlimited Internet access at local call rate for 85% of the UK population for only £50! Includes Netscape World Wide Web software, FTP, Usenet News and IRC! No obligation first month FREE!



Surf the Internet with Datatech

▶ AUTOMATIC FAX/DATA SWITCH £47 FDS3300



Fax Friend immediately pays for itself by replacing the need for installing a new dedicated telephone line for fax or modem.

The UK's top selling fax switch. Telephone, Answering Machine, Fax or Modem/PC work 100% normally - guaranteed no lost faxes... Remote control of Fax Machine from any telephone extension, including cordless. Connect upto 4 phones. Easy to install - just plug into any telephone socket. No recorded voice, tones or clicks. - Fully BAPT approved

▶ PCMCIA ETHERNET COMBO £89 PCL-ADAPT



• PCMCIA 2.0 High spec. 10-Mbps Ethernet adapter
• NE2000 compatible driver
• Supports T/P and Thin Ethernet BNC connections

• Small lightweight portable design - Low power consumption - 16k buffered RAM for high performance - LED indicator - High speed bus

▶ HIGH SPEED SERIAL CARD £14 16550C

High Speed 16C550 UART card with a maximum data rate of 115,200 bps - 16 byte FIFO buffer - essential for external high speed modems.

Supports IRQ 3 - 7 and COM ports 1 - 4

▶ PCMCIA VOICE FAX MODEM NEW VC1414C

• PCMCIA 2.00 version of the VC1414i including BitWare Voice Fax Modem software. - Phone for the latest details of this new product including a V34 version available shortly.

▶ PHONE BLASTER V.34 £239 PB2834



• Combines answering machine, speakerphone, fax/data modem and multimedia.
• Bring big business capabilities to your office or home with PhoneBlaster.

• Integrated message centre with remote access, up to 999 mail boxes. - Full-duplex speakerphone - SoundBlaster 16 audio. - 28,800 bps fax/modem. - Music on Hold - IDE CD-ROM drive interface. - MINI - BBS. - Fax on demand service.

▶ RACAL ISDN V120 TERMINAL ADAPTER £419 P120-ADAPT

• The latest V120 standard gives speeds upto 64k bps on compressed and non compressed data.

• Two analogue ports allow you to use your existing analogue equipment. Both ports can be used simultaneously.

• Plug and play operation for PC applications - supports AT commands

• Multiple Subscriber Numbering allows each port to be assigned a separate telephone number. - Fully CE (CTR3 standard) approved for use and sale in all European Community countries with CE mark approval.

▶ PCI ETHERNET ADAPTER £79 PCL-ADAPT



• High performance PCI local bus Ethernet adapter with 32 bit bus technology.

• Fully auto-configurable, plug and play specification.

• PCI burst mode greatly increases speed. Supports both twisted pair (RJ45) and thin coax (BNC) std's. - IEEE 802.3 standard.

• Diagnostic led's - Auto- detecting connector in use. - Free BNC "T" piece supplied. - Support Novell Netware DOS ODI and OS/2 ODI workstation-386 (3.x/4.x) server - Microsoft Windows for Workgroups 3.1.3.11, LAN Manager, Windows NT, Windows 95, UNIX, IBM LAN server (3/4), PATHWAY, DEC Pathway, ARTISOFT Lantastic, SCO - Supports IRQ 0 - 15

▶ V32bis INTERNAL VOICE FAX MODEM £69 VC1414I

▶ V32bis EXTERNAL VOICE FAX MODEM £74 VC1414E

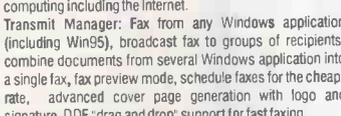
▶ V34 INTERNAL VOICE FAX MODEM £149 VC2834I



CHEYENNE COMMUNICATIONS

The VC series includes high specification modem supporting hardware error correction and data compression plus the latest software from Cheyenne Communications - we believe one of the best voice packages available today! You can now send and receive faxes, create your own voice mail system, retrieve faxes and voice messages from any touch-tone telephone, exchange files and explore the world of on line computing including the Internet.

Transmit Manager: Fax from any Windows application (including Win95), broadcast fax to groups of recipients, combine documents from several Windows application into a single fax, fax preview mode, schedule faxes for the cheape-rate, advanced cover page generation with logo and signature, DDE "drag and drop" support for fast faxing.



VOICE MANAGER: You (and your customers) can receive faxes and voice messages from any touch-tone phone. Create more than a thousand mailboxes, each with its own greeting message. Set-up Voice Manager to call your pager automatically. Create your own Fax-On-Demand mailboxes. Create Voice-On-Demand mailboxes. Remotely change messages. Copy, move and delete voice messages.

Receive Manager: Automatically receives faxes, answers voice calls and allows remote modem access all in the background. Forward received faxes automatically to another number. Automatically compresses and "cleans" fax images.

Data Communications: This module connects your PC to the world of online computing. You can send and receive files, exchange electronic mail and connect to online services. This full-featured program features popular file transfer protocols, including Y-modem-G, Zmodem, and Kermit. A powerful script language automates connections and routine tasks. Host mode lets you run a mini bulletin board system.

Full duplex speaker phone (14.4 version). Autodial Hands free conversation if you use optional microphone and speaker.

Phonebook: A powerful module, ideal for mass faxing, dBASE compatible, index-card interface, import ASCII, dBase or WinFax Pro 3 phone book. Easily create mailing lists using the group filters, search by name or company, links to dBase phonebook.

View Fax: Zoom in and out and rotate received images, rotate faxes that were sent upside down. Enhance the readability of faxes with anti-aliasing. Export faxes as BFX, BMP, DCX, PCX and TIFF files

• V32bis/32/22bis/22/21/bell
• Group 3 14400bps V17 Fax
• 16 bit ADC / DAC Voice
• MNP 2-4 V42 Error Correction
• Pulse and tone dialling
• 57,600bps max throughput
• On-board non volatile memory

• 14400/9600/2400/300bps
• Auto dial - Auto redial
• 16C550 High Speed UART
• MNP 5 V42bis Compression
• On-board speaker monitor
• Hayes compatible commands
• IRQ 2-5 COM 1-4 supported

• V34/VFAST/32bis/32/22 bis/22/21/bell/212A/103
• 28800,14400/9600/2400/1200/300 bps
• V17 - 14400 bps S/R Fax
• Group 3 Class 1 & 2 Fax
• V42 / MNP 2-4/10 error correction

• V42bis / MNP 5 data compression
• Asynchronous/Synchronous
• Lease line operation 2 wire
• Auto self test modes
• Auto dial / Auto answer
• Pulse and tone dialling

▶ V32bis EXTERNAL FAX MODEM £72 1414E

▶ V34 EXTERNAL FAX MODEM £119 2834E

▶ V32bis BAPT EXTERNAL FAX MODEM £89 DS1414E

▶ V34 BAPT EXTERNAL FAX MODEM £149 DS2834E



• High specification BAPT or FCC approved external fax modem.

• Available in V32bis 14400 bps and V34 28800 bps

• Latest Rockwell technology gives outstanding results, this is the ideal modem for getting

through on noisy telephone lines where other modems fail. - Ideal for heavy use situations.

• Supports the latest error correction standards including MNP10 on the V34 version, ideal for cellular use and where line conditions are very poor.

• For specialist use the unit also supports leased line operation and V23 for Viewdata type services.

• Fully Hayes AT compatible including Hayes extended

• The telephone line is constantly monitored and circuitry within the modem will dynamically equalise the line to compensate for noise, if line conditions continue to deteriorate the speed will automatically drop down and automatically fall forward when the line conditions improve.

• Supplied with Winfax, Dosfax, COMIT LITE Windows, DOS comms., and fax software.

• Free 9 & 25 pin serial cable and AC power supply.

▶ V34/VFAST/32bis/32/22 bis/22/21/bell/212A/103

• 28800,14400/9600/2400/1200/300 bps

• V17 - 14400 bps S/R Fax

• Group 3 Class 1 & 2 Fax

• V42 / MNP 2-4/10 error correction

• V42bis / MNP 5 data compression

• Asynchronous/Synchronous

• Lease line operation 2 wire

• Auto self test modes

• Auto dial / Auto answer

• Pulse and tone dialling

▶ V32bis INTERNAL FAX MODEM £64 1414ACI

▶ V34 INTERNAL FAX MODEM £99 2834ACI

▶ V32bis BAPT INTERNAL FAX MODEM £87 DS1414I

▶ V34 BAPT INTERNAL FAX MODEM £139 DS2834I



• Choose from the latest in technology, high performance V32bis or the lightning fast V34 28800 bps internal modem.

• High speed built-in 16550 serial port ensures maximum data throughput even on "old

technology" computers. A maximum of 57,600 bps throughput is achieved on the V32bis version while the V34 boasts 115,200 bps!

• Designed for continuous use operation ensures that this unit will perform in any situation - ideal for bbs, Internet, travel agents, hobby and support services.

• Error correction and data compression is hardware based. Some cheaper modems rely on the software to perform this function making them slower and less reliable.

• Support for independent IRQ and COM port settings enables you to install sound cards, CD's etc and still be able to use your modem, unlike some modems that only support two IRQ's and fixed COM port settings.

• Continuous line monitoring automatically drops the data speed to allow error free communications and unlike some other modems automatically increases the line speed when conditions improve.

• V34/VFAST/32bis/32/22 bis/22/21/bell/212A/103

• 28,800/14,400/9600/2400/1200/300 bps

• V17 - 14400 bps S/R Fax

• Group 3 Class 1 & 2 Fax

• V42 / MNP 2-4 MNP 10

error correction

• V42bis / MNP 5 data compression

• Lease line operation 2 wire

• 16C550 Buffered UART

• Auto dial / Auto answer

• Pulse & tone adaptive dial

▶ THE DATATECH ADVANTAGE ◀

✓ You can be confident when purchasing a modem from Datatech - modem specialists since 1989. Our service includes excellent pre-sales consultation, the very latest in communications technology, the keenest prices, free after sales technical support, plus if you are not totally satisfied with your purchase you can return it within 14 days for a refund (as long as it's sent back in "new condition").

✓ You can be safe in the knowledge that we supply the U.K.'s leading establishments including BT, M.O.D., BBC, Home Office, Red Cross, National Westminster Bank, British Gas, British Rail, ICL, Schools, Colleges, Universities, Police Forces, Fire Brigade, H.M. Treasury, and the list goes on.....

✓ Leading, reliable technology at the right price! Computer Shopper said "If what you want is a value for money solution, then the all round winner is from Datatech" (5/91). "extremely good value for a high-speed modem" (5/91) while PC Direct recommended the Datatech modem in its 10 modem review "for those planning to access BBS's and transfer files" (1/96). PC Format was so impressed it gave it's gold award and commented "You can change COM ports and IRQ settings separately - a flexibility not found on many modems. - Packaging, presentation and manuals are excellent." Need we say more!

✓ Datatech Modems support Hardware error correction and data compression. Some cheaper modems support this important standard only in software. Not all communication software supports this standard, this can lead to slower transfers and random characters appearing on your screen - not very good for controlling your bank account!

✓ All our modems are supplied with a free starter pack which includes free CompuServe membership and Internet software, free CIX membership and AMEOL off-line-reader software for Windows (worth £25), free quick start guide and free access to the Datatech BBS service for the latest software updates and drivers.

✓ We do not impose a credit card surcharge or charge high carriage tariffs. Please remember to check the TOTAL amount when comparing prices!

▶ THE DATA EXCHANGE BBS £9 BBS

FREE HTML WWW SOFTWARE!

Access using your standard comms software using ANSI colour setting or use the FREE HTML INTERACTIVE MULTIMEDIA SOFTWARE

12 + GIGS of data on-line!

The latest shareware, public domain, updates and demo software from all over the world including: DOS applications, games, game cheats, Windows applications, utilities, images, flight, Doom, Internet, ham radio, clipart, GIF, fonts, accounting, multi-media, database, CAD, communications, DTP, education, health, OS/2, religious, word processing, etc, etc...

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Portege610CT	-	£495 (£581.63)	£945 (£1110.38)	-	£195 (£229.13)	£149 (£175.08)	-	-
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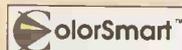


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Requires
Extra
Memory

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- 600 x 300 dpi black with HP RET

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EURPA1254 COLOUR OPTION KIT C3281A £31 (£36.43)
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HP DesignJet 750C	£3669	£4311.08	£4395	£5164.13

SEE PAGE 18 FOR HP MEMORIES
SEE PAGE 26 FOR HP JETDIRECT CARDS



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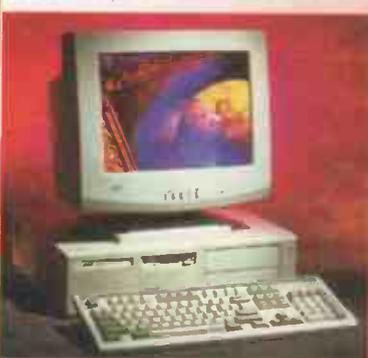
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- VE specifications: 640MB or 1.2GB HD, ISA/PCI slots, optional secondary cache, EDO RAM, Enhanced IDE on LB

Item	Model	Processor	HDD	RAM/MAX	I/O Slots	Price	Inv VAT
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EURCP3052	Vectra VE	Pentium 100	640MB	16MB/128MB	2*PCI,2*ISA	£1245	£1462.88
EURCP3050	Vectra VE	Pentium 133	1.2GB	16MB/128MB	2*PCI,2*ISA	£1499	£1761.33

Item	Model	Processor	HDD	RAM/MAX	I/O Slots	Price	Inc VAT
EURCP3095	Vectra VL4	Pentium 100	640MB	8MBEDO/128MB	2*PCI,2*ISA	£1079	£1267.83
EURCP3098	Vectra VL4	Pentium 100	1.2GB	16MBEDO/128MB	2*PCI,2*ISA	£1389	£1632.08
EURCP3102	Vectra VL4 MT	Pentium 100	1.6GB	16MBEDO/128MB	3*PCI,3*ISA	£1525	£1791.88
EURCP3093	Vectra VL4	Pentium 120	1.2GB	16MBEDO/128MB	2*PCI,2*ISA	£1435	£1686.13
EURCP3092	Vectra VL4	Pentium 133	1.2GB	16MBEDO/128MB	2*PCI,2*ISA	£1549	£1820.08
EURCP3099	Vectra VL4	Pentium 150	1.2GB	16MBEDO/128MB	2*PCI,2*ISA	£1699	£1996.33
EURCP3097	Vectra VL4	Pentium 166	1.2GB	16MBEDO/128MB	2*PCI,2*ISA	£1875	£2203.13
EURCP2985	Vectra VT MM	Pentium Pro150	1GB	16MBDIMM/128MB	3*PCI,3*ISA	£2349	£2760.08
EURCP3152	Vectra VT MM	Pentium Pro150	2GB	16MBDIMM/128MB	3*PCI,3*ISA	£3049	£3582.58
EURCP3159	Vectra VT MM	Pentium Pro200	2GB	32MBDIMM/128MB	3*PCI,3*ISA	£3899	£4581.33
EURMY0452	4MB Memory Upgrade for HP Vectra VL3 Series D2690A					£150	£176.25
EURMY1532	8MB Memory Upgrade for HP Vectra VL4 Series D3646B					£279	£327.83
EURMY1531	16MB Memory Upgrade for HP Vectra VL4 Series D3647B					£579	£680.33

AST COMPUTER BRAVO LC PCs



Outstanding speed & memory to the Max!

With your Bravo LC, you'll receive a powerful Cyrix 5X86 or Intel Pentium® processor, a PCI local bus, faster graphics, a new mid-size chassis, expansion capabilities, and AST Command Center (for ultimate virus protection). Plug-n-Play and E-IDE

support are also new to the Bravo LC line.

Features:

- 8MB RAM standard, expandable to 128MB
- 32bit PCI Graphics
- 630MB, 850MB or 1.2GB hard disk drive
- 1MB Video RAM Standard expandable to 2MB
- Two 32bit PCI and three 16bit ISA expansion slots
- Manufacturers three year warranty.

Item	CPU	Hard Drive	RAM/Max	Case	Price (Inc VAT)
CP2663	Cyrix P/75	850MB	8MB/128MB	Desktop	£769 £903.58
EURCP3229	Intel P/100	630MB	8MB/128MB	Desktop	£789 £927.08
EURCP3231	Intel P/133	1.2GB	16MB/128MB	Desktop	£1159 £1338.53
EL RCP3232	Intel P/166	1.2GB	16MB/128MB	Desktop	£1559 £1596.83
MT0906	AST Vision 4I 14" Analogue Monitor				£185 £217.58

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Power and Versatility in One Notebook!

- Intel® Pentium™ processing with up to 256KB of level 2 cache
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- Removable hard drive provides extra storage, flexibility, and increased security
- Only 5.8 lbs
- Extraordinary lithium ion battery life of 3-4 hours
- Ergonomic design, SmartPoint pointing device, and special Windows 95 keys



Item	CPU	Hard Drive	RAM/Max	Screen	Price (Inc VAT)
EURCP3225	J10 P/75	800MB	8MB/40MB	10.4" SVGA DSTN	£1755 £2062.13
EURCP3226	J30 P/100	800MB	8MB/40MB	10.4" SVGA DSTN	£2039 £2395.83
EURCP3227	J30 P/100	800MB	8MB/40MB	10.4" SVGA TFT	£2299 £2701.53
EURCP3228	J50 P/133	800MB	8MB/40MB	10.4" SVGA TFT	£2569 £3018.58
EURMY1567	8MB Memory Upgrade for Ascentia J Series				£319 £374.83

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486DX4-100, 8MB, 540MB HD, 10.4" TFT Screen

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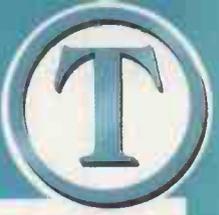


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PC Magazine, July 1995

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- Brilliant 10.4" TFT Display
- Lightweight 2.4kg
- PCMCIA slots -1 Type III or 2 Type II
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An intelligent combination of aesthetics and ergonomics offering maximum cost-effectiveness.



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(£1526.33)

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Lexmark Winwriter 200

- 4ppm laser • 600 dpi
- Windows and Win 95 GDI Printer
- Includes 1 year Lexmark on-site warranty

*Reconditioned by Lexmark to meet all original factory specifications - so you can buy with confidence. Limited stocks only - call for availability.



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£199!*
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NEW! Canon Printers for all Occasions

BJC-610

- 720x720dpi colour
- 4 colour cartridge system
- Microsoft® Windows® Printing System s/w
- Prints on plain paper



£319
(£374.83)

BJC-4100

- 720x360dpi colour and black and white
- Fast 4.5ppm mono printing
- 3 year warranty



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BJC-210

- 720x360dpi mono printing
- Optional colour cartridge £24
- 3 year warranty



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(£191.53)

A3 CANON BUBBLE JET PRINTERS

- BJ-230 A3 Monochrome Bubble Jet Printer **£235** (£276.13)
- BJ-330 A3 Monochrome Bubble Jet Printer **£389** (£457.08)
- BJC-800 A3 Colour Bubble Jet Printer **£925** (£1086.88)

LBP-460

- 4ppm laser; 600dpi with Auto Refinement
- Microsoft® Windows® Printing System s/w
- 1 year on-site warranty



£275
(£323.13)

BJC-70/BJ-30

- 360 dpi portable printers
- Built-in sheet feeder
- Colour BJC-70 **£185** (£217.38)
- Mono BJ-30 **£133** (£156.28)



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AFFORDABLE LASER PRINTERS FROM brother®

HL-1260 NETWORK LASER



- Fast 12ppm output • 87 standard fonts
- 2MB RAM memory upgradable to 26MB
- Toner Cartridge for HL1260 **£99** (£116.33)
- Duplexing Unit for the HL1260 **£399** (£468.83)
- HPI260 Lower Paper Tray (500shs) **£199** (£233.83)

£869
(£1021.08)

HL-660 OFFICE LASER

- 2MB RAM - 6ppm printer
- True 600 dpi resolution



£439
(£515.83)

HL-600 Series Toner Cartridge **£25** (£29.38)

NEW! WL-660 £319 (£374.83)
600dpi GDI Laser Printer, 1MB, 6ppm, 200 sheet tray, low cost Microfine toner and 1 year warranty

HL-630 PERSONAL LASER



- 300 dpi resolution
- 6 pages per minute
- Includes 45 fonts and Microfine toner
- Prints envelopes, different paper stocks & sizes
- HL-631 LASER PRINTER **£339** (£398.33)

£295
(£346.63)

NEW

HEWLETT-PACKARD SCANNERS

The launch of these new models moves the HP ScanJet range up to a new level of convenience and usability. The whole range is now focussed on easily providing working information rather than the mechanical process of scanning and manipulating data.

HP ScanJet 4p



HP's lowest cost colour A4 Flatbed Scanner!

ONLY
£325
(£381.88)

- ★ Colour A4 Flatbed
- ★ 300dpi resolution (1200dpi enhanced)
- ★ Strong software suite

HP ScanJet 4C



£614
(£721.45)

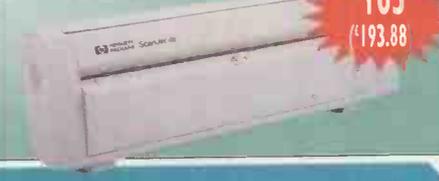
- ★ Hi-performance colour A4 flat-bed
- ★ 600dpi resolution (2400dpi enhanced)
- ★ Strong software suite

- 3YR OSM **£140** (£164.50)
- Auto Doc Feeder (4C/4P) **£325** (£381.88)
- Transparency Unit **£449** (£527.58)

HP ScanJet 4s

- ★ Easy to move around/uses serial port
- ★ Very compact yet A4 capable, mono
- ★ Excellent software capabilities

3YR OSM **£66** (£77.55)



£165
(£193.88)

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software



Computer Shopper Best Buy (March 1996)

EPSON STYLUS COLOR II

Offering high 720 x 720dpi resolution, the versatile Stylus Color II delivers photo-real colour output on a wide variety of materials, including coated, and gloss papers, and OHP transparencies. Whether you're printing photographic images, illustrations, or business graphics, the Stylus Color II can easily handle all your colour needs. Three year warranty included. 2ppm colour, 4ppm black.

FREE GRAPHICS SOFTWARE BUNDLE (CD-ROM)*:

MicroGraphix Graphics Work for Windows (RRP £99) - a complete graphics suite containing Windows Draw, PhotoMagic, Windows OrgChart, WinChart and SlideShow and including 10,000 clipart images and 1000 photographic image.
Epson CardMaker for Windows - create your own personalised A6-sized greeting cards, including hundreds of photographic and clipart images.
*while stocks last - valid until 30/6/96

only
£167
(£196.23)
+ FREE*
software



Epson Stylus Color IIs

The Stylus Color IIs provides the best of both worlds. When it's colour you want - you have Epson's photo-real Stylus colour. Want to print only black? Simply snap in a black cartridge and you'll have a high quality, black-only printer. And whether you're printing in full colour on black only, the Stylus Color IIs produces crisp documents - all at a staggering 720 x 720dpi quality on Epson paper. Includes three year warranty. 1ppm colour, 2.5ppm black.

Epson Stylus 820

Featuring Epson's unique 720dpi printhead, and using a specially formulated black ink, the Stylus 820 delivers crisp, clear text, and outstanding monochrome graphics on Epson paper.

£139 (£163.33)

Epson Stylus Pro - A4 Colour Printer

Ideal for printing photographic images etc at 720 x 720dpi.

£399 (£468.83)

Epson Stylus Pro XL - A3 Colour Printer

For CAD and design professionals offering 720 x 720dpi with Epson Micro Dot. 1.5ppm Colour, 3ppm black.

£825
(£969.38)

Photo-Real 720dpi capable

100 Sheet Feeder

Small Footprint

1 or 3 year warranty

LOW PRICES!

EURPA1267	Black Cart for II/IIs/820	£15 (£17.63)
EURPA1271	Colour Cart for II/IIs/820	£20 (£23.50)
EURBN0432	A4 Coated Paper 720dpi 200 sheets	£22 (£25.85)

STYLISH SCANNERS

from only
£315
(£370.13)



Epson GT-5000 Scanner

The NEW Epson A4 flatbed colour scanner GT-5000 is a compact and stylish system, ideal for both first time users and companies with more professional scanning requirements. Scanning resolution 300dpi and up to 2400dpi with interpolation.

- GTX-5000PCP PAR£315 (£317.13)
- GTX-5000PCS SCSI£369 (£433.58)
- GTX-8500PCP PAR£489 (£574.58)
- GTX-8500PCS SCSI£575 (£675.63)
- GTX-9000PCP PAR£589 (£692.08)
- GTX-9000PCS SCSI£669 (£786.08)

GTX-5000 Bundle includes Corel Photopaint 5, CorelDraw 4, Xerox Colour Document Management Suite (includes TextBridge (OCR), Visual Recall (document management) and integrated scan/fax/print software). GTX-8500/9000 includes Photoshop LE and Xerox Colour Document Management Suite

The Little BIG Laser from EPSON EPL-5500 Laser

Designed to meet your needs

One of the most compact laser printers you'll ever encounter! The EPL-5500 takes half the space of an ordinary laser printer. It prints fast, too! At 22.5MHz and 6 pages per minute, you'll save time. And let's not forget quality. The EPL-5500 uses BiRiTech Resolution (B Resolution Improvement Technology), an image enhancement system unique to Epson. BiRiTech monitors the size of dots on a page, shrinking or enlarging them to suit the image. The result? Sharper graphics, smoother lines and crisper text - unparalleled output clarity at up to 600 x 600dpi.

