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utilities

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Business Publications

WIN an NEC notebook,
Nikon scanner,
Smartsuite 96 p262

200 MHz Pentiums

FROM
£1,886



HP's OmniGo
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**Six-speed
CDs**

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affordable

**Crystal ball
gazers**

What 1996 holds

Booze bonanza

CD guides to beer
and wine



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OR 3.5" DISK
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you to tailor your system to suit your requirements. So we've also included Dell enhancement packs for both desktops and notebooks. And while you pick up on better choice we just pick up the odd quote or two. Here's what the August issue of PC Pro had to say on the XPS P133c: *"the fastest Pentium 133 on test, the Dell (XPS P133c) handled everything thrown at it with ease"*.

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Have a look at the specifications for the Dell Latitude™ XPs and see how cleverly the best has got better. Or just take a look at what the July issue of PC User had to say on the XPi P90T *"...Wins a gold award." "a superb price/performance ratio." "...Very impressive..."*. And like our Dimension range, Dell Latitudes now

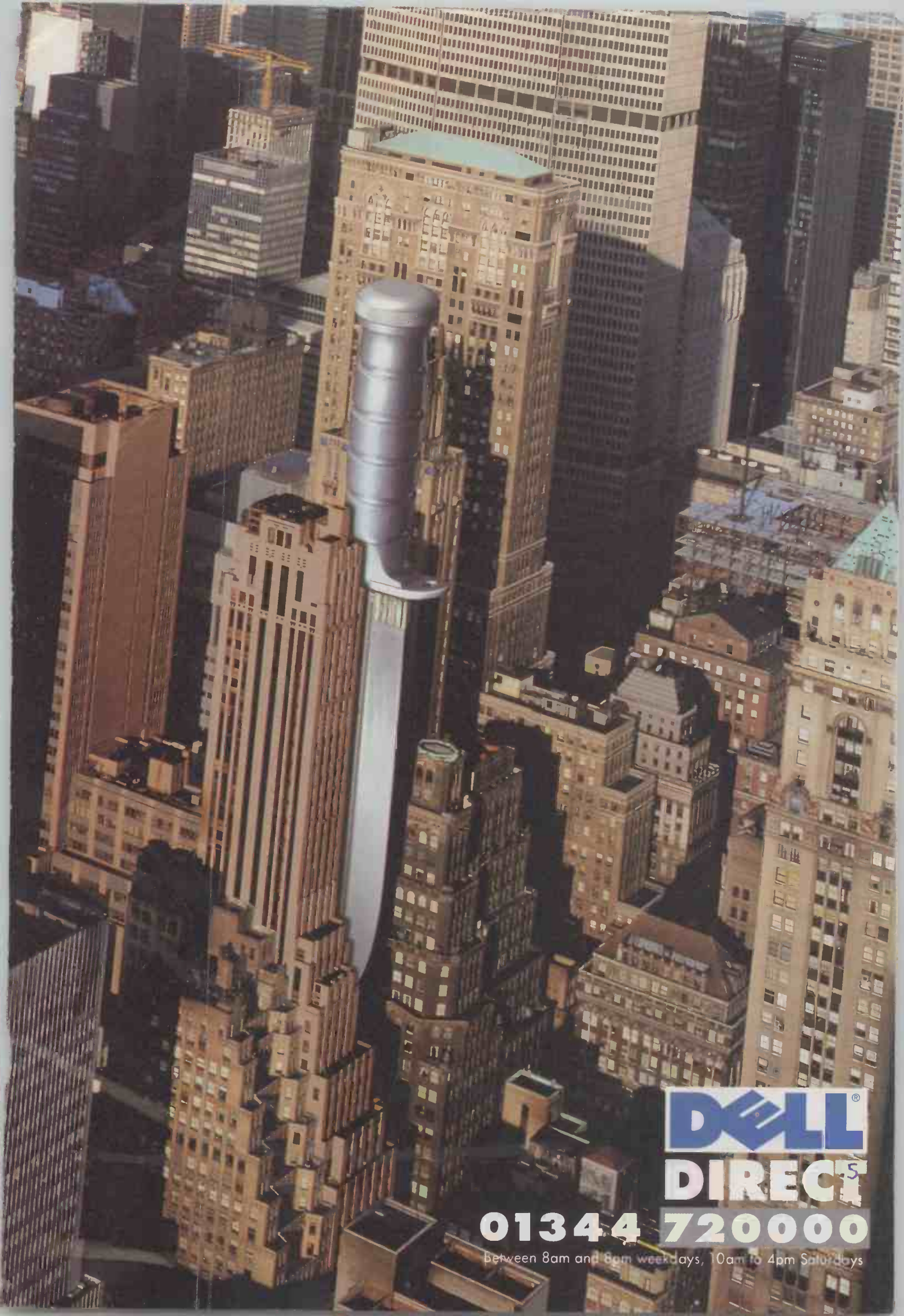
come with Microsoft Windows® 95 making mobile computing even easier. The benefits of our long life Lithium Ion batteries also give you the freedom to work, travel and communicate like never before. Add to this bigger, brighter, clearer displays, more storage and, in the case of the XPi, Pentium Processor power and the result is Dell has the pick of the crop.



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As hardware prices fall and Pentium power increases, high-performance PCs are more affordable than ever before. *PCW* compares 16 120MHz Pentiums to find the one worthy of our Editor's Choice.

PCW Cover Photography by David Whyte



Cover Disk or CD-ROM

- **Cover Disk** 8
3D Cyberpuck — excellent smooth scrolling action.
- **PCW Interactive CD-ROM** 9
650Mb of programs, music and animation including CompuServe's WinCIM 2.0 with Internet access. (CD-ROM Notes continue on page 167.)

Group Tests



Accounting Software

● Still relatively shrouded in mystery, accountancy software is a serious business for those who use it. David Carter puts the big players head to head, and explains how knowing the drill can save time and money.

Features



Beer and wine guides

9 8

by PAUL BEGG

Get into the Christmas spirit as *PCW* rounds up and reviews the latest PC wine, beer and cocktail guides. As a cautionary measure, we also look at some hangover cures for the morning after.

Crystal gazing

1 4 4

by THE PCW TEAM

We take on Mystic Meg with our own predictions for the new year. And, we look back at the news and events of 1995.



Six-speed CDs

by GORDON LAING

They just keep getting faster and cheaper. *PCW* takes the latest six-speed CD drives for a spin and looks at the first eight-speed model, which is almost as fast as a hard disk.



1 5 0

Sound card add-ons

1 5 6

by STEVEN HELSTRIP

If your old FM sound card is out of tune with your needs, a General MIDI daughterboard could be the answer.



Top music makers Roland, Yamaha, Creative Labs and Orchid compete to upgrade your hardware.

SoftWindows 2.0

1 7 0

by GEORGE COLE

If you want to use a Mac but need to run Windows programs, Insignia's SoftWindows is often the best solution. The new PowerMac-only version 2.0 claims to deliver full 486 performance.

Windows 95 utilities

1 7 4

by TIM PHILLIPS

Windows 95 is a great improvement on 3.1, but there's still plenty of room for improvement. *PCW* checks out the first batch of utilities designed to fill the gaps.

Delphi Tutorial: Part 3

1 8 6

by TIM ANDERSON

Part three of our Delphi programming tutorial explains all about menus and dialogs.

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HP's new hybrid pen and keyboard-based palmtop.
- 61 Adobe PageMaker 6.0**
The latest version of the high-end DTP package, now under the Adobe wing.
- 62 HP & CD Revolution CD writing kits**
Two complete CD writing kits for under £1,000 from HP and CD Revolution.
- 64 The National Lottery™**
The official National Lottery package could help you win your fortune.
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The world's fastest quad from Plextor, and Panasonic's quad in a retail pack.
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- 73 Quarterdeck Web Server**
Set up your PC as a web server under Windows 3.1 or Win95 — NT not required.
- 74 Adaptec AIRport 2000**
Upgrade your PC to join the infra-red age with the AIRport.
- 74 Avery LabelPro**
Have the best-looking labels in town.
- 76 Scan-IT**
All-in-one scanning, OCR, storage and retrieval application.
- 80 Map 'n' Go**
A complete road map of the USA on a single CD.
- 83 Nikon Super CoolScan**
A high-quality dedicated 35mm film scanner.
- 84 Xcad 3.1**
Fully-featured, low-cost 3D design package.
- 86 Canon multimedia speakers**
Speakers to improve any PC sound system.
- 86 Opti LCD monitor**
A notebook-style flat display for your desktop PC.
- 87 Logical Decisions 4.0**
Let your PC and Logical Decisions take the strain.
- 90 Lorien TextHELP**
Have your PC read out text aloud — ideal for proof-reading or for those with reading disabilities.
- 93 Minitab 10 Xtra**
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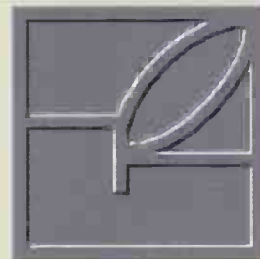
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PCW Media

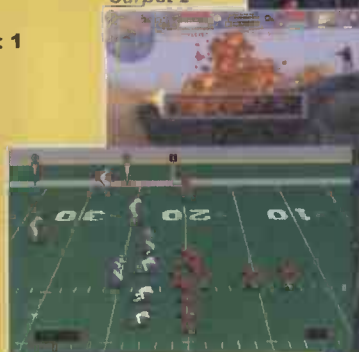
- 2 6 0 Books
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PCW Fun

- 2 6 5 Kids' Stuff
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2 7 3 Screenplay (with Leisure Lines, page 276)

Screenplay: *Project*

Screenplay: *Magic Carpet 2*



Focus: On-line gaming

CD-ROMs: *Robert Mapplethorpe*



PCW Cover Disk

This month we amaze you with Cyberpuck, a rollicking and ravishing 3D action game with a twist. David Price explains.

Installing and running the PCW Cover Disk

To install the programs, insert the disk in drive A: or B:, and from Windows run the file PCW.EXE in the root directory of that drive. All of the program will then be installed onto your PC and a Windows Program Manager icon will be created with which you can run the game.

However, please remember that not all Windows setups run DOS games very well so if you have problems with Cyberpuck you are recommended to exit to DOS and run it from there. In addition, the game requires at least 570Kb of DOS memory to run. If you have less it will inform you, and then exit. In which case you could try running MEMMAKER (if you have DOS 6) to increase your low DOS memory, or REM out some lesser-needed lines from your AUTOEXEC.BAT and CONFIG.SYS files. Alternatively, you could create a boot disk by formatting a floppy disk allowing for system tracks and then typing:

SYS A: (or B: if your floppy is in drive B:)

You can then reboot your PC with this disk in the drive to obtain the maximum low DOS memory. See your DOS manual for further details.

Cyberpuck is designed to challenge even the quickest reactions and is guaranteed to quicken your pulse rate. You find yourself in a futuristic games court revving the engine on your sports buggy when suddenly the puck drops into the court and all hell breaks loose.

You must out-pace your opponent who tries to wrestle the puck from you before you get a chance to blast their goal...



Try your puck against a worthy adversary, in this futuristic action game with a twist

IMPORTANT

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 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



David Price introduces this month's CD-ROM, crammed with useful and entertaining features. The Microsoft CD Expo contains over 400Mb of Bill Gates' finest. And there's a CompuServe freebie bonanza, plus utilities, applications, drivers and a whole lot more!

[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]

CORRECTION

The demo of Anagram Genius on last month's CD was mistakenly categorised as shareware. We would like to make it clear that this product is not shareware but normal commercial software published by Genius 2000 Software. Tel 0151 356 8000

PCW INTERACTIVE: Entire Contents List

AUDIO

Complementing the magazine sound board add-ons review in this issue, listen in to tracks 2-7. But don't play track 1 unless you want your PC or HI-FI to throw itself screaming onto the floor!

DOS PROGRAMS

- Alice in Wonderland** — Enthralling and educational
- Astrological database** — Transform yourself into Mystic Meg
- Diskcopy** — Multi-featured, useful utility
- Easybase** — Superb DOS database application
- Easyword** — Excellent DOS word processor
- Galaxy** — One of the most powerful shareware WPs available
- Hexen** — The Doom creators bring you an excellent new game
- You're Hired** — Job interview test simulator

EXTRAS

- Super VGA Graphics Drivers (not for Windows 95)
- Video for Windows Version 1.1e (Not for Windows 95)

FEATURES

MICROSOFT CD EXPO: 40 of Microsoft's top demos with many trial versions too

JANUARY 1996



XBOARD — Another handy Windows 3.1 program
Visual Basic Hands On — More source code from the popular column

WINDOWS 95 PROGRAMS

- Animation Edit** — Create your own animations the easy way
- Bombsquad 2** — Fiendish brain basher of logic and deduction
- FLO'** — Warp and manipulate images to your heart's content
- Image Edit** — Make your own icons and images
- Michael's Disk Benchmark** — Analyse your disk drives
- Micro Angelo** — Ultimate Windows 95 icon handling
- Print Screen** — Stylish and instant screen grabber
- Programmer's File Editor** — Top hole program file editor

F O L D

COMPUERVE INFORMATION MANAGER:

Get online to CompuServe and the Internet for gratis, courtesy of CompuServe

MACINTOSH

Last month we saved up our Mac software to get you off to a good start in '96 with this cornucopia of purest joy, including a demo of Marathon 2; the Doom-basher for the Mac



MAGAZINE

- Multimedia Hands On** — Great 3D animations
- Sounds** — Stimulate your earholes
- IFA301** — Makes using Windows 3.1 easier

- Solitary Confinement** — Time flies with these new solitary programs
- Stopwatch** — Tantalising timekeeping utility
- Toilet** — Customise your recycle bin in a water closet style
- Power toys** — Win95 add-ons that are highly recommended
- Restart** — Does all this and more, in accelerated time
- Tab 95** — Mac OS users will turn green with envy at this new pop-up folder system for PCs
- Taskview** — Gives you new power with active tasking

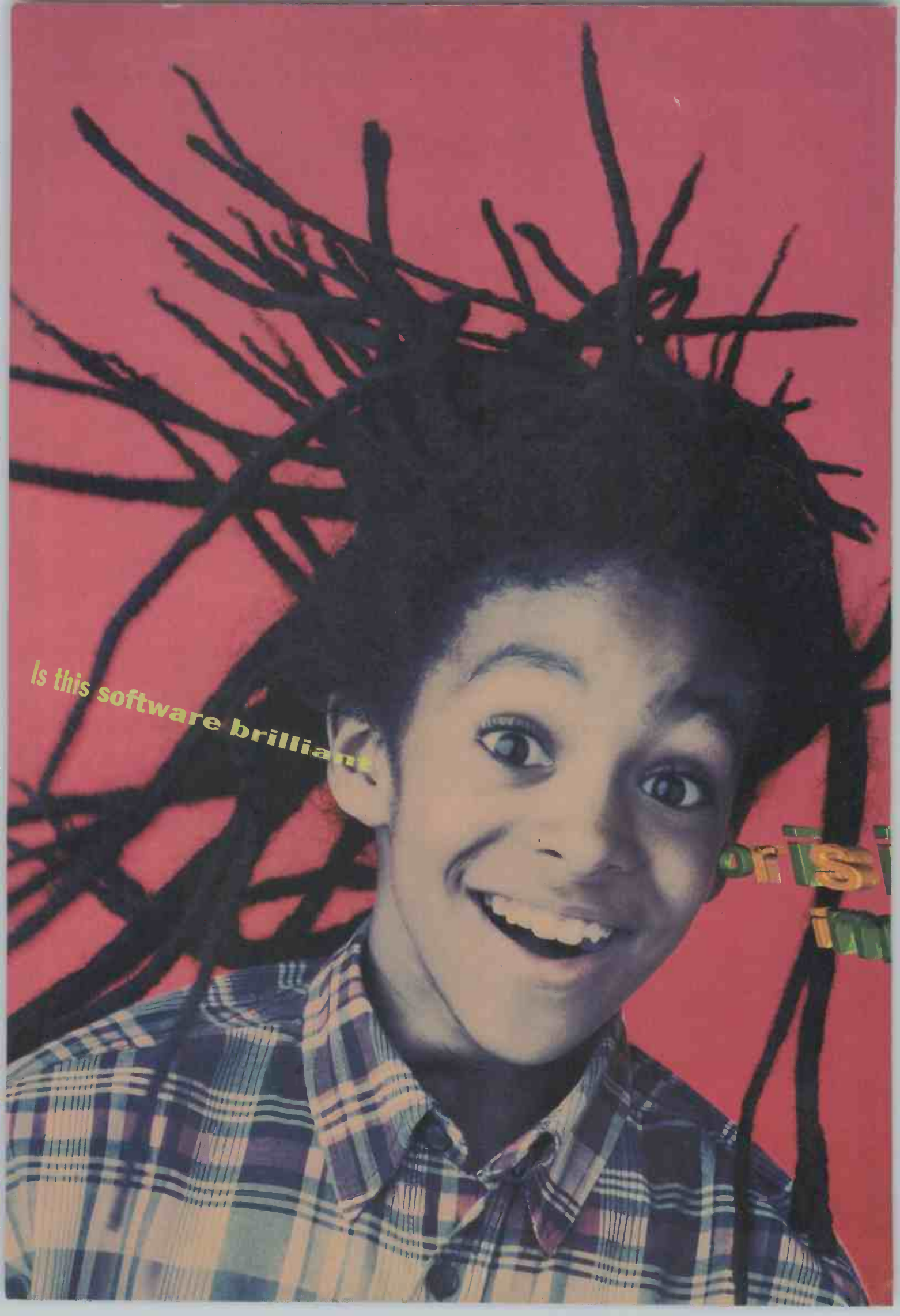
WINDOWS 3.X PROGRAMS

- A&B** — Award-winning personal information manager
- Auto CD** — An unmissable autoplay program for your CDs
- Button Star 5** — A desktop manager that ensures you won't miss business appointments
- Design a room** — Puts expensive interior designers on the dole
- Disk Factory** — One of the best shareware disk copiers
- Time and Chaos** — Personal info manager
- Virus** — Catch the bug with this addictive game
- Win Genius** — Try and win through in this draughts challenge

To run PCW Interactive (PCWI) use either File Manager to select your CD-ROM drive and run the file PCWI.EXE in the root directory of the CD-ROM. Or, if you are using Windows 95, just insert the CD into your CD-ROM

drive and wait for the program to load! Throughout PCW Interactive you'll have the opportunity to run or install

**CONTINUES
ON PAGE 167**



Is this software brilliant

OF S

Available with Explorapedia for £39.99* Age 2+



£29.99* Age 4+



£29.99* Age 6+



£29.99* Age 8+



£49.99* Age 8+



"I'D LIKE TO THANK EVERYONE who made this movie possible," I tell the hushed Hollywood audience.

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When I'm not making films, there's always the Microsoft® Creative Writer and Fine Artist CD-ROM to inspire me, or Microsoft® Explorapedia® - The World of Nature, a wildlife epic. Other big influences include Kipling's storybook 'How the Leopard Got His Spots,' and Scholastic's The Magic School Bus® Explores the Ocean, the latest in the series.

(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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Just my imagination?

Personal Computer World



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Editorial

Five years ago WordPerfect was the world's biggest selling word processor. It was unthinkable then that by 1995 the product would be finished, yet that is what is happening. Novell has decided to sell it and in the absence of a serious purchaser, it already looks likely that further development of the product will cease. At Comdex in Las Vegas in mid November, the Novell stand was dutifully demoing the latest version, in a scene reminiscent of the way chickens continue to twitch after their heads have been cut off.

Contrast WordPerfect's plight with Microsoft's. Microsoft appears to hold a brilliant hand. It dominates PC operating systems, and with Office has close to 90 percent of the desktop applications market. Bill Gates' keynote speech at Comdex outlined a glittering future for a future version of Office based around an object architecture, and with an integrated user interface that effectively insulates users from even knowing which application they are using.

Yet Gates admits to feeling vulnerable. Success, he says, is a poor teacher, and the more successful Microsoft becomes, the more companies set out to try and beat it at something.

Also at Comdex, Apple, IBM and Motorola finally announced the completed specifications for the PowerPC Platform, formally known as the Common Hardware Reference Platform. It promises a single-standard architecture for the next generation of personal computers able to run a variety of operating systems including Mac OS, OS/2 and Windows NT.

A lot of question marks still hang over the PowerPC Platform. When will components for the new machines be available in volume? When will the high-end 620 PowerPC chip become available? Yet if the platform can maintain its commitment to genuine openness, it has a chance of success. The prospect of millions of PowerPC machines running the Mac operating system is an enticing one. Ironically, though, the operating system most likely to make a success of the PowerPC platform is Microsoft NT with the Windows 95 interface. Perhaps it's Intel, not Microsoft, that needs to worry.

- Novell sells WordPerfect, p18
- PowerPC Common Hardware Reference Platform, p22



Ben Tisdall
Editor

Next ^{Personal} Computer Month ^{World}

Pentium Pros

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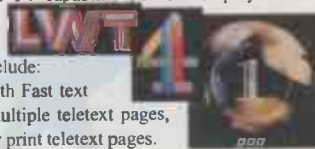
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PC Magazine (dan Ultimate 100), June '95

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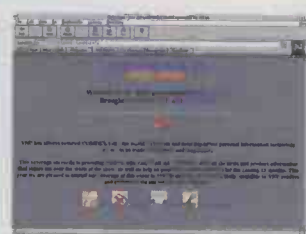
Microsoft comes clean 24

Yes, okay, the new Access *does* need 12Mb, says Microsoft. Refund, anyone?

Pentium Pro problem 29

Compaq claims to have found networking bug in Intel's new Pentium Pro chip

Software bestsellers 30



Comdex Online

You can read more Comdex news and views at our Web site, which maintained a daily bulletin during the show. The address is <http://www.vnu.co.uk/ln/comdex>

WordPerfect is up for sale

Networking giant Novell put WordPerfect up for sale last month in what looked like a final capitulation to Microsoft in the office applications market. The move is the latest in a string of seismic shifts in the industry caused by the launch of Win95 and the apparently unshakable power of Bill Gates and Intel.

WordPerfect was once by far the world's best-selling word processor, but it began to slip with the move to what-you-see-is-what-you-get and it fell badly behind when the first Windows version proved flaky. The product improved but its prospects did not: it fell inexorably behind Microsoft Word, which gained 85 percent of the market as part of the Office suite which is bundled with a large proportion of new PCs.

Lotus, the only other contender with its SmartSuite, was bought by IBM in July.

Novell is selling its business applications division, which as well as WordPerfect includes the Quattro Pro spreadsheet that it bought from Borland last year. But it will retain Groupwise products which fit in with its strategy of refocusing on

networking — the reason Novell shed its Unix interests in October.

Chief executive Bob Frankenberg said that two prospective buyers had already come forward. Rumour had it that one was Ray Noorda, who was responsible for buying WordPerfect and Quattro last year for £909m and £94m respectively.

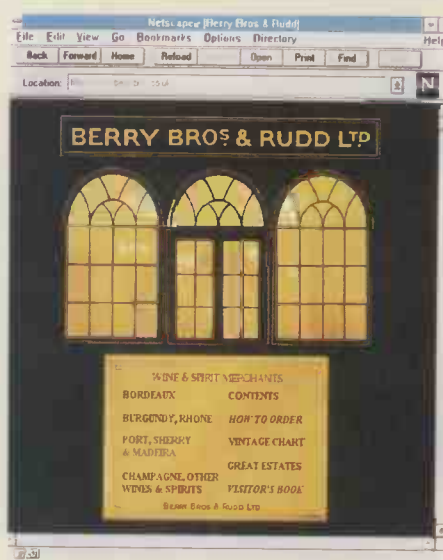
One estimate put the current value of the division as low as £125m.

The shifting of the great software houses was mirrored in the hardware world with the merger of two of the companies trying to chip away at Intel's near monopoly. AMD took over NexGen, hitherto its rival in making emulations of Intel chips (see *News Analysis*,

page 33).

The anything-can-happen atmosphere was illustrated by a joint launch by AMD and Reveal of a cheap, high-quality sound card at which news of the Nex-Gen deal emerged. Days later, Reveal was bought by Creative Technologies.

Clive Akass



Berry good... wine merchant Berry Bros and Rudd, established 1698, claims to be the oldest firm on the web. Its address is www.berry-bros.co.uk.

IBM chief upstages Bill Gates' soap opera

The future of computing lies in networking, the heads of both IBM and Microsoft agreed in Comdex keynote speeches last month. But their views of the emerging mega-connectivity differed radically.

Lou Gerstner, giving voice to a renewed confidence at IBM, predicted a drift of power

from the desktop to the network and server, and away from monolithic suites to small downloadable modules (see Tim Bajarin's *Analysis* on page 31).

Gates presented one of his skilful extravaganzas, in which he interacted with a screened mini soap opera depicting the near future with the internet as a

natural extension of the desktop; a future in which people do business via a Microsoft Office with multimedia knobs on.

It was a plausible extrapolation, spiced with some wishful thinking, but the exciting new ideas are coming from outside Microsoft: companies like Sun and Netscape, with their cross-

platform Java initiative, and even staid, suited IBM.

Gates, noting his 40th birthday, admitted that he was starting to feel out of touch. "People say I'm the Mick Jagger of the computing industry," he added. "I'm not sure what that means."

● **Comdex special report, pages 22 and 23.**

Enter the software clone, with full sound effects

A new bundle from German multimedia specialist, Miro, includes close imitations of Word 6.0 and Excel 4.0 — the industry's first software clones.

The emulations contain only a limited set of the features offered by the Microsoft versions, but the precedent could be significant if software moves away from massive do-it-all suites towards small "components" which you buy and load only as needed.

It could open a can of worms in the mobile market, too, which has a need for small, basic programs and is not so tied to the Wintel platform.

The clones are part of an interesting package called miroCONNECT Office, which bundles LapLink 6.0 remote control software, a full suite of Chameleon internet modules, an AutoRoute-like mapping module, with fax and datacoms software, plus a multi-purpose 28.8Kb/sec fax-modem/sound card — all for less than £250.

LapLink has been tweaked to allow simultaneous voice and data calls, allowing you to

control a remote PC while talking to the user.

Product manager, Hartmut Bauer, said that Microsoft had seen the products and was happy about them: "They told us we were unlikely to make any impact on their sales."

There have been many lawsuits over software copyright infringements in the US, but the position is by no means clear in Europe, especially over similarities in "look and feel".

● Delrina, newly taken over by utilities specialist Symantec, has launched a comprehensive suite of 32-bit communications programs for Windows 95. Delrina Commsuite includes Winfax

7.0, WinComm Pro 7.0 for general datacoms, and Cyberjack 7.0, which integrates a complete range of Internet facilities. All support multitasking and multithreading under Win95. It will be available this month at £129.

Delrina 01734 814230;

Miro 01494 510250



Larry seems to be getting everywhere these days. This cartoon is one of several in a free booklet on email etiquette from AT&T Easylink (for further details, phone 01527 514514) A £9.99 CD of his cartoons, for newsletters and the like, is available from The Data Business. Telephone 01865 842224.

Short Stories



● This heartfelt entry from a group at Inverkeithing Primary school in Scotland won the under-eight's category of the 1995 National Educational Multimedia Awards. The closing date for next year is 31st March.

NEMA 01203 416994

SoftRAM users offered a refund

● Purchasers of SoftRAM, which claimed to effectively double a PC's memory, have been offered their money back or a free upgrade following a devastating report by the US National Software Testing Laboratories.

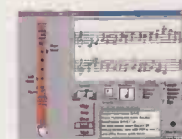
The report, commissioned by rival RamDoubler publisher, Connectix, stated that SoftRAM offered no benefits to Windows 3.x or Win95 users.

A second test, commissioned by SoftRam developer, Synchronys, was said to show benefits under Windows 3.11 but confirmed "a fault" under Win95. Synchronys says this fault has been cured. UK distributor, Roderick Manhattan, has set up a special upgrade hotline on 0181 875 4434.

Musical interlude

● Recorders are refined musical instruments at stocking-filler prices and if you are thinking of getting your child one for Christmas, you might also consider buying this little utility to make sure they get the most from it. Recorder for Windows shows both the fingering and music for a number of popular tunes, and will also play the music if you have a sound card. It costs £4.44 as shareware, or £16.95 registered.

SpringSoft 01352 770049



Digital's Santa clause offers free support for Christmas

PC support is set to become big business during the next five years as both software and hardware vendors struggle to cope with a 400 percent growth in the number of users, according to Digital.

The company is moving into support in a big way with an 8a.m. to 10p.m. service targeted at small businesses and home users. It will support all of the leading PC brands as well as software packages.

To help people get the message, Digital is offering the service free on Christmas Day and Boxing Day to anyone having trouble with presents in the form of any make of PC or software.

The service is also expected to be used by small dealers to ease the burden of supporting

customers. Big vendors such as Compaq already use Digital to help provide support.

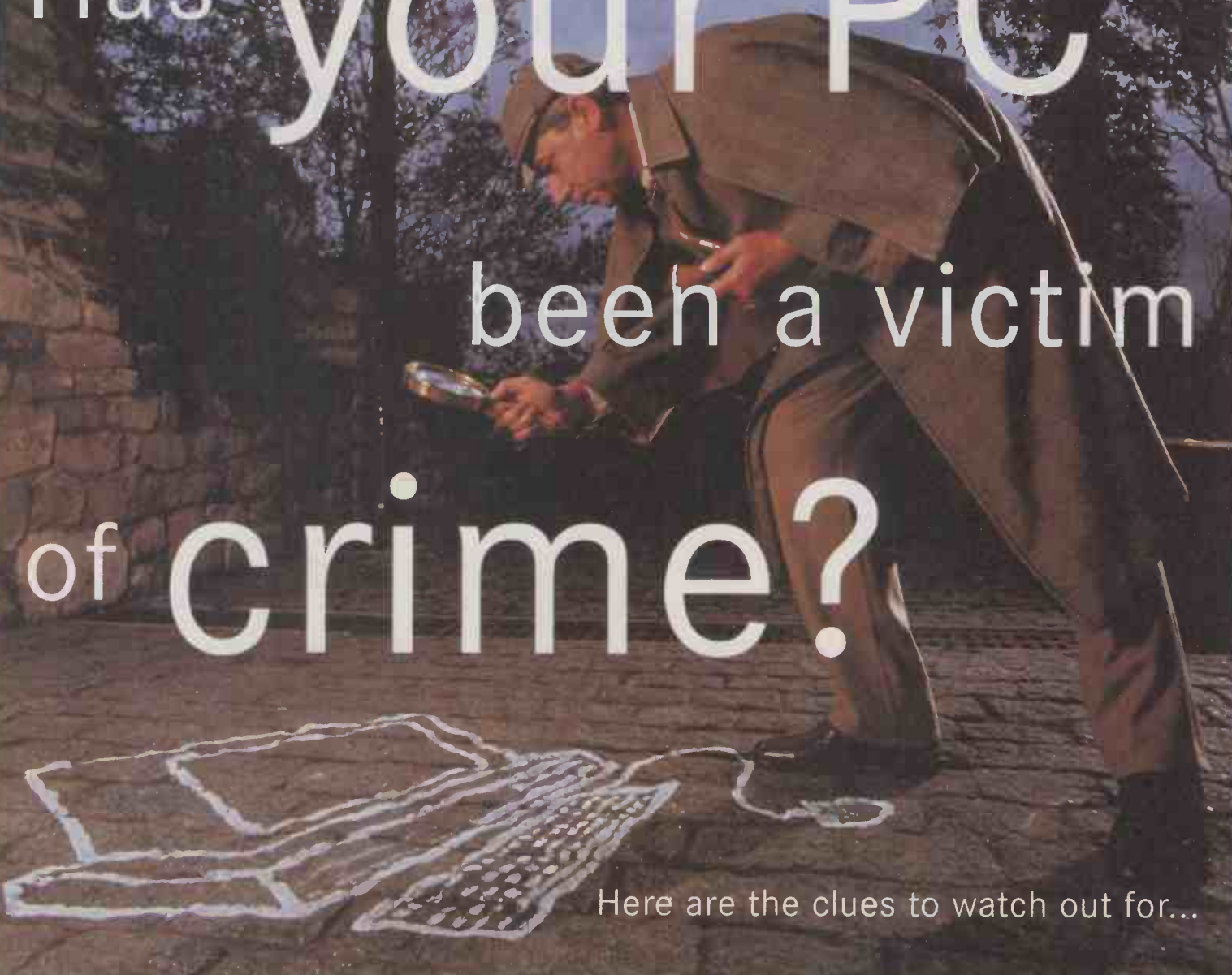
Marketing director, David Allen, said users were fed up with having to hang on to support lines waiting for someone to answer, only to be told that they have to ring another number.

"So many products go into a PC, the vendors can always blame someone else for a problem. Digital uses experts on all aspects of the PC, hardware or software so you only have to ring one number," he said.

The new service will initially cost £117.50, including VAT. The first five calls are free, after which you pay £20; so in effect signing on is free, Allen said.

Digital 0345 440011

Has your PC been a victim of crime?



Here are the clues to watch out for...

Was your operating system software delivered with the PC? Microsoft® MS-DOS® and Microsoft® Windows® are the most widely used desktop operating systems in the world. If your PC came with either of these, can you be sure that your software is legal?

To check that you have a fully authentic Microsoft product look for the Certificate of Authenticity - C.O.A. (only operating systems are required to have this) and the End-User Licence Agreement - E.U.L.A. which have to be delivered with MS-DOS and Windows.

If you have these two safeguards you will have: • Technical support. • Rights to warranty. • Right to update to the latest version from the software vendor.

If you don't have the Certificate of Authenticity and the End-User Licence Agreement your system may be illegal, you won't get any of these benefits, and illegal software carries the risk of viruses with the potential catastrophic loss of information.

You can help us with our enquiries. If you think your PC has been a victim of crime, call Microsoft on 0345 300 125 extension 1001 and tell us where you purchased your PC and Microsoft software. We will follow up on the information you give us, in the strictest confidence, and send you details of your consumer rights.

Microsoft and Windows are registered trademarks and 'Where do you want to go today?' is a trademark of the Microsoft Corporation in the US and/or other countries.



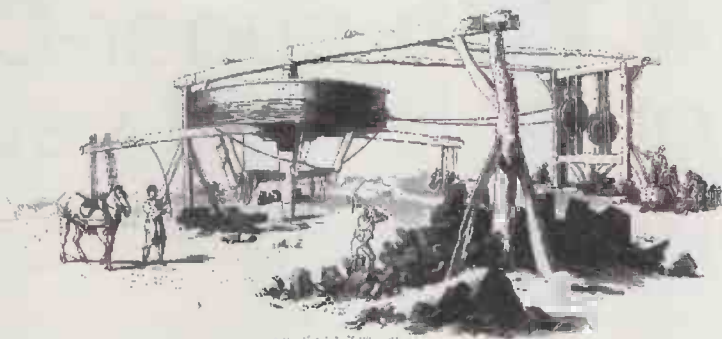
Microsoft

WHERE DO YOU WANT TO GO TODAY?™

CD with a lot of horsepower

The contraption shown here, for getting coal out of a mine, would be unlikely to pass a Health and Safety inspection these days, and must have looked old-fashioned even when this drawing was made, by William Pyne (1769-1843) at the turn of the nineteenth century.

He was depicting mechanisms that had been in use for centuries, but his picture shows, incidentally, how the power of new-fangled steam engines came naturally to be measured in terms of



horse power. It is taken from a new CD called *Mechanisms* (£49 for a single user or £99 for a site licence). It is available from Creative Curriculum Software, and is the first of a planned technology series for schools.

Short Stories

Win95 security bug 'fixed'

● A security problem with file and printer sharing in Win95 has been fixed, claims Microsoft.

The problem, which affects only those users who have turned on the Enable File and Printer sharing option, means that others on the network gain read-only access to your files.

You can fix the problem by downloading new drivers from www.microsoft.com.

SoftWerk tracks heads, not hits

● Market Focus is a Windows tool for analysing web-site traffic. Developer, SoftWerk UK, claims that the £465 CD-based package differs in that it counts users rather than the number of "hits" they make.

Graphs, bar charts and tables reveal trends, and sorted lists from log files to unlock valuable marketing information, can be easily created.

Joanna Scott

SoftWerk UK 01462 832244

Notebook users vote for H-P

● Hewlett-Packard ranks highest for customer satisfaction among notebook users, according to a new survey.

It scored 117 for reliability, reputation, screen, portability and keyboard. Dell followed with 112, leading on value and compatibility, in the JD Power 1995 Notebook Computer End-User Satisfaction Study.

Root and branch

● A Deluxe Win95 version 3.0 of Family Tree Maker is available on CD. It contains more than 115 million, mainly American names and allows you to view archive CDs. Access to the World Family Tree is included, a growing pool of CDs compiled by users. Price is £49.95; upgrades from £25.

S&N Genealogy Supplies 01252 378054

Gates faces new Euro-probe over 'unfair' Office discounts

Britain has asked the European Commission to investigate Microsoft's policy of granting big discounts to major PC vendors. The move may revive anti-monopoly investigations in Europe which were shelved after a much-criticised deal with US authorities last year.

The complaint was originally

made to Britain's Office of Fair Trading by the Personal Computer Association, representing dealers and other industry interests, which says that the discount enjoyed by Eire-based US companies like Gateway "unfairly discriminates against UK companies" to the extent that some could be put out of business.

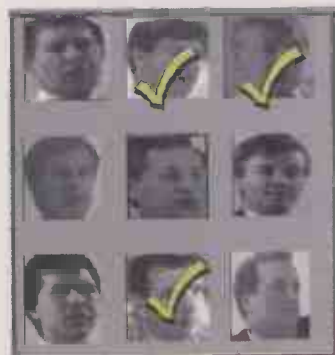
PCA executive director, Keith Warburton, said a variation in wholesale prices of up to 30 percent was to be expected. "If you lose to the competition in one way, you can make it up in another. That goes for anything, with the exception of Office where if you can enter a contract for a million, you can get it for, say, 60 percent cheaper. If Gateway can get Office Pro at, say, £50 when we have to pay over £200, we have a differential that we cannot possibly set off."

An OFT spokeswoman said: "We passed the complaint on to the EC because it has wider international implications." She agreed that the OFT would not have done this if it did not think the complaint had some substance.

Gateway UK general manager, John Shephard, said he had no sympathy with the PCA view: "I would get upset if it was the customer who was complaining. But this is good news for the customer. What Warburton is saying is that small vendors can't offer the same value as we can. I can't get too upset about that."

He said smaller companies could make money by "skilfully manipulating" specialist markets.

Facing up to the security issue



A unique identification and authentication security system relies on our ability to recognise faces as an alternative to using passwords or PINs. Visage

requires you to memorise three faces, but not from your family; this would be equivalent to using your spouse's name as a password. Identification consists of picking out the faces from a random selection. The company quotes the government GCHQ listening centre, describing it as "the biggest single advance in security since the invention of the password." The system can be used with Netware and Windows, and further development is under way for more O/Ss.

Visage 01442 230471

Dylan Armbrust



**Tim Bjarin
in the US**

AST? Play it again, Samsung...

● Samsung must be scratching its head over its \$850m investment in AST. It paid \$22 a share last spring; the price is now hovering around \$8 per share. At the end of 1994, AST was one of the top five PC vendors; today, it is barely in the top ten.

Chairman and co-founder Safi Qureshey has not been able to turn it around. So, news that Ian Diery, former Apple VP of marketing, has been appointed president has been seen as positive. He replaces James Schraith, who resigned a couple of months back after being widely blamed for the decline.

Diery is no visionary, but he is a solid marketing manager who will bring new enthusiasm and focus. But his task is gargantuan. He has to find products that customers really want, and regain the loyalty of corporates who have begun to drift to Compaq and IBM.

Take 24 Twinkies

● A cookbook called *Giga Bites*, written by Jenz Johnson and published by Ten Speed Press, would make a great gift for a hacker — a breed well known for junk food addiction. It features recipes to cater for that late-night pizza or doughnut craving.

My favourite is Twinkie Casserole. This calls for 24 Twinkies (small sponge cakes), 24 Oreo biscuits, a large jar of caramel topping, a bag of miniature marshmallows, a large jar of hot fudge, a tablespoon of cinnamon, and a dash of brown sugar.

Scary Gates

● Intel CEO, Andy Grove, got a lot of chuckles when he wore a Bill Gates mask at a Halloween meeting of finance experts and asked them: "As a Halloween present, may I have his [Gates's] price/earnings ratio?" Microsoft's rating is 39, Intel's is 20. Then, removing the mask, Grove added: "It's a scary sight, isn't it."

COMDEX Fall '95

4.7Gb super-CDs on sale next year

Next-generation CD drives taking disks with a minimum capacity of 4.7Gb (seven times that of the current generation) will be available by the end of next year, industry leaders pledged at Comdex.

Heavyweights from consumer electronics giants like Matsushita, Toshiba, Thompson, and Philips lined up at a press conference to quash rumours that they had reached a deadlock on the details of a compromise

between the rival SD and MMCD standards.

The compromise, announced in September, adopts most of the SD specification backed by the likes of Time-Warner, Toshiba and Matsushita, but incorporates the more rigorous error correction proposed by MMCD backers Philips and Sony.

Toshi Yajima, Toshiba's deputy general manager, admitted that both sides had still to agree on matters such as royalties, but promised that a full

technical specification would be published in December. "This will allow manufacturers of drives, disks and silicon to get to work on products while discussions continue on outstanding issues," he said. It would mean products will be available, for late 1996.

Double-sided versions of the new disk will hold 9.4Gb, and a future version will hold up to 17Gb. Rewritable versions are in the pipeline too, although initially they will have slightly less capacity.

Clive Akass

Power PC Platform sets the scene for innovation

IBM, Apple and Motorola have announced the Power PC Platform, the specifications for a standard PC architecture based around the Power PC chip. Formally known as the Microprocessor Common Hardware Reference Platform (CHRP), they are claimed to offer lots of room for innovation by PC designers.

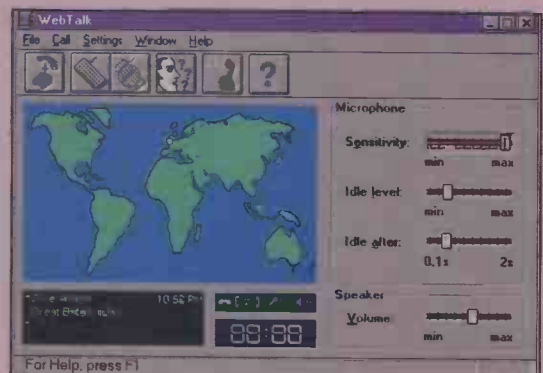
AIX, Netware, OS/2 Warp, Sun's Solaris and Windows NT are all expected to run on the new machines. And Apple says work is progressing on a ROM-less version of the Mac operating system for the new platform.

Volume production of PowerPC-specific components is promised for the second half of '96. A number of chipset and peripheral vendors are backing the standard, including VLSI and 3Com.

IBM plans to move its RS6000 wordstations to the spec later, in 1996, with the servers to follow. IBM denied press reports that the future of the high-end 64-bit 620 PowerPC process was in jeopardy. It claims early silicon is now being tested, with clockspeeds of over 300MHz expected by 1997.

Ben Tisdall

Compass points



Two novel new products could confirm Quarterdeck as Netscape's main rival for Internet software. *Internet Compass* is a means of trawling the Net for information, by querying several major search engines such as *Infoseek* and *Yahoo*. But it can also be set up to do regular searches to produce, say, a daily bulletin on chosen subjects. It includes facilities for organising your data. *Compass* will be on sale before Christmas for less than £70. *Web Talk* (shown above) allows real-time telephone conversations over a Net link. It will cost less than \$35 in the US, complete with a mike, Quarterdeck's *Mosaic* browser, and a month's Net access. Quarterdeck has also upgraded *Mosaic* to support Netscape-specific HTML formats and Adobe's *Acrobat* portable document format.

Quarterdeck UK 01245 496699

Gerstner's vision of the future

In his keynote speech on the first day of Comdex in Las Vegas, Louis Gerstner, president and CEO of IBM, outlined his vision for the future of computing. Gerstner believes we are on the threshold of the next phase of information technology — network-centric computing, and pledged that IBM is betting much of our future on it.

He explained that client/server has proved more expensive and more complicated to implement than anyone expected, and the cost of supporting a PC with the processing power of a 1985 mainframe on every desk is high.

Gerstner predicts that more power in terms of applications, processing, and memory will migrate back to servers, enabled by broadband high-speed networks, particularly ATM. This will free users from having to upgrade their PCs every year; and from feeling they're constantly falling behind current technology; and from dealing with arcane things like operating systems. PCs, said Gerstner, are the most brilliant examples of planned obsolescence he's come across, in any industry.

He went on to reveal that such a low-cost networking appliance is now under development in IBM's labs and will be released to some customers next year. The Internet, he said, is the most powerful manifestation, so far, of what net-centric computing will be like. But the IT industry faces three major challenges to achieving progress: ease of use, open standards, and the social implications of technology. Entire segments of our

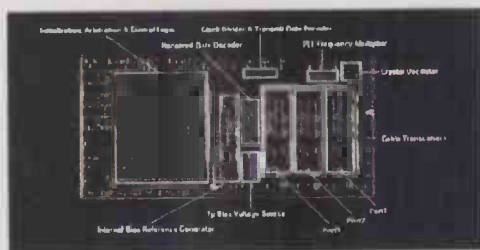


industry, said Gerstner, have been spawned by the failure to deliver ease of use. The failure to deliver open standards had resulted in a near death experience for IBM.

Finally, the social implementations of technology must be considered: intellectual property rights on the Internet, its misuse as a means of distributing pornography, and the issue of universal access. Gerstner cited a *Time* survey in which nearly half of respondents stated that access to technology was responsible for economic divisions.

Ben Tisdall

Fast data ports come onstream



The new Universal Serial Bus (USB) will be on all Intel motherboards, and thus on a large proportion of new PCs, by the end of 1996, the company announced. Intel believes USB, demonstrated in a side room here at Comdex, will eventually replace the familiar COM1 and COM2 ports.

It's designed to daisy-chain devices such as a mouse, keyboard and printer. Support chipsets are due to ship early next year.

Two other connection technologies, high-speed infra-red and Firewire, are also coming onstream.

Firewire (see above), also called 1394, is seen as a faster complement to USB. The cabling looks similar, with either four or six strands: two twisted-pair data paths and an optional pair for power. Firewire presently carries up to 100Mbits/sec, but 400Mbits/sec is on the horizon and 1Gbit/sec is planned. It is designed for

consumer items like digital camcorders as well as computers.

Texas Instruments showed a PCI-based Firewire port, and the 1394 Association demonstrated Firewire maintaining a full-screen video picture at 30fps.

Infra-red has been given a boost by Microsoft's launch at Comdex of an IRDA driver for Win95, enabling applications to use an IRDA port like a standard serial port. This means vendors can no longer cite software development costs as an excuse for keeping prices of IRDA add-on ports high — as much as \$100 for a couple of dollars' worth of silicon.

That price is for IRDA 1, which passes data at 115Kbits/sec; Sharp gave a demonstration of videoconferencing using a more expensive IRDA 2 link, which can manage 4Mbits/sec. **Clive Akass**

Short Stories

Tiny Thinkpad sees red

● A palm-sized IBM Thinkpad was on view in a side room at Comdex — but only to demonstrate its infra-red port.

The tiny PC110 measures about 6ins x 4ins and incorporates an ordinary plug-in phone, and is available only in Japan. The qwerty keyboard is too cramped and stiff for comfortable typing.

A slightly larger version with a type 3 card slot was also on view.

Camera news

● Chinon America demonstrated the \$499 fully automatic ES-1000 digital camera capable of storing eight 24-bit colour images, or 128 with an optional 16Mb flash card.

Epson offered the \$499 PhotoPC providing 640 x 480 and 320 x 240 resolutions, with 1Mb of flash storing a minimum of 16 images.

Wyse move

● Wyse Technology's Winterm terminals have brought Louis Gerstner's vision of net-centric computing a step closer.

They cost between 25 to 50 percent less than a PC, but when connected to a Windows NT application server will bring the full range of Microsoft applications to the desktop, with the advantages of easy administration and high security.

The Winterm 2500 colour terminal is expected to cost around \$750 when it ships in late December. A greyscale version will cost \$500.

Quick chips

● Virge 3D accelerator chips will cut the cost of a 3D accelerator card to as little as \$200, says the manufacturer, S3. Seventeen add-in card manufacturers and fourteen games developers plan to support the Virge and Virge/VX. The chips take advantage of the 3D support built into Windows 95 and will drastically improve the performance of 3D games such as Doom.

Short Stories

Post box

● Digital Mail is offering an electronic postbox service which allows you to collect faxes, email and voicemail for a basic £5 per month. The first 20 minutes is free, after which each minute costs 10p.

Digital Mail 0171 231 2929

Code decoder

● An updated version of STD Code Decoder, which tells you the geographical location of a phone number, is available for £20.

Oakley Publishing 01508 538546

New batteries

● TeleAdapt has replacement batteries for leading notebooks such as Toshiba, Compaq, IBM and Dell. Users can also upgrade to lighter, longer-lasting, NiMH batteries.

TeleAdapt 0181 421 4444

120MHz Latitude

● Dell's Latitude Xpi range of notebooks now includes a model using Intel's new battery-friendly low-voltage 120MHz Pentium chips. It also uses an 10.4in SVGA active-matrix colour display.

Dell 01344 720000

Mac con Brio

● EuroSource has produced a native PowerMac version of its BrioQuery database query tool. Details are at www.eurosource.com.

Eurosource 0181 561 1993

Charities on Web

● Free information on 5,000 British charities is available at www.hemscott.co.uk.

Basic training

● The Visual Basic User Group is holding briefings for VB 4.0 developers in London on 19th January, and in Manchester on 9th January. They cost £149, or £99 for members.

VBUG 01291 620720

Fontastic!

● Walnut Creek offers a £24 CD called Font Garden with 500 fonts in TrueType and Type 1 PostScript formats.

PDSL 01892 663298

Refund offer as Microsoft admits Access needs 12Mb

Microsoft admitted last month that the new version of Access needs 12Mb of RAM and offered a £99 refund to users who cannot, or do not want to, upgrade accordingly.

The admission came in a letter to users who bought Office Professional for Windows 95.

Oliver Roll, product manager of desktop applications, wrote on 1st November:

"After careful discussion with Beta users, we have decided to raise our memory recommendations for Microsoft Access for Windows 95 from 8Mb, as previously stated, to 12Mb."

At current memory prices, an extra 4Mb of RAM will cost around £150 (inc VAT) but many PCs will only allow an upgrade jump to 16Mb.

Microsoft regards this as a

"small change" but accepts that it "may be significant to some customers, particularly if your computer is currently configured for only 8Mb of memory". So Microsoft will give £99 to customers who have bought Access and now cannot use it.

The Professional Edition of Microsoft Office for Windows 95 shipped with a picture of Access on the packet, along with the four Office Standard programs: Excel, Word,

PowerPoint and Schedule.

The packaging specified 8Mb "to run Access or two other programs on Windows 95". But Access was not included. Customers received a ROM containing Office Standard and a voucher for "Access for Windows 95 software when available".

Roll's letter, to people who returned this voucher, contained another voucher. This asks Microsoft "not to ship me my copy of Access for Windows 95". In return Microsoft will send a cheque for £99, within 28 days.

Otherwise, customers will get Access for Windows 95 "when it is available". No timescale is given. Some users may now reasonably wish they had not hurried to buy Windows 95.

Barry Fox

Fake cache has users jogging their memory

Dodgy dealers are reported to be selling machines with fake cache RAM, or none at all.

They rely on the fact that there is no simple way in which novices can check that the cache has actually been fitted, although a tell-tale message may appear during boot-up — fake chips can fool the BIOS into thinking that the cache is present.

A PCW reader, who was alerted by a BIOS message, was informed by his dealer that his cache had been dropped in favour of fast EDO RAM. Cache memory can speed a PC by as much

as 30 percent; the benefit of EDO RAM is marginal by comparison.

The reader's complaint is being investigated by local trading officials, who say that they have difficulty finding expert witnesses to testify in such cases.

The issue is discussed in the Usenet group, comp.sys.ibm.pc.hardware.chips.

A utility called CompTest, freely available from several web sites, can detect false cache but is thought not to be infallible.

Web pollution blacklist attacks secrecy

A new web site, naming Britain's worst polluters, has been launched by Friends of the Earth (FoE) as part of a right-to-know campaign.

The information on the country's dirtiest factories was taken from official statistics

which are technically in the public domain but which, FoE claims, were only obtained after a high level of persistence had been employed.

FoE claims that similar information is published as a matter of course by US authorities.

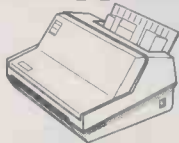
Deputy campaign director, Tony Juniper, said: "It's up to all of us to make the Government and industry come clean and tell us the whole truth about environmental destruction."

The address is: <http://www.foe.co.uk/cr>.

SURPLUS COMPUTER STOCKS

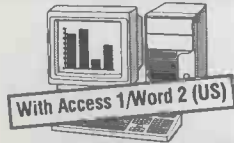
MORGAN COMPUTER CO. DISPOSAL OF BRAND NEW SURPLUS INVENTORY, OVERSTOCK & LIQUIDATED COMPUTER MERCHANDISE

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IBM BUILT "BLUE LIGHTNING"
486 D2 75MHz chip, 540Mb drive, 8Mb RAM, 1Mb video, 14" **£699.99**
.28 SVGA, DOS/Win 3.1

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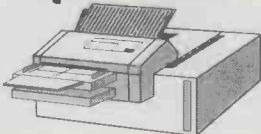
AMSTRAD FAX/ANSWERPHONE
Digital answerphone - uses no tapes, 50 memories, 9 auto dials, **£199.99**
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OLIVETTI 486SX



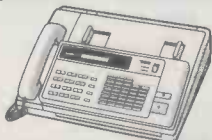
210Mb DRIVE, 4Mb RAM
486SX 25MHz chip, 3.5" floppy drive, 14" .28 dp SVGA colour, **£449.99**
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Needs no tapes, auto fax switch and cutter, BT appro/Mercury **£299.99**
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486SX-33MHz SUB-NOTEBOOK
120Mb, 4Mb RAM, external 3.5" floppy, mono screen, trackball, PCMCIA slot, DOS/Win, **£599.99**

600 DPI LASER



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BUBBLE JET



TRIUMPH ADLER JPR 7825
300 dpi res, 3 ppm speed, 13 Bitmap & 25 TrueType fonts, HP DeskJet Plus emulation. **£149.99**

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BUILT IN JAPAN FOR MAJOR DIRECT VENDORS
As manufactured for Gateway 2000 and NEC; 486SX and DX, removable 170Mb drives, 4Mb RAM, 3.5" floppy, PCMCIA expansion, NiMH battery power, SVGA monitor & keyboard ports & pull-out mini trackball. NB US keyboard & plain boxes.

SOTEC 486SX 25MHz MONO LCD SCREEN

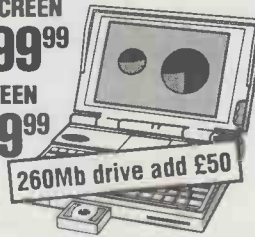
- Hi-res VGA mono screen **£499.99**
- DOS 6 and Windows 3.1

SOTEC 486SX 25MHz COLOUR SCREEN

- Dual scan colour LCD **£699.99**
- DOS 6 & Windows 3.1

SOTEC 486DX 33MHz COLOUR

- Dual scan colour **£749.99**
- DOS 6 & Win 3.1



260Mb drive add £50

24 PIN PRINTER - SUB £70!

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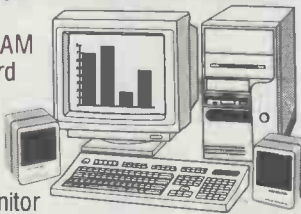
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TWINHEAD 486SL



33MHz SUB NOTEBOOK
80Mb removable hard disk, 4Mb RAM, external floppy, mono **£499.99**
VGA. DOS/Win installed.

IBM 486SX 25



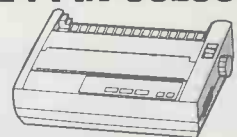
80Mb DRIVE, 2Mb RAM
486SX 25MHz tower, 3.5" floppy, 14" mono VGA (non IBM). **£299.99**
K/bd, DOS 6 & Win 3.1

MITAC NOTEBOOK



486SLC 33MHz NOTEBOOK
33MHz 486SLC, 120Mb/4Mb RAM, LCD VGA mono display, 3.5" **£499.99**
floppy. DOS 6 & Win 3.1

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SAMSUNG SP2417 PRINTER
80 col, 200 CPS/53 CPS LQ, 8K buffer, sheetfeeder. Colour kit/ **£149.99**
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THINKPAD PCMCIA CARD

Type II fax/modem, 2400/9600 speed. US import with all software **£49.99**
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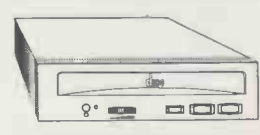
20" MONITOR



MULTI-SCAN COLOUR SVGA

1024 x 768 res, non-interlaced, .31 dot pitch, front panel control, **£699.99**
ideal for CAD and design.

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Short Stories

QuickView upgrade

● UK file-translation specialist, Software Compatibility Centre, is offering a wysiwyg version of the QuickView file viewer in Windows 95.

Microsoft bought in the technology for QuickView from SCC, publisher of the Windows 3.x-generation Outside In file viewer. But the version that ships with Win95 does not format text.

QuickView Plus for Win95 overwrites the Microsoft version. It provides fully-formatted views of more than 200 word processor, spreadsheet, database, graphics, and compressed file formats. The single-user price is £49.

SCC 01344 885224

Laser giveaway

● More than 1,500 laser printers have been given to schools via a scheme set up by Gestetner, which services and cleans old models donated by firms who are upgrading.

The Clydesdale Bank gave 400 machines and Marks and Spencer donated 200. Phone 0990 143157 if you have equipment to donate.

Welsh on check

● A £45 Welsh spelling and grammar checker, compatible with leading word processors, is available in DOS and Windows versions from the Welsh Language Board.

WLB 01222 224744



Fast Mirage

● Spea has launched the Mirage multimedia accelerator for £260 with a TV tuner, or £190 without. An MPEG decoder costs £100 extra.

Spea 01844 261886

CheckIt '95

● Touchstone has launched WinCheckIt 4.0, a £39.95 Win95-compatible version of its troubleshooting package.

Touchstone 01442 862612

Hard disk capacities to get bigger and cheaper

Hard disk capacities are set to double every six months, with the price per megabyte falling by half, according to Fujitsu. This means we could soon be seeing multi-gigabyte disks in entry-level machines.

The advances are enabled by new magneto-resistive (MR) heads, and a digital sampling technique called Partial Response Maximum Likelihood (PRML) which enables up to 50 percent more data to be stored on a platter.

Last month, Fujitsu announced a 2.5in two-platter 1Gb drive, a 4.4Gb five-platter, and an 8.8Gb ten-platter. It said a 1Gb single-platter will be available early next year.

Fujitsu claimed that only itself and IBM have the technology, with which it expects to gain a 20 percent share of the hard-drive market.

But both Quantum and Conner announced MR/PRML drives. Quantum says it will ship a 1.7Gb drive (pictured) and a 2.55Gb drive in



March, priced at \$265 and \$395 respectively. Both use MR and PRML.

Fujitsu technical marketing manager, Mike Nelson, said: "Everyone is going to have to bring out MR drives but they have a long way to catch up. We are now on our third-generation product."

Fujitsu 0181 5734444; Quantum 01344 353500;

Conner 01628 777277

NEC's pocket video player highlights falling ROM prices

The price of solid-state memory will plummet over the next four years, says NEC. And to illustrate the possibilities it has produced a pocket video player drawing MPEG-1 data from a memory card (see *Gadgets*, page 56).

The Walkman-sized demonstration model used a 40Mb memory card with only four minutes of film. But the falling price of ROM means the use of cards of a much larger capacity will become feasible.

NEC says a 1Gbit flash EEPROM chip, which cost \$3,840 in 1993, will cost only \$128 in 2000AD, and a non-rewriteable 1Gbit ROM chip will cost just \$2.70.

A 90-minute feature length film occupies about 900Mb, or about \$20 worth of ROM at NEC's estimated prices. Clearly, cheap solid-state memory could also have a big impact on mobile computers.

NEC 0181 993 8111

Cheap CD recorder bundles on offer

Plasmon has come up with a low-cost CD recorder package to rival that of the Hewlett-Packard Surestore CD-Writer 4020i. Both are based around a Philips 4020 drive and both are listed at £850.

H-P kept its price down by bundling a cheap SCSI card with no external connection, and a "Lite" version of Incat's Easy-CD software. The Plasmon CDR4220 has no SCSI card but a full, professional version of Easy-CD for Windows 3.1, Windows 95, and the Mac. The company says a basic Adaptec SCSI

card (about £50) will suffice.

Marketing director, Stewart Vane-Tempest, said he believed most users would need the facilities provided by the professional software, which provides full support for PhotoCD and multi-session recording.

There have been reports that the H-P package has problems under Win95, stemming from the fact that CD recording requires an uninterrupted stream of data. This is not a problem with Windows 3.x, because the application can grab processor time as needed; under Win95, it has

to bow to the operating system.

But the H-P and Plasmon bundles both include a 1Mb buffer, which Vane-Tempest claimed should be enough to maintain a smooth data flow if you close other applications.

He said the CD recorder should not be regarded as a backup device, which requires a read-write drive (such as Plasmon's \$600 dual PD and CD drive). He added: "CD is an ideal distribution medium because there are so many CD drives out there."

Plasmon 01763 262963

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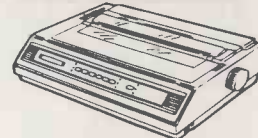
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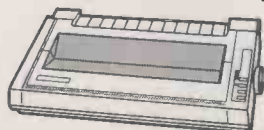
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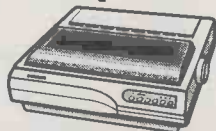
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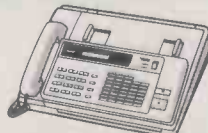
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- Lotus Write version 2 - word processor
- MS-Access ver 1 - relational database
- CA-Textor, SuperCalc & SuperDB for DOS
- CA-SuperCalc for Windows - spreadsheet



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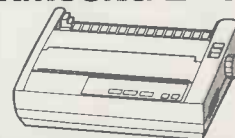
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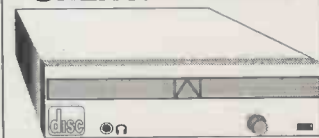
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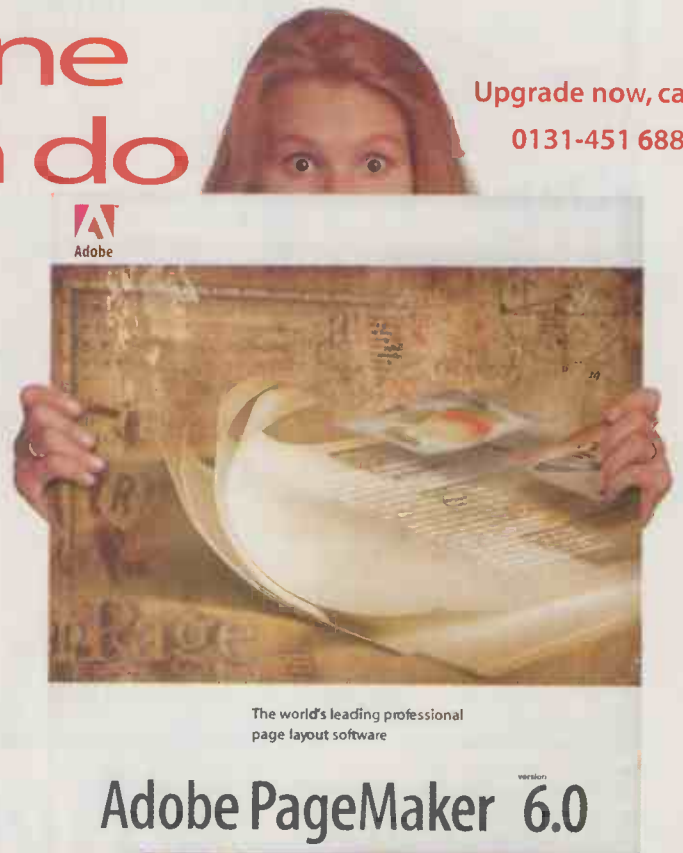
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Compaq bug claim as rivals rush out new Pentium Pros

Compaq claimed to have found a networking problem with Intel's new Pentium Pro processor last month, shortly after it was formally launched with sample chips at speeds as fast as 200MHz.

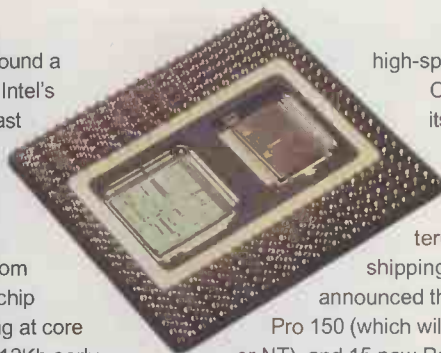
The Pentium Pro differs from the Pentium in having an on-chip 256Kb level-2 cache operating at core speed. This will increase to 512Kb early next year. Some PC makers say they expect speeds to be as high as 300MHz in 1996.

Intel is initially aiming its sales at the server and high-end workstation markets that use dedicated 32-bit applications. Firms involved in the financial, animation, and scientific fields are the first targets.

Carl Everett, senior desktop products VP, said that Pentium Pro systems "will bring PC economics into market segments that haven't seen PC-style price/performance."

Compaq claimed that Pentium Pro machines could, in certain circumstances, drop off a network and fail to communicate with other linked computers.

Intel states that this is a Compaq-specific problem, related to its use of "legacy" network cards being unable to cope with



high-speed data transfer.

Compaq has delayed shipping its Pentium Pro models until the problem is resolved.

Other PC manufacturers have not encountered this problem and are shipping according to schedule. Dell announced the 150MHz Dimension XPS Pro 150 (which will come preloaded with Win95 or NT), and 15 new Pentium systems.

Digital's Celebris workstation is processor independent, with a swappable daughterboard carrying a Pentium, Pentium Pro or Digital Alpha chip.

Gateway and Apricot say they will ship 200MHz Pentium Pro machines next month, and Fujitsu/ICL offer a 166MHz model.

Digital 01734 202180; Dell 01344 72000;
Gateway 0800 552000; Apricot 0121 7177171

Dylan Armbrust

No life online for Dictionary of Biography

All 32 volumes of the *Dictionary of National Biography* (DNB), documenting the lives of more than 40,000 people, have been published on a single CD.

The Oxford University Press (OUP) plans eventually to extend the scope of this work by including extra information such as birth certificates and wills, either directly or in the form of pointers to sources.

This could be done even more efficiently with a Web version, but there are no plans to set one up at present because the OUP believes there is, as yet, no satisfactory way of charging for usage.

However, the *Encyclopaedia Britannica*, now US-owned, can be accessed online

Best practice, on the face of it...

Sixty percent of the effort put into creating an application goes into the graphical interface, says the developer of a new design tool.

Good screen design is the best way to ensure your application is among the one in six applications that are considered a success, says Christine Comaford, president of Corporate Computing which

developed the online reference system, GUI Guidelines. It is aimed at small businesses and corporates who want to standardise their screens.

Corporate Computing is now owned by LBMS, a UK company best known for the SSADM development methodology. GUI Guidelines is offered at an introductory price of £99.95. LBMS 0171 636 4213



Britannica: rules the online waves

(www.eb.com) with subscriptions starting at around £75 per year.

The OUP is a charity with a remit to spread knowledge; it nevertheless makes money which it says is needed to finance expensive works like the DNB. The CD version, which costs £395, will effectively be in the public domain as many

copies will be bought by libraries.

As it is, many DNB contributors will have a long wait before seeing their work in print.

Sir Alexander Cairncross, who rewrote the DNB entry on the economist John Maynard Keynes, said: "I am told that the next printed version won't be out until the next century."

OUP 01865 267979

Short Stories

How many trees fit on a CD?

● Question: How many trees provide the equivalent, in paper, of a standard CD-ROM? Answer: 11, with each taking 20 years to grow. This corresponds to a 47ft stack of A4 paper.

The figures come from Martine Tatman, of CD and audio cassette replicators Ablex Audio Video. The coming 4.7Gb high-density CD would save 78 trees — equivalent to 1,560 tree years.

Joanna Scott

Amstrad image

● Amstrad is second only to IBM and Apple among Britain's best-known computer firms, according to the advertising agency DMB&B. IBM is seen to lead in terms of quality and standing, but Amstrad and Apple outstrip it for perceived value and innovation.

Portable CD

● Opti is selling a quad-speed portable CD-ROM with a PCMCIA-compatible interface.

Opti 0181 507 1818

Paradox 7.0

● Borland says Paradox 7.0 for Windows 95 and NT will go on sale this month for £99, or £69 as an upgrade, or £79 to users of an applications suite.

Borland 01734 320022

Win95 sales

● Microsoft claims seven million copies of Windows 95 were sold worldwide in the two months after its launch.

Magic of money

● A Christmas stocking filler for power-mongers might be the £34 Interactive Magic game which challenges players to build financial empires.

Interactive Magic 01276 62462

Digital album

● TGL Multimedia's £40 Picture Album lets you organise your photographs as an interactive multimedia show.

Short Stories

New Newton OS opens Windows

● A new operating system for the Newton palmtop is designed for easy integration with Mac and Windows systems. A new £59 module, called Newton Press, will allow a Word and ClarisWorks document to be displayed on a Newton.

The Newton 2.0 operating system should be available now for an upgrade price of £80, or £424 with a Newton MessagePad 120 machine. A £79 keyboard option is also available for the Newton.

Apple 0181 730 2480

'Fastest yet' Mac compatible

● Power Computing has produced what it claims is the fastest yet PowerPC machine running the MacOS.

The new PowerWave is the first to use the 150MHz 604 PowerPC chip and is the first MacOS compatible to have a PCI bus. A custom chip also allows NuBus cards to be used. More details at www.powercc.com.

Power Computing 001 512 258 1350 (US)

New DTP pack takes on Quark

● A UK company is making a surprise bid for the DTP market. UniQuorn, unveiled at the Apple Expo by SoftPress Systems, boasts some unique features including interactive preview of colour trapping and automatic creation of style sheets.

It uses XPress-style boxes for inserting text and graphics, but, unlike XPress, the same boxes can be used for both. Text can be flowed around bezier curves, too. Currently in beta, UniQuorn will be available for Mac and Windows platforms.

SoftPress 01993 882588

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New 3D accelerator card puts PowerMacs into workstation class

Apple has released a QuickDraw 3D accelerator card which it claims provides PCI-based PowerMacs with workstation class 3D graphics performance.

Unveiled by Apple CEO Michael Spindler at a Macromedia conference in San Francisco, the hardware makes 3D applications run up to 12 times faster.

Based on custom ASICs, the new card provides hardware support for QuickDraw 3D — Apple's cross-platform application programming interface for 3D graphics.

It supports full texture mapping, Gouraud shading, transparency and Z buffering. It can render 10 million tri-linearly filtered, mip-mapped texture pixels per second and up to 120,000 triangles per second.

This level of performance has only previously been available on high-end, high-priced systems.

"When Apple introduced QuickDraw 3D we revolutionised real time 3D



This early demonstration of Quickdraw 3D features texture mapping and complex shading. The image is updated in realtime as the camera moves smoothly along the rollercoaster track

graphics, making them as easy to use as text and 2D graphics," said Spindler.

"Today we take another technological leap forward with a hardware accelerator card that provides customers with the additional power necessary to produce complex 3D illustrations, designs and

animation with the quality and speed they demand, and at a price they can afford."

The card will be aimed at the graphics and entertainment markets, and will retail in the US at \$399.

No UK price or delivery date has been set.

Chris Cain

Top 10 Windows and DOS		
Product	Manufacturer	Last month
1 Windows 95 U/G	Microsoft	1
2 SoftRAM Memory Doubler	RMG	2
3 MS Office Pro 95 U/G CD	Microsoft	18
4 First Aid 95 for Win95	RMG	-
5 MS AutoRoute Exp UK & IRE	Microsoft	-
6 MS Plus for Win95	Microsoft	3
7 Lotus Smartsuite	Lotus	-
8 MS Office 4.2 U/G	Microsoft	4
9 RAM Doubler	Connectix	11
10 Uninstaller v3.0	Microhelp	6
Top 10 DOS		
1 PCDOS Version 7	IBM	1
2 Flight Simulator v5.1	Microsoft	3
3 QEMM v7.5	Quarterdeck	2
4 Turbo C ++ v3.0	Borland	5
5 MSDOS v6.22	Microsoft	-
6 Pegasus Solo Payroll	Pegasus	8
7 Turbo Pascal v7.0	Borland	-
8 Easy to Learn Computing	VCI	7
9 MS Space Simulator	Microsoft	-
10 Pegasus Solo Accounts	Pegasus	9

Top 20 Windows		
Product	Manufacturer	Last month
1 Windows 95 U/G CD	Microsoft	1
2 Softram Memory Doubler	RMG	2
3 MS Office Pro 95 U/G CD	Microsoft	18
4 First Aid 95 for Win95	RMG	-
5 AutoRoute Exp UK & IRE	Microsoft	-
6 MS Plus for Win95	Microsoft	3
7 Lotus Smartsuite	Lotus	-
8 MS Office 4.2 U/G	Microsoft	4
9 RAM Doubler	Connectix	11
10 Uninstaller v3.0	Microhelp	6
11 MS Office Pro 4.3	Microsoft	7
12 PlanIt Business Plan 2	RMG	12
13 MS Office 95 v7.0 U/G CD	Microsoft	9
14 Sidekick 95 for Win95	Starfish	8
15 Visio 4	Visio	-
16 Dr Sol Anti Virus Quarterly	S&S Int	20
17 MS Works	Microsoft	5
18 Quickbooks v3.0	Intuit	-
19 Passport Lan Licence	Lotus	-
20 CorelDraw 5 to 6 U/G CD	Corel	14

Figures supplied by Software Warehouse and relate to bestsellers for October 1995.

Central station

Tim Bajarin on the prospect of a central information server ruling a world of low-end access terminals.

Three years ago, I wrote that the mainframe was not a dinosaur and would make a significant comeback. I saw mainframes and minis as critical for delivering multimedia content to PCs and TVs, both as a glorified server and to handle some of the processing tasks. The internet was just starting to gain attention at the time, but mostly as a tool for business and educational research.

Diagrams that various interactive TV vendors were working on tended to envisage processing being carried out at the server, because the home access device had to be cheap. I was inclined to agree with this perspective.

Little did I, or anyone else in the PC industry, know at the time that this model would flourish on the internet, acting as a global network providing access to content and applications. Now the battle is on to determine the standards that will be used in access devices, and the roles Intel and Microsoft will play.

The likes of Oracle and Sun Microsystems believe that the network is the computer, and should be independent of the chip and operating system used by the access device. They propose that the standards should be inherent in the internet, or in the network itself.

This means that internet protocols like ftp, HTML, browsers, viewers, security and filters are what really matter. Multiple digital access devices will be crucial in getting information, and they should not be tied to a single chip or operating system.

You could, for example, access the internet from the office via either a PC or a TV in the living room, or a portable dedicated terminal in the kitchen. Of course, the smart phone could reside anywhere and have its own

operating system as well.

This argument will become more powerful once Sun and its partners release their new computing model in a few months' time. They go as far as proposing that the industry immediately begin developing low-end access terminals. Sun co-founder Bill Joy spends most of his time creating a reference model for a Sun internet access device costing around \$200.

This is, of course, full circle back to the days when the mainframe ruled a world of dumb terminals. However, most of this digital access will take place via a PC, which is anything but dumb and indeed, will become more powerful. Moreover, adding a model of high-bandwidth connectivity to this scenario, will provide access to vast amounts of data, information and applications — a "computing nirvana" that few would have predicted a year ago.

The interactive TV scenario is less clear. Most

set-top boxes now are truly dumb terminals (or have little processing power), so the interactive entertainment model is likely to have most processing carried out at the server end. Low-cost dumb internet terminals may also end up in areas where data access rather than productivity is the issue.

Within this new view, Intel and Microsoft could be threatened in the future. In a dispersed global network, where standards are driven by internet access, Intel x86 chips and Windows could hit a few roadblocks. Backwards compatibility will continue to be an issue that they can push over time, but within a global network its importance is likely to diminish.

Both Intel and Microsoft remain winners in the short term. But once the internet backbone carries applications as well as data, and allows platform-independent access, they could face serious challenges.



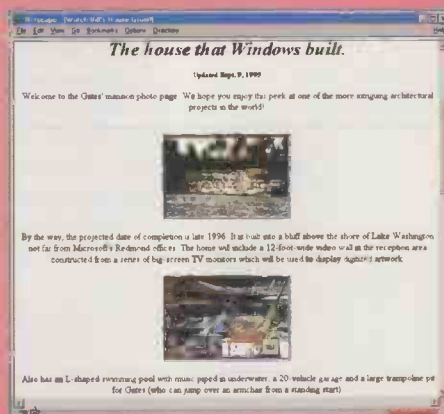
ANALYSIS

Hollowed ground

The house which billionaire Bill Gates is building for his new bride nestles in a hollowed-out cliff on the shores of Lake Washington, a few miles from Microsoft's Redmond campus.

It is not a normal house. The entry hall will have a ceiling-high video wall displaying digital art. The dining room will seat 300 people. The garage will be able to house up to 20 cars.

A PR agency in Washington is publishing, on its web page, a weekly update on how the work is progressing: so point your browser at www.morsepr.com.



The year of Windows 95

Clive Akass takes a look back at an eventful 1995, the good, the bad and the absurdity.



This image by Brian Cooke, electronically manipulated by Leana Newlyn at Visualeyes, shows true photographic quality from a Fujix Pictography 3000 digital printer, which will set you back £13,000

ANALYSIS

The PC world of 1995 was inevitably dominated by Microsoft's new operating system. Windows 95 was the biggest software event for five years (since the launch of Windows 3.0, the first successful version). It generated billions of dollars' worth of business and one way or another affected, or will affect, tens of millions of users.

But it was an event of scale rather than substance. Win95, which should have been Win94 or even Win93, was old hat by the time it came out, and contained little that could not be seen in rival OS/2 Warp or Mac OS.

What made it different was the fact that when Microsoft moves, the world moves with it. With Win95, the mainstream computing world changed gear from 16-bit to 32-bit operation.

Win95 retains many 16-bit byways for backwards compatibility, and is dismissed as a botch-up even by Microsoft insiders. The operating system of the future it isn't; but with its promise of much better to come, and its demonstration of Microsoft's near absolute domination of PC software, it epitomised computing in 1995.

It was the year we began to take processor power for granted. The humblest entry-level 486 machine had more than enough punch for routine applications. Processors nevertheless continued to get faster, with Intel's Pentium clocking up to 133MHz and the latest Pentium Pro coming in at 150MHz. Just as important was the introduction of fast (up to 120MHz) Pentiums operating internally at a battery-friendly 2.9v, making

them suitable for portables.

Intel still dominates, but its position looks less secure than Microsoft's. PC vendors increasingly look to chip cloners like Cyrix and AMD to reduce their dependence on Intel supplies. Microsoft itself is loosening Intel's grip by encouraging the use of rival hardware to run Windows NT. The PowerPC is not yet a big threat, but its importance may grow.