As low as
£363
(£426.53)



6ppm laser

EPL-5500 (1MB) LASER	£363 (£426.53)	250 SHEET LOWER PAPER TRAY	£199 (£233.83)
EPL-5500 (2MB) LASER	£408 (£479.40)	EPL-5500 TONER CARTRIDGE	£45 (£52.88)
EPL-5500PS (5MB) LASER	£695 (£816.63)		

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£284
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- ◆ 15" FST Digital Monitor
- ◆ 30-65 Khz (Multiscan)
- ◆ Low Radiation (MPR2)
- ◆ 0.28mm Dot Pitch
- ◆ 1024 x 768 up to 80 Hz

ERGOVISION 730LR



£485
(£569.88)

- ◆ 17" FST Digital Monitor
- ◆ 30-69 Khz (Multiscan)
- ◆ Low Radiation (MPR2)
- ◆ 0.28mm Dot Pitch
- ◆ 1024 x 768 up to 86 Hz
- ◆ OSD Image Control
- ◆ Win 95 Plug & Play

ERGOVISION 730TCO-S



£507
(£595.73)

- ◆ 17" FST Digital Monitor
- ◆ TCO 92 Compatible
- ◆ Built-in Speakers
- ◆ Built-in Microphone
- ◆ Headphone socket
- ◆ Mute Control
- ◆ Volume Control
- ◆ Win 95 Plug & Play

ERGOVISION 1080LR



£838
(£984.64)

- ◆ 20" Digital Monitor
- ◆ 30-82 Khz (Multiscan)
- ◆ Low Radiation (MPR2)
- ◆ 0.28mm Dot Pitch
- ◆ 1280 x 1024 up to 76 Hz

MONITORS

Ergovision 410 LR £197 (£231.48) Ergovision 740 TCO-S £519 (£609.83) GTS WinBoost 1 Meg (ISA,VLB,PCI) £83 (£97.53) GTS WinTurbo 2 Meg (ISA,VLB,PCI) £182 (£213.85)
Ergovision 740 LR £568 (£667.40) Ergovision 2100 TCO £1,349 (£1,585.10) GTS WinBoost 2 Meg (ISA,VLB,PCI) £117 (£137.48) GTS WinTurbo 4 Meg (ISA,VLB,PCI) £306 (£359.55)

GRAPHICS ACCELERATOR

NOKIA quality from only



**MULTIMEDIA
READY**

£475 (a) (£558.13)

- ◆ 17" flat, square tube
- ◆ 0.28mm dot pitch
- ◆ 1024 x 768 at 80HZ
- ◆ Integral 2 watt speakers
- ◆ Digital controls
- ◆ Power saving
- ◆ MPR II

VALUEGRAPH 447V MONITOR

Multigraph 44M090



£1429
(£1679.00)

- ◆ 21" flat, square tube
- ◆ 0.25mm Dot Pitch
- ◆ 1280 x 1024 resolution
- ◆ Power Management
- ◆ MPR II Standard



Vista S6E **NEW**

Remember how long it used to take to scan an A4 image? With the Vista S6E it only takes 23 seconds at 300dpi. That's the kind of scanner that really improves your productivity. 300 x 600dpi. (4800dpi through Ultra View Technology) Single pass, 24 bit high quality colour scanner. Includes Presto document management and OCR software.



Vista S6E £295 £346.63

Vista S12

A high resolution, high quality colour scanner without the high price tag! Fast single pass Colour CCD. 600 x 1200dpi (9600 x 9600 software interpolated), 24 bit colour. Built in analog gamma correction.



SuperVista S12Le with Photoshop LE £575 (£675.63)

SuperVista S12+ with Photoshop V3.0 £675 (£793.13)

PowerLook II Pro

The all new PowerLook II builds on its predecessor's success within the pre-press and professional DTP environments by improving both scanning speed and image quality. With a true optical resolution of 600 x 1200dpi and 36bits per colour pixel for accurate highlight and shadow detail, the PowerLook II leads the field as the professional's solution. Features adjustable lamp intensity for different original types and direct CMYK scans for increased productivity. Includes Transparency adaptor and Photoshop V3.0.

PowerLook II Pro £1995 (£2344.13)

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STORAGE

SIZE IDE	MANUFACTURER	MODEL	ITEM	ACCESS (MS)	CACHE (KB)	WARR YRS	PRICE	INC VAT
630MB	SEAGATE	ST3630A	EURDR4526	14	120	3	£119	£139.83
850MB	WESTERN DIGITAL	AC2850A	EUREX0824	10	64	3	£139	£163.33
1.0GB	FUJITSU	M1614	NEW	11	64	3	£145	£170.38
1.0GB	WESTERN DIGITAL	AC21000	EURDR1517	10	128	3	£155	£182.13
1.0GB	MAXTOR	KIT	DR4751	12	64	1	£175	£205.63
1.08GB	SEAGATE	ST51080A	EURDR1367	10.5	128	3	£139	£163.33
1.2GB	SEAGATE MEDALIST	ST51270A	DURDR4535	10.5	128	3	£159	£186.83
1.2GB	WESTERN DIGITAL	AC31200A	EURDR1293	10	64	3	£165	£193.88
1.2GB	SAMSUNG	PLS31274A	EURDR1502	11	256	3	£149	£175.08
1.2GB	MAXTOR	KIT	DR4562	12	256	1	£199	£233.83
1.6GB	WESTERN DIGITAL	AC31600A	EURDR1515	10	128	3	£199	£233.83
2.0GB	SEAGATE MEDALIST	ST32140A	DURDR4525	10.5	256	3	£225	£264.38

SCSI	MANUFACTURER	MODEL	ITEM	ACCESS (MS)	CACHE (KB)	WARR YRS	PRICE	INC VAT
545MB	FUJITSU	M1603S	EURDR1350	10	512	1	£129	£151.58
1.0G	FUJITSU	M1606S	EURDR1030	10	512	5	£165	£193.88
1.0GB	QUANTUM FIREBALL	F1080S	NEW	12	128	3	£155	£182.13
1.06GB	SEAGATE HAWK	ST31051N	EURDR4573	10.5	256	5	£275	£323.13
2GB	QUANTUM CAPELLA	VP32210S	EURDR4591	9	1024	5	£439	£515.83
2.1GB	MICROPOLIS	4221AV	EURDR0938	8.9	512	5	£2519	£609.83
2.14GB	SEAGATE BARRACUDA	ST32550N	DHD1034	8	512	5	£2559	£656.83
4.0GB	SEAGATE HAWK	ST15230N	DR4533	10.5	512	5	£2685	£804.88
4.0GB	SEAGATE BARRACUDA	ST1510N	EURDR0951	8	1000	5	£825	£969.38
4.0GB	QUANTUM ATLAS	XP34300	EURDR4590	8.5	2048	5	£789	£927.08
9.0GB	SEAGATE	ST410800N	DR4491	11	1000	5	£1399	£1643.83
9.1GB	MICROPOLIS	1991AV	EURDR4584	12	512	5	£1499	£1761.33

HARD DRIVES



CD-ROM DRIVES

Item	Manufacturer	Int/Ext	Speed	Data Rate	Access	Price	Inc VAT
				KB/sec	ms		
IDE							
EURDR0992	Pioneer DRUA124X	Int	4X	614	150	£115	(£135.13)
EURBN0559	Poweruser 4X	Int	4X	720	220	£39	(£45.83)
EURDR1368	Aztech 6Xi	Int	6X	900	225	£69	(£81.08)
EURDR1509	Creative Blaster CD	Int	6X	600	150	£115	(£135.13)
EURDR4587	Aztech 8X	Int	8X	1200	185	£129	(£151.58)
EURDR4569	NEC Multispin 4X4c	Int	4X	600	250	£179	(£210.32)
SCSI							
EUEDR0797	NEC 6Xi	Int	6X	900	150	£264	(£310.20)
EURDR0797	NEC 6XE	Ext	6X	900	150	£349	(£400.68)
EURDR1397	Toshiba XM3701S	Ext	6.7X	1000	130	£330	(£387.75)
EURDR1374	Toshiba XM3701B	Int	6.7X	1000	130	£265	(£311.38)



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ONLY £79 (£92.83)

- The easy way to make movies and take pictures with your PC
- Add photos to your documents and brochure
- Easy installation

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Backpack 4X Inc Sound	£309 (£363.07)
Backpack 1.2GB Hard Drive	£375 (£440.62)
Backpack 800MB Travan Drive	£189 (£222.07)



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Ergonomically designed for your office and home environment. This stylish acrylic stand raises your monitor 165mm off your desk, allowing you to store your keyboard underneath to clear vital desk space. The design of this terminal stand allows you to work long hours at your monitor without the risk of neck strain or backache. **A must for all work places.**

Designer Terminal Stand	£34.95	(£41.07)
Mouse House for easy storage	£3.95	(£4.64)
CD Tower (10 CD's)	£18.95	(£22.27)
Stylish and easy to view and obtain your favourite CDs		
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NEW

Kelvin Video64 Graphics Card

The affordable 64-bit graphics and digital video accelerator for today's multimedia computers

Orchid Technology's Kelvin™ Video64 superior graphics and full motion digital video acceleration at an affordable price. Graphics performance includes high resolution (up to 1600 x 1200 non-interlaced display), true colour depth up to 16.7 million colours, and refresh rates up to 150Hz. Full motion digital video can be scaled up to full screen at 1024 x 768 resolution and software support is provided for MPECC video playback.

Kelvin Video64 DRAM 1MB **£89** (£104.58) Kelvin Video64 DRAM 2MB **£159** (£183.35)

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- Stores 100MB on one 3.5 cartridge
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- 29 m/s seek time
- 1.25 mb/s transfer time

Zip Drive Parallel.....	£145	(£170.37)
Zip Drive SCSI.....	£145	(£170.37)
Zip Drive Parallel inc 5 carts...	£189	(£222.07)
Zip Drive SCSI inc 5 carts...	£189	(£222.07)
Cartridge Single.....	£13	(£15.27)
5 Pack Cartridge.....	£55	(£64.62)



GENIUS NEWSKETCH 1812/D

- 18 x 12 inch workspace
- KeyCAD Complete for Windows
- LCD panel provides pinpoint accuracy (1812D only)
- ADI driver, DOS driver, WINTAB Windows driver
- Includes: Puck, Stylus Pen, Power Adapter, AutoCAD R10, R11, R12 compatible templates, KeyCAD Complete for Windows, Utilities Disk, User's manuals

Newsketch 1812 **£184.95** (£202.45) Newsketch 1812D (with LCD panel) **£199.95** (£217.45)

FROM ONLY £184.95 (£202.45)



CASIO QV-10 DIGITAL CAMERA

- Up to 96 images can be selected, displayed or saved in memory
- Built in LCD
- Multiple image display
- Compact & lightweight

ONLY £495 (£581.63)



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486DX4-100, 8MB, 540MB HD, 10.4" TFT Screen
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- Supports both 8-bit and 16-bit Wide SCSI devices (AHA-2940UW)

AHA-2920 PCI-SCSI

Fast, Simple SCSI connection for your Pentium PC

- Easy Plug-and-Play installation of up to 7 SCSI devices
- Fast PCI data transfer for desktop applications
- Extensive set of convenient SCSI applications and tools included with Adaptec EZ-SCSI software

	Price Inc Vat
AHA-2940UW	£229 (£269.08)
AHA-3940 Dual Channel PCI-SCSI	£295 (£346.63)
AHA-1542CP ASPI Kit ISA-SCSI	£179 (£210.33)
AHA-2742T ASPI Kit EISA-SCSI	£239 (£280.83)

All cards now ship with EZ-SCSI 4.0 Windows software (Win95 compatible)

Enhance your IDE

This kit contains everything you need to add up to four Enhanced IDE peripherals, including HDs, CD-ROMs to your ISA bus PC. With only one IDE channel to communicate with a maximum of two IDE hard drives, most ISA PCs cannot fully support an EIDE drive and an EIDE CD-ROM drive over the same channel.



To take advantage of EIDE drives over 528MB and the new low-cost EIDE CD-ROM drives, you need the EIDE AT 32 Valuepack. If you also want Floppy support, choose the IDE AT 42. Both include PowerIDE software.

Future Domain EIDE AT32 ValuePak £45 (£52.89)
Future Domain EIDE AT42 ValuePak £49 (£57.58)
Enhanced IDE CD-ROM Kit

Add a second IDE channel to your ISA bus to take advantage of your EIDE CD-ROM Drive. This kit contains a 16-bit host adapter supporting up to 2 CD-ROM drives, PowerIDE software - a full featured I/O manager for EIDE hard disk and CD-ROM peripherals and an MPC-2 audio cable.

Future Domain EIDE CD-ROM Kit £25 (£29.38)

hp HEWLETT PACKARD HP SURESTORE CD-WRITER 4020i
The Simplest Way To Make CDs



only **£649**
(£762.57)

Perfect for both the Office and the Home

- | | |
|--|---|
| FOR THE OFFICE | FOR THE HOME |
| <ul style="list-style-type: none"> Create permanent archives Distribute your information Ideal for multimedia | <ul style="list-style-type: none"> Archive important personal documents Create your own CDs Transport large files to and from the office |

The 4020i comes with everything you need including drive, software, SCSI-2 controller, cable, two blank recordable CDs and manuals.

HP CD-R 650MB 74min Media 5pk..... £49 (£57.58)

NEW TECHNOLOGY - BACKUP SOLUTIONS



T1000e & T1000i

- ★ Easy to connect ★ Easy to use
- ★ Data Protection for your PC

External version connects to Parallel Port

Includes full featured Colorado Backup for Windows & Windows 95

	Travan		Trakker		Jumbo
	T1000e	T1000i	350	1400	350
Max Cap (Comp)	800MB	800MB	340MB	1.3GB	340MB
Warranty	2yr	2yr	1yr	2yr	1yr
Price	£125	£105	£99	£195	£69
inc VAT	(£146.87)	(£123.37)	(£116.32)	(£229.12)	(£81.07)

HP Colorado T1000i
2 year limited warranty

hp HEWLETT PACKARD SURESTORE DAT DRIVE SOLUTIONS

Protect your most valuable component - your data

- ★ High Performance
- ★ High Capacity
- ★ Wide System Connectivity
- ★ Low Cost Media
- ★ Compatibility
- ★ Reliability

Model	Ext inc VAT	Int Inc VAT
HP SureStore 2000 2GB (DDS)	£629 (739.07)	£549 (645.07)
HP SureStore 5000 4GB (DDS)	£715 (840.12)	£639 (780.82)
HP SureStore 6000 8GB (DDS-2)	£885 (1029.87)	£785 (922.37)
HP SureStore 12000e Autoloader 48GB		£1999 (2348.82)



International Modem Adapter Kit

This 12 piece kit gives access to over 150 national telephone systems worldwide. Simple connection for all types of modem.

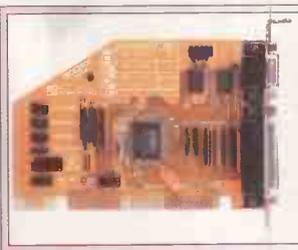
£49.95 (£58.69)



FaxFriend Automatic Fax & Data Switch

Ideal for sharing a modem & telephone. £49.95 (£58.69)

When purchased with any modem. £45 (£52.87)



HIGH SPEED SERIAL CARD

FEATURES:

- 2 Serial Ports
- 2 x 16550 UART
- Up to 1152 Kb/S
- Selectable IRQ & address

Great Value only **£29** (£34.07)

1 Bi-Directional Enhanced Parallel Port (EPP)

Supports SPP, EPP & ECP modes of operation

Selectable IRQ & address

EUREX2764 AT High Speed I/O card £29.00 (£34.07)

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MODEMS

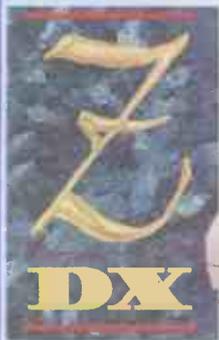
MultiTech Systems

Communications Power and Performance

There's a MultiTech modem for all your needs

For your Home and Small business...

When you're On the Move...



The Multimodem ZDX delivers the performance you need. With its V.34 (28,800) or V.32terbo (19,200) data rates (depending on the model) and V.17 (14,400) fax rates, the ZDX includes all the features you need to give your home PC a link with the outside world. Combined with MultiTech Systems' 25 years of modem design and manufacturing experience, the ZDX offers outstanding quality, reliability and performance at an incredibly low price.

- MultiModem - MT1932ZDXX V.32terbo £105 (£123.38)**
 - MultiModem - MT2834ZDXX V.34 £145 (£170.38)**
 - MultiModem - MT12834ZPXI V.34 PC Card £145 (£170.38)**
- External models include PC modem cable

The MultiModem LTI credit card sized data/fax modems for notebook and laptop computers are the perfect way to stay in touch when you're on the move. Designed to meet PCMCIA Socket connectivity standards, these modems can be inserted and removed while the system is up. The MT2834LTI modem offers 28,000 V.34 and V.32terbo performance with V.17 & Group 3 for fax. The MT1432LTI offers up to V.32bis and V.17 & Group 3 for fax. Both come with Data and Fax software for Windows.

- MultiModem MT1432LTI £149 (£175.08)**
- MultiModem MT2834LTI £179 (£210.33)**

For your corporate environment

The MultiModem II range offers you datacomm speeds up to 115.2K bps (with V.42bis compression) for those applications that demand high throughput. The MT2834s provide full-duplex synchronous or asynchronous datacomm and send/receive V.17 & Group 3 fax over dial up lines, plus 2 or 4-wire leased lines. With Dial-back security, UUCP support and AS400 support for synchronous communications, the MultiModem II range lets you connect to almost anyone easily and securely.

- MultiModem II MT1432BLK £249 (£292.58)**
- MultiModem II MT2834BLK £329 (£386.58)**



£339 (£398.33) V.34

MultiTech High Speed Serial Port Essential for all Windows users £49 (£57.58)
PC/AT Modem cable 9/25 £8 (£9.40)

APPROVED for Connection to telecommunication systems specified in the instruction for use subject to the Conditions set out in them.



Part No.	Model No.	SPEED		ERROR CORR	FAX		ASYNCHRONOUS	SYNCHRONOUS	DIAL-UP	2-4 WIRE LEASED LINE	DIAL - BACK UP	UUCP	AS400 SUPPORT	REMOTE CONFIG	FORMAT				PRICE		
		28,800 - V34	19,200 - V32terbo		14,400 - V32bis	9,600 - V32									V42	MNP 2-4	V42bis	MNP-5		9600	14,400 - V17
EURMM0103	MT1932ZDXX	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	£105
EURMM0104	MT2834ZDXX	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	£145
NEW	MT2834ZPXI-UK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	£145
EURMM0524	MT1432BLK	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	£249
EURMM0489	MT2834BLK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	£329
EURMM0487	MT1432LTI-UK	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	£149
NEW	MT2834LTI-UK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	£179

VAT (@ 17.5%) inclusive prices shown in brackets. Carriage charges: see page 1 for details. All prices & specifications subject to change without notice. Our standard terms and conditions of sale apply to all sales (available on request). Returned goods may be liable to a restocking charge. E&OE.

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ADMIN 0181-358 8100

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U.S. Robotics® Sportster® Vi 28,800 Faxmodem

MODEMS

The new Sportster Vi 28,800 faxmodem with personal voice mail provides e-mail, faxing and remote voice message and fax retrieval. Also speeds you along the information highway at 28,800bps.

- Personal Voice Mail - 10 mailboxes
- Fax On Demand - up to 100 stored
- Call Discrimination
- Remote voice message retrieval
- Remote Fax retrieval
- Dual Telephone Adapter
- Free data, fax and Voice software
- Free trial with CompuServe

Sportster 28,800 Internal PC Card £156

Sportster 28,800 Internet Special £155.95

Sportster Vi 28,800 Faxmodem £156 (£183.30)

Sportster Vi 14,400 Faxmodem £89 (£104.58)



**14.4Kbps
£89
(£104.58)**

**28.8Kbps
£156
(£183.30)**



- Free cable
 - Trial AOL Internet Services
 - Trial CompuServe
- With EVERY Sporster Vi**

Courier Dual Standard V.34 Fax with V.32bis

The Courier is the modem for the communications professional looking for advanced performance at an affordable price. It combines the very latest industry standards with features including dial-back security, class 2.0 fax and unique features such as ASL and QuickConnect.

Courier Dual Standard V.34 Fax External £239 (£280.83)

(Inc Free USR High Speed Dual Serial Port)
Courier Dual Standard V.34 PC Card £240 (£282.00)



Sportster® 28,800 PCMCIA XJACK

Performance, Reliability, Innovation

- The Sportster 28,800 PCMCIA XJACK fax/data modem delivers performance previously only available from a desktop modem
- If you use a notebook, the Sportster 28,800 PCMCIA powers down when not in use to preserve your battery
- The unique XJACK connector keeps your computer compact and self-contained by opening out to connect to a standard telephone cable, then locking away again securely - safe from accidental knocks when not in use
- QuickLink II data/fax software for Windows and DOS, + FREE trial of CompuServe
- V.34, V.32bis, Group III fax, Class I send/receive up to V.17 Fax, V.42, V.42bis
- BAPT Approved
- Dimension 85 x 54 x 5mm exc. XJACK connector



**£159
(£186.83)**

V.34 fax and data communication in a modem the size of a credit card

U.S. Robotics®
AUTHORISED RESELLER

5 year WARRANTY

MODEL	VOICE		SPEED		ERROR CORR.		DATA COMP.		FAX		FORMAT							
	28800 (V17)	19200 (V32 terbo)	14400 (V32bis)	9600 (V32)	V42	MNP 2-4	V42bis	MNP 5	9600	14400 (V17)	ASYNCHRONOUS	SYNCHRONOUS	DIAL UP	LEASE LINE	DESKTOP (EXT)	PC CARD (INT)	POCKET	PCMCIA
SPORTSTER Vi 28.8 + FAX	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SPORTSTER 14.4 + FAX			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SPORTSTER Vi 14.4 + FAX	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
COURIER V34		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SPORTSTER 28.8 PCMCIA XJACK		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

APPROVED for Connection to telecommunication systems specified in the instruction for use subject to the Conditions set out in them.

USR High Speed Dual Serial Port

Essential for all Windows users running at speeds faster than 9,600. Includes a 2 Year Warranty **£55 (£64.63)**

FREE DIRECT TECHNICAL SUPPORT - 5 YEAR WARRANTY



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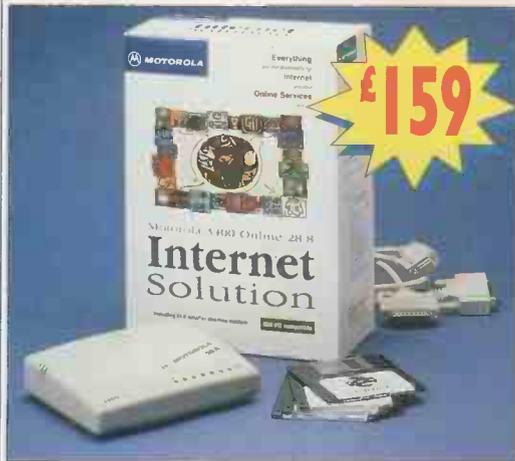
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MODEMS

THE 28.8 INTERNET SOLUTION



£159

3400 PRO DESKTOP MODEM £139

- ◆ Data: V34 (28.8Kb/s) to V21 (300bps)
- ◆ Fax: 14.4Kb/s to 2.4Kb/s
- ◆ Compression: V42bis & MNP5
- ◆ Correction: V42 & MNP2-4
- ◆ Command Set: Hayes AT compatible
- Package includes:**
 - ◆ Modem
 - ◆ Telephone & power cables
 - ◆ IBM PC/AT compatible modem cable
 - ◆ Windows fax and comms software
 - ◆ Easy install disk & user software
 - ◆ Motorola telephone support
 - ◆ 5 Year Motorola warranty

3400 ONLINE INTERNET SOLUTION £159

- ◆ 3400 PRO desktop modem (see left)
- ◆ Internet Software
 - Protocol software
 - File transfer software (FTP)
 - Worldwide web browser s/w
 - E-Mail s/w
 - Newsgroup s/w
- ◆ Internet phone software (Vocaltec)
 - Make cheaper international calls to other Vocaltec users
- ◆ Internet membership option for instant access

7 Great Reasons why the Motorola 3400 Online V.34 28.8 Data/Fax modem is ideal for your home and office environment:

- Easy - works with most popular fax and communications software.
- Fast - send/receive faxes and data at rates up to 115,200bps
- Quality - unparalleled Motorola quality and reliability
- Efficient - saves cost on each connection
- Complete - all you need to get online in minutes, including Internet software and online access to an Internet service provider
- Support - country telephone helpline and local language documentation
- Editors Choice - PCW February 96

The Motorola 3400 Online V.34 28.8 Data/Fax Modem provides the latest communications technology plus complete application software to offer you the most complete online access product available. It even includes online access to a local Internet service provider. The modem comes complete with an animated installation disk to get you up and running in minutes, plus all the necessary cables and communications software. Access online services. Go shopping without leaving home. Play interactive games. Use E-mail to keep in touch around the world. The possibilities are endless.



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EASY INSTALL
INCLUDES ANIMATED INSTRUCTION DISK

Hayes

Authorised Dealer

NEW! Voice and Internet Range

FROM £75
(£88.13)

ACCURA 288 V.34 + Fax Internet Kit Deluxe

ONLY £149
(£175.00)



Introducing the new Internet-based solutions from Hayes - the ACCURA 14.4 Internet Kit

and the ACCURA 28.8 Internet Kit Deluxe. In addition to the best in low cost fax modems, these kits include everything you need to get 'on-line' and send e-mail as well as access remote database and information services such as Internet or CompuServe.

- Introductory membership to CompuServe
- NetLauncher Internet Web software
- Internet access via Premier Internet
- Super Mosaic Web Browser • Eudora e-mail
- 50% off Net Nanny software • WinCIM software
- 50% off subscription to Internet Magazine
- Hayes Smartcom for Windows LE and Smartcom FAX for Windows communications software
- Hayes Introductory Guide to the Internet
- PC-to-modem cable

ACCURA 14.4 £75 ACCURA 28.8 £149

HIGH SPEED SERIAL CARDS

- ESP II at Single Port Serial I/F EUREX0212 £59
- ESP II at Dual Port Serial I/F EUREX0213 £89

Optima 288 Business Modem Voice/Data/FAX

TWICE THE SPEED OF OTHER 28.8 MODEMS!

Now you can support data throughput rates of up to 230,400 bit/s! Hayes AutoSync facilitates micro to mainframe communications, without the need for any additional hardware. Send and receive faxes plus FAX-On Demand, communicate by voice, and have tighter security support with Caller ID and password encryption. Configure your modem or access your quality message system's voice mail remotely. And Flash ROM upgrades make adding future enhancements to your modem fast, flexible and inexpensive. The Optima 288 Business Modem is the most practical modem for your business.



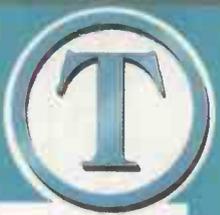
Hayes Authorised Dealer	VOICE	FAX ON DEMAND	FAX SEND/RECEIVE	DATA RATE		COMPRESSION RATIO	ERROR CORRECTION	ASYNCHRONOUS	SYNCHRONOUS	INTERNET KIT	PART NUMBER	PRICE EXC VAT
				28,800	14,400							
ACCURA 288 VDF	✓	✓	✓	✓	✓	4:1	✓	✓			MM3000	£179
ACCURA 288 + Internet Delux			✓	✓	✓	4:1	✓	✓		✓	EURMM0675	£159
ACCURA 288			✓	✓	✓	4:1	✓	✓			MM4743	£149
ACCURA 144 + Internet			✓	✓	✓	4:1	✓	✓		✓	EURMM0674	£82
OPTIMA 288 VDF	✓	✓	✓	✓	✓	8:1*	✓	✓	✓		DMD1546	£299
OPTIMA 288			✓	✓	✓	8:1*	✓	✓	✓		DMD1367	£265*
OPTIMA 144 VDF	✓	✓	✓	✓	✓	8:1*	✓	✓	✓		DMD1545	£239
OPTIMA 288 PCMCIA			✓	✓	✓	4:1	✓	✓	✓		EURMM0544	£195

*COMPRESSION OF 8:1 AVAILABLE WITH MATCHED PAIR IE OPTIMA AT EACH END ** While stocks last

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MODEMS

**BT PROLOGUE
PCMCIA V34 MODEM**

The latest technology for the portable user

- Built-in line Interface - no more bulky box-in-cable
- Performance - v34 (28800), V17 (14400 Fax), V42 LAPM, MNPS, MNP10, V42bis
- Security - Dial-Back and Password protection
- Remote Configuration
- Phonelink Fast Connect compatible - For Tel-Me and other services
- Call Back Request - Save on your phone bill!
- 16550 UART buffer, Flash Eprom, Hot swapping
- Auto-Sleep Powerdown - Conserve your battery
- Full Internet Access Software
- Delrina WinFax software
- High tolerance power surge/lightening protection



**NOW
£199
(*233.83)**

BT Prologue V34 PCMCIA £199

**BT PROLOGUE V34EX
DESKTOP MODEM**

The new Prologue V34EX combines outstanding performance and a host of advanced features to put it in a class of its own - all at an amazing price.

- Digital Display - shows line speed and condition & call progress
- Performance - V34 (28800), V17 (14400 Fax), V42 LAPM, MNPS, MNP10, V42bis
- Security - Dial-Back and Password protection
- Remote Configuration
- Phonelink Fast Connect compatible - For Tel-Me and other services
- Call Back Request - Save on your home phone bill!
- Phone socket for convenient line sharing
- Serial Cable with 9 & 25 way options
- Full Internet Access software
- Delrina WinFax software
- High tolerance power surge/lightening protection

BT Prologue V34EX modem

**NOW WITH
BT INTERNET
ACCESS**

£159 (£186.83)



5 YEAR WARRANTY BAPT Approved



**FROM
£129
(*151.58)**

"If you want a top of the line portable data communications solution, this product is the best you can get" - PC Magazine (January 1995)

Go for Gold with the Psion Dacom Gold Card

- ◆ Add fax to your notebook
- ◆ High-Speed file transfer
- ◆ Real remote LAN access
- ◆ Flash Upgrades available
- ◆ UK Market Leader
- ◆ Guaranteed compatibility
- ◆ Free lifetime technical support

Gold Card V34 + Fax £195 (*229.13)

- ◆ Ratified 28.8Kbps - The ultimate tool for intensive data transfer and remote LAN connectivity applications. Twice the speed of V32bis, up to 115.2Kbps. eg 200Kbyte file-15.6 second transfer time

Gold Card V32bis + Fax £129 (*151.58)

- ◆ 14.4Kbps - Europe's leading PCMCIA Data + Fax modem, ideal for medium usage communications, BBS access and fax applications

RACAL ISDN
Racal - Datacom

The UK Market Leader in ISDN Solutions

Superb quality and reliability with outstanding value. The DAP 6200's powerful features and astonishing speed bring significant benefits and amazingly low price! Whether you're accessing the Internet, communicating with your office or into large file transfer and you believe time is money but thought ISDN was expensive.

THINK AGAIN!

The Racal Datacom Solution

ISDN offers direct access to the core of the telephone network. Standard modems utilise older analogue technology with maximum speeds of 28.8bps. The Racal range of ISDN products utilise leading edge digital technology allowing you to directly access the digital telephone network which can operate at up to 64Kbps (more with compression). The net result is considerable cost savings.

	Typical 14.4Kbps modem	Typical 28.8Kbps modem	Racal DAP6300 ISDN
Speed	14.4Kbps	28.8Kbps	115.2Kbps
File Transfer	43 minutes	23 minutes	10 minutes
Call Charge	£3.53	£1.81	£0.80
Annual Call Charge	£1,771	£907	£401
Typical Annual Line Rental	£132	£132	£336
Total Annual Charge	£1,903	£1,039	£737
Annual Savings by using the Racal DAP 6300	£1,166	£302	

DAP External ISDN Adaptor

- Data+ Analogue or Data Only Model
- High Speed v24 port
- Plug and Play
- Sub second connection time
- Bundled with Trans Send Software
- Calling line identification
- Multiple Subscriber numbering



DAP6200 £399 (*468.83)

Data In/Out to COM port from RACAL DAP 6200 - up to 64 Kbps. Connects in less than one second!



X-TOL ISA

- Windows 95, NT 3x (TA Only)
- 128Kbps data throughput
- Plug and Play
- No memory Space
- 1/2 Card ISA and EISA
- Sync and Async PPP



X-TOL ISA £250 (*293.75)

X-TOL PCMCIA £450 (*528.75)

ISDN Applications

- Internet Access ✓
- E-Mail Access ✓
- On-Line Teleworking ✓
- Large File Transfer ✓
- Remote Network Access ✓
- Voice and data ✓
- Video Conferencing ✓

CyberRomCD - The Portable CD ROM drive for Windows 95



CyberRom CD can be used as a StandAlone CD audio player as well as use for CD-Roms. With it's three option power source it really becomes the complete portable CD-Rom drive for Windows 95.

- Double Speed PCMCIA (2x) Drive £245 (*£287.88)
- Double Speed PCMCIA (2x) Drive with Sound £365 (*£428.88)
- Quad Speed PCMCIA (4x) Drive £265 (*£311.38)
- Six Speed PCMCIA (6x) Drive £309 (*£363.08)





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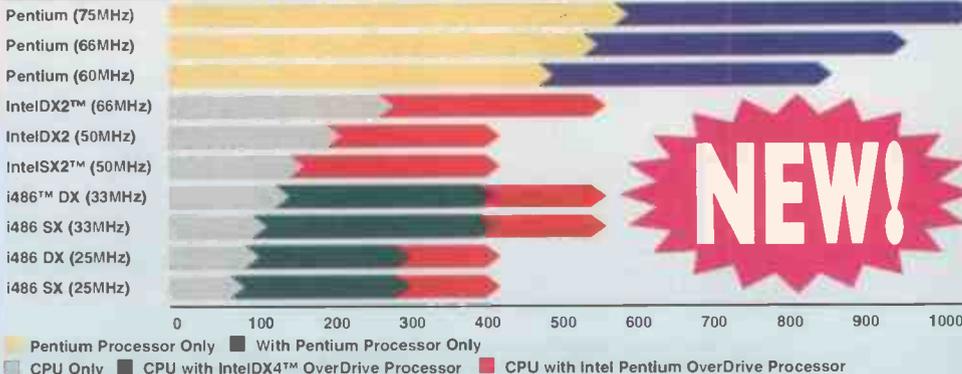
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UPGRADES

intel Pentium® Overdrive™ Processor

iCOMP INDEX FOR INTEL486™ AND PENTIUM® PROCESSOR-BASED SYSTEMS

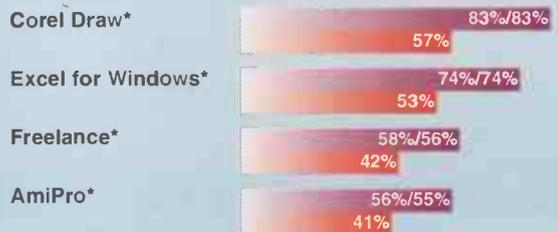


Note: Intel486™ CPU-based system supporting the write-through mode will yield approximately 15% lower iCOMP index ratings compared to PC's supporting write-back mode when upgraded with the Pentium OverDrive Processor.
Source: iCOMP: A Simplified Measure of Relative Intel Microprocessor Performance, Intel Corp. 1992

ITEM NO	DESCRIPTION	SOCKET NEEDED	PRICE
EUREX2784	INTEL PENTIUM® O/DRIVE 125MHZ FOR P75	N/A	£249
EUREX2785	INTEL PENTIUM® O/DRIVE 120/133MHZ FOR P60/P66	N/A	£249
EUREX2474	INTEL PENTIUM® OVERDRIVE 83MHZ*	N/A	£139
EUREX1248	INTEL PENTIUM® OVERDRIVE 63 MHz*	N/A	£99
EUREX0003	INTEL DX2 OVERDRIVE 25-50 MHz	Yes	£75
EUREX0004	INTEL DX2 OVERDRIVE 25-50 MHz	No	£75
EUREX0006	INTEL DX2 OVERDRIVE 33-66 MHz	Yes	£95
EUREX0005	INTEL DX2 OVERDRIVE 33-66 MHz	No	£95
EX6330	INTEL DX4 OVERDRIVE 25-75 MHz	Yes	£99
EX6332	INTEL DX4 OVERDRIVE 25-75 MHz	No	£99
EX6339	INTEL DX4 OVERDRIVE 33-100 MHz	Yes	£129
EX6331	INTEL DX4 OVERDRIVE 33-100 MHz	No	£129

Pentium is trademark of Intel Corporation *For 238 Pin Sockets only

Business Software Performance Improvement



■ Pentium® OverDrive Processor 120/133MHz¹
■ Pentium® OverDrive Processor 125MHz²

¹ The first % is based on a 60-MHz Pentium processor-based system upgraded with a 120-MHz Pentium OverDrive Processor, the second % is based on a 66-MHz Pentium processor-based system upgraded with a 133-MHz Pentium OverDrive Processor.
² Data is based on a 75-MHz Pentium processor-based system upgraded with a 125-MHz Pentium OverDrive Processor.

Make-it Processor upgrades for 286, 386 & 486 PC's

486 ➔ 586 DX4

Upgrade to Pentium level performance with Make-it 586. The Make-it 586 will triple the speed of the current SX/DX 20, 25 or 33 MHz processor and will upgrade a dx2 66 MHz to a 100 MHz 586 PC. This upgrade combines an enhanced 64 bit math coprocessor and the latest caching technology for the highest performances available and simply pushes into any 486 processor socket.

Make-it 486 SX/DX to 586
EUREX0903..... £185

486 ➔ 486 DX4

Triple the performance of your 486 with the Make-it DC4. This upgrade will triple the speed of an SX/DX 20, 25 or MHz PC. Simple, highly compatible, processor replacement that will upgrade 486 processors to a full powered DX4 for the power to make your PC fly.

Make-it 486 SX/DX to DX4
EUREX0902..... £139



386 ➔ 486

Convert your 386 PC to a full powered 486. The Make-it 486 comes with an 8K internal cache and utilises clock doubling for the power to run software that currently runs too slow or not at all. Will upgrade 16, 20 & 25 MHz PC's (doubling) and 33 MHz SX & DX PC's (non-doubling)

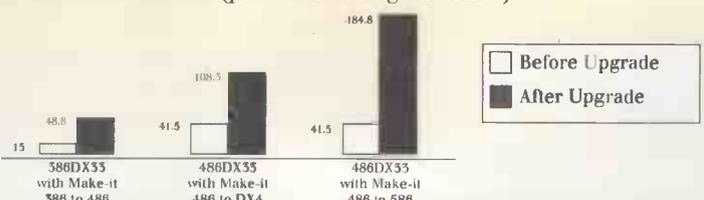
Make-it 386SX to 486
EUREX0901..... £99
Make-it 386DX to 486
EUREX0900..... £99

286 ➔ 486

Revitalise your 286 PC with Make-it 486 to double the speed of the current processor and add a 1K internal cache(optional match coprocessor).

Make-it 286 to 486
EX6196..... £99
Make-it 286 to 486 + 487 math copro
EX6197..... £145

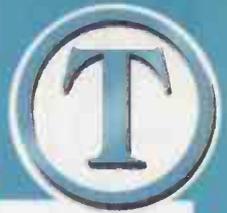
Benchmarks (performed using Norton SI)



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CREATIVE

SoundBlaster AWE32 PnP	£159	(£186.83)
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SoundBlaster 16 Value PnP	£59	(£69.33)
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Performance 32 6X Kit	£315	(£370.13)
Gameblaster 4X Kit	£245	(£287.88)
Phoneblaster	£239	(£280.83)
Blaster CD 6X Kit	£159	(£186.83)
Creative 6X IDE CD-ROM Drive Only (Int)	£115	(£135.13)

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A new generation in multimedia video that takes full advantage of Windows 95, not only does it offer scaleable television, professional Teletext and plug and play functionality, Cinema Pro also uses the latest advanced technology that offers the best picture quality in the market. Cinema Pro for Windows 95: TV Teletext, 1280 x 1024 Max res. 24 bit image capture, no Feature connector £229 (£269.08)



Win/TV Prisma: TV, Teletext, Feature Connector, Windows 95 drivers, 24 bit Colour Frame Capture	£155	(£182.13)
Win/TV Celebrity: TV, Teletext, NO Feature Connector, Win 95 + NT Drv, AVI capture	£254	(£298.45)
WIN/MOTION 60: M-JPEG, S-Video in/out, Full Screen Capture 768 x 576, FREE Media Studio 2	£369	(£433.58)

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- World's First internal 4 Disc Changer
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NEW Amazing new technology adds a whole new dimension to your PC. With just the click of a mouse, you can switch effortlessly between multimedia titles, data discs, music CDs and games. An innovative disc loading mechanism accepts one CD at a time without the need for a tray or caddie. An internal 'disc elevator' allows for quick switching between discs.

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SIMMS

4MB

£49

Prices Slashed

Code	Configuration	Size	Price	Inc VAT
72PIN NON PARITY SIMMS				
EURMY1245	1MB X 32-70NS	4MB	£49.00	£57.58
EURMY1249	2MB X 32-70NS	8MB	£99.00	£116.33
EURMY1252	4MB X 32-70NS	16MB	£215.00	£252.63
72PIN EDO SIMMS				
EURMY1336	1MB X 32-60NS	4MB EDO	£55.00	£64.63
EURMY1332	2MB X 32-60NS	8MB EDO	£105.00	£123.38
EURMY1555	4MB X 32-60NS	16MB EDO	£259.00	£304.33
72PIN PARITY SIMMS				
EURMY1235	1MB X 36-70NS	4MB	£79.00	£92.83
EURMY1237	2MB X 36-70NS	8MB	£145.00	£170.38
EURMY1239	4MB X 36-70NS	16MB	£289.00	£339.58
30 PIN PARITY SIMMS				
EURMY1222	1MB X 9-70NS	3 CHIP	£29.00	£34.08
EURMY1229	4MB X 9-60NS		£99.00	£116.33
EURMY1230	4MB X 9-70NS	3 CHIP	£95.00	£111.63
EURMY0405	4MB X 9-70NS	9 CHIP	£105.00	£123.38

MEMORIES & MULTIMEDIA

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Vert Freq Hz:	50-90	50-90	50-120
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OPTIONS

Connectivity Pack	£89 (£104.58)	Leather Case	£35 (£41.13)
Clip & Go Software	£51 (£59.93)		
Strategy Software	£36 (£42.30)		

Now with the HP OmniGo 100, business professionals have the perfect handheld organiser to access immediately their schedules and personal information, as well as HP financial tools, anytime, anywhere. Thanks to the GEOS™ operating system, you can enter your data using either pen or keyboard - it is an intuitive tool. The OmniGo 100 provides you with sophisticated financial features and all personal information management tools you need - it becomes your unique everyday business companion.

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- Appointment book: Phone book; Notepad; Database; Worldtime
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MEMORIES

Matched Memories for Computers

SYSTEM	SIZE	CODE	PRICE	INC	VAT
THINKPAD 700,700C,720,720C,750,755 PS/2 CL57SX	4MB	EURMY1017	£139	£163.33	
	8MB	EURMY1018	£249	£292.58	
THINKPAD 330/340/355/360/730C/370	4MB	EURMY1019	£119	£139.83	
	8MB	EURMY1020	£219	£257.33	
THINKPAD 701C SERIES, 701CS SERIES	4MB	EURMY1012	£119	£139.83	
	8MB	EURMY1013	£219	£257.33	
	16MB	EURMY1014	£449	£527.58	
THINKPAD 760C, 760CD	8MB	NEW	£229	£269.08	
	16MB	NEW	£459	£539.33	
	32MB	NEW	£1290	£1515.75	
THINKPAD 830, 850	4MB	NEW	£139	£163.33	
POWER SERIES INSTALL IN PAIRS	8MB	NEW	£249	£292.58	
	16MB	NEW	£459	£539.33	
PS/2 L40SX,PS/NOTE 182, PS/NOTE 2141,N82	2MB	EURMY1015	£89	£104.58	
THINKPAD 350/C,710T	4MB	EURMY0998	£149	£175.08	
	8MB	EURMY1000	£285	£334.88	
	16MB	EURMY1001	£459	£593.33	
PC 700 SERIES	4MB	EURMY1028	£99	£116.33	
	8MB	NEW	£165	£193.88	
	16MB	EURMY1025	£319	£374.83	
	32MB	NEW	£638	£749.65	
PS/2 EXP-BOARD FOR PS/2 70 & 80 SERIES	2MB	EURMY1030	£159	£186.83	
ADD ON	4MB	EURMY1029	£215	£252.63	
ADD ON	2MB	EURMY0988	£49	£57.58	
ADD ON	4MB	EURMY0957	£99	£116.33	
PS/VP 6381-FY1/FYE/KYO/MYO/MY1/VYO,433DX/SI	4MB	EURMY1028	£69	£81.08	
	16MB	EURMY1025	£235	£276.13	
PS/VP 6382-C20/C21/C41/C2A/C4A/F3C/K3C/M5C/W5C/M5D/W5D (C/K/F/W)	4MB	EURMY0974	£99	£116.33	
	8MB	EURMY0981	£165	£193.88	
	16MB	EURMY1025	£319	£374.83	
PS/VP 6384 FIM/W SERIES (EXCEPT F00/F20/F23/F40/F43/M00/M20/M40/M43/M50/M53/W40/W53)	4MB	EURMY0974	£99	£116.33	
	8MB	EURMY0981	£165	£193.88	
	16MB	EURMY1025	£319	£374.83	
PS/VP 6384 F00/F20/F23/F40/F43/M00/M20/M40/M43/M50/M53/W40/W53	4MB	EURMY0965	£116	£136.30	
	16MB	EURMY0967	£378	£444.15	
PS/VP C0/C2A/C20/C4A/C40	2MB	EURMY1002	£35	£41.13	
	4MB	EURMY0957	£99	£116.33	
	8MB	EURMY1009	£165	£193.88	
	4MB	EURMY0965	£116	£136.30	
	16MB	EURMY0967	£378	£444.15	
PS/I 2133-G43/W43/S43/174/1154, 2155-G44/W44/S44	1MB	EURMY0970	£35	£41.13	
	2MB	EURMY1002	£49	£57.58	
	4MB	EURMY0974	£69	£81.08	
	8MB	EURMY0981	£119	£139.83	
PS/I 2133-G11/G13/W11/W13/811/S11/S13/111/451/461/471/483/551, 2168-452/473/493/573, 2155-G14/W14/S14	1MB	EURMY0970	£35	£41.13	
	2MB	EURMY1002	£49	£57.58	
	4MB	EURMY0974	£69	£81.08	
	8MB	EURMY0981	£119	£139.83	
PS/I 2133-571/642/652, PS/I 2168-574/584/594/653/873	4MB	EURMY0996	£69	£81.08	
	8MB	EURMY0997	£119	£139.83	
	16MB	EURMY1239	£238	£279.65	
PS/I PRO 386SX 2123 (EXCEPT E31/E81)	2MB	EURMY1005	£49	£57.58	
	4MB	EURMY0974	£69	£81.08	
	8MB	EURMY0981	£119	£139.83	
APTIVA	4MB	EURMY1245	£69	£81.08	
	8MB	EURMY1249	£119	£139.83	
HURDLA 486 SERIES	4MB	EURMY0698	£116	£136.30	
SPRINTA 486DX/DX2/SX	16MB	EURMY0699	£378	£444.15	
SPRINTA II	4MB	EURMY0701	£69	£81.08	

SYSTEM	SIZE	CODE	PRICE	INC	VAT
ASCENTIA 800M,810N	4MB	EURMY1333	£119	£139.83	
	8MB	EURMY1334	£199	£233.83	
	16MB	EURMY1339	£399	£468.83	
ASCENTIA 900M, 910N	4MB	EURMY1501	£119	£139.83	
	8MB	EURMY1502	£229	£269.08	
	16MB	EURMY1503	£449	£527.58	

SYSTEM	SIZE	CODE	PRICE	INC	VAT
LTE 5000, 5100, 5200	8MB	EURMY1491	£219	£257.33	
	16MB	EURMY1492	£399	£468.83	
CONTURA 400/410 420/430	4MB	EURMY0808	£119	£139.83	
	8MB	EURMY0809	£229	£269.08	
CONTURA 4/25,CX,EX	4MB	EURMY0821	£109	£128.08	
	8MB	EURMY0822	£189	£222.08	
	16MB	EURMY0823	£489	£574.58	
CONTURA AERO	4MB	EURMY0830	£109	£128.08	
	8MB	EURMY0831	£189	£222.08	
CONCERTO LTE ELITE	4MB	EURMY0824	£119	£139.83	
	8MB	EURMY0825	£229	£269.08	
	16MB	EURMY0826	£439	£515.83	
LTE LITE 4/25,4/25C, 4/25E,4/33C	4MB	EURMY0802	£119	£139.83	
	8MB	EURMY0803	£219	£257.33	
	16MB	EURMY0804	£399	£468.83	
DESKPRO XL 450, 466, 5100 5120, 575, 590	8MB	EURMY0832	£198	£232.65	
	16MB	NEW	£328	£285.40	
	32MB	NEW	£638	£749.65	
DP 3/25i, 3/33i, 4/25iS, 4/33i,4/66i	1MB	EURMY0782	£35	£41.13	
	2MB	EURMY0760	£55	£64.63	
	4MB	EURMY0772	£99	£116.33	
	8MB	EURMY0812	£165	£193.88	
NEW PROLINEA 4/50,4/66,4/100 NEW DP 4/66,4/100	4MB	EURMY0827	£69	£81.08	
	8MB	EURMY0828	£119	£139.83	
	16MB	EURMY0829	£235	£276.13	
PROLINEA 3/25S,3/25ZS	2MB	EURMY0800	£58	£68.15	
	8MB	EURMY0801	£208	£244.40	
PROLINEA 4/25S,4/33,4/50, 4/66,CDS,PRESARIO	1MB	EURMY0784	£35	£41.13	
	2MB	EURMY0786	£49	£57.58	
	4MB	EURMY0790	£99	£116.33	
	8MB	EURMY0795	£165	£193.88	
PROLIANT 1000 486DX2-66	4MB	EURMY0790	£99	£116.33	
	8MB	EURMY0795	£165	£193.88	
PROLINEA MT 4/33S,MT 4/50, MT 466	1MB	EURMY0784	£35	£41.13	
	2MB	EURMY0786	£49	£57.58	
	4MB	EURMY0790	£99	£116.33	
	8MB	EURMY0795	£165	£193.88	
PROSIGNIA PC SERVERS	4MB	EURMY0772	£99	£116.33	
	8MB	EURMY0812	£165	£193.88	
	16MB	EURMY0805	£319	£374.63	
PRESARIO 720CDS, 724CDS, 744, 744CDS, 920CDS, 924, 954, 972CDS, 978CDT, 982CDS, 992CDS	4MB	NEW	£69	£81.08	
	8MB	NEW	£119	£139.83	
	16MB	NEW	£235	£276.13	
	32MB	NEW	£499	£586.33	
P486/P486/66/P486C/P486C/66 PORTABLES	2MB	EURMY0760	£49	£57.58	
	4MB	EURMY0772	£99	£116.33	
	8MB	EURMY0812	£165	£193.88	
DESKPRO XE 433S,450,466	2MB	EURMY0760	£49	£57.58	
	4MB	EURMY0772	£99	£116.33	
	8MB	EURMY0812	£165	£193.88	
PROLINEA MT	2MB	EURMY0786	£49	£57.58	
	4MB	EURMY0790	£99	£116.33	
	8MB	EURMY0795	£165	£193.88	
	16MB	EURMY0805	£319	£374.83	
PROLINEA NET 1-25S/E/TR	2MB	EURMY0786	£49	£57.58	
	4MB	EURMY0790	£99	£116.33	
	8MB	EURMY0795	£165	£193.88	
PRESARIO CDS 633,CDS 860,660	4MB	EURMY0790	£99	£116.33	
	8MB	EURMY0795	£165	£193.88	
	16MB	EURMY0805	£319	£374.83	

SYSTEM	SIZE	CODE	PRICE	INC	VAT
SATELLITE PRO 400, PORTEGE 610C(EDO)	8MB	EURMY1309	£299	£351.33	
	16MB	EURMY1308	£569	£668.58	
	32MB	EURMY1462	£1109	£1303.08	
TECRA 700CS, 700CT	8MB	NEW	£319	£374.83	
	16MB	NEW	£599	£703.83	
	32MB	NEW	£1199	£1408.83	
T2000/SX/SX/SX,T2200SX,T1800, T1850,T1850C,T1000LE	2MB	EURMY1142	£79	£92.83	
	4MB	EURMY1146	£125	£146.88	
	8MB	EURMY1176	£219	£257.33	
T2100 SERIES,T2150	4MB	EURMY1172	£119	£139.83	
	8MB	EURMY1173	£239	£280.83	
	16MB	EURMY1304	£469	£551.08	
T2400/T3600/T2450	4MB	EURMY1165	£119	£139.83	
	8MB	EURMY1168	£219	£257.33	
	16MB	EURMY1170	£449	£527.58	
T3400	4MB	EURMY1165	£119	£139.83	
	8MB	EURMY1168	£219	£257.33	
	16MB	EURMY1169	£449	£527.58	
T4400C/SX/SXC,T6400 T6600 SERIES	2MB	EURMY1144	£79	£92.83	
	4MB	EURMY1149	£119	£139.83	
	8MB	EURMY1177	£219	£257.33	
	16MB	EURMY1159	£399	£468.83	
T4500,T4600,T1900C,1910 1950C,1960,T4700 SERIES	4MB	EURMY1161	£129	£151.58	
	8MB	EURMY1163	£239	£280.83	
	16MB	EURMY1164	£469	£551.08	
T5200/T5200C/T8500	2MB	EURMY1154	£79	£92.83	
	8MB	EURMY1178	£269	£316.08	

SYSTEM	SIZE	CODE	PRICE	INC	VAT
VECTRA 486 VL	1MB	EURMY0892	£35	£41.13	
	2MB	EURMY0894	£49	£57.58	
	4MB	EURMY0899	£99	£116.33	
	8MB	EURMY0902	£165	£193.88	
VECTRA VL2/VL3	4MB	EURMY0916	£69	£81.08	
	8MB	EURMY0917	£119	£139.83	
	16MB	EURMY0918	£235	£276.13	
VECTRA VL4, VECTRA 500 TOWER, VE PENTIUM SERIES EDO MEMORY	8MB	NEW	£148	£173.90	
	16MB	NEW	£248	£291.40	
	32MB	NEW	£558	£655.65	
VECTRA 486-25N/33N/50N/66N NETSERVER LE SERIES 486XM SERIES	2MB	EURMY0894	£49	£57.58	
	4MB	EURMY0899	£99	£116.33	
	8MB	EURMY0902	£165	£193.88	
	16MB	EURMY0907	£319	£374.83	
NETSERVER LC, INSTALL IN PAIRS LH PENTIUM SERIES	4MB	NEW	£99	£116.33	
	8MB	NEW	£165	£193.88	
	16MB	EURMY0918	£319	£374.83	
	32MB	NEW	£579	£680.33	
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Access FAX 0181-205 0190
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Code	Configuration	Price Inc VAT
30 PIN PARITY SIMMS		
EURMY1219	1MB X 9-60NS 3 CHIP	£31.00 £36.43
EURMY1221	1MB X 9-70NS 9 CHIP	£31.00 £36.43
EURMY1222	1MB X 9-70NS 3 CHIP	£29.00 £34.08
EURMY1225	1MB X 9-80NS 3 CHIP	£31.00 £36.43
EURMY1229	4MB X 9-60NS	£99.00 £116.33
EURMY0405	4MB X 9-70NS 9 CHIP	£105.00 £123.38
EURMY1230	4MB X 9-70NS 3 CHIP	£95.00 £111.63
CACHE RAM (SRAM)		
EURMY1189	32K X 8-20NS (28PIN)	£6.80 £7.99
EURMY1190	32K X 8-15NS (28PIN)	£6.50 £7.64
EURMY1192	128K X 8-20NS (32PIN)	£24.00 £28.20
DRAM		
EURMY1194	1MB X 1-70NS (DIL)	£4.50 £5.29
EURMY1208	256K X 4-60NS (DIL)	£5.50 £6.46
EURMY1210	256K X 4-70NS (DIL)	£5.20 £6.11
EURMY1212	256KX16 -70NS (SOJ)	£22.00 £25.85
EURMY1213	256K X 16-80NS (SOJ)	£18.00 £21.15

SIMMS!