The high price of memory chips provides perhaps the biggest brake on performance for most users, especially with the advent of Windows 95, which needs 16Mb to show its paces. But hard disks have got bigger and cheaper.

Imaging set the cat among the storage pigeons with its cheap Zip drive, which takes 100Mb removables, costing £15. Syquest countered with the 135Mb EZ-135; Imagemaster promptly announced a cheap 1Gb removable drive.

Prices of CD recorders fell by 50 percent, but with a starting price of around £800 they are still well above consumer level. Applications such as digital photography and desktop video editing have been marking time on the specialist sidelines, waiting only for all this cheap mass storage to let them enter the mainstream.

Low-cost colour printing also improved over the year. Budget machines have yet to reach photographic quality (though we are assured that will come) but they can outclass, say, early Technicolor.

In January, *Newsprint* predicted that 1995 would be the year of comms. The internet boom has indeed continued,

and only the diversity of telecoms law has prevented modems from becoming a fixture on PC motherboards.

Bandwidth remains the big disappointment. Modems can deliver nothing like the true potential of the web, but most of us still struggle along with them. Even the 128Kb/sec digital ISDN service is inadequate (and overpriced).

High-bandwidth links are not inherently expensive, and the problems of providing them are less technical than political. At the party conferences, however, there were signs that this was at last becoming an issue.

A BT demonstration of state-of-the-art videoconferencing inadvertently showed the absurdity of the situation. Even over an ISDN link, movement was jerky and voices were clipped. Most of the technical sophistication was in cramming information into the narrow bandwidth. It was like flying an exquisitely souped-up Sopwith Camel rather than Concorde.

Mobile computing entered a similar fairyland. Beautiful notebooks have appeared, powered by battery-friendly Pentiums, with all the multimedia gizmos and fine colour TFT screens more than 11in across. But they are walking desktops; too big for the road. True mobiles are evolving from the palmtop, and with an exciting move towards wireless communication.

This was part of a general trend by which PCs, TVs, telephones, cellphones and other appliances married and began to breed exotic new devices. Hence this year's buzzword: "convergence".

After three decades of breathtaking change, computing is changing faster than ever. We are seeing the future take shape before our eyes. As a *Newsprint* headline said in June: "Welcome to the 21st century."

● Review of the year, p144.

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Chipping away at the market

If there's one thing that unites the factions in the chip war, it's collective fear, says Simon Rockman.

Everyone is scared of Intel at the moment. The chip giant is on its way to making \$100bn by the year 2000. Intel can afford to build billion-dollar manufacturing plants and invest in the fabulously expensive test equipment necessary to develop processors years into the future.

AMD's purchase of NexGen in the form of a share swap, which effectively values the company at \$800m, is a sensible response to this reality. AMD, NexGen and other chipmakers like Acer and Cyrix have made little impact on the Intel market, and the chips they have all been promising have failed to appear. The Cyrix M1 made the first silicon over a year ago and we've yet to see a real M1 machine, although the M1-based Blue Lighting 5x86 seems to be bubbling along quite nicely.

The most successful (or least *unsuccessful*) of the lot has been AMD which at least has an agreement with Compaq for the Pentium-class K5. Compaq wants to buy elsewhere because it feels that Intel is stealing all the glory. If machines are bought on the basis that they display an Intel Inside badge, there's little to distinguish between machine manufacturers. Compaq wants us to buy machines with — and for — the Compaq badge.

PC manufacturers receive considerable marketing support, and a discount on chips if they stick the Intel Inside stickers on their boxes. So Compaq is keen to support

AMD but K5 is running late. The only company with a Pentium rival actually available is NexGen. What is even more surprising is the fact that the NexGen Nx586 is one of the most advanced chips on the market.

In some ways, it's a great fit. The K5 is a superscalar chip design. The Pentium is like a V8 engine, made by bolting together two four-cylinder engines. The K5 makes a V16 by using four four-cylinder units — it's a good Pentium rival. The Nx586 is altogether more clever; it converts the 8086 instruction set into simpler RISC instructions and runs those. This is the technique used by the Pentium Pro. So, by buying NexGen, AMD already has its Pentium rival.

There is, however, the problem of IBM. While IBM is part of the club which wants to see the dominance of Intel waver, it is one of the backers of NexGen. Curiously, the original AMD press release announcing the NexGen purchase states that it has been approved by the major backers of NexGen including Compaq and Olivetti; IBM was not mentioned. And NexGen needs IBM: the complicated Nx586 can only be made using IBM's five-layer fabs. The three-layer system used by AMD's fab can't cope with the design. So now AMD has a chip, it has to buy from IBM. The only thing keeping this all cosy is the fear of Intel.

IBM has two other strategies with which to take on Andy "Intel" Grove. The first is

PowerPC. This has had fewer production problems than the Intel-compatible chips, and with NT implemented, it only needs a jolly good push by Microsoft and IBM (who are now friends again) to stack up. But IBM has chosen to relegate the PowerPC to the workstation division, which is pretty much terminal for the chip which has proved to be so good in the PowerMac.

The IBM workstation people licensed NeXTstep, the operating system which was years ahead of its rivals, and did nothing with it.

A more valuable tool with which IBM can attack Intel is Cyrix's M1. Under a deal with Cyrix, IBM can make one chip for itself for each one it makes for Cyrix; and with that special process the new M1rx is cheap enough to make it a real rival to Intel, so it seems likely that this is the weapon IBM will use.

The deal has a problem, though, because IBM seems to want to produce more chips than Cyrix wants. It could make them on the basis of buying the excess chips back from Cyrix, or it could buy Cyrix and save all the hassle. The lack of (non-IBM) machines with Cyrix chips seems to indicate that the company wouldn't be too expensive — at least, not in IBM terms. There were rumours of an IBM (or Samsung) purchase of Cyrix a while back, which might just have been Cyrix hyping the share price. Or they might have been true.



NexGen
rival:
Cyrix's
6x86 chip

ANALYSIS

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Computations

When will climate change force motorists to chop back their cars, adapt them as breakfast nooks or fantasy double beds, and steer on a VR screen? The juice from a typical car plant, about 40 million watts, would drive more than 600,000 power-sipping PCs.

Britain's 18 main vehicle assembly plants would power about 12 million energy-misers, and easily light up the UK's existing 4-5m conventional screens. The 24-hour online driving channels should include a jammed-up-in-the-rain option for those who find windscreen wipers sexy.

● **Powergen advertisement (Toyota's Burnaton plant)/Motor Industry Research Association/IDG Marketing Services**

The trade balance on computers is so negative that it means every Briton is sending about £33 to foreign infotech workers each year. The £1.74 billion-a-year cyber subsidy could pay for any one of the following:

- 1) The BBC
 - 2) All Tesco sales
 - 3) The rail subsidy
 - 4) 90 percent of the public science budget
 - 5) National lottery handouts
 - 6) All UK consumer books
 - 7) Eight new MI5 HQ's
 - 8) Nine Olympic stadiums
 - 9) 18 Arts Councils
 - 10) All computer games, twice over
- **CSO Annual Abstract of Statistics tables 12.3/12.4 (office machines and automatic data processing equipment; £416, trade deficit per household/annum in 1992)**



STATELLITE

One in every 33 CD-ROMs makes money, and they cost an average £325,000 to publish, meaning you begin to cover the odds only after a £10.7 million investment

● **Newsweek 5.29.95**

Even if you switch to a state-of-the-art energy-sipping PC configuration with a US "Blue Angel" stamp of environmental approval, your cred is still pulped by paper. A year's business supply of A4 paper (put at 40 cases) runs 50 percent higher than the environmental burden of your machine (assuming 300 watts at ten hours per day). American offices alone use a stack of paper more than 100,000 kilometres tall every year, which it would take an Airbus jetliner nearly five days to fly up.

● **IEE 1994 Environmental Conference on Computers p.299/Buzzworm 1993 Earth Journal/British Airways (cruising speed 530mph).**

STATELLITE

Japan buries or incinerates enough plastic in a year to load a nose-to-tail queue of semi-trailer trucks 2,900 kilometres long. The same level of waste for the Chinese would mean a 26,000-km jam

● **Canon Inc: Ecology, Towards Harmony between People and Nature, 1995/The Hutchinson Guide to the World, London 1995 (semi-trailer 23ft, 50ft)**

STATELLITE

Britons have half as many computers as Americans, and 134 times more than Indians.

Computers per 1,000 population in the USA: 265. In the UK: 134. In India: 1

● **Lester R Brown et al, State of the World 1994, Worldwatch Institute, Earthscan**

With the Smithsonian Institution reckoning that 75 percent of all US workers will be computerised by the year 2000, and the US labour force numbering 115 million, 86 million terminals can be expected in the US workplace within a few years. That scale of penetration for the expected 10 billion population in 2025 would mean more than 3.4 billion terminals worldwide. Installation so far has run at some 10 million PCs per year, at which rate the US level of penetration could not spread globally for another three and a half centuries. On the other hand, if Intel chairman Andy Grove is right in predicting that by 2000, PC sales will have surpassed 100 million units worldwide, more than the sale of cars or TVs, Americanisation would only take 40-odd years. The thing is, five-kilo plastic casings alone would require 185 supertanker loads of ABS plastic, causing 74 million tonnes of anti-climate gases.

● **The Smithsonian Magazine, May 94; also SIGCHI Bulletin Vol 27 No 1 (Jan 95), which predicts 80 percent/Information Please Almanac, NY, Houghton Mifflin/Newsweek 2.21.94/IEE 1994 Environmental Conference on Computers p.299/IEE Spectrum, January 95.**

STATELLITE

Britain fought World War 2 with fewer telephones than are now registered on the cellular network. Cellular registrations 1994: 3.503 million. Telephone stations 1937-38: 3 million

● **MarketLine/Whitaker's Almanack for 1939**

Now that the Intergovernmental Panel on Climatic Change has formally confirmed that the world is marinating in global-warming gases, it is worth reflecting that computers worldwide consume 240,000 million kilowatt hours of electricity per year, or all the juice used in Brazil. The annual power-cost of 170 million standard PCs could be halved by a mass switch to power-miser PCs, saving some 20 million tonnes of anti-climate gases. Unfortunately, the switch would cost, and it has been calculated that for every extra \$1 million spent producing electronic computers, nearly eight tonnes of polluting

emissions are generated, plus an energy increment of 42 billion BTUs — less than half that of fridges and freezers, but still climactically uncool.

● **The Independent on Sunday 9.15.95/Hutchinson Pocket Dictionary of the Environment, London 1994/DTI Brazil desk (Brazil's gigawatt capacity: 56,666)/PC Magazine (Siemens-Nixdorf Green PC (50 percent on 50 percent idle, 5.8-99.4w))/Compaq advertising campaign for DeskPro XL4/66 model /IEE 1994 Environmental Conference on Computers p.275**

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Offer applies to confirmed orders received before 22nd December, 1995 while stocks last. Contents could change from those shown.



Sounding Off



Michael Hewitt

The sort of people you normally meet in garden centres at weekends, pushing trolleys overloaded with plastic gnomes and battery-operated, integral-jacuzzi bird baths, are now turning up in Dixons and PC World, buying "internet ready" computers.

This suggests that the democratisation of the PC and, by extension, of the "information superhighway", is complete. Myself, I blame the software houses.

Just five years ago, everyday programs such as word processors and comms packages could reasonably be guaranteed to be completely unintelligible. Configuring them necessitated answering cryptic questions like "Recvd BS is dest?" and "NumLock toggle on?" The answer had to be a precise "Y" or "N". Anything vaguely multiliteral — "Maybe", or "Let me think about it" — was totally unacceptable. As a result, only the anorak-afflicted really had any idea what they were doing.

Today, however, software manufacturers have made their programs far too easy. Consequently, just as Stork Margarine spreads straight from the fridge, so PCs now work straight from the box. Which means that our hitherto exclusive hi-tech turf risks being invaded by the hoi polloi.

Fortunately, one group — computer peripherals manufacturers — is still doing its bit to stem the tide of the Great Unwashed. Their products, including sound cards, modems and printers, incorporate cunning design features guaranteed to stump the technovirgin. I refer, of course, to DIP switches and their siblings, jumper settings.

Let's assume, for instance, that your average oik wants to change the paper size on his printer from US Letter (which, helpfully for those of us in Europe, is often the default setting) to European A4. Now, you could fix a simple knob on to the side of the machine that would do the job. But, thankfully, alert to the risks of making things this easy, the manufacturers

have instead assigned this function to a couple of banks of very fiddly little plastic switches — DIP Switches — usually hidden away in an extremely inaccessible part of the printer. Therefore, not only does the oik have to take his printer apart to find them, he then has to figure out what the hell to do with them. And what if he makes a mistake? We all know, for example, that inadvertently setting switch 8 of Bank B to "down" on an HP Deskjet = DTR & Xon/Xoff, but I'll bet he doesn't. What a jerk.

My favourite peripheral in this respect, however, has got to be the internal modem with its jumper settings, IRQs, and all the rest. In the buff, the thing looks intimidating enough, as if you are likely to need a degree in electrical engineering just to remove it from its static-proof bag. But for the tyro, the fun really starts when he plugs it in and then fires up the PC. (That's assuming he can get the case off the computer in the first place.)

Take my pleb-proof Zoltrix FM-144ATI (and I'm sure the following is equally true of others). By default, it's set to COM2. This means that, as is, it's guaranteed to conflict with the existing COM port in the PC. A good piece of design there, Zoltrix, which must fool many non-technical people. What happens, though, if technonewbie eventually works out what's gone wrong, takes the PC apart once more, fiddles around with the jumpers using a set of tweezers, and finally manages to set them to read as COM3? Fortunately, all is not lost. When he puts everything together again and restarts the PC, the IRQ setting of the mouse in COM1 will conflict with the modem's default IRQ at COM3. So his comms package will just sit there and do nothing, or, like a

downmarket pub, declare "Port Unavailable". Nice one.

Anyway, keep up the good work, peripheral manufacturers. We'll see off the bastards yet, and maintain the exclusivity of computer ownership.

I see that computers have been featuring rather heavily in the cinema of late, what with Sandra Bullock's identity being scrambled by one in *The Net*, and Steven Seagal using a Newton to help save the world in *Under Siege 2*. But in particular, a film called *Assassins* quite intrigued me.

Starring Sylvester Stallone and Antonio Banderas, *Assassins* is the story of a couple of hitmen who keep trying to knock each other, and others, off. They receive their instructions for each hit over a modem link. Both of them are equipped with identical Apple PowerBooks, which suggests that the 540 is the laptop of choice for discerning contract killers.

Anyhow, the big mystery of the film revolves around who their employer actually is, given that all they ever see of him is typed instructions appearing on their screens. What's the problem, though? The thing is, he isn't an anonymous Internet site or an untraceable pseudonym on something like CompuServe. The mystery would then be understandable. But Stallone and Banderas' comms software actually dials him directly each time. So why didn't they just look him up in the phone book? Or was that too obvious?

As I look out of my window, I see the sun beating down and a heat haze rising in the distance. The temperature is probably in the mid-70s. All of which means that this column must be destined for the Christmas-cum-New Year issue of PCW. Season's Greetings, therefore, to you all. Have a good one.



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¹Photograph shows a multimedia model. Multimedia is not available on all models, such as the model priced in this advertisement. Prices start at £899 rising to £1,799 (inc. VAT). See your retailer for details. Retailer prices may vary. IBM Home Page: <http://www.ibm.com>

Homefront



Tim Nott

What to do with obsolete equipment? Those of us pre-occupied by this housekeeping dilemma don't appreciate how lucky we really are, as my man in Accra points out.

Last September I wrote about the problems of what to do with hardware and software that was too old to be of further use, but too good to throw away, and speculated that I'd have to continue finding shelf space for it until a museum or burglar took it off my hands. In December's issue (p229) a cartoon by Larry showed phased-out computers being dumped at sea, by a ship named the "Spirit of Obsolescence". Goodness me, it's a hard life at the forefront of technology, but at least we're all able to retain a sense of humour.

It took a reader in Ghana to spoil both these rather weak jokes with a refreshing blast of reality. Romanou Macauley wrote from Accra a letter that was charming, cheering and chastening, and I make no apology for reproducing most of it here:

"I read with delight your article in the September issue of PCW because I've at last found the answer to my longings. You see, I've been reading PCW every month from the local library. And whenever I see the glossy adverts in the magazine I always wonder when and how I'll get enough money to own a computer and its accessories. I think the day has come for you to get rid of all that junk. You certainly don't need a burglar. No, not at all! What you need is a kind friend and computer enthusiast who needs those obsolete items. I understand that you can't bear to throw them away. You've taken the right decision. I mean, will you bin something that could make someone else happy? Of course not! So please faites-moi plaisir. Send them to me. I'll pay the postage.

"For some of us feeling our way into the computer world, freebies or low-cost second-hand computer hardware, software and magazines (English or French) are our best bet yet. If you know of someone who hoards obsolete (or otherwise) systems in his attic, and would like to get rid of them, please kindly give him my address. I and people around me will appreciate your generosity — I can already see myself spending hours glued to a computer."

Well, readers, how about it? Would all that old kit be better off in the attic, at the bottom of the sea, or in the hands of Romanou Macauley and people like him? Could that old 286 motherboard or 16-colour display card come out of retirement to make a further contribution to computing society? Could that copy of WordPerfect 3.0 flex its lexical muscles once again? And would the knowledge that this was happening give you a sense of righteous satisfaction?

If so, please don't send your old kit to me or to PCW. If you want to send it to Romanou at P.O. Box 2014, Accra Central, I'm sure he'd be delighted and grateful, but I think we can afford to be rather more ambitious about this. I've no desire to re-invent the wheel, so if anyone reading this is already involved in recycling redundant kit for good causes — either in this country or abroad — please write to me at PCW or by email to timn@cix.compulink.co.uk.

I'll compile a list of charities for a future column, but if you don't want to wait, and have surplus items that you want to pass on, write or email with

details — again don't send the items themselves — and I'll try my best to put you in touch with a suitable organisation.

And now for something completely different:

Here's a tip for all you manufacturers who want to foster the idea that computers are lovable, cuddly things that are just right to have in the home alongside — or even instead of — the telly: smarten up the back. Many people are ready to be seduced by shop-window displays of svelte multimedia desktop dream machines.

The only trouble is that the PCs they've actually seen in use — on the desks of insurance brokers, travel agents and so on — are facing away from them and present the unacceptable rear-end of technology. A mass of slots, ports, plugs and sockets festooned with skeins of assorted cable belies the "You too" approach of contemporary advertising.

Sceptical technophobes might concede that plug and play sounds a great idea, but where exactly does one plug? And with what? I don't want to boast, but I've got fourteen assorted connectors on the back of my PC. Four aren't even connected to anything, so goodness knows what they do — maybe I'm missing out on something.

If manufacturers want to make PCs more palatable, hide all this stuff. Infra-red connections wherever possible, please, and the rest neatly hidden behind a hinged panel with colour-coded guides to keep the cables in order.

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InfoWorld, September 19, 1994

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J. Steinburg, Business Geographics, October 1994

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Straight Talking



Barry Fox

If you own a Compaq Prolinea 386 or 486, or a Presario 600 or Minitower PC, you may want to cut out and keep this month's column for future insurance. I have had to squeeze out this story like blood from a stone, or getting US Robotics to admit that its 28,880 Sportster modems had faulty chips.

It all began when I discovered by chance that Compaq had fitted faulty CMOS backup batteries to its ProLinea 386 range. By a remarkable coincidence, my wife had been one of the few people in the universe Compaq hadn't contacted "proactively" to offer a free replacement.

The signs are unmistakable. The PC develops Alzheimer's — losing date and time when it is switched off. An error message appears on the screen when it's switched on. This is your last warning of imminent catastrophe — within a few weeks the CMOS loses the system setup as well as date and time, so that the PC can't find its own disk drives and refuses to boot up.

Optional Rescue — running the setup program stored in the ROM chips to rebuild lost settings — is easy when you know how, but like talking Martian if you've bought a PC for office use, as most Compaq customers do.

As detailed in a previous column (PCW October 95) Compaq admitted to me that the CMOS batteries used in the ProLinea range between November 1992 and March 1993 had been faulty. David Moore, then Senior Product Manager at Compaq (now with Dell), claimed Compaq had extended the warranty on these batteries from three to four years to protect customers. Moore wanted me to believe that failure to offer free warranty replacement had been an "exception".

Checking out the free warranty promise exposed further the yawning gap between Compaq's publicity promises and reality for the consumer.

The original battery had failed a few days after the PC was bought and the dealer sent an engineer to "replace" it. We now know that the faulty NiCad was left on the motherboard, with a new battery stuck to the chassis alongside.

A little over a year later, I asked my dealer to order the replacement-for-the-replacement under the promised warranty, for DIY fitting.

The replacement arrived a month down the line but the dealer couldn't supply it to me unless I first gave him the dud. During the wait for the spare battery to arrive, the fault had long progressed to the terminal "refusal to bootup" stage.

Fitting the replacement battery cured the problem, but uncovered something very nasty. Although the original on-board faulties were NiCads, the off-board replacements aren't rechargables. They aren't even long life lithium cells but alkaline cells (Rayovac 480, 4.5 volts), comparable to Duracell torch batteries. So it seemed hardly surprising that a replacement for a faulty NiCad was itself failing after a year or so.

Compaq is surprised. It expects the alkaline cells to last "three to five years". But — wait for it — the company now admits there was another fault in some ProLineas.

James Griffiths, Product Manager for Commercial Desktops, confirms that: "In some instances the ProLinea system board continued to try and charge this external battery and therefore reduced its life...in these cases

the system board was replaced free of charge."

A serial number check confirmed that our ProLinea was not one of the faulty batch. Other checks confirmed that the board was not pumping significant reverse charge into the alkaline battery and that jumper leads for the first replacement were set correctly.

All this points to a common-sense conclusion — putting alkaline CMOS batteries in a PC condemns it to imminent failure. The instructions with the alkaline batteries refer to a wide range of Compaq PCs (Prolinea 386/486, Presario 600 and Minitowers), so all these models appear to be at risk.

On 11th September, I asked Compaq for reassurance for customers. By 1st October, I was pushing for an attributable comment from Compaq's Managing Director on my fear that "everything points to a ticking source of failure inside large numbers of Compaq's PCs". Despite promises, I had still received no comment after four weeks. Draw your own conclusions. Mine is that if Compaq and others are saving money by using alkaline batteries instead of NiCads or lithiums for CMOS backup, customers will end up paying for this "economy".

While all this was going on, I went to Paris for IDG's European Information Technology Forum. Speakers relied on electronic "slides", stored in a PC and projected by a video system. But several speakers had technical difficulties — slides either refused to change, or changed too early.

When Andreas Barth, Senior Vice President of Compaq, took the stand, he announced that in order to save embarrassment he was going to use an Apple Mac to show his slides. There may be a moral here.

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Business Matters



Nick Beard

We are now installing the "client/server" version of our clinical workstation. This is the PC-based version of PowerChart, a tool which enables doctors and other clinical staff to work with electronic medical records.

The system, part of our hospital application suite from Kansas City's Cerner Corporation (UK office in Luton) was already client/server in one sense; it is simply that the client and most of the server ran on the VAX — the only distributed part of the client software was the X-Windows piece which sat on the PC. This, however, makes the transition to client code which uses the PC much easier.

But is the client/server architecture simply a waystation on the route back to a more mainframe style of computing systems delivery? Many vendors are spending a fortune re-engineering their product lines to produce "client/server" versions of their products. This *might* make sense, but it doesn't necessarily follow that it will. Many software customers are engaged in the wholesale migration of their corporate applications suite to a client/server model. What is the driving force behind these moves, and have the motives always been properly thought through?

One view is that development of the computer, like every other industry, is driven by economics. First, the mainframe. Expensive. Then, the PC. Cheap—er. Since PCs became cheap, and graphical user interfaces became mandatory, the costs of computing power and of network bandwidth made it impossible to run many business applications on anything but PCs. When PCs were introduced, mainframes were rendered incapable of economically providing services such as spreadsheets. The number of cycles

required to churn out graphics, even in DOS mode, were unaffordable. On top of the limitations of mainframe application appearance, software development times were usually long. How could the expensive data centre compete with the mass-market price structures of "garage" software; software which (supposedly) enabled the user to do more themselves?

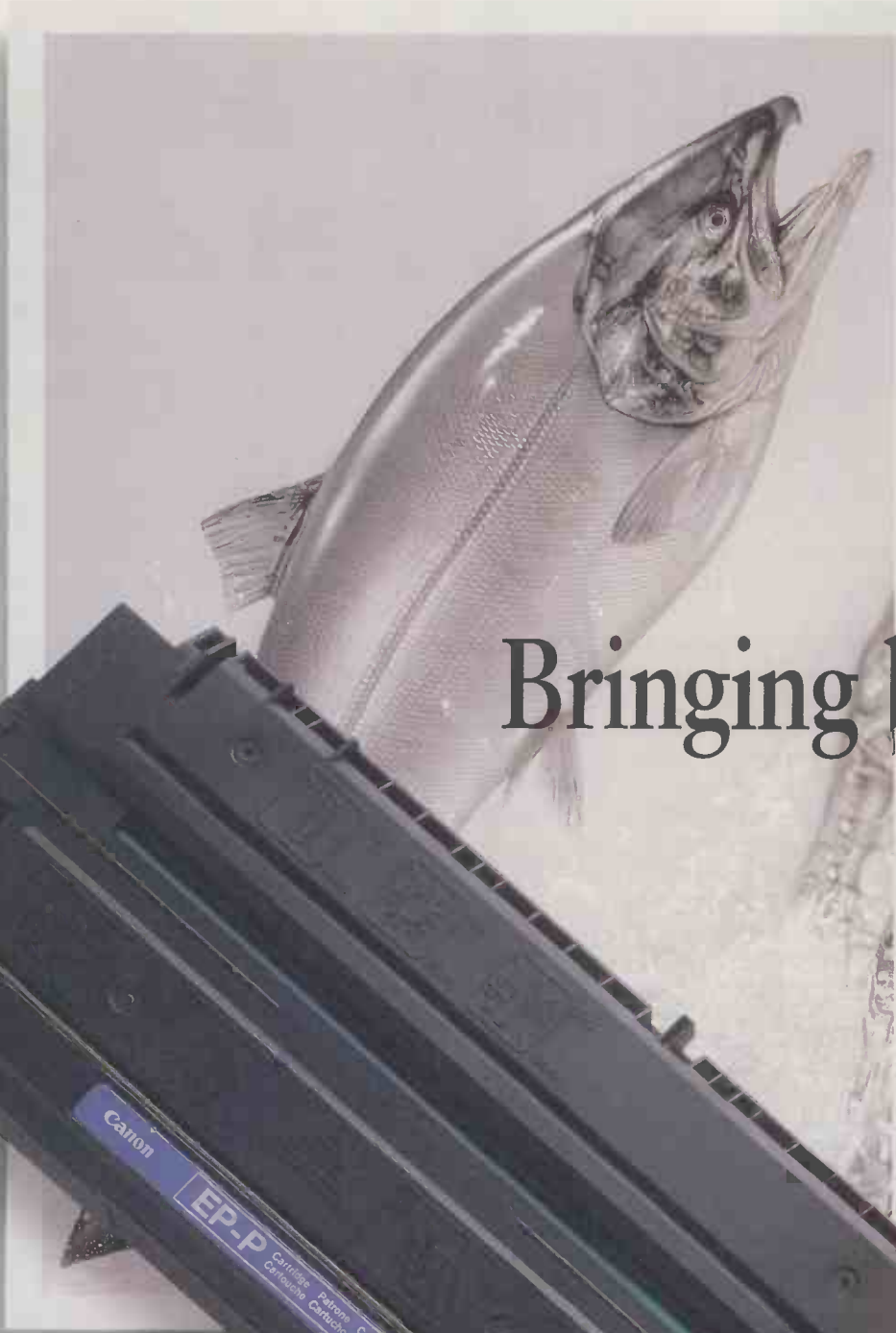
The *Standard Interpretation*, the most popular view of recent computing history, is a large part economics flavoured with a dash of nonsense about "user empowerment". Like many *econocentric* tales, it assumes that decision makers are rational and in possession of all the relevant facts. PCs, the *Standard Interpretation* goes, prompted the restructuring of corporate systems to enable lithe corporations to exploit the pace of development of silicon chips (one thing is indisputable: in the cost of raw MIPS, expressed as \$/MIP, PCs have outstripped mainframes for years).

The fall of networking costs just helped things along (or if you like, the need for networking in the aftermath of indiscriminate PC buying, bulked up the market and engendered volume discounts). This is not to suggest that these developments were necessarily a *bad* thing. However, there is another view. In the *Alternative Interpretation*, the PC/networking response to corporate computing is not *always* a rational exploitation of cheap MIPS and the falling cost of bandwidth. What was missed out? Consider the pieces from which computers are built. In essence,

all computing systems (at present), whether massive monolithic mainframes, networked minis, micros or standalone laptops, require certain constants: computing engines (CPUs), storage, screens/keyboards, the wires which connect them, and *the software they run*. The *Standard Interpretation* fails to take account of *the cost of software development*.

As noted earlier, mainframe application development times were usually far longer than the software built by users themselves. The problem with home-grown software is that it may be constructed in an undisciplined fashion. Every department, indulging in a frenzy of "user empowerment", did its own thing. The cost of consolidation soared. How do you create cross-corporate reports when one department has poured data into a database using months 1,2,3,4,5; another has organised its records by Q1, Q2, Q3; and the next by Jan, Feb, March? Of course, these data-merging problems are not new, nor are they completely insurmountable. They do, however, represent the hidden cost of badly organised "user empowerment". Mainframe application development cycles tended to be even longer than home-grown efforts because of the development disciplines that professional data centres demand.

The jury is still out on whether client/server computing protects companies from these problems. Client/server styles will continue to be developed and deployed, and if done for the right reasons will continue to bring benefits. However, companies should be cautious about expecting cost reductions and rapid software development times. The business case must be built carefully.



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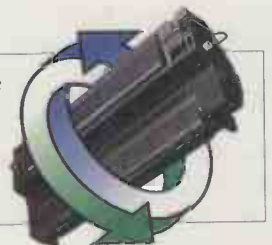


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Letters

Don't believe the hype

Tim Nott's statement (*Homefront*, PCW December, p41) that Dvorak "lifted" material from Negro spirituals for his New World symphony is completely false. In a letter to his publisher, Dvorak wrote that the story that the work contains Red Indian and Negro music was an advertising stunt designed to promote ticket sales for his subscription concerts. In 1890 he wrote to the conductor Oscar Nedball, who was preparing programme notes: "But the nonsense — that I made use of 'Indian' and American motives — leave out, because it is a lie...".

After over a century of massive, desperate efforts to find any connection between Dvorak's work and Negro/Indian material, the only thing to have turned up is a fragment — less than a dozen notes of a Red Indian melody he asked his friend Kovarik to note down, which bears a slight resemblance to just two bars of his E-flat quintet.

The interesting point is that it shows that advertising hype is so powerful, it is still believed a hundred years later.

NRD Griffith, Kent

The PC as a tax dodge

I was amused to read the item "The PC Goes Home" in the *News Analysis* section of November's PCW.

What is particularly droll is

your comment that "nearly seven out of ten of the efficient Germans put their PCs into a home office".

I rather think that the truth has less to do with the (largely mythical) efficiency of our Teutonic cousins, than with the fact that substantial income tax relief in Germany

is (or was until this year) available if one room in a flat or house is designated as an "office", and can be shown to be used as such. This is irrespective of whether the taxpayer normally works there or in a workplace provided by his or her employer.

What better way of "proving" to the tax authorities that the room is actually an office, and not, say, a living room, than installing a PC?

Otherwise, full marks for the changes in magazine layout and for continuing to provide something worth reading every month.

**Norman D Griffiths
Neu-Isenburg, Germany**

Intel test unreliable

How many Intel Pentium users have tried the current "Intel Test" and found that it has failed to identify their

Pentium as faulty?

A long time ago I tried Cleve Moler's test (PCW February, p294) which confirmed that I had a faulty Pentium. In August, I contacted Intel on their "Pentium Processor Help Line" (0800 374838) about a replacement. I was asked to carry out a different "Intel Test", and was told it was the only test Intel would now accept. The test is shown below:

$$X = 1 \times \frac{824633702441}{824633702441}$$

processor is OK if $X = 1$

The test failed to show that my Pentium was faulty. Unfortunately, the "Help Line" team would only arrange for the replacement of faulty processors identified using the Intel test. Having already used

Focus on Windows 95

User-unfriendly?

After reading Camille Mender's Windows 95 perspective (*News Analysis*, November), I was horrified at the complacent attitude of Richard Nuttall.

"Users expect too much," he says. I'm sorry, but in my book, that's one hell of a cop-out to level at the unwary beginner or even an experienced user. If I go into a garage to buy a car, I expect the damn thing to work properly as soon as I get behind the wheel. If it didn't, I would go straight back to the garage and bugger any excuse that "the brakes don't quite work as yet, but we're working on a fix for them", or "of course, the brake lights only work when you're stationary". Okay, so computer programs have millions of lines of code and of course mistakes are frequently made (that's why revision releases are produced), but that simply means that programmers have to be more careful. Loading all the blame onto the users just isn't on.

Users have every right to expect that software runs prop-

erly, runs on the machine it was developed for and does at least what it says on the box. The term "minimum requirements" is particularly misleading, giving little impression of what the program is like in real life and forcing users to abandon the new software or "invest" in new hardware. The trouble (as well as the beauty) of PCs is that they can be made up of so many different components (such as graphics accelerators), that it is impossible to recommend any one spec. If a user experiences difficulty in running the new software or if it conflicts with existing software, they have every right to complain and pester the "helplines" until the problem is sorted out.

I don't want Win95 on my machine — having seen it on other PCs I think it's dreadful — but I guess I'll end up installing sooner rather than later. I teach IT, mainly to beginners who are particularly likely to be suckered into buying and having problems with this "indispensable" new system. I'll therefore need to make sure that I'm up to date enough about the ins and outs

of Win95, as well as becoming au fait with the various hardware requirements of my students' minimum spec machines. Still, it's all helping my business, so I can't chastise the Bill Gateses of this world too much, now can I?

All this is really a shame, because I'd plump for a revamped Windows NT, especially if it sported something similar to Win95's rather nice interface and was a good games platform. But then I'd really have my work cut out.

**Mykel Evangelista
Lancashire**

...or the road to upgrade hell

Many thanks to Tim Nott (*Homefront*, November) for stating the basic problem for the serious user upgrading to Windows 95. He rightly pointed out that to get any benefit at all from the new system, it is necessary to upgrade all existing software to new 32-bit versions.

Quite simply, Microsoft (and others) will make a killing from charging more than £250 to upgrade Office from version 4.3 to Office 95. If there were any

Cleve Moler's test, I was completely unsatisfied with this. I was told that the only thing I could do was to call Intel's UK office. They initially tried to fob me off, saying only their test could be accepted and that the fault was not significant. I persisted, and in the end they sent me their CPU identification utility disc. This confirmed that my Pentium was one of the faulty batch. Things went smoothly after that and I have since installed my replacement Pentium.

What is Intel up to? Clearly their calculation test does not always work: I wonder how often it does. Do they only treat personal users in this way or do business customers get the same treatment? Perhaps you could warn other users about the shortcomings of the Intel test through the columns of *PCW*, and tell

real benefits to be had from the upgrade, this might be acceptable. But on all counts version 95 has nothing to offer over 4.3, except those features common to Windows 95 itself, such as long filenames.

The only other feature of Windows 95 that will be of benefit to the professional user is the expansion of system resources, allowing more than Word or Excel to be run at one time. Multi-threading seems like a good idea, but on a Pentium 90 or higher, printing and similar tasks are done so quickly that there is no need for true multi-tasking. Meanwhile, software such as RamDoublor has appeared, overcoming the system resource problem and making Windows 3.11 more stable.

As a user of Office 4.3, RamDoublor and PC Tools for Windows, I'm afraid that I will not be adding to Bill Gates' millions when the only tangible benefits of the new Windows 95 can be duplicated without the additional expense of upgrading every software package I have.

Andy Hann
Milton Keynes

them that if they are not satisfied, they must insist that Intel sends them the CPU identification utility.

Hugh Nisbet
Co. Down

One for the ladies

In the course of writing my book, *How To Make Money From Your Personal Computer*, I was struck by the number of self-employed women who use computers to earn a living.

It seems to be taken as read that men are masters of the computer world. Yet using computers at home is ideal for women. Firstly, it enables them to adapt their working hours to their children or elderly relatives (and we should be asking why it is still women who take on the bulk of these tasks). Secondly, it gives them access to a world of people via the internet and email, and, with suitable training, takes them away from the stereotype of home typing for a living. I have spoken to women designing press hand-outs, creating a biannual directory and editing and disseminating a financial bulletin, to name just a few.

There is an under-appreciated world of women working with computers in their own homes — teleworking does not adequately describe it. I hope your magazine will be giving more coverage to woman-friendly articles, explaining what the latest computers can do for them.

Polly Bird, Cheshire:
author of *How to Earn Money from Your Personal Computer*

Osborne offer

Simon Rockman's look back at the Osborne 01, the world's first portable computer, must have brought a tear of nostalgia to many an eye. This ageing classic is great fun to play with, especially for the retro-buff or computer historian, and I have had many happy hours tinkering with the one

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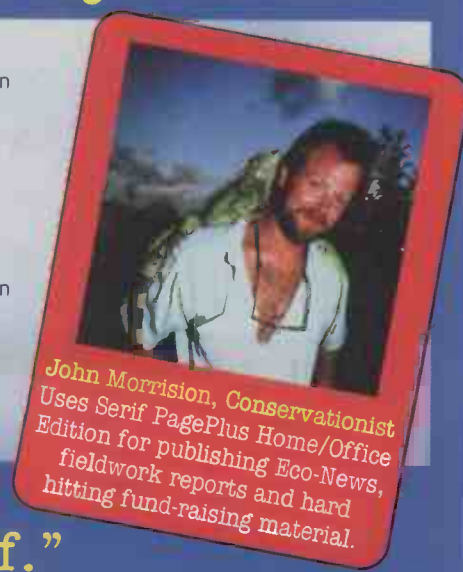
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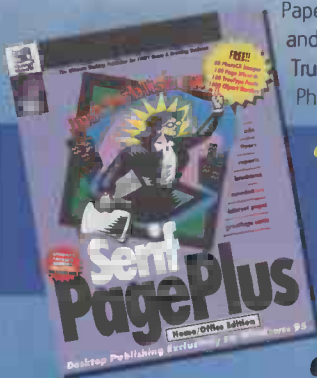
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that lurks in the corner of my office.

Unfortunately, I now don't have space to house the creature, so I would like to offer an example of the world's first portable computer, free of charge, to any bona fide museum or organisation that would value it.

Neil Harris

Cardiff

fax 01222 258377

nharris@starfleet.

win-uk.net

Note on Notino

I found Ben Tisdall's review of the Hi-Grade Notino and Gateway Solo multimedia notebooks unusual. Consider the following:

Design: Apparently, the main things he liked about the Solo were its neatness and lightness. "Partly because it has a CD or floppy drive, rather than both, the case is more compact," he wrote. The lack of a floppy disk drive is actually a serious disadvantage. It would, for example, be difficult to install Windows 95 from a CD to a computer without having a floppy to boot from.

Value: Going by current advertising, the Gateway Solo S120 Deluxe costs £3,999 plus VAT. You can buy the Notino Mover with the same processor, with full multimedia capability, a TFT screen and a 1.2Gb hard disk, for £3,150 plus VAT.

Maybe the reviewer finds it difficult to put himself in the shoes of an ordinary customer who has to pay for their choice and make a long-term decision, rather than move on to the next review machine.

Ori Yiassoumis

Sales Director

Hi-Grade Computers plc

Ben Tisdall replies:

Although your point about installing operating systems is a good one, what I'm

hearing from notebook users is that floppy disk drives are being used less and less often. Data is more likely to be transferred using a modem or by hooking up to a company network.

Money can't buy me love

I recently received a copy of Microsoft Money for Windows 95. As a user of version 3.0 of the product, I was keen to upgrade as I had assumed that Microsoft would take the opportunity to close the feature gap between Money and Quicken. However, the new version of Money has no new features and is merely version 3.0 with a tarted-up interface (which is very un-Windows). Selling the new version for £12 seems to be a cynical attempt to grab Intuit's market share by selling a vastly inferior product at a rock-bottom price. A message to any users of version 3.0 of Money — do yourself a favour and don't bother wasting money on an upgrade. From now on, I'll be using Quicken.

Julian Warr

jwarr@dial.pipex.com

PCW replies:

Microsoft liked Quicken so much, it attempted to buy Intuit. Unfortunately for Microsoft, the acquisition was blocked. It will take them a while to close the gap on Quicken, and frankly it's a relief to most people to find one mainstream PC application area that Microsoft doesn't own.

Virus vanquishing

I am not sure that these so-called "Macro Viruses" need to be such a threat. It has to be remembered that any command has to be executed by the word processor application. It must be a trivial matter for the developer of the word processor to release an additional facility which disallows the execution of programs or commands on

the loading of a document, if they have not been previously registered as a safe command. This would effectively lock out the virus for good and stop it spreading.

Dino Dini

dino@ujuga.dungeon.com

Not HP

Barry Fox (*Straight Talking*, December 1995) is not very impressed with HP's attitude towards customers. Neither am I. I have a DeskJet 500, which used to work fine with Windows 3.1 and Word 2.0a. Then I "upgraded" to Windows 95 and found I couldn't print envelopes any more. Microsoft say this is HP's fault (because the Win95 driver isn't as good as the Windows 3.1 driver) and that I should contact HP for a fixed driver, but the chatter on CompuServe makes it quite clear that HP have no intention of ever producing a Windows 95 driver for the DeskJet 5xx. And nobody, not even Microsoft, can tell me how to back up to the Windows 3.1 driver that worked fine. HP's BBS number was engaged four evenings on the trot, so I have given up trying it.

While I might appear to HP as a worthless customer, as I only use an "ancient" DJ500 (less than three years old and still working fine) at home, I do specify which laser printers my department buys at work. As we are about to buy a new, large printer for the department, should I buy HP, with the expectation that when a new version of an operating system (Cairo?) comes out I am expected to throw it in the skip? Or do HP, as it seems, really want me to buy from someone else.

Tim Ward, Cambridge

Retail, not mail

I regularly read your group tests but am regularly disappointed to see the number of the machines reviewed which are not available in retail outlets. It's not surprising that

people are wary of spending £1,500 plus on a machine they've never seen and probably haven't read a review of, especially when you consider that everyone knows at least one person who can tell a mail order horror story. I would like to see a specific group test on machines available widely in retail outlets, brands such as Packard Bell, Apricot, Vanilla, Escom, Highscreen, or Compaq.

I read your review of PC/TVs in the December issue and was disappointed to see the number of inaccuracies in some of the machine reviews. A good example is the Spectria review which starts by stating that it has an integral 15in monitor when it is 14in, the CD-ROM is quad-speed, and I believe the original price when released was around £1449+VAT but is now £1149+VAT. I have found that people buying Packard Bell computers find the colour-coded connectors very helpful, especially since PS2 mouse and keyboard connectors are practically identical. All of this is irrelevant anyway, as the model is discontinued — the 95xx range has been replaced by the 9xx range.

The PC/TVs you reviewed are/were available from a single shop, PC World, and the others individually from Tempo and such-like. In the run-up to Christmas and the January sales, I believe the majority of PC buyers will be buying from retail outlets, and I would like to see group tests which reflect this.

Joel Mansford, London

Board rigid?

Ian Pluthero [of Gateway 2000] sounds a little too complacent in his reply to RV Geal (*Letters*, December). I recently wanted to add 4Mb to my 8Mb P75. After interminable calls through to Gateway sales (with several repetitions of my customer ID number), the salesman told that me the memory for the P75 only

came on 8Mb boards. Naively, I bit the bullet.

Two weeks later, after many frustrating chase-up calls, two 4Mb boards arrived, taking my last available memory slots. Mr Pluthero won't know about this as I am not prepared to spend the time, taking them out, returning them to Gateway and having to chase up the 8Mb board replacement.

On a more positive note, it's been a great machine.

Duncan Goldie-Scot
duncan@live.co.uk

Licence loophole

In the company I work for, we have a corporate policy not to use an operating system without a virus checker based on

the PCs and on the servers. Our current virus checker has versions for DOS, Windows 3.11 and Windows NT, but the Windows 95 version is being developed.

We purchase PCs direct from a manufacturer who will preload either Windows 3.11 or Windows 95 for us, but not both. In the period of a few months, until the Windows 95 virus checker becomes available, we are forced to buy two licences for Microsoft Windows. Microsoft have very sweetly told us they are different products, and that we cannot therefore use Windows 3.11 under the Windows 95 licence.

Our company tries hard to be rigorous in using only

licensed software, and will therefore pay the extra £50 or so for each upgrade. But how can software companies expect users to abide by licensing agreements when

they treat them [the users] with such undisguised contempt?

Adrian Pope
apope@mochlmhs.mhs.com
compuserve.com

Honcho head-hunt

My compliments to your letters page editor for bothering to get a reply to a reader's complaint about Gateway 2000 from their MD, Ian Pluthero. (*Computer Shopper* recently published a similar complaint letter from another Gateway customer with no response.) I had a minor problem with my recent order to Gateway. Some software that was supposed to come with it, didn't. I phoned several times and wrote a letter. After a month there was still no

response. Now, having Mr. Pluthero's name, I was able to write to him. Right away I got a phone call, a polite letter, and the disk delivered by carrier.

It might make an interesting little feature sometime to publish (for sending bouquets as well as brick-bats) the names of the head honcho in the UK for many leading hardware, software and mail order companies.

Stephen Wells
stephen.wells@msn.com

Hindsight

Ten years ago: January 1986
Report from Comdex, Las Vegas

"If there was a Comdex trend in add-ons — apart from the obvious ones that all roads lead to the IBM PC — it was disk cards. Plus Developments started the trend with the HardCard, a 10Mb, 3.5in Winchester disk drive built onto a standard PC add-on board and announced some months back... All these manufacturers were pushing ease of installation and easy removal for data transfer from one machine to another."

Update: Comdex, at least, still happens in Las Vegas every November. See Newsprint, pp18-30.

Five years ago: January 1991
"A year ago, Lotus didn't sell a word processor and WordPerfect didn't sell a spreadsheet. So they got together and said: 'Microsoft sells both, and claims they work together. Let's make ours work together' — and Lotus 1-2-3/G and WordPerfect for OS/2 Presentation manager began to be born..."

Update: Developing for OS/2 was a disastrous mistake for both companies. Both were late with their Windows versions. Both companies were later bought, and their respective spreadsheets and word processors now have to content themselves with picking up the crumbs under Microsoft's table.



Panther Nx P100

"25% faster than Pentium systems"†

† PC Answers Windows 95 review, September 95

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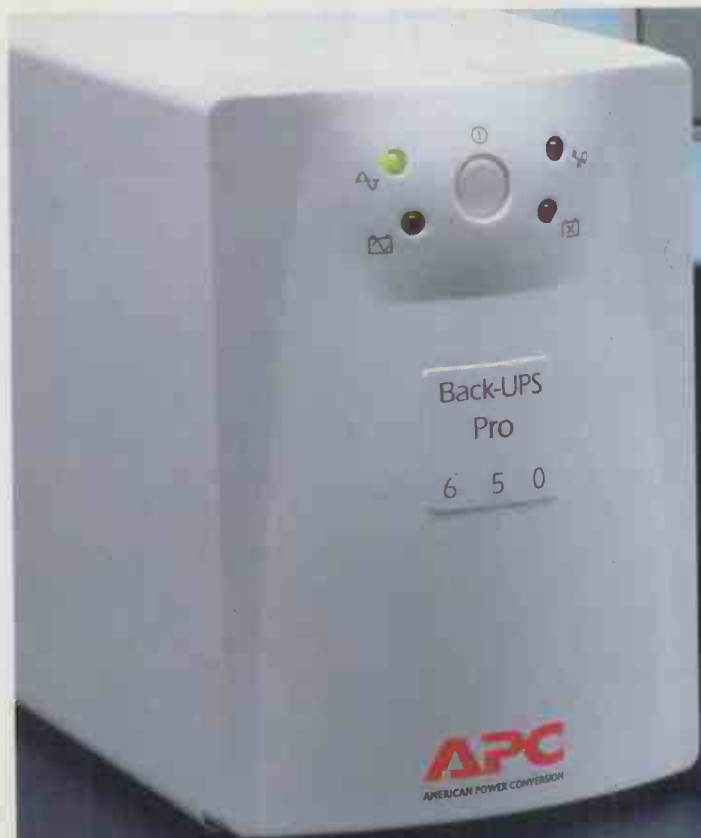
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IT'S NOT IF, IT'S WHEN

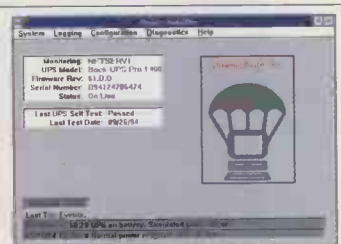
Windows® 95 puts the power of a server on your PC. The new Plug & Play Back-UPS® Pro™ will keep it there...



If you're about to invest in a new multi-tasking operating system like Windows 95, experts say it may be time to invest in APC protection. Why? Because bad power is the largest single cause of data loss, and on a multi-tasking system, your vulnerability is multiplied. When full protection is as affordable as a new mouse, it just doesn't make sense to leave your premium machine unprotected.

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Protect against the inevitable power hit with new Back-UPS Pro, the one and only UPS designed for Windows 95. Automatic Voltage Regulation (AVR) provides the edge you need for full protection against extended brownouts or overvoltages without draining the battery, while CellGuard™ intelligent battery management extends battery life with fast recharge and deep discharge protection. The units even include built-in 10Base-T network cable surge protection for a bulletproof response to anything Mother Nature or Murphy's Law may send in your direction.

All in all, you can't make a bad choice when you choose the company that protects more PC's than all other UPS vendors combined: APC.



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PC COMPUTING

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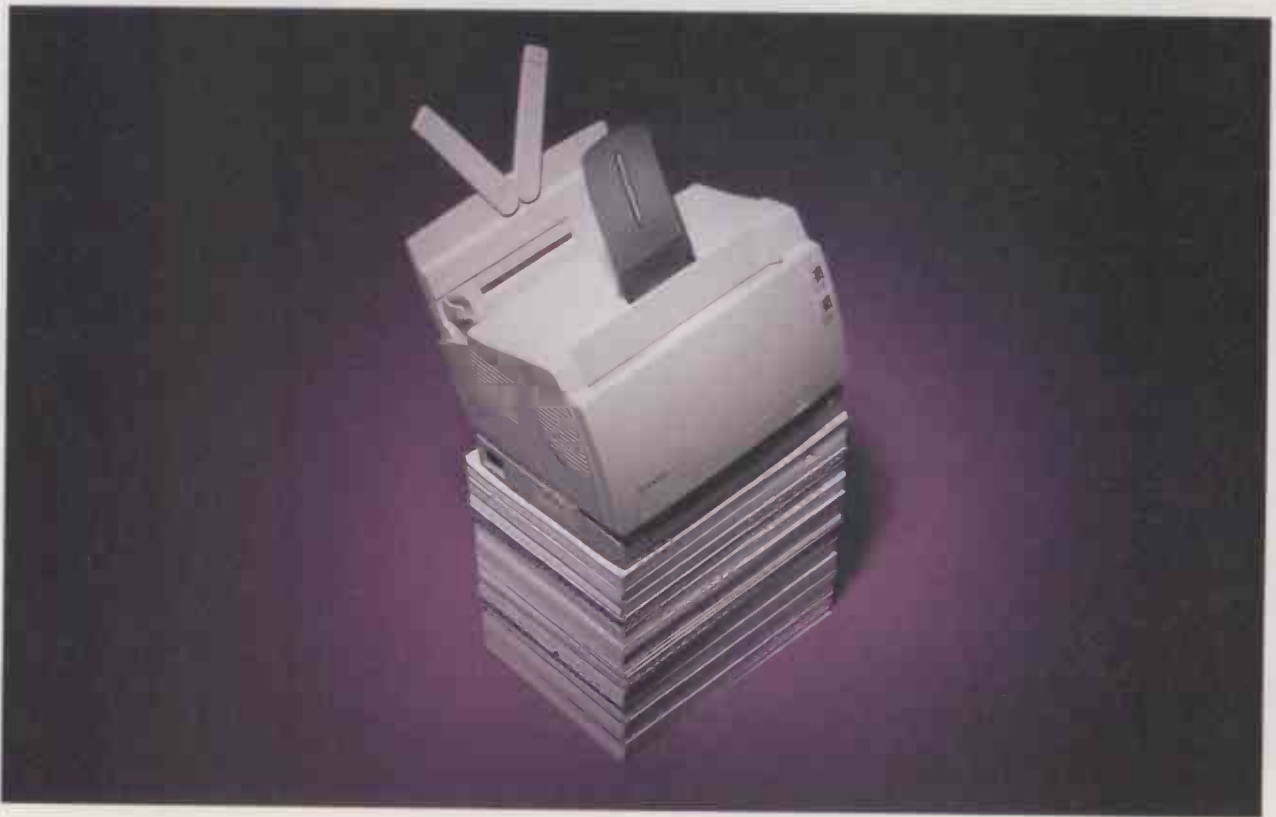
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First Impressions



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First Impressions includes the irresistible "Gadgets" spread on page 56. Highlights include a pair of bargain CD writing packages; each priced at under £1,000. And there's HP's hybrid palmtop. If you're feeling frisky, load up The National Lottery, or get ready to Map'n'GO.



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

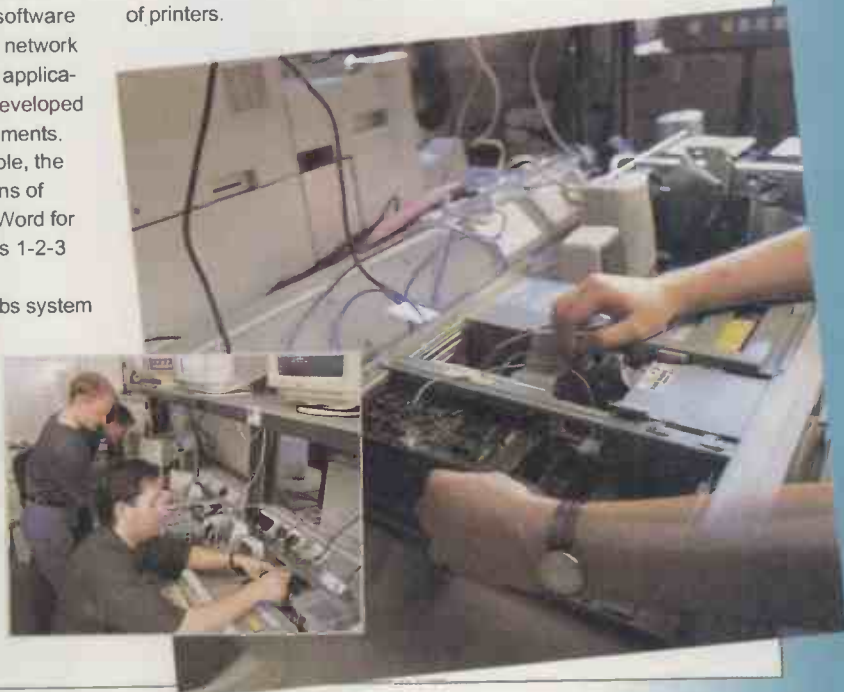
and enhanced to reflect hardware and software developments.

Our tests closely simulate real-world use. For example, the suite of PC hardware benchtests uses complete versions of industry-standard applications like Microsoft Excel and Word for Windows, WordPerfect 6.0 (DOS and Windows), Lotus 1-2-3 version 3.4 (DOS) and FoxPro (Windows and DOS).

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, quickly size up a hard disk, sound card, motherboard, display adaptor and printer, and give individual and overall figures.

● To make them easy to read at a glance, all the graphs in *PCW* are now 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.





Fortes VFX1

Fortes VFX1 is THE gadget extraordinaire for those who can lay out the dosh. Run down the corridors of Doom or Rocket and blast your way in Descent. Either way, you're in the middle of it. The VFX1 has its own ISA card that links up with your graphics adaptor to give you one of the best virtual reality experiences around.

Contact 5DT (Europe) on 0181 974 2044.
RRP £789.00 plus VAT



QuickCam

It's more than just a sphere on a pyramid — the Connectix QuickCam allows you to capture greyscale movies or still images at a resolution of 230x240 pixels. You can use the pyramid as a stand, or remove the ball for a true mythological eye in your palm effect. At the time of writing, the QuickCam was a Macintosh only product, with a Windows version on the way.

Macintosh version £99.95.

Contact Computers Unlimited on 0181 200 8282



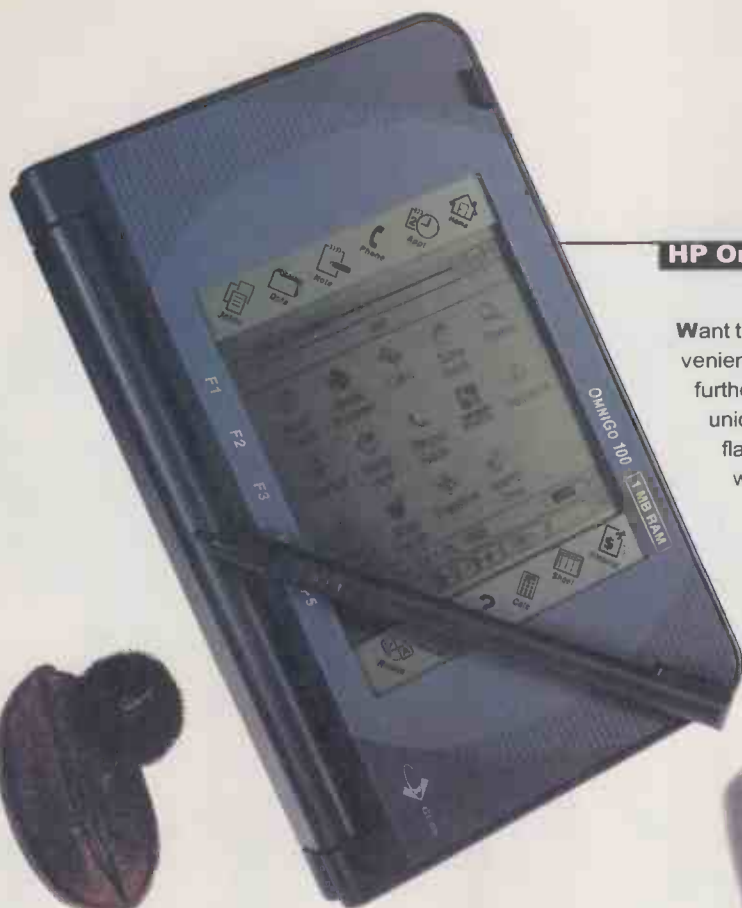
NEC Silicon View

Why bother with pesky moving parts which break down and eat up batteries when you can have a solid state portable video gadget? Because today, the several hundred megabytes required to store a movie on a credit card will cost you a fortune. In the meantime, dream of the future with this prototype from NEC, coming to a store near you in time for Christmas 1999. Hopefully it will be sold in more than just lurid pink.

NEC Europe on 0171 353 4383

Gadgets

Photography by Bruce Mackie



HP OmniGo 100

Want the power of an HP palmtop plus the convenience of handwriting recognition? Look no further than the smart new OmniGo 100. Its unique design turns an ordinary palmtop into a flat pen-driven device. The built-in Graffiti software means your scribbles are always recognised. Turn to First Impressions for more details.

Price £290. Contact Hewlett-Packard on 01344 369222



Trafficmate

Tired of tailbacks and sucking fumes on the motorway? Now you can avoid these lovelies with Trafficmate. This handy dashboard mounted sensor can verbally tell you what motorway routes and junctions to avoid within a range of ten miles or two junctions for all motorways. Trafficmate enquiries on 0800 707070. Price £49.99



Sony MD DATA Drive MDH-10

Fully reviewed last month, the data version of Sony's MiniDisc system is a real darling. Not only can its magneto optical cartridges store 140 Mb, but it can also play back audio MiniDisc titles. With an optional PCMCIA interface, this is a truly all-in-one gadget for the worker on the move. Sony Peripherals on 0181 860 0500. It'll cost you £499

"The Kodak Digital Science™ DC40 camera brings sharp, colourful digital images right to your desktop."



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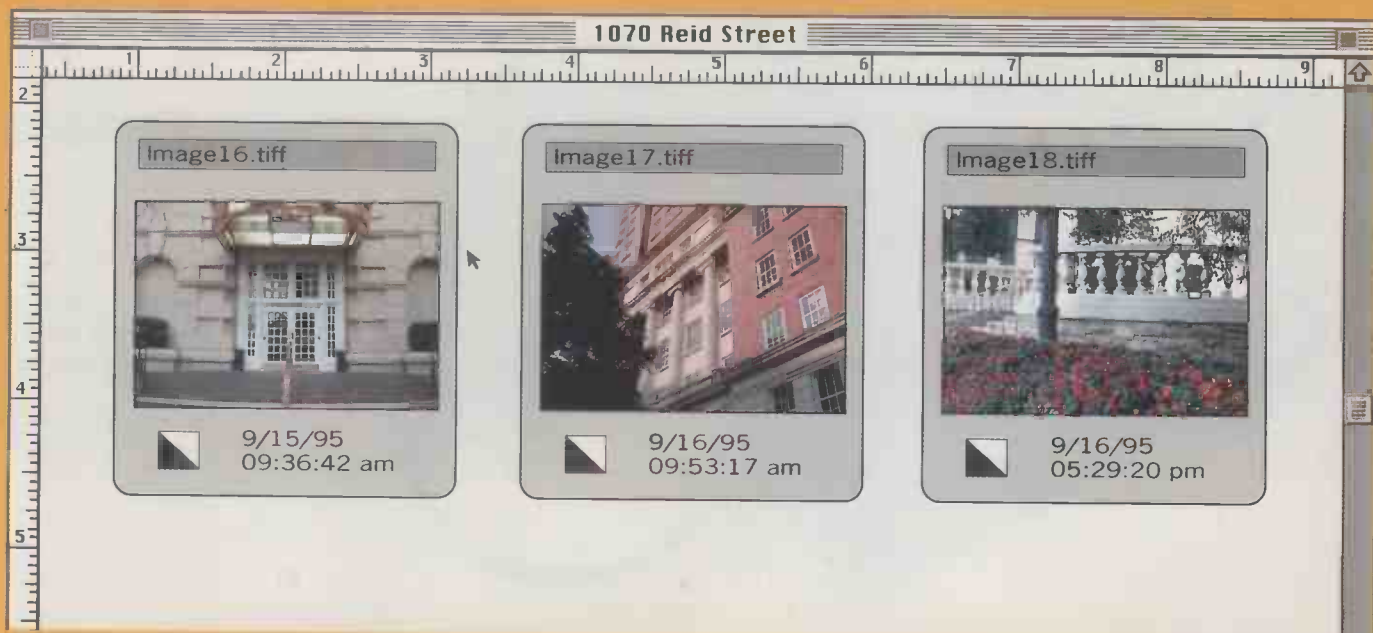
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"Once captured with the DC40 camera, images like these can be downloaded into your MACINTOSH computer or PC."



"Now, you can work with pictures on your computer to make proposals, letters, and presentations look better."



clearly.

rephrase your ideas.

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And one thing is certain. Once you use these imaging products, you'll no longer find yourself at a loss for words.



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HARDWARE

Hewlett-Packard OmniGo 100

Despite the OmniGo 100's clever hybrid pen and keyboard design, PJ Fisher doesn't think it's going to de-throne Psion.

The new Hewlett-Packard OmniGo 100 has a surprise in store. Before you open it up it looks like a normal palmtop. Then you discover the screen folds right back on a double-jointed hinge to lie flat on top of the keyboard unit. Lying in a slot at the front there's a little Newton-style pen. By now you are definitely aware that you are in possession of a very different palmtop, one that gives you a choice of interaction.

So which method should you use — pen using Graffiti software

determine whether you could get used to this keyboard.

But the OmniGo 100 is likely to be marketed on the back of its hybrid pen computing tools as much as anything else. Next question then: How well does it recognise handwriting? Very well, since the OmniGo has foregone any Newton-style recognition pretence and gone for the reliable Graffiti software instead. As long as you follow the rules every character you scribble on screen will be recognised instantly. HP claim that the Graffiti language can be picked up in twenty minutes and this seems realistic based on my experience.

I felt comfortable with Graffiti. But is single character entry the best way to take notes? I would need more time with the OmniGo to be convinced that it could beat fast keyboard entry, something the Psion excels at. In pen mode the OmniGo feels very like the Newton but the OmniGo also enables click and drag of

items such as the Graffiti dialogue box. One thing is certain. The screen

is sensitive and responsive to even the lightest of pen taps — something the earliest Newtons were not very good at.

Whatever its pretensions, this is basically an organiser and HP has packed it with everything that you would expect: diary, address and phone number databases, to-do listing, spreadsheet and calculator. And all the features can be edited using the pen or the keyboard. There is also a useful Financial Tools package which includes HP-12 calculator emulation and, unusually in a PDA, a stopwatch.

On the hardware side, 1Mb of RAM comes as standard along with a single PCMCIA slot and a serial port to talk to your printer or fax modem. HP will also shortly announce an add-on connectivity pack to link files between the OmniGo and your desktop PC.

OmniGo accepts the limitations of Graffiti (slow, unintuitive) but it remains the most robust form of a still developing technology. Until it is perfected I will continue to trust input from a palmtop keyboard. Of course you don't have to take notes on a palmtop and the OmniGo's pen works just fine as a pointing device in all its applications, so in effect you get the best (or worst!) of both worlds.

Using this pre-production unit for such a short time does not represent a full test. Longer acquaintance would determine its suitability as a permanent digital companion. Despite its clever integration, however, my gut feeling is that the OmniGo 100 has nothing about it to really best the Psion 3a.



or the traditional keyboard? Choose the latter and you'll find it is, frankly, very HP. The keys require a hefty push and lack the silkiness of, say, a Psion Series 3a which the OmniGo 100 will be pitched against. The keys are well spaced, which can be a good thing — you are less likely to hit the wrong key. A longer test would

is too small and looks strange fitted into the OmniGo's rectangular form. You do find yourself peering into it more closely than you would like. The display has some nice touches however. You can rotate it if you prefer to use the OmniGo in vertical hold and the eraser feature is particularly satisfying. The screen is highly

PCWDetails

Price £290 (plus VAT)

Contact Hewlett-Packard Customer Information Centre 01344 369222

Good Points Compact in size, responsive pen. Clever hybrid design gives choice of pen or keyboard input.

Bad Points But both have their limitations. Small display.

Conclusion Built-in Graffiti software is accurately robust but typing on a Psion is still faster and sweeter.

SOFTWARE

PageMaker 6.0

PhotoShop plug-ins get the thumbs-up but Pagemaker 6.0 is no radical overhaul. The real conundrum remains unsolved, observes PJ Fisher.

PageMaker still has a lot of fans in the PC world, unlike the Mac arena where it has all but lost the professional publishing market to Quark XPress. It is perhaps a little odd then that the PC version of 6.0 should arrive two months after its Mac cousin but I guess Adobe has a different set of priorities — it wants to re-establish PageMaker as a serious publishing tool and refuses to admit defeat. Hence this roll-out.

But, as they say, therein lies the rub. In the PC world the entry-level market for DTP is alive and well and PageMaker is seen as a rival to low-end packages such as Microsoft Publisher, Serif Page Plus and GST Pressworks. All sell for considerably less than PageMaker; under £100.

We looked at a late beta build of PageMaker 6.0 running on Windows 95. It was mostly robust but was prone to a few jitters when implementing key components such as the HTML tools, PhotoShop plug-ins and creating Acrobat PDF files. However, it could all be made to work with perseverance and will undoubtedly be smooth as butter in the final release.

So what do you see when you launch PageMaker 6.0? Well you see PageMaker basically. There is no radical new look to play with, which will appeal to traditionalists but might disappoint those expecting something revolutionary. All the familiar tools, menus and text-handling procedures are unchanged.

But Adobe has been at work. What used to be called Aldus Additions are now called Plug-Ins, bringing PageMaker into line with Adobe's standard nomenclature. What a shame then that the plug-ins are not quite those you have come to expect, in PhotoShop for example. The name may have changed but the plug-ins are pretty much the same collection of Aldus scripts. However, there are two honourable exceptions.

Photoshop Effects really does bring the power of Photoshop directly into PageMaker's interface, so you can apply filters directly on the page. As standard

you receive a number of Gallery Effects and the package should support after-market plug-ins, although I guess many PageMaker users will be happy with the standard kit.

The other excellent new plug-in is the Guide Manager. This is an excellent tool that gives you literally hundreds of options for setting guides on the page. It is easily the best implementation of guides on any DTP package.

On the whole most of the plug-ins are the same Additions that featured in previous versions of PM. For example Balance Columns has never worked properly, and Expert Kerning just scripts a process far better done from the Control Palette. Incidentally, this is a far more powerful facility than generally realised and gives fine control over kerning, tracking and font specs. Typographic controls are as good as any.

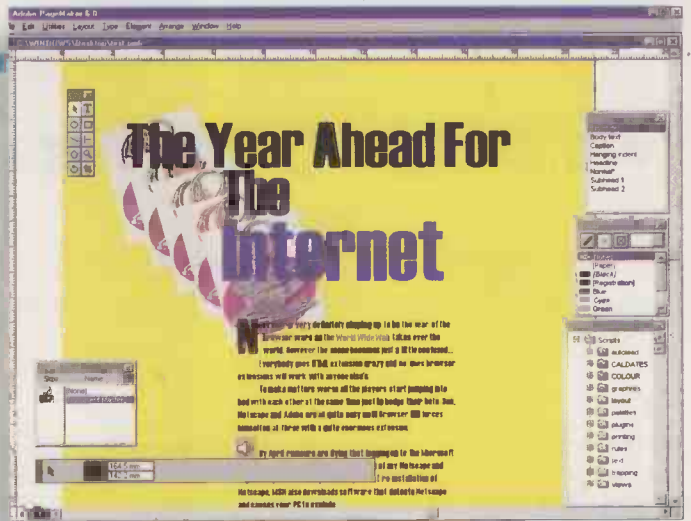
Elsewhere you'll notice a new Polygon tool in the toolbox. Again, this is hardly a power-level tool but it provides a simple method of creating polygons. These can be turned into multi-pointed star shapes but nothing more irregular than that. But it's neat and simple to use.

Text wrapping has not been improved and remains weaker than XPress, but is good enough for the sort of less-than-ambitious design work that most PageMaker users will do.

Magnification has also been improved with the introduction of a drag/zoom facility that has been sorely lacking until now.

Users at all levels will be delighted to see multiple master pages — up to 256 in a single document. This is very useful if your publications have several different page master designs.

Other useful new features include the extended grouping and hiding tools. You can, for example, now send objects within layers rather than simply to the back or front. Objects can also be grouped and treated as single units and lined up to a grid with ease. All these are



PageMaker 6.0 displays its new colours

major plus points. Another nice touch is the right click which zooms into a spot and then out again.

The really advanced stuff that Adobe has built-in refers to colour-management systems and colour trapping and masking. This is all very well, but I wonder how many of PageMaker's PC fans really need or understand such high-end repro tools.

Power users or not, PageMaker still needs a complete interface overhaul. Successive upgrades have left it with a mix of duplicated functionality, with too many controls scattered in far-flung dialogue boxes involving several mouse clicks to achieve results.

Overall PageMaker finds itself in an odd position. It is far superior to other PC-only DTP packages but is still outshone by XPress in the pro market. Unless the publishing and design industries decide to shift en masse to Windows high-end development on PageMaker for Windows seems a waste of effort.

The conundrum for Adobe is that PC users love PageMaker, but they are not pro users and don't want power repro features. On the other hand Mac PageMaker users are ALL power users but they all use XPress. Cute problem.

PCWDetails

Price £515, upgrade from £100 (from any version)

Contact Adobe UK 0131 453 2211

Good Points Ease of use, Photoshop plug-ins, smooth grouping and hiding tools.

Bad Points No real fresh face, interface is becoming messy. Plug-Ins need to be developed.

Conclusion Still a fine DTP package but a lot of power in this release will go to waste.

HARDWARE

Two budget CD writers

Gordon Laing reviews two new packages, from Hewlett-Packard and CD Revolution, that offer complete CD writing capability for under £1,000.

CD writing has always been considered expensive, and somewhat of a black art. Fortunately, both perceptions are a thing of the past with complete all-you-need bundles available at previously unheard-of prices. We've reviewed writers costing under £1,500 before, but here are two writers which come in complete bundles with SCSI card, software and blank media for under £1,000.

Both internal writers have not only the complete bundles in common, but additionally boast double-speed writing, and quad-speed reading capabilities. They are courtesy of newcomer to the field, Hewlett-Packard, and veteran distributor CD Revolution which, possibly inspired by HP, has created a retail bundle imaginatively named the CD Recording Kit. CD Revolution is OEMing a writer from a manufacturer it would prefer us not to name, but suffice it to say that this manufacturer is Japanese, has already made many CD writers and is big in motorbikes.

Ease of use is a crucial issue. Consequently both kits come complete with all you need to start writing CDs from scratch. HP offers the SureStore 4020i writer,

Advansys 5150 ISA SCSI-2 card, cable, two blanks and a variety of software, including a database package, photo CD viewer and suitable writing software. CD Revolution supplies the CDR-24 writer, Adaptec 1505 ISA SCSI card, cable, caddy, two blanks, and a choice of either Corel CD Creator or CeQuadrat WinOnCD ToGo.

Installation of both drives is a doddle. Set up the SCSI card, or connect to an existing one, reboot and install the writing software. Both packages require you to identify the writer and allow you to set up performance factors, the most important being writing speed. If your hard disk plods along, it's wise to write at single speed, or at least run the supplied speed checks, otherwise you could end up spoiling your blank disc. Both suppliers recommend a transfer rate from your hard drive of at least 800Kb/sec.

Spoiling blanks is infuriating, but not as big a deal as it used to be, with typical media prices of between £5 and £10 each — that's 650Mb formatted information, or over 70 minutes of CD digital audio — good value by anyone's books, and of course best of all, compatible with any existing CD-ROM drive or player.

CD-ROM is a write-once medium, so there's no going back once you've started the writing process. Fortunately it is possible to add data at a later date until you've filled the disc, but not over areas already written. Each recording is known as a session, and the capability to write or read these multiple sessions as multisession. Be aware, however, that each session has a lead-in and out track which occupies between 10 and 20Mb; effectively wasted space. Both these writers are multisession devices.

Write-once could be considered inconvenient since you can't re-record over already written-to areas, but for backup and archiving it is ideal. No-one can erase the data unless they physically damage the disc.

HP charges around £10 for its recom-

mended blanks which it claims have a 100-year life as opposed to the shorter span of normal blanks, but it's difficult to prove. It's worth remembering that CD-ROM discs are more fragile than normal pressed CDs and should be treated with care: keep them in their cases and out of sunlight when not in use.

Both writers successfully wrote at double-speed, although we did use a fast Adaptec 2940 PCI SCSI card and a quick Quantum hard drive. For no-worries writing at higher speeds, it really is beneficial to use a large SCSI drive connected to the same SCSI chain as the writer. This is one aspect where HP's supplied card falls down. Despite offering bus mastering, it does not have on-board bios and consequently will not support a booting SCSI drive. HP claims that having a card dedicated to the writer alone will ensure no interference, but in my opinion, CD Revolution bundles a far more useful Adaptec card, although power users may find the ISA bus on both supplied cards a little limiting.

The quad-speed reading claims are true for data transfer, but don't expect too much from access times. You can use both writers as plain CD-ROM drives, but they're not particularly fast — much better to have a dedicated reader.

Both kits represent excellent value for money. If we had to choose one, CD Revolution would probably have the edge thanks to a more useful SCSI card, Win95 ready software, and the fact that the writer manufacturer is not new to the game.

PCWDDetails

Hewlett Packard SureStore 4020i

Price £829

Contact 01344 369222

CD Revolution CD Recording Kit

Price £749

Contact 01932 562000

Good points CD writing complete for less than £1,000.

Bad points They're not sub-£500 yet!

Conclusion Both kits superb value.



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SOFTWARE

The National Lottery™

The Brookside Close lottery syndicate would have avoided a lot of grief by using the Multiple Board facility says Michael Hewitt.

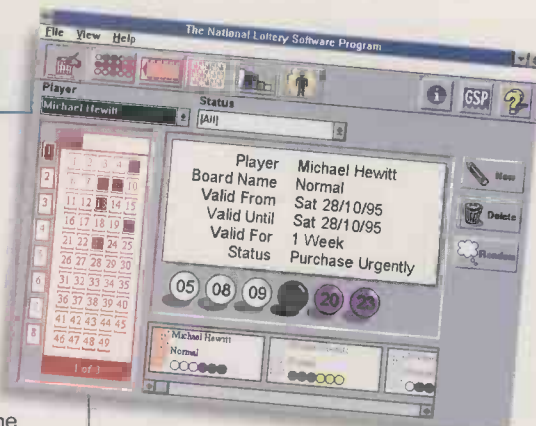
There are several lottery programs available, but this is the first product to have been developed specifically for the UK market. The screen interface is based on our own National Lottery graphics, including the by now depressingly familiar crossed fingers. So what does it do for you that choosing the numbers with a pin or praying to St Jude wouldn't?

The program (3.5in disk and CD-ROM) installs in under a minute. This done, click on the Lottery icon and the graphic of a blank red playslip appears. Choose New, and you're prompted for your name and the playslip name. Enter anything you like here. Winning Ticket, for example. On the other hand, if it's a rollover week, you might choose Rollover. Next, using your mouse, fill in the playslip numbers, exactly as if you were choosing them with a ballpoint pen

in the newsagent. Or you can ask the program's inbuilt random number generator to choose them for you. It's all very easy.

The next step is down to you. Having made a note of your chosen numbers, you have to actually go out and enter them in a *real* playslip, pay for your ticket, and then wait for the balls to drop. As Anthea Turner reads them out, fire up the program again, go into the Results Screen, and key in the winning numbers. If you've got three or more, the software responds with progressively more enthusiastic (but not overly so) sound effects. It has to be said that its reaction to winning the jackpot — a muted round of applause — is decidedly blasé. The Hallelujah Chorus would have been better.

Other features include a statistical analysis of winning numbers from past



The National Lottery Program has been designed to look as much like Camelot's genuine article as possible

lottery draws for those dumb enough to believe the selection is anything other than random. There's also a Multiple Board screen for people involved in a lottery syndicate, keeping track of who's paid what. And, importantly, the software will prompt you to go out and buy a ticket.

PCWDetails

Price £12.99

Contact GSP Software 01480 496 666

Good points Easy to use, good graphics and excellent value for money

Bad points Decidedly tacky sound-effects.

Conclusion Good fun, at just £312.99.

HARDWARE

New Quad-speed CD-ROMs

Gordon Laing reviews two new quads with a different twist.

Panasonic has at last made its tray-loading ATAPI quad available in a retail pack named the QuadPro IDE, while Plextor's latest caddy-loading SCSI drive, 4PlexPlus, claims to be the world's fastest quad-speed.