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The MY5616, 17 expands a single 72 pin socket into two 72 pin sockets. Great for memory expansion when all motherboard SIMM slots are already used. Also allows lower density, and often cheaper, SIMMs to be used in PC motherboards with just a few SIMM slots. Maps one or two 256KB, 1, 4 or 16MB x 36 SIMMs into one 72 pin slot. Call for other models.



Code	Configuration	Size	Price Inc VAT
72PIN NON PARITY SIMMS			
EURMY1244	1MB X 32-60NS	4MB	£55.00 £64.63
EURMY1245	1MB X 32-70NS	4MB	£49.00 £57.58
EURMY1250	2MB X 32-60NS	8MB	£105.00 £123.38
EURMY1249	2MB X 32-70NS	8MB	£99.00 £116.33
EURMY1253	4MB X 32-60NS	16MB	£249.00 £292.58
EURMY1252	4MB X 32-70NS	16MB	£215.00 £252.63
EURMY1293	8MB X 32-60NS	32MB	£499.00 £586.33
EURMY1254	8MB X 32-70NS	32MB	£469.00 £551.08
72PIN EDO SIMMS			
EURMY1336	1MB X 32-600NS	4MB EDO	£55.00 £64.63
EURMY1332	2MB X 32-60NS	8MB EDO	£105.00 £123.38
EURMY1555	4MB X 32-60NS	16MB EDO	£259.00 £304.33
72PIN PARITY SIMMS			
EURMY1235	1MB X 36-70NS	4MB	£79.00 £92.83
EURMY1237	2MB X 36-70NS	8MB	£145.00 £170.38
EURMY1238	4MB X 36-60NS	16MB	£315.00 £370.13
EURMY1239	4MB X 36-70NS	16MB	£289.00 £339.58
EURMY1241	8MB X 36-70NS	32MB	£559.00 £656.83

MEMORIES

intel Pentium® Motherboard designed and made by Intel supports EDO & FPM memory

	Advanced EV + CPU + 256K cache	Zappa + CPU + 256K cache
	Price Inc VAT	Price Inc VAT
P90MHz	EUREX2437 £339 £398.33	P75MHz EUREX2525 £199 £233.83
P100MHz	EUREX2439 £349 £410.08	P90MHz EUREX1095 £269 £316.08
P120MHz	EUREX2436 £389 £457.08	P100MHz EUREX2541 £279 £327.83
P133MHz	EUREX2524 £439 £514.83	P120MHz EUREX2523 £319 £374.83

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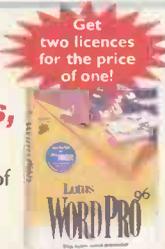
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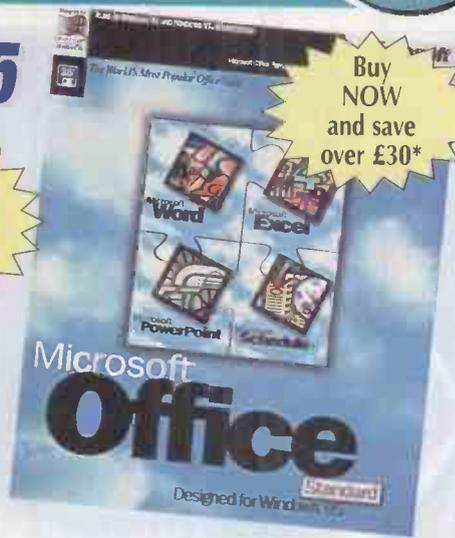


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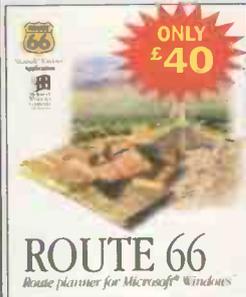
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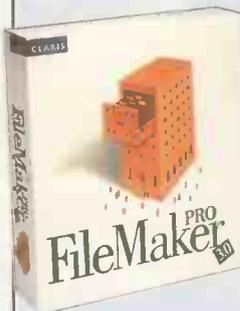
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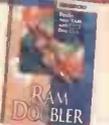
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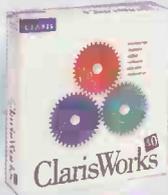
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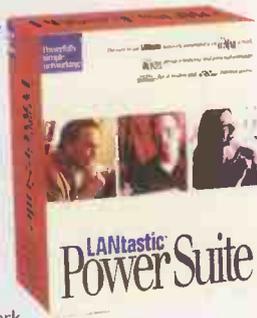
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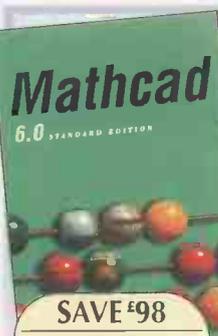
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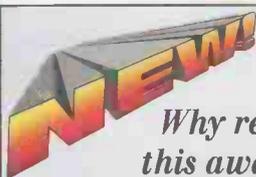
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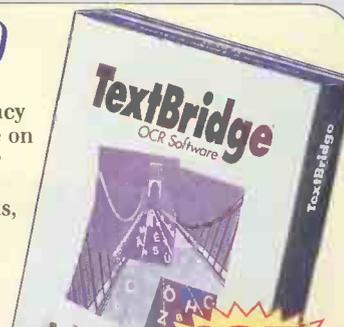
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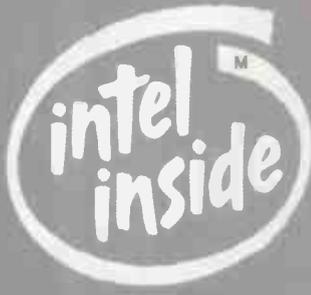
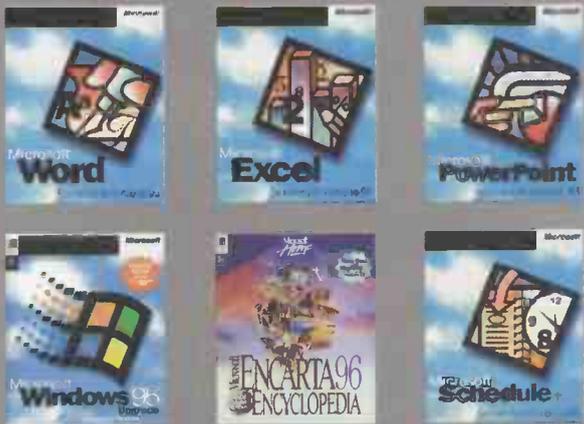
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Hard Disk	520MB	520MB	520MB	810MB	1.2GB
Resolution	Dual Scan Col.	Dual Scan Col.	Dual Scan Col.	11.3" TFT Col.	11.3" TFT Col.
PcMCIA Exp.	2xPCMCIA Slots				
CD ROM	N/A	N/A	Optional	N/A	N/A
Accessories	Trackstick Mouse				
Pre Loaded S/W	6.22 & 3.11	6.22 & 3.11	6.22 & 3.11	6.22 & 3.11	6.22 & 3.11
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1Gb	£1305/£1533.38	£1330/£1562.75	£1375/£1615.63	£1425/£1674.38	£1515/£1780.13	£1615/£1897.63	£1695/£1991.63
1.6Gb	£1355/£1592.13	£1380/£1621.50	£1425/£1674.38	£1475/£1733.13	£1565/£1838.88	£1665/£1956.38	£1745/£2050.38
2Gb	£1405/£1650.88	£1430/£1680.25	£1475/£1733.13	£1525/£1791.88	£1615/£1897.63	£1715/£2015.13	£1795/£2109.13

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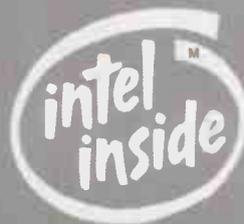
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1Gb	£805/£945.88	£830/£975.25	£875/£1028.13	£925/£1086.88	£1015/£1192.63	£1115/£1310.13	£1195/£1404.13
1.6Gb	£855/£1004.63	£880/£1034.00	£925/£1086.88	£975/£1145.63	£1065/£1251.38	£1165/£1368.88	£1245/£1462.88
2Gb	£905/£1063.38	£930/£1092.75	£975/£1145.63	£1025/£1204.38	£1115/£1310.13	£1215/£1427.63	£1295/£1521.63



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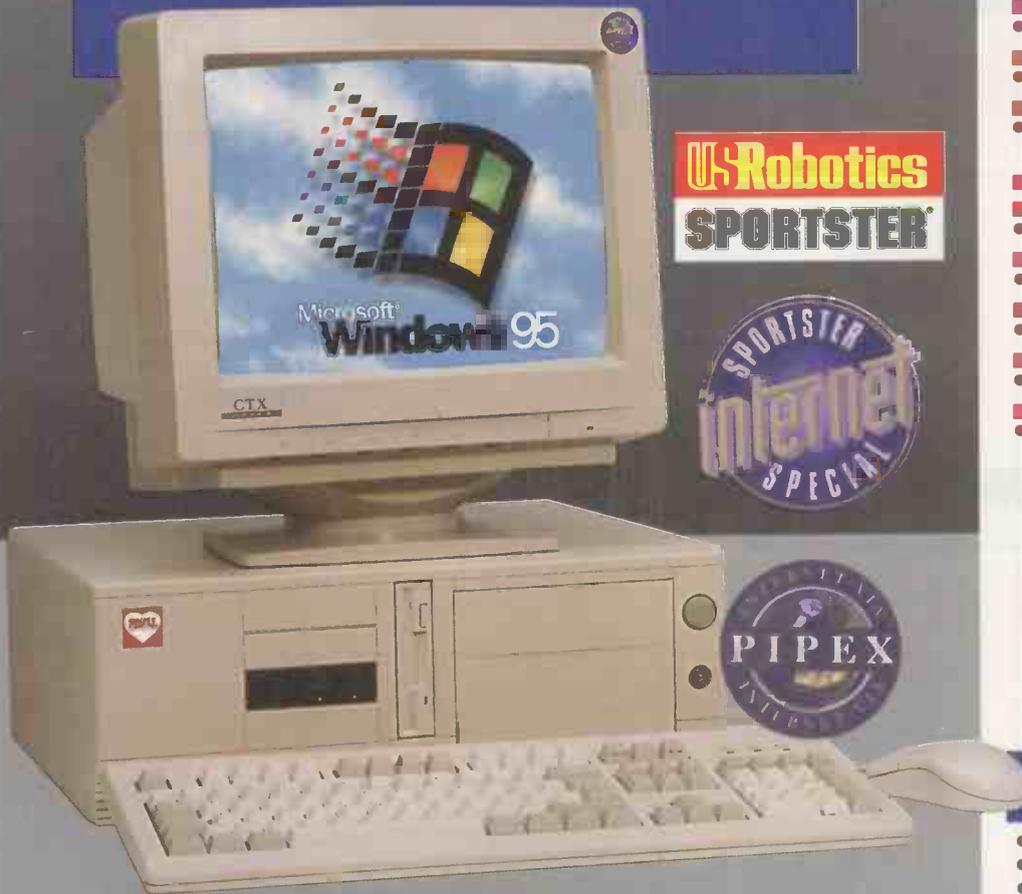
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1.6Gb	£1010/£1186.75	£1035/£1216.13	£1080/£1269.00	£1130/£1327.75	£1220/£1433.50	£1320/£1551.00	£1400/£1645.00
2Gb	£1060/£1245.50	£1085/£1274.88	£1130/£1327.75	£1180/£1386.50	£1270/£1492.25	£1370/£1609.75	£1450/£1703.75

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Teac 5.25" 1.2Mb Floppy Drive.....	£38	£44.65
Teac 3.5" & 5.25" Dual Floppy Drive.....	£86	£101.05
Cables & Accessories		
5.25" Floppy Drive Brackets.....	£5	£5.88
Standard 5 Head Floppy Cable.....	£5	£5.88
Extra Long 5 Head Floppy Cable.....	£7	£8.23



Optical Drives

Fujitsu 230Mb Optical Drive 3.5 internal bare.....	£289	£339.58
Fujitsu 230Mb Optical Drive 3.5 External kit.....	£429	£504.08
Fujitsu 230Mb Optical Drive 3.5 parallel kit.....	£679	£797.83
Panasonic PD Drive (Bare).....	£329	£386.58
<i>(Quad Speed CD-ROM / 650Mb Rewritable Drive In one)</i>		
Panasonic PD Drive Kit Internal.....	£585	£692.38
<i>Includes SCSI Interface Host Adaptor & Software</i>		
Panasonic PD Drive External (Bare).....	£625	£734.38
PD Drive Kit External (Plasmon).....	£678	£796.65
<i>Includes SCSI Interface, Cables & Software</i>		
Panasonic PD Media 650Mb.....	£34	£39.95
Panasonic LF7304 Int 1.5 Gb Read/Writable Optical.....	£1465	£1,721.38
Panasonic LF7300 Ext 1.5 Gb Read/Writable Optical.....	£1525	£1,791.88



CD Drives

IDE INTERFACE- Quad Speed

EXC. VAT INC. VAT

SIMPLY QUAD SPEED

Simply Quad Speed IDE CD-ROM £35 £41.13
600kpbs transfer, 190ms access, front panel audio controls.

Goldstar GCD-R540B Quad Speed CD IDE.....	£49	£57.58
Mitsumi CRMC-FX400E Quad Speed CD IDE.....	£49	£57.58
NEC Quad Speed CD IDE (Bare Drive).....	£59	£69.33
Pioneer DR-UA124X 4x CD ROM EIDE.....	£89	£116.33
Panasonic Quad Pro Quad Speed IDE Kit Six Speed	£89	£104.58

SIMPLY SIX SPEED

Simply Quad Speed IDE CD-ROM £49 £57.58
900kpbs transfer, 225ms access, 256kB cache

Aztech Six Speed CD IDE.....	£59	£69.33
Goldstar GCD-R560B Six Speed CD IDE.....	£59	£69.33
Mitsumi CRMC-FX600D Six Speed CD IDE.....	£79	£92.83
Panasonic CR582 Six Speed IDE.....	£95	£111.63
Wearnes CDD-620 Six Speed CD-ROM.....	£95	£111.63
Teac CD-56E Six Speed IDE.....	£95	£111.63

Eight Speed

SIMPLY EIGHT SPEED

Simply Eight Speed IDE CD-ROM £119 £139.83
1200kpbs, 220ms access

Panasonic CR583 8 Speed IDE.....	£125	£146.88
Wearnes CDD-820 Eight Speed CD-ROM.....	£139	£163.33
Aztech Eight Speed CD IDE.....	£135	£158.63

All CD Drives are supplied with Documentation, Driver Diskette And Cables

Interface Card

Universal IDE ATAPI CD Interface Card..... £13 £15.28

SCSI INTERFACE

NEC 6Xi Internal 6x Speed.....	£259	£304.33
NEC 6Xe External 6x Speed.....	£349	£410.08
NEC 6x SCSI Internal 6 Speed bare drive.....	£199	£233.83

Panasonic Quad Pro Quad Speed SCSI Kit.....	£125	£146.88
Panasonic Six CR505 Six Speed SCSI.....	£159	£186.83
Panasonic Six CR506 Eight Speed SCSI.....	£225	£264.38
Pioneer DR-U124X 4.4x CD ROM SCSI-2.....	£185	£217.38
Plextor 4Plex+ 4.4 speed CD-ROM Drive Internal.....	£205	£240.88
Plextor 4Plex+ 4.4 speed CD-ROM Drive External.....	£245	£287.88
Plextor 6Plex 6 speed CD-ROM Drive Internal.....	£239	£280.83
Plextor 6Plex 6 speed CD-ROM Drive External.....	£295	£346.63
Plextor 8Plex 8 speed CD-ROM Drive Internal.....	£315	£370.13
Plextor 8Plex 8 speed CD-ROM Drive External.....	£359	£468.83

(All the above Plextor drives are SCSI-2 devices and come with a 2 year RTB warranty)

Sony CDU-768 4x SCSI 250ms.....	£129	£151.58
Toshiba XM-5401B SCSI -2 4.4 Speed Bare Internal.....	£125	£146.88
Toshiba XM-3701B SCSI-2 6.7 Speed Bare Internal CD Rom.....	£249	£292.58

Random Access 135Ms, 256K Buffer 1000Kbs Data Transfer Rate

Toshiba XM-3701SA SCSI-2 6.7 Speed External CD Rom.....	£339	£398.33
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PARALLEL CD ROM DRIVES

Anacom EXCD Sound x4 Quad Speed CD-Rom with sound.....	£279	£327.83
Anacom EZCD x4 quad speed CD ROM parallel.....	£229	£269.08
Backpack CD ROM/4S Quad Speed Parallel.....	£239	£280.83
Backpack CD ROM/4S Quad Speed Parallel with Sound.....	£342	£401.85
Backpack CD ROM/4S Quad Speed Parallel.....	£299	£351.33
Backpack CD ROM/4S Quad Speed Parallel with Sound.....	£395	£464.13

JUKEBOX CD DRIVES

**NEC CDR-251 QUAD SPEED
4-DISK AUTO CHANGER IDE**
£159 £186.83 INC VAT



Nakamichi MBR-7 Dual Speed 7 Disk Stacking.....	£195	£229.13
Panasonic Six Speed Five Disk Auto Changer IDE.....	£179	£210.33
Pioneer DRM-624X Quad Speed 6Disk Jukebox.....	£395	£464.13
Pioneer 1804X Quad Speed 18 Disk Jukebox.....	£1375	£1615.63

WRITEABLE CD ROM DRIVES

Sony CD Rom Writer Bare (CDU920S).....	£735	£863.63
Sony CD Rom Writer Int Kit (CSP920S).....	£845	£992.83
HP SureStore CD-Writer 4020i Internal.....	£659	£774.33

4xCD Reader, 2x CD Recorder

Pinnacle XR-W2001 Quad Speed Internal SCSI CD Rec.....	£695	£816.63
Plasmon CDR420 CD-Writer.....	£699	£821.33

Writeable CD Media.....	£6	£7.05
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PCM CIA CD ROM DRIVES

Panasonic Dual Speed CD Rom PCM CIA.....	£259	£304.33
Anacom EZCD Card x4 quad speed PCM CIA.....	£299	£351.33
Anacom EZCD Card x6 six-speed PCM CIA.....	£385	£452.38
Anacom EZCD Plus - Dual speed PCM CIA CD-ROM/Audio CD.....	£249	£292.58
Anacom EXCD Plus x4 - Quad Speed PCM CIA CD-Rom/Audio CD.....	£299	£351.33

INNOVATIVE COMMUNICATIONS

**CYBERMAN CD 2X PCM CIA
CD ROM DRIVE CM2 SX**
WINDOWS '95 COMPATIBLE

£239 £280.83 INC VAT



Cyberrom CD Quad Speed PCMCIA CD Rom Drive.....	£265	£311.38
Cyberrom CD 6 speed PCMCIA CD ROM Drive.....	£309	£363.08
Cyberrom Dual Speed with 16 bit sound.....	£369	£433.58



CD Drive Kits

SIMPLY 4x CD-ROM UPGRADE KIT

Genuine Sound Blaster 16 Card ■ Simply Quad Speed IDE CD Rom Drive
Photo Access CD ■ Screen Beat Speakers

£99 £116.33 INC VAT

SIMPLY 6x CD-ROM UPGRADE KIT

Genuine Sound Blaster 16 Card ■ Simply Six Speed IDE CD Rom Drive
Photo Access CD ■ Screen Beat Speakers

£119 £139.83 INC VAT

SIMPLY FAMILY 4x CD-ROM UPGRADE KIT

Genuine Sound Blaster 16 Card ■ Simply Quad Speed IDE CD Rom Drive
MS Works, MS Encarta 96, MS Oceans, MS Dangerous Creatures CD's ■ Screen Beat Speakers

£159 £186.83 INC VAT

SIMPLY FAMILY 6x CD-ROM UPGRADE KIT

Genuine Sound Blaster 16 Card ■ Simply Six Speed IDE CD Rom Drive
MS Works, MS Encarta 96, MS Oceans, MS Dangerous Creatures CD's ■ Screen Beat Speakers

£179 £210.33 INC VAT

SOUNDBLASTER

SB 16 Discovery 4x Plug and Play

SB16 ■ 4x IDE ■ SBS36 Speakers ■ Telex Microphone ■ Virtual Pool ■ Nascar Racing,
Win95 Tutor ■ How To Make Computers Work ■ Brief History of Time ■ EA Games Pack,
Accent ■ 2 Educational Games.

£179 £210.33 INC VAT

Gameblaster 32 4x Plug and Play

SoundBlaster 32 PnP ■ 4x IDE CD Drive ■ speakers ■ FX2000 Joystick ■ Nascar Racing
Virtual Pool ■ FIFA Soccer ■ FX Fighter ■ Reirubition ■ Dark Forces ■ Magic Carpet
Little Blg Adventure ■ Alone In The Dark 1 & 2 ■ Theme Park and more!

£245 £287.88 INC VAT

Soundblaster Performance 6 Speed

Creative 6 speed IDE CD-ROM ■ Soundblaster 32 PnP ■ CS100 speakers ■ Telex Microphone
Win Tutor 95 ■ How To Computers ■ Accent ■ Midi Orchestrator ■ A Brief History of Time
Global Language ■ The Way Things Work ■ Fun School 5 ■ Dreamland ■ Nascar ■ Virtual Pool

£289 £339.58 INC VAT

Soundblaster Disney: The Lion King

Soundblaster 16 PnP ■ Quad speed internal IDE CD-ROM drive
Disney Lion King Print Studio ■ Disney Animated Story Book ■ Lion King Screen Scenes

£179 £210.33 INC VAT

DIAMOND

Diamond Ultra Kit 8000

IDE 8 Speed Drive ■ 1Mb 16 Bit Wavetable Sound card (Plug & play Ready)
Yamaha YST M5 Speakers ■ Software Included: Myst, Magic Carpet, SimCity 2000, Rebel
Assault & Compton's Interactive Encyclopaedia

£395 £464.13 INC VAT

HOW TO ORDER

By Phone: Call 0181 498 2100. We accept Switch, Delta, Visa, Mastercard, American Express. Confirm your order by 16:00 and we will ship the same day. If the goods aren't in stock, your salesperson will give you an expected shipping date before confirming your order. We do not debit your card until we ship the goods.

By Fax: Fax us on 0181 523 4002. Confirm your order by 15:00 and if we have stock, we will ship the same day.

By Post: Send us an order form with payment for the full amount including delivery and VAT. Please allow 7 days for cheque clearance.

Official Order: We welcome orders from customers in the public sector/Education establishments and approved companies. New accounts should contact our Corporate Sales on 0181-498-2150. Official Purchase orders by fax to 0181-498-2159.

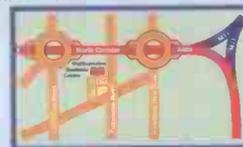
Personal Collection: Our showroom opening times are as follows:

Mon-Fri 10.00am to 6.00pm
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Please phone to reserve stock.

Carriage Charges: Next day courier from £6 to £10 (UK mainland only).

Warranty: All goods except mice and joysticks are supplied with a minimum 12 months return to base warranty. This sometimes entails dealing directly with the manufacturers. On all goods except printers we offer a 14 Day no-quibble money back guarantee. This only applies to unopened software packages. Prices are correct at time of going to press. E&OE. Prices effective 1st May 1996.