Panasonic's is interesting because it's effectively the replacement for what is probably the world's most widespread CD-ROM drive, the double-speed CR-562/563, Panasonic's proprietary interface which was fitted as standard to many sound cards.

The QuadPro IDE is an enhanced IDE drive, indeed it's already fitted to many PCs off the assembly line, but is now available off the retail shelf. You can use your existing IDE interface or the one supplied.

Plextor's 4Plex Plus is interesting on several counts: the company believes the quality market is SCSI and sticks to the traditionally higher-end interface, while the claim to be the "world's fastest" is due

to the fact that it's a 4.5 speed drive.

We've seen loads of quads, and several 4.4 speeds, but I suppose Plextor has just squeezed into the lead with a 4.5 speed, effectively confirming the "fastest quad-speed" claim.

SCSI handles multi-tasking much better than enhanced IDE and also supports up to seven devices, both internal and external. This flexibility and high performance has seen it fitted to servers and high-end desktops, but don't let that put you off going for SCSI. You will need a SCSI card, and we recommend any from Adaptec.

The 4Plex-Plus is also



plug-and-play compatible with the new SCAM (SCSI Configured Auto-Magically) standard, allowing it and a SCAM compliant card to automatically select IDs to avoid conflicts.

Plextor additionally supplies a good set of drivers and utilities which, considering everything else, makes it an innovative high performance package, although not a cheap one.

PCWDetails

Panasonic QuadPro IDE 601 Kb/s
Price £139

Contact Panasonic Computer peripherals 01344 853913

Good points Cheap and capable quad.

Bad points Six speeds dropping in price.

Conclusion Good choice for the as yet unquadded.

Plextor 4Plex Plus 682 Kb/s

Price £279

Contact Tekdata 01782 577677

Good points Fast, good software, plug and play.

Bad points Double the price of your average quad IDE.

Conclusion Excellent quad, but close to six speed prices.



Cleans more than just Windows.

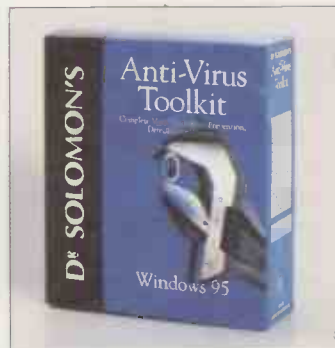
In addition to Windows 95, Windows NT, Windows 3.x and DOS, Dr. Solomon's Anti-Virus Toolkit is also available for NetWare, Macintosh, SCO UNIX and OS/2.

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SOFTWARE

Microsoft Publisher 3.0

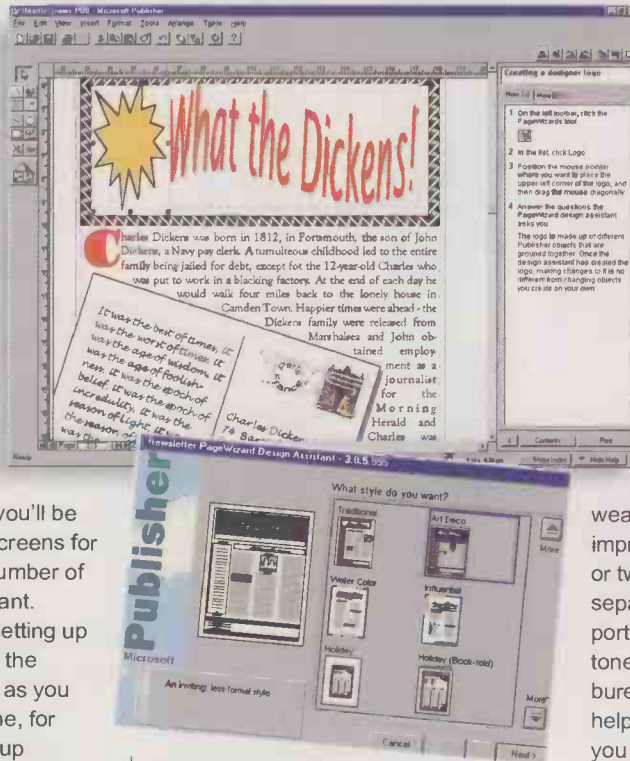
With online help and an excellent general manual, this version of Publisher is perfect for entry-level DTP, says Tim Nott.

To run this latest incarnation of Microsoft's entry-level DTP package, you'll need at least a 386DX running Windows 95 or NT Workstation 3.51, with 6Mb RAM for the former and 12Mb for the latter. Disk space required is 6-32Mb, depending on the options installed.

Publisher has always concentrated on ease of use, and this version is easier than ever. There are over 100 "PageWizards" to help you get started. Choose the Brochure PageWizard, for example, and you'll be prompted through successive screens for information such as the style, number of pages or company name you want. When the Wizard has finished setting up the document, it stays lurking in the background ready to offer "help as you go" — click on a dummy headline, for example, and a bubble will pop up explaining how to replace this with your own text.

The help doesn't stop there, as you can opt to have a help panel and/or index on-screen all the time, neatly slotted in beside the document you're working on. The contents change to reflect what you're doing, and they can be hidden away with a single click. In addition, "first time" help panels appear when you first do something (probably unwittingly), such as snap to a guide or place a "layered" object. Finally, you get regular prompting to save your work. More experienced users can, and will probably want to, turn these aids off.

The interface has been slightly tidied up since version 2. Publisher 3 is "Office Compatible", which means not only will menus, buttons and keystrokes be familiar to Word or Excel users, it will share resources such as a spellchecker. Publisher doesn't go all the way in Office compatibility — it won't use existing custom dictionaries and you can't add a Publisher document to an Office Binder, but there is a shortcut to edit a Publisher story in Word.



Above Exciting effects in Publisher 3 — WordArt, borders, fancy first letters and rotating both text and graphics
Below Creating a newsletter — let the Wizard do the work

Previous versions introduced some very clever touches, such as automatic text wrap around shaped graphics — a task some PageMaker users still have to do by hand. Fancy First Letters was another elegant time-saver, which has now been enhanced to offer a choice from a gallery of ready-made or customised effects and the rather splendid Border Art, offers plain or fancy borders "by the yard", automatically resizing to fit the frame. As in version 2, you're not limited to office stationery sizes: Publisher will create documents up to twenty feet square.

A new rotation tool has appeared on the formatting ribbon. Previously, to set text at anything other than horizontal, you had to use the WordArt OLE applet. WordArt is still included, and all sorts of fancy warping and shadowing effects are possi-

ble, but it's now possible to rotate anything on the page — even a block of text — to any angle. Grouping objects together so they can be moved around the page as one is now much easier, as a frame appears around the selected objects with an attached button to group or ungroup.

The Design Assistants, as before, add more page Wizardry, creating things such as coupons, logos and calendars — the last with a choice of eleven languages. Down at the bottom of the tool palette is a large button for the new Design Gallery. This gives access to a whole library of predesigned features to which you can add. There are headlines, sidebars, pull quotes, clever page numbering effects and much more, all available in a variety of styles, from classic to modern with much in between.

Colour was always Publisher's weak point, and there has been some improvement here. You can now use one or two "spot" colours, and Publisher will separate the output, but there's no support for spot colour libraries such as Pantone. Facilities for sending output to a bureau are much improved, and with the help of the checklist Publisher provides, you should be able to discuss things such as halftones, process separations and trapping with your printer with some degree of confidence.

With the online help and Wizards, you may never need to open the 285-page book, the Publisher Companion. This would be a pity, as it is not so much a technical reference to Microsoft Publisher, as a guide to Desktop Publishing in general. It covers such topics as the principles of page design, choosing fonts for headings and body text, illustration and use of colour, choice of paper and printing. Included in the box is a catalogue of special papers and other hard-to-find stationery.

PCWDetails

Price Around £70

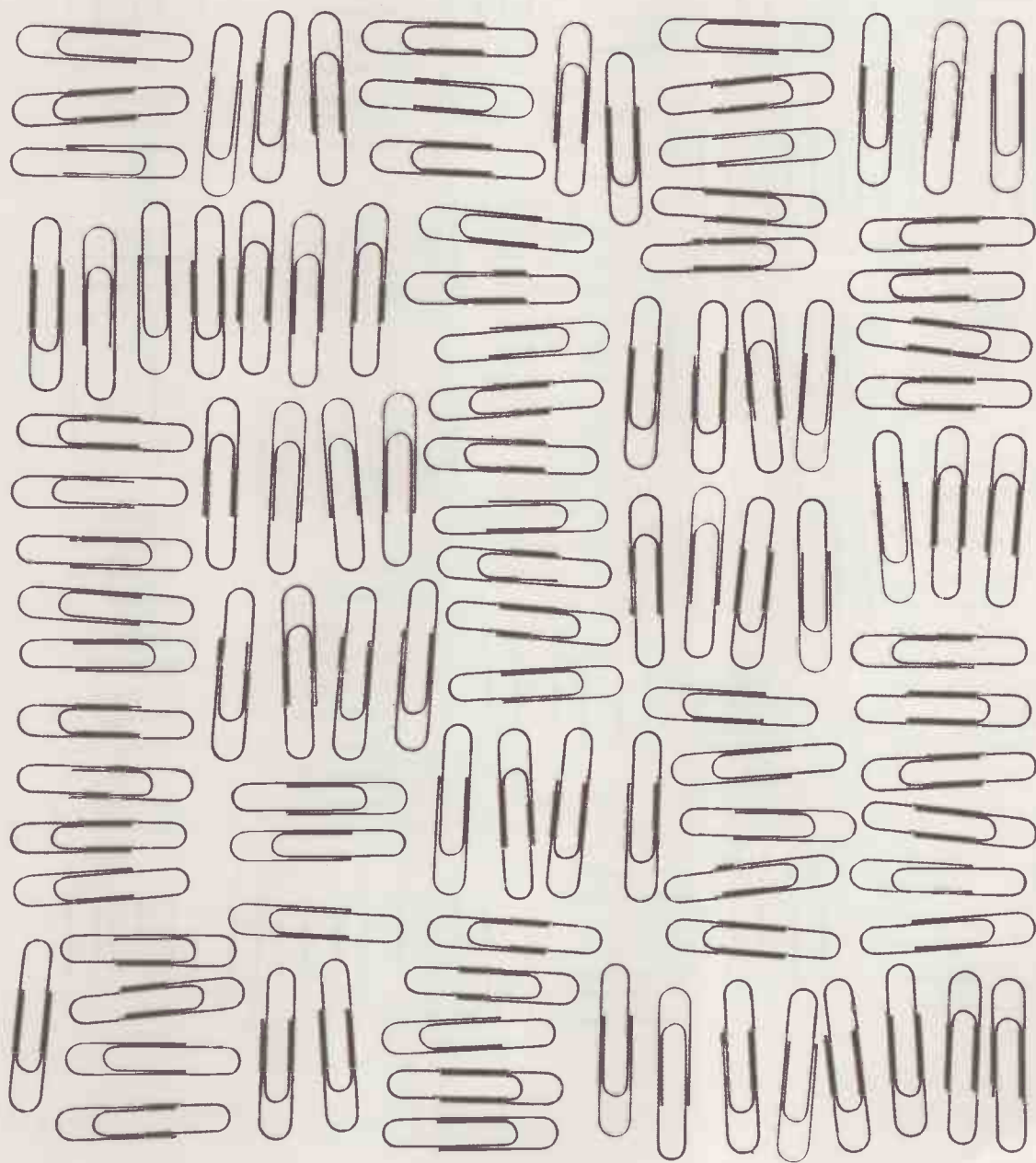
Contact Microsoft 01734 270000

Good points Easy to use entry-level DTP, with some ingenious effects.

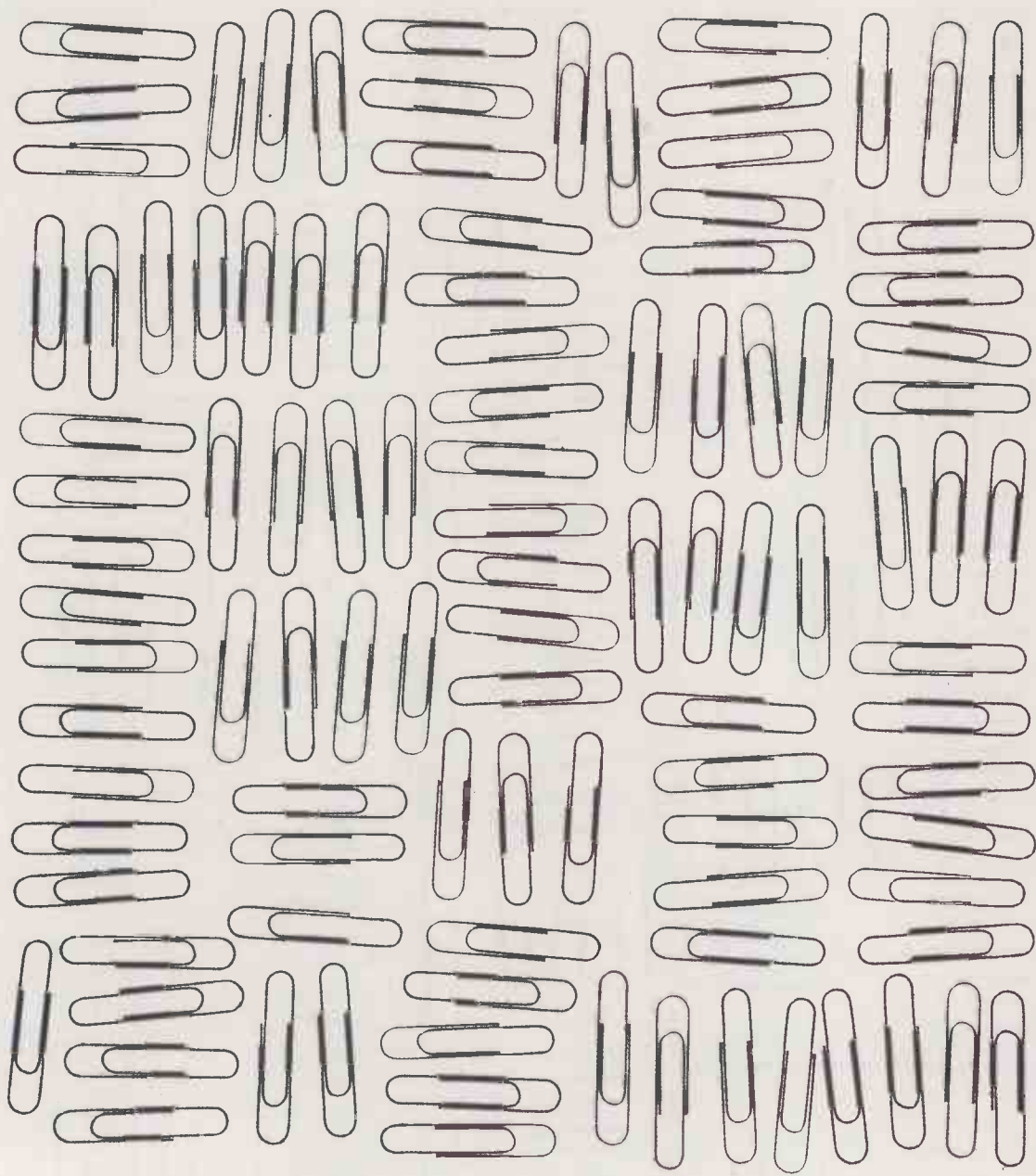
Bad points Limited colour support.

Conclusion Will keep all but the highest power users satisfied.

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HARDWARE

Orchid NuSound PNP

The first proper Windows 95 PNP sound card offers high quality sound samples with good compatibility. But, says **Gordon Laing**, you may still have to get your hands dirty.

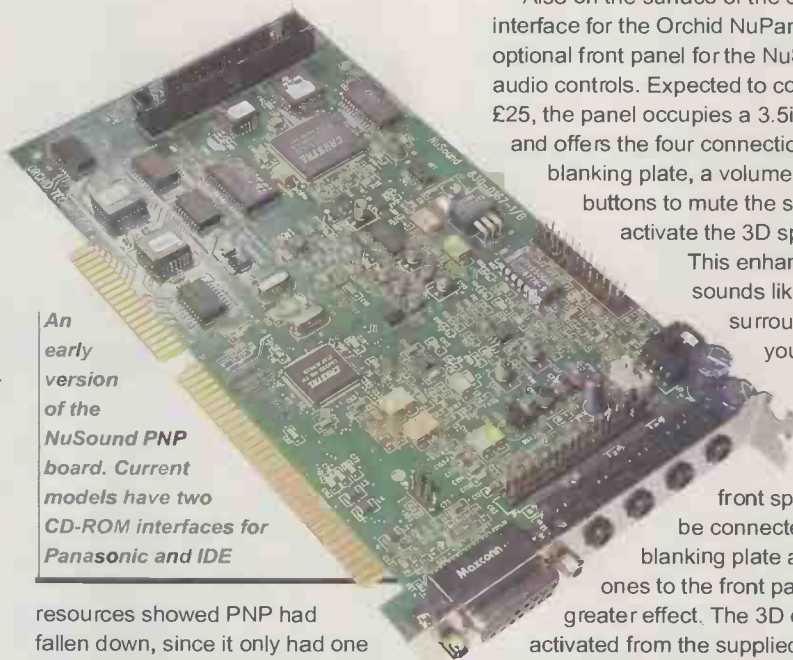
Once you've got past the enthusiastic singer on the cover of the box the first thing you notice are the words: Orchid NuSound, plug and play 3D Sound card with Wavetable synthesis.

This says it all really: Orchid's latest sound card is fully featured but not remarkable, in that it boasts 16-bit digital recording and playback, hardware wavetable synthesis and Panasonic and IDE/ATAPI CD-ROM drive interfaces. It's compatible with SoundBlaster (and Pro), AdLib, Windows Sound System and General MIDI. At £129 the price is alright, but again not outstanding with cheaper cards offering similar sound capabilities from the likes of Aztech. No, the special thing about the NuSound is that it claims to be the first plug and play (PNP) Windows 95 sound card; it's also compatible with Windows 3x. Sadly, the "easy, jumperless installation" wasn't quite that.

Plug and play does what it says. Just plug in your new piece of hardware and away you go. Fingers crossed, playing should be the only thing you worry about, with your computer doing all the technical legwork, solving hardware conflicts and automatically prompting for disks.

I eagerly slotted the NuSound into a spare 16-bit slot in my PC. As soon as Windows had started, the PNP experience began with "New hardware detected". The Orchid manual stated Windows 95 would spot and ask to install drivers for Windows Sound System, MPU-401 and GamePort Joystick, and that you should specify to read from the disk supplied by the manufacturer.

What actually happened was a detection of a CS-4232 chip (Orchid's chosen CODEC, compression decompression chip), which triggered off a compulsory search of the Windows 95 CD for a suitable driver. After this, I could install the previously mentioned familiar sound drivers as instructed. I called Orchid who explained that this was supposed to happen, but they neglected to mention this unexpected step in the otherwise detailed manual. One restart later and almost all was well. In the System control panel, one of the sound drivers was not working due to a hardware conflict. Checking the



An early version of the NuSound PNP board. Current models have two CD-ROM interfaces for Panasonic and IDE

resources showed PNP had fallen down, since it only had one of four IRQ interrupts to choose from and all were taken. These IRQs were occupied by old-fashioned non-PNP devices which wouldn't budge until I physically rearranged some jumpers.

The NuSound was much happier having found a spare location, but my troubles were still not over. The digital audio driver had PNP'd itself to IRQ 11, which was fine under Windows, but most DOS games only support a limited number of SoundBlaster IRQ options. Doom 2 only offers 2, 5, or 7, so before I could hear the plasma crackling, I had to manually change the digital audio IRQ to 5.

After this, everything worked perfectly. Doom and Descent played excellent General MIDI music, accompanied by SoundBlaster sound effects. Under Windows, WAV files played and recorded, 16-bit audio was clean, particularly at the maximum sampling rate of 48KHz. Orchid has software for DOS and Windows 3.1/95.

The wavetable section offers up to 32 simultaneous voices, including 190 instrument sounds and 46 special effects compressed onto a 1Mb ROM. The NuSound board has a port for a WaveBooster/WaveBlaster daughterboard card to upgrade the wavetable section: Orchid offers two (reviewed in this issue).

Four 3.5mm sockets accompany the

joystick/MIDI port on the blanking plate, offering stereo line input, output, amplified speaker output and mono microphone input. On the card itself are two internal CD audio connections for the SoundBlaster and MPC-2 standards; a cable is supplied with a microphone.

Also on the surface of the card is an interface for the Orchid NuPanel, and optional front panel for the NuSound audio controls. Expected to cost around £25, the panel occupies a 3.5in drive bay and offers the four connections of the blanking plate, a volume dial, and buttons to mute the sound and activate the 3D spatialiser.

This enhances stereo sounds like artificial surround sound. If you have the NuPanel and spatialiser activated, front speakers can

be connected to the blanking plate and rear ones to the front panel for greater effect. The 3D option is activated from the supplied DOS and Windows software utilities, which include MIDI configuration, audio recording and playback, and an enhanced CD player.

Overall, the NuSound is a good sound card, offering all the compatibility you'd want and high quality General MIDI samples, considering all the sounds are compressed into a 1Mb ROM. The NuPanel is a nice touch which could prevent you scrabbling behind your PC all the time to find the right plugs. The plug and play aspect works well so long as you understand what it's capable of doing, considering other potentially stubborn non-PNP devices. PNP is definitely the future, but during this transitional period you'll have to occasionally give it a helping hand. You'll also be paying a slight premium for PNP, so if it's not important to you, look elsewhere and save some money.

PCWDetails

Price £129

Contact Orchid Europe 01256 479898

Good points PNP, good compatibility, front panel option.

Bad points PNP may need manual configuration.

Conclusion Slight premium for PNP, but good overall card.

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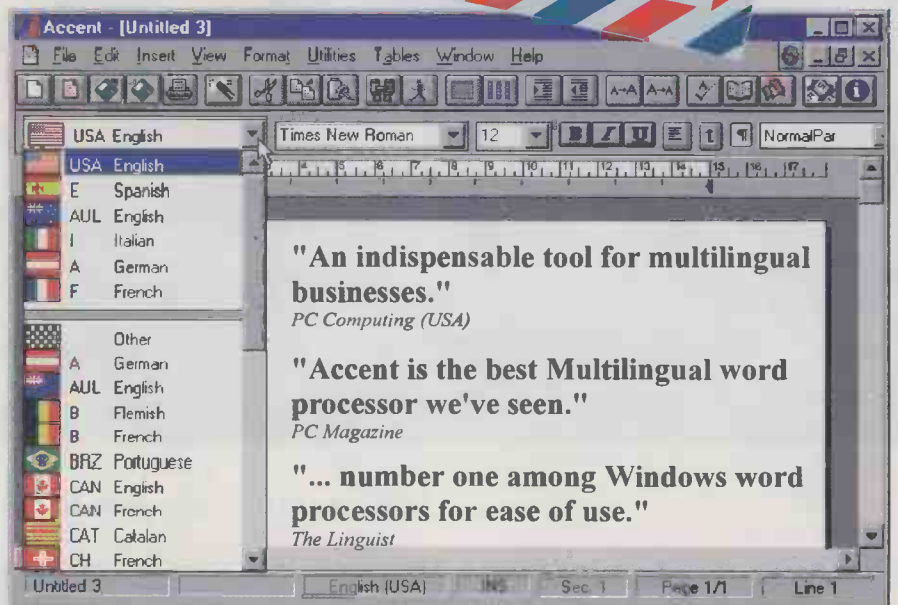
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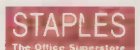
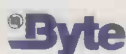
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SOFTWARE

QuarterDeck WebServer

A DIY webserver sounds too good to be true. Impressive, says PJ Fisher, but don't expect it to be as easy as ABC.

“Who says you have to be a programmer to set up shop on the internet?” asks the blurb on QuarterDeck's WebServer package. The answer: probably a lot of programmers.

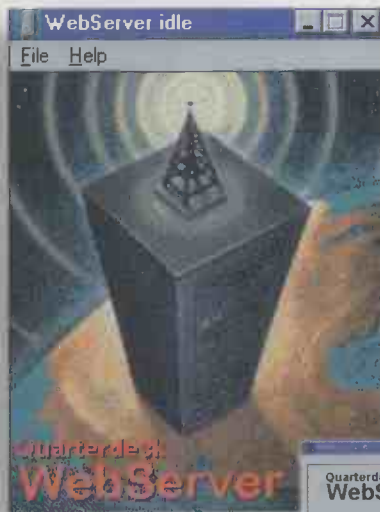
But setting up your PC as a Web server using this package is relatively easy, and the opportunity to do so cheaply will appeal to small businesses and individuals keen to get onto the world wide web.

There's just two disks to install (about 2Mb hard disk space is required), and this version is Windows 95 friendly. You also get 90 days free support and QuarterDeck have its own web site (www.qdeck.com) and BBS help systems as back up.

When installing WebServer you will be asked whether you want to install LAN Workplace. This is important as it contains the network support programs that WebServer needs to run — and it should run with the majority of network stacks. If unsure, consult your network manager. If you are worried about security, a log file records every hit to your site and who makes them. If you wish to remain absolutely secure, it may be worth installing WebServer on a standalone machine, but of course that would mean that no-one on the LAN would be able to access the web pages. Further to this, you can use restrict users with passwords and to users with certain IP addresses only.

When it comes to setting up, the manual is not a great comfort. Much better is the online Help system, but of course you can only get that after you have installed. The manual seems to be written back to front, with Chapter 2 serving as an introduction to web servers in general, while there are two different installation descriptions, one in Chapter 1 and another in the second chapter.

Fortunately, it is possible to ignore the manual, whack in the floppies and follow the on-screen installation requests. This can get tricky and you will need some



Left Once installed, WebServer keeps you informed of activity

Below It's simple to change configuration

TCP/IP networking knowledge.

For example, you need to know the IP address of your machine, its domain name and the subnet mask. That's a second 4 byte value which specifies which bytes of the IP address are to be used as a network ID and which are host (your machine) ID values. Confused? you will be. On to your network manager again. Meanwhile, the installation runs through all this and prompts you to fill in the correct details. Even if you are not sure what all these settings mean, you can get away with simply filling in the correct details in the right places.

WebServer hides a lot of the file placement in Windows 95 and configures them to work together. All relevant HTML and image files are placed into a folder called htdocs inside an Httpd folder on the hard drive. It is best to do this default install and this way you are unlikely to have problems and continue to use these folders when you create your own HTML files.

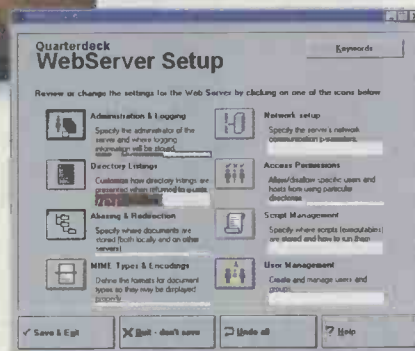
After install, restart and you will see the WebServer application sitting in the Start menu. Launch this along with your

favourite Web browser. To test WebServer type in a URL of `http://your-machine/` and the installed default home page should appear along with its images and hyperlinks. It worked first time across the LAN too and was immediately accessible on the internet. Leaving WebServer on your desktop enables you to see when someone is accessing the site.

Obviously you won't want to keep the QuarterDeck default home page for very long but don't trash it just yet. To start building your own home page you will need some knowledge of HTML and a decent web editor that will save to the .htm format. When you design a new home page it MUST be named INDEX.HTM so WebBrowser can find it and send it out to the client browser whether on the LAN or further out on the net. This is the default file a browser will display when the browser makes a request for `http://yourhost/`. I set

WebServer up on a bog standard Dell P60 with 16Mb of memory and a 540MB Hard drive and the whole set up took less than an hour.

There is a section in the manual about using CGI (Common Gateway Interface) scripts to create clickable image maps and a simple CGI example is installed for you to explore. This is worth keeping if you have ambitions to set up image maps on your own home page. And believe me, you will. CGI or not, once set up WebServer runs unobtrusively in the background and all you need worry about is keeping your pages up to date. You don't need a degree in computer science to set up WebServer, but you will need a basic knowledge of TCP/IP and other networking protocols. You may not have to be a programmer, but beginners may as well forget it.



PCWDetails

Price £130 + VAT

Contact QuarterDeck 01245 496699; fax 01245 491480; info@qdeck.co.uk

Good Points Online help, once set up will run without problem.

Bad Points The confusing manual can make set-up problematic.

Conclusion An elegant piece of software to make your presence felt on the web, but it's not for beginners.

HARDWARE

Adaptec AIRport 2000

The idea behind the Adaptec AIRport 2000 must be the way forward. But not yet, says Simon Rockman.

What lies behind infra-red data is the ability to link computers. The Infrared Data Association (IRDA) standard consists of a serial link. Based on the earlier 9600bps serial infra-red standard (SIR) the IRDA committee has produced a standard for faster serial communications. This takes the line speed up to 115,200bps with a later specification, IRDA 2, allowing for 1.5mbps. An increasing number of new devices, Hewlett-Packard printers, most note books and even a Nokia mobile phone, have IRDA options.

So what if you have an existing machine and want to communicate using Irda? Well you could buy the Adaptec AIRport 2000, an Irda adaptor which plugs into a serial port and allows you to communicate with other Irda devices. You could, but it would be a very, very, daft thing to do, because the AIRport 2000 doesn't work very well.

In an ideal world you could wander

into the office with your notebook and exchange files between your desktop and your portable computers as easily as if you had connected a serial cable. But it proved easier to find a lap-link cable than to get the AIRport to work.

The theory is great: there are two flavours of AIRport, the 1000 and the 2000. The 1000 looks like a 9-pin to 25-pin serial adaptor except instead of the 25-pins there is a shiny plastic lens with an indent. The 2000 has the same lens, but is housed in a free-standing device which takes four AA batteries. Three quids' worth of Duracells mean that the range is extended from one metre to two. There is an option to take a 6v power supply but that rather detracts from the portability of the whole thing.

To get the devices to work (in the broadest possible sense) they have to be around one metre apart. There is a cone of infra-red 30 degrees wide and each device has to fall inside the cone. If the



two devices are too close together they will not work and since getting the two ends to see one another is hard enough in the first place you don't really want to upset anything.

The AIRport 2000 is supplied with the Transit software. The idea is that this sees the remote devices as another drive from which you can drag and drop files. When an infra-red connection is made, a new window lights up. In practice this doesn't happen unless you coax the system into life. We failed to get the Adaptec system to work with a Hewlett-Packard Omnibook, although this should have worked. There is a good future for Irda but at £100, the AIRport is not a device which is likely to take off.

PCWDetails

Price £100

Contact Adaptec on 01252 811200

Good Points An honourable attempt at an IRDA adaptor.

Bad Points Falls short with several existing IRDA devices.

Conclusion Not likely to take off.

SOFTWARE

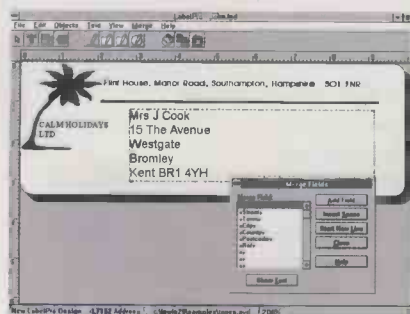
Avery Label Pro for Windows

Let your labels stand out from the crowd says Sharon McGuill.

Targeted primarily at the SoHo and small business markets, Avery Label Pro allows you to easily design your own specialised labels. Text can be typed in direct, or accessed from existing files and records.

There are two main features of Label Pro: Designer, which lets you add

Have professional-looking labels with Avery Label Pro



designs to your labels from Label Pro's clip art or your custom graphics; and List Manager, which merges text and graphics from a list function in Label Pro itself or from already established databases.

With over 150 label templates on which you can create and save your designs, you can merge from dBASE, Paradox, Word and ASCII comma separated (CSV) files. The merging function allows you to select the files you wish to print but it is limited in a single search. Label Pro's list manager is capable of holding internal lists with up to 15 fields and is particularly useful for printing video, cassette, disk and file labels.

Label Pro has a few extra features that set it apart from label functions within databases. These include "shrink-to-fit", which ensures no text is run-off the page; "print first label at", useful for those half-used sheets; an effective "on-

screen preview"; and "Postnet", for USA addresses.

LabelPro needs at least a 386 with 2Mb of RAM, 4Mb of disk space and a VGA display, you must also be running at least Microsoft Windows 3.1. If using a database with more than 50 records, it's best to print your labels with your Windows Print Manager switched off. Label Pro will print on laser, inkjet or dot-matrix printers supported by Windows.

The first 200 readers to call the Avery Consumer centre mentioning this PCW review, will receive a free sample pack of labels. Try before you buy with the free demo on this and last month's PCW cover discs.

PCWDetails

Price From £29.95 + VAT (Viking)

Contact Avery Dennison Consumer Centre 0800 805020. Fax 01628 764040

Good points Very easy to use and results are effective.

Bad Points Merge-select is a little limiting.

Conclusion An easy way of producing professional labels.

Annual Sales

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VOLUME 2 NUMÉRO 6

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SOFTWARE

Scan-IT

The idea of document scanning and filing in one software sounds like a dream come true, but Adele Dyer reckons this application is much too cumbersome to warrant its price.

Document scanning and filing has become popular as the idea of the electronic office finally takes off. At the moment, the basic scanning and OCR technology is all there and it is now a matter of finding the right filing software to go with this.

In the past few months PCW has seen quite a few document scanners, such as the Visioneer Paperport and the Umax Page Scan Device – packed with their own scanning, OCR and document filing software. We were therefore a little surprised to see the Scan-IT arrive as a standalone product sans scanner. However, it is compatible with over 40 different scanners, so we reviewed the application using the TWAIN compliant Umax Page Scan Device. The package does not include TWAIN drivers.

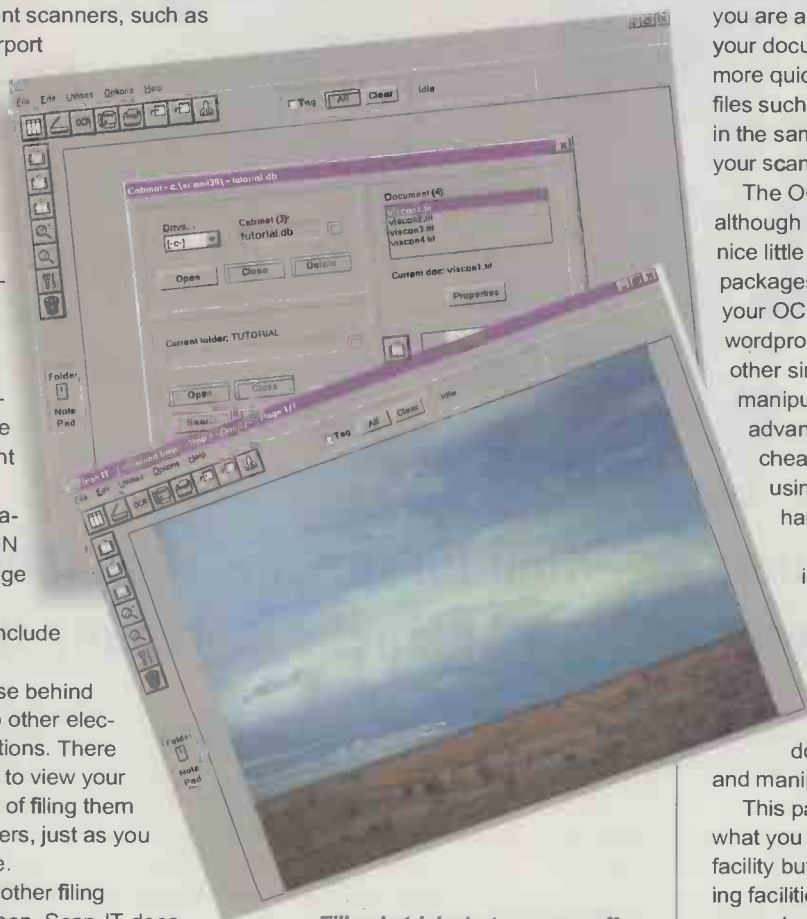
The basic premise behind Scan-IT is similar to other electronic office applications. There is a desktop for you to view your scans and a means of filing them in cabinets and folders, just as you would a paper office.

However, unlike other filing systems we have seen, Scan-IT does not give you as many pointers to where you are in the application and where your documents are. There is no bar to show what each of the icons means and the menus are skimpy, forcing you, horror of horrors, to go through the tutorial. Yet even after this, the lack of prompts leads to confusion and makes it, at least initially, quite hard to get to grips with — something of a surprise when all the other similar packages we have seen have been so easy.

You file your documents either in the notepad facility, that is straight onto the

desktop or in cabinets and folders. The notepad is simply like a physical desktop – somewhere to store your documents while you do some initial work on them and before you file them in a cabinet.

There are several problems with this. Firstly, it is not always easy to see exactly where you are. There is only a



Filing is tricky but as a pay-off, colour photo manipulation is available

small "switch" which lets you flick between the notepad and the cabinets, yet there is a marked difference in the way things appear on your desktop – or even if they appear there at all. Secondly, like most people's desks, if you put your work down on the notepad, forget it and go home it will disappear, especially as the package does not take abuse lightly and will crash if even slightly provoked.

Creating cabinets and folders again takes some getting used to. Not that the processes involved are complicated, simply there are a great number of steps involved in what should be a very simple operation, making it cumbersome and demanding to use. It will need some serious adaptation if it is to survive the onslaught of Windows 95. Why use a filing system which takes a dozen moves to create a folder, when it takes two clicks of the mouse to create the same effect using Windows 95 folders?

These are major problems which mar the product. It's not all bad, though. If you go through the process of filing properly, you are allowed to attach keywords to your documents to help you find them more quickly. You can also file foreign files such as sound, spreadsheets or text in the same cabinets as you are using for your scans.

The OCR engine is very good, although once again you do not get those nice little shortcuts as you do in other packages, such as a button which drops your OCR'd documents straight into the wordprocessor. One improvement on other similar packages is the ability to manipulate colour photographs – the advantage of not being tied to a cheap scanner, although of course using this facility depends on your hardware.

The main use for this package is primarily as a means of storing documents of various formats so that they can be easily viewed. Despite the handiness of this, the mechanics of the package does not make the file viewing and manipulation as easy as it could be.

This package is very overpriced if what you want is a document scanning facility but do not own a scanner. The filing facilities are suitable only for the vast amounts of documents generated by an office. Home or small office users are perhaps better off buying a bundled deal with scanner and software included.

PCWDetails

Price £170

Contact Grace Garret 0171 836 9486

Good Points Offers storage of multiple formats.

Bad Points Expensive and tricky to manipulate.

Conclusion SoHo users would be better off buying a bundled package.

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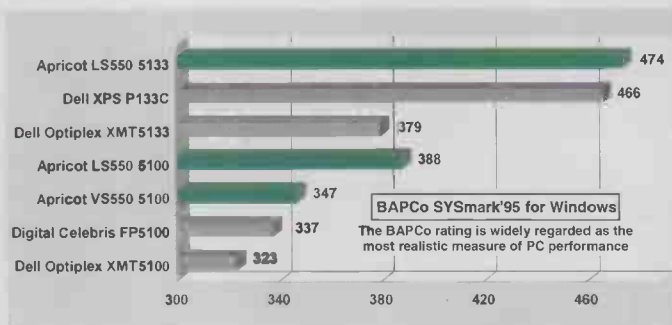
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SOFTWARE

Map 'n' Go

Take two route-planners into the motorhome? Dylan Armbrust just maps 'n' goes.

Have you ever thought about jumping on a Harley for that great USA road trip? Or maybe just take the family to the US fly the family over the Atlantic and pile in to a rented Ford Escort for two weeks. Either way, Map 'n' Go could be for you. Map 'n' Go bills itself as "The COMPLETE Travel Planner for North America" and I'd have to say that this isn't too bold a statement. It's a multimedia road atlas/route planner that can plan your travel route, highlight points of interest and give you detailed information on hotels, restaurants and campsites along the way. The package contains a CD-ROM, 128-page road atlas and an easy to read user's guide.

All you need is a 386 or higher, 4Mb RAM, CD-ROM drive and sound card (which isn't a requirement, but it is necessary to hear the audio presentations). I ran it on a P120 with quad-speed CD-ROM and 16Mb RAM. Installing Map 'n' Go took me no more than five minutes and it automatically detected whether or not I had a sound card and gave me the option of installing the drivers or bypassing sound altogether. I decided to try the tutorial first, and after a bit of engine revving and tyre screeching I was guided through the various features by a slightly twangy American female voice.

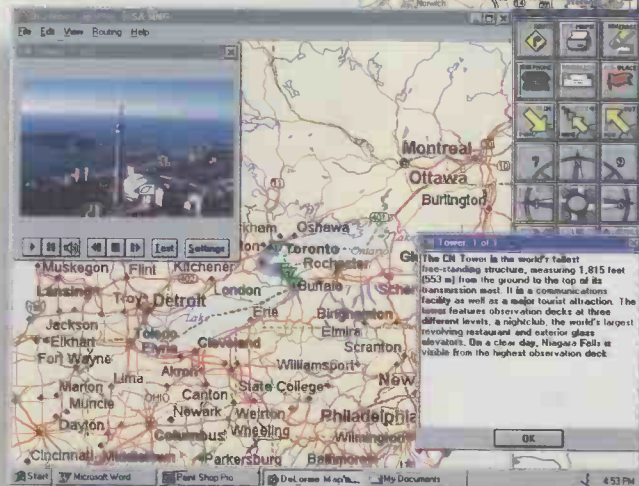
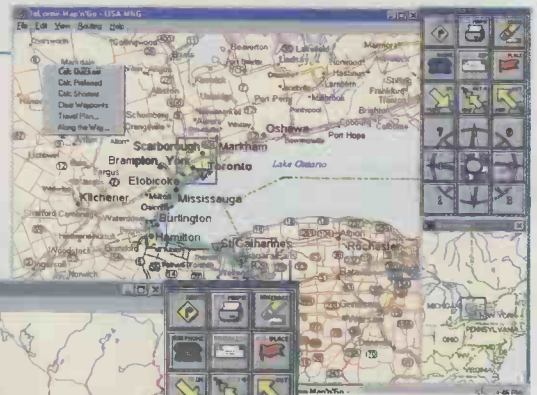
When you start the main program you are presented with a full map of the US, a floating toolbar and an overview map in the lower right of the screen. The toolbox contains most of the features needed to navigate Map 'n' Go. A large segmented compass allows you to move about freely over the surface of the map. There are two zoom control buttons that increase or decrease the magnification by factors of one and a quick zoom out button for getting an overall view. You can find any place by performing a Place name search. Or, if you want to discover where someone lives by their phone number or zip code, you can do that too, all at the touch of a button and a few keystrokes. I tried the Phone search to see how accurate it was, and it came up right every time. Same with the Zip code function.

Getting down to the nitty gritty of route planning was much easier than I

expected. Map 'n' Go gives you several methods of laying out your journey. You can point and click on map sites to add (or delete) way points. This is handy for map exploring to make up journeys along the way and see just how far you have to go. Or you can utilise the Manage Route box to enter your way points and destination if you already have a pre-planned journey. Regardless of what route planning method used, you simply select the type of route you want (Quickest, Preferred or Shortest), and ask it to calculate.

Quickest and Shortest are self-explanatory but the Preferred option checks settings you've previously entered regarding speed and what type of motorway you want to travel on (i.e. major highway or forest road). Once all is calculated, just select Along the Way and Map 'n' Go lists Points of Interest. From here you can select and play back your Points of Interest and attach them to your travel plan for when you print out.

I decided to put Map 'n' Go through its paces on some of my old territory to see just how well it holds up. I began with my family's old zippy USA shopping route starting in Toronto, Canada and finishing in Buffalo, New York. I added two way points along the route, one of them being Niagara Falls, just for the hell of it. I then asked it to calculate the shortest journey under the default settings and, presto, four seconds later it had the route selected. And whaddya know, it was right! It gave me a journey time of one hour and forty-one minutes with a distance of 101



The multimedia feature lets you be a tourist even before you arrive

miles. The only thing it didn't do was take into account the wait at customs. I then increased my speed settings to reflect the faster motorway speeds in Canada

and it managed to shave off eight minutes of travel time. Then I asked it to find me the shortest route and it managed to reduce the distance by four miles but increase the journey time by twenty-one minutes over the preferred route. Whoops! I knew there had to be a downside somewhere in here.

Once all is said and done I have to say that Map 'n' Go is a fairly sturdy program with enough depth to take you from the far reaches within the Arctic Circle to the sunnier climes of South America. The listing of hotels, restaurants and campsites appeared to be comprehensive enough, but is vulnerable to becoming out of date on prices. The only major drawback of Map 'n' Go that I found was the time it took to print out the selected route. Each page takes about ten minutes (depending on printer memory) to print out on a laser copier and this could mean waiting for a while if you have a lot of pages. In fairness, they do mention this in the guide and these waits are not uncommon for route-planning apps. So get your motor running, head out on the highway.

PCWDetails

Price £49

Contact Now Distribution 0181 288 3512

Good points Easy to use toolbox, lots of tourist info.

Bad points Lengthy print times.

Conclusion Good value for the information given and it was the only CD-ROM route planner for North America I could locate.

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HARDWARE

Nikon Super CoolScan LS-1000

The Nikon Super CoolScan LS-1000 35mm film scanner does the job and does it good, says Gordon Laing. At nearly £1,800 though, it's strictly for the specialists.

Nikon's Super CoolScan LS-1000 is dedicated to scanning 35mm film and nothing else. While it will do positives and negatives, it will not take paper, card or larger format film. It does just one thing, and as you'd expect from such a reputable manufacturer, it does it rather well.

All scanners work on the same principal of reflection or transmission. The image is placed before the scanning head, consisting of a light source and sensor. The amount of light reflected by or transmitted through the image is picked up by the sensor, then converted to a voltage proportional to the light intensity — the brighter the part of the image, the more light is reflected or transmitted, resulting in a higher voltage. This voltage is finally converted by an analogue to digital converter into information the computer can work with.

The sensor on many scanners is a charge-coupled device, CCD. A CCD consists of many photo-sensitive elements, arranged in a grid in the case of a video or digital camera, or in a long, thin line in the case of desktop scanners; the more photo-sensitive elements per unit length, the higher its resolution.

Most A4 flatbed scanners boast true, optical resolutions of between 300 and 600dpi, and are capable of scanning an original image around eight inches wide. That's between 2400 and 4800 sensitive CCD elements along the width of the scanning head. The head of an A4 flatbed could squeeze its elements into a line four inches wide, but uses mirrors and lenses to capture the wider real area.

All A4 flatbeds scan paper-based originals by reflection, but by swapping the reflective light source with an alternative source from above, it's possible to sandwich and scan film by transmission. Such add-ons are called transparency adaptors and are available for most flatbeds, so why would you want a dedicated film scanner?

The point in real terms is that on an average flatbed you'll have between 300 and 600 dots per inch to play with, and that's absolutely fine for originals measur-

ing several inches on each side or larger. But what if your originals measure 36 by 24mm? Even a decent 600dpi scanner could only muster a maximum 24-bit file of 1.38Mb, which could only be reproduced in, say, this magazine at 72 x 48mm.

Not a particularly useful size, and that's the problem with 35mm originals: they're too small for normal scanners. Dedicated film scanners concentrate all their CCD elements onto a much smaller area, and in the case of the Nikon LS-1000, to a width of 24mm.

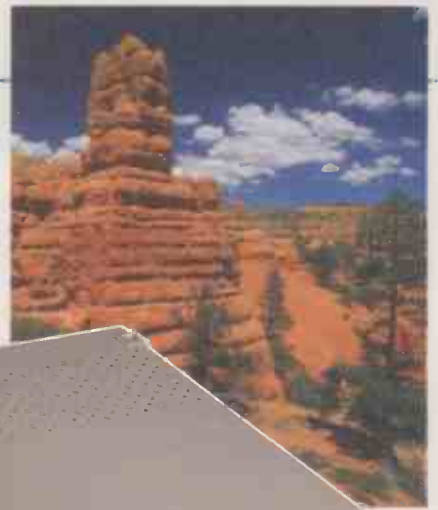
Nikon's LED scanning head will produce a maximum resolution of 2592 x 3888, resulting in a top resolution of 2700 dpi over the 35mm frame. It's a fast single pass device boasting 36-bit colour depth to adequately capture and resolve the subtle tonal differences found on film.

The unit itself is an unremarkable small box from the outside, measuring 151 x 268 x 63mm. It's a SCSI-2 device, connecting straight to a Macintosh, or requiring a SCSI card on a PC; we used a fast Adaptec 2940 PCI SCSI-2 card costing around £200, but slower ones are available for around a quarter of that price.

The front panel has a slot for the film. Mounted film can be inserted raw, or in strips of up to six frames once clamped into the supplied holder. When scanning, the Super CoolScan pulls the frame inside quickly for analysis, back out, then back in again more slowly for the final scan.

Even with six frames firmly clamped in the film holder, all can be accessed by sliding an inner sleeve in and out, or by turning the whole thing around. If you've got loads to do, an optional add-on automatically feeds mounted film.

The PC version comes with a TWAIN driver, while Macs use a traditional Photoshop plug-in; both have the usual scanner driver options, including one which reverses negative images into positive ones. Plug it in and install the driver —



An example 35mm scan from the Nikon Coolscan

that's all there is to set it up.

I scanned several images and was impressed, not only by the quality, but by the speed. Nikon's previous 35mm scanner, the CoolScan, was notoriously slow, often taking five or ten excruciating minutes per scan (it's still available for around £995). The Super CoolScan speeds through the process, delivering 10Mb files in around a minute; the maximum file size for a full 35mm frame at 2700 dpi is 28.8Mb.

So it's quick, and you can see the quality for yourself on the 6.5Mb scan printed here. It's expensive, but there's little to compare it to — that's the price you pay for dedication. If you want the flexibility of scanning variously-sized originals, both reflective or on film, buy a flatbed with a transparency adaptor. But if all you want is excellent 35mm film scans, look no further than the Nikon Super CoolScan LS-1000 — remember since it's SCSI, you can always connect a flatbed too.

PCWDetails

Price £1,795

Contact Direktek 0181 845 5969

Good points Quick, and high quality.

Bad points Only does 35mm.

Conclusion Perfect if you want pro 35mm scans.

SOFTWARE

Xcad 3.1

Looking for a reasonably priced 3-D design package with all the latest features? Xcad is putty in your hands, says Tim Nott.

Xcad is a 32-bit Windows Computer Aided Design package that runs under Windows 95, NT and, with the supplied 32-bit extensions, Windows 3.1. It's fully 3-D, but despite an impressive specification needs just 15Mb of disk space, 4Mb of RAM and a 386SX processor.

The interface is deceptively simple – below the menu bar is a ribbon of buttons for commands such as save, undo, grid snap toggles and line style/colour. A free-floating palette contains the drawing tools, two more floating boxes can be opened for co-ordinate input and object snaps, and a small "overview" window provides a quick way of zooming or panning a drawing. Although you can only have one drawing open at a time you can have up to eight different views.

Each button in the toolbox expands into a "fly-out" offering, for example, eight ways of drawing a circle – from centre-radius to tangent-tangent-radius. For accurate input you can "snap" points to a grid or to points on other objects – the end of a line or centre of a circle, for example. You can also define points by entering them in the co-ordinate box, specifying either co-ordinates absolute to the drawing sheet or relative to the last point.

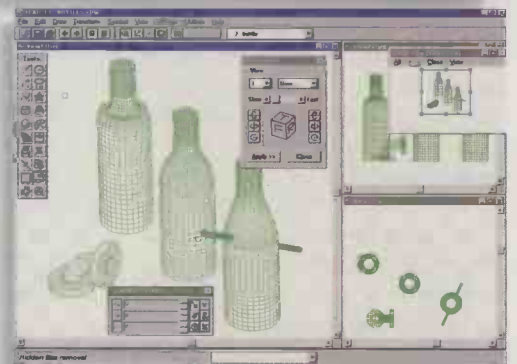
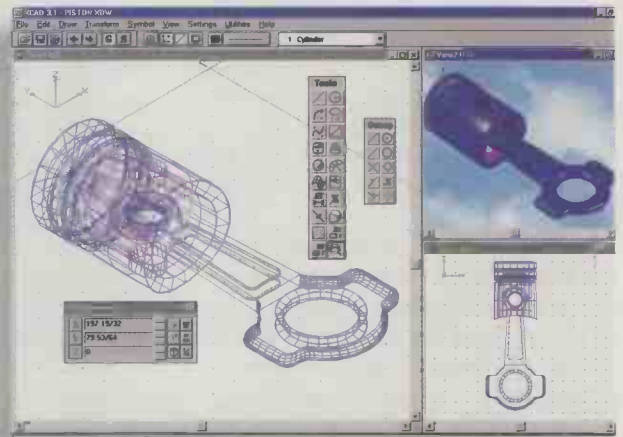
Non-uniform rational b-splines, or NURBS, are to CAD what Bézier curves are to illustration, but NURBS extend to three dimensions. There are ten ways you can draw a surface, ranging from plotting individual points (such as knots on a 3-D net), through rotating a shape around an axis or extruding it along a path, to creating a Coon's surface defined by four joined curves. Three-dimensional drawing is never easy, but Xcad succeeds in making it as painless as possible. A button on the co-ordinate box lets you switch between drawing in three planes, as on the surfaces of a cube, and if you want to work at an angle – say to draw on the side of a pyramid – you can set up multiple "User Co-ordinate Systems".

Having created 3-D surfaces, there are a number of ways they can interact – at the simplest level, you could use a

cylinder, say, to "drill through" other objects. More complex interaction includes blending – combining, say, two cylinders to form a bottle shape. 3-D surfaces appear as meshes, but to get a more realistic view you can remove lines that would be hidden in a solid object, or "render" the view to create solid, shaded surfaces with a variety of light sources. Though, as with other CAD software, you can't work in these modes, you can save a rendered view as a bitmap image. Xcad will import and export AutoCad .DWG and .DXF drawings, up to release 12, as well as Initial Graphics Exchange Specification (IGES) version 5.2.

There's a simple but flexible macro recorder which is rather like having an assistant to pass you the correct tools as you need them. If you draw two concentric circles, copy them in the Z-axis and create surfaces between them, you get a flange. Extrude the inner circle through a 90 degree arc, and you get a tube. Copy the flange to the other end of the tube and you get a pipe "elbow". Record all of this, and on playback, once you've drawn the circles, the relevant copy and surface commands will be activated in turn until the object is completed, but you'll be able to alter the size and position of the components as you go. More powerful automation comes via XDL – the Xcad development language, which can be used to create customised add-ons.

The version we reviewed was still in Beta, and showed a few anomalies. Not all the native Windows 95 features – such as the common File Open/Save dialogues – were implemented, though it did support long file names. We didn't have any documentation for XDL, and the supplied add-ins didn't appear to work. Stabil-



Top A 3D tutorial exercise
Above Examples of Xcad's NURB surfaces, with hidden lines removed

ity was also an issue: it managed to crash in a variety of ways, and once left Windows with a persistent "Out of memory" error that could only be cured by rebooting. If the release version cures these problems, then Xcad will be a remarkable product – I've seen nothing at a similar price coming anywhere near its 3-D capabilities.

PCWDetails

Price £495

Contact Digital Multimedia 0181 893 4000

Good points Fast, easy to use and offers astonishing 3-D features at the price.

Bad Points Beta version prone to crashes and didn't have full Windows 95 implementation.

Conclusion Unbeatable 3D capabilities at its low price.

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HARDWARE

Canon SV-15A Multimedia speakers

One giant leap for Gordon Laing along the road to perfect multimedia.

Canon describes its new SV-15A's as "active multimedia speakers". Multimedia, in computer terms, means including sound capability, still and moving picture facilities and a CD-ROM drive in a hardware system.

For me, the word multimedia conjures up cheap and nasty upgrade kits, cobbled together with poor components in time to cash in on hype. But today's reality is fortunately much better with fast CD-ROM drives, excellent sound and video cards available cheaply and often supplied as standard on new systems.

The only piece of the multimedia jigsaw left with room for improvement is the means by which you hear the sound. Headphones aside, the obvious solution is a pair of speakers. Computer speakers should have magnetic shielding. Speaker drivers contain large magnets which can turn your monitor into a sixties-style psychedelic experience if placed too closely.

Magnetic shielding (if it works) blocks out the culprit fields, protecting your screen. Unfortunately many so-called multimedia speakers don't feature shielding, and were by no means hi-fi to start with.

Fortunately for Canon, it chose to break the typical rubbishy mould by making its SV-15A's shielded, sound good and even look good. The design is part of Canon's wide dispersion technology, giving a larger listening area than conventional speakers and eliminating the old stereo hot spot; it works too. Each speaker is 240mm high, has a base diameter of 162mm and weighs 1.75kg.

Out of the box, each speaker has conventional cable terminals for connection to a separate amplifier. There is also a mounting bracket for each, with wires on the inside for the speaker terminals, and tempting looking phono and power plugs on the outside.

Yes, plug these in and the SV-15A's



become active speakers, boasting an ample 40W total power; excellent for business presentations. Each bracket has two phono plugs, allowing internal mixing of two sound sources. Normally you'd just use one phono for each speaker. The supplied power supply connects to one speaker, and a second lead powers the second from the first. Overall these are excellent and capable speakers, ideal for raising the profile of the multimedia experience.

PCWDetails

Price £179

Contact Canon UK 0181 773 6000

Good points Look good, sound good.

Bad points Not to everyone's tastes.

Conclusion Superior multimedia speakers.

HARDWARE

Opti LCD monitor

With highly dubious claims to eco-friendliness, this monitor is a waste of money and desk space, says Simon Rockman.

We are all used to flat LCD panels. Notebooks use them, and over the years they've gone from being quite good to being exceptionally good. Notebook screens are being produced in vast quantities, so it is no surprise that they are making a bid for the desktop. The new LCD monitor made for Opti by Compel – although like a lot of Opti products you'll see it wearing a number of different badges – is one of the first. The marketing departments will happily explain the advantages of flat screens: They are

ergonomic; they are good for the environment because they are low power; they look good and save space; and they are low radiation.

Unfortunately, most of this is claptrap. The Opti screen isn't ergonomic. It's small, but a 10.4inch monitor is uncomfortable to look at (big is beautiful when it comes to screens), and the 640x480 resolution isn't the kind of thing you want to stare at all day.

The screen may not consume a lot of power but it uses a VESA slot (PCI also available) for its proprietary video card, which means using a desktop computer with a power supply which is about as green as Manchester United's first strip. LCD screens also take much more power to make and have a very high failure rate (often as many as nine faulty screens to make one good one). If throwing away a

lot of expensive duds to make components is green then I'm Napoleon.

Looking good is a matter of taste. If you want to reduce clutter it's good, but that is not the same thing as looking good. The Opti screen is hospital beige.

The radiation thing is a load of twaddle propounded by people who don't like working with computers and are egged on by quack doctors selling screen filters.

Within those limitations, the Opti does its job. It installs easily with Windows 3.1 drivers, is bright enough to use in a well-lit office and can be removed from its stand to be wall-mounted. The display is crisp and the viewing angle almost as good as a CRT. The video card will support a proper monitor at 1024 x 768. A passive version is also available: and is bigger, cheaper (£839) and higher resolution (800x600) but not as bright.

PCWDetails

Price £1,299

Contact Opti International 0181 507 1818

Good Points Your friends won't have one.

Bad Points Your friends won't want one.

Conclusion So why would you want one?



SOFTWARE

Logical Decisions for Windows 4.0

Logical Decisions for Windows takes the pain out of logical decision making, says Michael Eagleton.

The brain is very good at making decisions based on a few items, but for complexity and objectivity, decision support software is required. Computers cannot make decisions, but it's very nice when they remember everything you describe, involve you at every stage in the process, and churn all of your small choices into a grand decision. Logical Decisions helps you do just that.

Once installed, wandering into Logical Decisions for Windows seems like wandering into a dense jungle. The supporting literature and the menu options at first glance seem designed to get you entirely lost. But after the first few pages and jumps to mind-boggling chapters, you realise that this is no jungle at all. This is the Royal Botanical Gardens of decision making software and every tool is here, neatly tended and perfectly appointed.

Logical Decisions for Windows breaks the whole decision process down into manageable sections. It forces you through the structuring of a decision to allocate the Goals, Measures, Alternatives and Units. The Common Units and Weights of each Measure contribute to a Goal.

The first section is a neat way of graphically describing Goals and Measures. Measures are hung from Goals, building them into a decision hierarchy of limitless complexity, (the limit is available memory). In the background to this is the Measures Matrix, a data table of the relevant units for each Alternative.

The best feature of Logical Decisions for Windows is its ability to use textual definitions of Units, in addition to numerical values. These are ranked in order of priority, but the key is retaining the text connection to the world where the decision needs to be made, and maintaining your focus there. Putting a numeric value on the choice between "a Blue one" and "a Green one" takes your eye off the real world decision, and you begin to deal in depth with quasi-meaningful numbers. Text Descriptions are invaluable when the time comes to use the extensive graphics to describe your decision. For strictly numeric choices, it provides low

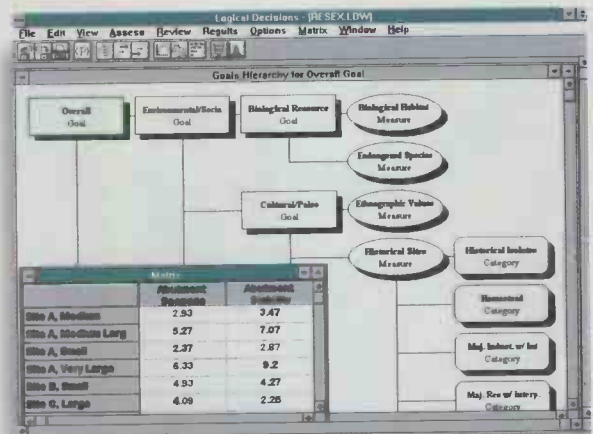
and high preference criteria and unacceptable cut-offs, or the possibility of statistical and probabilistic definitions.

Beyond the Units, and discreetly hidden in the background are the Utility components, or Common Units. This is where the power of preferences lies. Common Units are described on sliding scales (which is neat) or numerically, as "the usefulness of the unit for an alternative within a measure" (yes, these are the quasi-meaningful numbers). Logical Decisions for Windows uses these only to support the framework you have built so far, not as the key focus of it. This feature again keeps you focused on the real world options, while providing enough support for the computer to work in the currency it really understands. A very thorough approach.

After this, the Weighting of the contribution of each of the measures to the goal is identified. Very powerful tools for weighting include the "Gold Standard" of trade-offs between measures. The complexity or simplicity here, is of personal preference, each is handled superbly.

At the end of the garden is a very pretty display. Every decision criteria or weighting can be viewed, tested for sensitivity, scatter plotted, bar-charted or tabulated. It's not often that, when coming into a mathematical process programme for functionality that you expect the view to be very good. I was pleasantly surprised. There is an elegance in a programme that does all of its work in a large Times Roman. It looks good, it prints good, and it feels just a bit Bohemian.

Logical Decisions for Windows displays are used to provide insight into the defining aspects of why one solution is better than another, or to present them from different viewpoints, invaluable when reasoning to agree consensus. The results display is not just a series of lookups, each is a window that can be saved as a Windows Meta-File (.WMF).



Structuring decisions with Logical Decisions for Windows, is easy

The result displays begin the process of re-assessing your beliefs (or fiddling the weightings), refining what you feel the measures, weights and base values to be.

Two examples of where the software has been used are politics (where explanatory rationale for decisions is badly needed), and selecting the site of a military base. It excels at large problems and you grow to appreciate it as a power tool in the complex decision journey. You won't make use of it in an hour or be able to use it fully in a day, this is a tool for the detail researched, structured decision, and its mathematical integrity, complexity and solidness is impressive. It runs on a 386 or better, with 4Mb of RAM, needing about 5Mb of disk space. It recommends a 486 with 8Mb and a maths co-processor.

Logical Decisions for Windows comes as version 4.0 and shows the pedigree of coming through those 4 revisions. It is for everyone who has to arrive at, and explain, complex important decisions, and to enjoy doing so.

PCWorld Details

Price £399.00 (+ VAT plus P&P)
Contact POW! Distribution 01202 716726

Good Points Its ability to use textual definitions of Units, in addition to numerical values. Impressive mathematical integrity, complexity and solidity.

Bad Points Not very quick when used on a 486DX 33 with 8Mb.

Conclusion A serious tool for big decisions.



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SOFTWARE

LORIEN TextHELP! for Windows

Not just a proofreading tool but an invaluable aid to those with reading or other impairments, such as dyslexia, says Geoff Coggan.

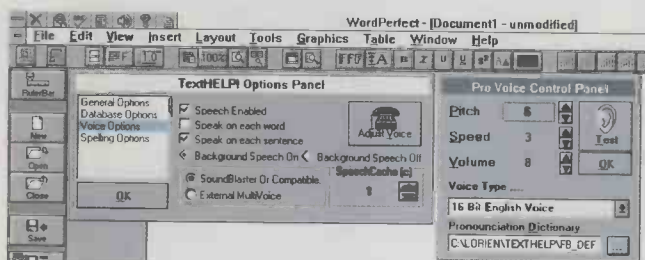
PC stalwarts may recall Monologue, a program which read back text using a speaker dongled into the parallel port, and which was especially helpful in proofing columns and rows of figures. It was distributed here by IanSyst, a company specialising particularly in voice programs including children's talking programs like the Dinosaur Discovery Kit.

IanSyst is now marketing Lorien TextHELP! for Windows, which is at one level a highly developed Monologue-style proofreader, but which also offers a great deal more — e.g. as an aid to computer users with reading or other impairments. Most of us using word processors have come to regard them as indispensable tools, forgetting that we used to manage perfectly well before the advent of computers. For most of us it is very much a self-created reliance — we can after all still write and communicate without them.

For some people, however, no such options are available and the computer has brought liberation. Lorien Systems (a software house based in Northern Ireland) has developed a range of applications to enable those with even severe physical impairments to not merely communicate but to use standard Windows software in doing so. The TextHELP! under review lies outside this highly specialised range and has mainstream functionality, not only in proofreading but in the help it offers dyslexia sufferers and those with reading, typing and spelling difficulties — all far more common problems than was once recognised.

The program installs with an uninstall icon to clear itself from disk, though I doubt if many trying it will want it off again. It takes up 8Mb of disk space and minimum specification is a 386DX running at 33Mhz, with 4Mb RAM. Its own RAM usage amounts to 1Mb so this is only really sufficient when using basic text editors. The requirements of full-blown Windows word processors like WordPerfect or Word make 8Mb a more realistic minimum.

Configurability is extensive, with the voice adjusting for speed, pitch and volume. Speech largely avoids the mechani-



With the aid of a sound card, text help can read text to you out loud

cal quality normally encountered. A question mark at the end of a sentence gives the voice a rising inflexion, and commas and brackets seem to be recognised in the flow of a sentence. As a rather unfair test I got it to read back Shakespeare sonnets from a CD. It made a great stab at this and did so in a voice like a cross between Donald Sinden and Douglas Hurd, which some may see as a step-up from that of a dalek. With mispronounced words, usually exotic forenames or technical jargon, it is a simple matter of teaching the program via its dictionary (or, rather, dictionaries, as many can be saved for different users or uses).

Voice options include reading back as you type, word-by-word or sentence-by-sentence; or reading sections of selected text (up to 66,000 characters). The former options are intended for dyslexic users (as is word-by-word spell-checking). TextHELP! can assist those with learning difficulties by suggesting word endings after the beginning of a word has been typed. Any suggested word can then be spoken. The spell-checker can be set to strict, normal or custom when suggesting alternatives, with a further phonetic button which can find even more words.

Getting users with slight to moderate degrees of dyslexia to test the program has confirmed its usefulness to them, though only professionals in the field of language disabilities could evaluate the help it offers those with more severe impairments. Clearly, used at extreme levels of disability the task of getting words onto paper is slow, but it may be near-impossible by other means.

The screen grab shows dialogue boxes that would never appear simultaneously in actual use. At top left, above the WordPerfect menu bar, is the small TextHELP! button bar which is all that normally displays. Top mid-screen is the Options panel, displayed on Voice Options. Right of this is the Adjust Voice

button which brings up the Voice Control panel where speed, pitch, etc can be tested and set. The Speller Box on the left pops up as needed. For example, on a word-by-word spell-check it will display

whenever an error is encountered, simultaneously beeping or saying that there is a possible error. To help a dyslexic typist correctly choose the word he/she wants from the list of suggested replacements a button on the Speller Box will speak any or all of the words listed.

Finding fault with the program is difficult as it does all it sets out to do. One criticism concerns its manual. Seeing that one role for the program is to help dyslexic users the manual should be a model of clarity. It isn't, though this shortcoming, which it shares with far too much software, is largely overcome by the excellent online Help. Even where this duplicates the manual text, there is something more logical about the way it is set out and compartmentalised, that makes it far easier to use.

Version 1.3 was introduced during the course of this review and appears to have got on top of the many variables which modern high-powered machines present to software developers. It has been tested on a Pentium with Sound-FX soundcard, PCI and ATI 64-bit video accelerator, and on two 486s with Soundblaster 2 and Cirrus Logic or Western Digital local bus video, working in exemplary fashion on them all.

PCWDetails














Price £75 for single user, special rates for schools and universities

Contact IanSyst 0500 141515; fax 01223 426644

Good points Fun to use and very useful.

Bad points Slightly pricey for the casual user.

Conclusion Invaluable for those who want to vocalise text.

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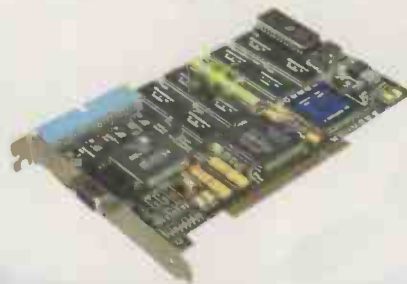
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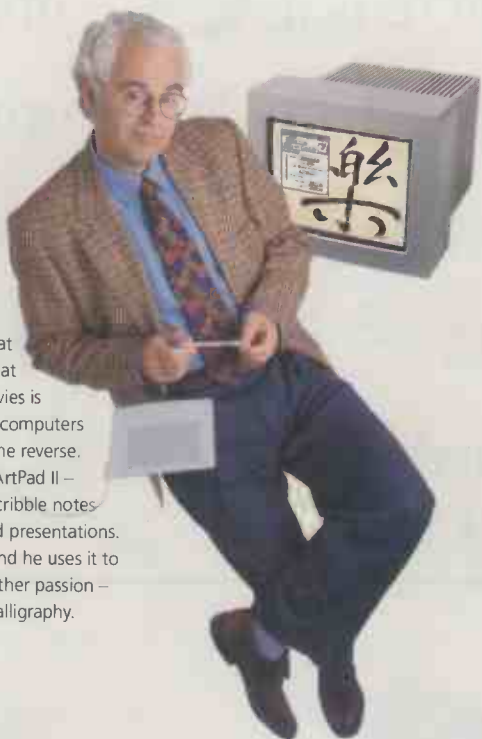


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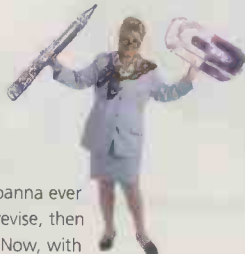
Making the most of her clients is what PR manager Jane Hollier does best – even if it means helping nature along a little. Using her ArtPad II and Adobe Photoshop, Jane can indulge in a little remodelling in her spare time – even down to changing hairstyles!



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SOFTWARE

MINITAB 10 Xtra for Apple and Windows

With a new graphic user interface and a host of new features, Minitab is still set to be the world's favourite statistical software, says Eric Adler.

Minitab is probably the world's most widely used statistical software. More students are introduced to the basic concepts of statistical analysis through Minitab than any other statistical package.

Having been supplying statistical software for over 20 years Minitab had let a certain degree of inertia set into their product development. However, with this long awaited 32-bit version Minitab have arrived at a cross-platform standard user interface which is now virtually identical in the MS Windows, Windows NT and Apple operating environments with the same handbooks and documentation for all versions.

This documentation is on a grand scale; the Minitab 10 Xtra "Quick Reference Card" runs to twenty eight pages, the User's Guide is now almost 300 pages and the main reference manual is over 1,200 pages while the online help files total almost 5mb and there are a further two hundred example files in addition to a 14 lesson on line tutorial.

Minitab 10 Xtra installs OK in Windows 95 but produced error messages and on just one occasion shut down suddenly with data loss. In Windows 3.11 Minitab 10 Extra runs under a custom Win32S installation included on two extra distribution disks and in this environment it proved to be stable. Minitab 10 Extra can now import files in Excel 5 and Lotus 123 format and permits data to be pasted to and from other spreadsheet based Windows programs.

Minitab also has DDE linkage with other Windows programs, and another major area of improvement, OLE2 linkage means that result screens and graphics can be pasted via the clipboard into MS Word and other word processors. 32-bit coding permits click-on graphics editing with dragging and dropping. Text and arrows can be inserted into graphics, but unfortunately in the Windows version this proved to be slightly difficult to implement with some elements refusing to respond to mouse clicks or to the "Bring to front/ send to back" command.

Customised graphics layouts can be saved as templates in much the same

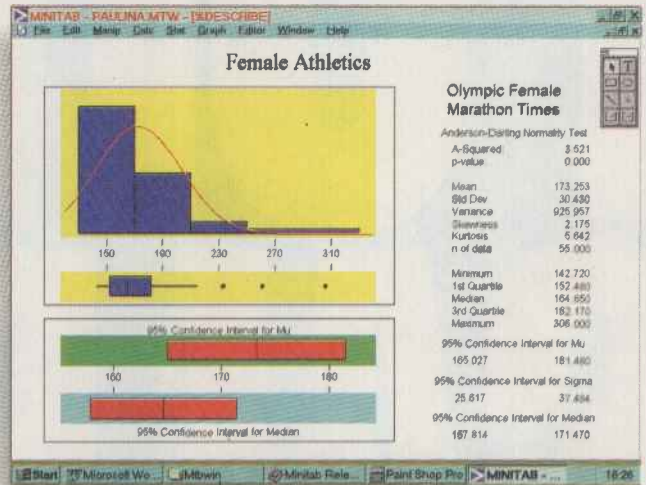
way that a series of commands can be saved as an executable macro, making this version of Minitab a smart package to work with.

From the point of view of data analysis as opposed to user interface, the most obvious improvement is the new combined data and graphics screens. This produces report-ready output with a single mouse click; formatted output ready to be copied directly into a word processing document. The descriptive statistics screen shows a well formatted histogram with superimposed normal distribution curve alongside essential data analysis in a single unit.

The distribution curve over plot is limited to normal and I for one would like to see a choice of distribution function curves as is offered by Unistat and Statgraphics. However, having this simple one step analytical output routine is a great improvement, as is the residual plotting function which presents the four standard residual plots. Normal Plot, I chart, Histogram and Residuals v Fits are presented in a single editable graphic. This has the added advantage that the plots may be brushed (individual points identified by row number by being clicked on), although the rows identified cannot be marked; neither can the brushing results be saved from within the program.

Other major areas of development include enhanced routines for Quality Control, Process Capability and Character Control Charts. With the addition of a wide range of charts including Zone, Short Run and percentage XS Charts and XR Charts, Minitab now has one of the strongest applications available for this specialist area. Like all Minitab graphics, the charts can now be custom edited.

Minitab has long had a strong experimental design capability (DOE) featuring



Minitab 10 Xtra now offers combined data analysis and graphics output

functions for the identification of significant variables, Interaction Analysis, Screening Designs, Factorial Designs, Response Surface Designs and Contour Plots which now all come with new improved 32-bit graphics editing capabilities. These DOE features allow the greatest access and interpretations of the data, with the least trial and error. They also allow the user to determine the optimal settings with ease. Other major areas of innovation include Time Series Analysis with over 60 functions where time series graphics can be custom edited and brushed and Analysis of Variance with improved residual charts.

The problems which arose with Minitab 10 Xtra in Windows 95 were mostly teething troubles, often encountered in a late beta release. But when the bugs are fixed, Minitab 10 Extra will be a reliable stable product in the Minitab tradition.

PCWDetails

Price £695 (plus vat), Academic orders £395.

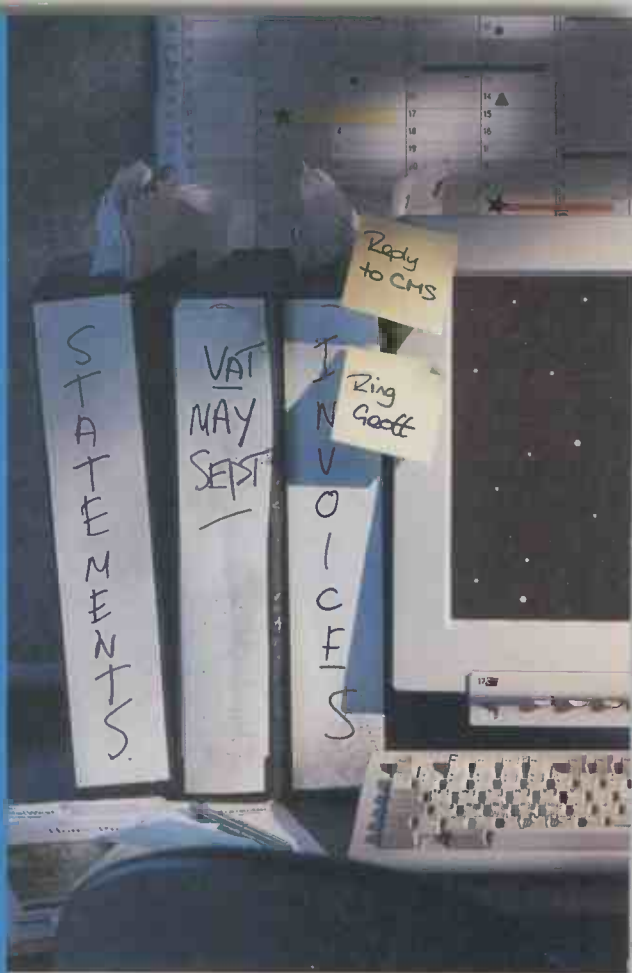
Contact Minitab 01203 695730. Fax: 01203 695731. Freephone 0500 586587

Good Points Promises to be a reliable, stable product once the bugs are ironed out.

Bad Points Some problems in Windows 95.

Conclusion A great improvement on earlier versions and will remain a strong contender amongst statistics software packages.

FOR
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£49.⁹⁵
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+ VAT



Introducing OfficeBlox

Five instant productivity tools for Windows 95 that will help organise your work, your life and clear your office of all the clutter!

If your desk looks like the one above, you need OfficeBlox. OfficeBlox will help you get rid of all that clutter by allowing all of those annoying little jobs currently done manually; like writing lists, quick calculations, scribbling down notes and filing; to be done as quickly and as easily on your PC, using small fast instant productivity tools called Blox.

What's more, even though each Blox needs less than 5% of the resources of a normal application, they are packed with power and take full advantage of the Windows 95 environment including drag and drop, OLE Automation and ODBC. So, you will also be able to capture, store, edit and work far more effectively than if you had tried to accomplish those tasks manually.

"Groundbreaking software. OfficeBlox represents a step forward in the way software will be viewed."

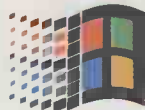
PC Magazine

Microsoft



OFFICE
Compatible

Designed for



Microsoft
Windows 95

30 DAY
MONEY BACK
GUARANTEE

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ListBlox

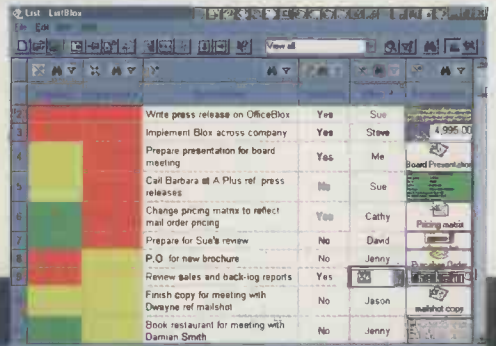
The fastest and easiest way to create, manage and work lists.

ListBlox lets you create lists as quickly and easily as writing them on paper but with the power and flexibility of an ODBC database.

You can create any list you need in seconds by simply typing into a blank template or by using the 48 pre-defined templates and content filled lists including to-do lists, addresses, expenses, asset tracking, decision support, project scheduling, top London restaurants and Times Top 100 companies. And, with multiple views and single click sorting, filtering and colour highlighting, analysing and managing your data has never been easier.

You can even make your lists work for you by dragging and dropping documents straight into them. So, when you review your to-do list for example, you can access and use those documents instantly.

And you can share lists with others by dragging and dropping them into other documents or by e-mailing them direct from the ListBlox menu.



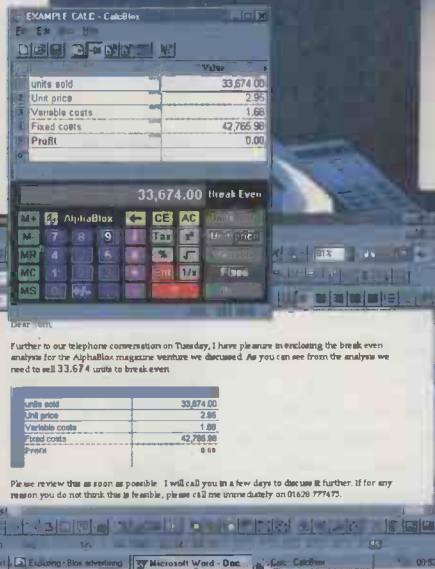
CalcBlox

The fastest, easiest, smartest and most flexible calculator ever built.

CalcBlox combines the speed and ease of a hand held calculator with the power and flexibility of a full Windows 95 software tool.

With 16 different calculator types, including standard, children's, scientific, depreciation and break even analysis and 21 pre-defined calculation templates including disposable income, mortgage payment, return on investment and business interest, CalcBlox gives you everything you need right out of the box and guarantees you get the right result every time.

What's more, CalcBlox's revolutionary CalcSheet makes complicated calculations like back solving quick and easy. It also allows you to create and save your own templates and to label, save, edit and drag and drop calculations and results into other documents and applications. For example, you can drag the results of a sales quotation calculation directly into a letter. When you want to review or edit the calculation, simply double click on the embedded CalcSheet or result number.



"Small but perfectly formed... quick and simple, it's a surprisingly important product, offering not only brilliantly designed functionality, but a far more efficient way of working. This is a habit worth getting into."

Computer Life

NoteBlox WorkBlox ToolBlox

The fastest and easiest way to take notes, organise your work and access tools.

As well as providing the fastest, easiest, smartest and most flexible calculator and list manager in the world, OfficeBlox also contains three more essential Blox; NoteBlox, WorkBlox and ToolBlox. So, at only £49.95, it also offers incredible value for money.

With NoteBlox you can create notes in seconds and then drag and drop them into documents, pin them on screen or e-mail them to colleagues.

With WorkBlox you needn't worry about losing files ever again, simply store all of your documents in visual tabbed folders by dragging and dropping.

With ToolBlox all of your Blox and applications are instantly available on one customisable floating toolbar.

Download a free 30 day trial copy from our web page at <http://www.blox.com>, or order now by calling Chris Brown on:

01628 777475

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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.

SOFTWARE**FirstClass**

Noel Chidwick hails this email/bulletin board system which opens up vast possibilities for distance learning and makes educational administration run smoothly.

2 YEAR
TEST

Just over two years ago, I managed to persuade the powers that be in my college that we should take our first steps into the digital age. I was told to go ahead and investigate an email system for staff, particularly those with contacts in Europe, where we have many partners. We were not connected to the internet — the luxury of JANET being at the time the closed province of higher (as opposed to further) education, and the cost of connecting was prohibitive. I was also keen to investigate the possibility of operating online courses, where students study from home via computer and modem. It was essential that it should be easy to use.

I needed to look no further than FirstClass — an email and electronic bulletin board system. The user has a private mailbox and access to any number of private or public conferences. Uploading and downloading files is straightforward, and there is a chat facility, allowing folk to type to each other while online. It has an elegant graphical interface of folders and icons and is simple to use: most users are sending and opening mail within a few minutes of first connection. The interface is exactly the same whether you log on with a Windows or a Macintosh client (distributed free, incidentally) and an FC server can be accessed over a LAN, via a modem, and recently over TCP/IP — the internet.

The FirstClass server is neither RAM-greedy nor processor demanding.

I installed the software on a humble Macintosh IIx with 8Mb of memory. I plugged a Hurdler serial port card into a Nubus slot; this accommodated our three modems with one socket in reserve. The IIx was already linked to a small network of Macs via LocalTalk. Setting the whole thing up, from opening the boxes to first logon took a short afternoon (with a long coffee break for browsing the manual).

For a system administrator, FirstClass provides excellent control; it is possible to configure a FirstClass system differently for different groups of users. For example, on our system (called ETEL) I have set up a range of desktops for staff in the college; public users; and other groups who have used ETEL for their own needs. FirstClass can be configured so that conferences can be fully accessible, read only, or completely invisible. Both the local branches of the Labour and Conservative parties could have their own conference areas on one FirstClass system, and neither would know the other was there.

A further feature of FirstClass places it head and shoulders above anything else: gateways. It is a simple matter for the administrator to establish a gateway connection with any number of FirstClass boards. This has led to the growth of OneNet, a community of FirstClass boards across the world. It works like UseNet, in that conferences on a variety of subjects are "broadcast" over this network. A message sent to one conference

spreads to the other FirstClass boards on OneNet in hours. Other kinds of gateways are possible, and I set up an internet gateway as soon as funds allowed. This only permits email, but it does allow us to send and receive messages over the internet.

Administrators need to spend time planning the links between individual machines and conferences — that long coffee break with the manual is vital. But once the layout has been established, it is a matter of filling in forms on screen.

Complexity is well hidden behind a user-friendly interface and SoftArc has managed to pull off an amazing feat by combining power with ease of use. Praise is also due for the policy of issuing free upgrades to registered users.

The principal caveat is for the administrator, not the user. To maximise speed, SoftArc has written the software in such a way that thousands of files are created on the server. This makes backing up a tortuous process, which has to be performed while the system is offline. Having said that, not once in all this time has ETEL crashed — because of the FirstClass software — and it runs 24 hours a day.

The Open University has recently adopted FirstClass for delivery and support, which proves its value to those who work in education. It opens up huge possibilities — we will be able to offer courses to remote or housebound students that would never have been possible in the past.

PCW Verdict

FirstClass is a mighty piece of software which makes mincemeat of Microsoft Mail, thumbs its nose at Lotus Notes — and is still as cuddly as a bunny rabbit.

Price 5 users: £330
10 users: £499
Telecom email: £299
Internet connection available

Contact Eurosource 0181 561 1993

HARDWARE

Escom 486DX40

A cheap, nicely bundled 486 that runs glitch-free for a year? Sounds too good to be true. Marc Hindley reckons Escom is here to stay.

1 YEAR
TEST

A year ago, I was looking for a new computer to replace my ageing 386. Price was important, but I also wanted a reliable dealer with a good name.

I had noticed Escom advertising quite regularly, but had not seen any reviews or heard of anyone using its machines. However, I had a feeling that it was going places. I travelled 245 miles to the Escom store in Aberdeen, and finally settled for a 486DX40 with 4Mb RAM, bundled with DOS 6.2, Windows for Workgroups 3.11 and Microsoft Works 3.0 for Windows, for

an excellent price. I was intending to get a CD-ROM/CorelDraw bundle, but they had sold out. Another good omen, I thought.

Back home and out of the box, everything worked perfectly and first time. I had enormous trouble trying to connect a laser printer through the serial port, but that was my fault, rather than the computer's.

Only two complaints — and very minor ones at that — no DOS mouse driver was included and I was surprised to find some months later the Trident video drivers had not been installed, and I was running under a standard VGA driver. The disk was included (presuming it was the backup, I filed it) and an easy Windows installation made immediate improvements over the 640x480 setup I had been using, providing comprehensive power management facilities. So with a healthy 1Mb video card, my



screen now resolves at a comfortable 800 x 640 in high colour.

Expansion capabilities are adequate, with 32-bit and 16-bit slots vacant, one 3.5in and two 5.25in drive bays free on the front, and memory is expandable to 128Mb with 30-pin SIMMs. My model had no 72-pin SIMM slots, although I suspect that more recent ones do.

Operating systems and software bundles, though pre-installed, come with complete manuals and disk sets. No manual as such for the hardware, but wiring diagrams and instructions for setup and expansion are included.

It probably hasn't escaped anybody's notice that Escom have been in the news this year, first for their buyout of Rumbelows and then their unexpected takeover of Commodore. This was confirmation for me that I had made the right choice, and that the Escom name

From the moment it came out of the box one year ago, the Escom has worked perfectly

will become a recognised brand. A just reward for offering such value for money to a critical public.

After a year of near-daily use, I have had no problems whatsoever. When I'm ready for a replacement or an additional computer, an Escom will be high on my list.

PCW Verdict

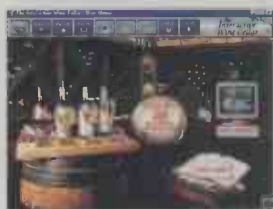
Low-priced, reliable PCs with high spec and good bundles. Highly recommended.

Price £529 (DX/66 with 540Mb hard disk and 4Mb RAM)

Contact Escom 0990 555888

"You must be careful about giving any drink whatsoever to a bore. A lit-up bore is the worst in the world." — David Cecil

"If you drink enough wine, it doesn't matter how bad it is." — Anonymous



"I think a man ought to get drunk at least twice a year just on principle, so he won't let himself get snotty about it." — Raymond Chandler

TIPPLE TATTLE

What cocktail should you give your guests as an aperitif? What wine should you have with Christmas dinner? And what about all those party drinks and punches? Paul Begg weaves his way through the electronic booze guides.

PCW Wine, Beer and Grape Photography by David Whyte

If you are interested in wine, spirits, cocktails or beer, your computer can help you. There are software guides to wine, cheap and cheerful cocktail recipe databases, and a couple of must-have titles for the dedicated or novice homebrewer. You can also use your computer to access bulletin boards, online services like CIX and Compuserve, and the internet to exchange information and advice about your favourite drinks and places to drink. With Christmas rapidly approaching, we decided to investigate further.

Wine

The proliferation of books about wine and the wine courses in Sunday newspapers and on television shows how wine consumption and appreciation is growing in Britain. The trouble with books, though, is that it isn't always easy to find the information you need and the courses can be superficial. Which is where CD-ROM steps in. You can find the information you want at a key stroke and learn at your own pace. And even if you are perfectly aware of the difference between a Chateau Mouton-Rothschild '59 and a '64, there's still a lot you'll find useful on these discs.

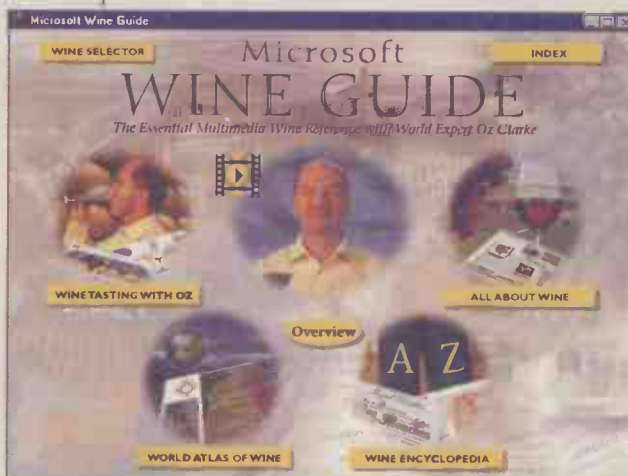
The mystique that surrounds wine is due to its infinite variety. The taste can change according to the grape variety, the region where the grape is grown, or the amount of sunshine or rain in a particular year. The

ability to recognise the subtle differences between wines is an important part of the enjoyment. But the act of discerning the differences shouldn't be po-faced or snobbish. It should be fun. As Oz Clarke says on the Microsoft Wine Guide (see below): "I'll drink vintage champagne out of a tin mug if that's all there is... It may not be correct, but wine is supposed to be fun before it's correct."

Microsoft's Wine Guide

Oz Clarke, wine writer and one of the presenters of the BBC's *The Food Programme*, also presents Microsoft's Wine Guide and no matter how often you use this CD-ROM, his enthusiasm is always

Wine Guide's opening screen gives you several options to explore your tipple





infectious. The Wine Guide is the most comprehensive wine encyclopedia on CD-ROM. It covers everything from the grape on the vine to the taste of the wine itself.

Everything you ever wanted to know is here — how to read a wine label, how to open a bottle, what sort of glass to use, how to judge the colour, bouquet and taste. A category called Wine Tasting covers every detail, from decanting, corks and corkscrews to how to spot a bad wine. There's also a video tasting tour in which Clarke explains what to look for, smell for and taste for in 18 wines, including champagne and port.

Perhaps the most used section will be All About Wine. Here information about the vineyard and the winery, classic grape varieties, reading a wine label and wine list is assisted by pictures, diagrams, video, and interactive charts. It is also the place where you can match the wine to your food. All you have to do is locate the food from the extensive lists provided and the Wine Guide produces a list of suitable wines. If you wish, you can narrow your search by specifying the country from which you want the wine to come.

In addition, there is an atlas of wine showing the 12 major wine-producing areas, plus 57 interactive maps and extensive information about geography and history, variety of grape grown and the way the country classifies the quality of its wine. Finally, an A-Z of wines

PCW Verdict

Microsoft's Wine Guide

This is an excellent introduction to wine, at a price not far off what you would pay for a good printed wine encyclopedia. In my opinion, it's also one of the best CD-ROMs you can buy.



"A good general rule is to state that the bouquet is better than the taste, and vice versa." — Stephen Potter

includes almost 2,000 entries and a glossary of about 700 wine terms.

Wines of the World

This American CD is based on the 1992 book, *The Companion to Wine*, edited by Frank Prial with Rosemary George and Michael Edwards. It is not as comprehensive as Microsoft's Wine Guide, but the smashing photographs are a compensation.

You embark on your exploration of wine from a mood-setting main screen which has a photograph of wet, glistening grapes hanging from the vine and relaxing classical guitar music in the background. You can explore wines in four ways: via the Wine Browser or by looking at Wine Quality, Wine Appreciation or Wine Regions. With the exception of the Wine Browser, each section leads you to others.

Wine Quality gives you three choices: The Vineyard, The Grape, and Making Wine. Clicking on The Vineyard gives you a detailed text and 16 photographs of different types of soil, vineyards, grapes, care of the vines and so on. Clicking on The Grape gives you a description of the main grape varieties, each variety being illustrated. Making Wine is an illustrated step-by-step guide.

Wine Appreciation covers Wine and Food, Wine Colour, Wine Tasting, Serving and Storage, and Wine Labels. The information is provided as text, accompanied by lots of great photographs. Unlike the Wine Guide, the program doesn't select an appropriate wine to go with the food you specify, but it provides plenty of good, solid information.

Wine Regions covers 18 regions (some are broadly defined, such as Far East, eastern

Just choose your food and let Wine Guide choose the appropriate wine



Top Wines of the World: a smashing opening screen
Above Great photographs throughout and a straightforward text

Europe, and so on), including some small wine producing countries such as Greece and the UK. Coverage is fairly comprehensive and includes a narrated "grower's viewpoint". For Greece, the grower is Mr Gerovassiliou of the Domaine Carras and Gerovassiliou Estate, who explains Greek grape varieties, growing conditions, wines, and future developments.

The Wine Browser allows you to search for wines — you just type in a grape variety such as Cabernet Sauvignon, select a producer, vintage, price, quality rating, and then Search. There's an excellent glossary of about 2,000 wine terms, too.

PCW Verdict

Wines of the World

While not as comprehensive as Microsoft's Wine Guide, the coverage of wine regions is more complete (the Wine Guide gives little more than nod in the direction of Greek Retina, for instance) and the photographs are impressive.



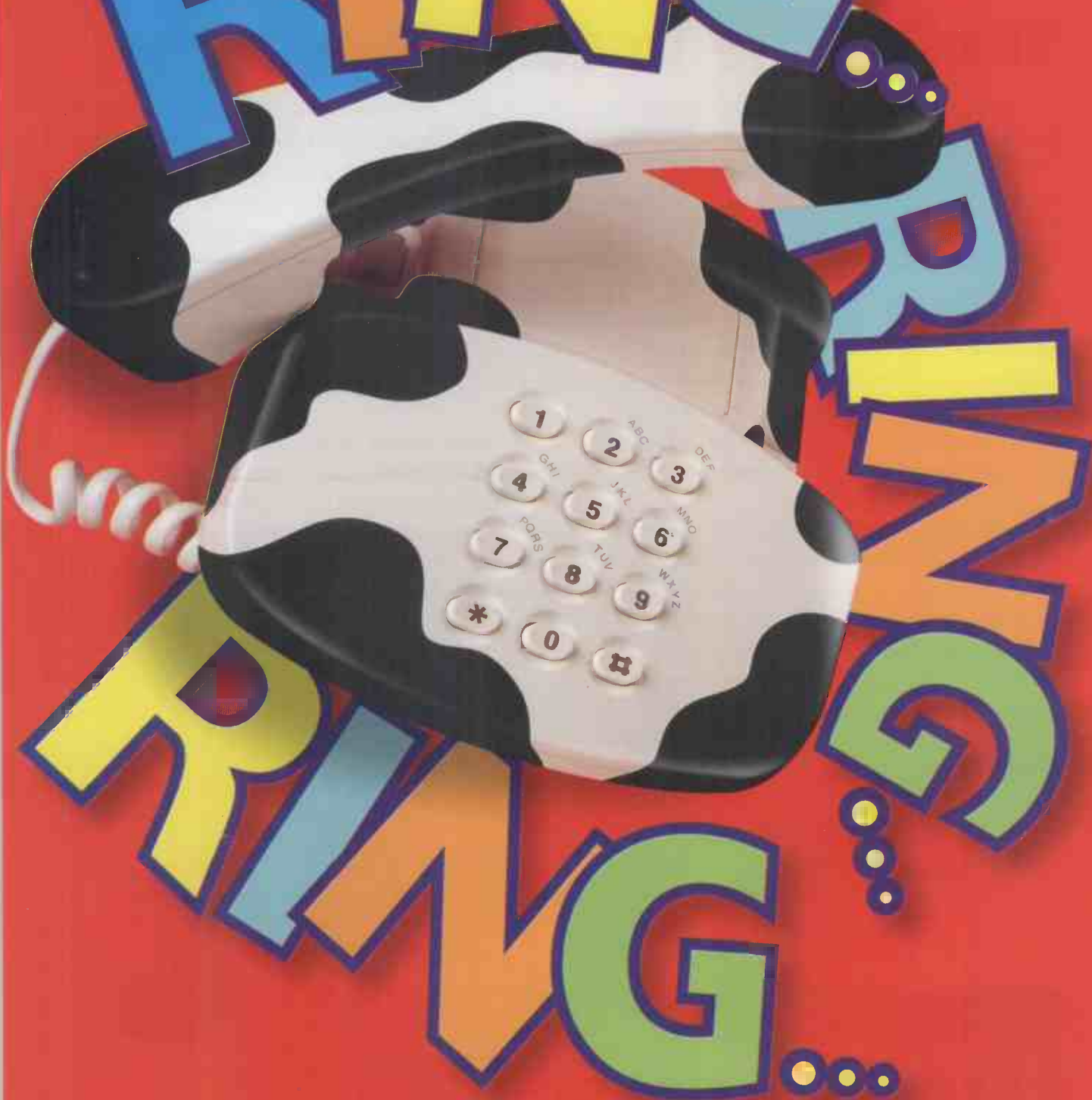
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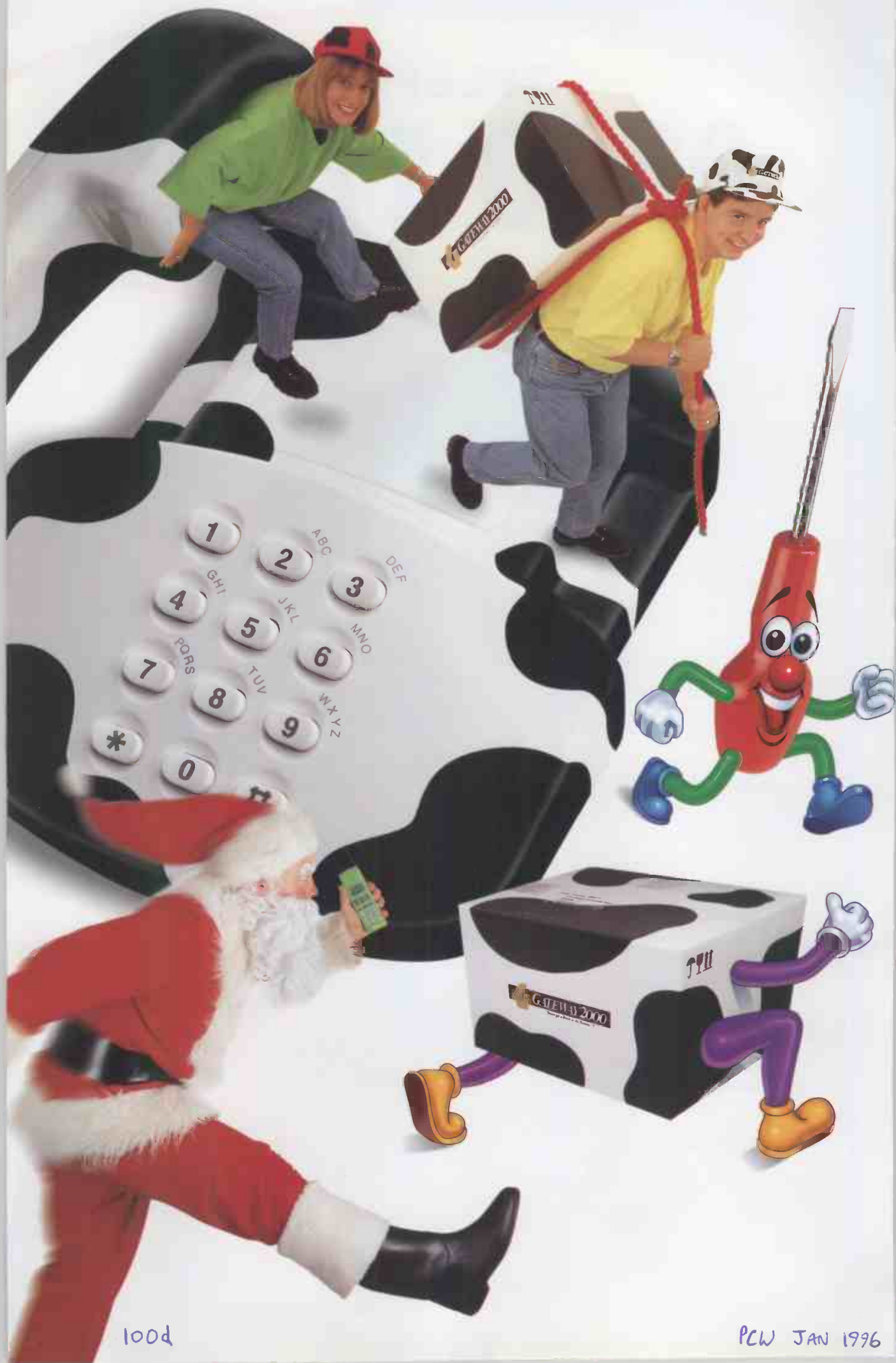
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It's all part of the service from Gateway 2000®. A level of service that supports our pledge to bring you not only the latest technology at the best prices, but also the finest quality components from the world's leading manufacturers together with true value-for-money in every system we sell. That's what makes us the industry's price-performance leaders.

It's these values that made us America's number one direct sales PC manufacturer (Source: IDC) – and a Fortune 500 company with worldwide sales in 1994 of over \$2.7 billion. In just two short years in Europe, those same values have seen us rise to become the second fastest growing PC company here too (Source: Dataquest).


When you buy direct from Gateway there are no wholesalers, retailers or other middle men to take their cut and you deal directly with the people best placed to help you – the people who manufacture, supply and support your system. At Gateway you simply talk by phone to our skilled and highly professional sales staff who make it their personal business to see that you get all the help you need in selecting the system that's best suited to your individual requirements. And after you've bought, you have access to our Customer Services and Technical Support teams. And it's these Gateway people, the people behind the phones, who make the difference. Thanks to them and their knowledge and skills you can buy with confidence and peace of mind.

We understand just how important after sales service and support is to our customers, that's why we're so proud to announce a radical enhancement of new support services. Services featured as standard with the purchase of all Gateway PCs include lifetime free technical phone support, a three-year parts warranty, industry leading on-site services including extended on-site hours for evenings and weekends, next-business-day on-site service and lifetime support of all Gateway supplied software – including Windows 95 at no extra charge.

In a recent press statement Ted Waitt President and CEO of Gateway 2000 said, "Although many companies are cutting back service and support programs and even charging for software technical support calls, Gateway is committed to add more support options, not less. We've been listening to our customers' support needs and Gateway support was developed to meet those growing needs by wrapping industry leading service around every PC to provide the best total package."

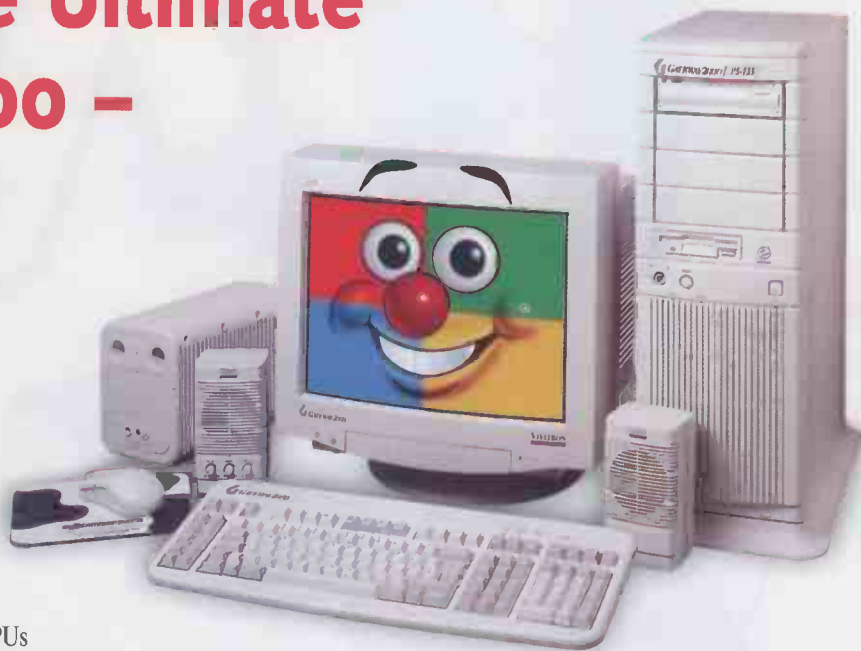
Need we say more?



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The Ultimate In Power, Performance And Value - And Now The Ultimate In Support Too - Even On Our Software

At Gateway 2000, we've built our reputation by providing the best value-for-money and the best quality in high-tech, high-spec PCs. And now our top-of-the-range systems are even better value. Just take a look at our P5-133 Elite and P5-120 Elite models. They're based on the fastest CPUs currently available from Intel®, the 133MHz Pentium® processor and the 120MHz Pentium processor.



100f



Both systems feature huge 1.6GB hard drives with PCI enhanced IDE interface, combined with 16MB EDO RAM and 256KB Pipeline Burst Cache to give you the power of a steam-hammer, the speed of lightning and the memory of an elephant!

Quad-speed CD-ROMs (with a triple-deck CD changer on the P5-133) are a standard feature of all our desktop and tower systems and Matrox

Millennium video cards with 2MB WRAM on the P5-120 and 4MB WRAM on the P5-133 combine to give you brilliant colour and superb resolution - all perfectly rendered on the 17-inch Vivitron™ monitor. These monitors use the latest Sony® Trinitron™ tube technology to give you pin-sharp focus and an unsurpassed range of colours. Thanks to Ensoniq Wavetable sound card, Altec Lansing speakers and a separate sub-woofer, these systems sound as good as they look too. Add to all this a simply amazing range of software: MS Windows® 95, MS Office™ Professional 95 and MS Encarta™ 95 at just £2,199 for the P5-120 and £2,399 for the P5-133, now you know what we mean by value!

All Gateway systems are now shipped with Windows 95 for faster, easier and more reliable computing. But if you prefer, you may opt for DOS® 6.22 and Windows for Workgroups™ 3.11 instead. It's up to you, the choice is yours - the price is the same. Either way, Gateway 2000 is the only PC company to offer FREE lifetime technical support not only on hardware but on all the software bought with it.

So what are you waiting for?

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pentium
PROCESSOR

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At Gateway we've a range of systems to suit almost every situation. Professional or multimedia systems based on 75MHz, 90MHz, 100MHz, 120MHz and 133MHz Pentium processors may be combined with almost any hard drive, monitor, video card and software. So, whatever your needs, just call us and we're sure to find you the perfect solution.

For home use, our P5-75 and P5-90 Family PCs will take you into the amazing world of multimedia with everything you need for work, education and entertainment.

The quad-speed CD ROM with a throughput of 600KB per second gives you full-screen, full-motion video from a CD (without jerks!) and the sound quality rivals many a sophisticated hi-fi. And just look at the software that comes with them!

The P5-75 Family PC for only £1,199 comes with Windows 95, MS Generation Software Bundle including: MS Works, Encarta 95 (the incredible interactive multimedia encyclopaedia), Cinemania, Golf and Money. Then there's a fantastic Games Bundle and,

wait for it, Superscape Virtual Reality Software on CD! We promise, you simply won't believe it! But be warned before you let the children loose on this lot, a Family PC is not just for Christmas – it's for life. So you could find yourself having to book time on it to do your correspondence, household accounts or the extra work you've brought home from the office!



100g

Introducing The Gateway Solo Multimedia Portable PC

The new Gateway Solo® is everything you ever wanted in a portable, and more. Wherever you need to use it, whatever you want to use it for, Solo delivers – it's the portable that thinks it's a desktop. In the office, at home, out on location it's a serious PC that's a lot of fun too. Just look at the spec! Choose from 75MHz or 90MHz Pentium processor, up to 1.2GB removable hard drive, minimum 8MB RAM, modular bay for 3.5-inch floppy or CD-ROM drive, full

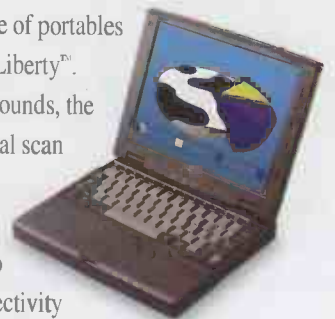
sized keyboard with Windows 95 keys, 10.2-inch VGA Active Matrix Colour display and that's just for starters. There's an optional docking bar for easy connection to external monitor, keyboard and printer, built-in microphone and speakers, lithium ion battery giving hours of use and still the spec goes on!

Solo is the ultimate Windows 95 portable, kitted out by Gateway to be your primary PC. Of course, we're not suggesting that you never show your face in the office again, but you certainly won't need to be tied to your desk to do a good day's work. Take it into the office if you must, after all, it only weighs around 6 pounds, but with all this computing power and a fax modem, maybe it's time to think about going Solo!

The Gateway 2000 Liberty

Completing our line of portables is the Gateway 2000 Liberty™.

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Our technicians have been comprehensively trained to answer questions and provide solutions over the phone. They have been equipped with industry leading support systems including case based reasoning tools with a database of every question ever asked. You may call them at any time between 8am and 9pm weekdays and 9am to 6pm Saturdays.

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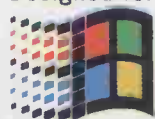
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SOFTWARE

All Gateway 2000 systems are preloaded with Windows 95, Microsoft's newest operating system. Software masters are provided on either diskette or CD. Documentation is also provided (either printed or on CD). Software is tested and optimally configured for your system, eliminating potential installation and set-up errors.

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This Bundle, standard on all Family PCs, is packed with Microsoft titles for all the family. In addition to MS Works 95, MS Golf, MS Publisher and MS Encarta 95, it contains:

MS Cinemania 95, the film buff's dream.

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■ Games Bundle

A standard offering on Gateway Family PCs, and available as an option for £50 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

centuries in the future, where you use your skill to stop a madman's interstellar plot. **Terminal Velocity™** is a high-speed 3-D space combat game operating on up to 27 levels. **SuperKarts™** leaves other racing games in the dust with 16 heart-stopping race tracks.

■ Starter Pack

Available as an alternative to the Games Bundle on all Family PCs, this multimedia bundle is also available as an option on all systems for £50:

Kiyeko and the Lost Night, a children's interactive story about the adventures of a young Indian. **Battle Chess™** - Chess with a difference, where characters engage in mortal combat. **Word Stuff™**, an educational adventure for children, designed to improve language skills in English, French and German. **Rosetta Stone™**, total language learning software for beginners and intermediates in English, French, German, Russian and Spanish. **World Atlas™** brings geography to life with 400 detailed maps and interesting facts. **Magic Carpet™** makes you a Wizard, with the power to reunite the world after an international disaster.

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■ Wavetable Audio Multimedia Kit

Ensoniq Soundscape 16-bit Wavetable sound card with Altec Lansing ACS31 speakers. £170

■ CH Flightstick £29

■ 28.8 Data/Fax Modem £199

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Call for details.

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■ Hewlett Packard LaserJet 5L £449

■ Jumbo 1400 Tape Backup Unit £139

■ 2GB SCSI Bundle

Kit includes 2GB SCSI drive, Toshiba 4x SCSI CD ROM and Adaptec AHA-2940 PCI SCSI Controller. £700

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The Interactive Wine Guide

It's not in the same league as the other two guides, but the Interactive Wine Guide costs a mere £14.95 (inclusive of VAT). For this, you get valuable wine tips from wine expert Robert

Mondavi and other noted connoisseurs, an A-Z guide of wine terms, an atlas of wine-producing regions and a descriptive guide to all manner of wines.

The disc is somewhat American in flavour, using the term "blush" for what we call "rosé" and giving emphasis to Californian wines. It is far from comprehensive and fails to explore the less common wine-growing regions. However, the wine novice will almost certainly find that it has all you need for finding a good wine to accompany Sunday lunch or to take to a dinner party.

You can investigate wines by their colour, find out about wine regions, or brush up on your wine terms. And there's a multimedia section that includes video and audio.

From the main screen, a mouse click on the appropriately coloured wine bottle takes you to an alphabetical list of wines. Each is accompanied by a broad description, some general information about temperature and ageing, the wine's characteristics (subtle, fresh, clean tasting, and so on) and the most appropriate

"Water taken in moderation cannot hurt anybody." — Mark Twain

foods to go with it. A mouse click on any green highlighted text produces a pop-up box containing a definition.

The tour of wine-growing countries — including Argentina, Australia, Chile, England, France, Germany, Hungary, Italy, New Zealand, Portugal, Spain, and the United States — is disappointing, consisting merely of a single screen of very broad general information. The dictionary of wine terms is more full-bodied: the definitions are short, but fine as a beginner's guide. Some are supported by narrative or video.

The multimedia section includes four videos and 17 audio extracts. All this information can be searched by word, but it isn't comprehensive. You can't type in "stew" for example, and get a list of every wine suitable to accompany a plate of that traditional winter warmer.

Curious wine fact

Sir Kenelm Digby holds the distinction of being the inventor of the sturdy modern wine bottle. He invented it in the 1630s — previously, wine bottles were very fragile and used mainly to take wine from the barrel to the table.

your impressions, as all the wine experts advise; and you can make notes of expert recommendations you come across and print out a list for your next visit to your local wine merchant. The disc also comes with details of 170 French wines.

PCW Verdict

Wine Cellar

For real aficionados rather than amateur wine-drinkers.



Booze Online

Both CIX and CompuServe have wine forums — try Wine on CIX and Bacchus on Compuserve — and there's enough going on the internet to keep even the most dedicated tippler happy.

Some sites to try are alt.food.wine, rec.food.drink, and rec.crafts.winemaking. The world wide web holds some promise too. Try <http://www.virtualvin.com>, a virtual vineyard devoted to wines from small US vineyards.

You can even order your wine via the web. Contact Sainsbury's Wine Direct on <http://www.j-sainsbury.co.uk>, make a choice from about forty wines on offer, order a case of what you fancy, and sit back to wait for it to be delivered to your home.

For beer on CIX try Beer, Booze, Drink, Drinkers, Food, Whiskey. On Compuserve look for the Beer forum. On the net, try alt.alcohol.

PCW Verdict

The Interactive Wine Guide

As a budget-priced beginner's introduction to wine, The Interactive Wine Guide has an acceptable nose, good colour and is satisfactory to the palate.



Wine Cellar

If you are a real wine aficionado then you must seriously consider this program. At first sight, it looks designed for anyone who has a wine cellar so big they can't remember where they left the claret. However, it has wider uses. First, you can keep a list of all the wine you buy, including where you bought it; you can make a note of



Top Interactive Wine Guide: a budget-priced introduction to wine
Above Choose from a selection of multimedia; often quite long and informative

Hangover cures

"A good cure for a hangover is to drink black coffee the night before instead of the morning after." — Laurence J. Peter

That debilitating hangover is caused by the effects of ethyl alcohol in your bloodstream and the best way to beat the "morning after" misery is not to drink to excess the night before. Once the damage has been done, get some oxygen into your brain by deep breathing. Then dress comfortably, stagger downstairs and make yourself one of the following:

Fernet Branca

45ml (1.5 fl. oz) Fernet Branca (a thick black bitters with quinine)

45ml (1.5 fl. oz) Pernod mix in an old-fashioned glass with ice

Prairie Oyster
 Worcestershire sauce
 two drops of Tabasco
 yolk of a fresh egg
 salt and pepper to taste
 sprinkle the Worcestershire sauce in a champagne glass, drop in the Tabasco, add the unbeaten egg yolk and drink the whole lot straight down
 if this doesn't work, return to bed and don't expect sympathy from anyone — not even your dog.

"For a bad hangover, take the juice of two quarts of whiskey." — Eddie Condon

Cocktails

A cocktail is a drink consisting of two or more ingredients — usually a spirit, liquor and fruit juice — combined by shaking or stirring. The Martini is said to have been the first cocktail, but this is unproven. There are many stories as to how the cocktail got its name. The most recent I've come across is that a Frenchman in Betsy's Tavern near Yorktown during the American Revolution saw a row of bottles decorated with cocks' tails

"If you drink, don't drive. Don't even putt." — Dean Martin

and shouted "Vive le cocktail!" There are other explanations, but the origin of the word will probably remain lost in the mists of time forever.

Given that there are thousands of food recipe books on disk and CD-ROM, it's odd that the commercial software companies seem to have avoided cocktail recipes. This is especially odd when you consider that there are thousands of recipes, that the technical stuff (such as the correct glass and how the drinks should be mixed) is sometimes more complicated than with wine, and that there's loads of scope for audio, video and still photography. Nevertheless, cocktails are served by shareware. Glitz and glamour may be in short supply, but the content is solid. Each of the following programs are pretty much the same, the only significant difference being the way in which the information is presented.

Complete Bartender's Guide

The Complete Bartender's Guide is a basic DOS-based database of cocktails and mixed drinks. Be warned, though, some of the cocktail names are naughty to the point of being offensive — even to a Sergeant Major. Being DOS-based, it looks a little long in the tooth, but is nevertheless worth taking a look at.

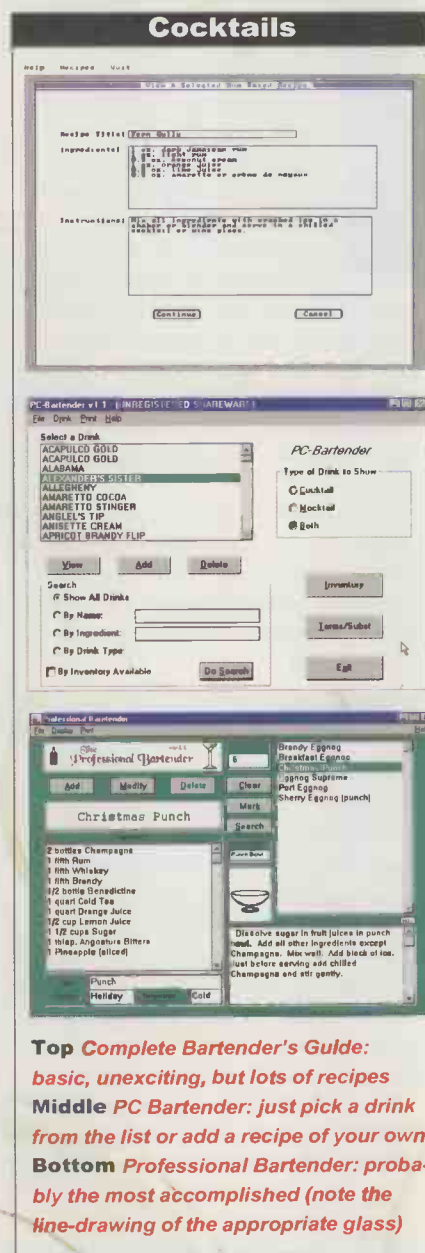
PCW Rating



PC Bartender for Windows

PC Bartender for Windows is another basic shareware program, but it does what it's supposed to do and couldn't be simpler to use.

It has three uses: it provides you with a database of cocktail recipes, lets you enter new recipes or modify existing ones, and it has a neat feature that enables you to convert and adjust the



Top Complete Bartender's Guide: basic, unexciting, but lots of recipes
Middle PC Bartender: just pick a drink from the list or add a recipe of your own.
Bottom Professional Bartender: probably the most accomplished (note the line-drawing of the appropriate glass)

amount of ingredients used. This latter feature is very useful if you are planning a party and want to mix up enough drinks for a known number of guests.

PCW Rating



Professional Bartender for Windows

This is the most accomplished of the three programs. The main screen has a list of drinks and you can find out the ingredients, the recipe, and general information such as the type of drink, temperature at which it should be drunk and the best season for drinking it. A neat feature that I really liked was a line drawing of the glass appropriate for each drink.

Searching is particularly good. You can search by liquor, liqueur, ingredient (such as drinks containing cream), by type of glass, season and drink

temperature. There are various printing options and, of course, you can modify existing recipes or add your own. The program comes with over two hundred drink recipes from cocktails through to beers (a lethal concoction called Depth Charge consists of beer and Schnapps), to soft drinks and punches. If you register, which costs about \$20, you get over 1,000 more drink recipes and full printed documentation.

PCW Rating



Professional Bartender for Windows

Only slightly less sophisticated than Professional Bartender, this lacks the comprehensive searching facility and the line drawings of glasses. However, WinBar scores by including over 1,000 recipes and the ability to tag the drinks you've tried.

PCW Rating



Beers

The Beer Homebrewing Guide (reviewed below) describes beer as "Nectar of the Gods. Juice of the sacred barley fruit". This seems to say it all, except to add that the tremendous growth in popularity of real ale is the result of the most successful consumer campaign in history. It is therefore difficult to understand why the commercial computer companies haven't jumped on the beer bandwagon with a beer guide.

All we have is a CD-ROM of beer recipes for the home brewer — but don't be too hasty to turn away! This is a seriously serious disc that any beer drinker would enjoy browsing through and which might even turn you into a homebrewer.

And why should you ever wish to brew your own? If you have ever sat in your garden on a hot summer's afternoon and taken a mouthful of a crisp, clean and fresh beer, you wouldn't need to ask. There's a huge variety of beers you can brew, from light summer ales to warming winter beers.

The Beer Homebrewing Guide

Written and compiled by Fred Lloyd, Barry Lyon and Monty Nelson — two enthusiastic homebrewers and one enthusiastic homebrew drinker — this must surely be the ultimate homebrewing guide.



Top If this disc doesn't inspire you to start homebrewing, nothing will
Above A seasonal recipe

The only thing that lets it down is that it is heavily orientated towards the US.

There are four main sections. "Brew" is an illustrated step-by-step tutorial to homebrewing. "Reference" is the home of lots of homebrewing reference material which, unfortunately, is American and of little use elsewhere in the world. However, the glossary is useful.

"Recipes" is the section most of us will head for first. The collection here is large and eclectic. There are two recipe collections, one called "The Cat's Meow" and another called "Other" which consists mainly of a collection of recipes supplied by customers of California-based William's Brewing, and reprinted in a newsletter. The Cat's Meow is a collection of beer recipes drawn from numerous sources, including almost every recipe posted to the Homebrew Digest on the internet from the first volume until 1992, but as the authors observe: "Caveat Brewer — we don't guarantee that the recipes will taste good, or even that they won't make you violently ill."

Nevertheless, just look at the range of beers covered: pale ale, lager, wheat,

steam, smoked, sour-mash, stout and porter, barley wine and doppelbock, herb and spice, fruit, scotch, trappist, brown and other ales, mead, cider and even a few of historical interest (most acknowledged as undrinkable).

Digests is a collection of articles from the world famous Homebrew Digest Internet mailing list. If you are familiar with on-line Threads, you'll have a rough idea of what to expect here — enthusiasts exchanging advice, recipes and much else.

Overall this disc is of greatest use to UK users for the Cat's Meow recipes, but enthusiasts generate excitement about their hobby and somehow this comes across from your computer screen to you.

PCW Rating

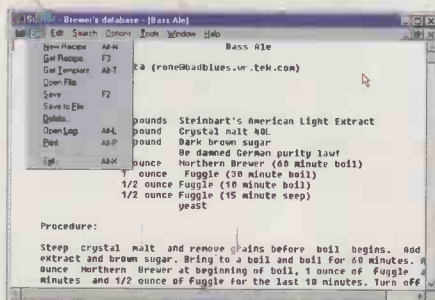


SUDS for Windows

SUDS is a comprehensive brewer's cookbook and log program that's grown from a simple effort by its author to bring some sense and order to his recipe and log notes. Using SUDS for Windows couldn't be easier. First enter a recipe, which you can type in or import as an ASCII file, and it is the work of a moment to import recipes downloaded from an online service such as Compuserve.

Once you've saved the recipe, a dialogue box is opened in which you enter pertinent information about the recipe,

Suds for Windows: for the homebrewer who means business



"There is no bad beer: some kinds are better than others." — German Proverb

such as the starting and finishing gravities, category (Pale Ale, etc) and method (i.e. Extract, Full Mash). Once you have a recipe, you can make log entries. The log detail screen contains a number of fields pertaining to a particular batch of the selected recipe. These include: Date Started, Date Bottled, Starting and Finishing Gravities, and Hop IBUs. There's also an area where you can make notes.

The program has some shortcuts built-in to make entering the information easier. The log screen gives you access to really useful tools such as the HOP IBU spreadsheet to calculate hop IBUs for beer batches — IBU stands for International Bittering Units, a world-wide standard of bitterness measurement based on hop isomerisation (it says here!) — and a basic beer label printer. SUDS for Windows comes with several recipes to get you started and there is a glossary of terms in the Help files.

SUDS is a typical shareware product: it was designed to satisfy the specific needs of its author and has grown into a solid but basic utility that goes straight to the heart of the beer brewer. There's no gloss or glamour here, no pretty pictures, not even very many free recipes. It's a simple tool to make the homebrewer's life easier. And it's yours for a nominal registration fee of \$15.

PCW Rating



As I don't have any homebrew, I'm off to the pub. Have a happy Christmas and New Year and, raising a glass — bottoms up!

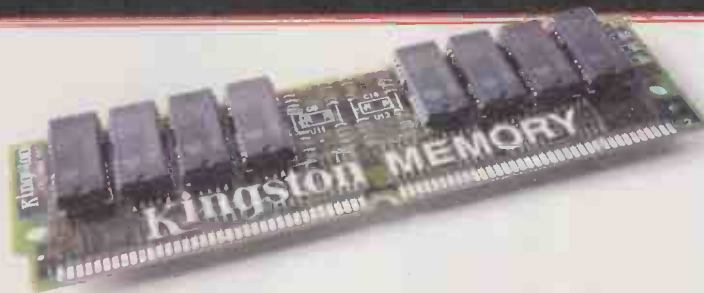


Product	Category	Company	Phone	Fax	CD/Floppy	Price Guide
The Beer Homebrewing Guide	Beer	Public Domain and Shareware Library	01892 663298	01892 667473	CD-ROM	£24.00 (inc VAT)
Complete Bartender's Guide	Cocktails	Public Domain and Shareware Library	01892 663298	01892 667473	1 floppy	about £6.00
The Interactive Wine Guide	Wine	World Library	01993 778077	01993 778246	CD-ROM	£14.95 (inc. VAT)
PC Bartender for Windows	Cocktails	Public Domain and Shareware Library	01892 663298	01892 667473	1 floppy	about £6.00
Professional Bartender For Windows	Cocktails	Public Domain and Shareware Library	01892 663298	01892 667473	1 floppy	about £6.00
Suds for Windows	Beer	Public Domain and Shareware Library	01892 663298	01892 667473	1 floppy	about £6.00
Wine Cellar	Wine	GST	01480 496666	01480 460206	1 floppy	£19.95 (inc. VAT)
Wine Guide	Wine	Microsoft	01734 270001	01734 270002	CD-ROM and disk	£29.99 (inc VAT)
WinBar	Cocktails	Public Domain and Shareware Library	01892 663298	01892 667473	1 floppy	about £6.00
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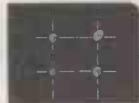
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DRILLER THRILLER

"Drill Down" is the key feature of accountancy packages in the nineties, and one software firm has caused a furore by registering a trademark for the term. Treading carefully through the exploding invoices, David Carter assesses the field.

A few months ago, a storm broke out in the normally staid world of accounting software. Under the noses of their competitors Bournemouth-based vendor SBS Financial Systems registered a trademark for the name "Drill Down" to describe its Exchequer accounts package.

Drill Down has long been recognised as the key characteristic that will distinguish accounts packages designed in the nineties from those of the eighties, so the news that one vendor had grabbed exclusive use of the term caused outrage in the industry. The lawyers have been hard at work ever since but because, as with most industry buzz-words, each supplier tailors the definition so they can claim that only their software qualifies, it's difficult to pin down what the argument is about. To help clear up some of the confusion, PCW decided to test ten of the major mid-range packages on the market to see how they measured up in the Drill Down stakes.

Accounting software — the big problem

Why is Drill Down so important? Basically, it's important because it tackles the most glaring defect of traditional accounting packages, which is that YOU CAN'T GO BACK. While accounts packages may be fine at transaction processing (printing invoices, processing orders, producing accounts etc), as soon as users want to analyse or browse through the transactions they have put in, sooner or later they run into a brick wall. The

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problem derives ultimately from lack of disk space, which until recently was limited and expensive. Package designers had to economise on it, so they dropped invoices off the ledger after they were paid, or posted summary details of the originating transactions to the nominal ledger, which were printed out as an "audit trail", then wiped off the disk. This made for fast processing and minimum storage requirements, but if users wanted to go back and have another look at the original transaction they couldn't, either because it wasn't there any more or, if it was, it was now in a different form.

Larger disk storage capacities mean that this constraint no longer applies. Several years' transactions can now be

held live on file, in full detail, for as long as you like. Faster processors and better file management programs like Btrieve allow vast quantities of data to be quickly accessed via multiple keys and cross-referenced relationally to associated transactions. So the stage is set for a new type of accounts package which allows users to roam around (i.e. Drill Down) their accounting database without hindrance and gain quick access to all that precious management information that hitherto has been locked away in impenetrable data files. But it's a slow process and old habits die hard. As this review shows, established vendors are still churning out new packages that are obsolete the day they are released.

The three faces of Drill Down

There are many definitions of Drill Down, but at the end of the day they all fall into one of three headings — Drill Down; Drill Around; and Super Drill Down. We'll take a look at each in turn:

● Drill Down

You have a list of yesterday's sales invoices on-screen. The typical value of your invoices is one or two thousand pounds, but this time you see that one of them is for £255,041. You decide to investigate. If you have a Drill Down system, all you have to do is to highlight the suspect invoice, then press Enter (or click with the mouse) and the full detail of the invoice, as it was originally entered, is displayed onscreen. So in this case you might see that the operator had got the decimal point in the wrong place and the

PCW Coin Photography by David Whyte

GLOBAL 3000

TIS Software is a subsidiary of the Misys Computer Services Group, one of the UK's largest computer companies. The name Global 3000 harks back to the package's predecessor, Global 2000, but in fact this latest version is a modern package, having been completely rewritten and runs under both DOS/Novell and Unix.

At £9,930 for a seven-user system, Global 3000 is one of the more expensive packages in this survey, but all modules are multi-currency, multi-stock location and multi-company as standard. Most Global 3000 installations have between five and 50 terminals, with a large proportion of them in specialist Distribution and Telesales.

TIS has recently added a GUI option to Global. A screen painter sits on top of the system allowing senior management to access the data in Windows while operational staff can continue working in character mode. The "Integrator" facility allows you to transfer data from Global into Excel or Access, then back again via OLE. For example, you can take your Nominal Ledger budget figures out of Global 3000 into Excel, amend them, then reload them into Global.

Global 3000 is reasonably good at Drill Down: you can list the transactions on a customer's account and explode down to the original invoice (curiously, although you can choose to see All, Current or Archived invoices on this enquiry, you cannot simply see Outstanding ones). You can list a daybook of past invoices or sales orders on the screen and explode any of them to see the original detail but you cannot drill down from a list of product transactions. The Nominal Ledger only allows drill down of a sort, in that it shows the nominal analysis of the originating journal but not the full detail.

Global was good at providing plenty of monthly totals in the Nominal Ledger and Stock modules. These were available at both group and individual account level. Unfortunately, though, it was not possible to drill down to the underlying transactions. Nor could we find any enquiries showing monthly sales by customer (the test results for Global and the other packages in this survey are shown in the table on pages 136/137). However, Global's "Sales History" module should be mentioned: this is a sort of mini data warehouse which posts invoices and

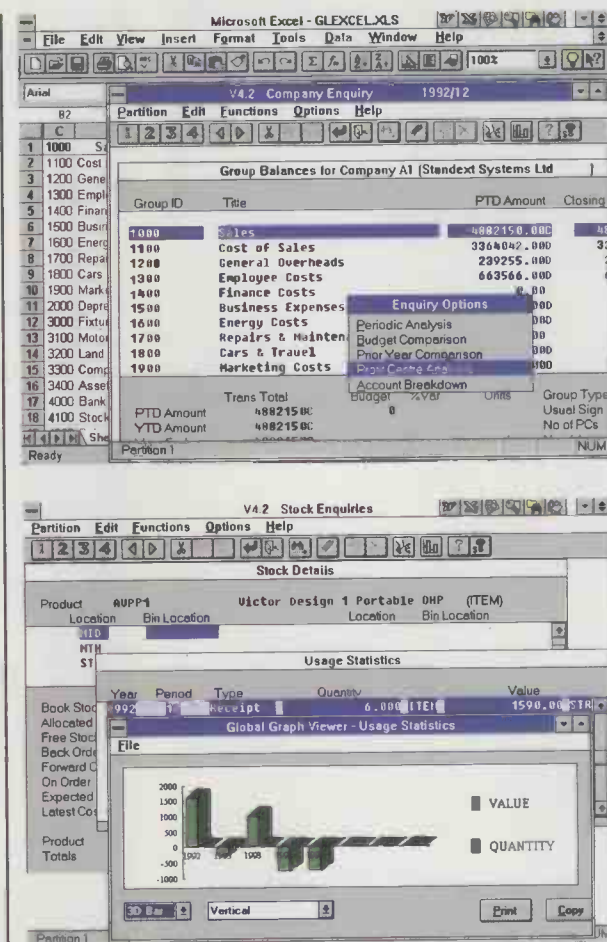
orders overnight, placing indexes on them to allow analysis later.

Global 3000 performed particularly well in the interactive order processing test. You can pre-set up to nine partitions running different jobs simultaneously and jump instantly from one to another rather like Alt-Tab in Windows. So, if you are in the middle of entering an order and get a credit warning, you can put the order on hold, jump straight to another partition which is running the customer account enquiry program, take a look at this customer's details, then hop back to where you were originally in the sales order.

So, in a telesales environment, you might set up the main partition for sales order entry: one for customer account enquiry, one for product enquiry, and another for customer sales history enquiry. While entering the customer's order in the main partition, you can jump instantly to other partitions to see the customer's outstanding invoices, future availability of a product, what the customer paid for the product last time, and so on.

This all worked pretty well, the only limitation being that when you jump to another partition Global doesn't immediately take you to THAT customer or THAT product and you have to do a Find operation to retrieve it, but the fast movement around the modules was impressive nonetheless. In addition, TIS has indexed many of the fields in transaction and master files, allowing immediate on-screen views of the data without having to close down the screen and load another menu option.

To sum up, Global 3000 was not really designed originally as a drill down package, but one feels that TIS has worked hard to make it seem so. The



Global 3000 was not really designed as a drill down package but numerous indexed search and sorts allow quick and easy retrieval of data

screen layouts are attractive, movement around the system is fast, via multi-partitioning, and TIS have introduced numerous indexed searches and sorts which allow quick and easy retrieval of data.

PCW Details

Global 3000

Price £9,930

Contact TIS Software 01628 532565

Good Points Good Drill Around (jobs can run simultaneously in multiple partitions). Fast data retrieval via indexes.

Bad Points No Super Drill Down from period balances to underlying transactions. Cannot create a new transaction by copying and editing a previous one.

Conclusion Good solution for companies requiring multi-user Distribution and Stock Control; especially telesales operations.



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WHERE DO YOU WANT TO GO TODAY?™

Dynamics

Dynamics, developed by US company Great Plains Software, is marketed in the UK by Kewill Systems. Under development since 1990, Dynamics was one of the earliest Windows packages. Five years and \$30 million later, three Ledgers, Stock and Sales Invoicing modules have been rolled out. Sales Order Processing was released in July 1995 and Purchase Order Processing is scheduled for early 1996. At £1,200 per module, Dynamics is aimed at the upper mid-range of the market. There are 150 users in the UK.

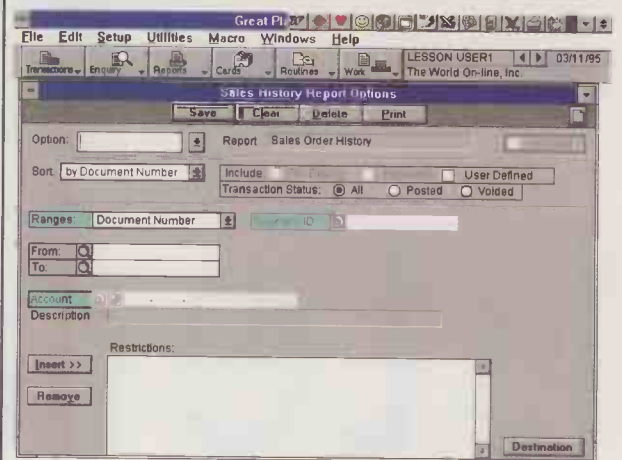
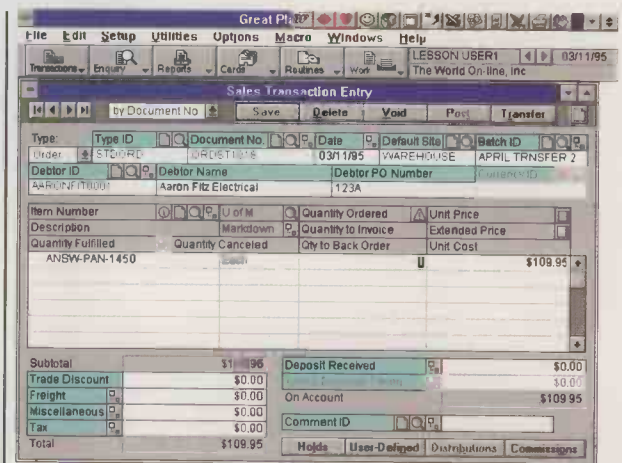
Dynamics acquitted itself well in our Sales Invoicing test. Drill down in particular is excellent, with the ability to display the original detail of virtually any source transaction. This is a particular strength of many Windows packages. When it came to super drill down from period totals to the underlying transactions, things were more variable: the Nominal Ledger offered monthly totals with the ability to explode down; the Product Sales history screen offered monthly totals but no drill down; while the Customer Sales enquiry showed just one month's totals with no drill down. In Sales Order Processing things went less well. The basic design looks impressive, with an interesting facility to predefine different order types via templates (Great Plains are very keen on templates, the idea being that it reduces the number of errors and the amount of time spent entering new transactions). But when in the middle of the order the customer ran over his credit limit and we went out to the customer's account to see outstanding debt and orders, we found that there were no details held of outstanding orders.

Similarly, when we ran out of stock on one of the items being ordered, and wanted to check availability in detail, it was possible to move to the product record from within the order, but there was no record on the product file of the outstanding orders for this product. It seems that the recent release of Sales Order Processing is very much a first stab and Great Plains have not yet got round to linking sales and purchase orders to the customer and account records. It was a little disappointing, too, that while you can auto-reverse a transaction via the "Void" facility, you cannot then correct the transaction by copying

and amending the original. You have to key it in all over again. Nor can you auto-reverse an invoice to automatically produce a credit note.

Nonetheless, it was clear that on Drill Down and Drill Around the basic design of Dynamics was pretty good, and doubtless these deficiencies will be made good. As to speed, earlier releases of Dynamics were slow, but a 486/66MHz with 12Mb of memory is now ample. On data entry, Great Plains allows you to tailor the Enter and other keys so you can work via the keyboard rather than via mouse, but odd things still happened. When I made a mistake on data entry, the cursor had disappeared when the screen cleared and it was not clear where I was. When we tried to scroll via the Down arrow through a list of nominal codes the highlight got left behind and we couldn't select the nominal code we wanted. The excellent Drill Down and Drill Around features can only be operated via the mouse, not the keyboard.

The overall look and feel of Dynamics is attractive. Screen prompts have a light blue background to distinguish them from data entry fields — a small point, but one which makes busy screens so much easier to read. The screen modifier allows you to "paint" the fields within a screen and customise it to your own needs. The one serious defect we noted was that each item line of a transaction seems to spill over onto two lines of screen display; in Sales Order Processing it needs three! Multiline displays are extremely difficult to read. I'd prefer to see a single line per item with a central pop-up window to accommodate the additional fields.



Top The three-line order entry screen in Dynamics is not easy to read

Bottom Monthly totals from Dynamics are good; but it would help if you could drill down to the underlying transactions

PCW Details

Dynamics

Price £12,295

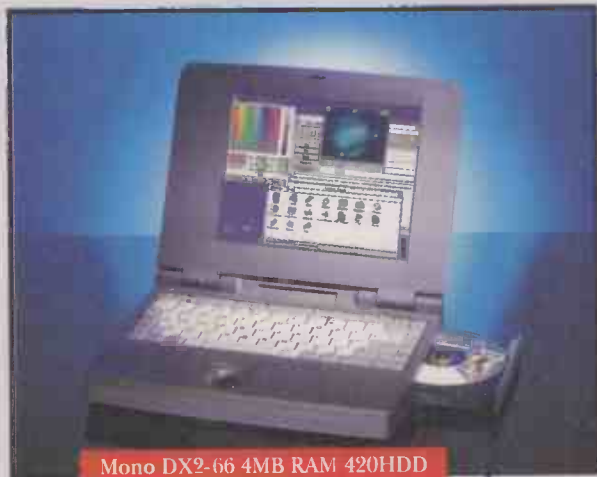
Contact Kewill Systems 0193 248328

Good Points Very good Drill Down and Drill Around facilities. Screens can be customised to user requirements via Modifier.

Bad Points Single transactions running over two or three lines of screen are difficult to read. Very limited Order Processing at present.

Conclusion A mature Windows interface. A good, if relatively expensive, choice for the corporate user who wants a Windows-based accounting system, but decent Order Processing and Stock Control look about 12 months away.

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Lakeview LM3



With offices in London and Birmingham, Lakeview writes and markets its own software package, LM3. Being an integrated package, LM3 is not priced by module. Instead the entire order processing, stock control and ledgers system is available for £8,750 (five to ten users). This price includes multicurrency, multi-stock location, works order processing and report layout maintenance as standard. Lakeview is also strong in the manufacturing area, with modules for production control and capacity planning. Most installations have between ten and thirty users. An optional Windows interface is planned for early 1996.

During demonstrations, some accounts packages come over as very easy to use, others are hard work. First impressions of LM3 are very impressive. Perhaps it is the striking but warm colour combination of white on a red background, together with a royal blue background display. Or perhaps it is the elegance of being able to do so many tasks with so few keystrokes. Either way, it is undeniable that LM3 comes over as a class act, a real thoroughbred which any new user will be delighted with.

Lakeview has made the screens clear and easy to read, with a common menu organisation and common keystroke functions throughout. If you go into the nominal ledger, you see a list of the last 12 months' actuals versus budget. Press left arrow and there is an overlay window comparing the previous year's actuals with budget. Press down arrow to see a list of transactions on the account. The designers have made special efforts so that by using a single arrow key, page up, page down or insert key, you can hop all over the system from the screen you are currently working on. There is no need to close down the screen and select another menu option. The result is a package that seems instantly responsive, because everything is just a keystroke or two away.

Another very slick feature is the wealth of FIND options. Go into the "enter/change sales orders" option and you can set the key field to order number, customer number, job number, client reference, even product, so that you can display the orders file on screen sorted in any sequence you want. You can do exactly the same with sales invoices. The result is fast movement around the data

You can jump sideways instantly from the order entry screen to see the customer or stock record



2nd Demonstration Company 2/11/95 Print profit and loss report

PROFIT & LOSS
 for period from: 9/07 Oct 95 to: 9/07 Oct 95

This Period					Year to date				
Actual	Budget	Variance	LastTr	Variance	Actual	Budget	Variance	LastTr	Variance
0.00	39029	-100.0	43988	-100.0	00108002				
9911.10	98760	-85.9	98192	-87.9	00108003				
0.00	9632	100.0	13687	100.0	00108006				
0.00	29	-100.0	22	-100.0	00108103				
(11729.66)	0	999.9	0	999.9	00110000				
431.54	10790	95.6	106199	95.5					
0.00	23670	100.0	20914	-100.0	00208003				
0.00	354	-100.0	426	-100.0	00208102				
0.00	329	-100.0	350	-100.0	00208103				
0.00	100	-100.0	123	-100.0	00208202				
0.00	993	100.0	990	100.0	00208203				
0.00	611	-100.0	699	-100.0	00208205				
0.00	29	-100.0	0	-100.0	00208302				
0.00	0	0	0	0	00208303				
0.00	0	0	0	0	00208305				
0.00	0	0	200	-100.0	00208402				
0.00	0	0	0	0	00208403				
0.00	2668	-100.0	3058	-100.0	00208602				
0.00	0	0	0	0	00208603				
0.00	0	0	0	0	00208605				
903.28	0	999.9	0	999.9	00208900				
903.28	28474	-95.8	34977	-97.4					
3828.26	79026	-95.1	71222	-94.6					
0.00	0	0	0	0	00408001				
0.00	0	0	0	0	00408101				
0.00	0	0	0	0	00408101				
(1026.66)	0	999.9	0	999.9	00420006				
(1026.66)	0	999.9	0	999.9					

An example of Lakeview's 132-column report display to an SVGA screen

files and easy retrieval.

In its latest release, LM3 scores 100 percent on our drill down tests (see the table on pages 136/137). From nominal, stock or customer screen enquiries, you have the ability to explode a period balance down to a transaction listing and then a transaction listing down to individual detail. Our only complaint: the "interactive profit and loss" enquiry is presented in the wrong order, the YTD Totals are shown last when they should be first. You can copy an order or invoice to make a new one. Faulty transactions can be automatically reversed and you can automatically generate a credit note from the original invoice.

LM3 excelled at the order-processing test. While in the middle of taking an order over the phone, you can jump direct to the customer's account to review his credit situation via the outstanding order summary and invoice payment history, then look at the "stats" option which shows when he purchased this product before, and at what price. Should the product ordered be out of stock, you can jump direct to the product record and inspect the "profile" which calculates the

forward availability based on delivery dates of future sales, purchase and works orders. On periods where you are going to be short of stock, LM3 displays a big red blob highlight so you get the message. If you want to dig deeper and check whether that works order really is going to be delivered on the due date, simply highlight it, press the INS key and LM3 displays the works order so you can see how far it has progressed.

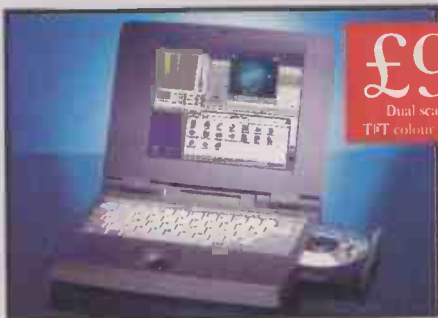
One exceptionally useful feature is that you can display any report in condensed 132 column x 43 line mode on an SVGA screen, allowing you to see the full report without having to scroll right. LM3 is a class act.

PCW Details

Lakeview LM3
 Price £8,750
 Contact Lakeview Computers
 0181 303 3329

Good Points Everything just a keystroke away.
Bad Points Minor faults only.
Conclusion A very fine system; beautifully crafted with extensive functionality and very easy to use.

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Opera

Pegasus, Sage and Tetra Pegasus are the three best-known companies providing accounts software in the UK. The Pegasus "Senior" package was for many years the top-selling modular accounts package in the country. In 1993, the company introduced its successor, Opera, which is written in Foxpro, the development database now owned by Microsoft. Opera is available in both GUI and character-based versions, and users are able to work in either mode simultaneously, on the same data.

The most obvious thing that strikes you about Opera is its attractive, modern appearance, complete with menu options from a pull-down menu bar at the top of the screen. A key feature throughout is that the designers have tried to reduce operator keying time by providing templates containing standard information. For example, you can set up a series of Stock Item templates containing default nominal codes, VAT rates, suppliers and so on. When setting up new products you can choose to base them on a template. The result is less keying time and fewer errors in your product file. To save data entry time, instead of having to type in credit notes, you can recall the original invoice to the screen and Opera will reverse it to automatically create the credit note for you. However, there is no facility to copy a previous transaction and amend it to create a new one.

I've always found Opera attractive and easy to use with one exception; printing reports to screen. Since the reports are 132 columns wide and the screen only 80, you constantly have to scroll to the right to see the full detail. But the cursor keys under Opera are slow and jerky and navigation is long winded. All these problems would disappear at a stroke if Pegasus could take a leaf out of Lakeview's book and come up with a condensed 43 x 132 character SVGA screen display.

Opera offers limited Drill Down. In the Nominal Ledger you can see the monthly balances, then drill down from them to see the underlying transactions, then select a transaction and drill down to see an "image" of the detail. But this doesn't extend to the Product or Customer enquiries: these offer no monthly totals at all, although in Customer enquiry you can display a list of transactions (i.e. invoices and payments) and display the original

Peterborough Paper Limited *Sales Processing Wed 05/07/95 23:37:00
ESC | F1 | F5 | FB | F9 | CTRL+F
Cancel | Help | View2 | Zoom | Print | Search

Account View of ADA0001 Adams Light Engineering Ltd

Date	Typ	Ref1	Ref2	Stat	Debit	Credit	Balance	
09/03/94	Inv	INV0107		P007	42.56			
11/03/94	Inv	INV0113			352.27			
13/03/94	Ad	Disc 44	Discount			34.00		
13/03/94	Inv	INV0122	ADA 6709		139.69			
15/03/94	Inv	INV0108			52.69			
19/03/94	Cr.	CRM0002				9.75		
19/03/94	Inv	INV0109			94.03			
24/03/94	Inv	INV0110	P/P 665333		69.53			
24/03/94	Inv	INV0111	PO 42155		126.12			
08/04/94	Rec	REC MAR	Cheque	B007		42.56	-0.91	
08/04/94	Dis	REC MAR		A007		0.91		
19/04/94	Inv	INV0157	665/00		381.45			
19/04/94	Inv	INV0158			45.79			
70 Days +							795.00	
56 Days							0.00	
42 Days							0.00	
28 Days							0.00	
14 Days							0.00	
Current							0.00	
Total							795.00	
Unallocated Receipts							-0.91	
							0.00	
							0.00	
							0.00	
							0.00	
							0.00	
							-0.91	

Above A customer account enquiry screen in Opera. The neat VIEW2 option allows you to see which payment is related to which invoice, and to separate out the unpaid items

Peterborough Paper Limited *Sales Processing Wed 05/07/95 23:38:02
ESC | F1 | F5 | FB | F9 | CTRL+F
Cancel | Help | Print as Copy | Print

Original Document

L: 0 C: 1 Ins

AD00001 INVOICE

Adams Light Engineering Ltd
Close Road
Gosforth Industrial Park
Gosforth
Northumberland
NE5 1UR

Gordon Smetwick

PRODUCT CODE	DESCRIPTION	UNIT	QUANTITY
07950	REXEL PAPER CLIPS Small plain 10x100	Box	10/
100165	LISTING PAPER 11 X 216 PLAIN 1PT.		

Above Customer account enquiry again — this time using the Zoom option to see the image of the invoice

invoice image, although there's no ability to filter out paid transactions and show Outstanding invoices only. But this is all accounting information rather than sales information. Opera doesn't seem to offer any screen enquiries for either customer or product sales histories.

The interactive order processing test showed up further limitations. Opera has no facility to jump sideways to look at customer or product details while you are in the middle of an order. So if you are in this situation and the customer asks for a product which is out of stock, and you want to have a look at the current orders and future availability, all you can do is to close down the order, then choose the "Stock" option from the Sales Order Processing menu. Then, when you've found the information you want you close down the Stock Enquiry, re-open the sales order, return to where you were and so on. There's the same problem when checking on the customer account, with the added drawback that Opera credit checks only on the Sales Ledger balance and ignores orders in the pipeline. It's all far too long-winded and not really acceptable when other packages allow you to

do the job in just a couple of keystrokes.

So, a few black marks then. But one should not be too negative. The development environment of Opera is flexible and the data easily accessed. If Pegasus were willing to invest a bit of time to sort out these limitations, Opera should be able to match any of the competition.

PCW Details

Opera

Price £6,400

Contact Pegasus Software
01536 410044

Good Points Attractive, easy-to-use design with basic drill-down features. Alternative DOS/Windows interface under Foxpro.

Bad Points One-thing-at-a-time design means weak Drill Around between modules. Reports displayed to screen are difficult to read.

Conclusion Opera is a competent, attractive package that on this showing is not in the first rank — yet. But the underlying development environment is good and Pegasus is the only one of the "Big Three" established vendors to be taking Drill Down seriously.

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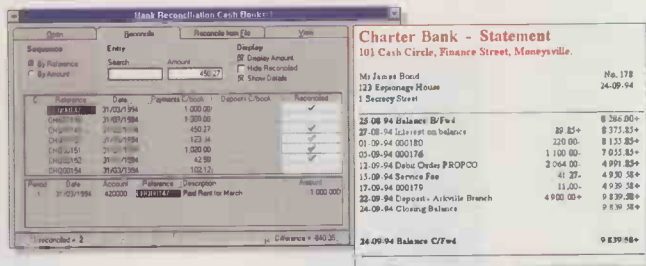
- "Pastel Accounting offers tremendous flexibility and will provide an excellent solution to your bookkeeping, invoicing, stock control and general reporting needs."
- Stephen Wells in PC Direct, United Kingdom, June 1994.
- "With crash-resistant postings, on-line help, a full repertoire of ledgers, report generators and ease of use, Pastel Partner Accounting is very good value for money."
- Vik Olliver in PC Magazine, United Kingdom, April 1994.
- "The Pastel Accounting and Pastel Bookkeeper systems provide a comprehensive accounting system with surprisingly sophisticated features at a budget price. These excellent systems are the star performers in their price range for our review."
- Andrew Peers of Ernst & Young, PC User, Australia, May 1993.

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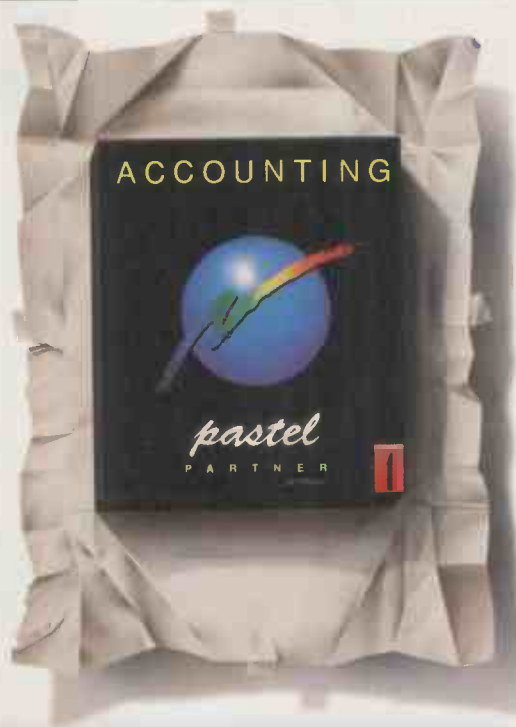
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Case Studies

Formac

When David France joined Formac — a distributor of PC and Apple Macintosh hardware and peripherals — as financial controller, he immediately realised that their accounting system had inadequate controls and stock tracking. Needing to implement a new system, he found Modulus to be the best product available.

As the stock module was being rewritten, he Beta tested and reviewed it, but waited to implement the full range of modules until September 1994. "We had a lot of input into writing the stock system," says France. "We ran the old system in parallel for three months, which gave us problems because Modulus was much more accurate than the old system, so we had problems reconciling them."

Formac is using the diary manager, stock control, sales order, purchase order, sales ledger, purchase ledger, nominal ledger, service control and data manager modules. There are 15 users, which is everybody in the whole building. Formac has been Beta testing new software since it first installed the system.

Diary manager is used by sales staff to control their calls and service control is used by Formac's technical support department. "With high-tech products, we have to be able to account properly for any returns," says France, "but each stock item can be tracked by individual serial number across 40,000 stock records."

"Modulus gives us better control of our business, because of the amount of detailed information available and the speed with which we can get at it. We know where everything is and everything that is happening. We can view information in any shape or form, at any point in time. For instance, we can see which customers we haven't sold to this month and give a report to the sales force."

"We would recommend Modulus to anybody. It is very simple, because there is only one integrated system. Life gets very complicated with more than one system. We wanted a system where we can look in by modem and see what is going on. Simon Warman-Freed — the managing director — and I



David France of Formac

can dial into Modulus and control the business when we are out of the office.