SIMPLY COMPUTERS

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Controllers

IDE ISA	EXC. VAT	INC. VAT
IDE 2FDD/2HDD.....	£10	£10.58
IDE 2FDD/2HDD 2S,1P,1G.....	£12	£14.10
Promise EIDEMAX ISA 2HDD upto 8.4G.....	£29	£34.08

Enhanced IDE 4FDD/2HDD 2S, 1P, 1G

£19 £22.33 INC VAT

IDE ISA CACHE	EXC. VAT	INC. VAT
Bus Logic KT510 ISA 16 Bit IDE Cache.....	£51	£88.13
VESA LOCAL BUS CONTROLLERS		
VESA Local BUS EIDE 2HDD/2FDD 2S,1P,1G (mode 3 Only).....	£18	£21.15
VESA Local Bus EIDE 4HDD/2FDD, 2S, 1P.....	£29	£34.08
VESA Local Bus EIDE 4HDD/2FDD, 2S, 1P,1G.....	£39	£45.83
VESA Local Bus EIDE 4HDD/2FDD, 2S (6550), 1P,1G.....	£39	£45.83
Promise EIDE4030PlusV1 4HDD/2FDD 2S(6550),1P,1G 0K.....	£99	£116.33



Adaptec EIDE - CD Kit.....	£18	£21.15
Adaptec EIDE - AT 32 VP Kit.....	£35	£41.13
Adaptec EIDE - AT 42 VP Kit (inc Floppy controller).....	£39	£45.83
Adaptec EIDE - VLB Kit (inc floppy & serial/parallel).....	£45	£52.88

PCI CONTROLLERS

Bus Logic KT910 IDE Caching Host Adaptor.....	£145	£170.38
PCI IDE Controller (mode 3, 4).....	£35	£41.13
DC-5030 IDE Cache Controller(0K)PCI.....	£105	£123.38

SCSI CONTROLLERS



Adaptec 1505 Altra Total CD Kit.....	£35	£41.13
Adaptec 1515 Altra Total Connect Kit.....	£59	£69.33
Adaptec 1542CP ISA SCSI Controller Bare.....	£124	£145.70
Adaptec 1542CP ISA SCSI Complete Kit.....	£169	£198.58
Adaptec 2742 EISA SCSI Complete Kit.....	£245	£287.88
Adaptec 2920 PCI SCSI Kit.....	£114	£133.95
Adaptec 2940 PCI SCSI Kit.....	£178	£209.15
Adaptec 2940 PCI SCSI Ultra Wide Kit.....	£215	£252.63
Adaptec 3940 PCI SCSI Multi Channel Complete Kit.....	£279	£327.83
Adaptec 348 MINISCSI Plus (Parallel SCSI Adaptor).....	£75	£88.13
Adaptec 1460 SCSI PCMCIA.....	£119	£139.83

REMOTE CONTROL

Adaptec Airport 1000 Infra Red.....	£59	£69.33
Adaptec Airport 2000 Infra Red.....	£69	£81.08
Adaptec Airport 2500 Infra Red.....	£115	£135.13



Advansys

ABP542 ISA kit.....	£105	£123.38
ABP920 PCI starter kit (Win 95 ready).....	£79	£92.83
ABP940 PCI kit.....	£125	£146.88

All the above Advansys kits come with Corel SCSI Lite and Internal cable

Bus Logic

Bus Logic KT 445C VLB 32 Bit SCSI Adaptor.....	£152	£178.60
Bus Logic KT 545C ISA 16 Bit SCSI Adaptor.....	£178	£209.15
Bus Logic KT 946C PCI SCSI Adaptor.....	£194	£227.95
Bus Logic BT 646S MCA 32 Bit SCSI Adaptor.....	£265	£311.38
Bus Logic BT 747C EISA Fastit SCSI Adaptor.....	£235	£276.13
Bus Logic KT 747S/C Fast SCSI EISA 32 Bit.....	£254	£298.45

CMD

CMD 6500 PCI SCSI Host Adaptor.....	£148	£173.90
CMD 6520 PCI SCSI (0K) Expandable to 64Mb.....	£195	£229.13

I/O CONTROLLERS

Multi I/O Controller 2S, 1P, 1G.....	£9	£10.58
Parallel Port Card.....	£9	£10.58
Serial Card.....	£9	£10.58
Serial Card with Fast Uart 16550.....	£19	£22.33
4 Port RS232 Adaptor.....	£78	£91.65

PCMCIA CARD ADAPTERS

CardPort ISA (one front, one rear PC card slot).....	£145	£170.38
Cardport Solo (One front mounted PC card port).....	£92	£108.10
Cardport Uno (One backplane-mounted PC card slot).....	£84	£98.70
Cardport adaptors require one ISA slot and for front-mounted cards a spare 3.5" drive bay		
Pson Gold Drive PCMCIA Card Reader.....	£95	£111.63
Desktop PC PCMCIA Bay		



PDA's

Apple Technologies

	EXC. VAT	INC. VAT
Voice Messagepad.....	£36	£42.30
Voice organiser 128k.....	£85	£99.88
Voice Organiser 512k.....	£115	£135.13

Timex

Timex Datalink Watch (Leather).....	£75	£88.13
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Tape Streamers

DANMERE BACKER

BACKS UP ON VHS TAPE

WINDOWS 95/3.11



£34 £39.95 INC VAT

COLORADO - INTERNAL

Jumbo DJ35 350Mb Tape Streamer.....	£55	£64.63
HP Colorado T1000 800Mb Tape Streamer.....	£95	£111.63
Jumbo DJ50 1.4Gb Tape Streamer.....	£178	£209.15

COLORADO - EXTERNAL

Trakker JT35 350Mb Tape Streamer.....	£102	£119.85
HP Colorado T1000e 800Mb Tape Streamer.....	£125	£146.88

Iomega(Internal)

	EXC. VAT	INC. VAT
Conner Ditto 420Mb Tape Streamer.....	£78	£91.65
Iomega Ditto 800 800Mb Tape Streamer.....	£85	£99.88
Iomega Ditto 1700Mb Internal T/S.....	£185	£217.38
Iomega Ditto 3200Mb Internal.....	£209	£245.58

Iomega(External)

Iomega Easy 800Mb Tape Streamer.....	£98	£115.15
Iomega Ditto 3200Mb Parallel Port T/S.....	£249	£292.58

Conner(Internal)

Conner Tapestor 420 AT Internal.....	£89	£104.58
Conner Tapestor 800 AT Internal.....	£105	£123.38
Conner Tapestor 1.7Gb Internal Kit.....	£179	£210.33
Conner Bali 3.2Gb Internal Kit.....	£229	£269.08
Conner Tapestor 4000 SCSI.....	£344	£404.20
Conner Tapestor 4000 EIDE.....	£344	£404.20
Conner 2GB DAT 4320 Internal Drive.....	£535	£628.63
Conner 8GB DAT Internal.....	£659	£774.33

Conner(External)

Conner Tapestor 800 EP.....	£285	£334.88
Conner Tapestor 4000 SCSI.....	£585	£687.38



HEWLETT PACKARD

Internal

HP Surestore 2000i 2Gb.....	£545	£640.38
HP Surestore 5000i 4Gb.....	£635	£746.13
HP Surestore 6000i 8Gb.....	£765	£898.88

External

HP Surestore 2000e 2Gb.....	£675	£793.13
HP Surestore 5000e 4Gb.....	£745	£875.38
HP Surestore 6000e 8Gb.....	£925	£1,086.88
Support Pack for HP Surestore DAT drives H5471A.....	£118	£138.65

Sony (Internal)

Sony SDT 5000 4Gb SCSI-2.....	£649	£762.58
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BACKUP SOFTWARE



Cheyenne ARCserve for Windows NT 3.51.....	£687	£807.23
Cheyenne ARCserve V6 for Network, Workgroup Edition.....	£338	£397.15
Cheyenne ARCserve V6 for Network, Enterprise Edition.....	£818	£961.15
Cheyenne ARCsolo Software SCSI for Windows.....	£99	£116.33
Cheyenne ARCsolo Software SCSI for Dos.....	£75	£88.13

TAPE STREAMER MEDIA

MC3000XL Tapes for Iomega 700.....	£15	£17.63
DC2120 Tape Streamer Tape.....	£8	£9.40
2GB DAT Tapes.....	£6	£7.05
3M 400Mb Tapes for Iomega Ditto.....	£25	£29.38
DC2120.....	£12	£14.10
Travan TR1 (420/800Mb).....	£22	£25.85
Travan TR3 (1700/3200Mb).....	£27	£31.73
DAT DDS1-90 (2Gb native).....	£10	£11.75
DAT DDS2-120 (4Gb native).....	£18	£21.15

For Simply's range of networking products, see page 14

Simply COMPUTERS

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Cases

Replacement PSU's	EXC. VAT	INC. VAT
200W CE approved PSU for Desktop/Mini Tower	£ 25	£ 29.38
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£49
£57.58
inc VAT

£75
£88.13
inc VAT



CE APPROVED CASES	EXC. VAT	INC. VAT
CE Approved Desktop Case with LED	£49	£57.58
CE Approved Mini Tower Case with LED	£49	£57.58
CE Approved Large Mini Tower case	£59	£69.33
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All the Above cases come with 200 Watt CE PSU's & Screws & Cables & EMC Suppression Kit

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Standard Slim-Line Case	£49	£57.58
Standard Large Mini Tower case	£59	£69.33
Standard Midi Tower Case	£59	£69.33
Standard Full Tower Case with LED	£75	£88.13

All the Above cases come with 200 Watt CE PSU's & Screws & Cables

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Single 5.25" Drive Case 40W PSU	£55	£64.63
Dual 5.25" Drive Case 60W PSU	£69	£81.08
Quad 5.25" Drive Case 150W PSU	£99	£116.33
Removable SCSI Hard Drive Rack	£29	£34.08

Keyboards and Rodents

SIMPLY Keyboards

Simply 102 Key UK Keyboard	£12	£14.10
Simply 105 Key Windows 95 Keyboard	£15	£17.63

Cherry G83-6105 Keyboard Soft with Win 95 Keys	£19	£22.33
Cherry G81-3000 Keyboard Soft with Win 95 Keys	£22	£25.85
Cherry G80-3000 Keyboard Click	£36	£42.30

MOUSE AND KEYBOARD OFFER

CHERRY G81-3000 KEYBOARD SOFT & MS MOUSE VERSION 2

£39 ~~£45.83~~ **INC VAT**

SAVE

£32

Cherry G84-4100 Notebook Keyboard	£65	£76.38
Cherry G80-5000 Ergo Keyboard	£149	£175.08
Cherry G84-4400 Trackball Notebook Keyboard	£199	£233.83

Microsoft Natural Keyboard for Windows '95

£49 **£57.58** **INC VAT**

Fujitsu FKB 4720 UK Keyboard	£26	£30.55
Keytronics Windows '95 Keyboard	£25	£29.38

KEYBOARD ACCESSORIES	EXC. VAT	INC. VAT
PS/2 Keyboard Adaptor (AT to PS/2)	£5	£5.88
PS/2 Keyboard Adaptor (PS/2 to AT)	£5	£5.88
Keyboard Extension Cable	£8	£9.40
Universal Clear Plastic Keyboard Cover	£19	£22.33

RODENTS	EXC. VAT	INC. VAT
3 Button Mouse MS Compatible	£8	£9.40
Manhattan Burger Mouse	£21	£24.68
Creative Aeroduet (complete with 3D software)	£78	£91.65
Genius Easy Mouse	£8	£9.40
Genius Mouse 3	£12	£14.10



Logitech Pilot Mouse Serial	£16	£18.80
Logitech Pilot Mouse PS/2	£16	£18.80
Logitech Pilot Trackball	£24	£28.20
Logitech Trackman Portable	£30	£35.25
Logitech Mouseman 96	£35	£41.13
Logitech Mouseman Sensa Mouse	£36	£42.30
<i>Available in four flavors</i>		
Logitech Mouseman Bus	£42	£49.35
Logitech Trackman Vista	£42	£49.35
Logitech Trackman Voyager	£45	£52.88
Logitech Mouseman Cordless	£47	£55.23
Logitech Trackman Marble	£54	£63.45

Microsoft	EXC. VAT	INC. VAT
Microsoft Easy Ball	£25	£29.38
Microsoft Home Mouse	£16	£18.80
Microsoft Home Mouse with 18 games	£20	£23.50
Microsoft Mouse V2.0 Combo with IntelliPoint	£35	£41.13

Trust Ami-Mouse Serial **£8** **£9.40** **inc VAT**

Keyboards and Rodents cont.

GRAPHIC TABLETS	EXC. VAT	INC. VAT
Wacom Art Pad 2	£125	£146.88
Wacom A4 Graphics tablet	£395	£464.13
Genius 'Easy Painter' Digitizer	£65	£76.38

Modems

US Robotics	EXC. VAT	INC. VAT
US Robotics Sportster V1 Ext	£85	£99.88
US Robotics Sportster 14.4 INT	£104	£122.20
US Robotics Sportster V1 28.8 V34 EXT	£155	£182.13
US Robotics Sportster 28.8 V34 INT	£155	£182.13
US Robotic Sportster X-Jack PCMCIA V34	£159	£186.83
<i>All the above now with Free Internet Access Software</i>		
US Robotics Courier V34 Int	£234	£274.95
US Robotics Courier V34 Ext	£235	£276.13

SIMPLY Modems

Simply 14400 Internal Fax Modem	£65	£76.38
Simply 14400 External Fax Modem	£75	£88.13
Simply V34 Internal Fax Modem	£125	£146.88
Simply V34 External Fax Modem	£129	£151.58

Simply Modems are BT approved and come with Windows compatible software



Miro Connect 34 Office **£239** **£280.83**

MiroCONNECT 34 Office comprises "Voice over Data" facilities for videoconferencing, access the Internet via V34 fax/modem, a high quality sound card with wavetable technology and a full suite of integrated office software.



Motorola 3400 Online Internet Solution with Data/Fax Modem	£152	£178.60
<i>1.31c, 28800 bps 1 month free access to CompuServe</i>		
3400 Pro 28.8 Data/Fax Modem	£139	£163.33



Multitech MT2834ZDX External V34 fax modem	£145	£170.38
Multitech MT2834ZPX Internal V34 fax modem	£145	£170.38
Multitech MT19322DX External V32 turbo fax modem	£109	£128.08
Multitech MT2834LTI PCMCIA V34 fax modem	£179	£210.33
Multitech MT1432LTI PCMCIA V32 bis fax modem	£139	£163.33

Psion Dacom	EXC. VAT	INC. VAT
Psion Gold Card V34 + Fax PCMCIA Modem	£190	£223.25
Psion Gold Card V32 BIS + Fax PCMCIA Modem	£129	£151.58
Psion Meteor V34 + Fax PCMCIA Modem	P.O.A.	P.O.A.
Psion Gold Drive PCMCIA Card Reader Desktop PC PCMCIA Bay	£95	£111.63

Pace	EXC. VAT	INC. VAT
Pace Microlin fx 32+ Internal - V32bis Fax Modem	£89	£104.58
Pace Internal Message Desk V32 Voice/Fax/Data	£99	£116.33
Pace Microlin fx34 PC Internal V34 Fax Modem	£149	£175.08
Pace Linnet 34 fx - Desktop V34 Fax Modem	£149	£175.08
Pace Message Desk V34 Desktop V34 Voice, Fax and Data Modem	£165	£193.88
Pace Microlin NB34 PCMCIA V34 Fax Modem	£178	£209.15
Pace Netlink/Netlink internal	£85	£99.88

Complete internet Access Pack containing Pace V32bis fax modem, 21 days free direct connection time, plus all software needed.

Pace Netlink Gold/Netlink Gold Internal	£159	£186.38
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Complete Internet Access Pack containing Pace V34 fax modem, 21 days free direct connection time, plus all software needed.

Zoom	EXC. VAT	INC. VAT
Zoom 14400 Internal	£75	£88.13
Zoom 14400 External	£79	£92.83
Zoom 28800 Internal	£129	£151.58
Zoom 28800 External	£135	£158.63

Hayes	EXC. VAT	INC. VAT
Hayes Accura 14.4 + Fax 14.4 V32	£95	£111.63
Hayes Accura 28.8 + Fax 28.8 V34	£155	£182.13
Hayes Accura 28.8 Voice Mail	£189	£222.08
Hayes Optima 14.4 + Fax 14.4	£249	£292.58
Hayes Optima 28.8 + Fax 28.8	£365	£428.88
Hayes Optima 14.4 Business (with Voice Mail)	£269	£316.08
Hayes Optima 28.8 Business (With Voice Mail)	£359	£421.83
Hayes Optima 144 + Fax144 PCMCIA	£199	£233.83
Hayes Optima 28.8 PCMCIA 2 Hayes Optima 288 + 2 Enhanced Serial Ports	£195	£229.13
Hayes ESP High Speed Serial Card 1 Port	£55	£64.63

Apex Data	EXC. VAT	INC. VAT
ClipperCom V32 PCMCIA Modem	£149	£175.08
ClipperCom V34 PCMCIA Modem	£199	£233.83

Creative	EXC. VAT	INC. VAT
PhoneBlaster Communications Centre V34	£215	£252.63

Features: 28.8 Fax/Modem, Music on hold, pager notification, remote access. Send data files during a conversation. 16 bit stereo recording & playback, IDE CD ROM interface.

AVRO PACIFIC Modem Accessories

Automatic Fax Switch		
Fax Friend (Automatic Fax & Data Switch)	£45	£52.88
Modem Travel Adapter Kit		
Avro Pacific International telephone adapter	£39	£45.83

FOR ORDERING INFORMATION SIMPLY SEE PAGE 5

Motherboards

ISA	EXC. VAT	INC. VAT
80386SX-40Mhz	£37	£43.48
VESA LOCAL BUS		
SGS DX2-66Mhz 256K VESA Local Bus	£110	£129.25
AMD DX4-100Mhz 256K VESA Local Bus	£124	£145.70
<i>All the Above motherboards have Zif Socket & are Pentium Overdrive Upgradeable</i>		
PCI		
SGS 80486DX2-66Mhz 256K PCI Motherboard	£133	£109.28
AMD 80486DX4-100Mhz 256K PCI Motherboard	£123	£144.53
AMD 80486DX4-120Mhz 256K PCI Motherboard	£130	£152.75
AMD AM5x86-P75 256K PCI Motherboard	£133	£156.28
Pentium 75Mhz PCI Motherboard 256K Cache	£168	£197.40
Pentium 100Mhz PCI Motherboard 256K Cache	£197	£231.48
Pentium 120Mhz PCI Motherboard 256K Cache	£246	£289.05
Pentium 133Mhz PCI Motherboard 256K Cache	£303	£356.03
Pentium 150Mhz PCI Motherboard 256K Cache	£383	£450.03
Pentium 166Mhz PCI Motherboard 256K Cache	£486	£571.05
<i>All the Above motherboards have Plug & Play Bios & on board Enhanced IDE & I/O</i>		
Pentium Intel PCiset 75Mhz PCI Motherboard 256K Pipeline Burst Cache	£179	£210.33
Pentium Intel PCiset 100Mhz PCI Motherboard 256K Pipeline Burst Cache	£208	£244.40
Pentium Intel PCiset 120Mhz PCI Motherboard 256K Pipeline Burst Cache	£257	£301.98
Pentium Intel PCiset 133Mhz PCI Motherboard 256K Pipeline Burst Cache	£314	£368.95
Pentium Intel PCiset 150Mhz PCI Motherboard 256K Pipeline Burst Cache	£394	£462.95
Pentium Intel PCiset 166Mhz PCI Motherboard 256K Pipeline Burst Cache	£497	£583.98
<i>All the Above motherboards have an Intel Intel PCiset/Plug & Play Bios & Built in EIDE & Multi I/O</i>		
Intel Endeavour Pentium 100MHz 256k Cache	£284	£333.70
Intel Endeavour Pentium 120MHz 256k Cache	£333	£391.28
Intel Endeavour Pentium 133MHz 256k Cache	£390	£458.25
Intel Endeavour Pentium 150MHz 256k Cache	£470	£552.25
Intel Endeavour Pentium 166MHz 256k Cache	£573	£673.28
<i>All the Above motherboards have Intel PCiset & on board Enhanced IDE & I/O, Built in Sound & are Intel Manufactured</i>		
Intel Atlantis Pentium 100Mhz 256K Cache	£368	£432.40
Intel Atlantis Pentium 120Mhz 256K Cache	£417	£489.98
Intel Atlantis Pentium 133Mhz 256K Cache	£474	£556.95
Intel Atlantis Pentium 150Mhz 256K Cache	£554	£650.95
Intel Atlantis Pentium 166Mhz 256K Cache	£657	£771.98
<i>Intel manufactured have a Intel PCiset & on board Enhanced IDE & I/O & VGA & Built in Sound</i>		
MOTHERBOARD NO CPU		
486 VESA Local Bus M/B 256K Cache Zif NCPU	£69	£81.08
3 VESA, 4 ISA 4 x 30Pin & 2 x 72Pin Simms		
486 VESA Local Bus M/B 256K Cache Zif NCPU	£69	£81.08
3 VESA, 4 ISA 4 x 72Pin Simms		
486 PCI Multi I/O Motherboard 256K Cache Zif NCPU	£75	£88.13
Pentium 75/90/100Mhz Motherboard with EIDE & Multi I/O	£88	£103.40
Pentium TRITON 90/100/120/133/150/166MHz M/B EIDE PCI/ISA Super I/O 256K Pipeline Burst Mode Cache	£116	£116.33
Pentium TRITON 90/100/120/133/150/166MHz M/B EIDE PCI/ISA Super I/O 512K Pipeline Burst Mode Cache	£145	£170.38
Intel Endeavour Pentium Motherboard 256K Cache	£175	£205.63
<i>Intel manufactured have a Intel PCiset & on board Enhanced IDE & I/O & Built in Sound</i>		
Intel Atlantis Pentium Motherboard 256K Cache	£259	£304.33
<i>Intel manufactured have a Intel PCiset & on board Enhanced IDE & I/O & Graphics & Built in Sound</i>		
Supermicro Pentium TRITON 90-166MHz M/B EIDE PCI/ISA Super I/O 256K Pipeline Burst Mode Cache	£179	£210.33
Micronics M54PI Intel Neptune chipset P75/90/100 256k cache PCI/ISA super I/O	£219	£257.33
Micronics M54HI Intel Triton chipset P75 - 166 256k cache PCI/ISA Super I/O	£219	£257.33
Micronics M54PE Intel Neptune chipset Twin Pentium 75 - 133 256k cache PCI/EISA Super I/O	£279	£326.83
Dual Pentium Pro 150 - 200 MHz Intel Orion chipset motherboard PCI/ISA super I/O	£595	£699.13

Pentium Memory Kits



Memory Kits

For most of the following manufacturers PCs
AMSTRAD, COMMODORE, DAN TECHNOLOGY, DEC, ICL, KAMCO, MITAC, MBC, MJN, OLIVETTI, OLYMPIC, TANDON, TTKO, TIME, VALE, VIGLEN, WATFORD

486 Memory Kits	2MB inc. vat	4MB inc. vat	8MB inc. vat	16MB inc. vat	32MB inc. vat	64MB inc. vat
30 Pin Parity Memory	£38/£44.65	£76/£89.30	£150/£176.25			
72 Pin Non-Parity Memory	£42/£49.35	£85/£99.88	£170/£199.75	£390/£458	£780/£916.50	
72 Pin Parity Memory	£58/£68.15	£115/£135.13	£225/£269.63	£510/£599.25	£1020/£1198.50	
72 Pin Non-Parity Memory	£84/£98.70	£170/£199.75	£390/£458.25	£780/£916.50		
72 Pin Parity Memory	£116/£136.30	£230/£270.25	£510/£599.25	£1020/£1198.50		
EDO Memory	£48/£56.40	£105/£123.38	£245/£287.88			

All Simply memory kits come with fitting instructions and are backed by a 12 month warranty including a 14 day no quibble money back guarantee. Please phone to see if your machine is compatible.