"With Modulus, I have total control of the business and an encompassing view of what the company and its staff are doing at any point in time. It is an all-seeing, all-knowing in-house system."

Contact: David France, Financial Controller, Formac, 0181 533 4040, fax 0181 533 2495

Avery Dennison

Avery Dennison (Ireland) is part of the Avery Dennison Corporation; leading manufacturers of self-adhesive labels. It is now in the second year of using TAS Books, a system it finds to be more than adequate. It was previously using System 36, linking two warehouses on separate sites by a telephone line. When this proved to be too cumbersome, the firm changed to TAS Books 2 on the advice of its IT department in the UK.

Personnel came from the UK to implement the system and train the users. The system currently has eleven users linked by a Novell network. All modules have been implemented and TAS Books is used for everything; including purchasing, stock control and sales. It is used by the sales department, stores and accounts.

"We find it an incredible system," says Ray O'Brien, Avery's warehouse controller. "It does everything we want to do and more. Reports are wonderful compared to those from the old system. It is

especially good for stock control, allowing us to use a perfect just-in-time system in the warehouse. We utilise pre-set reorder stock levels and quantities, together with automatic re-ordering. We use "low stock" and "product movement" reports, which are printed three or four times a week. By generating suggested orders, the system cuts down our workload. It is very user-friendly and it doesn't take new staff long to pick up.

"TAS Books 2 is very user-friendly with its integrated menus and modules," says Frank Morrison, Avery's finance manager. "The report generator is used frequently and is quite good. Once I had got the feel for it, while producing the first report, I found it very powerful. It is also helpful to be able to import our own stationery designs to use our existing stationery stocks. The ability to edit a transaction speeds things up and eliminates a great many correcting journals."

"We are also using TAS Books in our Cork plant in the same way that it is used in Dublin," continues Morrison. "It is sufficient for small and medium-sized businesses and is more than adequate for us and our users are all quite happy. Megetech is good with back up and support," says O'Brien. "Because the new system is so easy to use, all our staff

Ray O'Brien, Avery's warehouse controller



have more time to do other tasks."

Contacts: Ray O'Brien, Warehouse Controller, Avery Dennison, 00 353 1 623 3581, fax 00 353 1 626 6131

Frank Morrison, Finance Manager, Avery Dennison, 00 353 249 2301, fax 00 353 1 249 2864

Travco

Travco, a travel wholesaler selling hotel accommodation in Europe to travel agents, had been using a ledger supplied with its UNIX reservation software. "When I joined the company, I soon realised that it was awful," recalls Alasdair McGraw, Travco's systems manager, "so I quickly decided to replace it. I looked at a number of packages and liked the demonstration of Exchequer. It was intelligent and thinks the way human beings think. It also had the drill-down facilities which we needed."

McGraw had to recreate the first year's accounts in Exchequer, but since then Travco has implemented all the modules. Seven people have been using Exchequer all day every day for two years to enter data. "We have abused it and made mistakes, but the trial balance has always balanced, and in every case we were able to find errors very quickly," admits McGraw. "The Exchequer reports are very good and we have been able to spot errors and drill down to identify and correct the offending transaction."

McGraw finds that it is a great blessing to have all his historical periods open, although he needs to check the audit trail

very carefully to ensure that nobody has posted to an audited period in error.

Travco also take groups of tourists around Europe, so they find the costing module is good for accumulating the costs of each tour.

"The whole system is transparent and gives us realtime information," says McGraw. "We have three years data available online and can drill down straight to any individual transaction. The search facilities are also good. We particularly appreciate the hotkeys if a customer telephones. They allow us to access one transaction to answer a query, while in the middle of entering another transaction."

"Exchequer's multi currency handling is superb. We are also able to use the fields in Exchequer to match our sales invoice with the corresponding purchase invoice from the hotel." Travco uses the stock codes during sales order processing, to provide analysis and utilise processing information. It is currently building import routines to bring orders from the reservation system into Exchequer, probably using Microsoft Access to match transactions with the ledger codes.

"We are very impressed with Exchequer," says McGraw. "SBS have been very good at support, and we receive updated software almost monthly, as improvements are made. Exchequer is running well under Windows 95. On a human level, Exchequer is very intuitive, although we are only using about half of what it can offer. Use of a good accounting system, such as Exchequer, has allowed us to cope with expanding rapidly to a turnover of £8 million."

Contact: Alasdair McGraw, Financial Controller, Travco, 0171 739 3333, fax 0171 739 2233

Alpha Dot

Alpha Dot is a manufacturer of large character inkjet printing machines for labelling cardboard cartons, which is currently turning over £2.5 million. It needed an accounting system which gave better support to the firm's manufacturing operation, which involves metal fabrication, integrated circuits and software. Its needs covered everything from procurement through stock control, manufacturing, sales, management reports, financial management and accounts.

"We needed total integration and

good reporting," said James Ward, commercial manager at Alpha Dot. "We liked Lakeview LM because you don't have to move around between modules. It seemed easy to use, because their hotkeys allow you to switch, say, from sales order processing to stock or procurement."

After training from Lakeview, Alpha Dot ran the new system in parallel with the old one until the end of its financial year. It has completed implementation and has been using Lakeview LM on its own for about four months. There are ten users on a Novell local area network with Windows clients.

"It's easy to move rapidly about the system," says Ward, "especially to look at a situation at a particular time, and it has a good report writer. Lakeview's support service is invaluable in helping to us optimise our use of the system. It's a powerful adjunct to their training."

"The system now runs the whole business. The screen layout is excellent and it is very user and key-friendly. Hotkeys reduce data entry time enormously, allowing us to copy an order and modify it, or copy an invoice as a credit note. Stock control is definitely a powerful feature. We have multiple locations, so we need tight control. Lakeview has allowed us to hold our stock levels constant while increasing our turnover. It allows us better control over stock items which are key to our manufacturing operation."

"Lakeview LM has flexible password protection, which is important because it gives each staff member the ability to work with and view the data they need. Lakeview will customise the system to meet any specific needs we have, so it is not a frozen design. With hindsight, good solid training was our best investment. After that, the system is easy to use when you first get in, with clear screens and well-defined fields. Even procedures which seemed difficult at first are easy once you have learnt them. Lakeview was a good choice because it allows us to maintain control of a growing business while increasing our overall administrative productivity."

Contact: James Ward, Commercial Manager, Alpha Dot 01264 781989, fax 01264 782017

Rod Newing

Rod Newing MBA FCA FInstD is a freelance journalist and a member of the IT Faculty at the Institute of Chartered Accountants in England and Wales.



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Legend

Legend is the latest offering from Tetra, perhaps the UK's premier suppliers of PC-based distribution and accounting software to corporate and higher-range users. Tetra's top-end product for corporate users is Chameleon, running primarily under Unix. Legend was released last year as a slightly lower specification alternative to Chameleon, running under Novell. Recently, however, Tetra has ported it to run under SCO Unix and AIX. In a seven-user configuration, Legend costs £1,075 per module.

Although one of the newest packages in this test, Legend distinguished itself by having virtually no drill down features whatsoever. Even in the Nominal Ledger, usually the base point for incorporating drill down in a package, there is no facility to select a transaction from a list and explode it to see the original document in detail. Nor can you drill down from period balances to the underlying transactions: but since the only period balances you get are This Month and Year to Date, this facility wouldn't be of very much use anyway. It is a long time since I've seen such an inadequate Nominal Ledger and for a package released in 1994, at this sort of price, these limitations are inexcusable. This is very much an eighties design.

To be fair, Tetra's reputation has always been in distribution and manufacturing, rather than pure accounting. Entering one or two products and creating an invoice showed the wealth of facilities offered by Legend — batch traceability, serial number tracking and quantity conversion are all offered on well-designed, functional screens.

On-screen sales enquiries were basically very good, with the ability to see lists of daily orders or invoices, full details of past orders or invoices, and a line-by-line list of what each customer has bought and at what price. Everything is here; but it is all accessed via separate menus. Navigation would just be so much more slick and easy if everything was linked together in a drill down design.

One screen enquiry of particular importance was the Product Period Usage screen, which shows for each period both the demand and the sales. This is a vital point, ignored by so many vendors, who tend to offer sales figures only. If you are forecasting ahead for re-ordering purposes, you need to extrapo-

Legend 1.94

Customer Code : C004

Name : [REDACTED] Currency : [REDACTED] Page 1 of 3
 Address : [REDACTED] Language : [REDACTED]
 Carrier : [REDACTED]
 Delivery Method : [REDACTED]
 Settlement Disc. : [REDACTED]
 Discount Code : [REDACTED]
 Reminder Category : [REDACTED]
 Sales N/L Cat. : [REDACTED]
 Price List : [REDACTED]
 Spec. Price List : [REDACTED]

Post Code : [REDACTED]

Alpha Code : [REDACTED] UAT DETAILS
 Telephone : [REDACTED] Reg No. : [REDACTED]
 Fax : [REDACTED] Exempt No. : [REDACTED]
 Telex : [REDACTED] UAT ind. : [REDACTED]
 Btx : [REDACTED] UAT type : [REDACTED]

CREDIT DETAILS
 Credit Limit : [REDACTED]
 Credit Category : [REDACTED]

+1 exit, F2 browse, F4 contacts, F6 notes, F10 print
 +/- copy details, F9 confirm, shift-F4 EC details

Above Comprehensive sales and customer information can be called up, though access would be better if everything was linked in a drill down design

Right Monthly totals from Dynamics are good; but it would help if you could drill down to the underlying transactions

Great Ph... [REDACTED]

File Edit Setup Utilities Macro Windows Help

LESSON USER1 03/1/95
The World On-line, Inc

Sales History Report Options

Option [REDACTED] Report Sales Order History

Sort by Document Number Include: [REDACTED] User Defined
 Transaction Status All Posted Voided

Ranges: Document Number [REDACTED]

From [REDACTED] To [REDACTED]

Description [REDACTED]

Restrictions: [REDACTED]

Insert Remove Destination

late not from past sales, but past orders. After all, what if you were out of stock during the period?

Drill Around was fair. When entering a sales order, it was not possible to access the customer's account to credit-check in detail. However, Legend was good at providing product information, e.g. via the Predict Future Stock Availability screen which helps the operator give the customer accurate forward delivery dates. At the end of the sales order test, as part of which we had part-delivered an order and the customer had rung up, quoting his order reference and asking us to tell him the delivery note number, Legend rather fell apart. We couldn't find the delivery note anywhere, emphasising the lack of relational linking in Legend between all transactions relating to a single order.

For management information Tetra offers a link to Powerplay, an EIS package from Cognos. Tetra has mapped its record layouts to Powerplay, allowing simple, SQL-less, interrogations of the data. The result is that you can pretty well use Powerplay out of the box and it is very simple to use. Most people will buy Powerplay for sales analysis, at which it is very good (cross-tabs, pie-

charts etc), even automatically generating the analysis model from Legend's data records. But it does suffer from what is perhaps a fatal flaw — it only works on an extract of the data, rather than the original data records, so it's impossible to drill down from a balance to the underlying transactions because they aren't there. In the long-term I'm not sure that handing over all data analysis to a third-party package is the right solution, but if you need good sales analysis here and now, Powerplay is a good bet.

PCW Details

Legend

Price £7,270

Contact Tetra 01628 770939

Good Points Sophisticated order processing facilities.

Bad Points Mid-eighties design means that you can't browse and navigate through the data as with a modern package.

Conclusion Tetra's reputation and splendid functionality will carry Legend through for a year or two. But one morning Tetra's management will wake up to find that customers simply aren't buying this sort of package any more.

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in England and Wales, Opera's unique benefit is that it totally integrates financial control with management information to provide your business with speed, power and flexibility. Written in Microsoft FoxPro, Opera allows extensive tailoring with the advantage of links to Office products.

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Exchequer



SBS Financial Systems set the cat amongst the pigeons earlier this year when it registered the trade mark for the name "Drill Down" in connection with its Exchequer accounts package. Poole-based SBS sells Exchequer via a small number of dealers and direct to end-users.

The package, like the company, is still young: SBS introduced Sales and Purchase Order Processing modules in 1994 and Report Writer and Costing modules in 1995. There is basic Bill of Materials but no Works Order Processing, so while Exchequer will suit a company that buys and resells things, it is not suitable for a manufacturer.

Exchequer is available in different versions. At entry-level you can buy a basic Stock, Invoicing and Ledgers system competing with Sage Financial Controller for £695 (this is for a single user). At the heavyweight end of the scale, SBS has a client-server version of Exchequer whose largest installation is a motor parts distributor processing around 250 orders a day on a 50-user system. The price of a seven-user, client-server, version of Exchequer worked out at £5,980. A dual interface DOS/Windows "Enterprise" version is due for release in February 1996.

While most vendors in this survey have bolted on Drill Down as a later addition to their original package, in Exchequer it is inherent in the original design. Select ANY transaction in a listing on the screen, press Enter, and Exchequer will display the originating document; not as some extract or image but in its original form (as it was entered). If you enter a sales invoice for a product to a customer, you can drill down to the original from all directions — from the nominal Sales account, from the Product record, or from the Customer account. This ability, when looking at any transaction anywhere, to be able to highlight it and display full details of the original is immensely helpful, especially if you have a query.

Exchequer offers super drill down as well, from period balances to the underlying transactions. Although this is good, it could be better. For instance, the more sophisticated packages in this survey show the true demand for a product in the form of monthly quantities ordered, but Exchequer shows only monthly quantities invoiced. It holds period balances for nominal and product groups as well as

Purchase Invoice		Exchequer V 2.23 Multicurrency		Mar/1993-94	
Polished Printers Ltd Christchurch Dorset		Our Ref : PIN000035 /ROB	A/C No. : POL101	Currency : £	Ex Rate: 1.00000
		Date : 03/04/93	Date Due : 03/05/93	Period: Jul/93	
		Your Ref : 321312			
Stock Code	Qty	Description	Unit Price	Disc	Total UAT
	1.0	Letterheads	450.000		450.00 \$
Nominal Account	CC:	Dept:	Net Total	UAT Total	Total
73010 Stationery & Printing			£ 450.00	78.75	528.75
OPTIC Line-view Del-addr View-analysis Find					
* Status: Posted					

The original invoice from Polished Printers Ltd for new letterhead appears in full detail. You've moved down from the top to the bottom of the information period in just a few seconds

individual accounts but unfortunately if you want to query, for instance, the June total for Administrative Expenses, it is not possible to drill down from this figure to see the June totals for the individual nominal accounts falling within the Administrative Expenses group.

Of all the packages tested, Exchequer was the fastest at interactive order processing and scored 100 percent for features. It required the minimum number of keystrokes to accomplish complex tasks. While in the middle of a sales order you can jump instantly to the customer's account using the F2 key and interrogate past invoices and orders. If a product is short of stock, pressing Shift-F10 takes you instantly to that product record in the stock file and pressing Return will display a list of due sales and purchase orders. Even though Exchequer does not calculate forward stock availability, the speed with which you can view outstanding sales and purchase order quantities generally compensates for this.

Considering that so much work is carried out interactively on-screen, Reports in Exchequer are actually a bit weak; there are numerous audit trails on the accounting side but little else. Fortunately, the introduction last year of an excellent relational Report Writer has remedied this.

Exchequer is still raw in some areas; notably Stock. For example, multi-loc-

ation stock is still not available and, with only one type of stock movement record, the handling of returns, consignment goods, loans, stock transfers and the like becomes awkward. But when all is said and done, in terms of overall design and ease of use this package is in a class of its own, allowing astonishingly fast movement throughout the data: sideways, downwards, upwards, anywhere. I have been installing Exchequer with my own customers for the past year and a half, and much of the genesis of this article was an effort to work out just why this package is so good. Considering an industry as over-hyped as our own one finds that, for once, the word is appropriate: "Exchequer" is a product of genius.

PCW Details

Exchequer

Price £5,980

Contact SBS Financial Systems
01202 298008

Good Points Lightning fast movement around the data. Multiple online balances with super drill down to transaction level.

Bad Points Minor, due to product immaturity.

Conclusion Third millennium accounting software which has arrived a few years early. Study it and learn.

Sovereign

Sage is perhaps the best-known supplier of accounting software in the UK, with its Sterling range having long dominated the entry-level marketplace. Having decided to move upmarket, Sage took over Sky Software in 1989 so as to acquire Sky's mid-range product, which was given the Sage treatment and re-launched onto the world as Sovereign. Pegasus Senior was top dog in the mid-range market at the time but, as Sovereign was in many ways superior, it made deep inroads into Senior territory and a couple of years ago could justly be said to be the premier mid-range package on the market.

However, that was two years ago and things have moved on a bit since then. In 1993 Pegasus introduced the successor to Senior. Opera is written in the Foxpro database, which is a Microsoft-owned product, so Opera is very much in the mainstream and can be linked to third-party products. Sovereign uses its own proprietary database and remains relatively standalone, although a new Windows version is planned, written in Visual Basic, which should allow links to other packages via ODBC drivers.

First impressions of Sovereign were rather good, with clear, attractive screens in the customary Sage green and red livery. Entering a new customer, order or product is rather neatly done: Sovereign asks if you want to create the new record from scratch or by copying an existing one. Setting up a sample product record showed a clear, well-designed screen with multilocation stock control as standard (although min/max stock levels for re-ordering were held at company level rather than by individual warehouse). However, these initial good impressions soon turned to frustration as it proved extraordinarily hard work to get back and enquire into the data. Sovereign appears to be an old-style "modular" design, whereby each module has its own version of a transaction and the versions are posted over in diminishing detail as the transaction progresses. So for example a purchase order will move through three "modules" as it is converted from a purchase order to a purchase invoice, which is then updated to the nominal ledger.

In an integrated, relationally designed package, enquiries on purchase order, purchase invoice or nominal account

The Stock Item/Customer Enquiry screen lets you see what each customer is ordering

Account	1890	Name	MEILER E	Contact	DA	Item Number	Quantity	Price	
Order No	0000976855	Their Ref	op 87/34	CR 21	CR PUR FAULTY	PAT1010 MK	20.0000	125.45	
						PAT1020 IMPORT	2.0000	13.50	
Free Format Total								4.50	
Order Total								149.45	

Customer account enquiry in Sovereign allows you to see details of each invoice

Date	Mth	Type	Reference	Debit	Credit	Outstanding	? Paid
010694	3	OP	OP BAL	3700.93		3700.93	
180794	1	SI	FR 45123	672.90		672.90	
030894	5	SI	234599	861.74		861.74	
300994	6	SI	234584	1271.01		1271.01	
300994	6	SI	234577	325.11		325.11	
150994	6	SR	236431		2355.14		FULL
300994	6	SI	0000872365	71.74		71.74	
CURRENT SALES INUCE DETAILS				Trans. Date	18 Jul 94	Gross	672.90
				Ledger Month	1	Discount	0.00
				Due Date	17 Aug 94	NETT AMOUNT	672.90
				Disc. Due Date		Allocated	0.00
URN :				Reference	FR 45123	Outstanding	672.90
00000000000				2nd Reference			
				Orig. Ex Rate	1.0000		

would give you three different "views" of the one transaction. But in each module of Sovereign you can only view that module's own summary version of the transaction; you can never get back to the original.

Sovereign also lacked a Super Drill Down facility, that would allow you to explode a balance and display the underlying transactions. Perhaps this isn't surprising, but it was disappointing to find that multiple monthly balances are not held on any of the nominal, customer or product accounts. All you get are figures for This Month and Year to Date, which give no indication of trends. A complete blank then, on Super Drill Down, which is a pity because Sage have shown, with the VAT analysis capability of Sterling for example, that they are able to do this. In the interactive order entry test, Sovereign displayed no obvious means of jumping sideways into other modules while entering an order.

However, it is possible to set up the Alt key plus a keyboard letter to open up another menu option to run concurrently. This would have to be set up by a dealer, but it would allow a sales clerk to run order processing, customer enquiry and stock enquiry at the same time and to hot-key between them. This may be more

cumbersome to set up than other packages, but once set up, it will do the job effectively enough.

To sum up, Sovereign's lack of a Drill Down facility made it rather impenetrable, as you couldn't go back and browse through data. Although Opera also failed on quite a few of these tests, its basic design and the flexible development environment of Foxpro suggest that its defects can ultimately be put right. But in Sovereign's case we doubt whether its design will allow for any major improvements.

PCW Details

Sovereign

Price £6,500

Contact Sage Software 0191 201 3000

Good Points Attractive, well designed data entry screens.

Bad Points Modular design makes Drill Down back to original transaction impossible. Lack of multiple monthly on-line balances.

Conclusion Sovereign has an old-fashioned "modular" design rather than a modern "integrated" one. This is not a suitable platform upon which to build Drill Down features and speedy movement around the database.

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Modulus Gold

Modulus Gold, produced by West London-based Vector Software, is one of the premier accounting packages for the Macintosh. Modulus is not a well-known name in the PC world but if traditionalists doubt whether it could come up with a serious accounting application, they can rest assured that Modulus Gold is a heavyweight contender, with just as detailed a feature set as any package in this group test. Vector introduced Modulus in 1993, after writing bespoke applications for larger Mac users. Modules include Sales and Purchase Order Processing, Ledgers and Job Costing, integrated with Diary Manager and Word Processing. Vector now has some 250 Macintosh users for Modulus including well-known names such as Mercury, Body Shop, and *AutoTrader*. Most installations average ten users per site.

The Windows version of Modulus was introduced in October 1995. Vector says a 486/66 with 8Mb of RAM is a reasonable hardware specification, particularly if you're running the client/server version. The cost for a seven-user system worked out at £7,000, with four days' worth of installation and training thrown in. Drill down from transaction listings to original document was excellent, as Modulus retains all transactions in their original state. Windows makes this sort of feature so easy to implement, so Windows packages seem invariably to excel at drill down. Modulus' only defect was that it is not possible to drill down from within a list of product movement transactions.

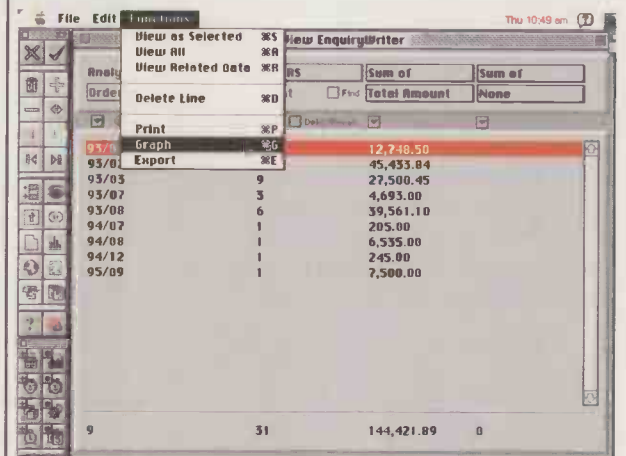
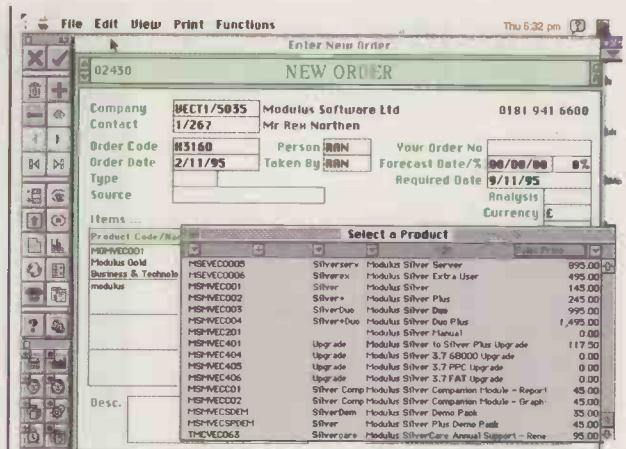
Modulus was less good at drilling down from monthly balances to transactions. This is due to the basic design of Modulus, which is like a database. Transaction item lines are retained at the detail level and whenever you want to produce a report or enquiry, it is generated there and then from the transaction detail, rather than having been pre-calculated and held on-line. This sort of approach gives enormous analytical power in making enquiries but it does demand a fairly literate management accountant-type user to understand and make use of it because the user must first know how to generate the enquiry in order to get any figures.

With the online balances approach, you just make the enquiry and there the monthly figures are, already calculated

for you. Similarly, with the database approach reports are freshly calculated and cannot get out of sync, but they take time to calculate as the machine trawls through thousands of transaction records. The online and database approach each has its advantages and disadvantages, but in my view management enquiries are made much easier and quicker by having the period balances online, already calculated.

When it came to interactive order processing, Modulus zipped through the test with ease. It was easy to drill across to view the customer's account. (Although this showed that credit-checking was faulty, taking regard only for the outstanding sales ledger balance and ignoring sales orders in the pipeline). Equally good was the facility to drill across to the product record if an item was short of stock. This was fortunate because when showing stock availability Modulus does not give an "OnOrd" total and you cannot see what is in the pipeline from suppliers — you have to go and look at the individual purchase orders. Curiously, Modulus has a three-line order entry screen just like Dynamics, but unlike Dynamics this was fairly easy to read (see visual), primarily because Vector uses different fonts to distinguish screen prompts from data fields. Nonetheless, I'm not sure I would recommend this to a company that wanted to process lengthy, multi-line sales orders.

Back-to-back ordering was also impressive with the ability both to generate a one-to-one purchase order (e.g. for a PC precisely configured to the customer's needs) or a many-to-one purchase order (where one purchase order is generated from the total of the day's sales orders). Stock control was also



Top Like Dynamics, Modulus has a three-line order entry display; but this one is a lot easier to read
Bottom Modulus Gold is one of the premier accounting packages for the Macintosh

sophisticated, with individual "stock types" indicating rental stock, consignment stock, loan stock, returns to supplier etc. Overall, order processing and stock control in Modulus was of a very high standard, far superior to its competitor Dynamics which lacks Purchase Order Processing and whose Sales Order Processing is relatively incomplete. Modulus is also a lot cheaper.

PCW Details

Modulus Gold
 Price £7,000
 Contact Vector Software
 0181 941 6600

Good Points Excellent drill around in order processing.
Bad Points Lack of online balances.
Conclusion The clear choice for users who want a GUI-based system running order processing and stock control.

TAS Books 2

The original TAS Books was released in July 1991. It started life as a £399 package sold through dealers, but Megatech then changed its strategy, slashed the price to £99, and started to advertise heavily for direct sales in the PC press. Sales shot up and from nowhere TAS Books is now the UK's second-biggest selling accounts package after Sage.

Written under the Btrieve file manager, the original TAS Books offered basic accounts (ie sales, purchase and nominal ledgers, cashbook), together with product and service invoicing. TAS Books 2, released in 1994, added stock control, together with sales and purchase order processing.

The problem for vendor Megatech is that in TAS Books 2 it has produced a serious product quite capable of handling a major installation (Megatech itself is running a 26-user system with 400Mb of data). If sold through dealers, TAS Books 2 could retail quite honestly at £3,000-4,000. But TAS Books' name is in the high-volume, low priced, direct market so it is selling the product at just £999 per system, a fraction of the cost of the other packages in this review.

TAS Books 2 is very much a traditional stock control and order processing package, but offers a very decent clutch of features. Products can be regular, assembly or non-stock. As to pricing, there are quantity discounts with four break points and three customer price bands. Bills of material and serial number tracking are standard. Items can be marked as "commissionable" (Megatech is very keen on tracking salesman's sales and commissions) or flagged as discontinued, so that they remain on file but don't clutter up the system. Spicer file import is standard.

Recently Megatech has added drill down to the accounting ledgers of TAS Books. You can now highlight any nominal, customer or supplier transaction and display the detail of the original posting. This is a great improvement, but like so many other vendors in this review it has not grasped the super drill down concept and so have done only half the job. Thus TAS Books 2 offers excellent monthly summaries of nominal, customer and salesman histories, but you cannot highlight a month and drill down to display the underlying transactions.

While analysis of customer and sales-

TAS Books Enter / Change Sales Order Details [711-22B]

Desc: Regular Product Number 01 Qty: 1.00

Avl: 29.00 Alternative Product Code: Price 1: 30.00
 S/O: -20.00 Cat: Price 2: 21.00
 B/O: 33.00 V Size: 99 Unit: Price 3: 18.00
 P/O: 50.00 1/7/95 Qty:

Product Code	Ord Qty	B/O Qty	Inv Qty	Unit Price	LDisc	UAT	Net Price
PRODUCT01	4.00	0.00	4.00	30.00		1	

Ord Net: 120.00 Inv Net: 0.00 SDisc: 0.00 UAT: 0.00 Total: 120.00 Margin: 0.00%

Enter the price for this product

F1-Help F3-Clear PgUp PgDn Home-First End-Last Ins-Insrt Del-Delt ESC-Exit

Above Order entry in TAS Books 2. Good, clear screens but you can't jump sideways Right Of all the packages reviewed, TAS Books 2 was best at analysing salesman's performance. But there's no super drill down to underlying invoices

TAS Books Enter / Change Sales Person Details [711-22B]

Code: 299 David Stephenson Comm Rate: 2.50 Sales/Margin: \$

	Target	Sales	Cost	Margin	Commission	%S	%M
JUN	10000.00	84.30	2810.00	5620.00	195.00	2.3	3.17%
JUL	10000.00	10500.00	3500.00	7000.00	262.50	2.50	3.75%
AUG	10000.00						
SEP	10000.00						
OCT	10000.00						
NOV	10000.00						
DEC	10000.00						
JAN	10000.00						
FEB	15000.00						
MAR	15000.00						
APR	15000.00						
MAY	15000.00						
YTD	140000.00	10930.00	6310.00	12620.00	457.50	2.42	3.63%

Enter the sales person name

F1-Help F3-Clear F4-Delete PgDn-Next ESC-Exit

man sales is very good in TAS Books 2, stock reporting is fairly basic. A monthly summary of sales and margin by product similar to the salesman summary would be welcome. The stock enquiry offers you the option to see outstanding sales and purchase orders separately, but no attempt is made to bring them together to project future stock balances. The low stock report does not sort by supplier and there is no attempt to generate suggested purchase orders.

The interactive sales order processing test showed up TAS Books 2's lack of drill around features. When entering an order you are warned that the customer is exceeding his credit limit (orders in the pipeline are ignored) but you cannot go and look at the account in detail.

Similarly, if you are short of stock you can only see the totals of stock available, on back order and purchase order; there is no opportunity to look at the individual orders and see the delivery dates.

However, if you want just to bang in batches of sales orders from pre-written order sheets, and there is need to simultaneously jump around to check credit accounts or forward stock availability, then TAS Books will suit you down to the ground. It has been carefully and thoroughly written, with plenty of good touches and is quite worthy to stand against other packages in this review if

you want a simple batch-oriented stock control and order processing system without frills.

The low price of TAS Books 2 is very attractive, but may cause problems.

Will users be willing to pay the £2,000 to £3,000 consultancy necessary to get it properly installed when the product itself only costs £999? TAS Books 2 should offer a niche to larger companies with experienced IT staff who are looking to install a cheap but effective order processing and stock control system in a department or subsidiary.

PCW Details

TAS Books 2

Price £699

Contact Megatech 0181 874 6511

Good Points Reasonably good drill down. Strong analysis of salesman performance.

Bad Points At the price, none. Low price may result in a lack of skilled consultancy support to install TAS Books 2 properly.

Conclusion Solid, dependable, traditional design at a ridiculously cheap price. Perfectly adequate for many users who have paid five or ten times as much.

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PERSONAL COMPUTER MAGAZINE, JULY 1994

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PC MAGAZINE, MAY 1995 SMALL BUSINESS ACCOUNTING SOFTWARE USABILITY TEST

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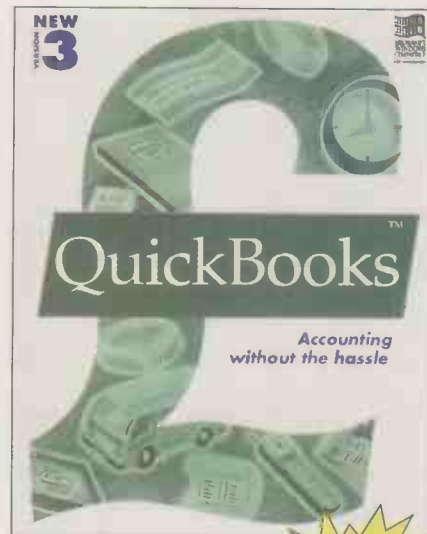
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Navision

Navision is a name that's new to this country, but is well known in Scandinavia and 13 other countries, where over 24,000 copies have been sold. First released in 1990, the product is developed by PC & C A/S, a Danish company with a 10-year history in writing business and accounting software. Navision was introduced to the UK in May 1995.

Standard modules available are the three Ledgers, Stock Control, Bill of Materials, Invoicing, Sales and Purchase Order Processing, Job Costing and Resource Control. The target market for Navision is mid-range and installations can vary from a single-screen standalone application up to a large-scale network. Navision is very competitively priced and a seven-user system worked out at £4,700 in the DOS version. A Windows version has just been introduced, which costs about 40% more.

Navision's mainly light blue or black screens show the considerable influence of DOS versions of Lotus 1-2-3, circa 1989. It looks a bit boring, really, but once you get into it you find out what a truly remarkable package Navision is. A key feature is the ease with which it can be tailored to individual needs. Just dip into the Design menu, and you can make extensive changes from data tables without the need for writing any programming code.

Each Navision application consists of various types of objects which you design, such as reports, screen windows, menus and tables. The objects are executed by an "object interpreter" which is built into the Navision Development System and handles the interface with the computer's operating system. All the application objects you create will automatically run under DOS, Windows, Unix or OS/2. While the creation of new objects would really be the province of the professional, non-technical but computer-literate users can modify and adapt existing objects for themselves. Anyone who has mastered a Report Writer or written a simple database program should be more than capable within Navision of painting their own screens, setting keys to fields for sorts, and adding fields to screen enquiries.

Navision scored very highly on the interactive order processing test and Drill Around functionality is exceptional. When interactively entering an order you can

interrogate both the customer's account and the product record in full detail. Navision jumped straight to the specific customer record and specific product record in both cases — a sign of good quality. It also credit-checked on a line-by-line basis as each order-line was added, rather than wait till the order was complete.

Super drill down is provided by the "Trendscape" facility which is to be found in all modules, and which analyses transactions into user-definable "time buckets". For example, the "Availability" Trendscape in Stock Control is a screen enquiry which takes the current balance of a stock item, then adds incoming quantities from purchase orders, and outgoing quantities from sales orders, to give a closing anticipated balance at the end of each period. You can choose to display the results analysed by day, week, month, quarter or year.

Normally, one would fear that on a live system it might take too long to trawl through all the transactions, but in order to analyse data across multiple dimensions the Navision database has its own "SIFT" (Sum-Indexed Flow Technology) specialised technology which is designed specifically for speedy analysis and output of business information. The Navision demonstrator told me, hand on heart, that with 60,000 transaction records the response would still be nearly instantaneous.

Navision has extremely powerful analysis features. Once the Trendscape has been calculated you can highlight any period total, and display the transactions that make it up, in any View you wish. It is then possible via the "Navigate

Year	Quantity On Hand	Expected On Hand
3-93	2	2
4-93		
5-93		
6-93		
7-93	1	-1
8-93	5	5
9-93	5	10
10-93	3	10
11-93	1	7
later		6

TABLES	Field	Key	Info	Field Transfers	Triggers
14 Location			<input type="checkbox"/> Write-Protected		
15 M/L Account			<input type="checkbox"/> Common to All Companies		
17 M/L Entry			<input type="checkbox"/> Date Compression (Definition)		
18 Customer					
19 Cust. Invoice Disc.					
20 Cust./Item Discount					
21 Sales Ledger Entry					
23 Supplier					
24 Supp Invoice Disc.					
25 Purch. Ledger Entry					
27 Item					
28 Item Price					
29 Item Sales Qty. Disc.					
30 Item Translation					
32 Item Ledger Entry					
36 Sales Header					
37 Sales Line					
38 Purchase Header					

Top A superb "Trendscape" screen showing future stock availability by day, week, month, quarter or year

Bottom Navision's Design menu allows you to set up your own screen layouts, keyed fields etc., without any need for programming code

Document" option to drill down still further into the originating transactions. Our only complaint is that, while Navision will calculate for you, say, a Group Sales figure for June in the Nominal Ledger, drilling down on the total will show you a long list of all the June transactions for every account within the group. But you don't want this — you want to have the June totals of each individual account. Similarly, there is no serious attempt to consolidate sales at a Product Group level and drill down to the products within that group. But nonetheless, this is a terrific piece of software.

PCW Details

Navision

Price Varies, according to module, from £1,100, to £8,750 for complete core version; £300 per additional user.

Contact Navision UK 0181 446 1458

Good Points Very easily customised. Top quality Drill Down features. Objects work on any platform.

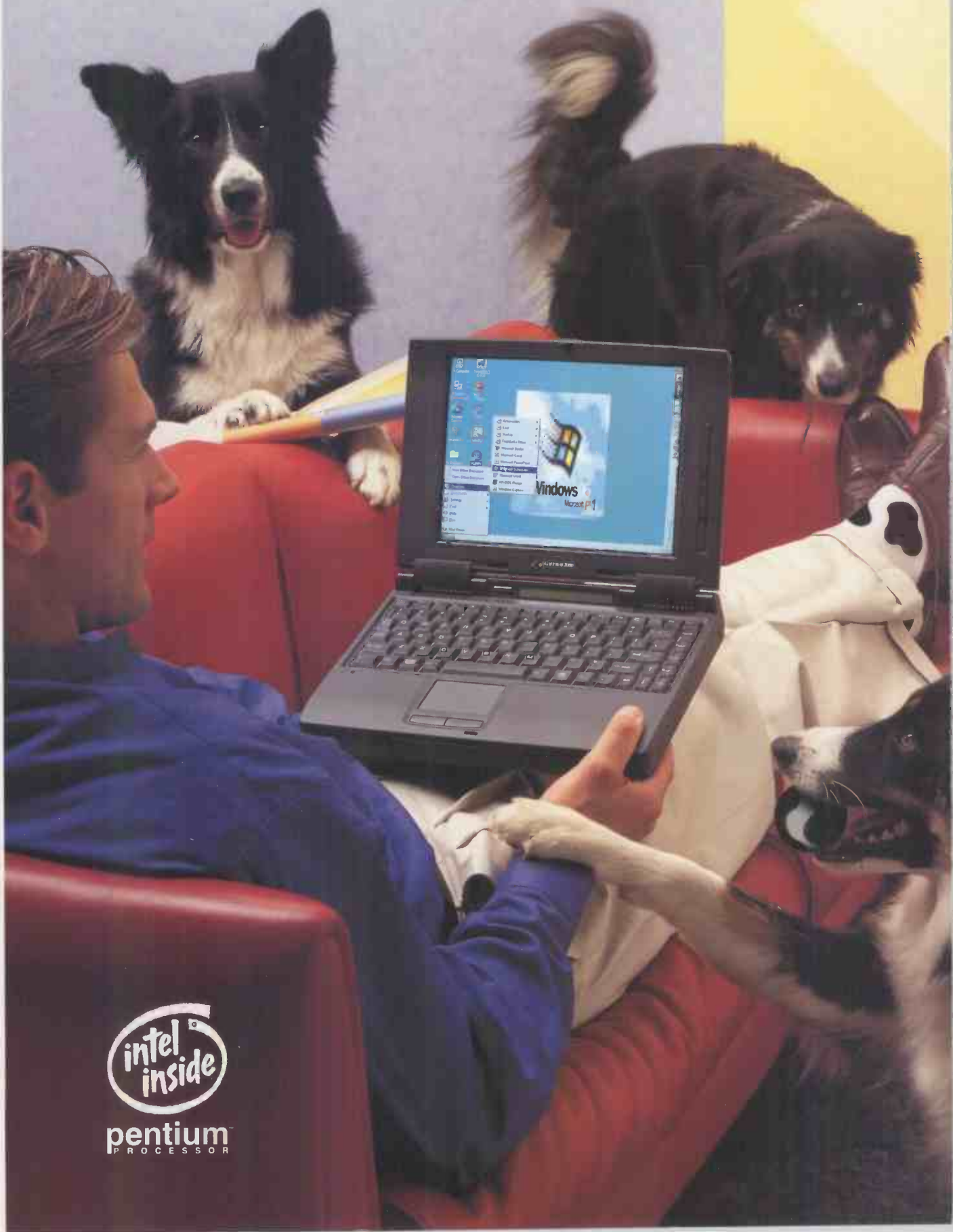
Bad Points Nothing serious.

Conclusion Functional appearance hides a state-of-the-art package.

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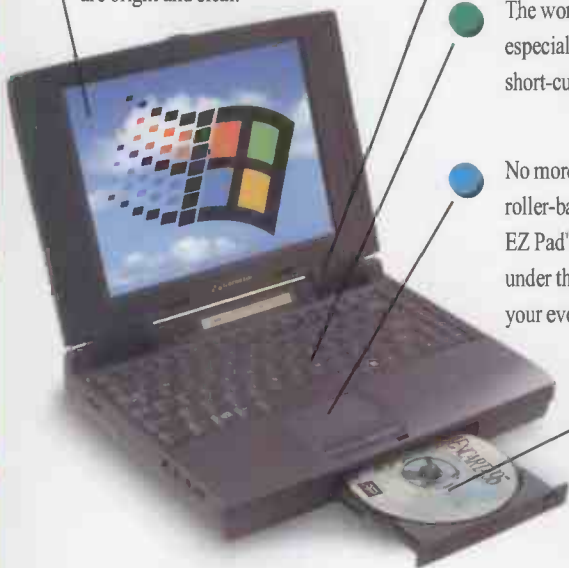
The 10.2/10.4-inch VGA/SVGA Active Matrix Colour Display is combined with 1MB video card to ensure your images are bright and clear.

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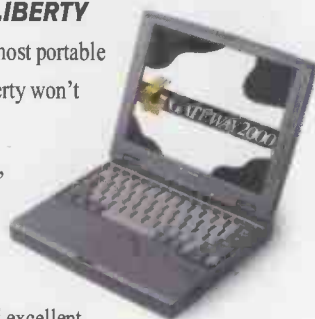
The Gateway Solo is a serious multimedia portable that just can't help thinking its a desktop. Starting at around 6 pounds, it has a feature-packed spec and enough power to be your primary PC. Wherever you are, at home, out travelling, on location, it's like taking your office with you – except you can turn it off any time you want and you don't have to be tied to a desk to use it!

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It used to be such a hassle, working out how I could afford to buy myself the system additions I needed, or keep up with the kids' demands for the latest games and software. I just hated being surprised by unexpected bills or finding out that I'd gone overdrawn.

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With Quicken on my PC, organising my finances is fast, accurate and simple. And, with all my details in one place, Quicken shows me the 'big picture' of all my financial affairs which really puts me in control of my money.

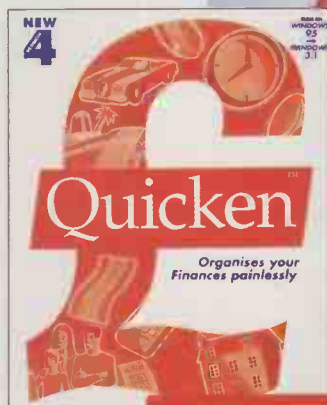
I know exactly what I have available to spend, what all my bills are, and exactly when I have to pay them. It's like having a bank statement you never have to wait for (and never get a nasty surprise from).

I found Quicken an absolute doddle to use, simple to start and easy to learn. And now there's even a CD version that uses a "Talking Tutor" – it's like having your own

personal coach on screen to show you how to get the most from Quicken. It literally took only minutes to get me started. The screen displays are so simple it's just like using an ordinary calendar, cheque book and bank statement. Once you're up and running you'll be amazed at what you can do with your money.

You simply enter your regular bills and income, then just add your spending as you go. Basically, I just tell Quicken what I plan to spend and it automatically works out my monthly balances for me. More than that, it also learns and adds my standing orders and reminds me when bills need to be paid.

Entering my details was easy – and so fast to keep up to date. It cleverly remembers my regular spending and saves me time by completing my entries for me as soon as I start to type them. Something else I really love is that I no longer have to sit down for hours with a pile of papers and a pen to work out my



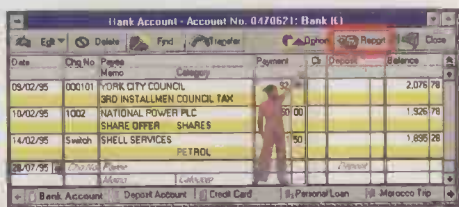
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finances and pay the bills. In fact, all I do now is check my bank statement with Quicken to make sure that the bank have got it right. I even let Quicken print my cheques for me, it types the addresses for me, and I can be sure that my cheques match my records because Quicken does it all for me.

The more I use Quicken, the more it helps me. When I need more information – on my mortgage or investments for instance – a couple of clicks on the mouse lets me clearly see what's going on.

Now I never wonder where my money goes because Quicken analyses my spending for me. And it's really easy to do. At the touch of a button Quicken produces full colour graphs and charts of my finances, and I can customise these to give me the exact details or summaries I need. I must warn you though, it will give you a surprise or two when you see what things add up to – like running your car, or dining out. It really teaches me where I'm wasting money

and shows me how to sensibly cut corners to help me budget for the things I really want. It knows how much I spend every month and tells me what my account balances are likely to be next month or even next year. But best of all, Quicken has taken all the uncertainty and stress out of my decision making.



I now know what I can afford in advance and all my plans are realistic.

I'm so confident with Quicken now that I also use it to run my business affairs. Business reports, expense analysis – even my VAT reports and returns – its all so easy with Quicken. No more spreadsheets and boxes of receipts!

I've never needed any help with Quicken but it's nice to know that it comes with unlimited free technical support, and a 60 day money back guarantee which means that unless you are 100% satisfied you can just return it for a full refund.

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Quicken runs on Windows 3.1 and Windows 95.

AD CODE QNPCW1/96



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How we did the tests

We tested each package by running through a series of sales orders and purchase orders.

The first test was to enter a straightforward batch sales order. Having posted and printed the final invoice, we checked what information had been posted to the customer, product and nominal sales accounts and what screen enquiries were available to show this information.

We then entered a purchase order and posted a second sales order. This time we tried to check, while in the middle of entering the sales order, the customer's outstanding invoices, past sales, and the current and future stock position of the item being ordered.

Comparative results are shown in the table on pages 136/137. In addition, we checked on other valuable features of a Drill Down package: the ability to automatically reverse or void a faulty transaction ("auto-reverse"); the ability to auto-reverse a sales invoice in order to create a credit note; and the ability to create a new sales invoice or order by copying and editing a previous one.



Editor's choice

Two packages in this review belong to an older generation. Tetra's Legend, despite its fine functionality and a release date of 1994, is really a backward-looking package. Sovereign from Sage looks very attractive but proved quite impenetrable. TAS Books 2 holds its own with the rest and provides extraordinarily good value. It's very similar to Sovereign in terms of function, and if you order in batches rather than interactively and you don't need multilocation stock and multicurrency, then it's a fine, cheap package.

The best of the established dealer-supplied products was Global 3000 from TIS Software. Its multiple partitions made it especially good at interactive order processing. At a lower price level, Pegasus OPERA is very attractive but Pegasus need to take a leaf from TIS's book and get the modules working concurrently on the order processing side. Both products offer a combined DOS/Windows interface.

For those who want a GUI-only solution, we preferred Modulus. Like so many Mac packages, it makes its Windows competitors look a bit unwieldy, but the real problem with Dynamics is that its Order Processing and Stock Control capabilities remain incomplete.

Definitely the dark horse in the group was Navision from Denmark, which has just been released in the UK. Uniquely customisable, running on DOS, Windows or OS/2 and with its amazing Sift Trendscape facility, this is a terrific package.

At the end of the day, though, the editor's choice goes to two packages — Lakeview LM3 and Exchequer from SBS Financial Systems. We found it impossible to choose one over the other. Exchequer is the more radical design, but Lakeview is generally more mature, especially in manufacturing. Both packages are superlative and a delight to use, particularly for the experienced user. Once you've mastered either of them any information you want seems just a keystroke away.



Do Windows accounting packages have a future?

The Windows development environment is ideal for Drill Down — it's an area where Windows accounts packages put most of their DOS and Unix competitors to shame. Windows' ability to run multiple sessions concurrently makes it a natural at Drill Around as well. And the arrival of Windows 95 at last brings a robust operating system capable of running mission-critical accounting applications. So are traditional character-based accounts packages about to go the same way as character-based word processors? It may seem so, but one major obstacle remains. Before you junk your existing accounting system and sign up for that Windows package, sit down at the keyboard and try entering half a dozen transactions. Then the awful truth hits you — data entry under Windows is a disaster area.

Typically, an accounting screen displays a dozen or so fixed fields into which data has to be keyed. There's no formatting, only the task of moving from one field to the next. Pick up the mouse, click on a field, put down the mouse, type in the data, pick up the mouse again, click on the next field, type in the data — you soon realise that this is impossibly slow and to get up any sort of speed you've got to forget the mouse and use the keyboard shortcuts. But all of those specialised keys on the PC keyboard — the double size Return key for entering data into each field, the Arrow keys laid out in the inverted T, the Escape key at top left for exiting out of a screen — Windows ignores them all. So instead of the Up arrow to go back a field, you have to use Shift-Tab; instead of

Escape it's Ctrl-F4; and the Return key doesn't enter a field any more but saves the whole screen.

With obscure or finger-wrenching key combinations for common tasks, no type-ahead facility for the experienced user, and a cursor that's either pencil-thin or non-existent so that often you lose track of where you are on the screen, user productivity drops dramatically. The training department of a major bank found that: "Under the old text-based mainframe our Bought Ledger clerk used to enter around 200 purchase invoices a day. With the new Windows package she manages 120."

Whether or not this limitation is permanent, it is incontrovertible that operators work more slowly under GUIs. Realising the problem, most vendors are now coming up with client/server solutions whereby the user interface is distinct from the underlying application, so that both text and GUI interfaces are available. Operating staff whose primary task is data entry can work in text mode keying in orders and payments, while analysts and managers who need to use data extraction and analysis tools can work in GUI mode — both working simultaneously on the same data.

The argument is that this gives you the best of both worlds. While purists may complain with some justice that it doesn't really give you proper Windows, the combined text/Windows interface does seem to offer the obvious solution — analysts and management get the benefits of the GUI, but operating staff are not penalised.

ACCOUNTING SOFTWARE TABLE OF FEATURES

	Global	Dynamics	LM3	Opera	Legend
Product Vendor	GLOBAL 3000 TIS	DYNAMICS Kewill	LM3 Lakeview	OPERA Pegasus	LEGEND Tetra
Operating Platform	DOS/Win	Win	DOS	DOS/Win	DOS
Price SPOP, Stock & Ledgers, 7 users single location, single currency	£ 9,930	£ 12,295	£ 8,750	£ 6,400	£ 7,270
DRILL DOWN					
The facility, from a list of transactions displayed on the screen, to select one and see the originating document in full detail.					
Nominal Account Enquiry	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Customer Account Enquiry	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Product Account Enquiry	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invoice Daybook Enquiry	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Orders Daybook Enquiry	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
SUPER DRILL-DOWN					
The facility to call up on screen the monthly totals for an account, to highlight one month and see the individual transactions that make up the monthly total.					
Nominal Ledger Group - monthly values	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drill down to individual N/L accounts?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Nominal Ledger Account - monthly values	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Drill down to transactions?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Product Group Sales - monthly values	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drill down to individual products?	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product Sales - monthly values	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Drill down to individual invoices?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product Demand - monthly order quantity	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Drill down to individual orders?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customer Sales - monthly values	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drill down to individual invoices?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
DRILL AROUND					
The facility, while reviewing or entering a transaction, to move sideways and see related transactions within other modules from within a sales order.					
Access this customer's account record	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access this customer's account record via a single keystroke	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
View individual transactions on this customer's account	<input checked="" type="radio"/>	not orders	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access this product's account record	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Access this product's account record via a single keystroke	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
View quantities delivered to date and outstanding	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
View related sales and purchase orders	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
View related delivery note(s)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
View related sales invoice(s)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
COPY/EDIT AND AUTO-REVERSE TRANSACTIONS					
Auto-reverse transactions?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Auto-reverse invoice into a credit note?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Copy an invoice and edit	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Copy an order and edit?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

KEY ● Yes ○ No

ACCOUNTING SOFTWARE TABLE OF FEATURES

	Exchequer <small>Account Software</small>	Sovereign	Modulus	TAS Books 2	Navision
Product Vendor	EXCHEQUER SBS	SOVEREIGN Sage	MODULUS Vector	TAS BOOKS 2 Megatech	NAVISION Navision
Operating Platform	DOS	DOS	Win/Mac	DOS	DOS/OS/2 /Win
Price SPOP, Stock & Ledgers, 7 users single location, single currency	£ 5,980	£ 6,500	£ 7,000	£ 699	£ 4,700
DRILL DOWN					
The facility, from a list of transactions displayed on the screen, to select one and see the originating document in full detail.					
Nominal Account Enquiry	●	○	●	●	●
Customer Account Enquiry	●	●	●	●	●
Product Account Enquiry	●	○	○	○	●
Invoice Daybook Enquiry	○	○	●	●	●
Orders Daybook Enquiry	●	●	●	○	●
The facility to call up on screen the monthly totals for an account, to highlight one month and see the individual transactions that make up the monthly total.					
Nominal Ledger Group - monthly values	●	○	●	○	●
Drill down to individual N/L accounts?	○	○	○	○	○
Nominal Ledger Account - monthly values	●	○	●	●	●
Drill down to transactions?	●	○	○	○	●
Product Group Sales - monthly-values	●	○	○	○	○
Drill down to individual products?	○	○	○	○	○
Product Sales - monthly values	●	○	○	○	●
Drill down to individual invoices?	●	○	○	○	●
Product Demand - monthly order quantity	○	○	○	○	○
Drill down to individual orders?	○	○	○	○	○
Customer Sales - monthly values	●	○	○	●	●
Drill down to individual invoices?	●	○	○	○	●
DRILL AROUND					
The facility, while reviewing or entering a transaction, to move sideways and see related transactions within other modules from within a sales order					
Access this customer's account record	●	●	●	○	●
Access this customer's account record via a single keystroke	●	○	●	○	●
View individual transactions on this customer's account	●	●	●	○	●
Access this product's account record	●	●	●	○	●
Access this product's account record via a single keystroke	●	○	●	○	●
View quantities delivered to date and outstanding	●	●	●	●	●
View related sales and purchase orders	●	○	●	○	●
View related delivery note(s)	●	○	○	○	○
View related sales invoice(s)	●	○	●	○	○
COPY/EDIT AND AUTO-REVERSE TRANSACTIONS					
Auto-reverse transactions?	●	○	●	optional	●
Auto-reverse invoice into a credit note?	●	○	●	●	●
Copy an invoice and edit	●	○	●	●	●
Copy an order and edit?	●	●	●	●	●

KEY ● Yes ○ No

Performance, Quality, Upgradeability, Choice & Incredible Value! ...

MJN P75 Business System at £799

MJN High Performance Business Systems incorporate the latest technology and advanced features that are demanded by today's business users. These systems include Pentium® processors, a minimum of 8Mb RAM, the latest PCI based motherboards with fast 64-bit enhanced IDE disks, superb fast PCI graphics and are available in various configurations with differing RAM and hard disk capacity.

Systems shown here are optimised for Windows® 95 and also include the entire suite of Lotus high end applications as standard. Our Best Buy P75 B model is available for a remarkable £799 +VAT!

MJN P75 B

- Intel® 75MHz Pentium® processor
- 8Mb RAM (Max 64Mb)
- 540Mb enhanced IDE hard disk
- 3.5" 1.44Mb floppy drive
- Parallel and 2 serial ports
- 64-bit PCI integrated graphics with 1Mb video RAM
- 14" SVGA screen
- 102 keyboard and mouse
- Expandable desk top case with 7 drive bays

Software

- Microsoft Windows 95
- Lotus 1-2-3 for Windows
- Lotus Ami Pro for Windows
- Lotus Approach for Windows
- Lotus Organizer for Windows
- Lotus SmartPics for Windows
- Lotus Notes Express for Windows licence

	8Mb	16Mb
540Mb	£799	£999
850Mb	£829	£1029
1.08Gb	£879	£1079

Intel 100MHz Pentium® processor based systems.....plus £100

Options

Midi tower case	plus £10
Full tower case	£Call
14.4 modem	plus £80
28.8 modem	plus £160
PC TV Card with Teletext.....	plus £160
Quad speed CD drive.....	plus £100
Six speed CD drive	plus £150
800Mb tape back-up	plus £150
14" NI screen upgrade	plus £40
15" NI screen upgrade	plus £110
17" NI screen upgrade	plus £340
Microsoft Office 95	plus £149
Microsoft Office Pro 95.....	plus £199

MJNB53A



Every MJN Business System comes with a complete range of software from Lotus including Lotus Notes Express

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. The end result is the new MJN range of personal computers.

Wider Choice Of Expandable Case Styles

The new range features a choice of ergonomically designed cases which include a new 7 bay desktop, 8 bay midi tower and 9 bay full tower with heavy duty CE approved power supplies. Unique designs enable small footprints whilst giving you more expansion potential than any other set of case styles.



Highest Performance Components

The motherboards, graphics adaptors and hard disks used in these systems are amongst the highest performance components

“The best performer of the review group”

PC User

available. Our performance systems feature the latest Intel Triton chipset with Burst Mode cache and EDO RAM, fast 64-bit PCI graphics cards with VRAM, enhanced IDE (Fast ATA)

hard drives with over 256K cache and six speed IDE CD-ROM disks. All these options are available on all our other systems.

Optimised For Windows 95

All our Windows 95 systems feature a minimum of 8Mb or 16Mb RAM and all the components are optimised for smooth and fast running of Windows 95. A system optimised for Windows 95 will outperform systems which just come bundled with Windows 95.

Tailor Made Configurations

We appreciate that our customers' requirements vary and we can alter the configuration of these systems to fit in with your particular needs. Simply select the case style, processor, hard disk, RAM and other options which suit your requirement and budget.

Designed for



Microsoft®
Windows 95

Future-Proof Upgradeability

All Intel® Pentium® processor based systems are upgradeable to the next generation of Pentium® Pro processors. System RAM can be easily upgraded via 72-pin SIMMS, as can the memory on the graphics cards and motherboard cache. The enhanced hard disk controllers can handle up to 4 hard disks and our new cases can take a minimum of 7 storage devices even on desktop models!

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.

Wider Range Of Software Options

As well as the superb Lotus software suite which comes as standard with many systems, we also offer you a superb range of bundled multimedia titles with our multimedia systems. Microsoft Office 95 is also available as an option at a very competitive price.



Certificate No. FS 28122
BS EN ISO 9002:1994

Backed By Superb Service And Support

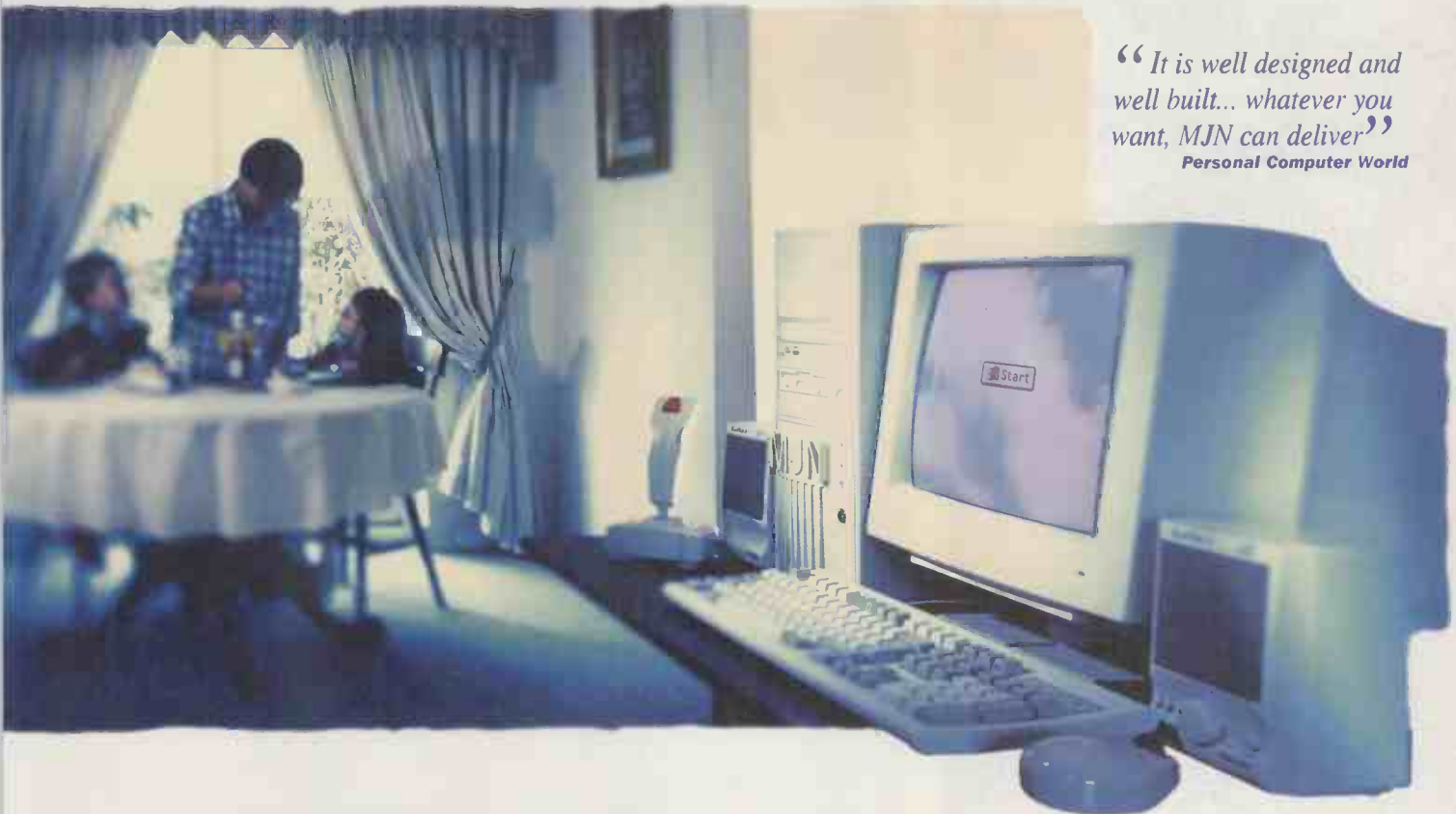
Our knowledgeable sales staff can offer advice on your requirements and are backed by teams of technical support staff who will quickly resolve any problems. We offer extended warranties up to 5 years and on-site support for networks and file servers.

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

...The New MJN Range Offers All These & Much More

Telephone

MJN on
01 282 777 555



MJN 486DX4-100P
September 95



MJN P75P/CD
August 95



MJN P90/CD
May 95



MJN P90/CD
May 95



MJN P60P/CD
February 95



BEST BUDGET BUY
MJN 486DX2-66
January 95

MJN Technology Ltd, Granville House, Blackburn Rd, Simonstone, Burnley, Lancs, BB12 7GT.

All prices exclude delivery and VAT. 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. EX0E

MJNIN3A

MJN P75 Multimedia System at £959



MJN Multimedia Systems feature the highest quality, high-performance components, including Intel Pentium® processors, and come packed with features at prices that provide you with incredible value. All systems feature ultra-fast 64-bit PCI graphics, large enhanced IDE hard disks, crisp sharp 14" and 15" screens and fast CD-ROM drives with full-feature multimedia.

Also included are superb CD multimedia titles including Infopedia full feature encyclopaedia, WinTutor Windows 95 tutorial, Bodyworks and the multimedia version of World Atlas together with 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.



"Best Buy, we can thoroughly recommend the MJN"

PC Plus

Best Buy Model with quad speed CD and desktop caseplus £50

MJN P75 MM		MJN P100 MM			
8Mb	16Mb	8Mb	16Mb		
540Mb	£929	£1129	540Mb	£1059	£1259
850Mb	£959	£1159	850Mb	£1109	£1309
1.08Gb	£1019	£1209	1.08Gb	£1209	£1409

Intel® 100MHz Pentium® processor based systemsplus £100

MJN Multimedia Options

14.4 modem	.....plus	£80
28.8 modem	.....plus	£160
PC TV Card with Teletext	.....plus	£160
Quad speed instead of double	.....plus	£50
Six speed instead of double	.....plus	£100
Midi Tower case	.....plus	£10
800Mb tape back-up	.....plus	£150
14" NI screen upgrade	.....plus	£40
15" NI screen upgrade	.....plus	£110
17" NI screen upgrade	.....plus	£320
Microsoft Office 95	.....plus	£149
Microsoft Office Pro 95	.....plus	£199

Personal Finance

All systems are available on Personal Finance from as little as £49* per month. Be sure you can afford the payments before entering into a credit agreement.

Tel. 01 282 777 555. Fax 01 282 77 08 44. All prices exclude delivery (£19) and VAT (17.5%). Software applications are provided on CD or pre-loaded with on-line documentation. Pack shots shown for purposes of illustration only. Finance available subject to status. APR *19.8% Written quotations are available on request. The peripherals and upgrades listed are sold only with the purchase of an MJN system. Intel® Inside and Pentium® processor logos are registered trademarks of Intel Corporation. E&OE.

MJN1MM2A

All the MJN multimedia systems come with the best CD multimedia titles and Lotus business software



MJN P75 MM

- Intel 75MHz Pentium® processor
- 8Mb RAM (Max 64Mb)
- 850Mb enhanced IDE hard disk
- Double speed, quad speed or six speed CD-ROM drive
- 16-bit stereo sound card
- Twin stereo speaker system
- Quickshot joystick
- 3.5" 1.44Mb floppy drive
- Parallel and 2 serial ports
- 64-bit PCI integrated graphics with 1Mb video RAM
- 14" SVGA colour screen
- 102 keyboard and mouse
- Expandable MJN desktop case with 7 drive bays (midi tower shown £10 extra)

Software

- Microsoft Windows 95
- Lotus 1-2-3 for Windows
- Lotus Ami Pro for Windows
- Lotus Approach for Windows
- Lotus Organizer for Windows
- Lotus SmartPics for Windows
- EZ Language multimedia CD
- Infopedia - the ultimate encyclopaedia CD
- World Atlas MPC CD
- WinTutor 95 multimedia CD
- Bodyworks multimedia CD
- Plus other multimedia titles

MJN P100 MM

- Intel 100MHz Pentium® processor
- 16Mb RAM (Max 128Mb)
- 850Mb enhanced IDE hard disk
- Double speed, quad speed or six speed CD-ROM drive
- 16-bit stereo sound card
- Twin stereo speaker system
- Quickshot joystick
- 3.5" 1.44Mb floppy drive
- Parallel and 2 serial ports
- 64-bit PCI integrated graphics with 1Mb video RAM
- 14" SVGA colour screen
- 102 keyboard and mouse
- Expandable MJN desktop case with 7 drive bays (midi tower shown £10 extra)

Software

- Microsoft Windows 95
- Lotus 1-2-3 for Windows
- Lotus Ami Pro for Windows
- Lotus Approach for Windows
- Lotus Organizer for Windows
- Lotus SmartPics for Windows
- EZ Language multimedia CD
- Infopedia -the ultimate encyclopaedia CD
- World Atlas MPC CD
- WinTutor 95 multimedia CD
- Bodyworks multimedia CD
- Plus other multimedia titles

£959

£1259

Telephone

MJN on

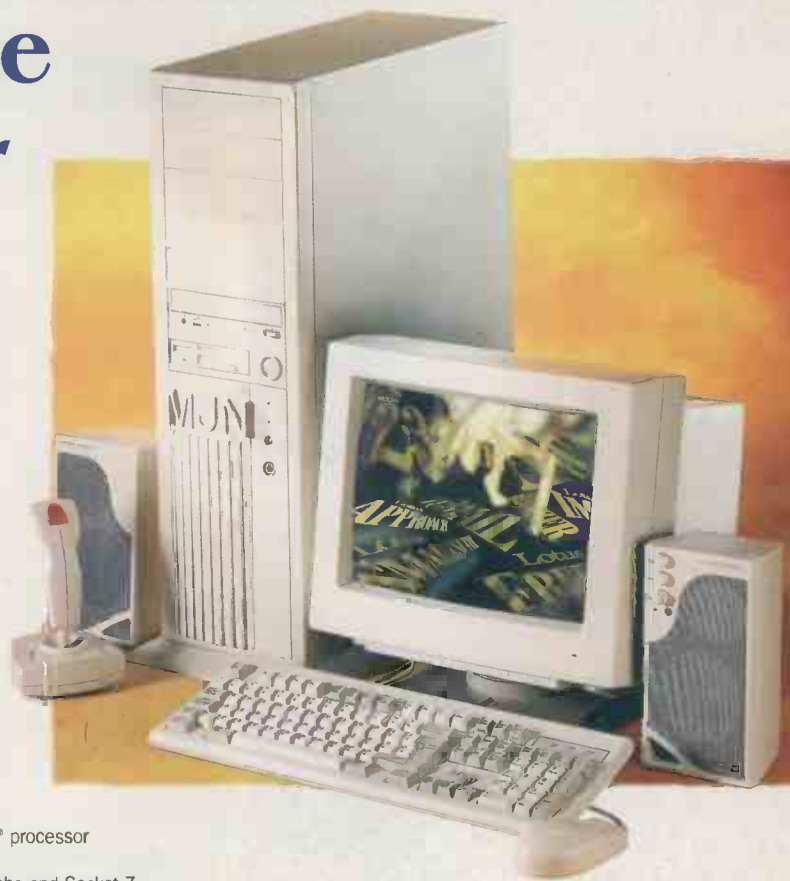
01 282 777 555

MJN Performance Systems for the power user

MJN Performance Multimedia Systems have a high specification featuring the fastest components available. Our P133 multimedia model features the latest Intel Triton chipset with 256K BURST mode cache, 32Mb EDO RAM, Fast 1.6Gb enhanced IDE hard disk, 28.8 modem, advanced PC TV with Teletext and six speed CD multimedia with Orchid Wave Table sound.



Also included is the fastest Diamond Stealth 64-bit PCI graphics with 4Mb VRAM video RAM, 3.2Gb tape back-up, sharp 17" screen and a range of Lotus business software together with CD multimedia titles.



MJN P120 MMP

- Intel 120MHz Pentium® processor
- Intel Triton Chipset
- 256K cache and socket 7
- 16Mb RAM (Max 128Mb)
- 1.6Gb enhanced IDE hard disk
- Six speed CD-ROM drive
- 14.4 (or 28.8) BAPT approved modem
- 16-bit stereo sound card
- High power stereo speaker system
- Quickshot joystick
- 3.5" 1.44Mb floppy drive
- Parallel and 2 serial ports
- PCI 64-bit graphics with 2Mb video RAM
- 15" SVGA NI MPRII screen
- Desktop case with 7 drive bays (Tower Optional)
- 102 keyboard and mouse

Software

- Microsoft Windows 95
- Lotus software suite including Lotus 1-2-3, Ami Pro, Approach, Organizer, SmartPics and Notes Express for Windows
- EZ Language multimedia CD
- Infopedia - the ultimate encyclopaedia CD
- World Atlas MPC CD
- Wintutor 95 multimedia CD
- Bodyworks multimedia CD
- Plus other multimedia titles

MJN P133 MMP

- Intel 133MHz Pentium® processor
- Intel Triton Chipset
- 256K BURST MODE cache and Socket 7
- 32Mb EDO RAM (Max 128Mb)
- 1.6Gb enhanced IDE hard drive
- Six speed CD-ROM Drive
- 28.8 BAPT approved modem
- Advanced PC TV with Teletext
- 3.2Gb tape back-up
- Orchid wave table stereo sound card
- High power stereo speaker system
- Quickshot joystick
- 3.5" 1.44Mb floppy drive
- Parallel and 2 serial ports
- PCI 64-bit graphics with 4Mb VRAM video RAM and MPEG playback
- 17" SVGA NI MPRII screen
- Full tower case with 9 drive bays and heavy duty power supply
- 102 keyboard and mouse

Software

- Microsoft Windows 95
- Lotus software suite including Lotus 1-2-3, Ami Pro, Approach, Organizer, SmartPics and Notes Express for Windows
- EZ Language multimedia CD
- Infopedia - the ultimate encyclopaedia CD, World Atlas MPC CD, Wintutor 95 multimedia CD, Bodyworks multimedia CD
- Plus other multimedia titles

"The best performing machine of the lot... blisteringly fast hard-disk performance with one of the highest ratings ever recorded in Shopper"

Computer Shopper

MJN P120 MMP

	16Mb	32Mb
850Mb	£1749	£2149
1.08Gb	£1799	£2199
1.6Gb	£1899	£2299

Intel 133MHz Pentium® processor based systemsplus £150

MJN P133 MMP

	16Mb	32Mb
1.08Gb IDE	£3109	£3589
1.6Gb IDE	£3209	£3689
2Gb IDE	£3309	£3789

Intel 150MHz Pentium® processor based systemsplus £Call

MJN P120 MMP Options

14.4 to 28.8 modem upgrade.....	plus £80
PC TV card with Teletext.....	plus £160
3.2Gb tape back-up.....	plus £220
17" NI screen upgrade.....	plus £210
Upgrade to 2Mb VRAM video and MPEG.....	plus £100
Upgrade to 4Mb VRAM video and MPEG.....	plus £220
Full tower case.....	plus £50
Microsoft Office 95.....	plus £149
Microsoft Office Pro 95.....	plus £199

£1899

£3689

Telephone

MJN on

01 282 777 555

MJN Technology Ltd, Granville House, Blackburn Rd, Simonstone, Burnley, Lancs, BB12 7GT.

MJNTOW3A

All the MJN multimedia systems come with the best CD multimedia titles and Lotus business software



MJN Workstations

from £599



*“The MJN is a meaty machine.
It's specification is formidable”*
Practical PC

MJN Workstation Options

Midi tower case	plus £10
Full tower case	£Call
Ethernet combi network card	plus £40
MS DOS 6.22 & Windows for Workgroups 3.11	plus £60
Microsoft Windows 95	plus £60
14.4 modem	plus £80
28.8 modem	plus £160
Quad speed CD drive	plus £100
Six speed CD drive	£150
800Mb tape back-up	plus £150
14" NI screen upgrade	plus £40
15" NI screen upgrade	plus £110
17" NI screen upgrade	plus £320
Microsoft Office 95	plus £149
Microsoft Office Pro 95	plus £199

Server Options

Please call for details of server specifications and options.

Personal Finance

All systems are available on Personal Finance from as little as £49* per month. Be sure you can afford the payments before entering into a credit agreement.

Tel. 01 282 777 555. Fax 01 282 77 08 44. All prices exclude delivery (£19) and VAT (17.5%). Software applications are provided on CD or pre-loaded with on-line documentation. Pack shots shown for purposes of illustration only. Finance available subject to status, APR *19.8% Written quotations 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.

MJNWRK3A



MJN can design a network system
for your particular requirements

MJN 486 and Pentium® processor based Workstations are the ideal systems for business, corporate and educational users and 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 486DX4-100 W

- Intel 486DX4-100 processor
- 4Mb RAM (Max 64Mb)
- 540Mb enhanced IDE hard disk
- 3.5" 1.44MB floppy drive
- Parallel and 2 serial ports
- 64-bit PCI graphics with 1Mb video RAM
- 14" SVGA colour screen
- 102 keyboard and mouse
- Desktop case with 7 drive bays
- Select required operating system and options

£599

	4Mb	8Mb
540Mb	£599	£699
850Mb	£629	£729
1.08Gb	£679	£779
486DX2-66 models.....	minus £30	

MJN P75 W

- Intel 75MHz Pentium® processor
- 8Mb RAM (Max 128Mb)
- 540Mb enhanced IDE hard disk
- 3.5" 1.44Mb floppy drive
- Parallel and 2 serial ports
- 64-bit PCI integrated graphics with 1Mb video RAM
- 14" SVGA colour screen
- 102 keyboard and mouse
- Select required operating system and options

£729

	8Mb	16Mb
540Mb	£729	£929
850Mb	£759	£959
1.08Gb	£809	£1009
Intel 100MHz Pentium® processor based systems	plus £100	

£999

MJN P120 W

- Intel 120MHz Pentium® processor
- Intel Triton chipset with 256K cache
- 8Mb RAM (Max 128Mb)
- 1.08Mb enhanced IDE hard disk with 256K cache
- 3.5" 1.44Mb floppy drive
- Parallel and 2 serial ports
- 64-bit PCI fast graphics with 1Mb video RAM
- 14" SVGA colour screen
- 102 keyboard and mouse
- Select required operating system and options

	8Mb	16Mb
850Mb	£999	£1199
1.08Mb	£1049	£1249
1.6Gb	£1149	£1349
Intel 133MHz Pentium® processor based systems	plus £150	

MJN 486DX4-100 540Mb, 8Mb Colour Notebook at £1599

MJN has designed and manufactured the most advanced range of notebooks available today. All systems are completely modular and include built-in advanced TouchPad, hard disks up to 1.2Gb, RAM upgradeable up to 40Mb and a full range of multimedia and docking facilities.

Our 486 range features an advanced modular design with fast 486DX4-100 processor and a range of large mono, dual scan colour and TFT colour screens.

We have teamed up with Texas Instruments to offer you our best buy Pentium® notebook that includes 75MHz Pentium® processor with fast PCI bus, full feature fast CD multimedia with 16-bit sound, built-in MPEG, and a choice of 10.4" dual scan or TFT colour screens. Our Best Buy 486DX4-100 540Mb 8Mb colour system is available with a superb Windows 95 software bundle for just £1599



MJN Powerlite 486DX4-100 colour

- Intel 100MHz 486-DX4 processor
- 8Mb RAM expanded to 32Mb
- Removable 1.44Mb 3.5" floppy drive
- Removable 540Mb IDE hard disk
- 2 PCMCIA type II/1 type III slot (PC card slots)
- Built-in stereo speakers
- VESA local bus graphics with 1Mb video RAM
- 10.5" dual scan colour screen (mono or TFT VGA colour screen options available)
- Built-in TouchPad
- Dimensions 287x200x47mm Weight 6.2lbs

Software

- Microsoft Windows 95
- Lotus 1-2-3
- Lotus Ami Pro
- Lotus Organizer
- Lotus SmartPics
- Lotus Approach
- AutoRoute Express
- Quicken v4

MJN Powerlite P75 MM colour

- Intel 75 or 90MHz Pentium® processor
- 8Mb RAM expanded to 40Mb
- Double speed internal CD-ROM drive
- 256k fast cache
- 520Mb IDE disk
- PCI local bus graphics with 1Mb video RAM
- Graphics card supports MPEG motion video
- Large 10.5" SVGA dual scan or TFT colour screen
- Built-in TouchPad
- 16-bit stereo sound card
- Built-in stereo speakers
- Removable 1.44Mb 3.5" floppy disk drive
- Infrared ports
- 2 PCMCIA type II/1 type III slot (PC card slots)
- Dimensions 287x200x52mm Weight 6.9lbs

Software

- Microsoft Windows 95
- AutoRoute Express and Quicken v4
- Lotus 1-2-3, Ami Pro, Organizer, SmartPics and Approach
- Multimedia titles including Bodyworks CD, Wintutor 95 CD, EZ Language CD, Infopedia CD and World Atlas CD

“Performance of the machine on the road proved exhilarating”
Computer Buyer

MJN Powerlite 486DX4-100 mono

	4Mb	8Mb	16Mb
340Mb	£1099	£1239	£1519
540Mb	£1189	£1329	£1609
810Mb	£1309	£1449	£1729
1.2Gb	£1529	£1669	£1949
10.5" dual scan model	.....plus £270		
9.5" TFT colour model	.....plus £770		

MJN Powerlite 486DX4-100 Options

Mini docking station	.....plus £95
16-bit sound card	.....plus £80
NiMH battery	.....plus £67
Car adaptor	.....plus £60
Luxury carry case	.....plus £29

MJN Powerlite P75 MM

P75 (no multimedia)	.....£1899
P75 (as listed) dual scan	.....£2199
P75 multimedia TFT	.....£2699

Options

8Mb RAM models	.....plus £349
16Mb RAM models	.....plus £799

Best Buy Model

£1599

£2199

Telephone

MJN on

01 282 777 555

MJN Technology Ltd, Granville House, Blackburn Rd. Simonstone, Burnley, Lancs, BB12 7GT.

MJNNOT3A

MJN Powerlite Notebook come with superb software from Lotus together with Quicken and AutoRoute





Crystal gazing

As 1996 looms, the **PCW** star-gazers cast the bones to take a light-hearted glimpse into the future. What will the new year hold?

Read on...



Bewitched Ben Tisdall's prophecies for the industry

- **Novell spends two or three months looking for someone to buy WordPerfect**, but strangely, the company which was worth \$1.4 billion a year before is now worth absolutely nothing. Novell lays off developers and buries hundreds of tons of unwanted copies of Novell Office in a land-fill site. Residents of the houses that are later built on the site complain that the ground is "unstable" and it's all too easy to "crash" through the surface.
- **The difficulties for UK PC manufacturers increase.** They have to pay through the nose for Microsoft Office while the big US operations (without mentioning Dell or Gateway) get it for practically nothing. Microsoft's share of the Suites market moves sharply into the nineties and several UK-based PC assemblers go into receivership. There's a glut of cheap, rather tatty, warehouse space in north London and the home counties.
- **A senior IBM executive admits that OS/2 is finished.** IBM issues a press release to explain that he meant "completed", not "ended". The same week, Microsoft announces it has sold 30 million copies of Windows 96.
- **In the summer, IBM/Lotus pulls the plug on Lotus SmartSuite** and says its "strategic direction is to concentrate on

Lotus Notes". US start-up, The Lite Fantastic, releases WordLite, a \$19.95 word processor which uses the Word file format. Microsoft sues, but in a matter of weeks, millions of copies have been sold on the internet.

● In the autumn, the CD-ROM market collapses. A senior industry analyst says: "Books are better and cheaper. It costs hundreds of thousands to develop good CD-ROM products but consumers won't pay more than £15 per disk." Intel releases the 200MHz Pentium. Prices for Pentium 90MHz PCs dip below £800 and Sainsbury's and Tesco start selling PC games.

● Just before Christmas, Microsoft sells its 60 millionth copy of Windows 95 and puts in a large bid to acquire Symantec. The bid is referred to the FTC. Adobe buys Macromedia. IBM buys The Lite Fantastic and promises to bundle WordLite with both the copies of OS/2 Warp it expects to sell in '97.



Prophetic PJ Fisher's prospects for the internet

Next year is very definitely shaping up to be the year of the browser wars as the world wide web takes over the world. The scene becomes just a little confused, however.

● **Everybody goes HTML extension crazy** and no-one's browser extensions will work with anyone else's. To make matters worse, all the players start jumping into bed with each other at the same time just to hedge their bets. Sun, Netscape and Adobe are all quite cosy

until Browser Bill forces himself on all three with a quite enormous extension.

● **It's April, and rumours are flying** that logging on to the Microsoft Network automatically deletes any copies of any Netscape, replacing them with Microsoft Explorer. To prevent re-installation of Netscape, MSN also downloads software that detects Netscape, and formats your hard disk if it does.

● **It's summertime and the British Microsoft, BT, surprises everyone** by launching its own internet service with, surprise, surprise, its own web browser and some exclusive new extensions. Still no sign of its Video On Demand service, however, as it says that future development will concentrate on the web.

● **Silicon Graphics announces a new web browser** and easy-to-use programming language. It's this year's Java-type sensation and everyone says that Hot Java is finished. In August, IBM launches a new browser for OS/2 Warp but nobody notices.

● **By Autumn, Bill Gates, disturbed by the number of formatted hard disks** around the world, tells a conference that the internet is all junk and not worth logging on to anyway. "The only extension I'm interested in is the one to my house of the future," he says. Apple is delighted to see four more people subscribe to eWorld.

● **It's November, and Netscape announces Version 8.0.** It has extensions that switch on the TV, take the dog for a walk and spread peace and love around the world. In desperation, the ISO HTML Standards Committee resign *en masse* and opt for something easier.

● **By the end of the year, there's real-time everything:** real-time music, real-time video, real-time confusion. Though not, of course, any real-time profits. But, you know, it's early days. The four new eWorld subscribers cancel their subscriptions.

PCW Mystic Photography by Tony Barratt



Clairvoyant Chris Cain sees what's in store for Apple

Tonight's winner is connected to the number six, has a black cat, a gold lamé shell suit and... Oops! Sorry, wrong crystal ball.

● **A typically headstrong Aries, Apple sees mixed fortunes** just as it did in 1995. There's no let-up in the demand for PowerMacs and overall turnover figures increase. But profits crumble significantly as prices are forced down to keep products competitive.

● **Software is the all important area for Apple in 1996.** In much the same way as PC users embraced Windows 95, PowerMac owners take to Copland, the new 95 percent PowerPC native version of MacOS, like ducks to water. It arrives late, has many new features and claims to run in 8Mb, but you really need 16Mb and virtual memory to run more than one application. Apple apologises, saying its calculations are performed on Pentium processors following Microsoft guidelines. Microsoft retaliates with a new, even slower version of PowerMac Office.

● **Apple makes tremendous strides with cutting edge technologies**, including interactive video and video-conferencing. These have their thunder stolen by cheaper, less original solutions for WinTel PCs with better marketing and smaller memory requirements. QuickDraw 3D has the edge for longest, but Apple shoots itself in the foot by producing a Windows version.

● **The best-selling Apple product is not a Mac** but a Pentium version of the DOS add-on card. A 200MHz 604+ based Mac is launched towards the end of the year, and both PCI PowerMac clones and Common Hardware Reference Platform (CHRP) machines arrive from famous manufacturers. MacOS then faces a strong challenge by Windows NT for dominance of the latter.

● **Relationships continue to be a problem** thanks to that Aries independent streak. Nothing changes.

Soothsayer Simon Rockman divines chips and systems

● **In the first quarter, Intel announces that the Pentium Pro will be available**

soon. When it's pointed out that this was promised for the fourth quarter of 1995, Intel states there has been a slight slippage and they will now be available in 1995 — but in the *fifth* quarter.

● **Microsoft ships Chinese language version of Windows 95** on the basis that the Chinese new year is in February. Someone in Seattle starts work on the Hebrew version — he's got until September.

● **In the Spring, Intel struggles with Moore's Law.** Having worked hard to persuade people that the rule of chip power doubling every two years actually meant the price of a system halved every two years, the company finds that Pentium Pro machines are slower when measured using Intel's own iCOMP benchmarks. Intel scraps iCOMP and goes back to using the FOR...NEXT loop system pioneered by PCW in 1982.

To hit the half-price target, Intel drops the processor price to less than that of Pentium but finds that as you need 32Mb RAM and a fast cache, the machines are still too expensive.

This leaves the way open for AMD to clean up with the Nx586, but AMD can't get the chips out of the only factory that can make them, the IBM fab, because IBM is too busy making M1s for Cyrix.

● **By the summer, Cyrix finds that it can't sell any M1s** and so can't pay its bill to IBM. IBM buys Cyrix. Intel and IBM lock horns over a patents issue and an injunction is put on all chips. No new computers are made, at all.

● **Nintendo launches the Ultra 64** which has more graphics processing than any video card, and high-speed, high-capacity, magnetic storage. An enterprising boffin in Cambridge builds an Ultra 64-to-PC interface, to allow the Nintendo to be used as a backup device and accelerator for Windows 95. Thousands of businesses buy Nintendos. National productivity falls to a lower level than in Christmas '93, when Doom was first released, as businesses across the land unplug their Nintendos and play the Ultra 64 version of Super Mario.

● **With no new computers and millions of Nintendos in the country,**



the Japanese company launches a keyboard for the console. Microsoft ports Windows 95 to the MIPS4000 used in the Nintendo and the console takes over the computer industry. Well, stranger things have happened.



Ethereal Eleanor Turton-Hill predicts databases and software development

I see a 32-bit frenzy looming... Hold on a minute, it's disappearing... No, no wait, it's back again... Ah, I can see it more clearly now... It's waving... No it's not — it's drowning.

● **Windows 95 developers throughout the land rush, like lemmings,** to inject their applications with some 32-bit "goodness", but like most software development projects, it turns out to be a long, frustrating and painful process.

Those companies who decide to take the first step towards 32-bit happiness provide plenty of entertainment for those who don't, and a surprising number of businesses take the sensible option of doing nothing at all.

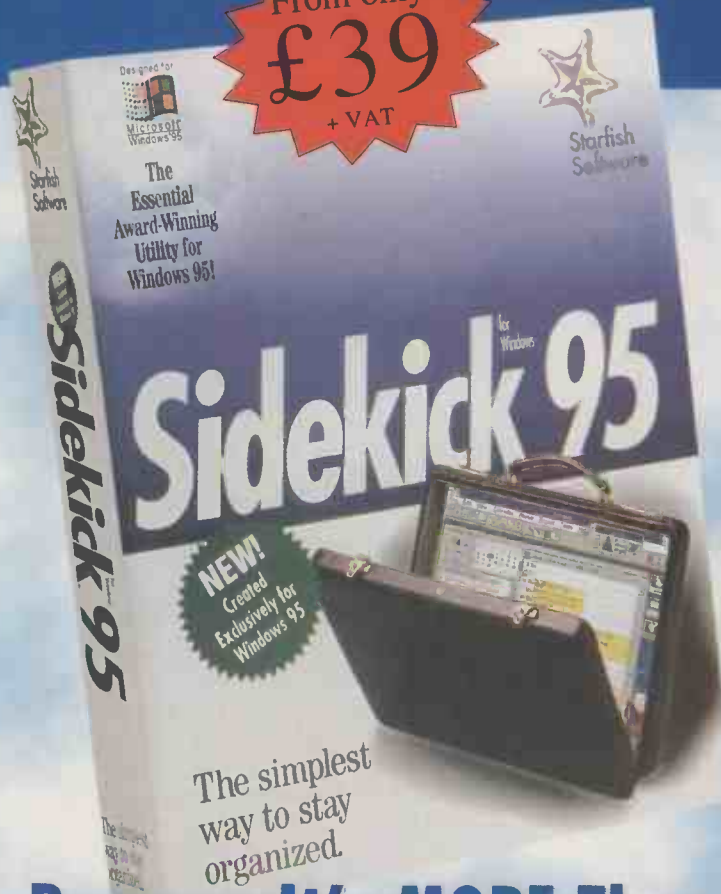
● **Those companies who go forward with the Windows 95 plan** begin to grasp the enormity of it all — it's not going to be the party they had first imagined. They are tormented by hardware incompatibilities, and increasingly everyone becomes aware of the tragic similarity between PCs and Cabbage Patch dolls. Each one has a unique combination of hardware components as well as applications, drivers, and fonts, and all of these are, as yet, untested under the new OS. The mere thought of transforming custom-built 16-bit apps to better, faster, 32-bit versions sends IT departments into a state of apoplexy.

● **The advantages of 32-bit code on Windows 95 continue to be thrashed out** in the computer press, and businesses continue to analyse the benefits they might be missing, or those they're striving to achieve. In vain, they repeat the words to themselves over and over again: "multithreading", "flat addressing", "improved stability", but only

"THE BEST WINDOWS 95 PROGRAM SO FAR"

Computer Life, October 1995

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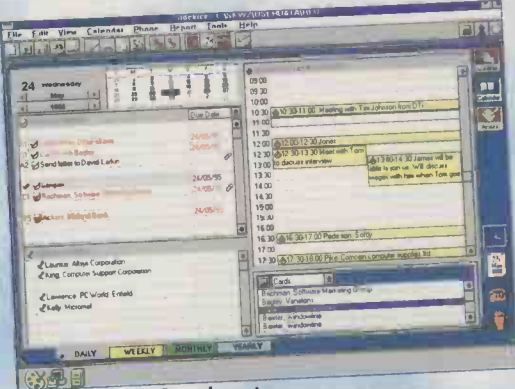


Why is Sidekick the No. 1 Personal Organiser ?

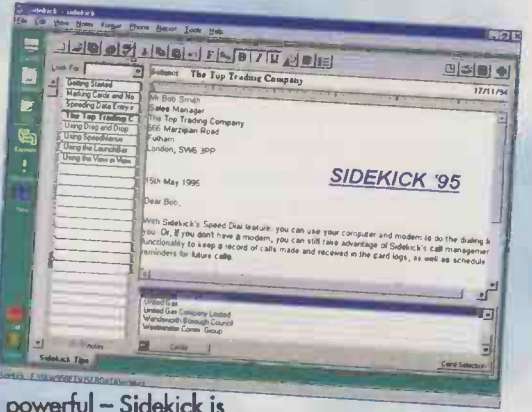
Because It's MORE Than Just a Personal Organiser

"The PIM by which all others should be measured" PC Direct

Sidekick is the best selling personal organiser ever. BUT it is more than just a Diary and Address Book. With Sidekick 95's advanced Word Processor you can compose letters and documents and automatically combine these with addresses from your Cardfiles for quick and easy



mail merges. You can drag a name from a Cardfile to your Diary to schedule an appointment and let Sidekick automatically update your contact manager. You can stay on top of your business life with Sidekick's To-Do lists, Expenses Tracker & Notes Organiser, and you can even see what time it is elsewhere with Sidekick's Worldwide Clock. As Computer Life noted, "Who needs Word,



Excel and Lotus Organiser?" Simple to use, easy to learn and incredibly powerful – Sidekick is everything you'll need to stay organised. Let Sidekick simplify your life. With 90-day money-back guarantee. Also available for Windows 3.x.*

Great news for Windows 3.x users – Sidekick 2.0 has just launched to rave reviews



Sidekick 95 for Windows 95 and Sidekick 2.0 for Windows 3.x* are available direct from Software Warehouse on 01675 466467 and all leading suppliers including:

Starfish Software (UK)



All trademarks are acknowledged. Errors & Omissions Excepted. *Some features not available in Sidekick 2.0.

a privileged few reach the final state of 32-bit nirvana. The rest become hopelessly dependent on teams of hack programmers who patch each other's patches, play with each other's objects, and alter each other's code in a million and one entangled ways.

● **Someone roots through Microsoft's Win32 SDK** and discovers a handy little tool, PORT.EXE, which scans their source code and helpfully informs them that their porting problems are greater than the total number of atoms in the universe, but the essential solutions can be narrowed down to 14,534,567 instances of 16-bit keywords and 6,578,932,199 references to third-party DLLs.



Crystal-gazing Clive Akass looks into the destiny of notebooks

● **Notebook vendors fight off several law suits** brought by users suffering slipped disks and arm strain.

● **Meanwhile, a new breed of true mobiles** with wireless communications (infra-red and cellular telephone) experiment with novel forms of human-machine communication such as redesigned handwriting and speech recognition.

The mobiles run for days on cheap AA batteries, or rechargeables, and rely on easy desktop connections for storage. This leads to a growing demand for a standard docking station and low-voltage DC power supply, allowing access to facilities in any up-to-speed office or home.

The new mobiles use cut-down clones of desktop applications and so are not tied to the Wintel platform. This represents a huge opportunity for small third-party software developers.

The mobiles use the workstation-class StrongARM Risc chip developed by Cambridge-based Advanced Risc Machines with Digital. Britain's own mobile maker, Psion, is also forced to innovate to maintain its world lead.

● **Novell struggles on looking for a purpose in life** until it joins with IBM in a bid to corner the world networks; a task at which Microsoft has signally failed. Happily, the networks are already too big to corner.

● **Seventeen million users sue Microsoft** for misrepresenting Windows 95 by not spelling out that they will have to upgrade their hardware and applications software in order to reap its benefits. Microsoft, ordered to pay billions in compensation, collapses. Bill Gates gives up in despair and retires to Ulan Bator to grow tomatoes.



Star-gazing Gordon Laing peers out at graphics and DTP

● **Early in the year, six and eight-speed CD-ROM drives are superseded** by the first 16-speed drives — the world's fastest yet. Within a month, the 16-speeds drop below £150 in time for the world's fastest CD-ROM drive yet again, this time 32-speed, although early tests indicate the processor grinding to a halt under the strain, the PC case melting under the heat, and a near fatality when a disc was accidentally ejected while still spinning.

● **The standard hard disk starts the year at 1.5Gb, but doubles in capacity,** while halving in price every three months. By the end of the year, most PCs will still be unable to cope with a complete installation of Microsoft Office and CorelDraw for Windows 96.

● **As RAM prices fail to fall, they replace the gold bar** as the universal standard unit of currency. Paranoid users, worried about memory theft, force RAM manufacturers to replace the parity chip on a SIMM with a global positioning system (GPS) device. Linked to a Psion Series 3a running AutoRoute 96, victims of theft will experience few difficulties in tracking down the culprit.

● **Quark, author of the XPress DTP package,** suddenly realises how appallingly rude it has been to the press and to its customers. To make amends, it provides reasonably-priced upgrades, less buggy code and review copies for journalists — just like every other software manufacturer in the world.

● **Corel continues to remorselessly swallow up other developers' products** for inclusion in Draw version 7. It will ship on 14 CDs, consist of 27 unique modules, include 4,000 fonts and

37,000 pieces of clip-art, and will arrive late with approximately 50 percent of it not working, to be followed by a seven-CD bug fix four weeks later.

● **At some point in the future, plug and play will operate seamlessly,** although perhaps only in a parallel universe. Visitors to this alternative plane also find high-definition televisions and PCs which run well under 4Mb in every home — and that CorelDraw is the most popular and best established graphics package on the Macintosh.

Highlights from the births, marriages and deaths columns of Personal Computer World in 1995

Births

- To Microsoft, a new graphical operating system, Win95, after a long and painful gestation. Dark questions about whether the father was Apple's Mac operating system.
- To Intel, a 150MHz Pentium Pro, the first of the sixth-generation processors. Born into a more uncertain world than its forbears, as software becomes more platform independent.

Marriages

- Lotus and IBM. Wedding of the year. The bride wore a yellow SmartSuite. Blushing ever-the-bridesmaid was Apple, whose name has long been linked with IBM (though a bigamous marriage is still not ruled out).
- Aldous and Adobe. Marriage of leading graphics specialist left problem of what to do with the squabbling children, Freehand and Illustrator. Freehand eventually went to AltSys, its mother by an earlier marriage, who sold it heartlessly to Macromedia.
- AMD and NextGen. A marriage of convenience. Major chip cloners unite in the face of the might of Intel. First child, to be called K6, expected next year.
- Symantec and Delrina. Utilities giant takes on the Canadian.

Marriage that wasn't

- Engagement of Microsoft and Intuit called off after objections when the banns were read out. People said they were only marrying for the online money market.

Separation

- Novell announced that it planned a divorce from WordPerfect, only weeks after admitting publicly that it was ending its furtive romance with high-roller Unix, of which there had long been talk of a love child. Novell claimed it was renouncing all ties to concentrate on its self-proclaimed task of networking the entire world.

Deaths

- Photostyler. Strangled by stepmother Adobe, who did not want it upsetting her daughter, Photoshop.
- Commodore US. Looked like a case of adios Amiga, until Escom bought the intellectual rights to the machine which will be sold in Eastern Europe.

Near-death experiences

- Modem pioneer, Hayes, under Chapter 11 protection, spoke repeatedly of saving angels coming into sight down a long, bright tunnel.

Be your own oracle

Do any readers have better predictions for what may happen in 1996? Just write between 300 and 500 words and send it in on disk, or by email, to the addresses on the letters page. We'll print the best submission and cross your palm with silver.

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1995 — What happened, and when

January

● **Intel** reels from the discovery by the improbable Professor Tom Nicely that the new **Pentium** can get its sums wrong. Boss Andy Grove tactlessly points out that Intel has known about the bug for months, and that anyway, users should expect a new chip to make mistakes.

Intel first says it will replace only "mission critical" chips — meaning those that might cause air crashes, or world wars. European marketing manager, Tom Keating, says: "We want to talk to people who design aeroplanes."

There is global uproar. Intel agrees to replace all flawed chips.

● Portly **Phillipe Kahn**, last of the great spenders, resigns as president of **Borland**, the company he founded. No doubt taking a weight off their minds.

● Microsoft's new graphical operating system, codenamed **Chicago**, has already been renamed **Windows 95** to help us forget that it was promised for 1994. Launch date "before July".



February

● **Windows 95** now set for launch "in August". IBM gloats that sales of its rival **OS/2 Warp** operating system are booming as a result. Cynics say the real reason is that sales are being encouraged by PC makers to persuade Microsoft from getting too outrageous over Win95 pricing.

● Meanwhile, thousands of printers are roughed up by scrubbers as **Hewlett-Packard** becomes the latest company to be hit by a bug. The scrubber pads are fixed to a contraption designed to fit on best-selling inkjets (DeskWriter 510 and 520, and Deskjet 550C and 580C) to re-texture paper-feed rollers which have lost their grip.

March

● People queue to sue Microsoft as the Win95 bandwagon gathers pace. Some complain of monopoly abuse and there are fears that **Bill Gates** will use Win95 and his new Microsoft Network to muscle in on global inter-networks. **Apple** accuses Microsoft of pirating **QuickTime** code.

● The **Business Software Alliance** reports that 349 people have called a "Shop Your Boss" hotline to report companies using unlicensed software. Only half were motivated by the £2,000 reward, according to the BSA; the rest were worried that Bill Gates was not getting all his dues. Not one malicious call — aren't people nice?

● The original rubber ball, **Phillipe Kahn**, comes bouncing back with his **Sidekick**, the organiser software that made Borland's name and is now sold by Kahn's new company, **Starfish**. Borland is doing rather well, too, launching **Delphi**, a Pascal-based visual programming environment.

April

● A survey reveals that one in five French men prefers to play with a PC than with a woman. It doesn't say what they do with their PCs. Perhaps we've been mishearing all along: not Latin lover, but La Tin lover.

● **Phone Day**, British Telecom's conspiracy to confuse computers, has database users all over the country amending their records. Those who protest that BT does not need new numbers are

told that the exercise is a trial run for the millennium, when a lot of PCs and software will refuse to recognise the 21st century.

● **Gates** says the August launch of Win95 is "not guaranteed" due to persistent buglets.

May

● **Compaq**, stung by the introduction of cheap removable mass-storage devices from Syquest and Iomega, announces a new super-floppy drive that will read both 100Mb disks and standard floppies. But not yet. Denying accusations of vapourware, desktop marketing chief Kevin Bohren says: "We are shooting for the fourth quarter." Watch

this space.

● German vendor, **Escom**, buys the Rumbelows chain and starts to transform it into 200-odd high street PC shops. IBM is delighted because Escom's PCs, targeted at first-time buyers, are preloaded with, guess what? Cue mystified callers to **PCW**: "What's all this about Warp? Is it German? Is it safe to eat?"

● **IBM** spokesman **Brad**

Chase says Win95 is set for a 24 August launch "barring a major problem."

June

● **Lotus** chief, **Jim Manzi**, is "devastated" to be told of a hostile takeover offer from IBM five minutes before it is announced. Six days and \$3.5 billion dollars later, he welcomes the deal — and, presumably, the fact that he is personally \$35 million the richer for it. "We are excited about being able to work with IBM," he says.

● A group of PC vendors in the US file fraud suits against Microsoft for claiming that Win95 would run in 4Mb of RAM. But of course, Microsoft didn't say how fast it would run...

● The **Department of Justice** ponders accusations of unfair competition in Gates's plan to bundle a Microsoft Network connection with Win95 (though both **IBM** and **Apple** offer similar deals).

July

● **IBM** Global Network chief, **John Whiteside**, admits: "We have lost the battle for the desktop interface." And Win95 has not even shipped yet.

Lots of people are still trying to stop it, with anti-monopoly officials still sniffing at that network connection.

● Microsoft promises to provide a list of products that will not work with **Windows 95**; instead, it produces a list of ones that will. No point in spelling out how many applications the punters will need to upgrade.

● **Novell**, still market leader in corporate net-operating software, is feeling the squeeze from Win95's big brother, **Windows NT**. Novell president, **Bob Frankenberg**, hopefully describes a proposed blend of the best of **Novell Netware** and **Unix** as the "network computing platform our customers will rely on into the next century."



August

● On launch day, Win95 makes it to BBC radio's **Woman's Hour** which is as close to blanket coverage as a software launch can get. **Hitchhiker's Guide** author **Douglas Adams**, in a **Guardian** front page review, dismisses it as a poor imitation of the Mac OS.

Seven million users who buy it over the next eight weeks discover that whatever else Win95 will do (which is a lot), it will not run their existing applications faster than Win 3.11, nor will they get those nice long filenames without application upgrades.

September

● The **Microsoft Network** arrives with a soft thud; a big anti-climax. **Access** is slow, features don't begin to match the likes of **CompuServe**, and internet connection is only a promise. If Gates reckoned on signing the world up to his network on the back of his \$200 million Win95 hype, he's blown it.

● **VNU Labs' tests** on Win95 code confirm that 16Mb of RAM is required to get a significant performance boost under Windows 95.

● A new form of virus, using self-replicating macros, is spread worldwide by a **Microsoft** technical CD. The payload consists only of the message: "That's enough to prove my point." And a considerable point it is too: the macros bypass all existing security, and can easily be altered to do damage.

October

● **Novell** sells off its **Unix** interests (see July) to concentrate on **Netware**. **SCO** and **HP** will continue to develop Unix but integrate **Netware** hooks. **Novell** president, **Frankenberg**, unveils plans for a **Smart Global Network** that will talk to all major operating systems. He adds: "This is anathema to Microsoft."

● But the talk is of **Microsoft's NT** becoming increasingly platform independent. Intel president, **Andy Grove**, when asked about the opportunity this presents to other chip makers, says: "If we don't keep ahead of the competition, we don't deserve to survive."

● **Jim Manzi**, former **Lotus** boss, walks out after just 99 days working for new owner **IBM**. "I don't think I am the right person to be leading a division inside a much larger organisation," he says.

November

● **Novell**, in yet another retrenchment under Microsoft's barrage, puts **WordPerfect** up for sale barely a year after buying it in a \$1.3 billion deal. A Win95 version of what was once the world's leading word processor is not expected until next year. But the big question is whether someone (such as **IBM**) will buy **Novell**.

● **Microsoft**, which once insisted that Win95 would run in 4Mb, finally admits that its **Access** for Win95 Professional Edition database needs 12Mb — which on many machines means installing 16Mb. Desktop product manager, **Oliver Roll**, in a statement of apology, says: "We hope you continue to have rewarding experiences with **Microsoft Office**."

SIX SPEED
CD-ROMS

Six of the best

Faster is usually better in the computer world so perhaps it's no surprise that six and even eight-speed CD-ROM drives are now on the market, although quad-speeds only ceased to be a novelty a few months back. **Gordon Laing** reviews six six-speeds and an eight-speed.

It was only a few months ago that we noticed quad-speed CD-ROM drives had suddenly become the standard, but even in this short time, quad-speed has become old hat. So what now? First we had single-speed, then double, then quad, so presumably this month heralds the arrival of eight-speed CD-ROM drives. Right? Well, kind of.

I was planning to shock you with the news that the next step up is the apparently intermediate one of six-speed. That was until Diamond squeezed in with the very first eight-speed, just in time for inclusion in this round-up, so I've considered the eight-speed separately for the purposes of this feature (see page 152).

So here we have six six-speed internal CD-ROM drives, all claiming to be half as

fast again as the average quad, which can be no bad thing, since in the computer business, fast is good. Or is it? In fact, there's more to it than just the six-speed aspect of these drives, so before making any recommendations we'll review other performance issues and consider why, other than speed, you would want a six, or even eight-speed CD-ROM drive.

I'm too sixy for my drive

The first question is surely: "Six times what, exactly?" To answer this we must return to the birth of the compact disc, when it carried audio only.

Sony and Philips laid down the specification for compact disc digital audio in what is known as the "Red Book". It stated that the stereo system

would employ digital sampling at a rate of 44.1 KHz with a 16-bit resolution. While this would at first appear to be a lot of information, 650Mb for an entire disc, the sustained data transfer was a modest 150Kb/sec; about the same as a floppy disk or a tenth of the average hard drive.

It didn't take long to realise the potential of a cheaply manufactured read-only disc with 650Mb of computer information, and the Yellow Book CD-ROM was born. The first CD-ROM drives read the information at the same speed as an audio player (150Kb/sec) later to be known as single-speed.

While audio discs must be read at single speed, there was no limit to CD-ROM. The faster you could get the data off, the better. Then the double-speed CD-ROM drive arrived, spinning the disc at twice the speed, and offering double the data transfer; typically 300Kb/sec.

Improved transports, tracking and error correction saw the inevitable introduction of the quad-speed CD-ROM drive delivering 600Kb/sec. With this improved performance, CD-ROM titles became easier to use, encouraging developers to increase the sophistication. As with the constantly speedier processor, this rendered older, slower, hardware obsolete or at best extremely frustrating.

Currently, quad-speeds are the standard, available for a little over £100 and fitted to most new PCs. If you take a look at the Pentium 120MHz group test on page 196, you'll see that all come with a fast CD-ROM drive. And although we originally asked for quad-speeds, several manufacturers supplied the increasingly common six-speeds, most of which are tested here.

Six-speed, it almost goes without saying, spins the disc at six times normal speed, theoretically delivering a sustained data transfer of 900Kb/sec, fast approaching that of a typical hard drive. So is that all there is to it? Just spin faster and faster and reap the benefits?

Unfortunately, none of the CD-ROM drives tested here even approaches the overall performance of a typical hard disk. In sustained data transfer from sequential sectors perhaps, but as soon as random access comes into play, the CD-ROM drive can't compete. This isn't to say they're a big con; just be aware that even with six or eight-speed you shouldn't expect overall hard drive performance.

Then there's the "processor hit" to consider. As CD-ROM drives speed up they place greater strain on the processor, and in some cases could have a negative effect. Some manufacturers have developed drivers to reduce this,

but it's worth bearing in mind before you have a total speed frenzy.

Application

Even though access times are poor compared to hard drives, and there is the potential for hard processor hits, fast CD-ROM drives make a big difference in... well, what exactly? The greatest speed difference is in pure transfer of data: copying files from CD-ROM to hard drive, the installation of software or operating systems, and accessing CD-based databases are all significantly improved with a faster CD-ROM drive.

Sadly, one application which appears to have found a performance ceiling is Photo CD. Kodak's image storage format holds a single image at five different resolutions, the top three being compressed, the largest of which, uncompressed, can measure a little under 20Mb. Now there's a system which would benefit from a faster drive, and indeed we found double-speeds opening twice as fast as single-speeds, and quads twice as fast again.

Then we tried the six-speeds, and found to our dismay that they were no faster than the quads. It would appear that the decompression and decoding of Photo CD image packs is limited by more factors than just the drive of origin, and even with a fast Pentium and plenty of memory, there is no benefit in having anything faster than quad-speed. So if you're only interested in Photo CD, anything faster than quad would appear, for the moment, to be unnecessary.

Installation

If only it were as easy as just plugging in a CD-ROM drive and getting on with life — well, it can be, but just what do you plug it into?

In the old days there was only SCSI, followed by the proprietary interfaces. Three proprietary interfaces crossed the boundary into standards, found subsequently on many sound cards, the idea being that a multimedia upgrade kit would only require one card. The three interfaces, compatible primarily with drives from that manufacturer, were Sony, Misumi, and Panasonic/Matsushita.

SCSI matured into SCSI-2 and the current alternative is the IDE interface. Every PC has a hard drive controller which with a little coercing, can also support a CD-ROM drive. The original IDE hard drive was designed for the AT bus. The IDE interface with its single channel could support two drives, and the later ATAPI specification allowed one of these to be an IDE CD-ROM drive.

Unfortunately, in the excitement few

bothered to notice that a CD-ROM drive sharing the same IDE channel as a hard drive would slow it down, particularly in Windows, where the precious 32-bit access was lost. This happens because Microsoft's driver looks for installed drives in the BIOS, only spots a drive C, gets confused when it notices interrupts from a mystery source and gives up.

The most popular solution is enhanced IDE (E-IDE) which offers two channels for a total of four drives. Pop your hard drive(s) on one and your CD-ROM drive on the other and have the best of both worlds. Or, go for SCSI, which could always support seven devices, internal or external, without any of these troubles. It also handles the job of multitasking better.

The technical bit

Once again, we've got six six-speeds: three from the E-IDE camp, and three representing the SCSI-2 side of things. All were fitted individually to the same IBM Pentium 90 with 16Mb memory; the E-IDE drives connected to a spare channel of the on-board PCI E-IDE interface, and the SCSI-2 drives to an Adaptec PCI 2940 SCSI-2 card.

The standard CD-ROM benchmarking suite of the VNU Labs was run on all drives, resulting in figures for sustained data transfer, processor hit, and weighted overall performance (see the table on page 152).

Plextor is the only drive here to use a caddy loading system: the other five, and the eight-speed too, use tray loaders. Plextor has retained the older method of loading CDs, arguing that it allows the drives to be mounted vertically. It also extols the virtues of having your most frequently used discs ready to go, pre-loaded in caddies, rather than suffer all the inconvenience of opening jewel cases (i.e. normal CD cases).

Apart from this, all the drives look much the same. They each require a spare 5.25in drive bay, suitable power and data connection, and that's it. All the front panels have headphone jacks and volume controls for audio use; all CD-ROM drives have built-in digital-to-analogue converters and automatically drop to single-speed for audio discs. Some of the more interesting drives may have basic CD audio transport controls such as track skip, but otherwise, one CD-ROM drive looks pretty much like any other.

There are many similarities in terms of performance and price. A six-speed drive should theoretically be able to deliver a sustained data transfer rate of around



900Kb/sec but only four of the six managed this. All three SCSI drives topped the 900Kb/sec mark, the clear winner being the Toshiba, boasting 968Kb/sec thanks to its slighter faster "6.7-speed". The model we reviewed was a pre-release version, but the final product, which should be shipping soon, is not expected to be any different.

Only one of the E-IDE drives cleared the 900Kb/sec mark: the Teac, which just beat the NEC 6Xi SCSI drive. The Aztech and Wearnes turned in relatively disappointing sustained data transfer rates of around 680Kb/sec. This ended up being very close to the various 4.4 and 4.5-speed SCSI drives we have tested from the likes of Pioneer, Toshiba, and Plextor (the latter is in *First Impressions* on page 64). But putting this into perspective, they were all comfortably faster than a standard quad-speed drive.

Conclusion

How do the prices measure up? As you've gathered, the CD-ROM drive

market is in a continual state of flux: one manufacturer drops its prices, and then the others follow; making simultaneous comparison difficult.

All the SCSI drives are generally at least half as expensive again as their E-IDE counterparts. On the other hand, all the SCSI drives delivered more than the expected 900Kb/sec. NEC's quoted street price appears to be a little optimistic, placing it and Plextor at level-pegging. NEC's drive boasts audio transport controls and gains bonus points for front panel design, but Plextor has a superior driver and set of utilities. Both are excellent choices, but for a little extra you should be able to get the Toshiba which had the highest transfer rate, but a larger, undesirable processor hit. The Plextor had a lesser

processor hit, which combined with its second best transfer rate places it as the highest overall performer. Taking its lower price into consideration, the Plextor 6Plex receives our Editor's Choice award for SCSI drives.

Teac's CD-56e represents particularly good value with excellent performance levels (being the only E-IDE to top 900Kb/sec) and a low street price, and thus earns itself Editor's Choice among the E-IDE drives.

The real rock-bottom bargain hunters should look no further than Aztech which currently appears to have the edge on price, even beating several IDE quads. Wearnes couldn't quote a street price at the time of writing, but should be able to come close to Aztech and Teac.

Diamond Multimedia Kit 8000

Yes, it's true.

The photo may show a plain-looking internal CD-ROM drive, but the label gives away the exciting truth: that Diamond Multimedia is first on the scene with an eight-speed CD-ROM drive.



Of course everybody else has them in their labs, testing away, but Diamond felt confident enough to send in not a beta version, but an entire retail multimedia pack with sound card and speakers.

The Multimedia Kit 8000 comes with a pair of Yamaha YST-M5 powered active speakers, a 16-bit, 1Mb wavetable sound card, five CD titles consisting of Myst, Magic Carpet, Rebel Assault, Sim City 2000 and Comptons Interactive Encyclopedia 1996, and of course the eight-speed CD-ROM drive.

The sound card has an IDE interface for the CD-ROM drive, and you can also use an existing interface. Yes that's right — the fastest CD-ROM drive did not make its debut on the SCSI bus, but IDE instead.

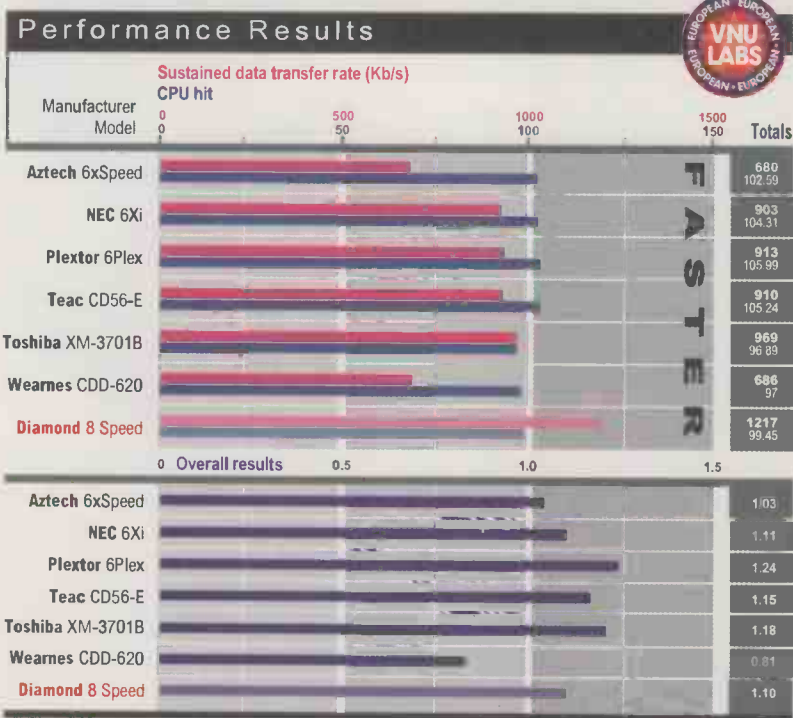
Most important of all is the performance of the drive, and we are pleased to announce that it scored an impressive 1,217Kb/sec in our sustained data transfer rate tests, making it the fastest drive yet and confirming its eight-speed badge.

On the down side, its performance hit was harder than any of the six-speeds, although not in major way. The drive also runs quite hot so watch your fingers when you remove discs from the tray.

On the plus side is the price, which at around £500 on the street is a bit of a bargain when you consider you get a wavetable sound card and a decent pair of active loudspeakers. Then again, if you can wait a couple of months, everyone else will have their eight-speeds out at nice, low prices, and we'll be featuring the world's first 16-speed — probably.

Price Around £500

Contact CHS Electronics 01483 723411



SIX SPEED CD-ROM DRIVES

	Aztech	NEC	Plextor	Teac	Toshiba	Wearnes
Manufacturer Model	Aztech 6x Speed	NEC 6Xi	Plextor 6PLEX	Teac CD56-E	Toshiba XM-3701B	Wearnes CDD-620
Connection	E-IDE	SCSI-2	SCSI-2	E-IDE	SCSI-2	E-IDE
RRP	£149	£379	£359	£279	£395	£199
Street	£149	£260	£300	£179	£325	n/a
Supplier	Aztech	NEC	Tekdata	Teac	Ideal Hardware	Wearnes
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ST486 DC
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MHz

ST6x86
100...166
MHz

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586

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Super sound boost

Now that WaveTable daughterboards are more readily available, it's easy to upgrade your FM sound board with this simple add-on.

Steven Helstrip explains the advantages and the technology, and puts five boards to the test.

Everybody is producing add-ons these days that allow you to upgrade your existing FM sound board to WaveTable technology — or so it seems. Last time we looked at sound cards (in April 1995), only a few manufacturers had started producing WaveTable daughterboards. In many ways it's like buying an overdrive chip, only different, because you can install one in around three minutes flat, turn on your computer and it works. First time.

Because WaveTable cards use actual recordings of real instruments, you hear

what the composer originally intended: pianos sound like pianos, guitars are convincing, and a trombone sounds as though it belongs to the brass section. With FM, not only do all the instruments sound the same, but you rarely get to hear them all because FM cards are limited to playing 11 voices at any one time.

So if you want high-quality music to complement your games and multimedia titles, WaveTable is the way forward. The good news is that you don't always have to buy a new sound card and it costs as little as £66.

Installing the cards

Any of these cards will connect to 16-bit sound cards that have a daughterboard feature connector. These include most SoundBlaster, MediaVision and Aztech boards. The connector looks similar to the CD-ROM version, only smaller.

To install a daughterboard, just take out your sound card and "sit" the daughterboard in place. Each board comes with three plastic spacers which help to keep a safe distance between the two cards.

Digital effects

With the exception of the Orchid WaveBooster 2, all the cards in this round-up have digital effects. This means reverb, echo and chorus can be added to the instruments to enhance the audio quality.

When reverb is applied, instruments can sound as though they are being played in large concert halls, churches or even your bathroom. The Yamaha DB50XG even allows separate effects to be applied to individual instruments, thus adding further realism.

Chorus effects are numerous and vary from one card to the next. On the whole, though, they "thicken" up the sounds and give the impression that more than one instrument is playing.

In this round-up we have tested, listened to, and made CD recordings of five cards to uncover the best of all. You can hear each card, by using our free CD-ROM cover disc this month, and compare it to the FM equivalent.

How WaveTable works

Before WaveTable technology was implemented in sound cards, the accepted sound standard was FM, or Frequency Modulation. FM produces sound by first creating a sine wave and then mixing it with a second. When the two waveforms

are close in frequency, a more complex waveform is produced, resulting in a new sound. By altering the two patterns, different timbres or instruments can be produced.

However, if you study the waveform produced by a piano, it would be far too complex for an FM generator to reproduce accurately. The same is true for most other instruments and this is why FM cards don't sound realistic.

WaveTable technology works differently. Instead of generating waveforms, it plays back pre-recorded samples of real instruments. A WaveTable chip, therefore, is an electronic table of waveforms.

Due to the size of audio samples, instruments are stored in a ROM chip which in most cases is 2Mb or 4Mb in size. Some professional synthesisers have up to 16Mb for their instrument samples. In addition, whereas one FM sound card will sound much the same as the next, WaveTable ROMs can differ significantly.

Two main factors determine the quality of a WaveTable ROM; the sampling rate at which the instruments were recorded and the number of samples which make up the instruments. Most samples on today's cards are recorded at 44.1kHz, the same frequency at which CDs are recorded. This is why some cards are described as having CD-quality audio. The higher the sample recording rate, the better the sound quality.

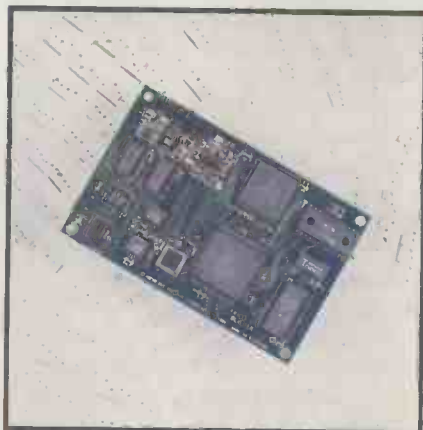
When a real piano is played, different timbres are produced depending on how hard the keys are struck, and where on the keyboard (or pitch) the key was pressed. By taking more samples from the piano, a more realistic sound can be reproduced.

Creative Labs WaveBlaster II

The Creative Labs WaveBlaster II is based on the EMU-8000 synthesiser chip and has 2Mb of samples on board. That's 128 General MIDI-compatible instruments, ten drum kits, and digital effects that include Qsound, reverb and chorus. Qsound creates a 360-degree stereo field, fooling the ear into thinking that the sound is coming from anywhere other than your speakers and comes into effect when playing compatible games.

The same synthesiser chip is used on the AWE-32 sound card and many of the instruments are similar. Consequently, little will be gained by adding this card if you already use an AWE.

In addition to General MIDI (GM), the WBII is compatible with Roland's MT32



synthesiser and is GS (an enhanced version of GM) compatible. Software is provided which allows you to edit the instruments by applying filters and changing settings. Edits can be saved as sysex files (.syx) and further imported into most MIDI sequencers.

Cakewalk Apprentice, a 256 sequencer, is bundled along with a MIDI adaptor kit which enables you to connect any MIDI device. Cakewalk provides score and piano role editing and has an intuitive interface.

Although this card offers better audio performance than FM, the overall standard is disappointing. Many acoustic instruments (pianos, basses and strings) are weak and drum kits are uninspiring.

PCW Details

Creative Labs WaveBlaster II

Price £77.99

Contact Creative Labs 01734 248590

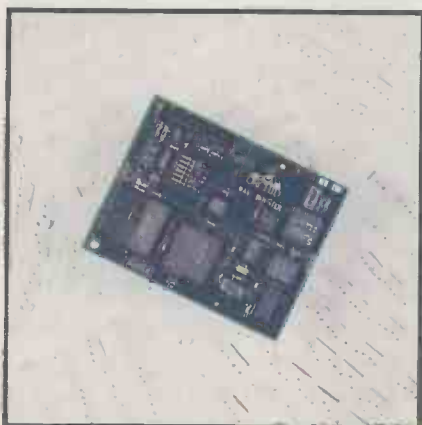
Good Points Great price.

Bad Points Not the best sound.

Conclusion A good bundle.

Orchid WaveBooster 2

This is the cheapest daughterboard in this review and probably the most realistic option for users wanting to upgrade their FM sound card. For your £66 you



get a 16-part, multi-timbral, General MIDI synthesiser, a copy of Cubase Lite, and a Windows control panel which lets you change the card's settings.

The WaveBooster 2 has 2Mb of samples onboard; that's 159 melodic instruments and eight drum kits to play with. As well as providing GM compatibility, it can be used in MT32 mode by selecting an option on its control panel. The card is capable of playing 24 voices simultaneously, more than enough for current games. There are no on-board effects, however.

If you want to dabble with on-board sounds, these can be accessed using a MIDI keyboard along with Cubase Lite (a Windows sequencer). The control panel also lets you play the sounds, enabling you to select instruments and drum kit, and change basic parameters such as modulation.

The sounds on this card don't compete with Roland or Yamaha products but they are a massive improvement on FM. Although realistic, the samples are a little bland and the lack of digital effects leaves them sounding "thin" and dry.

PCW Details

Orchid WaveBooster 2

Price £66

Contact Orchid Europe 01256 479898

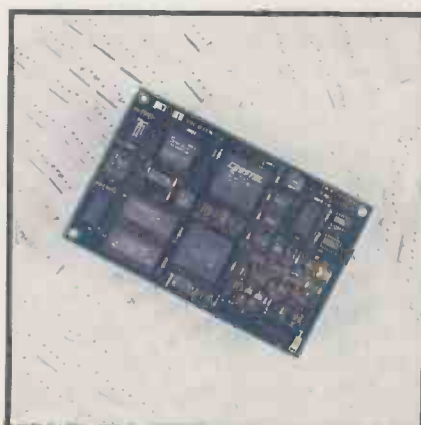
Good Points One hundred times better than FM.

Bad Points Samples are a little bland.

Conclusion The one to have if you're on a tight budget.

Orchid WaveBooster 4FX

This is the most expensive of the three cards available from Orchid. The 4FX contains 4Mb of samples — twice that of the WaveBooster 2 — to provide higher-quality instruments and built-in effects. These include six reverbs, two delays and four chorus settings.



The card also offers compatibility with Roland's GS standard, enabling you to accurately modify instrument parameters via a MIDI sequencer. Parameters include the attack, decay and release times of its patches, and the pan position and effects levels of the percussion samples.

There are 128 instruments within the ROMs conforming to the GM specification, and a further 63 timbres which come into play when using GS and MT32 emulation. There are 118 percussion samples as well, laid out across the eight drum kits.

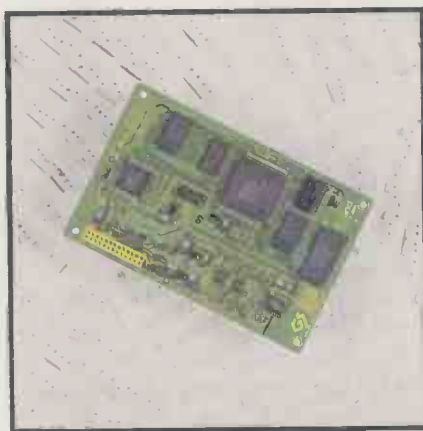
The control panel enables you to select emulation modes and sets up the on-board effects. The sounds on this board are better than those on the WB2, and the effects make a huge difference. But this card doesn't stand up against similarly-priced boards.

Recording Session, a notation-based sequencer, is bundled with the hardware but the package would be a better buy if Cubase Lite were included. Recording Session doesn't provide as much flexibility and is awkward to use.

PCW Details	
Orchid WaveBooster 4FX	
Price £109	
Contact Orchid Europe 01256 479898	
Good Points Good sound.	
Bad Points Awkward sequencer; not as good as similarly-priced products.	
Conclusion Difficult to recommend.	

Roland SCD-150

Roland is largely responsible for where music is at, on the PC today. It was the first company to manufacture a "serious" sound card, the LAPC-1, and played an



important role in developing the standards for General MIDI and GS.

The SCD-150 is Roland's most recent card based on its tried and tested Sound Canvas technology. There are 354 instruments crammed into its 4Mb ROM, and digital effects which include eight reverb types and eight choruses.

The card is General MIDI, MT32 and GS standard compatible, making it usable with just about every game, multimedia title and MIDI file around. It offers 16-part, 28-voice polyphony along with ten drum kits that include special effects. The quality of samples is consistently high, and covers the whole spectrum of acoustic and electronic instruments.

DoReMIX is bundled with the package, enabling everyone to create music; you simply drag icons into an Arrange window and the "musicians" play the parts. It has over 600 four-bar music sections which can be chained together — it's easy and fun — and there are 130 MIDI files included, covering many styles of music.

If you want high-quality samples, compatibility and lots of pre-recorded songs, you'll get them all here.

Music software

WaveTable cards don't just make games and multimedia titles sound great — there's heaps of software around that enables you to compose, arrange and print your own music. If you're new to music, then there's software to teach piano, while others require no musical knowledge at all.

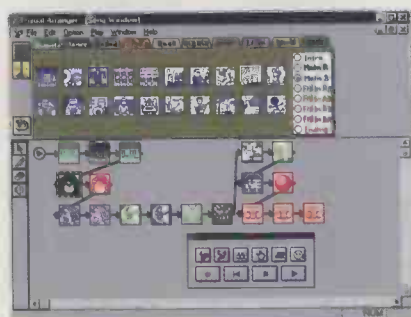
Most cards in this round-up come with music software. The best-featured, and easiest to use, is Cubase Lite which is bundled with the Orchid WaveBooster 2.

Lite is a cut-down version of the industry standard music sequencing package, Cubase. It lets you record and edit your performances using several editors, and includes a notation window. To use this effectively, though, you will need some musical knowledge and a MIDI input device, such as a keyboard.

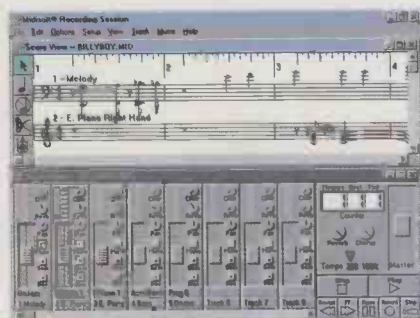
Once the parts have been recorded, they can be copied and moved around via the intuitive Arrange screen. There's also a mixer that lets you set the volume, reverb and chorus levels. Up to 16 tracks can be recorded using as many MIDI channels.

● Cubasis Audio

If you want to record a vocal or other live instrument, Cubasis Audio has additional tracks for doing just that. All you need is a



Visual Arranger enables anyone to make great music. It's easy and great fun



Recording Session enables you to record and edit your music using traditional notation

16-bit sound card and enough hard disk space for your recordings at roughly 5Mb per minute. Audio tracks can be recorded and manipulated in much the same way as MIDI and up to four parts can be played back simultaneously. The audio version includes better editing facilities.

Price £250

Contact Harman Audio 0181 207 5050

● Visual Arranger

Yamaha sent along a copy of Visual Arranger with the DB50XG. No musical knowledge is needed to use this package since all the parts have been recorded for you.

The point is to arrange musical ideas by dragging icons into an Arrange window. Musical styles range from reggae through to jazz and dance. For each style there is a myriad of variations, including introductions, guitar solos, verses and endings.

If you want to get more involved you can play around with the chord progressions, record your own parts, change the tempo and select different musicians to play the parts, or instruments.

This package is lots of fun and is recommended for beginners and children.

Price £39.99

Contact Yamaha Kemble 01908 369269

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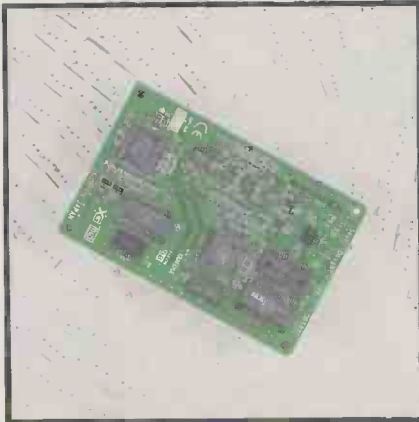
PCW Details

Roland SCD-150
Price £169
Contact Roland 01792 702701

Good Points Excellent sound, compatibility.

Bad Points Not many.

Conclusion A tad expensive.



Yamaha DB50XG



When the name Yamaha is mentioned many people think of fast bikes. In fact, Yamaha has been making musical instruments for more than a century now and was the company that developed FM — the technology used in sound cards before WaveTable came along.

The DB50XG is the only card to implement XG technology. In a nutshell, this means that instead of just 128 instruments (like General MIDI) you have a total of 676 sounds, 21 drum kits and

high-quality DSP (Digital Signal Processor) effects thanks to an increased number of variants.

While remaining compatible with General MIDI, the DB50XG has more control over its sound, allowing individual characteristics to be fine-tuned. For example, the EQ of a piano sound — how does this affect the soundtrack from Doom? It doesn't. But games written with XG soundtracks in future will have greater realism.

So is it any good? It's fantastic. The quality of instruments is consistent from the pianos through to the drums and everything in between. Even better are its built-in effects. Because it uses a sophisticated DSP, different effects can be assigned to separate instruments. So instead of merely having reverb on every sound, there can also be a chorus on the guitar, echo on the flute... whatever you want.

Editor's Choice

Are these cards any good? The simple answer is yes. Each card reviewed here proved to be a massive improvement on FM — some more than others. They are easy to install, work as soon as you turn on the computer, and add greater realism to every game and multimedia title.

Choosing which card is best is not easy, but after plenty of listening we decided the Editor's Choice award should go to the Yamaha. The DB50XG has stacks of sounds, fantastic digital effects and a nice price to match. It also comes with a CD-ROM crammed with MIDI files and audio tracks.

Another card worthy of mention is the Orchid WaveBooster 2. It's not particularly the best-sounding card, but if you're on a tight budget, at £66 it's a fantastic buy. You get a copy of Cubase Lite, too, which is the ideal software package to get started with MIDI sequencing.

You can hear how each sound card performs by listening to tracks two to seven on this month's cover-mounted CD. *Do not listen to track 1 as this is the CD-ROM partition which may damage your speakers.*

Track listings

- Track 2 A typical FM sound card
- Track 3 Creative Labs WaveBlaster II
- Track 4 Orchid WaveBooster 2
- Track 5 Orchid WaveBooster 4FX
- Track 6 Roland SCD-15
- Track 7 Yamaha DB50 XG

PCW Details

Yamaha DB50XG
Price £129
Contact Yamaha Kemble 01908 369269

Good Points Great sound, amazing price.

Bad Points None.

Conclusion Go out and buy it.

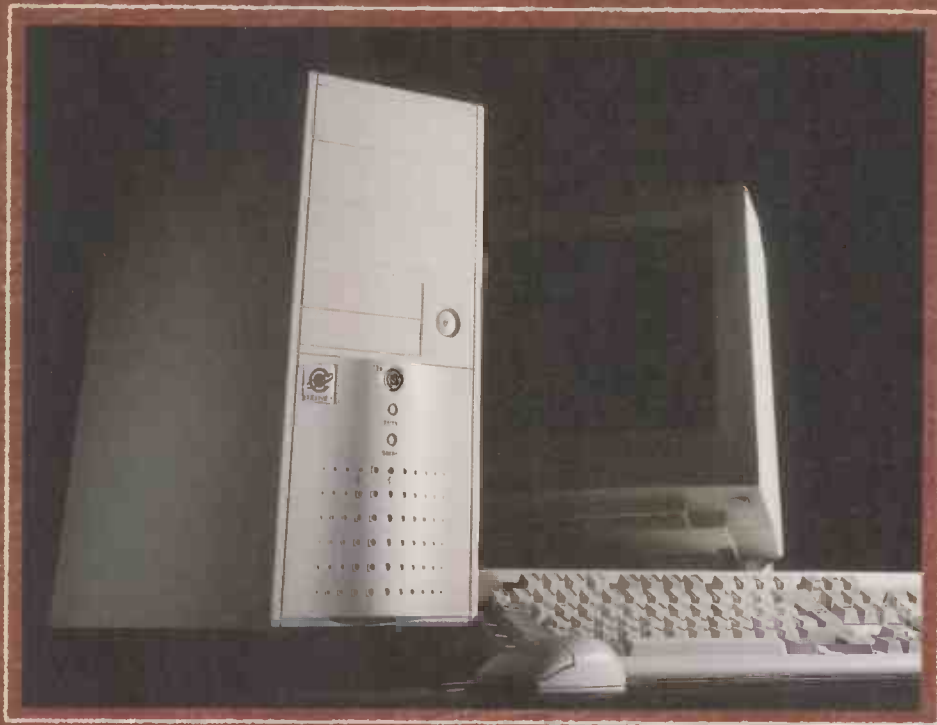


WAVETABLE DAUGHTERBOARDS TABLE OF FEATURES

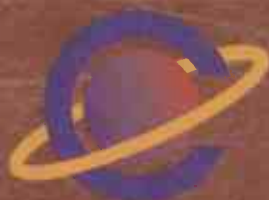
	Creative Labs	Orchid	Orchid	Roland	Yamaha
Manufacturer	Creative Labs	Orchid	Orchid	Roland	Yamaha
Product	WaveBlaster II	WaveBooster 2	WaveBooster 4FX	SCD-15	DB50XG
Telephone	01734 248590	01256 479898	01256 479898	01792 702701	01908 369269
Price	£77.99	£66	£109	£169	£129
Chipset	EMU8000	Dream	Dream	Sound Canvas	MU50
ROM	2Mb	2Mb	4Mb	4Mb	4Mb
No. Voices	28	24	24	28	32
No. Instruments	128	159	159	354	676
No. Drum Kits	10	8	8	10	21
Reverb	●	○	●	●	●
Chorus	●	○	●	●	●
Bundled Software	Cakewalk Apprentice	Cubase Lite	Sound Impression	DoReMIX	None

KEY ● Yes ○ No

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- Intel 75MHz Pentium® processor
- High performance PCI bus
- 8Mb RAM (maximum 64Mb)
- 850Mb enhanced IDE drive
- Powerful 64-bit 1Mb PCI graphics
- Dual speed CD-ROM drive
- 16-bit Stereo sound card
- Twin stereo speakers
- 14" SVGA colour monitor
- 8 bay midi-tower case (desktop case -£10)
- 2 Parallel and 1 serial port
- 102 Key UK keyboard and mouse
- Plus a galaxy of software, see alongside

Software

- Microsoft Windows 95
- Novell Word Perfect
- Novell Quattro Pro
- Novell Presentations
- Novell Envoy
- Novell InfoCentral
- Novell GroupWise
- Ez Language French, German and Spanish
- Infopedia encyclopaedia CD
- WinTutor 95 CD
- Time Almanac CD
- Bodyworks 3 CD
- UFO for Windows CD
- Dinosaurs for Windows CD
- World Atlas CD



£999 +VAT

Colossus Home/Office/Family Multimedia System Processor Options

Colossus P100M

As above but with Intel 100MHz Pentium® processor

£1099 +VAT

Colossus P120M

As above but with Intel 120MHz Pentium® processor

£1149 +VAT

Colossus P133M

As above but with Intel 133MHz Pentium® processor

£1299 +VAT

Colossus P150M

As above but with Intel 150MHz Pentium® processor

£1599 +VAT

Upgrades

Hard Disk Drive Upgrades

850Mb to 1.08Gb +£50

850Mb to 1.6Gb +£150

Modems

14,400 BAPT internal fax modem +£80

28,800 BAPT internal fax modem +£160

Modems include 30 day free trial Pipes Internet software connection

Ram Upgrades

Each extra 8Mb +£200

CD-ROM drives

Quad speed drive +£50

Six speed drive +£100

Monitor Upgrades

14" non interlaced monitor +£40

15" non interlaced monitor +£110

17" non interlaced monitor +£320

Miscellaneous

800Mb Tape back-up +£150

PC TV card with teletext +£160

Intel Triton Chip Set +£C

Finance from under £39 per month

Colossus Finance Example:

19.8%

Colossus P75M multimedia system. Maximum APR 19.8%
Price £999 +VAT and delivery charge = £1196.16, 10% Minimum Deposit = £119.16
Balance = £1077.00 or 12 monthly payments of £98.73

or 24 monthly payments of £53.85 or 36 monthly payments of £38.89

Colossus P75E System with Pentium® Processor for Educational Establishments

The case for educational establishments is clear. no frills, no nonsense, high specification, superior quality and down to earth prices for the cost conscious bursar. We have been serving schools, colleges and universities since day one and our consultants are regularly assisting educational establishments with regard to upgrading, expanding and enhancing their existing systems. Colossus specialise in networking, cabling, system configuration, E-Mail, Internet access, and indeed, video conferencing. Our educational entry level systems include, as a minimum, Intel 75MHz Pentium® processors, 8Mb RAM, plus the specifications listed below. Prices weigh in at around £730



Colossus P75E Educational System

- Intel 75 MHz Pentium® processor
- 8Mb RAM maximum 128Mb
- 540Mb IDE hard disk
- 7 drive bay desktop case
- 3.5" 1.44Mb floppy drive
- 2 parallel and 1 serial port
- Powerful 64-bit PCI graphics
- 14" SVGA monitor
- 102 UK keyboard and mouse

£ **729** +VAT

About Colossus

We are Colossus Computer Corporation Ltd, a wholly owned subsidiary of the Granville Technology Group of Companies, the UK's premier direct PC supplier, with a customer base approaching 200,000

Our Company is uniquely positioned in the PC marketplace in that we enjoy the stability of being part of a thoroughly and financially sound parent company, however, at the same time we have the flexibility of a manufacturing base that enables us to build and formulate system(s) and solution(s) specifically and, indeed, individually to our customers needs.

Colossus Quality and Service

Our manufacturing facility is streamlined. We use the most advanced design and engineering techniques and our "Burn In" testing procedures coupled with the fact that we buy only the finest components for our systems will guarantee "Award Winning" Colossus reliability. As far as our service is concerned, from placing your order, through the delivery process, right through to free Technical Support, you will find at Colossus only knowledgeable and helpful people to advise you.

The Colossus Range

Whatever system or systems you choose, you will discover that we can meet your every need to enable you to cope with today's, and importantly, tomorrow's fast moving developments in software and hardware technology. At Colossus we build every PC, client server, workstation, and transportable using our "Building Block" principle of upgrade paths right through to full solutions. Our Networking Division provide advice on complete range of advanced networking services which include Mission Critical Raid Level 5 Fault Tolerant Systems. Our service also includes consultancy, comprehensive quotations, full installation, cabling, implementation of multi-user network applications, training and support.

Colossus BS5750

Having achieved BS EN ISO 9002 (BS5750 Quality Standards), we at Colossus have proven beyond doubt our ability to build, configure, install and maintain computer systems, and it is testament to the quality of our service and the reliability of our product, as well as our consistent value for money that the majority of our business comes from existing and recommended customers.

Colossus Warranties

In our book "The Customer is King". (that's part of our mission statement), so, customer satisfaction and peace of mind are key objectives for us at Colossus. All our systems carry a full back-to-base 12 months parts and labour warranty as well as technical telephone support and we also offer a choice of on-site maintenance options and extended warranties.

Colossus Terms of Trading

We offer credit facilities and business leasing to corporate customers (according to status). Official Government and Educational orders are welcomed. Payment can also be made by Visa, Access, Amex, cheque, etc. We can also offer finance facilities for individual customers, please ask for our Finance brochure.

The Colossus Range - Want to know more?

Just give us a call on the number below and you will be in touch with one of a team of knowledgeable and highly trained sales staff.

Colossus P100E Educational System



As above but with 100MHz Pentium® processor

£ **829** +VAT

Colossus P120E Educational System



As above but with 120MHz Pentium® processor

£ **879** +VAT

P133E
£1029 +VAT

Colossus Educational Upgrade Options

Operating Systems	540Mb - 1.6Gb	+£180	Monitor Upgrades	
MS Dos and Windows for workgroups 3.11	RAM Upgrades		14" non interlaced monitor	+£40
MS Windows 95	8Mb - 16Mb	+£200	15" non interlaced monitor	+£110
	8Mb - 4Mb	-£100	17" non interlaced monitor	+£320
Midi tower case	CD-ROM Drives		Software	
	Dual speed CD-ROM drive	+£50	Microsoft Office 95	+£149
Hard Disk Drives	Quad speed CD-ROM drive	+£100	Microsoft Office Prof.	+£199
540Mb - 850Mb	Six speed CD-ROM drive	+£150		
540Mb - 1.08Gb			For a full range of software please call	



Certificate No. FS 28122
BS EN ISO 9002:1994



NOVELL



pentium
PROCESSOR



Telephone

01 707 25 88 99

Northern Sales Office 01 282 77 00 88

Facsimile 01 707 26 74 00

Colossus Computer Corporation Ltd. Colossus House, Travellers Lane, Welham Green, Hertfordshire. AL9 7DA



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pentium
PROCESSOR

Colossus for the Connoisseur

'System 95' by Colossus



SYSTEM 95
by COLOSSUS

Make no mistake about it "System 95" by Colossus is special, even unique, and heralds a breakthrough in 32-bit computing in that it unlocks the power, compatibility and the versatility of Windows 95. Since the birth of the IBM compatible in the early 80's that remarkable and time resilient bolt-on system has demonstrated, time and time again, its ability to adapt and access extra features via third party add-in cards. These "add-in" cards were most times, highly innovative, sometimes expensive, but more often than not they could not perform to their full capability because of conflicts and bottlenecks when installed in the existing system. Our research team at Colossus, while examining and evaluating the potential of Windows 95 took a long and hard look at these incompatibilities and bottlenecks and with the collaboration of some of the world's technology leaders have developed and integrated new configuration procedures that take Plug and Play compatibility, ease of use and indeed raw speed and power to the ultimate. Hand on heart "System 95" by Colossus is state of the art in a PC and there is nothing around (we know) to touch it.



'System 95' by Colossus model P100 Midi-Tower



SYSTEM 95
by COLOSSUS

- Intel 100MHz Pentium* processor
- 16Mb EDO RAM
- 1.08Gb 11ms EIDE drive mode-4 F80A-2
- Diamond Stealth 64 3200 2Mb VRAM video card
- 15" Non interlaced SVGA colour monitor
- Midi tower case (others optional)
- Plus all the specifications listed alongside

£1999 +VAT

P120 Model price £2049

All Systems are fully plug and play compatible and include:

- PCI Bus
- Intel's Triton chipset architecture
- 256k burst mode SRAM cache
- Flash BIOS for future upgrades
- MPEG video playback with full Digital Control Interface (DCI) and Indeo* video
- Orchid NuSound sound card featuring 3D spatializer surround sound effects and voice recognition
- Six speed CD-ROM drive 190m/s access time
- 70 Watt premium stereo speakers
- 16Mb EDO RAM memory expandable to 128Mb
- 2 Enhanced serial and 1 parallel port
- Mouse and keyboard
- 3.5" floppy disk drive
- 15" or 17" Non interlaced SVGA colour monitor
- Windows 95
- Novell PerfectOffice (see previous left hand page for details)
- 8 CD multimedia titles
- Choice of desktop, midi tower or full tower case styles

'System 95' by Colossus model P133

£2699

+VAT

P150 model
£2999+VAT



- Intel 133MHz Pentium* processor
- 16Mb EDO RAM
- 1.6Gb 11ms EIDE drive mode-4 F80A
- Diamond Stealth 64 3200 4Mb VRAM video card
- 17" Non interlaced SVGA colour monitor
- Full tower case (others optional)
- Plus all the specifications listed above

COLS952A

ENGINE SPECIFICATION

Intel 75, 100, 133 or 150MHz Pentium* processor based systems

- 16Mb of memory, expandable to 128Mb
- Intel Triton chipset, full PnP compliant PCI bus
- SMC 37C665 Multi I/O chip
- Enhanced IDE interface supporting up to 4 EIDE devices fast 4-mode
- Two high speed 16550 serial ports
- One high speed enhanced parallel port
- 256Kb mixed mode fast burst SRAM cache exp. to 512Kb
- 4 ISA (PnP) and 4 PCI (PnP) expansion slots
- Memory to PCI bus transfer rate of up to 100Mb p/sec

VIDEO SPECIFICATION

Diamond Stealth 64 video 3200 graphics engine

- 2Mb fast VRAM expandable to 4Mb
- 64-bit graphics performance
- Flicker free refresh rate up to 120Hz

- MPEG playback
- Fully PnP compliant
- Accelerated real time video playback
- MPEG, INDEO and CINEpack compatible
- Full support for DCI (Digital Control Interface)

AUDIO SPECIFICATION

Orchid NuSound PnP Audio Card

- Plug and Play 16-bit sound card
- CD-quality 16-bit audio with 64x over sampling
- Hardware wave table synthesis and MIDI support, 3D Spatializer audio technology giving surround sound
- MPC level II, Soundblaster pro, Roland MT-32 and MPU-401 compatible
- 1Mb Wave table in compressed ROM
- Up to 32 simultaneous voices, 190 instrument sounds and voice recognition
- 5 Channel sound (4 stereo, 1 mono)



Telephone

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Colossus SBF Servers & Workstations

NOVELL

We did think about giving you lists and lists of specifications of our Novell Server options, but, frankly, server specifications are so unique to each individual business. Our philosophy of specific build and formulation (SBF) means that we will build you a server (or servers) that is tailored to your requirements. We list here examples of popular configurations; a typical file server and some workstations.



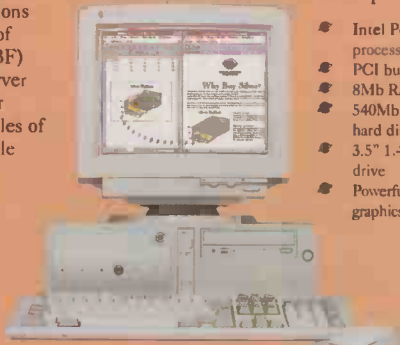
Colossus SBF 100MHz Pentium® Processor based Server

- Intel 100MHz Pentium® processor
- Intel Triton PCI chipset
- Heavy duty power supply
- 9 drive bay full tower
- 16Mb RAM
- 256K fast cache
- 1.6Gb IDE hard disk
- SCSI II drive options with Adaptec 2940 PCI SCSI controller available
- 16-bit ethernet card
- 3.5" 1.44Mb floppy drive
- 64-bit PCI bus graphic with 1Mb
- 14" SVGA 0.28 colour monitor
- 102 keyboard and mouse
- Select desired Novell Netware operating system
- Select required server options

£1459 +VAT

Intel 120MHz Pentium® +£50

Colossus SBF Desktop Network Workstation



- Intel Pentium® 75 processor
- PCI bus
- 8Mb RAM
- 540Mb 11ms IDE hard disk
- 3.5" 1.44Mb floppy drive
- Powerful 64bit PCI bus graphics
- 14" colour SVGA monitor
- 16-bit ethernet card
- 102 keyboard & mouse
- Midi Tower case _____ +£10
- MS DOS and Windows for workgroups 3.11 _____ +£60
- Windows 95 _____ +£60

£769 +VAT

P100 model price £869

Networking Example

Network configurations are infinite. Whether you require a peer to peer Network or a Client Server Network, we can offer you a complete Network Solution. Just call the number below and ask for the Network Division. Our typical Client Server plus 4 Network Stations plus software can cost as little as £5,000.



Colossus SBF Server & Networking Upgrade Options (add the following amount)

Case Style	Operating Systems	Multimedia	Tape Back-up	APC Smart UPS 600
Midi tower case _____ +£10	MS Windows 95 _____ +£60	Double speed CD-ROM _____ +£50	800Mb tape back-up _____ +£150	APC Smart-Ups 900
Full tower case _____ +£50	MS DOS & Windows for Workgroups 3.11 _____ +£60	Quad Speed CD-ROM _____ +£100	3.2Gb tape back-up _____ +£220	Powerchute Plus for Novell
Hard Disk Upgrades	Memory Upgrades	Six speed CD-ROM _____ +£150	2Gb SCSI DAT drive only _____ +£600	Network installation & cabling
850Mb to 1.08Gb _____ +£50	System RAM per 4Mb _____ +£100	16-bit sound card _____ +£40	4Gb SCSI DAT drive only _____ +£750	Network Cards
850Mb to 1.6Gb _____ +£150	Monitor Upgrade	Soundblaster AWE32 Value _____ +£130	Server Options (Call for details)	16-bit ethernet card combi _____ +£40
1.08Gb to 1.60Gb _____ +£100	14" non-interlaced screen _____ +£40	Modems	Novell Netware 4.1 5 User	32-bit PCI ethernet card _____ +£150
1.6Gb to 2Gb SCSI II _____ +£380	15" non-interlaced screen _____ +£110	14,400 BAPT fax/voice/data modem including software _____ +£80	Novell Netware 4.1 10 User	Mylex Raid Level 5 (12Mb cache) Controller _____ +£180
Adaptec SCSI controller _____ +£200		28.8 fax/data Modem _____ +£160	Novel Netware 4.1 25 User	
			Cheyenne ARCserve Software	

The Colossus SBF 'Super Pro' Office Series

The Colossus SBF P75 Super Pro system with Pentium® processor

Our range of standard office systems start from as low as £700, but in the fast moving, heavy workload office environment, more speed, more processing power, more graphics, more everything is the order of the day. In such environments, our 'Super Pro' Office series of PCs excel.



- Intel 75MHz Pentium® processor
- 8Mb RAM
- 1.08Gb hard disk
- High performance PCI bus
- Pentium® upgradeable
- Latest Intel Triton chipset with fast 256k cache
- 64-bit s3 graphics card with 2Mb video RAM
- 3.5" 1.44Mb floppy drive
- 15" SVGA non-interlaced monitor
- 6 speed CD-ROM drive
- 1 Parallel and 2 serial ports
- Windows 95 (option MS DOS and Windows for workgroups 3.11)
- Novell PerfectOffice (applications pre-loaded and ready to use)

£1299 +VAT

P100 Super Pro _____ £1399 +VAT
P120 Super Pro _____ £1449 +VAT
P133 Super Pro _____ £1599 +VAT

All prices exclude delivery and VAT (17.5%). Delivery: Systems £19, Lasers and large items £15, software and small items £10. Visa Access/ American Express Switch and Government orders welcome. Prices, specifications and offers are subject to change and subject to our conditions of sale copies of which are available on request. Mail order only. No collections please. Goods are normally despatched within 7 days. All orders will be fulfilled within 28 days unless otherwise specified. Software is Pre-loaded, back-up CD and manuals are available as options. Intel® Inside and Pentium® processor logos are trademarks of Intel® Corporation. All trademarks are acknowledged. E&OE.

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COLWK2A

Meet the Expanding range of Colossus SBF Power Notebook Systems

The New Range of Colossus "on the move" Power Notebooks incorporate advanced features and high specifications such as exchangeable hard disk drives up to 1.2Gb, RAM capacity up to 32Mb as well as multimedia capabilities. With advanced touch pad mouse, Local Bus

Graphics, a choice of upgradeable screens and pre-loaded with Novell PerfectOffice (with its six leading applications), the high specification Colossus Notebook systems can be specifically built and formulated (SBF) by us for you at prices that are highly competitive.

Colossus SBF Mono



£1149^{+VAT}

- 486DX4-100 processor
- 4Mb RAM expandable to 32Mb
- Removable 1.44Mb 3.5" floppy disk drive
- Removable 340Mb hard disk drive
- Choice of mono, dual scan or TFT screen
- 1Mb local bus graphics
- 86 Key keyboard, 12 function keys
- One DB-25 pin parallel port, bi-directional with EPP/ECP support. One 9 pin serial port (16550 UART), keyboard, external monitor and mouse ports PS/2 type
- Additional ports for docking and optional IRDA and TV tuner modules

Colossus SBF Dual Scan



£1419^{+VAT}

Colossus SBF TFT



£1899^{+VAT}



- Two speakers built-in (Soundblaster and Windows Sound System 2.0 compatible). Optional - sound card module
- Two type II, or one type III PCMCIA slot
- LCD icon indicators
- Nickel metal hydride (NiMH) battery, 120/240 auto-switching adaptor. Full APM support. System supports suspend to RAM and suspend to disk functions
- Phoenix Systems BIOS, Flash upgradeable. Includes setup in ROM, user-defined power management options
- 8.85"(D) x 11.62"(W) x 1.97"(H). Weight 6.2 pounds
- Windows 95 (MS DOS & Windows for Workgroups optional)
- Novell PerfectOffice suite pre-loaded

Colossus SBF Pentium® Notebook Systems

We are pleased to announce the arrival of our new Colossus SBF Pentium® Notebook Systems. These, our fastest notebooks feature:

- Intel 75MHz Pentium® processor
- 8Mb RAM; 256 cache
- Minimum 540Mb hard disk drive
- 16-bit sound card, built-in internal speakers
- Dual speed CD-ROM drive
- Built-in MPEG
- Choice of 10.4" dual scan or VGA TFT screens
- Windows 95 and Novell PerfectOffice CD
- Prices from around £2000

Colossus P75
Multimedia Notebook Computer

£2199

For 8Mb RAM model _____ +£349
For 10.4" TFT model _____ +£500

Upgrades & Options

- RAM upgrade per 4Mb _____ +£140
- From 340Mb to 540Mb hard disk _____ +£90
- From 340Mb to 810Mb hard disk _____ +£260
- From 340Mb to 1.2Gb hard disk _____ +£480
- 12v DC car adaptor _____ +£60
- Additional NiMH battery _____ +£99
- Docking station _____ +£329
- SMART battery pack _____ +£120
- Sound card module _____ +£80
- TV tuner module, infra-red & port replicator _____ £TBA
- 28.8 PCMCIA modem _____ \$199

Meet the New Colossus SBF Power Portable & Comms Systems



The new Colossus Power Portable range provides substantial 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 and the most popular uses are in

network management, instrumentation, data capture, presentations and multimedia applications. Add a 14.4 BABT voice/data fax modem card and you transform your power portable into a state of the art comms system.