CPUs

	EXC. VAT	INC. VAT
SGS ST486DX2-66-GS	£18	£21.15
AMD 80486DX4-100Mhz CPU	£48	£56.40
AMD DX4-120Mhz CPU "Write Back"	£55	£64.63
AMD5x86-P75 CPU	£58	£68.15
<i>486 Compatible CPU with better performance than the Pentium 75Mhz</i>		
Cyrix 5x86-P100 CPU	£65	£76.38
<i>486 Compatible CPU with better performance than the Pentium 90Mhz</i>		
Cyrix 6x86-120 CPU	£145	£170.38
<i>Socket 7 compatible 6th generation processor</i>		
Cyrix 6x86-133 CPU	£188	£220.90
<i>Socket 7 compatible 6th generation processor</i>		
Cyrix 6x86-150 CPU	£258	£303.15
<i>Socket 7 compatible 6th generation processor</i>		
Cyrix 6x86-166 CPU	£399	£468.83
<i>Socket 7 compatible 6th generation processor</i>		
Cyrix 6x86-200 CPU	£485	£569.88
<i>Socket 7 compatible 6th generation processor</i>		
Pentium 75Mhz CPU	£80	£94.00
Pentium 100Mhz CPU	£109	£128.08
Pentium 120Mhz CPU	£158	£185.65
Pentium 133Mhz CPU	£215	£252.63
Pentium 150Mhz CPU	£295	£346.63
Pentium 166Mhz CPU	£398	£467.65
Pentium 200Mhz CPU	£495	£581.63
Intel Pentium Pro 150MHz	£465	£546.38
Intel Pentium Pro 180MHz	£645	£757.88
Intel Pentium Pro 200MHz	£738	£867.15

intel OVERDRIVE

PENTIUM* OVERDRIVE 83Mhz
 (OVERDRIVE CHIP FOR 486 33Mhz MOTHERBOARDS)

£175 £205.63 INC. VAT

Overdrive Chip 486DX2-50	£76	£89.30
Overdrive Chip 486DX2-66	£86	£101.05
Overdrive Chip 486DX4-75	£95	£111.63
Overdrive Chip 486DX4-100	£122	£143.35
Pentium Overdrive 63Mhz	£129	£151.58
<i>Overdrive Chip for 25Mhz Motherboards</i>		
Overdrive for P60/66 to P120/133	£245	£287.88
Overdrive for P75 to P125	£245	£287.88

make-it

Make-It 286 - 486	£99	£116.33
Make-It 286 - 486 & Maths Co-Processor	£139	£163.33
Make-it 286 - 486 LCC Adaptor	£45	£52.88
<i>Required If 286 bus retaining Clip</i>		
Make-it 386SX to 486	£95	£111.63
Make-it 386DX to 486	£95	£111.63
Make-it 486SX/DX to 486DX4	£139	£163.33

HEAT SINKS

486 Heat Sink with Fan	£9	£10.58
Pentium 75-166 Mhz Heat Sink with Fan	£11	£12.93
Pentium Pro Active Heatsink and fan	£15	£17.63
Fan Failure Detector	£10	£11.75



Generic Memory

30 Pin Memory		
256K Simms 70ns	£9	£10.58
1Mb x 9 SIMMs 70ns 9 or 3 Chip	£35	£41.13
1Mb x 9 Simms 70ns 3 Chip	£19	£22.33
1Mb x 9 Simms 70ns 9 Chip	£28	£32.90
4Mb x 9 Simms 70ns 3 Chip	£75	£88.13
4Mb x 9 Simms 70ns 9 Chip	£95	£111.63
72 Pin Memory		
1Mb x 32 Simms (4Mb) 70ns	£42	£49.35
2Mb x 32 Simms (8Mb) 70ns	£85	£99.88
4Mb x 32 Simms (16Mb) 70ns	£195	£229.13
8Mb x 32 Simms (32Mb) 70ns	£395	£464.13
1Mb x 36 Simms (4Mb) 70ns	£58	£68.15
2Mb x 36 Simms (8Mb) 70ns	£115	£135.13
4Mb x 36 Simms (16Mb) 70ns	£255	£299.63
8Mb x 36 Simms (32Mb) 70ns	£465	£546.38
EDO RAM		
4Mb EDO SIMM 70ns	£48	£56.40
8Mb EDO SIMM 70ns	£105	£123.38
16Mb EDO SIMM 70ns	£245	£287.88
32Mb EDO SIMM	£599	£703.83
4Mb Burst Mode EDO SIMM	£55	£64.63
8Mb Burst Mode EDO SIMM	£115	£135.13
16Mb Burst Mode EDO SIMM	£285	£334.88
16Mb EDO Memory with Parity	POA	POA
32Mb EDO Memory with Parity	POA	POA
168 Pin Memory		
8Mb 168-pin DIMM Module	£125	£146.88
16Mb 168-pin DIMM Module	£235	£276.13
32Mb 168-pin DIMM Module	£425	£499.38
64Mb 168-pin DIMM Module	£835	£981.13

FOR ORDERING INFORMATION SIMPLY SEE PAGE 5



Desktop Memory

ACER	4MB	INC VAT	8MB	INC VAT	16MB	INC VAT	32MB	INC VAT	64MB	INC VAT	128MB	INC VAT
All 486-based desktop PCs	£135	£158.63	£265	£311.38	£499	£586.33	£895	£1051.63				
All Pentium-based desktop PCs			£265	£311.38	£505	£593.38	£895	£1051.63	£1735	£2038.63		
APPLE												
PowerMac 6100/7100/8100 Performa 61xx			£209	£245.58	£415	£487.63	£830	£975.25	£1599	£1878.83		
PowerMac 7500/8500/9500			£269	£316.08	£534	£627.45	£1045	£1227.88	£1985	£2332.38		
Performa (all except 61xx), LC, Quadra 6xx, Centris 6xx	£109	£128.08	£209	£245.58	£415	£487.63	£830	£975.25				
AST												
Premia - All models, Bravo - MS-T, MS-L, MS, MT Pentiums			£210	£246.75	£399	£468.83	£810	£951.75	£1590	£1868.25		
Bravo-LP, MT486, LC2, LC3	£119	£139.83	£210	£246.75	£399	£468.83	£810	£951.75				
COMPAQ												
Proliant 4500, 4000, 2000, 1000, Deskpro XE					£510	£599.25	£999	£1173.83	£1735	£2038.63	£3420	£4018.50
Prolinea - All Pentiums, Presario 95xx, 55xx, Deskpro - All Pentiums except XE, XL486, Proliant 1500, Prosignia 300, 500			£254	£298.45	£510	£599.25	£895	£1051.63	£1735	£2038.63	£3950	£4641.25
Presario 8xx, 7xx, 5xx	£115	£135.13	£204	£239.70	£399	£468.83	£825	£969.38				
Presario 6xx, 4xx, Prolinea 4xx	£129	£151.58	£254	£298.45	£445	£522.88	£895	£1051.63				
Deskpro 386/486M (with memory expansion board), Deskpro 396/486i series	£129	£151.58	£254	£298.45								
DELL												
Powerline workstation, Poweredge, Optiplex Pentiums, Dimension XPS Pentiums, Oninplex, Performance ME			£255	£299.63	£459	£539.33	£895	£1051.63	£1740	£2044.50		
Optiplex 486, Netplex 486, Performance L, M, T	£119	£139.83	£199	£233.83	£395	£464.13	£825	£969.38				
DEC												
Celebris - All models, Prioris XL servers, Venturis 5xx Pentiums, Starion - All models, DEC PC XL servers, 560ST, LPX566, DEC PC4xxST, 4xxSE			£254	£298.45	£510	£599.25	£895	£1051.63	£1735	£2038.63		
DEC PC 4xxMT, LP, LPX, LPX+	£129	£151.58	£254	£298.45	£499	£586.33	£895	£1051.63				
GATEWAY												
P5 - All models			£210	£246.75	£429	£504.08	£815	£957.63	£1710	£2009.25		
4DX2 - All models	£120	£141.00	£210	£246.75	£429	£504.08	£815	£957.63				
HEWLETT PACKARD												
Vectra XU, XM3, VL3, VE Pentium, VL2-560, Pavilion 7xxx, 5010, NetserverLM, Multimedia PC			£209	£245.58	£425	£499.38	£820	£963.50	£1595	£1874.13		
Vectra VL2 486i XM2, M2, N2, VE, Entria - All models, Pavilion 5010, Envizex - All models	£124	£145.70	£215	£252.63	£425	£499.38	£820	£963.50				
IBM												
PC300 Pentiums, Aptiva Pentiums			£215	£252.63	£425	£499.38	£815	£957.63	£1595	£1874.13		
PC300, Aptiva - 486-based	£119	£139.83	£215	£252.63	£425	£499.38	£815	£957.63				
SILICON GRAPHICS												
Challenge M, S, Iris Indy					£529	£621.58	£999	£1173.83	£1715	£2015.13	£2950	£3466.25



Notebook Memory



Printer Memory

ACER	4MB	INC VAT	8MB	INC VAT	16MB	INC VAT
Acermote 760i, 780i, 790i, Pentium	£148	£173.90	£285	£334.88	£499	£586.33
AST						
Ascentia 950n			£295	£346.63	£509	£598.08
Ascentia 900n	£149	£175.08	£295	£346.63	£509	£598.08
COMPAQ						
LTE 5000			£279	£327.83	£524	£615.70
Contura 400/410 family	£149	£175.08	£275	£323.13	£495	£581.63
DEC						
HiNote Ultra	£139	£163.33	£265	£311.38	£499	£586.33
HiNote	£139	£163.33	£265	£311.38	£499	£586.33
IBM						
Thinkpad (Butterfly)	£145	£170.38	£269	£316.08	£495	£581.63
Thinkpad 340, 360"	£154	£180.95	£279	£327.83	£495	£581.63
Thinkpad 760/755	£167	£196.23	£295	£346.63	£510	£599.25
NEC						
Versa M	£148	£173.90	£267	£313.73		
TOSHIBA						
Satellite Pro (EDO)			£415	£487.63	£755	£887.13
T2100, T2110, T2150, T2105"	£155	£182.13	£299	£351.33	£525	£616.88
T4600-T4900 memory card	£145	£170.38	£299	£351.33	£499	£586.33

CANON	2MB	INC VAT	4MB	INC VAT	8MB	INC VAT
LBP4 Expansion board	£78	£91.65				
Module	£135	£158.63				
LBP-811	£109	£128.08	£179	£210.33		
Notebook	£139	£163.33	£179	£210.33		
Laserjet 4, M, Si, SiMX, Deskjet 1200C 12000C/PSDesignerjet 600			£149	£175.08	£259	£304.33
HEWLETT PACKARD						
Laserjet 11P, Laserjet 111P Laserjet 111D, Laserjet 11D, Laserjet 11			£175	£175.08		

If you don't see your memory for computer, notebook or printer, please call for details

All prices subject to market fluctuations



SIMM SAVERS

Instruction Manual ■ Life Warranty ■ Hot Line Support
Guaranteed Compatibility ■ Suitable for most PCs

Allows 8 x 30 pin SIMMs to be utilised in one 72 Pin socket..... £55 £64.63
Allows 4 x 30 pin SIMMs to be utilised in one 72 Pin socket..... £29 £34.08

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Leisure

JOYSTICKS

	EXC. VAT	INC. VAT
Warrior 5 Joystick	£9	£10.58
Warrior 5 Plus Joystick	£12	£14.10
Mach 1 Plus Joystick	£16	£18.80
Mach 2 Joystick	£21	£24.68

Trust 3D Sound Commander £40 £47.00 inc VAT

CH Jetstick joystick	£23	£27.03
CH Flightstick	£27	£31.73
CH F-16 Flightstick (4-button)	£34	£39.95
CH Flightstick Pro	£48	£56.40
CH Virtual Pilot Flight Yoke	£54	£63.45
CH F-16 Combat Stick	£55	£64.63
CH Virtual Pilot Pro Flight Yoke	£62	£72.85
CH Pro Pedal for Flight Sims	£65	£76.38
CH F-16 Fighter Stick	£66	£77.55
CH Pro Throttle	£66	£77.55
Gravis Analog Joystick	£24	£28.20
Gravis Professional Analog Joystick	£32	£37.60
Gravis PC Game Pad & FIFA International Soccer (CD)	£35	£41.13
Gravis Firebird Flight & Weapon Control System	£59	£69.33
Gravis Phoenix Flight & Weapon Control System	£95	£111.63
Logitech Wingman Lite	£15	£17.63
Logitech Wingman	£23	£27.03
Logitech Wingman Extreme	£29	£34.08
Logitech Thunder PC Game Pad	£14	£16.45

MS Sidewinder Joystick £19 £22.33 inc VAT

MS Sidewinder Joystick 3D Pro £34 £39.95 inc VAT

MS Sidewinder Joystick & Fury £40 £47.00 inc VAT

Quickshot Skymaster	£19	£22.33
Quickshot StratoWarrior	£34	£39.95
Dual Joystick Splitter Cable	£9	£10.58

GAME CARDS

IBM Game Card & Joystick 50Mhz	£19	£22.33
CH Gamecard III Auto up to 80Mhz	£28	£32.90
CH Gamecard III MGA 50Mhz	£32	£37.60
JCD Gamecard II PCMCIA Dual Joystick Interface	£45	£52.88



ISDN

Hayes

	EXC. VAT	INC. VAT
Hayes Ultra ISDN 64K Modem	£395	£464.13
Hayes Ultra 64K System Adaptor	£285	£334.88

RACAL

DAP RELEASE 2 NOW AVAILABLE, 128K DATA SPEED. MULTI-LINK PPP INTERNET READY. TEL-ME SOFTWARE



Racal DAP 6200 Data Only	£369	£433.58
V24 Data Port, Async 57.6Kbps, Sync 64Kbps, Trans-Send Comms Software		
Racal DAP 6200	£489	£574.58
V24 Data Port, Async 57.6Kbps, Sync 64Kbps, Trans-Send Comms Software, 2 Analog Ports		
Racal DAP 6300	£529	£621.58
V24 Data Port, Async 115Kbps, Sync 64Kbps, Trans-Send Comms Software, 2 Analog Ports, Network Management		
X-Toll PCMCIA ISDN PCMCIA, PriP, 128Kbps	£439	£515.83
Internal ISDN Adaptor 16 Bit Card, PriP, 128Kbps	£235	£276.13

**SIMPLY UPDATE
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Multimedia

CREATIVE

Creative TV-Coder External	£109	£128.08
Creative MP400 (MPEG Player)	£115	£135.13
Creative Video Blaster RT300	£209	£245.58

Aztech

	EXC. VAT	INC. VAT
Video Galaxy Gamma	£155	£182.13
Video Galaxy Gamma MPEG Upgrade	£119	£139.83
Video Galaxy Gamma Teletext Upgrade Module	£29	£34.08
Video Galaxy Oscar (MPEG Playback board)	£189	£222.08

Fast Electronic

Fast Movie Machine Pro	£275	£323.13
Fast Movie Machine Pro MJPEG option	£275	£323.13
Fast Movie Machine 2	£465	£546.38
Fast Movie Machine 2 MJPEG Upgrade	£275	£323.13
Fast Movie Machine 2 MPEG Upgrade	£225	£264.38
Fast Movie Machine 2 Powerpack	£899	£1056.33
Fast F60 Card with MJPEG	£345	£405.38
Fast FPS 60 Card with MJPEG	£485	£569.88
Fast FPS 60 Card MPEG Upgrade	£225	£264.38
Screen Machine II	£655	£769.63
Screen Machine II MJPEG upgrade	£275	£323.13



Hauptauge!

Hauptauge Win/TV Celebrity	£239	£280.83
Hauptauge Win/TV Prism	£142	£166.85
Hauptauge Win Motion 60	£359	£421.83



DIGITAL CAMERAS

	EXC. VAT	INC. VAT
Chinon ES3000 Digital Camera	£685	£804.88
Casio QV10 Digital Camera	£489	£574.58
Fuji DS-220 digital camera	£649	£762.58
Kodak Digital Camera 40	£565	£663.88
Kodak Camera AC Power Adapter	£69	£81.08

Automatic exposure & built in flash, 756x504 image resolution (4 x Apple Quicktake 100 resolution), includes batteries. AC Adapter optional

Orchid

Orchid Vidiola	£249	£292.58
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Philips

PCA20TV TV/Capture card	£179	£210.33
PCA21TV TV/Capture/Teletext card	£195	£229.13
PCA20TM TV/Capture/MPEG card	£295	£346.63

Sigma Design

Reelmagic Maxima Quantum Leap Software	£199	£233.83
TV Buster Internal	£45	£52.88
PC Tuner	£65	£76.38
Media Pro Plus	£189	£222.08
Media Pro Plus Hi-Res	£209	£245.58



Trust PCTV Home Video Card	£165	£193.88
Trust Home Cinema module	£123	£144.53
Trust Home Teletext Module	£33	£38.78
Trust FM Stereo Radio Card	£32	£37.60



Videologic Captivator Pro	£165	£193.88
Videologic Captivator Pro and TV	£205	£240.88
Videologic MPEG Player for VMC	£195	£229.13
Videologic MPEGStar (MPEG player for GrafXStar 400)	£89	£104.58
Videologic Mediator XLC PC to TV Converter	£149	£175.08



2Mb miroVIDEO 20TD live! PCI or VLB	£295	£346.63
miroVIDEO DC1 Plus With Adobe Premiere, Photoshop LE, Asymetric 3D	£299	£351.33
1Mb miroVIDEO 12PD PCI or VLB	£89	£104.58
2Mb miroVIDEO 12PD PCI or VLB	£129	£151.58
miroMPEG Maker	£185	£217.38
miroVIDEO DC20 Videocapture card	£710	£834.25

Videolabs

Flexcam Desktop TV Camera	£499	£586.33
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Others

Intel Smart Recorder Pro	£285	£334.88
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VIDEO CONFERENCING

Creative Labs ShareVision PC 3000	£995	£1,169.13
Intel ProShare Video System 200	£1849	£2,172.58
Intel Pro Share Premiere Edition SFW	£199	£233.83

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Sound Cards

CREATIVE

Sound Blaster 16 PnP.....	£58	£68.15
Sound Blaster 32 PnP IDE.....	£97	£113.98
Sound Blaster AWE32 PnP IDE.....	£149	£175.08
Wave Blaster II.....	£75	£88.13
Creative BlasterKeys.....	£105	£123.38
Creative BlasterKeys Kit.....	£275	£323.13

Sound Blaster AWE 32, 19 key (full size) keyboard, software
Multi-Dimensionator Plus, Modem, Master Joystick, Soundfont, Librarian



Orchid NuSound PnP 32.....	£104	£122.20
Orchid WaveBooster 2Mb + CueBase Lite.....	£22	£25.85
Orchid WaveBooster 4Mb + FX + MidiSoft.....	£34	£39.95

Gravis	EXC. VAT	INC. VAT
Gravis Ultrasound PnP card.....	£125	£146.88
Gravis Ultrasound ACE Wavetable Add-In Card.....	£75	£88.13

Trust Sound Expert 16 +3D **£49** £57.58 inc VAT

Aztech	EXC. VAT	INC. VAT
Sound Galaxy Pro 16 - 2.....	£58	£68.15
Sound Galaxy Waverider 32+.....	£88	£103.40
Sound Galaxy Waverider 32+ Kit.....	£275	£323.13



MiroSound FM10.....	£58	£68.15
Miro Sound PCM10.....	£76	£89.30
Miro Sound PCM1 Pro.....	£121	£142.18
Miro Sound PCM12.....	£138	£162.15
Miro Sound PCM20 Radio.....	£190	£223.25

Others	EXC. VAT	INC. VAT
Portable Sound Plus Sound Blaster Compatible connects to Parallel Port.....	£129	£151.58

SPEAKERS

Small Speakers.....	£5	£5.88
Screen Beat 4 Speakers.....	£9	£10.58
Screen Beat 5 Speakers.....	£10	£11.75
Screen Beat 3 Speakers.....	£12	£14.10
Screen Beat Pro 50.....	£29	£34.08
Screen Beat Super Woofer Speaker System.....	£109	£128.08

Complete with Mid and High Frequency satellite speakers

Labtec CS-600 Speakers.....	£19	£22.33
Small Mains Powered Amp Speakers.....	£19	£22.33
Medium Mains Powered Amp Speakers.....		

**Large 80W
Mains Powered
Amp Speakers
£49** £57.58 inc VAT



Canon SV15A active wide-disperson 40W speakers.....	£149	£175.08
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Trust Soundwave 40	£17	£19.98 inc VAT
Trust Soundwave 30	£24	£28.20 inc VAT
Trust Soundwave 20	£25	£29.38 inc VAT
Trust Soundwave 240	£41	£48.18 inc VAT
Trust 3D Sound Dimension	£49	£57.58 inc VAT

Sony Multimedia PC Speakers SRS-PC30.....	£45	£52.88
Sony Multimedia PC Speakers SRS-Pa50.....	£65	£76.38
Typhoon 150W Speakers with LCD.....	£49	£57.58
Yamaha Multimedia Speakers YST-M5.....	£36	£42.30
Yamaha Multimedia Speakers YST-M10.....	£40	£47.00
Yamaha Multimedia Sub Woofer YST-M10S.....	£75	£88.13

ZYFI Compact Speakers	£9	£10.58 inc VAT
ZYFI 2 Speakers	£24	£28.20 inc VAT
ZYFI Pro 2 Speakers	£38	£44.65 inc VAT

ACCESSORIES

Trust Midi Headset	£12	£14.10 inc VAT
Trust Home Music Maker	£65	£76.38 inc VAT
Trust Professional Music Maker	£123	£144.53 inc VAT

Headphones.....	£5	£5.88
Microphone.....	£9	£10.58

Games on CD - See page 17



Scanners

AVRO PACIFIC

Scanafax (makes you fax machine into a scanner).....	£29	£34.08
Scanafax & Delrina Lite (makes your fax machine into a scanner).....	£39	£45.83

EPSON

LapCAT GT300.....	£248	£291.40
Epson GTX5000 Parallel.....	£298	£350.15
Corel Photopaint 5, DRAW! 4, Xerox Colour Mgmt Suite		
Epson GTX5000 SCSI.....	£350	£411.25
Corel Photopaint 5, DRAW! 4, Xerox Colour Mgmt Suite		
Epson GTX8500 Parallel Photoshop LE, Xerox Col Doc Mgmt Suite.....	£470	£552.25
Epson GTX8500 SCSI Photoshop LE, Xerox Col Doc Mgmt Suite.....	£545	£640.38
Epson GTX9000 SCSI Photoshop LE, Xerox Col Doc Mgmt Suite.....	£662	£777.85
Epson GTI8500 SCSI Adobe Photoshop V3.....	£720	£846.00
Epson GTI9000 SCSI Adobe Photoshop V3.....	£818	£961.15
Epson GTX9000 Parallel Photoshop LE, Xerox Col Doc Mgmt Suite.....	£570	£669.75
Epson Bi-Directional parallel Port.....	£35	£41.13

Genius	EXC. VAT	INC. VAT
Scanmate/256.....	£59	£69.33
Scanmate Colour se.....	£93	£109.28
Scanmate Colour Pro.....	£115	£135.13

HEWLETT PACKARD

HP 4s Grey Scale Document Scanner.....	£165	£193.88
HP Scanjet 4P.....	£358	£420.65
HP 4c Colour Scanner.....	£598	£702.65
HP 4si Colour Scanner for Networking.....	£1598	£1877.65
Support Pack Scanjet 4C/4Si.....	£140	£164.50
Support Pack Scanjet 4s +4P.....	£66	£77.55



Logitech 256 Scanner.....	£69	£81.08
Logitech Easytouch Scanner.....	£105	£123.38
Logitech Scanman Colour Pro.....	£115	£135.13
Logitech PageScan.....	£275	£323.13
Logitech ScanPad.....	£12	£14.10

NIKON



Nikon Scantouch LE.....	£799	£938.83
Nikon CoolScan II.....	£919	£1079.83
Nikon Super CoolScan.....	£1359	£1596.83

Sicos	EXC. VAT	INC. VAT
Sicos Colour Page Scanner.....	£195	£229.13
Sicos DMS2000 document scanner.....	£99	£116.33

Trust COMPUTER PRODUCTS

Trust Ami-Scan Colour.....	£82	£96.35
Trust 1200dpi Flatbed Scanner.....	£285	£334.88
Trust 2400SP 2400dpi Flatbed Scanner.....	£385	£452.38

UMAX

Page Office.....	£275	£323.13
Vista S6E 300x600dpi Colour Scanner.....	£289	£339.58
Vista S8 400x800dpi Colour Scanner.....	£499	£586.33
Vista S12 Colour Scanner.....	£549	£645.08
Gemini.....	£765	£898.88
Powerlook II 600x1200dpi Colour Scanner.....	£1995	£2344.13

All UMAX Scanners come with Presto! software and Adobe Photoshop LE. Options available with transparency adapters, automatic document feeders and full version of Photoshop. Please call for details

Other	EXC. VAT	INC. VAT
ScanFX - Scanner, Fax, Copier.....	£379	£445.33

Colour/B&W 1200x1200dpi Scanner with Fax & Copying, comes with WordScan OCR, Picture Publisher LE

**See page 5
for CD-Rom
Drives at
only £35**

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VGA Cards

ISA

Generic

	EXC. VAT	INC. VAT
256K VGA 800 x 600 16C.....	£18	£21.15
512K VGA 1024 x 768 156C.....	£24	£28.20
1Mb Trident 8900D 1024 x 768 256C.....	£39	£45.83
1Mb Cirrus Logic 16.7 Win Accelerator.....	£42	£49.35
1Mb Tseng ET4000 16.7m Colours.....	£65	£76.38

ATI

1Mb ATIGX DRAM 1152 x 864 256 colours.....	£83	£97.53
2Mb ATIGX DRAM 1280 x 1024 256 colours.....	£117	£137.48
2Mb ATIGPT VRAM 1280 x 1024 256 colours.....	£194	£227.95
4Mb ATIGPT VRAM 1280 x 1024 16.7 million colours.....	£308	£361.90

All ATI graphics cards come with MPEG playback software for full-screen MPEG file playback

Hercules

1Mb Hercules Dynamite Pro ISA.....	£139	£163.33
2Mb Hercules Dynamite Pro ISA.....	£154	£180.95

STB

2Mb STB Nitro 64 ISA.....	£145	£170.38
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VESA LOCAL BUS

Generic

1Mb Cirrus Logic 5429 Win ACC VLB.....	£48	£56.40
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ATI

1Mb ATIGX DRAM 1152 x 864 256 colours.....	£83	£97.53
2Mb ATIGX DRAM 1280 x 1024 256 colours.....	£117	£137.48
2Mb ATIGPT VRAM 1280 x 1024 256 colours.....	£194	£227.95
4Mb ATIGPT VRAM 1280 x 1024 16.7 million colours.....	£308	£361.90



2Mb Orchid Fahrenheit ProVideo 64 VLB.....	£205	£240.88
4Mb Orchid Fahrenheit ProVideo 64 VLB.....	£309	£363.08

STB

1Mb STB Powergraph 64v VLB.....	£119	£139.83
2Mb STB Powergraph 64v VLB.....	£139	£163.33
2Mb STB Velocity 64V MPEG VLB.....	£219	£257.33
4Mb STB Velocity 64V MPEG VLB.....	£319	£374.83



1Mb GrafixStar 300 VLB.....	£83	£97.53
2Mb GrafixStar 300 VLB.....	£125	£146.88
2Mb GrafixStar 700 VLB (Inc AVI Scaling).....	£233	£273.78
4Mb GrafixStar 700 VLB (Inc AVI Scaling).....	£345	£405.38

PCI

Generic

1Mb Cirrus Logic 54M30 PCI.....	£39	£45.83
1Mb Cirrus Logic 5436 PCI.....	£58	£68.15
1Mb Advanced Logic AL2301 PCI.....	£65	£76.38
1Mb Tseng ET4000/W32P PCI.....	£75	£88.13
2Mb Cirrus Logic 5434 PCI.....	£98	£115.15
2Mb Tseng ET4000/W32P PCI.....	£108	£126.90

ATI

1Mb ATIGX DRAM 1152 x 864 256 colours.....	£83	£97.53
2Mb ATIGX DRAM 1280 x 1024 256 colours.....	£117	£137.48
2Mb ATIGPT VRAM 1280 x 1024 256 colours.....	£194	£227.95
4Mb ATIGPT VRAM 1280 x 1024 16.7 million colours.....	£308	£361.90
4Mb ATIGPT1600 1600 x 1200 65k colours.....	£359	£421.83

Diamond

1Mb Diamond Stealth 64 Dram 2000 PCI.....	£75	£88.13
1Mb Diamond Stealth 64 Dram 2001 PCI.....	£78	£91.65
1Mb Diamond Stealth 64 Video Dram 2001 MPEG PCI.....	£98	£115.15
2Mb Diamond Stealth 64 Dram 2001 PCI.....	£105	£123.38
2Mb Diamond Stealth 64 Dram 2000 PCI.....	£115	£135.13
2Mb Diamond Stealth 64 Video Dram 2001 MPEG PCI.....	£119	£139.83
2Mb Diamond Stealth 64 Video Vram 3000 PCI.....	£195	£229.13
4Mb Diamond Stealth 64 Video Vram 3000 PCI.....	£319	£374.83

Diamond 3D

1Mb Diamond Edge DRAM PCI.....	£185	£217.38
2Mb Diamond Edge DRAM PCI.....	£219	£257.33
2Mb Diamond Edge VRAM PCI.....	£275	£323.13
4Mb Diamond Edge VRAM PCI.....	£379	£445.33

All Diamond Edge cards offer 2D & 3D graphics, Full Motion Digital Video, Hardware Wavetable, Digital Gameport & Plug 'n' Play for Win95

Hercules

1Mb Hercules Stingray 64 Video PCI.....	£95	£111.63
2Mb Hercules Stingray 64 Video PCI.....	£145	£170.38
2Mb Hercules Graphite Terminator 64 Video PCI Dram.....	£145	£170.38
2Mb Hercules Dynamite Power PCI.....	£145	£170.38
2Mb Hercules Graphite Terminator 64 PCI Vram.....	£235	£276.13

matrox

2Mb Matrox Millennium WRAM PCI.....	£215	£252.63
4Mb Matrox Millennium WRAM PCI.....	£315	£370.13

Win 95 compatible Plug and Play

VGA Cards cont.