Colossus SBF CRT Colour



£1679^{+VAT}

- Colossus CRT portable features 9" Sony SVGA colour monitor
- Colossus "Lunchbox" portable case features LCD VGA mono, dual scan colour or TFT colour screens
- Intel 486DX4-100 processor
- 8Mb RAM expandable to 128Mb

Colossus SBF Mono



£1399^{+VAT}

- 256k external cache & PCI bus
- 540Mb IDE hard disk
- 3 drive bays and 5 slots
- 3.5" 1.44Mb floppy drive
- Parallel & 2 serial ports and keyboard
- Windows 95 (MS DOS & Windows 3.11 for Workgroups optional)

Colossus SBF Dual Scan



£2099^{+VAT}

- Colossus Portable Upgrades**
- From 540Mb to 850Mb _____ +£30
- From 540Mb to 1.08Gb _____ +£80
- From 540Mb to 1.60Gb _____ +£180
- From 540Mb to 2Gb SCSI II _____ +£580
- Adaptec 2940 PCI SCSI controller _____ +£200
- Processor Upgrades**
- From 486DX4-100 to P75 Triton _____ +£100
- From 486DX4-100 to P100 Triton _____ +£200
- From 486DX4-100 to P133 Triton _____ +£400
- Alternative Processor**
- From 486DX4-100 to 486DX2-66 _____ -£30

Colossus SBF TFT



£2999^{+VAT}

- Other Options**
- NEC 6Xi SCSI CD-ROM _____ +£300
- NEC SCSI/AT adaptor _____ +£60
- 16-bit sound card _____ +£40
- Soundblaster AWE 32 Value _____ +£130
- 14" additional screen _____ +£160
- 15" additional screen _____ +£230
- 17" additional screen _____ +£460
- 14.4 BABT fax/data modem _____ +£80
- 28.8 BABT fax/data modem _____ +£160
- 800Mb tape back-up _____ +£150
- 1.7Gb tape back-up _____ +£220

COLNOT2A

Additional RAM
RAM per additional 4Mb _____ +£100



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programs, get further details on a particular program, try out demonstrations of programs, play videos, listen to audio files and much more. When any of these options is available an icon will be displayed indicating the fact. All you need to do is click once on it to activate the choice.

About this month's CD-ROM

A new year cometh and a new look interface for PCWI stumbles out blinking into the light. We just can't resist giving you the best CD-ROMs in the business; our new look has been inspired by the success of Windows 95.

Staying with a Microsoft theme we include this month, Microsoft's CD Expo. This is so comprehensive that we have given you the opportunity to run it from within PCWI or to leap into it from the root directory. Just run MICROSFT.EXE. Similarly the CompuServe access software and internet connection kit can be accessed directly by selecting CSERVE.EXE.

MAIN FEATURES

Microsoft CD Expo

Bill Gates' boys and girls have led the market for years with the products you just can't afford to do without. Now we bring you Uncle Bill's collection of his latest and greatest software demos and trial versions.

CompuServe Goodies

Not a selection of Tim Brooke-Taylor style comedy sketches, but a demo of CompuServe's latest package, plus ten hours' free online time! Become one of CompuServe's four million satisfied customers and gain complete internet access via the worldwide web — and why not



A new look front screen for PCWI

take a CompuServe tour while you're at it? For further details refer to the card which has been included in this month's cover disc wallet.

Mac Software

We've pulled out all the stops for Mac aficionados this month and crammed in games, demos and utilities that will leave you breathless. Gorge yourself on our veritable banquet, including the Marathon 2 demo as the main course (it's the Mac's excellent answer to Doom): verily a big Mac extra value meal.

Video for Windows Enhanced Setup

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! That's right, without having recourse 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 that when you exit from PCW Interactive, if you leave the option for full-screen video selected, then video in other applications will also be full screen. If you don't want this, re-run PCW Interactive, select the "Windowed" option and quit again.

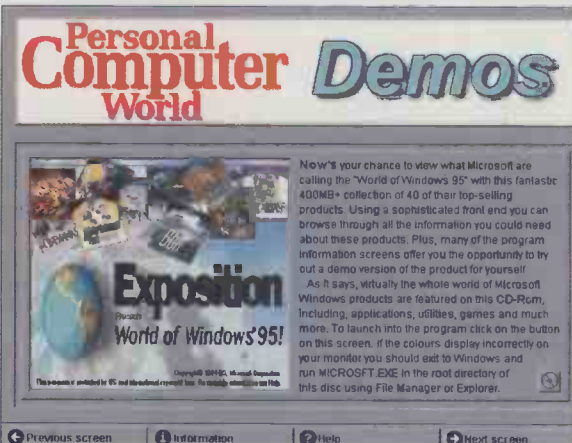
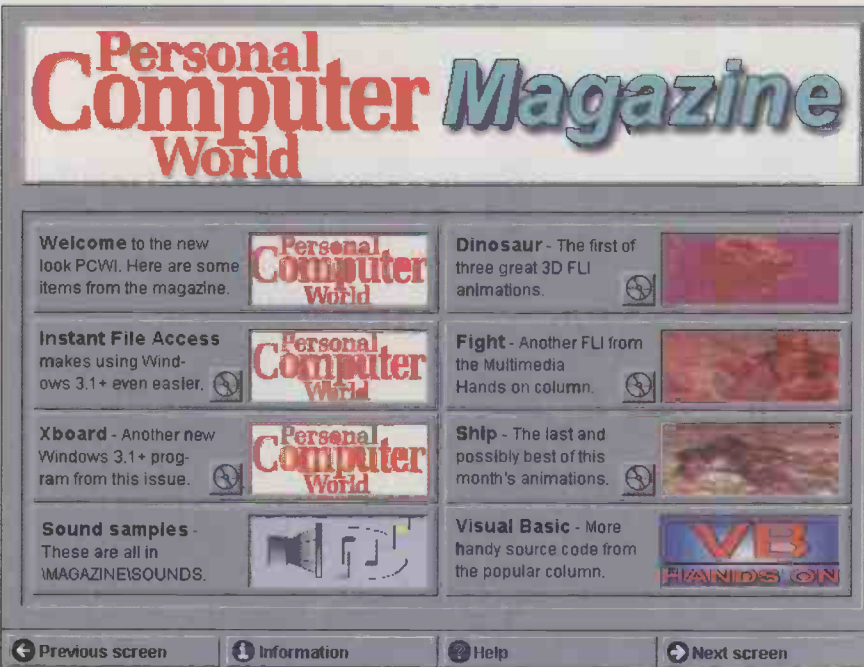
Testing your CD-ROM

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 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 still fails, return your CD-ROM to the magazine for a free replacement.

You are free to copy the CDTEST.EXE



Demos and trial versions of Microsoft software products



Above A new look interface for PCW Interactive

Left PCWI brings you the World of Windows 95, with a whole host of software demos and trial versions of programmes

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 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 videos it is probably because your graphic display driver may not be entirely 100 percent 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\SVGA256" (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.

• 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.



CD-ROM 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).

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*Money Back Offer applies up to a maximum of £20, and excludes P&P and VAT paid. Offer applies to Expert Landscape & Garden Designer 2. For others please call. The company reserves its right to request validation of proof of purchase. Full terms and conditions available on request. 3D Landscape currently uses Imperial measurements only. 3D Landscape: 386 or higher, Windows 3.1 or 95, VGA Graphics (256 colours or higher), 5MB of hard disk space (CD-ROM version). Requires 15MB for disk version. Minimum 4MB RAM, 8MB recommended. Sound card recommended. Garden Encyclopaedia (CD-ROM only): As with 3D Landscape, except only 2MB hard disk space required. Quad-speed CD-ROM drive recommended.

Taking the soft option?

If you want to run PC applications on your Mac you'll have to choose between software and hardware-based emulation. George Cole assesses SoftWindows 2.0, the DOS card from Apple, and the OrangePC co-processor.

How do you like your emulation; hard or soft? A growing number of Apple Macintosh users are running PC programs on their machines with the aid of hardware or software-based emulation. The idea of anyone wanting to use PC software may seem puzzling to some Apple enthusiasts, but there are many good reasons why you might want to do so. In many ways, Macintosh owners are in a similar position to those who bought Betamax VCRs rather than VHS machines back in the early eighties. Macintosh users clearly have the better technology (even when compared to PCs running Windows 95), but they are very much in the minority.

Around 85 percent of the world's computers run on Intel processors and Microsoft's MS-DOS or Windows operating systems, compared with around 10 percent for the Apple Macintosh. As a result the first priority for most software companies is the PC. For example, of the 5,500 CD-ROM titles available

worldwide last year, nearly 3,300 were designed for the PC — almost three times the number available for the Macintosh. Apple users often have to wait weeks or even months for the Macintosh version of new software to arrive — and there are far more games for the PC.

Around two years ago, Apple launched a dual-processor machine in the US, which contained both a Motorola and PC processor, allowing users to run Macintosh and PC applications. The machine was nicknamed Houdini, presumably because it offered an escape

from the horrors of DOS. At the time, Apple resisted calls to launch Houdini in Europe but, last year, it introduced a DOS-compatible card for the Power Macintosh 6100, and the Performa 630 DOS-compatible, which has a Motorola 68040 and 66MHz 486DX2 processor.

The other route for running PC programs on a Macintosh is software emulation — to do this, the British company Insignia Solutions has released SoftWindows 2.0 for the Power Macintosh. Software emulation is cheaper, easier to upgrade and more cost-effective. You do not have to take the top off your computer and the system is more integrated. It sounds impressive, but how well does the software emulation work?

Going soft

Software emulation has an image problem. It's often seen as a slow and rather ungainly method of running "foreign" programs on a computer. But thanks to

faster processors and improvements in emulation design and coding, things are much improved. SoftWindows works on any Power Macintosh, whereas the

SoftWindows Installation - Application Memory Setup

SoftWindows uses Macintosh memory for DeltaCache, PC memory and Windows desktop size. Use the radio buttons to select the amount wanted for each.

SoftWindows DeltaCache Size:

Minimum (+0 MB)
 Faster (+1 MB RAM)
 Fastest (+2 MB RAM)

A larger DeltaCache will improve SoftWindows performance, but will also increase the application memory required to run SoftWindows.

PC Extended Memory:

Windows minimum (1 MB)
 Windows optimum (3 MB)
 Other:

Windows applications require Extended Memory. Each megabyte of Extended Memory requires an increase in SoftWindows memory requirement of 1,030K.

Windows Desktop Size:

Small window (640 x 480 x 256 colors)
 Medium window (800 x 600 x 256 colors)
 Other: (640 x 436 x 256 colors)

SoftWindows uses 12 MB of RAM

12 MB of RAM available

SoftWindows' performance can be configured to suit the power of your Mac. Assigning as much memory as you can spare to the program is highly recommended

DOS-compatible card only works with the 6100's non-standard NuBus slot. Another bonus is that SoftWindows can also be networked, which means that you don't have to fit every computer with its own DOS card.

SoftWindows version 1.0 was based on the Windows 286 standard mode, which meant that it only ran around 80 percent of Windows software, and then at a sluggish pace.

SoftWindows 2.0 runs Windows in the 386 enhanced mode and emulates a 486DX processor. Booting Windows in the enhanced mode requires 35 million instructions per second, compared with 5 million for the standard mode. A 486 processor has 1.2 million transistors, whereas a 286 has fewer than 150,000.

SoftWindows translates Intel 486 instructions into PowerPC instructions and uses both static and dynamic compilation. The former compiles frequently-used Intel code into PowerPC code and builds it into SoftWindows. This means that the code doesn't have to be translated or compiled when called into action. Dynamic compilation identifies frequently executed segments of Intel code and compiles them into PowerPC code segments. These are cached and can be run directly when required.

For our test machine, we used a PowerMacintosh 6100, with 16Mb RAM, 500Mb hard drive, and connections to a Pioneer DR-U124X quad-speed CD-ROM drive and 14in Apple monitor.

If you think Windows needs a lot of memory, then you haven't used

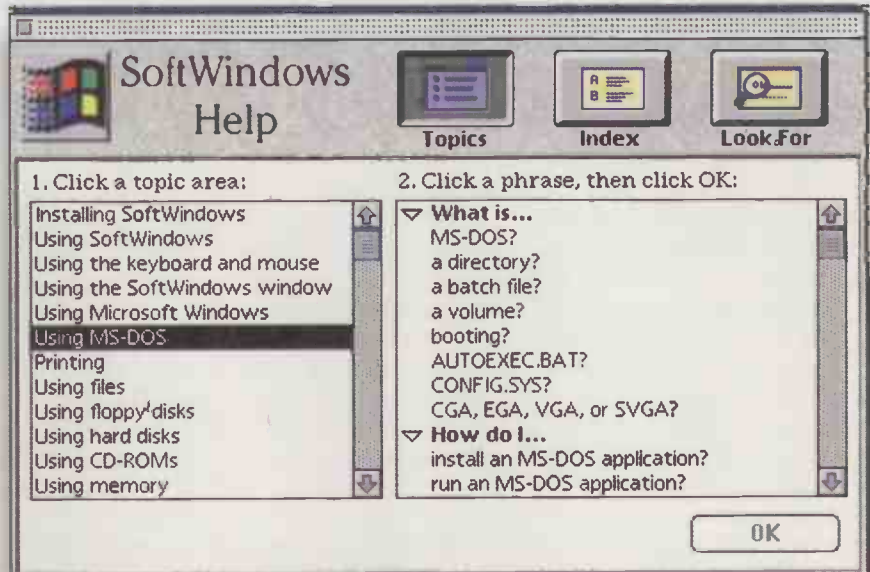
OrangePC

The OrangePC MS-DOS co-processor for PCI or NuBus Macintosh machines comes in a range of configurations; there are three basic models. The 440 model has a PCI interface, up to 64Mb RAM, SVGA graphics and 256K of L2 cache. The 420 also has a PCI interface and up to 32Mb RAM. The 290 is designed for NuBus machines, has up to 32Mb RAM, 128K of L2 cache, a PC Card (PCMCIA) expansion slot and serial and parallel ports.

The cards support 486SX, DX, DX2 and DX4 processors, and the 400 series offers a Pentium OverDrive chip too. An optional 16-bit Sound Blaster-compatible card is available for the 400 series.

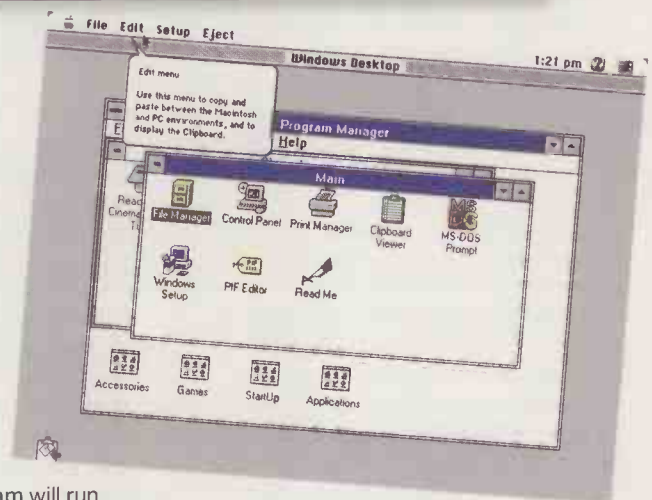
Price Entry level prices start at £854+VAT for a 486DX2 50 with 4Mb RAM

Contact 01706 832662



Above Insignia provides an Apple Guide help file to guide Mac users through the weird and wonderful world of DOS and Windows

Right The Windows 3.1 desktop in all its glory. Everything acts just like the real thing, and you can share data between Mac and PC clipboards. Apple's balloon help also works here



SoftWindows. The program will run on a PowerMac with a minimum of 16Mb, but Insignia recommends a machine with at least 24Mb. This is because SoftWindows requires a minimum of 12Mb, so with 16Mb you effectively have just 4Mb spare for running Windows applications. As Paul Daniels would say: "Not a lot."

SoftWindows comes with MS-DOS 6.22 and Windows 3.1 pre-installed. It offers extensive network support, too, and includes Novell NetWare and LAN manager client software. Ethernet, Token Ring and LocalTalk connections are all catered for. SVGA graphics are supported and audio and video can be played back from either QuickTime for Windows or Video for Windows applications. SoftWindows also cleverly combines the Macintosh and Windows sound systems, and you can even make sound recordings with the Macintosh microphone when using Windows applications with audio features (such as Word and Lotus 1-2-3). AppleScript support is provided for programmers who may wish to write specific instructions for running PC programs. And if you're

running System 7.5, there's an Apple-like balloon help system.

One disappointment, however, is that SoftWindows does not support the DOS sound system. Insignia considered emulating a Sound Blaster card, but the required processing power for the sound alone was equivalent to an entry-level PowerMacintosh! It means playing PC games without their sound effects. However, now that PCI PowerMacs are here, it is likely that some users will install a PC sound card. Insignia is looking at ways of getting sound from these when running DOS programs under SoftWindows.

Special mention should be made of Insignia's instruction book, which is one of the best I've seen. It's clear, concise and packed with useful advice. It's a format that other companies might wish to, er, emulate.

The installation of SoftWindows from CD-ROM is quick and simple. However, the first installation wasn't successful because for some unknown reason, the software decided that my machine only had 10Mb of RAM available for

Power Macintosh 6100 with DOS-compatible card

The PowerMac 6100 typically comes with a 66MHz PowerPC 601 processor, 8Mb RAM and a 350Mb drive. But add a DOS-compatible card and it turns into a different beast. You can buy the 6100 with the card built in, and in this case the machine comes with MS-DOS 6.22 and Windows 3.1 pre-installed. Or you can buy the card separately and install it yourself. The card fits into the 6100's single NuBus slot. The DOS card is well specified: a 66MHz 486DX2 processor, 8Mb RAM (expandable to 32Mb) Sound Blaster 16 card and SVGA graphics. It's not exactly leading-edge PC technology, but it's enough to run most PC programs comfortably.

With the DOS card installed, the 6100 can run native PowerPC software, standard Macintosh 680x0-based programs, and DOS and Windows applications, all of which makes it a very versatile machine. So much so that the 6100 won PCW's 1995 award for the Best PC System (see our June '95 issue). Incidentally, although Apple has now replaced its first-generation PowerMacs, it's keeping the 6100 in its range. Our machine came with the card and software installed, although I soon hit a nasty problem — my PC was dumb. DOS and Windows programs were silent, both through the monitor and the CD-ROM drive's headphone socket. Fortunately, the problem was soon solved. By going into the sound control panel, clicking Options and then selecting Internal CD and Play Through, my PC-in-a-Mac beeped into life.

The PC software and files are stored in a drive "container", which acts as a PC hard drive on the 6100's hard disk. The DOS-compatible software uses up around 25Mb of disk space and Apple suggests setting a minimum of 40Mb for your drive container (if the DOS card is pre-installed, the drive container should already be set-up for you). Windows eats up lots of hard disk space, so if you find your drive

container filling up, you can create a second one.

Operating the 6100 as a PC is very easy. A PC setup control panel, which is selected from the Apple menu, allows you to configure the system to your own particular needs. For instance, you can instruct the 6100 to switch over to PC mode on booting up, or make the screen fade during the changeover from Macintosh to PC or vice-versa. If you want to use a PC CD-ROM, you select a temporary drive from the Sharing panel on the PC control panel.

Switching between PC and Macintosh simply involves hitting a couple of keys (Control, and Return). The screen fades and then magically displays the DOS screen, complete with flashing C: prompt. Type WIN and you're into Windows. The 6100 ran DOS and Windows 3.1 software well. The applications we tested included DOS games, Word for Windows, the children's writing package Creative Writer, and multimedia CD-ROM titles like Microsoft's Dangerous Animals. It also coped with Windows 95 and the Office 95 suite, although its speed is nothing to write home about. Although Microsoft says that existing Windows programs should run at least as well under Windows 95, my subjective impression was that the 6100 was happier with the 3.1 version. Text and graphics can also be transferred between the two environments via DOS, Windows and Macintosh clipboards. However, you can't transfer sounds from PC to Macintosh or vice-versa.

All in all, the 6100 acquitted itself well and while it isn't the raciest PC in the world, the ability to run PC programs on a Macintosh more than makes up for this.

Price £1,874.13 (inc VAT); DOS-compatible card £487.63

Contact Apple 0181 569 1199

SoftWindows. The results of trying to run Windows applications on this were abysmal, with the 6100 taking ages to write each screen and most programs refusing to run and throwing up all sorts of error messages. If this happens to you, my advice is to re-install SoftWindows. When I contacted Insignia about the problem, the company was stumped for an answer as to why this had happened. The second installation was more successful, with 12Mb of RAM being allocated to SoftWindows.

The next step is to decide how all this RAM is to be used. There are three parameters to set: the size of the DeltaCache, the amount of PC Extended Memory and the size of the Windows desktop. The smaller you set these parameters, the less memory you need, but then the slower SoftWindows works. If you've got lots of RAM go for the highest DeltaCache and Memory Management settings you can — SoftWindows tells you how much RAM your settings need and warns you if there isn't enough.

The extra 2Mb of RAM gained on the second installation made a big difference and I could even use PC multimedia CD-ROMs such as film guide Cinemania 95. Arnie's "I'll be back" speech from the film "The Terminator" boomed through my speakers and the Video for Windows movie clips of "2001: A Space Odyssey" and "The Godfather" ran fine.

SoftWindows allows both PC and Macintosh windows to be displayed together on-screen, making it very easy to cut and paste between the two environments. The only caveats are that it works best on a large screen (preferably 16in or more), and some PC applications won't run in anything smaller than full screen, 640 x 480 VGA graphics. But even if you can't display both windows simultaneously, cutting and pasting between PC and Mac is a simple procedure. For example, transferring text from a document in Creative Writer involved copying it into the Windows clipboard, closing down Windows, opening the Macintosh desktop and then running Word. After locating the right file, the text was simply pasted using the Macintosh edit menu.


Standard Windows programs like Word also ran satisfactorily under SoftWindows, although the speed of the 6100 was more that of a fast 386 than a 486 PC. But then, the idea behind SoftWindows is not for people to throw away their PCs and buy a Macintosh, rather it is designed for those who use the latter for most of their work, but may need to use the odd piece of PC software — even if it doesn't fly off the screen.

With only 4Mb of RAM available for Windows, I didn't attempt to operate SoftWindows under Windows 95. Insignia does not recommend SoftWindows users moving over to Windows 95: although

Windows 95 programs may run, the performance is unacceptable, says the company. But Insignia is developing a version of SoftWindows which will be optimised for Windows 95.

Conclusion

Neither hardware nor software emulation will turn a Macintosh into a high-powered PC. If you find you need to run lots of Windows programs, then buy a PC. But if you have only occasional need to use PC applications, then hardware and software-based emulation is a godsend. If you're using a low-end machine like the 6100, then I would go for the DOS card, which will run your Windows programs faster and has the extra bonus of offering sound with DOS programs.

However, if you've got a high-end PowerMac with lots of RAM, or you need to run DOS or Windows programs on a network, then SoftWindows is the route to take. Either way, you'll be delighted with the ability to turn your Mac into a PC. And you'll be even more pleased to know that you can switch your PC back into the Mac with just a couple of keystrokes. 

Details

SoftWindows 2.0

Price £329

Contact Insignia Solutions
01494 459426





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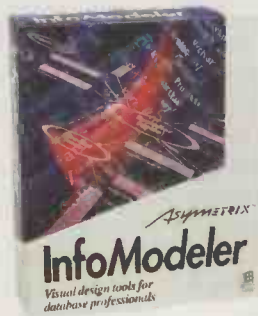
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Utility

Even within the more complete environment of Windows 95, there's still some room for utility suppliers to step in with upgrades. Tim Phillips reviews the first batch.

Windows 95 isn't the bunfight for utilities suppliers that you might imagine. Although it gives them a good opportunity to upgrade their software and sell us new versions of old products, Windows 95 is a much more complete environment than 3.11, and takes care of many housekeeping jobs perfectly adequately.

On the other hand, Windows 95 is neither perfect nor complete. While some utilities, especially File Manager replacements, are all but redundant, things like virus protection, disk maintenance and memory management should not be neglected, and this is where suppliers can step in. This month we review the first batch of Windows 95 products to see what's on offer and whether it's worth upgrading.

● **WIN'95 Advisor 1.01**

TouchStone has a long track record in diagnostic tools, but often its products have been aimed more at the professional end of the market. This utility is handy for users who don't have Windows 95 yet. If you're thinking of upgrading your software, and want to check whether your hardware is up to the job, then at around £20 this utility might be worth looking at.

The premise is simple: install this software under Windows 3.1 (it needs at least this to work) and it checks your hardware, even doing some multimedia benchmarks. It then comes back with a set of recommendations and compiles a report for you. If you upgrade your hardware, simply rerun the software and it will revise the report, giving you a new score.

The design is good: for software like this you need a coherent interface with a clear message, which minimises the work for you. This supplies the lot. The overall score is represented as a big dial in the middle of the screen, with a rating out of



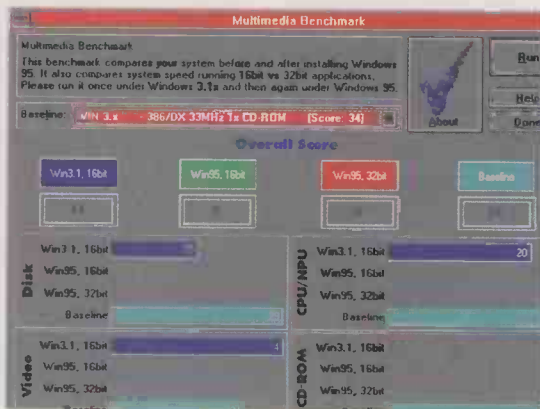
Left Check your PC's performance under Windows 95 before installing it, with WIN'95 Advisor

Below Running multimedia benchmarks on the components warns of any system bottlenecks. You can re-run them after installing Windows 95 to fine-tune the system

95 and a one-word assessment, ranging from "Wow!" to "Fail". Big buttons and lots of help make this the sort of application that's useful for professionals but unbreakable by idiots.

That said, it's not all sweetness. Advisor was complimentary about a couple of PCs which were truly hopeless. Granted, it refers to having 4Mb of RAM as a "con" but it claims this is enough to run Windows 95, whereas in fact any less than 8Mb is a complete non-starter. The analysis of disk space left me wondering too — I was bemused when it concluded that although I would have minus 47Mb of hard disk left after installing Windows, this was still "enough".

The product is probably best used in a workplace, where it can be installed across a number of PCs prior to upgrading to Windows 95. By systematically testing a number of machines this way, you can handle all your upgrade problems in one pass, eliminating a messy trial-and-error procedure. For this reason too, I don't recommend you buy this with Windows 95, even though it does a good job of preparing your existing software. Buy it a couple of weeks



before you install Windows 95, and use it to make a hardware shopping list.

PCW Details

WIN'95 Advisor 1.01

Price £29.99

Contact TouchStone Europe
01442 862612

Good Points Neat design.

Bad Points Marginal use for a single PC.

Conclusion An inexpensive way to avoid upgrade headaches.

● **Norton Utilities**
Although the Windows 95 Plus Pack tries to supply a set of disk-based utilities,

Vehicle

don't be fooled. Norton has come up with the real thing. It's the tenth release of Norton Utilities, and although Windows 95 has tried to pull the rug from under it, this is a complete and exhaustive set of disk functions.

Norton worked closely with Microsoft during the development of Windows 95, and it shows. This is the slickest, best organised set of utilities in this review.

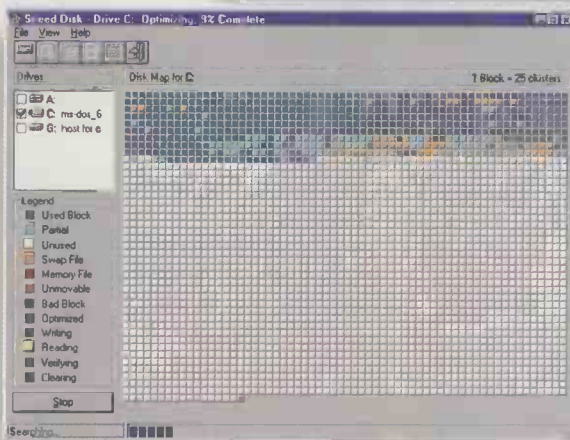
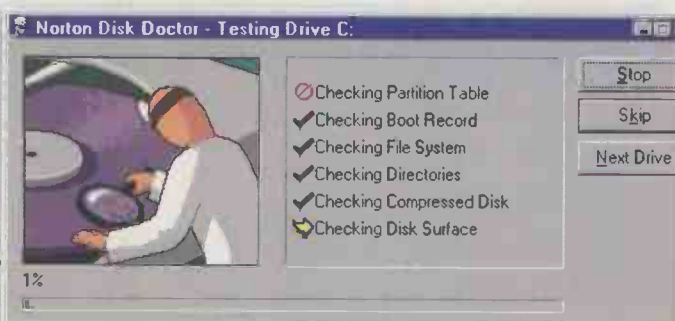
You can start with the Norton Utilities before you upgrade to Windows 95 if you want — there's a pre-installation tune-up under DOS. It's not like the Windows 95 advisor software, also reviewed here — it doesn't attempt to provide a hardware upgrade checklist. What it does do is tackle the most tedious jobs; deleting unwanted files, cleaning up the hard disk and checking for defects. If you are nervous about your PC's ability to upgrade, this is strongly recommended.

Norton Utilities for Windows 95 is missing some of the Norton stalwarts, such as Ncache, DupDisk, FileFind and Control Centre, because Windows 95 duplicates their functions. Instead, Norton has slimmed down the package and tried to add value where it has something to offer that isn't available under Windows.

There's a whole new utility as well: the Norton System Doctor. This is so complete it's quite amusing — it has a graphical display of every conceivable resource running under Windows 95, with up to 80 different monitoring functions. Some are displayed as dials, others as traffic lights, but this system doctor is easy to use and clear to read — something no-one else has managed under Windows 95. You add and remove sensors by dragging them.

Other utilities are given a new lease of life, notably the Speed Disk defragmenter which not only defragments your disk, but does it "intelligently" — files are placed in positions where they are less likely to

Right Norton Disk Doctor, still going strong, and with an animated sequence to make it interesting. Here comes the man in the white coat



Left Running Speed Disk can be done quite safely in background, but you miss the colours in the display. The graphics represent individual blocks of data on the disk

fragment in future. The position of the swap file is also optimised, a much-neglected speed-up for Windows users, and the whole operation runs perfectly happily in the background, although obviously it does slow disk access.

Symantec is quite pleased with itself, having designed all its utilities as true 32-bit applications so that they run on their own protected virtual machine. It claims this as an advantage over Microsoft, which makes sense: if you're going to mess about with low-level file operations, you ought to do it properly.

With animated displays, easy-to-use menu structures and a level of information that inspires confidence, this is an impressive set of disaster recovery and optimisation utilities.

PCW Details

Norton Utilities

Price £129

Contact Symantec 01628 592222

Good Points Excellent utilities.

Bad Points None.

Conclusion The original and the best.

● Norton Anti-Virus

The Norton Anti-Virus package functionally appears similar to the 16-bit Windows version. But that's where the similarity ends.

Because virus products work at a low level, existing Windows 3.x virus protection doesn't work under Windows 95, so Norton Anti-Virus has been completely rewritten and retooled. It's hard to say which virus product is the best at finding



**BE TWICE AS SAFE IN WINDOWS 95.
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FOR WINDOWS 95**

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32-BIT NORTON DISK DOCTOR

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100% protection of erased files. The new wizard-like interface leads you through file recovery step by step.

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Norton Utilities provides you with the capability to retrieve your valuable data.

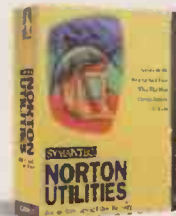
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Also available from Symantec for Windows 95 are Norton AntiVirus and Norton Navigator. Outside the UK, please call (0) 1734 66299

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viruses: even the developers admit that, from one month to another, a different package is rated "best". However, with free monthly updates to its virus list and the resources to keep up the depressing work of catching and curing viruses, Norton is a strong contender. You can download the monthly updates from the Symantec bulletin board, from CompuServe or even its web site, free of charge.

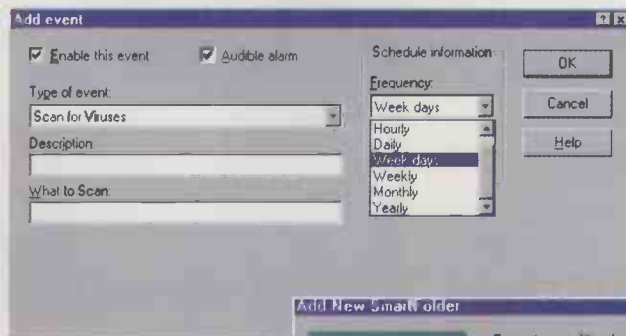
Once installed, the product is 6Mb, which is fat for a virus checker. As Windows 95 doesn't carry any built-in virus checking, I would suggest that if you ever use risky floppies, this could be invaluable.

Norton's customary easy interface is well suited to the limited range of activities that a virus checker does. Four big, fat buttons control the configuration and the manual virus checking options. The only tiring part is configuring the system's automatic operations. Symantec is nothing if not exhaustive with its range of options, including a very useful option to partially check files in certain directories or of certain types. This comes in handy when you forget to empty the Recycle Bin after deleting files on the desktop — the files are stored in a directory called \recycled, which doesn't show up in the file tree but can quickly become huge.

Another useful feature is the "proactive" virus checking that Norton provides. This monitors changes to critical files and sections of your disks, the sort of changes that a virus would make. While the method of providing fixes for each category of viruses is the safest — hence the list of viruses that you get with every anti-virus product — this is a way to detect most new types of infection.

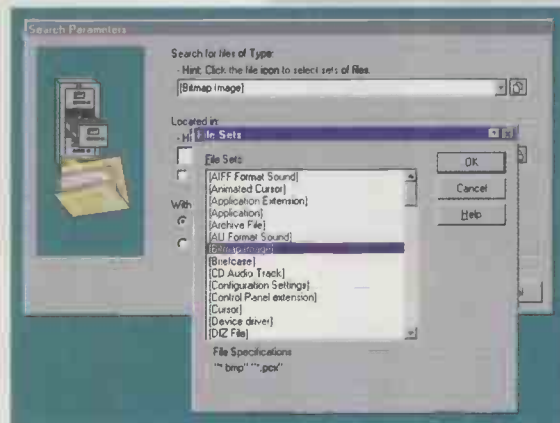
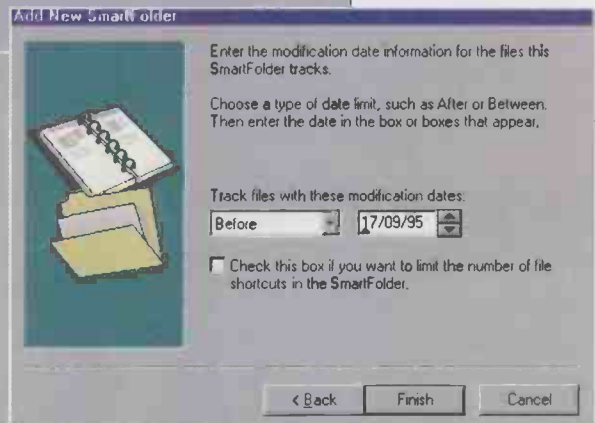
Symantec's viruses make interesting reading. You can get clued up on each individual virus, including what it does, how it works and how common it is. It may be some consolation to become an instant virus expert.

As well as allowing you to automatically schedule your virus checking operations, the scheduler is flexible enough to schedule other software to run automatically as well.



Left First, schedule your automatic scans. The scheduler can also run other, non-virus software

Right Finally, the scan. A neat animation shows files passing behind an X-ray screen, putting a bit of fun into what's essentially a rather dull operation



Left Zipping files using the Wizard is a quick way to build archives and preserve disk space

the standard configuration of menu tree on the left, file list on the right. It's more flexible, because there are tabs in the bottom corner which allow you to view the menu tree in a variety of

ways, but I'd question whether this is really a bonus, as the default view gives all the information you need. It does list deleted files from each directory, though — very useful if you want to recover them.

One quibble with the desktop, which represents ftp sites on the internet as folders — a useful idea — is that it did not show the desktop folders in their appropriate position outside the directory tree, placing them instead in their "logical" position as subdirectories of Windows.

Along the top of the File Manager a set of buttons perform some of the other functions. The file searcher is ten times faster than a Windows search, Symantec claims, and a series of searches that I made backed this up. There's a neat fast zip utility which complements the more extensive standalone version included in this package, and one useful director function which allows you to synchronise

● **Norton Navigator**

One of the undeniable facts of life is that as Windows improves, even if it does so slowly and imperfectly, there are some utilities it positively eats up. This is perhaps one of them.

Navigator is an extension of the Norton Desktop under Windows 95, and although it is an excellent product, I would only recommend it to the very keen. That's not to say it is poor; just that whereas Norton Desktop was a lot easier to use than the Windows File Manager, this is only a bit easier.

The Navigator is more than its name suggests. It's a collection of file-related utilities that expand the Windows 95 desktop and make it easier to use.

The most obvious incarnation is Navigator's File Manager, which, as the name suggests, is like the Windows Explorer on steroids. It's a neat-looking interface, with

PCW Details

Norton Anti-Virus
 Price £79
 Contact Symantec 01628 592222

Good Points Full 32-bit code, flexible.
Bad Points Could be confusing for beginners.

Conclusion An essential item, and one utility you can't just fudge with a 16-bit version.

two folders.

For power users, the ability to use a variety of customised desktops, which are represented as icons on the task bar, will be extremely useful. It means that you can keep a different set of desktop applications for different tasks without cluttering the single Windows desktop, and this will undoubtedly be a huge boon to 640x480 notebook users.

With the ability to enable long filenames — although crucially not for some Microsoft 16-bit applications — the Navigator is a useful bunch of utilities. There's not a killer among them, though.

PCW Details

Norton Navigator

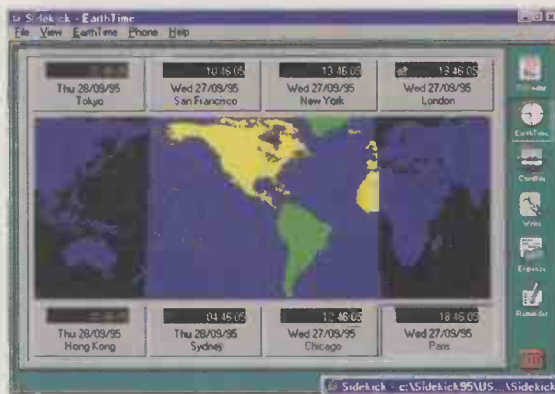
Price £99

Contact Symantec 01628 592222

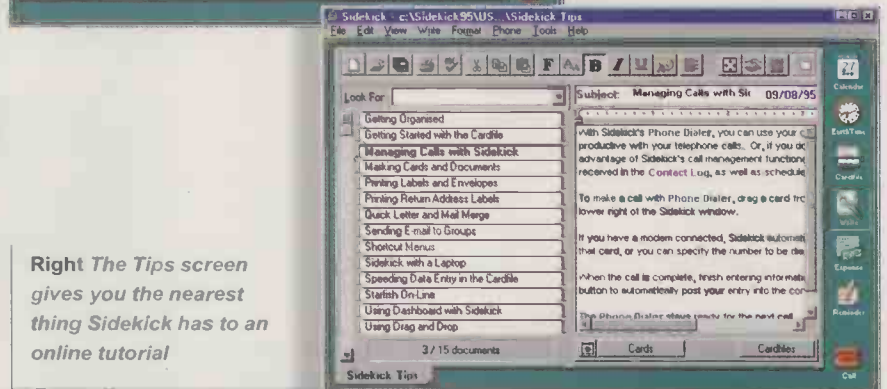
Good Points Desktops can be customised, fast searches.

Bad Points That's more or less it.

Conclusion Nicely done, but not a dramatic improvement over Win95.



Left Sidekick: Earth Time shows the time across the world, plus which parts are in daylight. It's slick, but not earthshatteringly relevant to the majority of people



Right The Tips screen gives you the nearest thing Sidekick has to an online tutorial

● Sidekick

The original contact manager comes blasting back under Windows 95 with a good-looking interface and — even if it's not the easiest product in the world to use — a breadth of features that will satisfy most users.

Sidekick was late to the Windows environment, but it has compensated by learning from other earlier entrants. Specifically it combines the contact management power of ACT! with some of the ease of use of Lotus Organiser (Lotus still sets the standard for ease of use). Sidekick has a much grander design though — it isn't a calendar, a scheduler, a contact manager, a jotter, an address book or a database. It's all of these, plus some.

The heart of Sidekick 95 has to be the reminder page. On this one sheet you can see all your appointments, calls and things to do — from this point you can start to access all your other features. The other views look similar, so it can be disorientating to use at first, but they are fast and intuitive, and with a number of buttons which allow you to switch between views, Sidekick under Windows is as quick to use as ever.

During the eighties, many DOS users took advantage of Sidekick for all their office functions, for example using the text editor to prepare letters. Although the text editor is hardly state-of-the-art for users familiar with Microsoft Office, it is



Dashboard 95 offers a positive horde of features and functions, but is unlikely to have the same impact under Win95 as it had under Win3.1

still useful, and the preformatted templates turn a contact-card into a form-letter quickly. It's these short cuts that Sidekick does so well, and which mean it's still an ideal utility for someone with complex time-management problems but no love of computers.

There's still room for improvement: many users will find the screen too busy, with lots of options available at any time. Functions like the World Time map are a minority consideration, when what Sidekick really needs is a top-class scheduling architecture so that users can synchronise appointments across a network. Multiple address books make it a good choice for a home office, and it's still the best organiser for notebook users.

● Dashboard 95

The old Windows desktop was ripe for improvement, and Dashboard was one of the best utilities for enhancing ease of use. This version still improves on the Windows 95 desktop, but is best suited to power users, as it's a big, complex utility which can be quite tricky to learn.

Dashboard, as the name suggests, is a central resource from which to launch applications, monitor system use and find documents. With all its parts enabled, it takes up quite a portion of an 800x600 screen, although you can snap off utilities you don't require.

When you install the one-disk utility, it automatically makes a first pass at organising your desktop, grouping the applications that it recognises into functional groups. These include suites, like Microsoft Office, email applications and games. These groups can be edited without any problems, but mine were quite

PCW Details

Sidekick

Price £39

Contact Starfish Software
UK 0181 875 4455

Good Points Lots of useful features.

Bad Points Screen gets a bit cluttered.

Conclusion Excellent value.

neat and almost complete, the icons in each tabbed folder displayed in turn on the dashboard toolbar.

At the top of the toolbar, the program groups are listed — using both seemed to be overdoing it a bit, so I snapped the top layer off, which cut down on the amount of space used and made the rather busy Dashboard interface easier to follow.

System resource usage is a handy utility which might reasonably be expected on the Windows taskbar, but Dashboard comes to the rescue with a neat display of CPU utilisation, memory use and the number of current threads running. This is power user stuff, although low-end Windows 95 users might find it useful — with the resources needed by some Office applications, readouts provide an invaluable warning that they aren't going to be able to open those graphics files after all.

All in all, Dashboard is flexible and easy to configure. It is hard to read though, and for most users, using this on top of Windows 95 will create more problems than it solves. It is helpful, but the Windows 95 desktop itself strikes a good balance between ease of use and flexibility. Unless you either need the system use resources or are an upgrading Dashboard user, this is in danger of failing the "so what?" test.

PCW Details

Dashboard 95

Price £39

Contact Starfish Software
0181 875 4455

Good Points Powerful.

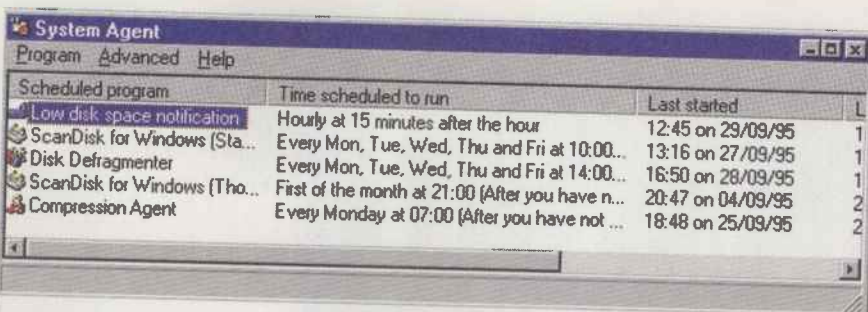
Bad Points Can cause more problems than it solves.

Conclusion Stick with the standard interface.

● Windows 95 Plus Pack

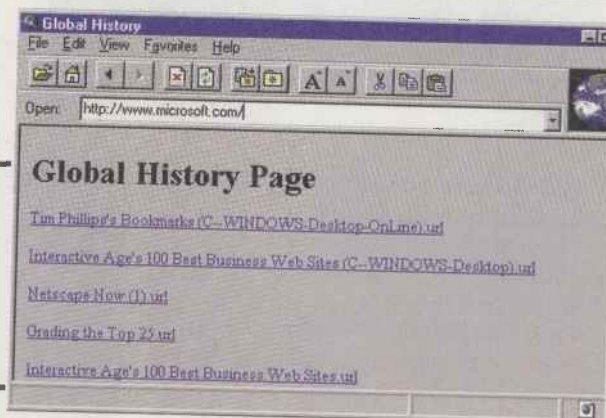
If you want to pay that little bit more for your Windows 95, Microsoft will sell you the Plus Pack. For many users it's just what it says — a plus, but it certainly isn't a panacea for all utility problems. One drawback is that the Plus Pack has no central theme — it's the bits that didn't make it into the main part of Windows 95.

First there are some Norton-like Disk optimisation tools. One which will be useful to users of older PCs is the disk compression utility, a piece of software which you either love or hate. Disk compression is not immediately attractive with the fall in price of hard disks, but if you have a 200Mb or smaller hard disk and you don't want to do a hardware upgrade, then DriveSpace 3 is a must. We successfully



Above The System Agent from the Windows 95 Plus Pack — scheduling your disk maintenance

Right The Explorer browser — good, but no NetScape extensions



compressed a 250Mb hard disk, which took a couple of hours and had a slightly adverse effect on performance, especially with high I/O applications such as video.

Oddly, the Plus Pack does not use 32-bit disk-diagnosis and file-fixing utilities, but it will recompress, check and repair your disk at prescheduled times using a utility called the System Agent, which Norton Utilities does not provide. This is an excellent idea, allowing you to schedule your disk maintenance for night time. It will also recompress your hard disk at night too, speeding up daytime usage.

Disk utilities are not the only extras — there's Microsoft's Internet Jumpstart kit. The TCP/IP stack you need to connect to the internet is part of Windows 95, but this adds two features: a web browser called Explorer, licensed from Spyglass; and an internet mail reader. Explorer installs seamlessly on to the desktop, but it is not as intuitive as the NetScape browser, which you can download free and which is a better idea, especially as many sites are using NetScape's HTML enhancements.

The final part of the Plus Pack is called the desktop themes module, which allows you to customise your desktop to a theme. The most bizarre is the 1960s America theme, which provides suitably hippy-sque sounds and spinning CND symbols. Dangerous Creatures is in there too, but most users we consulted found the Themes too intrusive, and tended to take them off the desktop after a few days.

PCW Details

Windows 95 Plus Pack
Price £30-£40
Contact Microsoft 01734 270001

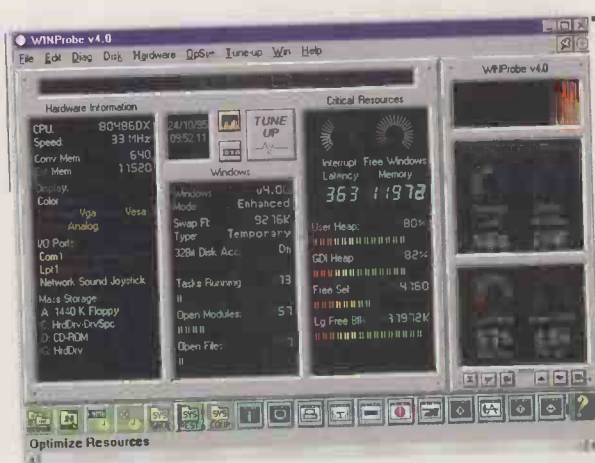
Good Points A nice set of tools.
Bad Points No utilities really stand out.
Conclusion Should have been standard in Windows 95.

● WINProbe 4.0

WINProbe is another system performance and evaluation tool, and if you are clued-up enough on the technical side to understand what it's telling you, it does a good job of reporting on your system and telling you how to improve performance.

WINProbe has been around for a long time, and is targeted more at the support professional than the home user. So although it's ideal if you are running a small network, the casual user might find that WIN'95 Adviser or Norton Utilities are easier to understand.

The basic screen in WINProbe is a catch-all diagnostic and reporting panel, which on first view is so packed with data that it is hard to understand. The data is divided into four columns: a hardware report; Windows evaluation; analysis of your critical resources like your GDI heap; and a system monitoring panel. This last panel is the most important, and if you click on a thumbtack in the top right of the screen this stays on top of any



Left WINProbe is a powerful product for fine-tuning your PC's performance, but is not recommended for the casual user

Below The statistics will tell you how your system is performing. The important figure — the compression ratio — improves the longer you use the system

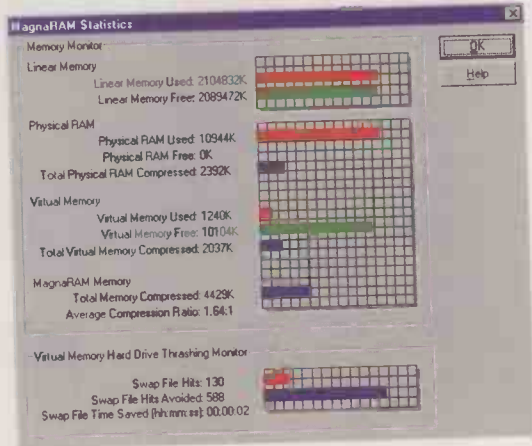
Windows you use subsequently. It's too big to be convenient, so it's best used as a way to see how launching a new application affects system resources.

Along the bottom of the screen are buttons that match every one of the options on the six diagnostic menus. They're very similar, so thankfully WinProbe tells you what each one is. This is optional — many users will turn it off.

The hardware and software diagnostics are uncannily accurate, and will pick up on most hardware faults with few difficulties. This will be secondary for most of us, because we'll dive straight to the Tune-Up menu to try and optimise our settings.

Tune-Up is a disappointment — it doesn't do the job automatically but instead makes suggestions based on your current configuration. It works like a grammar-checker in a word processor, offering you suggestions based on what it has found. It makes optimising Windows a tedious process however, and a little more active help in changing settings would have been handy.

This is a value-conscious bundle: WIN-Probe works under Windows 3 as well as Windows 95, and Quarterdeck has thrown in a CD-based CD-ROM drive troubleshooter, a 16-bit version of its uninstaller (called Cleansweep) and a copy of web browser Mosaic for good measure.



● MagnaRAM2

If RAM is your problem when upgrading to Windows 95, MagnaRAM is one answer. It claims to simulate up to three times the level of memory that you have in your system, and in our evaluation there was certainly a marked increase in system performance.

A disk compression utility like Stacker effectively doubles your hard disk size by compressing data so that more of it fits on the same piece of real estate; and memory compression operates in a similar manner — but it is more complex. Windows is constantly swapping data on and off the hard disk, where it has what is known as a "swap file". This enables you to open several applications, but slows the system down — a hard disk is several times slower than memory. MagnaRAM gets round this by making a "RAM buffer" into which the data is swapped, and compressing this data in the buffer. So Windows accesses the hard disk less often.

When you install MagnaRAM on your Windows system — again, this Quarterdeck product installs under either Windows 3 or 95 — you don't find an immediate difference in performance. This doesn't mean that MagnaRAM isn't working, it is just that it is only effective when system resources are being used to

their greatest extent. At these times, not having to keep swapping memory out to disk is a huge asset — especially if your system is already using disk compression, which slows down the operation of the Windows swap file.

It's impossible to say exactly how much benefit you get from MagnaRAM — its compression depends on the files you have loaded, and the amount of physical RAM that you have. But a useful rule of thumb, based on the machines we tested, is that you will simulate the memory of a machine with twice as much RAM.

There are utilities to reconfigure MagnaRAM, and to evaluate its performance, but most users will be happy to let it run in background. It's not a great idea to buy less memory and MagnaRAM instead of a fully-configured system, but if since upgrading to Windows 95 you have found your system grinding to a halt under the effect of memory-hungry monsters like Microsoft Office, this offers a cheap way to get out of jail.

PCW Details

WINProbe 4.0
 Price £49.95
 Contact Quarterdeck UK 01245 491190

Good Points A powerful product if you regularly support PCs.
Bad Points Not really for the casual user.
Conclusion Good value.

PCW Details

MagnaRAM2
 Price £39.95
 Contact Quarterdeck UK 01245 491190

Good Points Installs easily, and it works.
Bad Points No substitute for real RAM.
Conclusion A cheap way to boost performance.

Editor's Choice

Whether you want to upgrade to new versions of popular utilities depends on how demanding you are — and on what you feel comfortable with. Utilities fans are notoriously protective of their environment, and are much more productive when using these add-ons than when forced to cope with a vanilla system. It's a question of familiarity as much as good design, and with the comparatively low prices of these utilities, there's a lot to be said for upgrading. For the rest of us, it's worth taking time to look at the breadth of features that Windows 95 already provides, and at the utilities like NetScape that you can get for free — you might find they offer more than you think.

The standout package here was definitely Norton Utilities, a rewritten set of applications that are both powerful and usable. Symantec took the brave step of ditching the utilities which were duplicated in Windows, and concentrated instead on adding value. The result is an excellent package which gets Editor's Choice.

Say, isn't it about time you did some weeding inside that hard drive of yours?

At last, a simple software utility you can truly trust to clean things up. UnInstaller™ 3 is the newest version of 1994's No. 1 selling Windows application.

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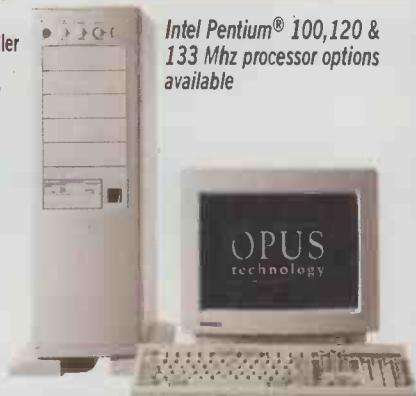
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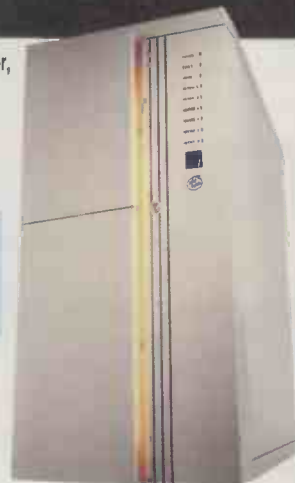
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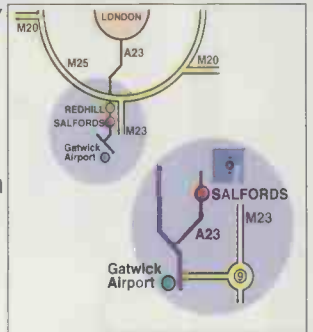
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Dialog with Delphi

Last month's tutorial created the engine of a great Windows utility, but with little in the way of a user interface. Delphi makes it easy to add standard Windows features like menus and dialogs with check-boxes and spin buttons. This month we use these tools to spice up the *PCW* space monitor, adding a fine degree of user control.

By Tim Anderson.

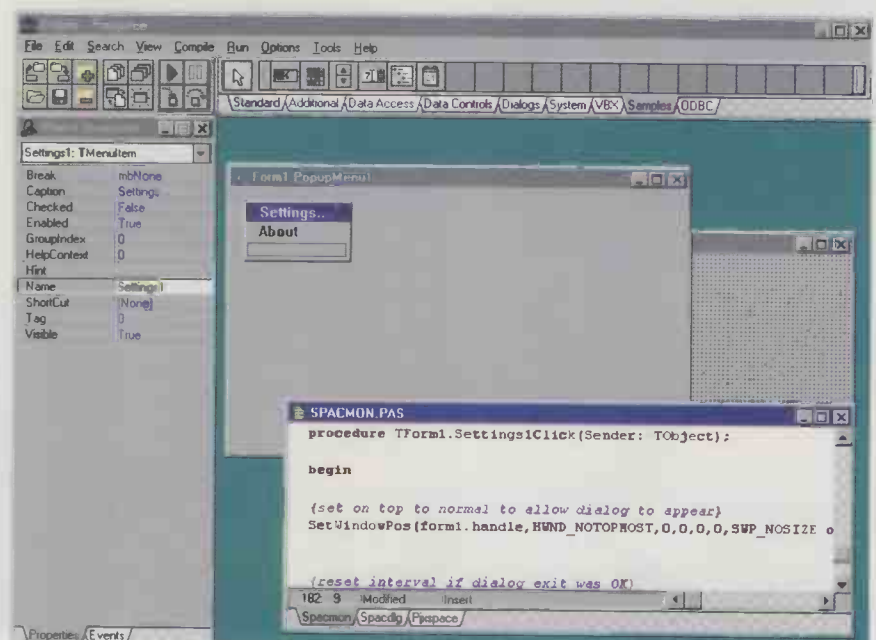
Delphi and menus

Delphi supports two kinds of menus, the traditional menu bar and a handy pop-up type that appears when you right-click the mouse. Both are easy to program. Start a new Delphi project and place a MainMenu component on the form. This component supports no events and just four properties. Think of it as a container for the menu itself. If you double-click the menu property in the object inspector, the menu designer opens.

The menu designer is excellent — intuitive and flexible. As you build the menu, simply click where the next item should appear and Delphi creates it. Then you can set the caption and other properties. An ampersand before a letter in the caption sets a keyboard shortcut and causes that letter to be underlined in the menu.

Attaching code to menu items is just as easy. Each item supports an onclick event. Double-click this event on the object inspector, and the event procedure opens up for you to type in code.

You can add or delete menu items at runtime, either by setting the Visible



property (see panel) or by calling the Add method. For example, this adds a menu item to the bottom of the File menu:

```
var  
mnuNew: TMenuItem;
```

Delphi's menu designer opens the correct event procedure when you double-click a menu item


```
begin
mnuNew := TMenuItem.Create(Self);
mnuNew.Caption := 'My new menu';
mnuNew.Name := 'NewItem';
File1.Add(mnuNew);
end;
```

If you need to create a nested menu item, call the Add method for an item already in a dropdown list. Or to create a new top-level menu, call the Add method for the Items property of a TMainMenu object:

```
mainmenu1.Items.Add(mnuNew)
```

Finally, to associate a procedure with the new menu, set its OnClick property to the procedure's name.

Improving the space monitor

Not all applications need menu bars. The PCW space monitor needs to be small, as it is designed to run alongside other programs. It's an ideal candidate for a pop-up menu. This will give control over some settings, for example to toggle the "always on top" characteristic. It gives an opportunity to explore how dialogs work in Delphi.

Open the space monitor project and place a pop-up menu on the form. Double-click the Items property and add two entries, with captions "Settings.." and "About". Now click the form, and set its PopUpMenu property to "popupmenu1". Run the application. If you right-click anywhere on the form, the menu appears. Neat.

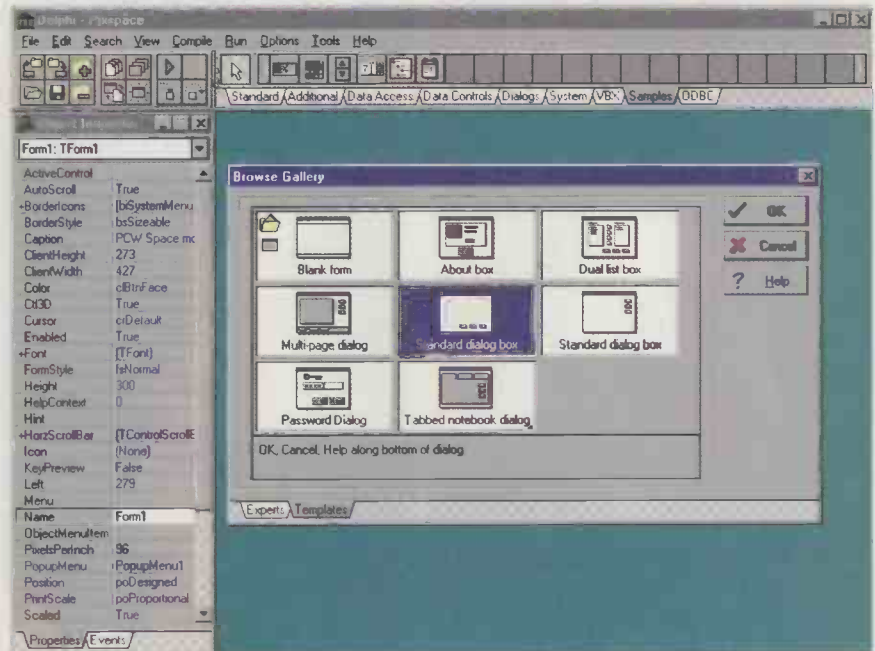
To show that the menu works, you can implement the About item straight away. Open the menu designer again, and double-click the OnClick event for About. In the procedure editor, type:

```
MessageDlg('Your helpful message goes here', mtInformation, [mbOk], 0);
```

The Settings item is a little more involved. First it's back to the form designer to create a dialog.

Creating a dialog box

In Delphi, there is no hard distinction between dialogs and other forms. But there are customisable templates that shorten the work of form design. In this case, choose File - New Form, and select one of the standard dialogs for your template. Delphi adds a new unit and associated form to the project, with pre-set buttons and properties appropriate for dialogs. For example, the position property is poScreenCentre, ensuring that the dialog is drawn in the centre of the screen; and the border property is set to



bsDialog. The Help button is not needed, so select it and press Delete. Then build up the dialog.

The example shown uses two labels, a SpinEdit control (from the samples tab) and a check box. Incidentally, the SpinEdit control is a great example of code re-use in Delphi. It combines two buttons and an edit control, together with some common-sense properties like MinValue and MaxValue. Written in Delphi, the component is now available to all through the component library.

There are two elements the user can adjust. One is the "always on top" setting.

When you choose New Form, this template gallery appears. For the space monitor project, choose one of the standard dialog-box templates

The other is the interval at which the space monitor refreshes its information. By setting the MinValue, MaxValue and Increment properties of the SpinEdit control, the adjustment is kept between 0.25 seconds to 10 seconds, in quarter-second increments. First, set the Name property of the dialog form to Settings-

Menu designer tips

- You can set the visible property of a menu item to false, so that it will not appear when the application runs. Your code can control when to show the item.
- Click the right mouse button in the menu designer to pop up a number of useful options, such as inserting menus from menu templates or resource files.
- Create nested menus by clicking on a menu item and pressing CTRL->.
- A nice touch is to create hints that appear in a status bar as the user traverses the menu.

There are four steps involved:

1. Enter a help message in the hint property for a menu item.
2. Place a panel on the form, with the Align property set to alBottom.
3. Write a procedure called ShowHint, like this:

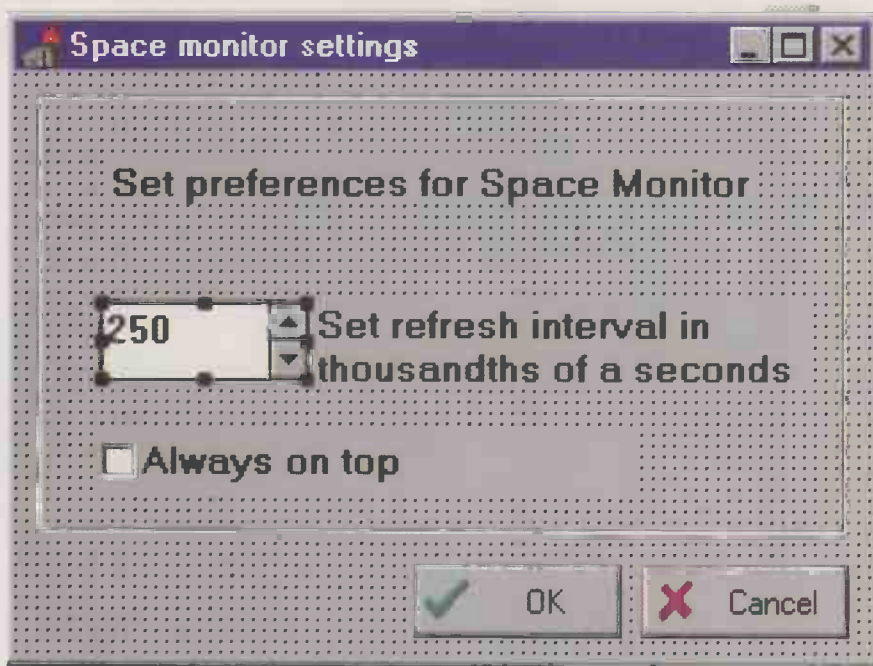
```
Procedure TForm1.ShowHint(Sender: TObject);
begin
panel1.Caption := Application.hint;
end;
```

It should be declared in the Public section of the TForm1 class definition.

4. Double-click the form to open the FormCreate procedure, and add the line:

```
Application.OnHint := ShowHint;
```

Now run the application. When you run the mouse down the menu, the hint appears in the panel.



At design time, this is how the settings dialog appears

Dlg. Then save the project and call the new dialog unit SPACDLG.PAS.

Connecting the dialog

The dialog is no use until it is connected to the main part of the application. Here's a possible approach:

1. Add SPACDLG.PAS to the Uses clause of SPACMON.PAS (the unit for the main form).
2. Open SPACDLG.PAS and find the var clause in the interface section at the top. Add two declarations so it looks like this:

```
var
  SettingsDlg: TSettingsDlg;
  Interval: Word;
  OnTop: bool;
```

These variables will contain the user's selections.

3. The OnTop and Interval variables must be initialised when the application first runs. The following goes in the Form-Create procedure for Form1:

```
spacdlg.OnTop := True;
spacdlg.Interval := Timer1.Interval;
```

4. When the dialog opens, the controls should contain the current values. To do this, place the following in the dialog's Activate event:

```
CheckBox1.Checked := OnTop;
SpinEdit1.Text := inttostr(interval);
```

5. As the user closes the dialog, the values are read from the dialog into the

unit's public variables. Open the dialog form and double-click the OK button.

Enter the following:

```
OnTop := CheckBox1.Checked;
Interval := StrToInt(SpinEdit1.Text);
```

Naturally, if the user clicks Cancel, the values do not change.

Tip: If you run this code, you will find the compiler stops on the second line with the Error3: Unknown identifier. Strange, you think, since StrToInt is in the helpfile. But the entry for StrToInt says Unit: SysUtils — and SysUtils is not included by default in the dialog unit. The solution is manually to add SysUtils to the Uses clause.

6. Finally, open the menu designer and double-click the Settings item. Enter the code in Fig 1 (below).

Why all the calls to SetWindowPos? One of the snags with always-on-top

windows is that they easily get in the way. In this case, the ShowModal method opens the new dialog. But if the main form is always on top, the dialog will open underneath it. The workaround is to remove the on-top setting before opening the dialog, and put it back afterwards. You may have noticed the same problem with the About box, and you can use the same technique to fix it.

It's important that dialogs can be closed with Cancel, to ignore any changes. Delphi makes this easy to implement. The ShowModal method returns a value called ModalResult, which can be one of several constants. This is one of the properties of a Delphi command button. In this case, the buttons on the dialog form have Modal-Result properties set to mrOK and mrCancel respectively. You don't need to write code to close the dialog: these buttons work automatically once the Modal-Result has been set.

That's it! With the space monitor developed into a handy utility, next month it's time to look at database development.

Delphi quirks and quibbles

One thing that may puzzle you is why we used the API call SetWindowPos as opposed to the much simpler FormStyle property, which can have a value of fsStayOnTop. In fact that was tried; but changing the FormStyle property causes the whole form to be refreshed, creating an ugly flashing effect. The obvious solution to a problem is not always the best.

Another issue is about form creation. When you add a form to a Delphi project, a line gets inserted into the project source. For example:

```
Application.CreateForm(TSettingsDlg,
  SettingsDlg);
```

Fig 1 Code for connecting the dialog

```
{remove on top setting to allow dialog to appear}
SetWindowPos(form1.handle,HWND_NOTOPMOST,0,0,0,0,SWP_NOSIZE or SWP_NOMOVE);

{reset interval if dialog exit was OK}
if Settingsdlg.showmodal = mrOK then
  timer1.interval := spacdlg.interval;

{must restore on top status anyway}
if spacdlg.OnTop = True then
  SetWindowPos(form1.handle,HWND_TOPMOST,0,0,0,0,SWP_NOSIZE or SWP_NOMOVE)
else
  SetWindowPos(form1.handle,HWND_NOTOPMOST,0,0,0,0,SWP_NOSIZE or
  SWP_NOMOVE);
```


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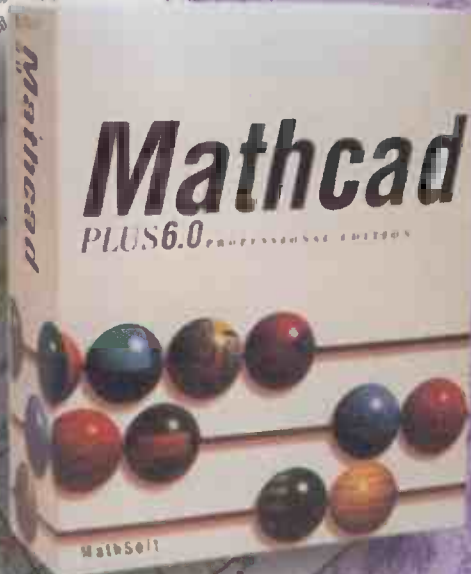
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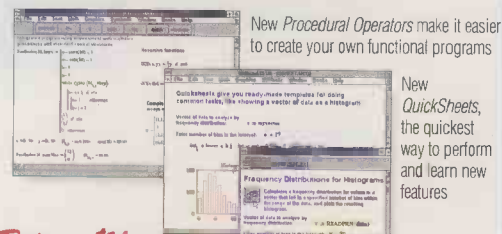
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Recommended reading: Delphi Starter Kit

Authors: Jeff Duntemann, Jim Mischel and Don Taylor
Publisher: Coriolis Group Books
Pages: 656 with CD
Price: £38.99 inc VAT
Contact: IDG 0181 579 2652

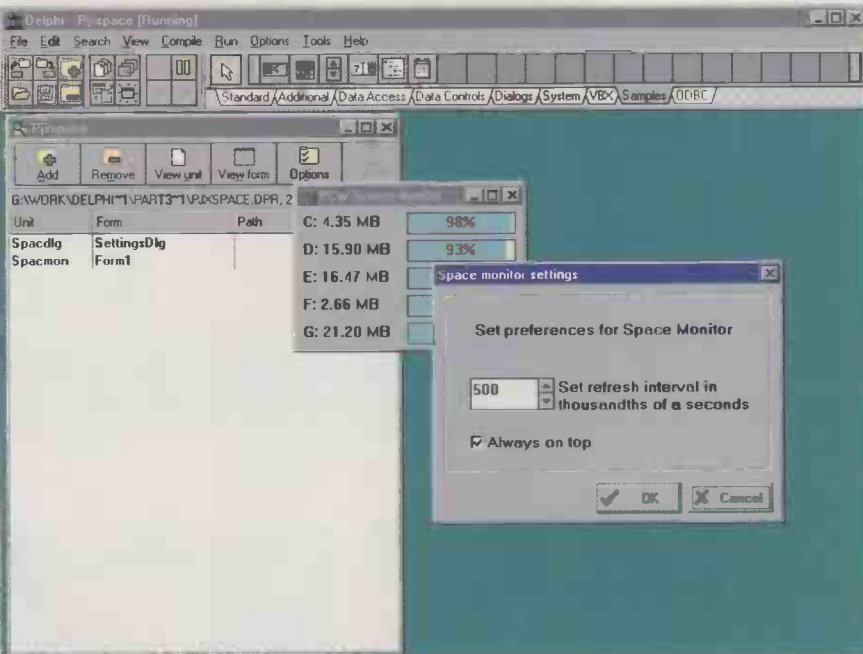
When is a book not a book? The Delphi Starter Kit is a typical book/CD package but unusually comes in a box, enabling the publishers to call it a kit instead. The book itself is called Delphi Programming Explorer, and that is what you really pay for. The CD is mostly a showcase for Delphi add-ons and magazines, with invitations to register or subscribe. Articles are in the dreaded Acrobat format. There is also sample code from the book.

If you are sensitive to English style, you may not like this book. The authors promise "a wild good time" and the first chap-

ter is called "Way RAD!". Part 3 is called Ace Breakpoint's Database Adventure including lots of human interest. Then again, writing about programming in a lively manner is not easy, and credit to Coriolis for trying a new approach.

The real content is rather well balanced. There's an introduction to the Delphi interface, an explanation of Pascal programming basics, and strenuous efforts to expound the elements of Delphi's object model in a way that anyone can understand. The database material is skimpy, except that the "database adventure" does explain how to put together a database application. The other main example is an object-orientated mortgage application. While not as thorough as some others, the Delphi Starter Kit doesn't duck any issues and provides a good grounding, so long as you can cope with the writing style.

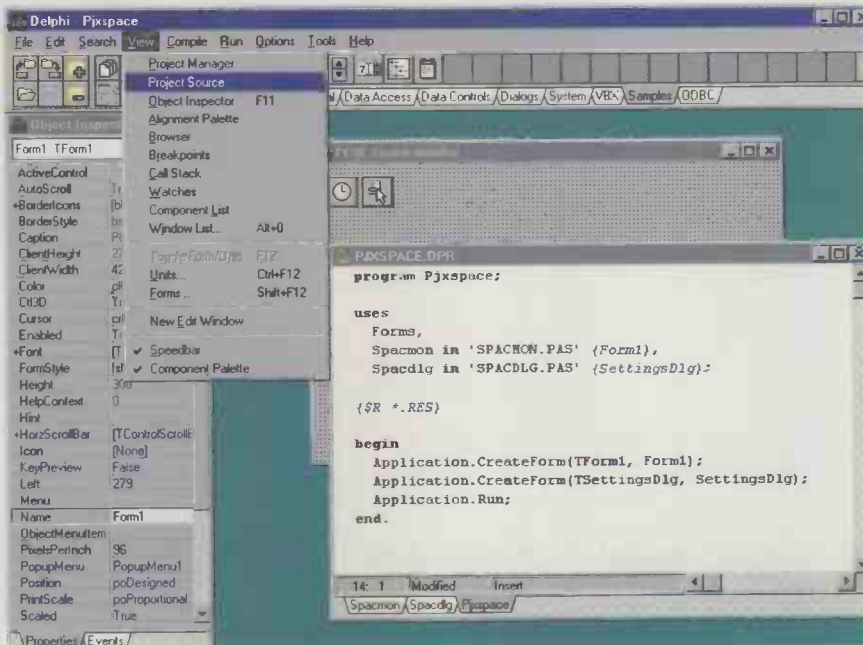
Left The completed space monitor, showing the new dialog in use
Below Open up the project source, and notice that Delphi creates all form objects immediately the application runs. It makes for good performance but heavy use of memory in large projects (see "Delphi quirks and quibbles")



What this means is that the form object is created when the application first runs, even though the user may never choose to open it. This is good for performance, but bad for resource and memory usage. A good option is to remove this line from the project source, and instead create and destroy the form when you need it.

Finally, a note about the Uses clause. In the example, the dialog sets public variables in its own unit, for reading by the main unit (in which Form1 is declared). But why not have it set public variables in the main unit itself? If you try this, you will find that the dialog unit cannot see any variables declared in the main unit. Further, if you add the main unit to the dialog's Uses clause, the compiler chokes with Error 68: Circular unit reference.

Generally this means you should rethink the structure of the application, and avoid these circular references. In extremis, you can place a Uses clause in the implementation section, where Delphi will compile a circular unit reference.



PCW Details

All the code for the Space Monitor project, together with an executable anyone can run, is included on the PCW cover disk/CD.

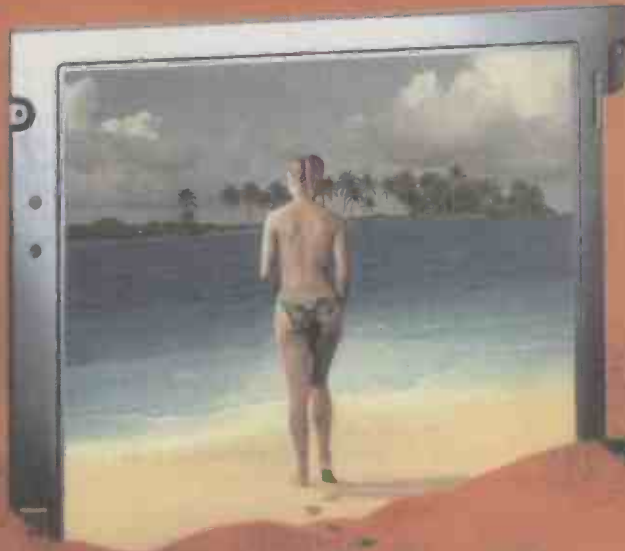
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P120s

To bring out the best — or worst — of these P120 PCs, we adapted our tests to the whims of Windows 95. Adele Dyer takes you through a mixed bag of high-spec machines.

If nothing rises as fast as Pentium clock speeds, then nothing drops as rapidly as their prices. Back in May 95 we reviewed the first P120s on the market: a Gateway and a Viglen. They were high spec machines, but comparable to those in this test. The litmus test of price means it's been worthwhile waiting until now to buy a P120. In May 95 the Viglen Genie PCI P5/120 with a 17in monitor cost £2,999. Now the same machine will cost you only £2,549 — a drop of £450.

For this test we decided on a fairly high spec, but if you choose a decent processor you will naturally want good, fast components to make the most of it. To that end we specified a 1Gb hard drive and 16Mb of RAM. The hardware spread on pages 224/225 goes into more detail as to why you need both of these, but suffice it to say that if you are going to be multitasking in Windows 95 and intend to run anything more than MS Works, you need both of these.

To complete the equation we went for wavetable sound cards, a minimum of 2Mb of VRAM on the video card and a quad speed CD-ROM drive. None of these components are out of the ordinary, and if you're serious about multimedia they're all absolutely necessary if you want to get the most out of your PC.