Number Nine Visual Technology

	EXC. VAT	INC. VAT
1Mb 9FX Vision 330 PCI.....	£89	£104.58
2Mb 9FX Vision 330 PCI.....	£129	£151.58
1Mb 9FX Motion 331 PCI.....	£115	£135.13
2Mb 9FX Motion 331 PCI.....	£148	£173.90
2Mb 9FX Reality 332 PCI Graphics and 3D multimedia acceleration.....	P.O.A.	P.O.A.
1Mb 9FX Motion 531 PCI.....	£115	£135.13
2Mb 9FX Motion 531 PCI.....	£145	£170.38
2Mb 9FX Motion 771 PCI.....	£195	£229.13
4Mb 9FX Motion 771 PCI.....	£295	£346.63
4Mb Imagine 128 1280 PCI.....	£459	£539.33
4Mb Imagine 128 1600 PCI.....	£569	£668.58
8Mb Imagine 128 PCI.....	£949	£1,115.08



1Mb Orchid Kelvin Video 64 PCI.....	£79	£92.83
2Mb Orchid Kelvin Video 64 PCI.....	£125	£146.88
2Mb Orchid Fahrenheit ProVideo 64 PCI.....	£159	£186.83
4Mb Orchid Fahrenheit ProVideo 64 PCI.....	£189	£222.08

STB

1Mb Powergraph 64V PCI.....	£115	£135.13
2Mb Powergraph 64V PCI.....	£145	£170.38
2Mb STB Velocity 64V MPEG PCI.....	£208	£244.40
4Mb STB Velocity 64V MPEG PCI.....	£315	£370.13



1Mb GrafixStar 300 PCI.....	£79	£92.83
2Mb GrafixStar 300 PCI.....	£115	£135.13
1Mb GrafixStar 400 PCI.....	£85	£99.88
2Mb GrafixStar 400 PCI.....	£129	£151.58
2Mb GrafixStar 700 PCI (Inc AVI Scaling).....	£229	£269.08
4Mb GrafixStar 700 PCI (Inc AVI Scaling).....	£345	£405.38



Monitors

CTX

17" CTX 1785S
MPRII .26
1280 x 1024

£469 £551.08 inc VAT



14" CTX 1451CLR N-1 MPRII.....	£169	£198.58
15" CTX 1565D SVGA MPRII.....	£230	£270.25
17" CTX 1765D MPRII .28 1024 x 768.....	£438	£514.65
17" CTX 1785XA MPRII .25 1600 x 1200.....	£589	£692.08
20" CTX 2085GM MPRII .28 1600 x 1200.....	£799	£938.83
LMT 1000 16 Gray Scale LCD VGA Screen 9.4".....	£485	£569.88
LMT 5020 4096 Colour LCD VGA Screen 10.4".....	£1965	£2308.88

All the above monitors come with 1 years on-site Warranty

14" Mono VGA Monitor.....	£69	£81.08
14" Crystal Colour SVGA Interlaced.....	£165	£193.88
15" Crystal Colour Monitor N-1 MPRII.....	£228	£267.90
17" Crystal 17HQ 1280 x 1024 N-1".....	£498	£585.15

NEC

NEC MultiSync XV14 14" 1024 x 768 N-1.....	£215	£252.63
NEC MultiSync XV15 15" 1280 x 1024 80Hz.....	£274	£321.95
NEC MultiSync XV17 17" 1280 x 1024 80Hz.....	£549	£645.08
NEC MultiSync XE15 15" 1280 x 1024 80Hz.....	£405	£475.88
NEC MultiSync XE17 17" 1280 x 1024 80Hz.....	£719	£844.83
NEC MultiSync XE21 21" 1280 x 1024 75Hz.....	£1135	£1333.63
NEC MultiSync XP17 17" 1280 x 1024 76Hz.....	£925	£1086.88
NEC MultiSync XP21 21" 1600 x 1200 70Hz.....	£1549	£1820.08

MAG

14" MAG DX1495 N-1 TFT.....	£179	£210.33
15" MAG DX1595 TFT.....	£289	£339.58
17" MAG DX1795 TFT.....	£489	£574.58



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Monitors



17" Iiyama Vision Master

FST MF8617E

£516

£606.30 inc VAT

15" Iiyama Vision Master FST MF-8515F.....	£259	£304.33
17" Iiyama Vision Master FST Pro MT9017E.....	£582	£683.85
21" Iiyama Vision Master FST MF8221E.....	£1165	£1368.88
21" Iiyama Vision Master FST MT9021E.....	£1246	£1464.05

PHILIPS

14" Philips Mono Monitor 14M.....	£89	£104.58
14" Philips Enhanced VGA Color Monitor 14C.....	£163	£191.53
15" Philips Brilliance Autocolor Colour Monitor 15B.....	£254	£298.45
15" Philips Brilliance Autocolor N-I Colour Monitor 15A.....	£275	£323.13
<i>Built In Stereo for Multimedia Applications</i>		
17" Philips Brilliance Autocolor Colour Monitor 17A.....	£665	£781.38
<i>Built In Stereo and Plug and Play compatibility</i>		
17" Philips Brilliance Autocolor Colour Monitor 17A (no speakers)...	£569	£668.58
17" Philips Autocolor Colour Monitor 17B.....	£560	£658.00
17" Philips Trinitron Monitor 17T.....	£599	£703.83
20" Philips Autocolor Colour Monitor 20C.....	£775	£910.63
20" Philips Autocolor Colour Monitor 20T.....	£1299	£1526.33
21" Philips Autocolor Colour Monitor 21B.....	£1439	£1690.83
21" Philips Brilliance Autocolor Colour Monitor with Cyberscreen Technology 21A.....	£1749	£2055.08

Samsung

	EXC. VAT	INC. VAT
14" Syncmaster 3NI 800 x 600 CQA.....	£159	£186.83
14" Syncmaster 3NE 1024 x 768 CVP.....	£179	£210.33
15" Syncmaster 15GLE 1024 x 768.....	£249	£292.58
15" Syncmaster 15GLI 1280 x 1024 Plug & Play.....	£289	£339.58
17" Syncmaster 17GLI NI 1280 x 1024.....	£499	£586.33
17" Syncmaster 17GLSI NI 1280 x 1024 76Hz.....	£599	£703.83

15 and 17" monitors with 3 year on site warranty

Sony

Sony 15" CPD-SX1.....	£269	£316.08
Sony 15" CPDSF2 1024 x 768 NI .25.....	£298	£350.15
Sony 17" CPDSF2 1280 x 1024 NI.....	£515	£605.13
Sony 17" GDM-17SE2 SVGA N-I.....	£749	£880.08
Sony 20" GDM-20SHT.....	£2029	£2384.08
Sony 20" CPD-20SF1.....	POA	POA
Sony 20" GDM20SE1 1280 x 1024 N-I.....	£1395	£1639.13
Sony CSS-B100 Computer Speaker System.....	£75	£88.13

Taxan

14" Taxan Ergovision 400LR Interlaced.....	£178	£209.15
14" Taxan Ergovision 410LR N-I LR.....	£189	£222.08
14" Taxan Ergovision 420 LR N-I.....	£232	£272.60
15" Taxan Ergovision 580+ LR 1280x1024 N-I.....	£269	£316.08
17" Taxan Ergovision 880 LR 1280x1024 N-I.....	£495	£581.63
17" Taxan Ergovision 885 LR 1600x1200 N-I.....	£559	£656.83
17" Taxan Ergovision 895 LR 1600x1200 N-I.....	£785	£922.38
20" Taxan Ergovision 1080LR 1600 x 1200 N-I.....	£859	£1009.33
21" Taxan Ergovision 2100 LR 1600 x 1200 N-I.....	£1489	£1749.58

Viewsonic

14" Viewsonic 14ES 1024 x 768.....	£185	£217.38
15" Viewsonic 15ES 1024 x 768.....	£270	£317.25
15" Viewsonic 15G 1280 x 1024.....	£320	£376.00
15" Viewsonic 15GS 1280 x 1024.....	£339	£398.33
15" Viewsonic 15GA 1280 x 1024 with speakers.....	£369	£433.58
17" Viewsonic 17EA 1280 x 1024 with speakers.....	£540	£634.50
17" Viewsonic 17GS 1280 x 1024.....	£569	£668.58
17" Viewsonic 17GA 1280 x 1024 with speakers.....	£619	£727.33
17" Viewsonic 17PS 1600 x 1200 Professional.....	£679	£797.83
20" Viewsonic 20G 1600 x 1200.....	£1039	£1220.83
21" Viewsonic 21PS 1600 x 1200 Professional.....	£1399	£1643.83

ACCESSORIES

Universal Monitor Drawstring Dust Covers.....	£11	£12.93
14" Anti Glare Screen Filter.....	£29	£34.08

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UPS

APC

	EXC. VAT	INC. VAT
APC BK250i-250 VA Backup.....	£75	£88.13
APC BK400i-400VA Backup.....	£115	£135.13
APC BK600i-600 VA Backup.....	£139	£163.33
APC BackUPS Pro 280 PNP includes PowerChute Pro.....	£105	£123.38
APC BackUPS Pro 420 PNP includes PowerChute Pro.....	£159	£186.83
APC BackUPS Pro 650 PNP includes PowerChute Pro.....	£195	£229.13
APC BackUPS Pro 1000.....	£289	£339.58
APC BackUPS Pro 1400.....	£374	£439.45
APC Smart UPS 250i.....	£169	£198.58
APC Smart UPS 1000i.....	£389	£457.08
APC Smart UPS 1400i.....	£539	£633.33
APC Smart UPS 2200i.....	£835	£981.13
PowerChute Software 4.2 Novell.....	£45	£52.88
PowerChute Software 4.2 LAN Manager.....	£45	£52.88
PowerChute Software 4.2Unix.....	£69	£81.08

APC SMART UPS 700i

£225 £264.38 INC VAT



BTS

BTS LS 600 Line Interactive 600 VA.....	£149	£175.08
BTS LS 900 Line Interactive 900 VA.....	£259	£304.33
BTS LS 1000 Line Interactive 1000 VA.....	£299	£351.33
BTS LS 1200 Line Interactive 1.2 kVA.....	£335	£393.63
BTS LS 2000 Line Interactive 2 kVA.....	£699	£821.33

Hewlett Packard

	EXC. VAT	INC. VAT
HP PowerWise L600 VA UPS.....	£215	£252.63
HP PowerWise L900 VA UPS.....	£326	£383.05
HP PowerWise L1250 VA UPS.....	£478	£561.65
HP PowerWise 1000 VA UPS.....	£403	£473.53
HP PowerWise 1250 VA UPS.....	£710	£834.25

(All include PowerWise Assistant Software for NT & Netware included)

Upsonic

Station 28 280 VA Off-line UPS.....	£89	£104.58
Station 40 400 VA Off-line UPS.....	£109	£128.08
Station 60 600 VA Off-line UPS.....	£140	£164.50
Station 90 900 VA Off-line UPS.....	£265	£311.38
Station 140 1400 VA Off Line UPS.....	£359	£421.83
LAN 40 400 VA Line Interactive UPS.....	£189	£222.08
LAN 60 600 VA Line Interactive UPS.....	£205	£240.88
LAN 75 750 VA Line Interactive UPS.....	£269	£316.08
LAN 100 1000 VA Line Interactive UPS.....	£399	£468.83
System 60 600 VA On-line UPS.....	£449	£527.58
System 100 1000 VA On-line UPS.....	£599	£703.83
System 200 2000 VA On-line UPS.....	£1049	£1232.58

(All Upsonic products include Communications Interface and come with a 2 year warranty)

Liebert

Powerlite EMP250 250VA Off-line.....	£75	£88.13
Powerlite EMP400 400VA Off-line.....	£105	£123.38
Powerlite EMP600 600VA Off-line.....	£142	£166.85
Accupower Select EMS400 400VA Line Interactive.....	£195	£229.13
Accupower Select EMS600 600VA Line Interactive.....	£215	£252.63
Accupower Select EMS900 900VA Line Interactive.....	£365	£428.88
Accupower Select EMS1400 1400VA Line Inter.....	£515	£605.13
Accupower Select EMS2000 2000VA Line Inter.....	£815	£957.63
Accupower Select EMS3000 3000VA Line Inter.....	£1155	£1357.13
Upstation GX 1000 1000VA On-line.....	£1059	£1257.13
Upstation GX 1500 1500VA On-line.....	£1399	£1643.83
Upstation GX 2100 2100VA On-line.....	£2299	£2701.33
Sitenet1 for Novell.....	£55	£64.63
Sitenet1 for Unix.....	£55	£64.63
Sitenet1 for Windows NT.....	£65	£76.38

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Network Cards

SiMPLY Network

Simply NE2000 Compatible 16 Bit BNC.....	£19	£22.33
Simply NE2000 Compatible 16 Bit RJ45.....	£19	£22.33
Simply NE2000 Compatible 16 Bit Combo Card ISA.....	£25	£29.38
Simply NE2000 Compatible 32 Bit Combo Card VLB.....	£79	£92.83
Simply NE2000 Compatible 32 Bit Combo Card PCI.....	£89	£104.58
Simply NE3210 Compatible EISA 32 Bit Combo Card.....	£99	£116.33
Simply NE2000 Boot ROM.....	£5	£5.88

(All the above Cards are Novell approved)

Novell	EXC. VAT	INC. VAT
Novell NE2000 Plus 16 Bit BNC.....	£48	£56.40
Novell NE2000T Plus 16 Bit RJ45.....	£48	£56.40
Novell NE2000 Plus-3 16 Bit Combo Card.....	£59	£69.33
Novell NE2000 Plus 5 Pack 16 Bit either RJ45 or BNC.....	£225	£264.38

3Com	EXC. VAT	INC. VAT
3COM Etherlink III 3C509B ISA BNC.....	£66	£77.55
3COM Etherlink III 3C509B ISA RJ45.....	£66	£77.55
3COM Etherlink III 3C509B ISA RJ45/BNC Combo.....	£73	£85.78
3COM Etherlink III 3C509 ISA either BNC or RJ45 5 Pack.....	£295	£346.63
3COM Etherlink III 3C509 ISA RJ45/BNC Combo 5 Pack.....	£319	£374.83
3COM Etherlink III 3C590 PCI Combo Card.....	£105	£123.38
3COM Etherlink III 3C589 PCMCIA RJ45 and BNC.....	£129	£151.58
3COM Etherlink III 3C589 PCMCIA RJ45.....	£98	£115.15

SMC Ethercard	EXC. VAT	INC. VAT
SMC PCI EtherPower Adapter Combo.....	£89	£104.58
SMC PCI EtherPower Adapter Combo 5 Pack.....	£425	£499.38
SMC EtherEZ ISA RJ45.....	£58	£68.15
SMC EtherEZ ISA BNC.....	£58	£68.15
SMC EtherEZ ISA Combo RJ45 and BNC Win '95 Plug and Play.....	£63	£74.03
SMC EtherEZ ISA RJ45.....	£265	£311.38
SMC EtherEZ ISA Combo RJ45 and BNC 5 Pack.....	£285	£334.88
SMC EtherEZ ISA BNC.....	£315	£370.13

D Link	EXC. VAT	INC. VAT
D Link DE620CT Pocket Adapter BNC/RJ45.....	£89	£104.58
D Link DE400 EISA Ethernet Card BNC/TP/AUI.....	£129	£151.58
D Link DE530CT PCI Ethernet Card BNC/TP.....	£89	£104.58
D-Link DE650CT NE2000 PCMCIA Combo Card.....	£89	£104.58
D Link DLIT 220+ Token Ring Card.....	£229	£269.08



INTEL EtherExpress ISA 16 BNC.....	£64	£75.20
INTEL EtherExpress ISA 16 RJ45.....	£64	£75.20
INTEL EtherExpress ISA Flash Combo.....	£89	£104.58
INTEL EtherExpress ISA 16 BNC 5 Pack.....	£315	£370.13
INTEL EtherExpress ISA 16 RJ45 5 Pack.....	£315	£370.13
INTEL EtherExpress ISA Flash Combo 5 Pack.....	£389	£457.08
INTEL EtherExpress PRO/100.....	£115	£135.13
INTEL EtherExpress PRO/100 Smart Adapter.....	£535	£628.63

Network Software

	EXC. VAT	INC. VAT
Cheyenne ARCserve 5.01 for Netware (5 Users).....	£221	£259.68
Cheyenne ARCserve for Windows NT 3.51.....	£1	£1.18
Cheyenne ARCserve V6 for Netware, Workgroup Edition.....	£338	£397.15
Cheyenne ARCserve V6 for Netware, Enterprise Edition.....	£818	£961.15
Cheyenne ARCserve V6 U/G from V4/V5 25 Users or less.....	£162	£190.35
Cheyenne ARCserve V6 U/G from V4/V5 Over 25 Users.....	£492	£578.10
Cheyenne ARCserve Software SCSI for Windows.....	£99	£116.33
Cheyenne ARCserve Software SCSI for Dos.....	£75	£88.13
Cheyenne ARCserve for Windows 95 on CD.....	£85	£99.88
Cheyenne Inoculan NT/Server for window 3.5 or higher.....	£385	£452.38

LANTastic Single User on 3.5".....	£59	£69.33
LANTastic Single User for Windows 95 on CD.....	£62	£72.85
LANTastic 5 User for Windows 95 on 3.5".....	£264	£310.20
LANTastic 2 User Starter Kit.....	£245	£287.88
LANTastic Extra User S/W.....	£115	£135.13
LANTastic Powersuite 2 user Starter Kit.....	£215	£252.63
MS Lan Manager TCP-IP Dual V1.0.....	£101	£118.68
MS Windows For Workgroups 3.11on 3.5".....	£89	£104.58
MS Windows for Workgroups Upgrade on 3.5".....	£40	£47.00
MS Windows NT Server V3.5 on CD.....	£459	£539.33
MS Windows NT 3.51 Workstation CD/Disk.....	£218	£256.15
Novell Personal Netware on 3.5".....	£44	£51.70
Novell Personal Netware 5 User on 3.5".....	£184	£216.20
Novell Personal Expansion Kit.....	£128	£150.40
Novell Netware 3.12 5 User on 3.5".....	£432	£507.60
Novell Netware 3.12 5 User CD.....	£450	£528.75

For our full software listings, see pages 17-21

Network Software cont.

Novell Netware 3.12 10 User on 3.5".....	£982	£1153.85
Novell Netware 3.12 25 User on CD.....	£1445	£1697.88
Novell Netware 3.12 50 User on 3.5".....	£2085	£2449.88
Novell Netware 3.12 100 User.....	£2921	£3432.18
Novell Netware 3.12 250 User.....	£5210	£6121.75
Novell Netware 4.1 5 User on CD Only.....	£430	£505.25
Novell Netware 4.1 10 User on CD Only.....	£943	£1108.03
Novell Netware 4.1 25 User on CD Only.....	£1435	£1686.13
Novell Netware 4.1 50 User on CD Only.....	£2031	£2386.43
Novell Netware 4.1 100 User on CD Only.....	£2920	£3431.00
Novell Netware 4.1 250 User on CD Only.....	£5240	£6157.00
Novell NW Manage Wise 1.0 5 User on CD Only.....	£749	£880.08

Hubs and Repeaters

SiMPLY Hubs

Simply 8 Port TP Hub (8 x RJ45, 1 x AUI).....	£119	£139.83
Simply 12 Port TP Hub (12 x RJ45, 1 x BNC, 1 x AUI).....	£169	£198.58
Simply 16 Port TP Hub (16 x RJ45, 1 x BNC, 1 x AUI).....	£249	£292.58
Simply 24 Port TP Hub (24 x RJ45, 1 x BNC, 1 x AUI).....	£354	£415.95

ETHERNET HUBS

	EXC. VAT	INC. VAT
3 Com		
3C16670 12 Port FMS II Hub (12 x RJ45, 1 x AUI).....	£369	£433.58
3C16671 24 Port FMS II Hub (24 x RJ45, 1 x AUI).....	£669	£786.08
3C625 FMS II Link Cable.....	£29	£34.08
HP		
HP AdvanceStack Hub 48 RJ45 Ports 4 Telco, 1BNC.....	£117	£1380.63
HP AdvanceStack Hub 24 RJ45 Ports 2 Telco, 1BNC.....	£629	£739.08
HP AdvanceStack Hub 12 RJ45 Ports, 1BNC.....	£335	£393.63
HP AdvanceStack Hub 16 RJ45 Ports.....	£270	£317.25
HP AdvanceStack Hub 8 RJ45 Ports.....	£105	£123.38
HP AdvanceStack Hub 12 RJ45 Ports with SNMP Module.....	£570	£669.75
HP AdvanceStack Hub 24 RJ45 Ports with SNMP Module.....	£860	£1010.5
SMC		
SMC Tiger Hub TP6 6 Port.....	£165	£193.88
SMC 3812 14 Port Hub.....	£495	£581.63

REPEATERS

D Link

D LINK DE-805TP 5 PORT WITH KEYBOARD PORT POWER CABLE



£69 £81.08 INC VAT

D Link DE-809TC 8 Port Hub with BNC.....	£129	£151.58
D Link DE-812TP+ 12 Port Hub with BNC and AUI.....	£175	£205.63
D Link DE-816TP 16 Port Hub with BNC and AUI.....	£235	£276.13
D Link DE-824TP 24 Port Hub with BNC and AUI.....	£359	£421.83
Link DE-1400-45 24 Port Stackable Hub Slave Unit to DE-16001.....	£469	£551.08

D-Link Repeater 2 Port BNC/AUI (DE-802).....	£269	£316.08
D-Link Repeater 4 Port BNC/AUI (DE-804).....	£295	£346.63

Allied Telesyn

Allied Telesyn 2 Port Repeater BNC/BNC (ATMR125).....	£239	£280.83
Allied Telesyn 4 Port Repeater 4BNC & 1 AUI (AT3004SL).....	£435	£511.13
Allied Telesyn 8 Port Repeater 8BNC & 1 AUI (AT3008SL).....	£529	£621.58

CNet

CNet CN4020ERP 2 Port Repeater BNC/AUI.....	£135	£158.63
CNet CN4040ERP 4 Port Repeater BNC/AUI.....	£199	£233.83
CNet CN8900BNC 8 Port Repeater BNC/AUI.....	£342	£401.85

TRANSCEIVERS

	EXC. VAT	INC. VAT
Allied Telesyn Micro Transceiver BNC/AUI (ATMX10S).....	£35	£41.13
Allied Telesyn Micro Transceiver UTP/AUI (AT210TS).....	£35	£41.13

CONNECTORS AND ACCESSORIES

	EXC. VAT	INC. VAT
Connectors		
BNC Connector with Boot.....	£1	£1.18
BNC T-Connector.....	£2	£2.35
BNC Terminator.....	£1	£1.18
BNC In-Line Coupler.....	£2	£2.35
RJ45 Connector with Boot.....	£1	£1.18
Single BNC OutLet (FacePlate).....	£4	£4.70
Dual BNC OutLet (FacePlate) and Back Box.....	£6	£7.05
Dual RG45 OutLet (FacePlate).....	£12	£14.10
EAD Thinwire Tap Outlet.....	£24	£28.20
EAD Thinwire drop Lead 2M.....	£26	£30.55
EAD Thinwire drop Lead 5M.....	£36	£42.30

Professional Tools

BNC Crimp Tool.....	£29	£42.30
Ethernet Cable Stripper BNC.....	£15	£17.63
RJ45 Crimp Tool.....	£75	£88.13
RJ45 and BNC Cables made to order.....	POA	POA

FOR ORDERING INFORMATION SiMPLY SEE PAGE 5

Printers



**HEWLETT
PACKARD**

Deskjets

HP DESKJET 600



£144 £169.20 INC VAT

HP Deskjet 660C <i>Include Lotus Word Pro & 1 Month's Internet Access</i>	£239	£280.83
HP Deskjet 850C	£313	£367.78
HP OfficeJet LX	£465	£546.38
HP Deskjet 1600C	£819	£962.33
HP Deskjet 1600CM	£1218	£1431.15
HP Deskjet Colour Kit	£28	£32.90



HP DESKJET 340 WITH 30 PAGE SHEETFEEDEE (INCLUDES FREE COLOUR KIT)

£166 £195.05 INC VAT

Laserjets

HP LASERJET 5L

£344 £404.20 INC VAT

HP Laserjet 5L.....	£344	£404.20
HP Laserjet 5P.....	£589	£692.08
HP Laserjet 5MP.....	£734	£862.45
HP Laserjet 5SI	£2045	£2402.88
HP Laserjet 5SI MX	£2985	£3507.38
HP Laserjet 4V A3 Laser Printer	£1395	£1639.13
HP Laserjet 4MV A3 Postscript Laser Printer	£2049	£2407.58
HP Colour Laserjet 5	£4235	£4976.13
HP Colour Laserjet 5M	£5199	£6108.83
HP Copyjet (Scanner/Colour Printer)	£2115	£2485.13



**HEWLETT
PACKARD**

Support Packs

3 years on site maintenance



Support Pack Portable, 340	£40	£47.00
Support Pack Deskjet/ Deskwriter, 540, 600.....	£40	£47.00
Support Pack Deskjet /Deskwriter Colour, 660, 850.....	£65	£76.38
Support Pack Mono Scanjet	£85	£99.88
Support Pack Officejet	£102	£119.85
Support Pack 1200C/PS, Pjets, 1600C/CM, 4L.....	£105	£123.38
Support Pack 5L (H5500A).....	£112	£131.60
Support Pack 5SI, 5SI/MX	£530	£622.75
Support Pack, 5P, 5MP, Colour Scanjets	£142	£166.85
Support Pack HP4+, 4M+	£180	£211.50
Support Pack 4V, 4MV	£235	£276.13
Support Pack 4SL/MX	£530	£622.75
Support Pack Colour Laserjet 5/5M.....	£948	£1113.90

EPSON

EPSON STYLUS 1500 WIDE-CARRIAGE INKJET



£532 £625.10 INC VAT

EPSON EPL 5500 6ppm LASER PRINTER

£359 £421.83 INC VAT

Epson LX300 9Pin Dot Matrix	£93	£109.28
Epson LX1050+ 9Pin Dot Matrix	£180	£211.50
Epson FX870 9Pin Dot Matrix	£235	£276.13
Epson FX1170 9Pin Dot Matrix	£294	£345.45
Epson LQ300 24 Pin Dot Matrix	£119	£139.83
Epson LQ570+ 24 Pin Dot Matrix	£206	£242.05
Epson LQ1070+ 24 Pin Dot Matrix	£289	£339.58
Epson LQ870 24Pin Dot Matrix	£365	£428.88
Epson LQ2170 24 Pin Dot Matrix	£465	£546.38
Epson Stylus 820.....	£138	£162.15
Epson Stylus 820 Colour Kit (C832162)	£50	£58.75
Epson Stylus Colour IIS	£168	£197.40
Epson Stylus Colour II	£247	£290.23
Epson Stylus Pro A4 Printer	£342	£401.85
Epson Stylus Pro XL Colour A3 Oversize	£798	£937.65
Epson EPL-9000 8ppm A3 Laser Printer 600dpi	£1195	£1404.13
Epson EPL-9000PS 8ppm A3 Postscript Laser 600dpi	£1475	£1733.13



Ecosys FS-400 4ppm.....	£349	£410.08
Ecosys FS-1550 10ppm.....	£855	£1004.63
Ecosys FS-1600 10ppm.....	£1045	£1227.88
Ecosys FS-3400 18ppm.....	£1338	£1572.15
Ecosys FS-3600 18ppm.....	£1748	£2053.90

Printers cont.



Brother HL-630 6ppm Windows Printer	£288	£338.40
Brother HL-631 6ppm (1Mb) Windows Printer	£335	£393.63
Brother HL660 600dpi 6ppm Laser	£439	£515.83
Brother WL660 600dpi 6ppm Windows Laser	£759	£921.83
Brother HL1260 600dpi 11ppm B&W Laser	£869	£1021.08

Canon - Inkjets

Canon BJ30 Mono Portable Printer	£132	£155.10
Canon BJC210 colour Bubblejet	£160	£188.00
Canon BJC70 Colour Portable Printer	£188	£220.90
Canon BJ230 Printer	£235	£276.13
Canon BJ300 80 Column Bubblejet	£352	£413.60
Canon BJ330 136 Column Bubblejet	£388	£455.90
Canon BJC4100 colour Bubblejet	£222	£266.65
Canon BJC610 Colour Inkjet	£312	£370.80
Canon BJC800 Colour Bubblejet	£899	£1056.33

Canon - Lasers

Canon LBP460 4ppm Laser Printer.....	£275	£323.13
Canon LBP1260 12ppm Laser Printer.....	£729	£886.58

Lexmark - Inkjets

Lexmark Winwriter 150c Printer.....	£249	£292.58
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Lexmark - Lasers

Lexmark Winwriter 400 Laser Printer.....	£535	£628.63
Lexmark Winwriter 600 Laser Printer.....	£704	£827.20
Lexmark Optra R+ 1200 dpi 16 ppm 2Mb postscript	£995	£1169.13
Lexmark Optra R+ 1200 dpi 16 ppm 2Mb postscript	£1182	£1388.85
Lexmark Optra Lx+ 1200 dpi 16 ppm 4Mb postscript.....	£1589	£1984.58
Lexmark Optra Lxi+ 1200 dpi 16 ppm 8Mb postscript.....	£2225	£2614.38
Lexmark Optra-C 600 dpi 12 ppm full-colour laser 8Mb postscript.....	£4-95	£5751.63

NEC

NEC Superscript 610plus 6ppm Laser	£259	£304.33
NEC Superscript 660 6ppm Laser	£382	£448.85
NEC Superscript 660i 6ppm Laser	£519	£609.83
NEC Superscript Color 3000 1ppm Laser	£435	£511.13

OKI

OKI ML320 Dot Matrix Printer.....	£309	£363.08
OKI ML520 Dot Matrix Printer.....	£339	£398.33
OKI ML590 Dot Matrix Printer	£435	£511.13
OKI ML3410 Dot Matrix Printer.....	£849	£997.58
OKI OKJET300C 300dpi Inkjet Printer.....	£234	£274.95
OKI OL400w 4ppm Laser Printer	£248	£291.40
OKI OL600ex 6ppm 300dpi 1Mb Laser Printer	£292	£343.10
OKI OL610ex 6ppm 300dpi 2Mb Laser Printer	£369	£433.58
OKI OL810ex 600dpi Laser Printer	£645	£757.88

Panasonic - Dot Matrix

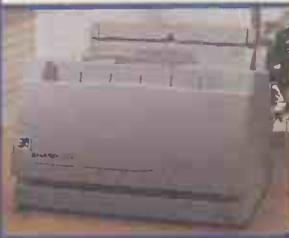
Panasonic KX-P-1150 9 Pin Dot Matrix	£87	£102.23
Panasonic KX-P-2023 24 Pin Mono Dot Matrix	£108	£126.90
Panasonic KX-P-2124 24 Pin Mono Dot Matrix	£192	£225.60
Panasonic KX-P-2135 24 Pin Colour Printer	£125	£146.88
Panasonic KX-P-3626 24 Pin Mono Dot Matrix.....	£265	£311.38

Panasonic - Laser

Panasonic KX-P6100 6ppm GDI Laser Printer	£263	£309.03
Panasonic KX-P6150 6ppm PCL Laser Printer.....	£317	£372.48
Panasonic KX-P-6500 6ppm GDI/PCL Laser Printer	£345	£405.38
Panasonic KX-P-4430 5ppm Laser Printer.....	£519	£609.83
Panasonic KX-P-4440 10ppm Laser Printer.....	£719	£844.83

SHARP

SHARP JX9200



Small footprint and lightweight design
Paper Handling - A4, Letter and Legal,
100 sheet multi-purpose tray
4 pages per minute
MS Windows printing system (WPS) for
high speed, easier printing with Windows
OS Environment - Windows 3.1,
Windows 95
No wasted toner with Toner Self-Recycling
Ozone-free printing and
low power consumption

£240 £282.00 INC VAT

Sharp SHP JX9210, 4ppm, 600x600dpi, 512K.....	£315	£370.13
Sharp SHP JX9660, 8ppm, 600x600dpi, 2MB	£759	£891.83
Sharp SHP JX9680, 12ppm, 600x600dpi, 3MB	£890	£1045.75

Seiko

Seiko Smart Label Printer EZ30	£105	£123.38
Seiko Smart Label Printer Pro.....	£219	£257.33

Star

Star Wintype 4000 Laser Printer Ultra Compact - 10"x2"x1" - only 17.5 oz weight	£288	£338.40
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ACCESSORIES

Universal Printer Drawstring Dust Cover Large	£10	£11.75
Universal Printer Drawstring Dust Cover Small	£9	£10.58

See this month's
Simply Update for
hot deals on printer
consumables!

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The people who love PCs

FOR ORDERING INFORMATION SIMPLY SEE PAGE 5

THE LOWEST UK PRICES - CALL NOW!

EPSON®

- Epson manufacture the highest resolution inkjets now available
- New models improve the existing popular range of printers
- Professional desktop publishing models now reduced in price
- Epson microdot technology (PRO models) improves resolution
- We offer the complete selection of Epson scanners and printers

EPSON STYLUS COLOUR II



- Fantastic high resolution printing on various papers
- Compare the specifications with other inkjets!
- 720 x 720 dpi colour and true black printing
- Improved version of the Epson Stylus Colour
- Handles 720dpi, 360 dpi and glossy papers
- 3 year warranty included as standard
- New even lower pricing from Tech Direct **£229**

EPSON EPL-5500 LASER



- Handles A4 printing at 6 pages per minute
- Small compact desktop designed footprint
- True 600 x 600 dpi with BiRiTech print enhancement
- HP PCL5e, Epson and HPGL2 compatible
- High speed bi-directional parallel interface
- 150 sheet universal paper feeder fitted
- Postscript and 2Mb versions available **£353**

EPSON STYLUS PRO A4



- This is the professional desktop publishing answer!
- 720 x 720 dpi with Epson MicroDot technology
- 4 Colour P1F20 high quality Epson print head
- Handles plain, 360 dpi, 720 dpi, and gloss papers
- Includes parallel and RS422 high speed serial port
- One year manufacturers warranty included
- Ideal as a pre-press proofing solution **£344**

- EPSON STYLUS 820 - 720 dpi entry level inkjet with optional colour kit £153
- EPSON STYLUS COLOUR IIs - 720 dpi inkjet. Interchangeable colour or black £183
- EPSON STYLUS 1500 - 720 dpi A3 inkjet inc. tractor feed. Optional colour kit £534
- EPSON STYLUS PRO XL A3 - As Stylus Pro A4 but handles A3 plus papers £799
- EPSON EPL5500 LASER 1Mb - A brand new compact 600 x 600 dpi laser £353
- EPSON EPL5500 LASER 2Mb - As above with extra memory for faster printing £403
- EPSON EPL5500 POSTSCRIPT - 600 dpi desktop Postscript printing £687
- EPSON EPL9000 LASER - The high end A3, 600 dpi, 8 p.p.m, 2Mb solution £1084
- EPSON EPL9000PS LASER - As above with 6Mb as standard and Postscript £1495

OKI

- Several brand new laser and inkjet printers just launched!
- All laser models include one year on-site warranty as standard
- Split toner and drum means cheaper consumable costs
- ON/OFF switch is fitted as standard (check the opposition!)
- Technical support is available direct from OKI in the U.K.

NEW!! OKI 4W



- Brand new LED page printer from OKI
- Fast high quality text and graphics output
- On screen software control from within Windows
- 300 x 300 dpi output with resolution enhancement
- Will print to DOS via Windows DOS box
- Laser quality output at inkjet prices
- Compact spacesaving design **£214**

OKI 600EX



- Presenting OKI's best selling LED printer!
- 600 x 600 dpi when printing through Windows
- 6 pages per minute output, PCL4.5 emulation
- Standard 1Mb of memory (max 18Mb)
- OKI 610EX (2Mb Ram & PCL5e) £370
- 5 year LED head warranty as standard
- One year on-site warranty as standard! **£289**

OKI 810EX



- Fast LED printer for Windows/Dos users!
- 600 x 600 dpi resolution, 8 pages per minute
- Separate toner & drum units for low running costs
- HP PCL5e DOS emulation, 45 scalable fonts
- 2Mb Ram expandable to 34Mb
- 5 year LED head warranty as standard
- One year on-site warranty as standard **£599**

- OKI 610ex - 600 x 600 dpi, 6 pages per minute, PCL5e, 2Mb Ram £368
- OKI 400W - 300 x 300 dpi, 4 pages per minute, PCL4.5, GDI £247
- OKI 1200ex - 600 x 600 dpi, 12 pages per minute, PCL5e, 2Mb Ram £935
- OKI 2010 - 600 x 300 dpi colour inkjet with dual head (colour and black) £235
- OKI MICROLINE 380 80 Column, 24 pin dot matrix printer £220
- OKI MICROLINE 386 136 Column, 24 pin dot matrix printer £399
- OKI MICROLINE 520 80 Column, 9 pin dot matrix printer £339
- OKI MICROLINE 521 136 Column, 9 pin dot matrix printer £395
- OKI MICROLINE 590 80 Column, 24 pin dot matrix printer £435

LEXMARK™

- Lexmark have scooped several recent printer awards from the press!
- Lexmark lead the market with new products and innovations
- Tech Direct are authorised resellers for the complete Lexmark range
- We will not be beaten on price! Please call us for the best value deals!
- Look below for details of new models just launched by Lexmark!

LEXMARK 150C



- Personal Computer World Editors Choice!
- Computer Shopper Best Buy winner!
- 600 x 300 dpi colour and black printing
- Free CorelDraw 4.0 software (on CD only)
- Ready for Windows 95 (includes drivers)
- 3 Year Warranty included as standard
- Fast Windows multimedia printing **£219**

NEW!! LEXMARK 2070



- Brand new model just launched by Lexmark
- 7 pages per minute mono, fast 1 p.p.m colour
- 600 x 600 dpi printing in colour or black
- An quality colour solution for the home or office
- Free CorelDraw version 4.0 software included
- Windows 95 and Windows 3.x compatible
- Three year warranty is included **£289**

NEW!! OPTRA LASER



- A brand new class leading laser from Lexmark!
- True 600 x 600 dots per inch microfine printing
- 6 pages per minute / 1Mb expandable RAM
- Extendable one year on-site exchange warranty
- Windows 95, Windows 3.x and NT compatible
- High speed RISC processor for rapid speeds
- Multiple networking options are available **£409**

- LEXMARK 150C INKJET PRINTER £219
- LEXMARK 1020 INKJET PRINTER £159
- LEXMARK OPTRA R+ - 16 p.p.m., 2Mb Ram, Postscript £979
- LEXMARK OPTRA RT+ - 16 p.p.m, 2Mb Ram, Postscript £1179
- LEXMARK OPTRA LX+ - 16 p.p.m, 8Mb, Postscript £1669
- LEXMARK OPTRA LX+ - 16 p.p.m, 8Mb, Postscript £2199
- LEXMARK OPTRA C - 600 dpi colour laser, 8 Mb Ram £4775
- LEXMARK OPTRA C pro - 32Mb Ram and Ethernet card £5989
- OPTRA ON-SITE WARRANTIES £Call

tech direct

unit 1, princess mews, horace road, kingston, surrey KT1 2SZ

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F A X L I N E S 0 1 8 1 2 8 6 0 2 0 0

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Authorised Reseller
Personal Computer
Products

HP INKJET PRINTERS

HP LASER PRINTERS



HP DESKJET 600

- 600 x 300 dpi Ret enhanced
- 3 ppm print speed in black
- £164 with colour kit (HPDJ600C)
- £40 for 3 year on-site support
- FREE Lotus WordPro CD
- FREE Compuserve CD

£144



HP LASERJET 5L

- 4 ppm print speed
- 600 dpi with enhancement
- £442 with 3 year on-site support
- 100 sheet paper input tray
- 1Mb standard memory
- 26 scalable fonts

£337



HP DESKJET 660C

- 4 ppm print speed in black
- Improved 600 x 300 dpi colour
- New 2 Button control panel
- £299 with 3 year on-site support
- FREE Lotus Wordpro CD
- FREE Compuserve CD

£234



HP LASERJET 5P

- Rapid 6 ppm print speed
- 600 dpi with enhancement
- Infrared Port for Windows 95
- £719 with 3 year on-site support
- 2 Mb standard memory
- £729 5MP model

£584



HP DESKJET 850C

- 6 ppm print speed in black
- Faster 600 x 300 dpi in colour
- New Model - 2 Button control
- £377 with 3 year on-site support
- Built in sheetfeeder
- Accepts envelopes

£312

NEW MODELS!! HP LASERJET 4PLUS



- 12 pages per minute
- 600 dpi with enhancement
- Network options available
- £1015 with 3 year on-site support
- 2Mb standard memory
- £1145 4MPlus model

£845

HP OFFICEJET LX	£459
HP COPYJET COLOUR - NEW!	£1949
HP DESKJET 340	£166
HP DESKJET 1600C	£812
HP DESKJET 1600CM	£1217
HP DESKJET 1600CN	£1289

HP LASERJET 5SI	£1969
HP LASERJET 5SIMX	£2869
HP LASERJET 4V	£1379
HP LASERJET 4MV	£1999
HP LASERJET 5 COLOUR	£4195
HP LASERJET 5M COLOUR	£5250



- Kyocera lead the way in economic printing
- Drums are guaranteed for the printer life
- The latest cost saving printer technology
- Three year on-site support options available
- New A3 high speed laser just launched!



KYOCERA FS400

- 4 pages per minute printing
- Enhanced 300 x 1200 dpi
- 100,000 page drum guarantee
- 79 bitmap, 13 scalable fonts
- Optional Postscript emulation
- Low cost per page output
- Cartridge free design
- 12 month warranty

£333



KYOCERA FS1550

- 10 pages per minute
- Enhanced 300 x 1200 dpi
- 250 page sheet feeder
- 79 bitmap, 13 scalable fonts
- HP Laserjet III emulation
- Optional network interface
- Optional Postscript
- Low running costs

£847

The above Kyocera FS400 desktop personal printer offers outstanding longterm value for money. The cartridge free design means the only consumable to buy is a replacement toner for £15 whilst the FS400 is still equipped with a wealth of features. Further networking, paper handling and memory options are also available to enhance your printer at a later date. Be kind to the planet and your wallet with a Kyocera FS400 printer from Tech Direct.

For speed and economy the Kyocera FS-1550 printer leads the pack. Resolution enhancement ensures all your work is clear and precise, whilst the low running costs ensure you are making the best long-term investment. We are delighted to quote on the excellent selection of networking, paper handling and memory options for this printer making it ideal for the expanding office - this means the FS-1550 can actually grow with your business!

KYOCERA LASERS		KYOCERA TONER KITS		KYOCERA ON-SITE WARRANTIES		
FS-400 Twin Bin	£437	FS-400	£15	1 YEAR	2 YEAR	3 YEAR
FS-1600	£1035	FS-1550/1600	£44	FS-400	£49	£79
FS-3400	£1330	FS-1500	£31	FS-1550/1600	£99	£166
FS-3600	£1740	FS-5500	£38	FS-5500	£260	£416
FS-5500	£3325	FS-6500	£44	FS-6500	£199	£333
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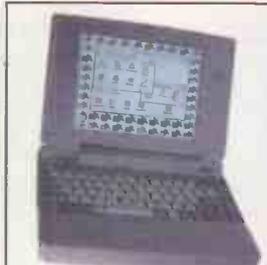


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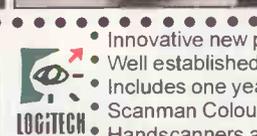
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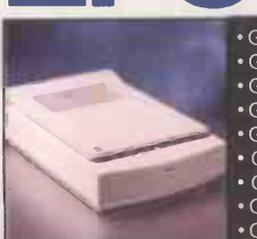


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JAVA

Java now has enough tools to have its own section! Serious developers should check out the RAD tools such as Café & JFactory. The official books should be published soon.

Borland C++ 5.0	£247
Borland C++ 5.0 Dev Suite	£340
Symantec Café Intro	£129
JFactory (Win32)	£636

OBERON

Oberon is the latest language from Niklaus Wirth, following on from Pascal & Modula-2. Oberon/F is a native 32-bit compiler with complete component framework for developing compound documents. Try the eval at <http://ftp.inf.ethz.ch/pub/software/Oberon/OberonF>

Oberon/F	£315
Oberon/F Dev Bundle	£569
Ofront (Oberon-to-C Translator)	£715
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News & Views

VisualAge for C++ for Windows The State of the Art Redefined

At last, C++ developers on Win32 can use IBM's VisualAge technology to build apps more rapidly than you thought was possible:

- **Visual Builder** lets you build complete apps (not just the GUI) visually by connecting parts
- **Open Class Library** now has over 500 classes, includes Taligent's Compound Document Framework (CDF) that supports OLE now, OpenDoc in the future
- **Taligent's CDF** is a complete subsystem that lets you create OLE apps in 2 or 3 lines of code
- **Data Access Builder** maps SQL tables to C++ classes, generating C++ & SQL code. Supports Oracle & Sybase (ODBC) as well as DB2
- **Direct-to-SOM** generates SOM objects direct from C++ code

This is the most advanced C++ compiler ever - it makes VB & Delphi seem primitive, while those one-shot wizards & experts look prehistoric! Do yourself a favour and call us now for full details - and ask about the competitive upgrade.

Oberon/F

Component-Oriented Programming

If you want to program in a modern type-safe OO language and believe that compound documents will be the next generation of business software, your dream has come true:

- **Oberon-2** is Niklaus Wirth's latest language, following Modula-2
- **Native Code 32-bit Compiler** with automatic garbage collection
- **Component Framework** with compound document architecture
- **OLE & OpenDoc** support is under development (also client/server)

If you are allergic to C++, call us now

JFactory

The Complete RAD Tool for Java!

If you are serious about Java, you need JFactory. It lets you visually design Java apps & applets, test your interfaces, and generate source code. Drag & drop predefined components on your app, or design your own! There is no space here to give justice to JFactory, so you will have to call us for more details.

Symantec Café

Visual Java?

This is the first Win32-hosted tool devoted exclusively to Java, and includes everything you need to write & debug Java apps & applets:

- **Café Desktop IDE** with project manager, class editor, hierarchy editor, syntax-highlighting editor
- **GUI Debugger** with multiple independent thread debugging
- **Java SDK** with API help file, many samples (both apps & applets)

Java enthusiasts now have a choice of development tools, with more to come! Call us for full details.

AM for Windows

The Corporate Client/Server Tool

If simple GUI builders run out of steam when accessing your corporate SQL data, then you need AM for Windows. It is a full 32-bit multi-tasking client/server tool that scales from workgroup to enterprise.

AM's hyperlogic approach to programming makes it one of the easiest products to learn, especially for teams of existing staff. It boasts a wide range of connectivity options, and is robust enough for high performance transaction systems updating corporate SQL databases.

AM Builder, the entry level version, only costs £195. Why not call us to find out more. Also ask about Amazon, their new tool that connects Web servers to your corporate data.

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TRACKBALLS

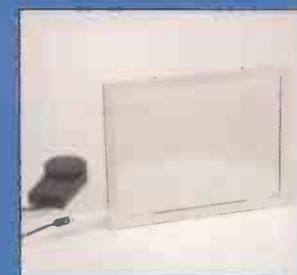
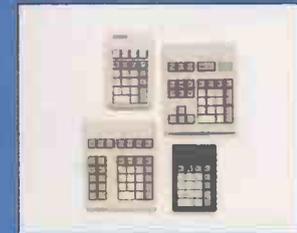
Our new trackball range features the new infrared Star Track for remote control of presentation, demonstration and any other mouse applications. Two desktop models offer the choice of thumb or finger operations with two enclosure styles. All trackballs can directly replace a serial mouse.

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Our new touch screen panel clips directly to your existing monitor and, through the supplied serial interface and software, can emulate a mouse for instant touch control of your applications – or use it as a development tool for your own touch screen programmes. Fits 14" and 15" screens. Bonded touch monitors also available.

KEYPORT

The latest Keyports now include a full PC keyboard wedge interface – just plug into the keyboard port, with or without your keyboard attached, and you're ready to programme your own layout. Software to download programme and design overlay included.



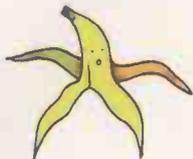
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You know you are a computer programmer...

- When your ideal evening consists of fast-forwarding through the latest sci-fi movie looking for technical inaccuracies.
- When you have modified your can-opener to be microprocessor driven.
- When you can name six Star Trek episodes and own "Official Star Trek" anything.
- When you are convinced you can build a phaser out of your garage door opener and your camera's flash attachment.
- When your wristwatch has more buttons than a telephone and more computing power than a 486DX-50.
- When you have used coat hangers and duct tape for something other than hanging coats and taping ducts.
- When you think that when people around you yawn, it's because they didn't get enough sleep.
- When you have a habit of destroying things in order to see how they work.
- If you have ever taken the back off your TV just to see what's inside.
- If you thought the concoction ET used to phone home was stupid as you believe the aliens who live among us are far more intelligent.
- If you ever burned down the school sports hall with your Science Fair project.
- If you can type at 70 words per minute but can't read your own handwriting.



Oops!

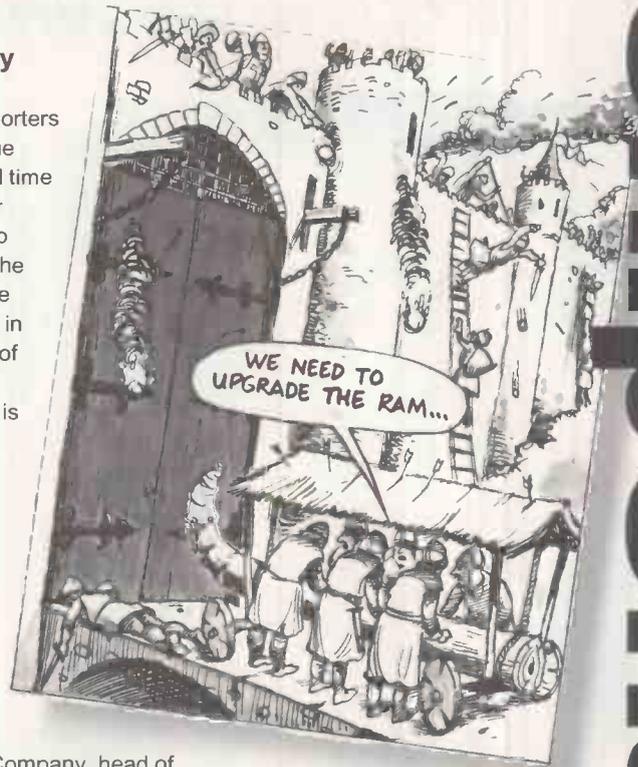
Apologies to those expecting to see the PCW Awards in this issue — the winners will be announced next month.

- In the Lexmark Colour Jetprinter 1020 vs Epson Stylus Color II review (*First Impressions*, April) we stated that Lexmark provides printer cables with the printer. Lexmark has confirmed that this is not the case (except for press review models) and that buyers must purchase their own. We regret any confusion caused by this error.
- VideoLogic's phone number was wrong in the April issue (3D Accelerators). The correct phone number is 01923 260511.
- Scandisk actually appeared in DOS version 6.2, not version 6.0 as mentioned in the *Beginners* column last month.

Where are they now?

PCW's intrepid reporters have discovered the whereabouts of old time heavy metal rocker **Ozzie Osborne**. No longer strumming the guitar and biting the heads off chickens in front of thousands of screaming fans, it appears our Ozzie is now working for IBM.

Ozzie was on the road again recently, this time lunching with lowly UK IT journalists in his new capacity as worldwide vice president, systems strategy, IBM PC Company, head of relationships — Intel and Microsoft. Word on the street was that he would give a "valuable and stimulating lunch briefing" — PR speak for a rockin' good time, but please hold the chicken. It just goes to show you that old rockers never die — they just go to IBM.



Chipchat

3M Company and POST-IT

We included the Postit shareware utility on our April 1996 CD. "POST-IT" is a trademark of 3M Company which manufactures a large range of POST-IT™ products in a wide variety of formats and colours. This year in the USA 3M has launched POST-IT software notes for the PC which is due to be launched in Europe later this year. We acknowledge that the POST-IT brand is the property of 3M and use of the mark POST-IT was not authorised by 3M and was inadvertent.



Personal Computer World personal number plate

You too can be the proud owner of a personalised number plate from your favourite magazine. PCW has been told that a company specialising in registration plates has just received B7 PCW and B8 PCW. Each plate is being sold at £520 (+VAT, plus the standard DoT £80 fee). A special discount will be given to anyone offering to buy both. We've informed our publisher about the deal but haven't heard whether he's interested in the "his 'n hers" combo. Anyone else attracted by the offer should phone High Profile on 01494 432282 to place their bid.



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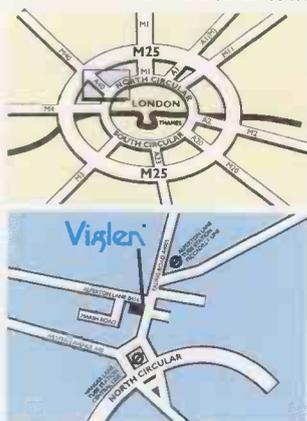
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Software packages

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Five essential tools for easier everyday computing. Word processing, spreadsheet, database, graphics and communications tools.



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