Finally it was time to convert to Windows 95 tests. Like it or loathe it, Windows 95 is the way of the future. For more details on how we adapted our existing tests, see the panel "How we did the tests" on page 217.

One additional test we ran was a Doom 2 demo. The advantage of this test is that it forces the PC to display every frame in a short, pre-set game demo. This really pushes the processor and the graphics card

and gives a very good indication of how the machine will perform for entertainment purposes.

There are 16 machines here for you to sample. We have done our best to sift the wheat from the chaff and now the final choice is yours.

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Adams 586 Multimedia

**PC**

A good deal of thought has gone into the design and overall package of this machine. The layout inside allows you to see clearly where everything is and, more importantly, to get your hands on it.

The Quantum Fireball hard disk lurks at the back with room for a second underneath it. The one we were given to review was 1.1Gb and ran at 10ns, although you can choose to have a 1.2 Conner drive, which is slightly slower, for the same price. At the front there is only room for one more 5.25in device and this is well below the floppy drive and the CD-ROM drive.

The CD-ROM drive is well worth noting. The machine we had was a six-speed TEAC. Adams will fit six-speeds as standard on future machines, but these will be by Aztech or Optics Storage.

The Micronics motherboard, with Intel Triton chipset, houses the processor complete with Socket 5. The 16Mb of EDO-RAM came with two 8Mb SIMMs running at 70ns and were easy to reach.

There are four PCI and four ISA slots; one shared. One ISA slot is taken by the Creative Labs SoundBlaster AWE 32 and one PCI slot by the Matrox Millennium video card.

All in all there is nothing to fault on this machine, except perhaps for the price. It has very good performance and is well-equipped — an excellent choice if you have that much money to spend.

Monitor

The Iiyama Vision Master 17 supplied with this system comes as standard with any machine with a wavetable soundcard. It produced an excellent picture and was comfortable running at 1280x1024.

PCW Details**Adams Accura Professional 586 Multimedia System**

Price £2,749

Contact 0161 877 8822

Fax 0161 877 8684

Web BBS - 0161 283 9921

Software Bundle OS/2 v3.0 with Lotus Smartsuite, or Windows 95 with Novell Perfect Office

Hardware Bundle

SoundBlaster microphone, Yamaha M-10 speakers

Warranty Terms three years parts and labour, first year on-site

Two more years on-site for £150
Technical Support Free telephone and fax support

Good Points Six-speed CD-ROM drive, nice monitor

Bad Points Only one 5.25in expansion bay

Conclusion A solid, well-constructed machine

Armari eXPS-120plus

**PC**

One of the nicer looking machines in the group test, this was at first one of the easy ones to set up and get going.

Armari had partitioned the hard disk, which optimises performance when Windows 95 is installed as an upgrade on top of DOS and Windows 3.1, rather than as a straight installation on a clean hard disk. It overcomes Windows 95's allocation of 32Kb to the smallest cluster on the hard disk. Armari offers you the chance to choose whether or not you want disk partitioning when you buy the machine. However think carefully about this, as once a hard disk has been partitioned it is extremely tricky to unpartition again.

Once inside the machine, the high spec soon becomes apparent. The Quantum Fireball EIDE hard disk produced good results - maybe helped by the partition. The EDO-DRAM, pipeline burst cache and Pioneer CD-ROM all point to a well spec-ed machine.

The other parts are fairly standard fare, including a Creative Labs AWE 32 and Matrox Millennium video card. There are four PCI and four ISA slots, none of them shared, two free 5.25" front facing expansion bays and one internal 3.5" bay.

In tests they gave good results in the Windows sections, although the machine stopped once on the WordPerfect for DOS tests. However, this did not affect its overall performance. The Doom2 tests gave a score of 50 fps.

Monitor

The 15" Iiyama monitor was quite happy to run at 1024 x 768 x 256 non-interlaced. It was crisp and clear with no distortion.

PCW Details**Armari eXPS-120plus**

Contact 0181 810 7441

Fax 0181 810 5783

Web <http://www.stec.net/~arminfo>

BBS: 0181 810 8633. For support, BIOS and video card driver upgrades. Free

Software Bundle Windows 95 as standard. Office 95 Pro - £209. MS bundle including Dangerous Creatures, Encarta, Works, Works - £59

Hardware Bundle

J888Av or Jazz Hipsters - options

- 30 Watts

Warranty Terms 1st year, back to base. Options - £39 for one year on-site

Technical Support Free telephone and fax support

Good Points Good hard disk, pleasant machine to use

Bad Points Disk partitioning potentially a problem

Conclusion A good machine for a very good price

Atlantic Pro 95**PC**

Of all the machines in the test, this stood out in terms of sheer size if not any other criteria. Standing over two foot tall, it dwarfed even the Gateway and was too big to fit on the labs workbench. The room inside is naturally in proportion to the size. It has four 5.25" front-facing expansion bays and one 3.5" bay, as well as one internal bay for an extra hard disk.

The components were partly very typical: a Diamond Stealth 64 video card, a Creative Labs AWE 32 sound card, Western Digital hard disk and Triton chip set were found in many of the machines. However Atlantic offered two unusual components, a Vertos CD drive and a SOYO motherboard, neither of which we had seen before.

On the downside it was a very noisy machine. Even if you switched off the monitor and covered up the HDD light you could easily monitor the hard disk activity by listening to the rattle and hum.

The other negative point about this machine was the inclusion of a trackball instead of a mouse. Admittedly, some may find it a more convenient way of working, but personally I found it cumbersome and inaccurate.

The performance offered was fair. It was one of the fastest finishers in the Doom2 tests, but lagged a little on Windows. However the results are quite good overall and if you want a machine with a lot of expansion room, you could do a lot worse.

Monitor

This Samsung monitor ran quite happily at 1024x786 x256, but it was flickery and in DOS it became clear that the red gun was misfiring, giving the characters a spooky red rim.

PCW Details**Atlantic Systems****Atlantic Pro95**

Price £2,278

Contact 01792 700002

Fax 01792 792888

Software Bundle Windows 95, Lotus Smartsuite, Grolier Multimedia Encyclopedia, Supervisee comms/fax/phone software, games and training bundle.

Hardware Bundle Trust multimedia speakers - 15 Watts

Warranty Terms 1st year on-site parts and labour, further 4

years return to base labour. Optional 2nd and 3rd year on-site.

Technical Support Free telephone and fax support

Good Points Good software bundle, lots of room for expansion

Bad Points Excessive size, noisy hard disk

Conclusion A bit "different", but a decent performer

Brother BCR 4586P**PC**

Brother is well known for its business machines, and this machine was aimed more at commercial users than for high-end home use. This was obvious from the moment we took off the top.

The sight that greeted us under the lid was not a pretty one. The first anomaly was the position of the parallel and serial ports. One of the parallel ports and one serial port come off an I/O card in one of the ISA slots. There is then a second parallel port at the far end of the expansion slots, but no second serial port. The mouse takes one serial port, leaving you little room for an extra external peripheral such as a modem.

The Connor hard drive sits under the floppy drive and under this is a rather inaccessible spare 3.5" bay. Next to this is the Goldstar CD-ROM drive on top of a spare 5.25" bay. Unfortunately the CD and floppy drives are so close together you have to take out the floppy and hard disk bays and then take out the CD-ROM drive to put extra equipment in the free 5.25" bay. The hard disk and CD-ROM were strung together on the same IDE chain, which adversely affects performance. The four 4Mb SIMMs were in a tight spot with one end just under the power pack and the other jammed against the Taxan video card.

It's not exactly Plug and Play, but this machine is not without its compensations. There is an IRDA connection on the front of the case.

Monitor:

Brother BM 84L EPA/energy star monitor was happy enough to run non-interlaced at 1024x768, but the picture was a little distorted graphically on a trapezoid shape.

PCW Details**Brother BCR 4586P**

Price £1,999

Contact 01279 416888

Fax 01279 418130

Software Bundle Windows 95

Hardware Bundle SP-868 multimedia speakers

Warranty Terms 1 year on-site

Technical Support Free telephone and fax support

Good Points IRDA connection on front of case

Bad Points Hard disk and CD-ROM drive on same IDE chain

Conclusion Cheap, but has the lowest spec in the group test

Carrera Panther P120AM



PC

The door on the front of the case is the one distinctive mark of a Carrera. However, once inside the machine, it turned out to be quite different to the P90 we looked at in September.

Once the case is off, this machine proved to be well constructed. Almost everything was well placed, easy to reach and so to upgrade.

There were three free expansion bays: one 5.25" front-facing, one 3.5" front-facing and an extra internal bay. Unfortunately the amount of space this left in a small case did not allow the RAM to be put in a convenient place. If you wanted to get out of the RAM and upgrade it, you would have to poke under the floppy and hard disks to get your fingers to the clip.

There were four PCI and four ISA slots, none of them shared. VRM was included on the Super motherboard, as was Socket 7 and, of course, Triton. Other than the problem with the RAM, all the components were easy to reach and the motherboard was clean and clear.

The benchmark tests confirmed that this was a very respectable machine. The Doom2 test gave a result of 50fps and the machine was one of the fastest finishers in the DOS tests. Like many of the speedier machines in this test, the Carrera was fitted with the very fast Quantum Fireball, which will have made a considerable contribution to producing these results. Considered with the good software bundle, this is a good machine for the price.

Monitor

This Goldstar monitor has the standard controls, but no pincushion or barrel - a shame as the monitor has a tendency to warp. Otherwise though it run well at 1024 with no flicker or interlacing.

PCW Details

Carrera Panther P120AM

Price £1,999

Contact 0171 830 0586

Fax 0171 830 0286

Software Bundle Windows 95, MS Works, PC Check diagnostics software

Hardware Bundle Typhoon sound system speakers

Warranty Terms 1 year parts and 3 years labour back to base. On-site available

Technical Support Free telephone support - no fax support

Good Points Lots of room for expansion in a small case

Bad Points RAM hard to reach

Conclusion A nice little runner

Dan Dantium 95/s 120MM



PC

This is a no fuss machine. The case is plain but not austere and takes a bit of a tug to get it off, but inside everything is clearly visible and within easy reach.

The Quantum EIDE hard drive sits right at the top of the case and under this are two free 5.25", front facing, accessible bays. Under this is the Toshiba quad-speed CD-ROM drive, followed in descending order by the floppy drive and finally a free 3.5" bay.

The motherboard was twinned with Intel Triton chipset and the processor fitted with Socket 7 and 256k of pipeline-burst cache. The two 8Mb EDO-RAM SIMMs were easy to reach. There were two more SIMMs sockets for further expansion.

To round off the spec, Dan had fitted a Creative Labs SoundBlaster AWE 32 sound card and a Diamond Stealth 64 Video VRAM video card. This left room for expansion in two free ISA slots (one shared with a PCI slot) and two free PCI slots, one of which was extended.

As was common in those machines with both a Diamond Stealth 64 Video VRAM card and a Quantum hard drive, the Dan did well at the Doom2 tests, finishing fifth.

Altogether the machine was well constructed and would be a doddle to upgrade. It comes with an extensive software bundle and good speakers, which make the whole package very reasonable.

Monitor

The Dan has a CTX monitor which ran quite happily at the test resolution of 1024x768 non-interlaced. It has all the standard controls, including pincushion and barrel.

PCW Details

Dan Dantium 95/s 120MM

Price £2,071

Contact 0181 830 1100

Fax 0181 830 1122

Software Bundle Windows 95, Lotus Bundle, Works 95, Encarta 95

Hardware Bundle AT 75 - 80 watt

Warranty Terms Lifetime (1st year full back to base, parts and labour). Extended warranty 8% of PC value per year

Technical Support

Free telephone and fax support

Good Points Well constructed, good software bundle

Bad Points Keyboard was slightly spongy

Conclusion A very good machine for the price

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Dell Dimension P120MT**PC**

Dell has a reputation for solid machines, backed up by excellent support. This machine was no exception. It was the highest scorer in the Doom2 tests and came with the most comprehensive troubleshooting manual.

As an OEM manufacturer Dell produces its Aown motherboards and some components, including a huge 512kb cache card. It was notably the only manufacturer to include so many kb of cache. While the argument rages about the diminishing returns of larger cache sizes (the larger the cache, the longer the search time), Dell argues it has tried to increase the overall speed of the machine by putting in the fastest possible individual components. More cache does not make that much difference to operating systems like Windows 3.1, but it does help when multitasking, so enhancing Windows 95 and OS/2 performance.

The other components, including the Intel Triton chipset and the Creative Labs AWE 32, were quite standard. Room for upgrading was limited to two 5.25in free front-facing expansion bays and one internal 3.5in expansion bay. There were four PCI and four ISA slots, one shared, with three of each still free.

Interestingly, the results for Doom2 rated the Dell higher than the benchmark tests. This may have been due to the fast Quantum Fireball hard disk and the Number Nine Technology graphics card.

This machine was also nicely kitted out with extras. Office Pro comes pre-loaded and on CD-ROM, while the Altec Lansing speakers are powerful and give good reproduction.

Monitor

The Dell had its own proprietary monitor — a rebadged Lit-On. It ran 1024x768 comfortably, without interlacing, and was pleasant to use. It had all the standard controls including pincushion and barrel.

Details**Dell Dimension P120MT****Price** £1,999**Contact** 01344 720000**Fax** 01344 723695**Software Bundle** Windows 95, Office 95 Pro**Hardware Bundle** Altec Lansing ASC31 speakers**Warranty Terms** One year collect-and-return**Options** Up to four years on-site or four years collect-and-return**Technical Support**

Free telephone and fax support

Good Points Good initial support, software bundle**Bad Points** Limited expansion bays**Conclusion** A very well-specced machine**Gateway P5-120 Elite****PC**

At first glance you could be forgiven for mistaking this machine for a server, not a humble tower PC. It is vast. At about three times the size of the average mini-tower in this test the Gateway, not surprisingly, had three times the expansion room.

As could be expected in such a large case, the three front-facing expansion bays and two free bays at the rear have plenty of space around them, so you won't have to reach for the crowbar if you want to fit new kit.

Similarly, elsewhere in the machine everything is well laid out and easily accessible. I was surprised there were not more expansion slots — a measly three ISA and four PCI slots, one of which is shared. In these sit one of the more unusual sound cards: the Ensoniq Opus Wavetable. Ensoniq have a good reputation for their sound cards and this one is no exception.

Unfortunately we had problems with the graphics card and the monitor. At base the proper drivers had not been installed, so although the graphics card was driving the monitor, it was impossible to change the settings. So although you could set the monitor in Windows 95 to run 1024x768 in SVGA, nothing happened at the monitor end.

The hard disk is worth a mention as it was by far the largest in the test. We asked for a 1Gb disk and were sent a 1.6 Gb Western Digital, which obviously performed well in the tests. Likewise the graphics card still performed well in the Doom2 tests, despite the monitor problems.

Monitor

A very good, flat 17in screen with programmable features to allow several modes of operation. This makes it easy to adjust by swapping between modes.

Details**Gateway P5-120 Elite****Price** £2,299**Contact** 0800 602000**Fax** 00 353 1 848 2022**Software Bundle** Windows 95, Office 95, Encarta 95**Hardware Bundle** Altec Lansing speakers**Warranty Terms** One year on-site, two years BTB. Extended warranty — second and third year on-site**Technical Support** Free telephone and fax support**Good Points** Excellent monitor, large hard disk, very fast performer**Bad Points** Monitor not set up properly at base**Conclusion** A very good machine, competitively priced

Hi-Grade Winputer P120-M

**PC**

Someone at Hi-Grade did not want me to get into this machine. The screws had obviously been put in with a power screwdriver and were in so tight the paint flaked off when I went to take the back off this mini-tower.

Once inside, the Hi-Grade is quite logically made up. There is plenty of space amongst the drive bays to fit extra devices in the single 5.25in and two 3.5in free front-facing expansion bays. Unlike Hi-Grades on other machines, the Seagate hard drive stays firmly in place on this model, as unfortunately no-one makes mode 4 removable hard drives.

On the motherboard everything is easy to reach and so to upgrade. The Triton chip set is helped on its way by Socket 7 and VRM. The RAM is standard RAM running at 60ns. Hi-Grade are happy to supply you with EDO if you want it, but quite rightly reckon that with caching EDO RAM, which runs at 70ns, has only minimal advantage over standard cache. Pipeline synchronous can be included for an extra £55.

Otherwise there are only three ISA, and four PCI, slots — one of them shared. Nestling in here is the added bonus of a US Robotics 14.4 modem: a useful inclusion.

Interestingly this machine did much better on the Doom2 tests than on the Windows and DOS tests, demonstrating the benefit of a good graphics card.

Unfortunately only the basic operating system is included in the price.

Monitor

Hi-Grade were one of the few to supply a 17in monitor. Unfortunately the Panasonic monitor was flickery, had very few controls and winced visibly when switched on and off during the DOS tests.

PCW Details**Hi-Grade Winputer P120-M**

Price £2,370

Contact 0181 591 9040

Fax 0181 591 1586

Software Bundle Windows 95 or DOS 6.22 and Windows 3.11

Hardware Bundle SV37 SoundBlaster standard

Warranty Terms One year return to base. One year on-site — £25, subsequent years — 7% of purchase price

Technical Support Free telephone support, no fax support

Good Points Internal modem, plenty of room for expansion

Bad Points Disappointing monitor, only standard RAM and cache

Conclusion A sound machine, if not a speed devil

HP Vectra XM Series 3 5/120

**PC**

Better known for their printers than for their desktops, Hewlett Packard also manufacture their own PCs. That is, they make their own motherboards rather than simply assemble other people's bits.

Inside the layout of the HP is something of a surprise. The case is split down the middle with all the drives on one side and the hard-wired components on the other. The hard disk nestles at the back with a fair amount of space around it, but no free expansion bays. In front there is just the one 3.5" free front facing expansion bay.

On the other side lies the HP motherboard. To get to it you have to lift up the power pack which sits over the top like a protective arm. You can move this out the way by slipping it out of its slot and moving it over to one side. The motherboard has built-in ports, video and non-standard keyboard and mouse ports.

The three of the six SIMMs slots were taken by two 4Mb and one 8Mb SIMMs of EDO-DRAM. The processor is held in place with a Socket 7 ZIF socket and there is VRM.

At a 90 degree angle to the motherboard are three ISA and two PCI slots (one shared). Getting the screws out to put in a network was a bit of a fight. The screws used are not standard issue PC screws, but have an extra washer on them. Two of the four came out quite easily, but it took me 20 minutes to prize out just one of the others.

Monitor

This 15" HP monitor ran flicker free at 1024x768 for the tests, but is capable of 1280x1024. It has a good flat screen and is easy on the eyes.

PCW Details**Hewlett-Packard Vectra XM Series 3 5/120**

Price £2,740

Contact 01344 369222

Fax 0171 735 5565

Software Bundle DOS 6.22, Dashboard 2.01, Windows 95 or Windows 3.11 (user chooses at boot)

Hardware Bundle HP speakers

Warranty Terms 3 years (1 year on-site, 2nd and 3rd year BTB). 2nd and third year on-site with HP support pack

Technical Support Free telephone support. Fax support in USA only

Good Points Lots of SIMM slots

Bad Points Expansion slots hard to get at and only one 3.5" expansion bay

Conclusion A business machine, not a personal, multi-media machine, but quite pricey

Atlantic Systems



Atlantic Multi-Media Plus²

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Olympian Evolution 2000

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HIGHLY
COMMENDED

**PC**

This company was new to PCW. They have been around for four years, but this is the first time we have reviewed one of their machines. Despite the name they give to their PCs they are not to be confused with Evolution. The Evolution badge instead refers to Olympian's lifetime labour guarantee, which includes free fitting of any upgrades.

Sitting on the TMC motherboard are the Triton chip set, Socket 7 ZIF socket and VRM. Two of the four available SIMMs slots are taken by 8Mb of EDO-RAM, and these are hidden under the ribbon cables, but are otherwise quite easy to reach.

There are two free expansion bays. The first, a 5.25" bay is wedged between the Mitsumi CD drive and the floppy and the 3.5" bay is between the floppy drive and the hard disk. There are no internal expansion bays.

We tested the machine with a Seagate hard disk, but Olympian are replacing this with a Quantum Fireball - a disk that tested very well and produces much faster results.

Although not one of the fastest machines in the test, it did turn out to have several plus points. It was extremely easy to set up for the tests and introduced no hitches along the way, suggesting the machine had been well configured at base. It ran the Doom2 tests well, although the benchmark test results were less earth-shattering.

This was a pleasant machine to use all round, and it hums along at a respectable pace.

Monitor

The ADI monitor has an LCD to select the controls, including pincushion, trapezoid and barrel. It is reasonably flat, ran 1024x768 without a hitch and is energy efficient.

PCW Details**Olympian Evolution 2000**

Price £1,999

Contact 0181 880 4222

Fax 0181 880 4222

Software Bundle Windows 95 or DOS 6.22 and Windows 3.11

Hardware Bundle None

Warranty Terms Lifetime labour and 1 year on-site parts and labour

Technical Support Free telephone and fax support

Good Points Pleasant to use, good guarantee offered

Bad Points Limited software bundle

Conclusion A solid machine

Panrix Micron P120

**PC**

One should never judge a computer by its case and this is true of the Panrix Micron P120. It is the same midi-tower case with which we have been familiar over past models but this baby packs a greater punch. The Micron P120 has the usual external accoutrements such as the two serial and one parallel port, PS/2 plugs for the Microsoft mouse and keyboard, and a Sony CDU 76E quad-speed CD-ROM.

Once you open the case you'll find a spacious and clear interior. No obstruction exists in getting to the three PCI and four ISA slots (one of which is shared). There are two free 5.25in expansion bays and one internal 3.5in bay.

The Micronics motherboard holds an Intel P120, Triton chip set, and 256K Pipeline cache. The 1GB Quantum Fireball hard drive, with 10ms access, and the CD-ROM are supported by the primary and secondary EIDE on-board controller which helps add to the speed of this machine.

Occupying three of the available seven slots are a Matrox Millennium video card with 2Mb of RAM in the first PCI slot, and a Creative Labs Vibra 16 sound card in the top ISA slot. The bonus card in the pack is the US Robotics Sportster 14,400 fax/modem card which sits in the bottom ISA slot. If you're looking for a speedy, although not cheap, machine with a clean look this could be the one for you.

Monitor

An Iiyama Vision Master 15, with a nice flat screen and the expected pincushioning/barrelling and degaussing controls. For another £280, you can upgrade to a 17in monitor.

PCW Details**Panrix Micron P120**

Price £2,350

Contacts 01132 444958

Fax 01132 444962

email

70630.2724@compuserv.com

Software Bundle Windows 95, Office 95, Bookshelf, and Delrina 4 in 1

Hardware Bundle Mouse, keyboard, Trust Multimedia Sound-wave 10 speakers, 15in Iiyama monitor

Warranty Terms Two years on-

site. Option of three years on-site at eight percent of system cost

Technical Support Free phone and fax support

Good Points Fast and well assembled

Bad Points Tinpot keyboard

Conclusion A very good machine all round



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MONITORS

Simply Computers P120

**PC**

This machine gave us the most trouble of any machine in the test. It refused to see three different network adaptors under Windows and gave a hard disk controller error when we finally attempted to use a 3Com card. Simply Computers admitted they had had problems with this card in the past and advised us to try something else. Eventually we used an SMC card installed under DOS.

Inside the mini-tower case everything was a little squashed. There was one free 5.25in expansion bay and two more 3.5in free bays — one internal and one external. Getting to the free 3.5in bays would be difficult as they are close up against the power supply.

The bays reach right down onto the motherboard and make everything here seem a little too close for comfort. There are four PCI and four ISA slots, none shared. The EIDE ribbon cables all come down to connect to the motherboard in the middle of the slots and so would have to be disconnected to put in a PCI card. Solidly buckled power cables snake across the inside of the machine, so getting anything into the PCI slots requires very careful manoeuvring. There is no room for a full length card here.

When it came to the tests we had difficulties running the WordPerfect for DOS test and eventually had to run it from a DOS boot — it refused to run from a DOS prompt box within Windows 95 as not enough memory had been allocated to run DOS applications.

Monitor

This CTX monitor, a popular choice in this test, had no problems running at 1024x768 in 286 colours. It has a nice, narrow surround and a good range of controls.

PCW Details**Simply Computers P120**

Price £2,119

Contact 0181 523 4120

Fax 0181 523 4002

Software Bundle Windows 95

Hardware Bundle Creative Labs ProDigital speakers

Warranty Terms First year On-site, further 4 years back to base. Options: 2nd and 3rd year on-site

Technical Support Free telephone and fax support

Good Points US Robotics 14.4 modem

Bad Points Where do we start?

Conclusion Don't buy it

Vale Triton Platinum

**PC**

No need to tell you the chip set, as Vale draws your attention to it in the name of the machine.

We initially had problems with this machine. It started well enough, but the longer we had it running, the less it would do, including boot from a DOS diskette. An engineer came in from Evesham Micros, and it turned out that the problem had been a jammed fan on the processor. The heat sink was too small to defuse the heat and the whole machine seized up.

Another factor that counted against the Vale was the way the Creative Labs SoundBlaster AWE 32 overlapped the processor ZIF socket. These sound cards are admittedly very long, but its position was at best unusual and at worst irresponsible.

There were only three ISA and four PCI slots, one of them shared and again on the upgrade side there was only one 5.25in expansion bay.

Once we had overcome the initial difficulties, the Vale had no trouble running the Doom2 tests, coming out with an excellent score — worth noting as many people think running Doom is the most reliable way of testing a PC. It did not do so well on the other tests — perhaps because the Seagate hard disk and Toshiba CD were on the same EIDE chain.

The software package included is comprehensive, however, including Windows 95, Works, and a multimedia bundle.

All in all it ran quite well, but the hardware problems were enough to make us think seriously about its overall reliability.

Monitor

A reduced number of controls on this monitor made it initially confusing to see how to set the screen size. Otherwise it was flickery at 1024x768.

PCW Details**Vale Triton Platinum**

Price £2,124

Contact 01386 765500

Fax 01386 765354

Software Bundle Windows 95, Vale Media 95

Hardware Bundle Zydec multimedia speakers

Warranty Terms One year on-site, second year £69; second and third year £169

Technical Support Free telephone and fax support

Good Points Good hard disk and software bundle

Good Points Some very strange build decisions

Conclusion A potentially good machine marred by suspect build quality



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Viglen Ultimate MultiMedia 120 PC

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PC

When you open the box for this machine, the first thing you come across is a very useful sheet telling you exactly how to assemble the various components. Included on this, helpfully, is the technical support line number.

Having taken off the knobby looking case, the internal components are easy to see. This is partly because the ribbon cables have been kept to a minimum, so there isn't an excessive amount of plastic cluttering up the place.

At the front of the case there are two free front-facing 5.25in bays over the TEAC CD-ROM drive. Below this is the floppy drive and then one free front-facing 3.5in bay before you reach the Quantum Fireball hard disk.

The two 8Mb RAM SIMMs are right under the hard disk and would be tricky to replace without taking out the hard disk. The other two free SIMMs sockets are jammed up against the HDD and could also be difficult to get to, but fitting extra RAM in these slots would not involve dismantling your machine.

There are four PCI slots and three ISA slots, including one shared slot. In these sit a Creative Labs SoundBlaster AWE 32 soundcard and a Diamond Stealth 64 Video VRAM videocard.

The Viglen was one of the fastest machines on the Doom2 tests and ran the benchmarks well. The addition of a six-speed CD-ROM drive adds to the overall performance of the machine.

By the time this review goes to press Viglen will be including a fax/modem as standard.

Monitor

Viglen supply their own monitors. This one was interfaced at 1024x768, but at lower resolutions it is not glare-ridden. For an extra £240 you can upgrade to a 17in monitor.

PCW Details

Viglen Ultimate MultiMedia 120 PC

Price £2,704

Contact 0181 758 7000

Fax 0181 758 7080

Software Bundle Windows 95, MS Works 95, Encarta, Musical instruments, Golf, Money, Publisher

Hardware Bundle Speakers, microphone

Warranty Terms One year return-to-base. Numerous options for extended warranty — for

details call 0181 758 7000

Technical Support Free telephone and fax support

Good Points Six speed CD as standard

Bad Points RAM hard to reach

Conclusion A well kitted-out machine, but quite pricey for the performance it offers

Western Systems Power Pro 120



PC

This little desktop was the cheapest machine in the test, perhaps because it does not go for flash components. It obviously opted for the Triton chip set and a Seagate hard drive, but there the similarities with parts chosen by other manufacturers come to an end.

The machine we had for review did not include EDO RAM or pipeline burst cache. However both of these are available. To upgrade you pay an extra £10 per Mb for EDO RAM and £45 for pipeline burst cache. This does of course affect the price considerably. For 16Mb of EDO RAM and the upgraded cache, the cost of the whole unit goes up to £2,091.

The CD-ROM drive and sound card are both by Reveal and the video card is by VideoLogic. Reveal and Western Systems are names that are often linked, with the former best known for its upgrade kits. VideoLogic, meanwhile, makes some very good cards, especially their Rapier range. The one tested here is an entry level card, but still performed nicely.

The layout is surprisingly clear for such a small machine. Everything is logically placed and easy to reach.

While not one of the quickest machines in the test, it nevertheless did reasonably well, and on the Doom2 test it came out with a very respectable score. The DOS scores were not that good, but were balanced out by better Windows results.

If you can live with the lack of EDO RAM, and the limited software bundle, this machine offers a good price/performance compromise.

Monitor

The CTX monitor was capable of operating at 1024x768 at 80Hz, and was crisp, clear and flicker-free. The surround is narrow, allowing maximum viewing space for the area.

PCW Details

Western Systems Power Pro 120

Price £1,886

Contact 0181 842 0071

Fax 0181 841 3891

Software Bundle Windows 95
Hardware Bundle Reveal Computer speakers

Warranty Terms One year on-site, optional second and third year on-site

Technical Support Free telephone and fax support

Good Points Good video card, bargain price

Bad Points No software bundle included — operating system only

Conclusion Performs well for such an inexpensive machine

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Editor's Choice

Personal
Computer
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EDITOR'S
CHOICE

There is more to a good machine than raw speed. In deciding which of this bunch of P120s come away with awards, we looked at the overall picture. Many of the better machines were very close in relative performance and so we have taken into consideration price, guarantee, build quality, software bundles and all-round spec of each machine to come up with our list of winners.

The first Highly Commended award goes to the Olympian. Although this is a new company to PCW it has, in fact, been around for four years. The benefits of this machine were many. While not the fastest machine in the test, it was one of

the few to run seamlessly all that we asked it to do. But the greatest factor in its favour is the lifetime labour guarantee. This includes upgrades, so if in future you decide to install new peripherals you only have to pay for the parts and Olympian will do all the hard work free of charge.

Viglen wins the second Highly Commended award for its very high spec machine. This was one of only two we saw with a six-speed CD-ROM drive. In addition it had a fast Quantum Fireball hard drive, a more than adequate Diamond Stealth 64 Video VRAM and good software, all for a very reasonable £2,144. Add £240 to this for a 17in monitor and you still have a real bargain.

After much deliberation, cogitation and debate, the Editor's Choice goes to Dan. The price/performance ratio of this machine was excellent. It was very well built with plenty of space for upgrading in a neat case, and included a comprehensive software bundle. Dan itself seems a solid company and offers a lifetime guarantee on its machines.



Buyer's Guide

By opting for a Pentium you're already looking to the future. The old 486 chips are due to be phased out very shortly and, apart from the workstation Pentium Pro, Intel have not come up with a Pentium replacement.

However, when you buy a PC there is more to the deal than a machine you can boast about to your friends in the pub. As with any piece of electronic equipment, the warranty is vital, and so is the backup in the shape of technical support. Also, there is the software, which, if not bundled with the machine, can be costly to acquire.

Warranty options vary wildly. Manufacturers offer either back-to-base or on-site repairs. Your decision as to which to opt for depends very much on how you use your PC. If you depend on it for your livelihood it might be worth discussing guaranteed call-out response times with the manufacturer. Armari, for example, offers an optional eight hour response on top of their standard

guarantee. Other manufacturers, such as Dan and Olympian, offer lifetime labour guarantees, with the latter covering the labour costs involved in upgrading your PC so that you only have to pay for the upgrade kit. Optional extra years may be worth considering, especially for PC beginners.

Software bundles are a vexed question. Many smaller manufacturers don't offer bundles within their stated prices because they can't negotiate the same kind of deals as the larger companies. However, the price advantage gained by buying a non-bundled machine can be erased if you have to buy the large office packages separately. Think carefully about what you need. Some of the integrated packages are quite adequate for most people's needs, while the multimedia bundles are often regarded as a tad unnecessary by others.

The cost of the machine is affected by all these considerations, and there is no one answer. What is important is to find a deal that suits your requirements.

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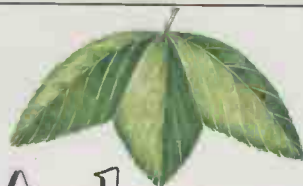
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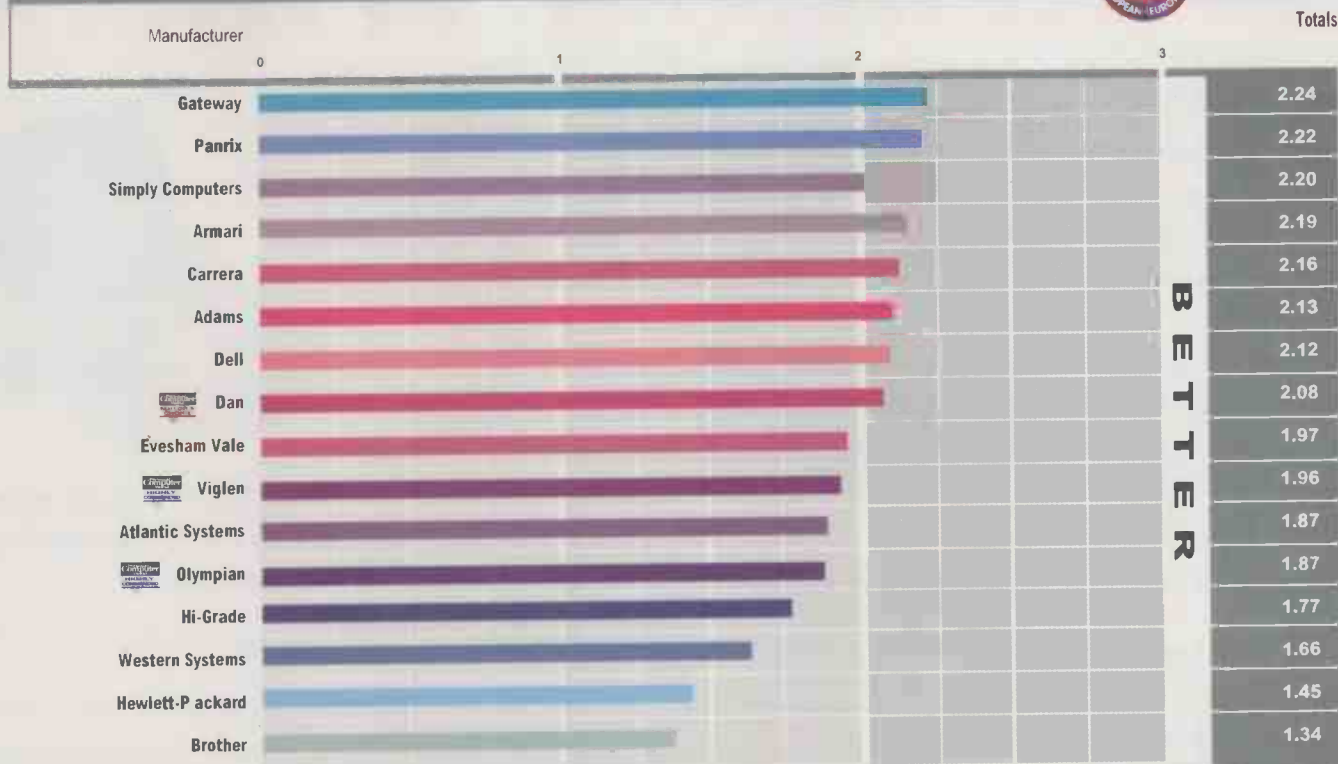
Thanks to all our customers for your support during 1995, please accept our best wishes for Christmas and 1996.



Performance Results



Overall



RELATIVE: COMPAQ DESKPRO DX4/100, 16Mb RAM = 1.00

How we did the tests

Like the previous VNU Windows and DOS tests, these Windows 95 performance figures are based on the throughput of standard application programs. While there are strong similarities with the old tests, the results are not comparable for two reasons. Firstly, the base platform (with a reference score of one) has shifted to a 486 DX4-based Compaq Deskpro system. Secondly, the numbers are weighted and calculated differently.

Although DOS programs are still tested, they now have a lower weighting. The DOS figures are merged into the overall score rather than being presented separately. Under Windows 95 they run in a DOS box — essentially a Windows-based environment.

Previous lab tests used a normalised test platform that included changes to the swap file and other system settings. To better reflect how manufacturers supply machines for review, we now keep reconfiguration to a minimum, specifically, installation of PostScript printer drivers and disabling of the undelete facility in the



Recycling bin.

This has highlighted speed variations across relatively similar hardware platforms. Although the processors in all these machines are identical and all have 16Mb of RAM, there is an overall difference of almost one point between the fastest and slowest. Careless software installation makes a dramatic difference in Windows 95: like a bad apple, one 16-bit driver loaded for a sound card or

display adapter can cripple performance across the entire application suite. We also encountered several machines that are still using old DOS TSRs and these generally performed

worse than the "cleaner" installations on the top eight machines.

Finally, we ran a Doom test for the first time. This consists of a short demo run lasting about two minutes, and is intended to test the hard disk and the graphics card — no frames are dropped. The final score (of realtics) is divided by a constant (gametics) and multiplied by 35 to give a frames per second rate. For a consistent condition we ran it at full screen and without sound.

Julian Evans



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Winputer Director

Intel Pentium processor
133Mhz clock speed,
Intel Triton PCI/ISA chipset
16Mb RAM, expandable to 128Mb
256K cache memory
1Gb IDE hard disk (mode 4)
3.5" 1.44Mb floppy disk drive
Diamond Stealth 64 graphics card
(S3 868 controller, 2Mb DRAM)
15" SVGA colour monitor
(resolution: 1280x1024 @ 60Hz)
Quad-speed CD-ROM drive, Sound Blaster 32 AWE card, 2 external
loudspeakers
2 fast serial ports, 1 enhanced parallel port
3 PCI slots (2 free) 4 ISA slots (4 free)
102-key Cherry keyboard (mechanical switch type)
Serial 2/3-button mouse
Windows 95 on CD-ROM
Mini-tower case (414mm deep x 177mm wide x 391mm high)



£1,795 (plus VAT)

Notino Mover

Intel Pentium processor
120Mhz clock speed,
upgradable to 133Mhz
16Mb RAM, exp to 32Mb
256K write-back cache
800Mb removable hard disk
Removable 3.5" 1.44Mb
floppy disk drive (can be
replaced with MPEG module)
PCI SVGA graphics card (2Mb VRAM), 10.4" TFT colour LCD display
Dual-speed CD-ROM drive, Stereo sound card, Speakers, Microphone
Infra-red comms port, Built-in trackpad and joystick
Enhanced IDE/EPP/ECP controller
Removable, rechargeable NiMH 23W battery
Auto-switching 50W AC/DC adaptor (charges battery while PC works)
Serial port, parallel port, Keyboard connector, ext. monitor connector
PCMCIA type 3 slot (two type 2 slots), Fax/modem (PCMCIA, V34)
Windows 95 on CD-ROM
Size: 300mm x 227mm x 54mm, Weight: 3.5kg (7.7lb)



£2,995 (plus VAT)

Introline Extra

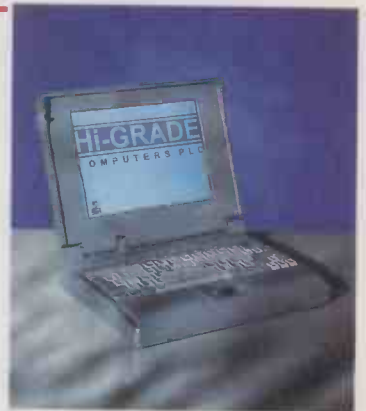
Intel 486DX4 processor
100Mhz clock speed
AMI BIOS
8Mb RAM, expandable to 128Mb
128K cache memory
540Mb IDE hard disk
3.5" 1.44Mb floppy disk drive
VESA local bus enhanced IDE hard
disk controller
Dual-speed CD-ROM drive
Cirrus Logic VLB SVGA graphics card (1Mb DRAM)
14" SVGA colour monitor (resolution: 1024x768 x 256 colours)
2 serial ports, 1 parallel port, 1 games port
5 16-bit slots (3 free)
102-key Cherry keyboard (membrane switch type)
Serial 2/3-button mouse
Windows 95 on CD-ROM
Desktop case (425mm deep x 425mm wide x 157mm high)



£840 (plus 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
10.3" 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)
Trackball (centre front position)
DOS 6.22, Windows 3.11 for Workgroups
Size: 280mm x 220mm x 52mm, Weight: 3kg (6.6lb)

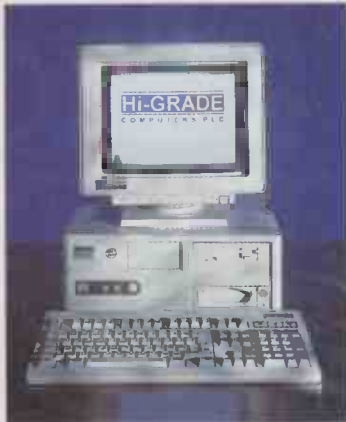


£1,635 (plus VAT)

Offers

Winputer Manager

- Intel Pentium processor
- 120Mhz, clock speed, upgradable to 133Mhz
- Intel Triton PCI/ISA chipset
- 16Mb RAM, expandable to 128Mb
- 256K cache memory
- 1Gb IDE hard disk (mode 4)
- 3.5" 1.44Mb floppy disk drive
- ET-4000 PCI SVGA graphics card (1Mb DRAM, expandable to 2Mb)
- Quad-speed CD-ROM drive
- 14" SVGA colour monitor (resolution: 1024x768 @ 60Hz)
- 2 fast serial ports, 1 enhanced parallel port
- 3 PCI slots (2 free) 4 ISA slots (4 free)
- 102-key Cherry keyboard
- Serial 2/3-button mouse
- Windows 95 on CD-ROM
- Desktop case (425mm deep x 425mm wide x 157mm high)



£1,455 (plus VAT)

Winputer Homester

- Intel Pentium processor
- 75Mhz, upgradable to 133Mhz
- Intel Triton PCI/ISA chipset
- 8Mb RAM, expandable to 128Mb
- 256K cache memory
- 540Mb 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, sound card with ASP chip, speakers
- Multimedia software, including Encarta, MS Works, MS Publisher
- 2 fast serial ports, 1 enhanced parallel port
- 3 PCI slots (2 free) 4 ISA slots (4 free)
- 102-key Cherry keyboard (membrane switch type)
- Serial 2/3-button mouse
- Windows 95 on CD-ROM
- Desktop case (406mm deep x 425mm wide x 107mm high)



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The Winputer Director, illustrated here, is a high-end system which fully deserves its name despite its comparatively modest price. Cheaper by £320 is the Winputer Manager, which nevertheless packs a powerful punch and will appeal to many hard-pressed executives.

Less expensive still is the Winputer Homester model, aimed at the multimedia enthusiast. It comes with a set of software including the Encarta encyclopedia.

Then there are the Intronline Extra, an entry-level but well equipped system, remarkable for its low price, and 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 PCW. The other, the Notino Mover, is a luxury notebook that some high-powered people already regard as being more a necessity than a luxury.

*Valid until 31 January 1996



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PENTIUM 120MHZ TABLE OF FEATURES

	Adams	Armari	Atlantic	Brother	Carrera
Manufacturer	Adams Technology	Armari	Atlantic	Brother Computers	Carrera
Model Name	Professional 586 Multi Media System	eXPS-120plus	Atlantic Pro95	Professor P120	Carrera Panther P120AM
Tel No	0161 877 8822	0181 810 7441	01792 700002	01279 416888	0171 830 0586
Fax No	0161 877 8684	0181 810 5783	01792 792888	01279 418130	0171 830 0286
Price (excl VAT)	£2,749	£2,143	£2,278	£1,999	£1,999
Basics					
Processor Manufacturer and Model	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120
Expansion Bus					
Local bus Architecture	PCI	PCI	PCI	PCI	PCI
Free local bus only slots	3	3	3	3	3
Free ISA only slots	3	3	3	2	3
Free shared local Bus/ISA slots	1	0	0	0	0
Motherboard Manufacturer	Micronics	Supermicro	SOYO	Brother	Supermicros
Chipset	Triton	Triton	Triton	SIS	Triton
No. of spare 3.5" bays	1	1	1	0	1
No. of spare 5.25" bays	0	2	4	2	1
Hard disk					
Manufacturer	Quantum	Quantum	Western Digital	Conner	Quantum
Size	1.1Gb	1Gb	1.2Gb	1.275Gb	1.1Gb
Interface	EIDE	EIDE	EIDE	IDE	EIDE
Average access time (ms)	10	12	11	14	10
RAM and Secondary Cache					
Main RAM	16Mb	16Mb	16Mb	16Mb	16Mb
Max RAM	128Mb	128Mb	128Mb	128Mb	128Mb
RAM Type	EDO	EDO-DRAM	EDO	Standard	EDO
SIMM Type (pins)	72	72	72	72	72
Secondary cache (Kb)	256Kb	256Kb	256Kb	256Kb	256Kb
Max secondary cache (Kb)	512Kb	512Kb	512Kb	256Kb	512Kb
Cache type	Synchronous SRAM	Pipeline Burst	Pipeline Burst	Writeback	Pipeline Burst
Multimedia					
CD-ROM Manufacturer	TEAC	Pioneer	Vertos	Goldstar	Mitsumi
CD-ROM Model	cd-56e	UA124X-5	400	GS540B	FX400
CD-ROM Speed	6X	4X	4X	4X	4X
Sound Card Manufacturer	Creative Labs	Creative Labs	Creative Labs	Creative Labs	Creative Labs
Sound Card Model	Sound Blaster AWE 32	Sound Blaster AWE 32	Sound Blaster AWE 32	Vibra 16	Sound Blaster AWE 32
Graphics					
Graphics Card Manufacturer	Matrox	Matrox	Diamond	Taxan	Matrox
Graphics Card Model	Millennium WRAM	Millennium WRAM	Stealth 64 Video VRAM	GTS 1280	Millennium WRAM
Graphics Card RAM/Max RAM	2Mb/8Mb	2Mb/8Mb	2Mb/4Mb	2Mb	2Mb/8Mb
Graphics Card					
Max non-interlaced resolution	1600x1200x256 @ Hz	1600x1200x256 @ 85Hz	1024x786x256 @ 70Hz	1280x1024x256 @ 74Hz	1600x1200x256
Monitor Manufacturer	Iiyama	Iiyama	Samsung	Brother	Goldstar
Monitor Model	MF8617	8115	15GL	BM84L	1520DM
Monitor Size	17	15	15	15	15
Monitor Maximum					
Refresh Rate at 1024x768 (Hz)	100Hz	72Hz	72Hz	80Hz	75Hz
Free tech support line	●	●	●	●	●
Fax support	●	●	●	●	○
Company turnover (most recent figures available)	£3 million	£ 950,000	£20 million	\$1.6 billion	£9.6 million
Number of staff	16	8	81	5000	52
					

KEY ● Yes ○ No

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486DX4-120	£ 899	PENTIUM P100	£1149

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- 16Mb Superfast RAM (EDO support)
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- 6 x Speed CD-Rom Drive E-IDE ATAPI
- Ultrasound Gravis Wave 32 Sound Card
- 300 Watt Hi-Fi 3D surround sound speakers
- PCS 14,400 Fax Modem, Internet ready
- Minitower Case, (other options)
- 102 Keyboard, Joystick, Mic, Mouse
- MS-Dos 6.22/Win 3.11 preloaded, Win'95 option, all Manuals/Disks
- MEGAPACK 3, 12 best selling CD-Roms & Encarta'95, Works Money (worth £498)
- 5 YEAR WARRANTY***

PENTIUM P75	£ 1999	PENTIUM P120	£ 2199
PENTIUM P90	£ 2099	PENTIUM P133	£ 2399
PENTIUM P100	£ 2149	PENTIUM P180	£ 2899



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PACK 3

MULTIMEDIA WORKSTATION

- Intel TRITON Motherboard, Socket 7 (Pentiums) 256K Cache
- Award Plug & Play Bios
- 8Mb Superfast RAM (EDO support)
- 1Mb 64 Bit PCI Graphics Accelerator
- 14" PRO-Multisync NI SVGA Colour Monitor, MPR2, 1024 x 768
- 1.275 Gigabyte Mode 4 E-IDE Hard Disk
- Quad Speed CD-Rom Drive E-IDE ATAPI
- Soundblaster PRO (comp) Sound Card
- 300 Watt Hi-Fi 3D surround sound Active speakers with Bass/Treble/vol
- PC-Science Internal Internet Fax/Modem
- Minitower Case, (other options)
- 102 Keys ergonomic Keyboard, 3 Button Mouse, Joystick, Microphone
- MS-Dos 6.22/Win 3.11 preloaded, Win'95 option, with all Manuals/Disks
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486 DX2-66	£ 999	PENTIUM 90	£1299
486 DX4-100	£ 1049	PENTIUM 100	£1349
486 DX4-120	£1099	PENTIUM 120	£1399
PENTIUM P75	£1199	PENTIUM 133	£1599

PCSCIENCE

PACK 4

MULTIMEDIA PRO

- Intel Triton Motherboard, 256K Cache
- 16Mb Superfast RAM (EDO support)
- Award Plug & Play Bios, Intel Socket 7
- PCI 2Mb 64 Bit Graphics Accelerator
- 15" PRO-Multisync NI SVGA Colour Monitor, 1280 x 1024, MPR2
- 1.275 Gigabyte Mode 4 E-IDE Hard Disk
- 6 x Speed CD-Rom Drive E-IDE ATAPI
- Ultrasound Gravis Wave 32 Sound Card
- 300 Watt Hi-Fi 3D surround sound speakers
- PCS 14,400 Fax Modem, Internet ready
- Minitower Case, (desktop, Full tower option)
- 102 Keys ergonomic Keyboard, Mouse, Quickshot Joystick, Microphone
- MS-Dos 6.22/Win 3.11 preloaded, Win'95 option, all Manuals/Disks
- MEGAPACK 3, 12 best selling CD-Roms & Encarta'95, Works Money (worth £498)
- 5 YEAR WARRANTY***

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PENTIUM P100	£ 1749
PENTIUM P120	£ 1799
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PENTIUM 120MHZ TABLE OF FEATURES

	Dan 	Dell	Evesham Micros	Gateway	Hewlett-Packard
Manufacturer	Dan Technology	Dell	Evesham Micros	Gateway 2000	Hewlett Packard
Model Name	Dantium 95/s/120MM	Dimension P120MT	Vale Platinum Triton	P5-120 Elite	HP Vectra VL5/120 model 84
Tel No	0181 830 1100	01344 720000	01386 765500	0800 602000	01344 369222
Fax No	0181 830 1122	01344 723695	01386 765354	003531 848 2022	0171 735 5565
Price (excl VAT)	£2,071	£1,999	£2,124	£2299	£2,740
Basics					
Processor Manufacturer and Model	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120
Expansion Bus					
Local bus Architecture	PCI	PCI	PCI	PCI	PCI
Free local bus only slots	2	3	2	3	1
Free ISA only slots	1	3	1	2	2
Free shared local Bus/ISA slots	1	1	1	1	1
Motherboard Manufacturers	Dan	By Intel to a Dell design	Intel	Intel	HP
Chipset	Triton	Triton	Triton	Triton	VLSI 82C591/2
No. of spare 3.5" bays	2	1	2	3	1
No. of spare 5.25" bays	2	3	2	3	0
Hard disk					
Manufacturer	Quantum	Quantum	Seagate	Western Digital	Western Digital
Size	1Gb	1Gb	1Gb	1.6Gb	840Mb
Interface	EIDE	EIDE	FAST ATAZ	EIDE	EIDE
Average access time (ms)	10	11	10.5	9	10
RAM and Secondary Cache					
Main RAM	16Mb	16Mb	16Mb	16Mb	16Mb
Max RAM	128Mb	128Mb	128Mb	128Mb	192Mb
RAM Type	EDO	EDO	EDO	EDO	DRAM
SIMM Type (pins)	72	72	72	72	72
Secondary cache (Kb)	256Kb	512Kb	256Kb	256Kb	256Kb
Max secondary cache (Kb)	512Kb	512Kb	512Kb	256Kb	256Kb
Cache type	Pipeline Burst	Pipeline Burst	Pipeline Burst	Pipeline Burst	Direct mapped *
Multimedia					
CD-ROM Manufacturer	Toshiba	Mitsumi	Toshiba	Mitsumi	Sony
CD-ROM Model	XM 5302B	FX-400	XM 5302B	FX-400	CDU76-E
CD-ROM Speed	4X	4X	4X	4X	4X
Sound Card Manufacturer	Creative Labs	Creative Labs	Creative Labs	SoundScape	Creative Labs
Sound Card Model	Sound Blaster AWE 32	Sound Blaster AWE 32	Sound Blaster AWE 32	Ensonx Wavetable	Vibra 16
Graphics					
Graphics Card Manufacturer	Diamond	No 9 Technology	Diamond	ATI	Cirrus Logic
Graphics Card Model	Stealth 64 Video VRAM	Motion 771	Stealth 64 Video VRAM	MACH 64 VRAM	CL-5434 on PCI local bus
Graphics Card RAM/Max RAM	2Mb/4Mb	2Mb	2Mb/4Mb	2Mb/2Mb	1Mb/2Mb
Graphics Card					
Max non-interlaced resolution	1600x1200	1600x1200 @76Hz	1024x768x256 @76HZ	1280x1024x256 @75Hz	1024x768x256 @75Hz(1Mb) 1280x1024x256 @75Hz(2Mb)
Monitor Manufacturer	CTX	Lite-on	Mitac	Sony	HP
Monitor Model	CM1565GM	D1528-LS	AL5064 EDM	Vivitron 1776 LE	D2806A
Monitor Size					
Monitor Maximum	15	15	15	17	15
Refresh Rate at 1024x768 (Hz)	84Hz	80Hz	75Hz	80Hz	75Hz
Free tech support lines	●	●	●	●	●
Fax support	●	●	●	●	●
Company turnover (most recent figures available)	£39.5 million	\$3.5 billion	£41 million	\$2.7 billion	\$25 billion
Number of staff	125	7,500 worldwide	210	800+	99,900
					

KEY ● Yes ○ No * write-through with burst reads

PENTIUM 120MHZ TABLE OF FEATURES

	Hi-Grade	Olympian	Panrix	Simply Computers	Viglen	Western Systems
Manufacturer	Hi-Grade Computers PLC	Olympian Computer Systems	Panrix	Simply Computers	Viglen	Western Systems
Model Name	Winputer P120-M	Olympian Evolution 2000	Panrix Micron P120	Simply Pentium 120 Multimedia	Ultimate MultiMedia 120 PC	Power Pro 120
Tel No	0181 591 9040	0181 880 4222	0113 244 4958	0181 523 4120	0181 758 7000	0181 842 0071
Fax No	0181 591 1586	0181 880 4222	0113 244 4962	0181 523 4002	0181 758 7080	0181 841 3891
Price (excl VAT)	2,370	£1,999	£2,350	£2,119	£2,144	£1,886
Processor Manufacturer and Model	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120	Intel Pentium 120
Expansion Bus						
Local bus Architecture	PCI	PCI	PCI	PCI	PCI	PCI
Free local bus only slots	2	3	2	3	2	2
Free ISA only slots	2	2	3	3	3	3
Free shared local bus/ISA slots	0	1	1	0	1	1
Motherboard Manufacturers	TMC	TMC	Micronics	Super Micro	Intel	Elite
Chipset	Triton	Triton	Triton	Triton	Triton	Triton
No. of spare 3.5" bays	1	1	0	1	3	1
No. of spare 5.25" bays	1	2	2	1	2	0
Manufacturer	Seagate	Quantum	Quantum	Quantum	Quantum	Seagate
Size	1Gb	1.2Gb	1Gb	1Gb	1Gb	1Gb
Interface	EIDE	EIDE	EIDE	EIDE	EIDE	EIDE
Average access time (ms)	10	11	10	12	10	10
Main RAM	16Mb	16Mb	16Mb	16Mb	16Mb	16Mb
Max RAM	128Mb	128Mb	128Mb	128Mb	128Mb	128Mb
RAM Type	Standard	EDO	EDO	EDO	EDO	Standard
SIMM Type (pins)	72	72	72	72	72	72
Secondary cache (Kb)	256Kb	256Kb	256Kb	256Kb	256Kb	256Kb
Max secondary cache (Kb)	512Kb	512Kb	256Kb	256Kb	256Kb	256Kb
Cache type	Standard asynchronous	Pipeline Burst	Pipeline Sync	Pipeline Burst	Pipeline Burst	Writethrough
CD-ROM Manufacturer	Toshiba	Mitsumi	Sony	Pioneer	TEAC	Reveal
CD-ROM Model	5302B	FX-400	CDU76-E	DR-VA 124X	CD-56E	CDD4X
CD-ROM Speed	4X	4X	4X	4X	6X	4X
Sound Card Manufacturer	Creative Labs	Creative Labs	Creative Labs	Creative Labs	Creative Labs	Reveal
Sound Card Model	SoundBlaster AWE32	SoundBlaster AWE32	Vibra 16	SoundBlaster 16 Pro ADSP	SoundBlaster AWE32	SC500
Graphics Card Manufacturer	Diamond	Matrox	Matrox	Matrox	Diamond	VideoLogic
Graphics Card Model	Stealth 64 Video VRAM	Millennium WRAM	Millennium WRAM	Millennium WRAM	Stealth 64 Video VRAM	GraphixStar 300
Graphics Card RAM/Max RAM	2Mb/4Mb	2Mb/8Mb	2Mb/8Mb	2Mb/8Mb	2Mb/4Mb	2Mb
Graphics Card						
Max non-interlaced resolution	1280x1024x256 @ 72Hz	1600x1200x256 @ 72Hz	1024x786x256 @ 75Hz	1600x1200x256 @ 72Hz	1280x1024 @ 72Hz	1280x1024
Monitor Manufacturer	Panasonic	ADI	Iiyama	CTX	Viglen	CTX
Monitor Model	TX-1732B	4V	MF-15	1565 CD	Envy 15P	1565CD
Monitor Size						
Monitor Maximum	17	15	15	15	15	15
Refresh Rate at 1024x768 (Hz)	75Hz	70Hz	75Hz	75Hz	72Hz	80Hz
Free tech support lines	●	●	●	●	●	●
Fax support	○	●	●	●	○	●
Company turnover (most recent figures available)	£13 million	£1.5 million	£2.2 million	£34 million	£185 million	£30 million
Number of staff	55	14	14	140	240	160
						

KEY ● Yes, ○ No

Motherboards

Inside every PC is a large printed circuit board (PCB) called the motherboard. All the main components of a PC plug into it and communicate with each other through it. It is worth being familiar with a few basic terms to help you suss out how everything works and what you are getting for your money.

CPU (central processing unit)

Also known as the processor, this is the main chip — in this case a P120. It executes program instructions.

Chipset

A series of chips on the motherboard which handle the data going in and out of the CPU. All but one of the machines in this test used the Triton chip set, which Intel developed to optimise the performance of PCI bus. PCI (peripheral component interconnect) is a means of moving instructions and data around the motherboard. It is designed to improve the performance of peripherals, such as video cards, by putting them closer to the CPU.

RAM (random access memory)

This is the PC's primary storage area, used to write, store and retrieve information and program instructions which are then passed to the CPU for processing. For more on the operation of RAM, see the "Memory" section below. The type of RAM you have affects performance as the information stored here has to be refreshed many times per second by the processor.

D-RAM (dynamic RAM)

Has to be refreshed more frequently than SRAM (static RAM). Page-mode RAM is faster still, not needing to be refreshed so frequently and managing data retrieval more efficiently. EDO RAM is page-mode.

VRAM (video RAM)

Is designed specifically for video cards and allows the display to be refreshed and updated on separate ports, making it quicker than DRAM.

Cache

An intermediate storage capacity between the processor and the

RAM or disk drives. The most commonly used instructions are held here, allowing faster processing. The larger the cache, the more can be stored here, but the longer the access time. Write-through, asynchronous, synchronous and pipeline burst all refer to reading and writing instructions. Pipeline burst is the fastest of these and is quickly becoming standard in high-spec PCs.

VRM (voltage regulation module)

Used to absorb the voltage difference between the processor and the motherboard.

ZIF (zero insertion force)

A type of socket which allows the processor to be upgraded more easily. Socket 5 and Socket 7 are common types of ZIF sockets.

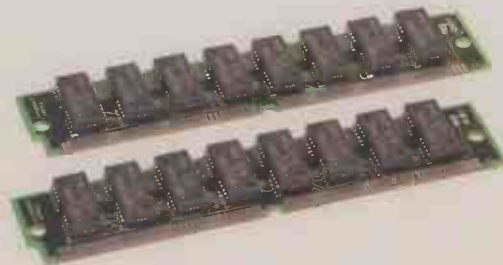


Memory

There are two types of memory which you need to be aware of when buying a PC. The first is the hard disk and the second is RAM.

The hard disk is the area where all the information on your PC is stored, including the system files your PC needs to operate, your applications and of course the data you input. This is permanent memory. When you close down the machine this data is stored and can be accessed next time you power up.

The larger the disk, the better the performance you can get out of it. This is due to the way it is made. Hard disks are made of a series of magnetic platters which spin. Heads read the data from the platters and transfer it to the RAM and so to the processor. The larger the hard disk, the more platters you have and the more heads to access the data, speeding up transfer rates as the other heads can search while



one is reading.

As applications grow ever larger, the need for a large hard disk becomes more pressing. If your hard disk becomes overcrowded it takes longer to search and becomes increasingly fragmented, so will not operate at its optimum rate. By buying a large disk now, you are prolonging the life of your machine by ensuring it will continue to operate well with future applications.

RAM is very different. It is an impermanent source of data, but is the main memory area accessed by the hard disk. It acts, if you like, as a staging post between the hard disk and the processor. The more data contained in

the RAM, the faster the processor can access that data and so the faster your machine will run.

Operating systems such as Windows 95 are extremely memory hungry and gobble up RAM. To run Windows 95 successfully, you will need a minimum of 8Mb, preferably 12Mb. To do justice to a processor as fast as a P120, you should really run with 16Mb.

CD-ROM drives and graphics cards

When Sony and Philips presented the original Red Book specification for digital audio on a CD in the early eighties, few would have believed how flexible the five inch shiny disc would become as a carrier of information.

A CD stores digital information which could be digitised audio, scanned photographs, digital video or plain computer data - files, applications and the like. Most CDs not containing pure audio or video are termed CD-ROMs (Read Only Memory) and you'll need a CD ROM drive to read them.

The first CD-ROM drives spun the disc at the same speed as a conventional audio player, delivering a sustained data transfer rate of around 150Kb/s, and known as single-speed. 150Kb/s is around the same speed as a floppy disk, and at least ten times slower than a typical hard drive; it wasn't long before the industry yearned for faster CD-ROM drives.

The first double-speed drive simply spun the disc at twice the speed, doubling the data transfer to 300Kb/s. Inevitably quad speed arrived which doubled again to 600Kb/s. Applications installed faster, files opened quicker, video clips played more smoothly and everyone was a lot happier. When an audio disc was inserted, the drives automatically dropped to single speed for compatibility.

CD-ROM drives have not only sped up, but dropped in price too. A typical quad speed costs between £100 and £150 and is an essential minimum starting speed for today's buyer. As important as speed is compatibility. All drives will play yellow book CD-ROM and red book audio discs, but only those labelled white book compatible will play Video CDs.

The future is speeding up, but not to eight speed quite yet. Six speed is already available, raising transfer rates to just under 1Mb per second. Six speeds will open conventional files very quickly, but early tests have shown that the decompression necessary to open a Photo CD image effectively slows down performance to quad speed.

Video cards

Video or graphics circuitry, usually fitted to a card but sometimes



found on the motherboard itself, is responsible for creating the picture your monitor displays.

Windows describes the desktop with its graphical device interface, GDI, commands. The software video driver takes the GDI information and converts it into a coloured bitmap image at the desired working resolution and number of colours.

This bitmap image is stored in dedicated video memory. The higher the resolution or the greater the number of colours, the more

memory you'll need. However, since it is a shared resource, reducing one will allow an increase of the other. 1Mb of video memory is capable of doing a resolution of 1024x768 pixels in 8-bit colour, offering 256 colours. Alternatively dropping to 800x600 pixel resolution will free up video memory to up to 16-bit colour, offering 65536 colours. All the PCs in this group test have 2Mb video memory, capable of 1024x768 pixels in 16-bit colour, 1280x1024 at 8-bit or 800x600 in 24-bit, just under 16.8 million colours.

Photographic images or smooth colour blends look best in 16 or 24-bit colour, the latter being described as true colour, or enough for you not to notice the steps. DTP and CAD applications work best at high resolutions, where fine details can be seen.

Video performance is dependent on several factors. One is the speed of the video memory. D-RAM is slower than the more expensive V-RAM. Speed of the bus is vital too, although the high performance of PCI featured on all these PCs at least eliminates this worry.

The video memory stores the desktop image as a digital bitmap, which must be converted into an analogue RGB signal for a monitor to display. A chip called a RAMDAC is responsible for the conversion. The speed at which this operates limits the maximum combination of resolution, number of colours and refresh rate.

At the same time, it's no good having an extremely high performance RAMDAC capable of ultra high resolutions at high flicker-free refresh rates if your monitor cannot lock onto the signal frequency. Try to get the most out of your monitor, but don't drive it too hard. All monitors in this group test should be able to display 1024x768 pixels in a flicker free, non-interlaced mode.

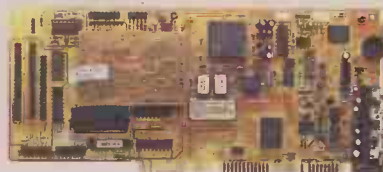
Gordon Laing

Sound cards

We asked each manufacturer to supply a WaveTable sound card with their systems for this group test. Most arrived at the office with a Creative Labs AWE-32, although some came fitted with older, FM-based Vibra 16s.

WaveTable sound cards differ from FM (Frequency Modulation) cards in that they store actual recordings, or a table of waveforms, of real instruments. WaveTable cards store instrument samples in ROM. The AWE-32 has 1Mb of samples on board; that's 128 melodic instruments and seven drum kits.

Because WaveTable plays back real instruments, as opposed to electronically generated sounds, they offer greater realism. Sound is further enhanced on the AWE-32 thanks to its on-board effects. These include several reverb types, chorus



effects and Qsound.

Qsound is similar to Surround Sound and fools the ear into thinking audio is coming from all around. Reverb can make the instruments sound as though they are being played in large concert halls, while Chorus gives the impression that more than one

instrument is playing.

Software bundled with the AWE-32 includes CakeWalk Apprentice, a 256-track MIDI sequencer, and several Windows applets enabling you to record, edit and playback MIDI and Wave files.

So is the AWE-32 any good? In many respects, yes — it allows user samples to be converted into MIDI instruments; it has lots of useful software; and the audio quality is more than good enough when used for games and multimedia applications.

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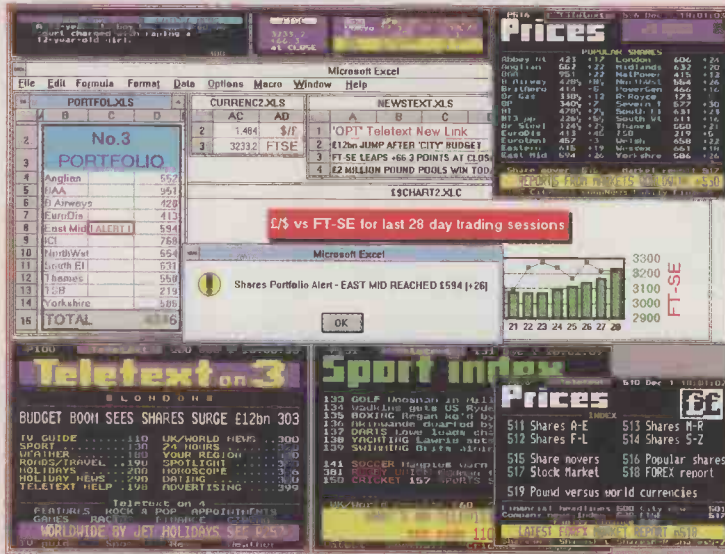
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| <input type="checkbox"/> - 'Export' VHF/UHF PAL' - add £50 to above receiver prices - made to order - call for details | <input type="checkbox"/> - Update 'Shares' V3 For Win - 'Teletext 400' Shares/Graphing System £195 |
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CUTTING 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 bringing you the latest news about computing, and consumer technologies and online services.

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 3 2 **Focus** — Richard Vadon surveys the online gaming scene here and in the US. Is the virtual community of game players set to colonise the internet?
- 2 3 6 **net.answers** — Finding your way round the internet throws up all sorts of queries: Nigel Whitfield has the solutions.
- 2 4 0 **net.news (incorporating net.surf)** — CIX gets caught in the net, and the DTI launches its Schools Online project: news round-up by PJ Fisher.
- 2 4 5 **net.newbies** — A short and simple explanation of how to get online.
- 2 4 6 **Focus** — In the first of a series of three HTML features, Nigel Whitfield makes it easy for you to create your own web pages.

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- 2 5 3 **Innovations** — Tim Frost on the turmoil surrounding the CD recorder market.
- 2 5 5 **Horizons** — Simon Rockman on the innovation — or lack of it — in the world of RAM.
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- 2 5 9 **Retro Computing** — Simon Rockman on why the Jupiter Ace missed the mark.

PCW Media

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- 2 6 8 **CD-ROMs** — Test your encyclopedic knowledge with new discs from Microsoft and Grolier, plus Mel Gibson's *Braveheart* and the works of Robert Mapplethorpe. With Adele Dyer.

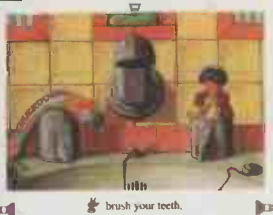
PCW Fun

- 2 6 2 **Competition** — Win a bumper bundle that includes notebook, monitor and SmartSuite 96.
- 2 6 5 **Kids' Stuff** — A manic magician tested Paul Begg's reserve, plus there's news from the Best Toy Awards.
- 2 7 3 **Screenplay** — The frightening *Phantasmagoria*, *Magic Carpet 2*, and joysticks judged.
- 2 7 6 **Leisure Lines** — Puzzles with JJ Clessa.



Focus:
Virtual Gaming

Kids' Stuff: George Shrinks



Screenplay: Phantasmagoria



CD-ROMs: Robert Mapplethorpe



Playing a net

Is a virtual community of game players set to colonise the Internet? With an impending sense of Doom, Richard Vadon considers the online gaming scene in the US and the UK.

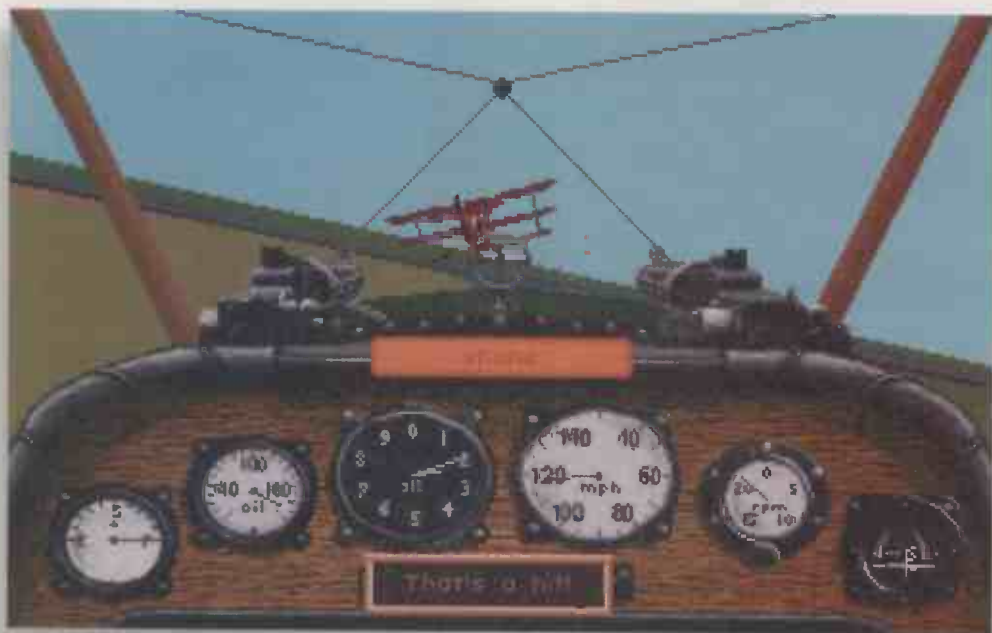
Online gaming could be the next big thing to hit the Internet. Research by US consultant Jupiter Communications predicts that online gaming will be a \$1.3 billion industry in the US by the year 2000.

In the UK, BT has announced Wireplay, its own online gaming service, showcased at Live 95. Beta testing starts in January 1996 and the service should be fully operational by the summer.

What's caused all this? Undoubtedly the arrival of Doom was a seminal event. It came from the Internet and changed the way people play and think about computer games. It was addictive enough when played against a computer but when you played it on a network against other people it was far, far better.

Online gaming provides something that games played alone on a home PC cannot; interaction with other people. Ironically, computers, which first released us from having to find other people to play games with, are now bringing people together to play games. So having destroyed your social life by playing computer games, you can now use your computer or console to make new friends online, and then try to kill them.

The games themselves are only part of what makes online gaming enjoyable. The players of online games become a virtual community. It is the interaction with other players, either in competition or in co-operation, that makes online games



Above 3D flight combat. *Fighter Wing* is distributed on the Internet



Left Play ball on the AT&T Imagination Network

so compelling.

Online gaming differs from ordinary computer gaming in that it is an inherently sociable activity — you play with other people. The American gaming networks report that players often just log on to hang around and chat. People even log on to watch other people play.

One consequence of this social aspect is that the demographics for online gamers are different from those for

computer gamers. Online gamers tend to be older, smarter and richer — much more like Internet users than ordinary gamers.

BT's Wireplay is still in the pipeline, but in the US major players are already emerging. However, as you might expect in a young industry, no-one is clear how the market will develop or how best to deliver their services. Each of the US services (Catapult, VR1, ImagiNation and Simutronics) is taking a different route into the market.

Catapult is offering what amounts to a dating service for players of existing multi-player

console and PC games like Doom, Mortal Kombat and Streetfighter. Catapult's service connects two players, keeps track of their scores and allows them to send e-mail and chat messages to each other. PC users can already do most of this with direct modem-to-modem gaming. What makes Catapult stand out is the modems it has designed for consoles. These run at only 2.4 Kb/sec but allow full speed real-time gaming. The e-mail and chat services are so popular that Catapult now sells keyboards for the games consoles as well.

BT's Wireplay will take a similar approach to Catapult.



CUTTING EDGE

game



Gamers will be offered the opportunity to play the games they have on their own PCs against opponents connected by BT. Charges will be on a pay-as-you-play basis with no subscription fees. BT is negotiating with software developers to include the Wireplay access software within their games.

According to its publicity, Simutronics Corporation is dedicated to building huge online communities and having them destroyed by robots. It uses US online services such as America Online, Prodigy, and GEnie to distribute its games. Simutronics games range from graphics-based arcade style shoot-em-ups to text-based adventures. Surprisingly, Gemstone III, a text based role-playing game, is three times as popular as any of the others and its players spend on average, \$85 per month.

VR1 has a similar strategy to Simutronics but uses the internet rather than commercial online services to distribute its games. Its first game is a rather splendid 3D flight simulation



Use your imagination on the net in widely varying situations; from sports simulations to fantasy role play

combat game called Fighter Wing which is currently beta-testing. However, the speed the game runs at depends on how direct your link to the Internet backbone is, rather than the speed of your modem.

The AT&T ImagiNation Network launched its direct dial service over a year ago. Users log on to ImagiNation computers to play a variety of multi-player games in a number of different virtual worlds. For instance, there are fantasy role-playing games in the medieval world and sports simulations in the arena world. Traditional games like

bridge are also available — indeed the US Bridge team prepares for tournaments on the network. ImagiNation finds that its customers spend a third of their time chatting or dealing with email.

The US online gaming industry likes to think of itself as being in the same position as the internet 18 months ago, and in some ways this is true. It's waiting for its killer application — the game that will really capture the imagination in the way that Sonic or Doom did.

How quickly online gaming grows is also dependent on the

costs of access and service. In the US local calls are free, so customers only have to pay for the service. Local calls are charged for in the UK and elsewhere in Europe, and this is likely to act as a barrier to the growth of online services.

The networks all use different methods to reach the market but would aim eventually to access the global market offered by the internet. But the internet is too slow and unwieldy at the moment — VR1 uses the internet but the connection in the UK never seems good enough to make arcade-style

Modem-to-modem gaming

Multi-player games, like Doom, which are played over a network, can also be played as modem-to-modem games using CompuServe or the Internet. Using CompuServe's MTM Gaming Lobby, members can play almost any modem-to-modem game with other members of the CompuServe Information Service.

A game can be scheduled in advance using CompuServe's Challenge Board (GO CHALLENGE) and Modem Games Forum (GO MODEMGAMES), or by just hanging around the Lobby.

To establish a connection for modem game play, players need to enter the Lobby by typing GO MTMLOBBY. Once there, they will find out who is there and what they want to play.

The /CHALLENGE command is used to initiate a game with another member. The syntax of the command requires two pieces of information: the player number of the opponent and the title of the game.

After the challenge has been accepted (/ACCEPT), both players

will receive confirmation messages. Once you receive this message, a "direct connection" is established between both players through CompuServe. At this point the game should be run.

When the game is loaded, each player will need to configure their game communications parameters. The game must be configured as a direct connection since both computers are already connected with one another. The game's baud rate and communications port settings should be set to the same as those used to access CompuServe.

The Internet can also be used to arrange modem-to-modem games. The Internet Modem Players Listing (<http://www.xmission.com/~morrison/IMPL/home.html>) is a mainly American resource but there are about 20 UK players listed. The drawbacks to using the Internet are the need to swap telephone numbers and the difficulty of splitting the cost..

game playing practical.

The games that do exist on the internet at the moment are limited by the constraints of the system: there is no animation or sound and long delays are experienced while pages load. Many games that are entertaining on a high-speed line are just not worth it with a more common 28.8 modem.

The best games on the internet side-step these disadvantages and make the best of the good points; its interactivity and sense of community. MUDs (Multi User Dungeons) are perhaps the best example of this because they come from text-based role-playing game tradition. MUDs are computer programs which users can log onto and explore. Each user takes control of a computerised character which can walk around, chat with other

Sprawl, for instance, found at <http://sensemedia.net/sprawl>.

MUDs came from the world of academia but the new generation of internet MUD games are being produced by corporate developers. Foremost among these is Delphi, part of Rupert Murdoch's media empire. Delphi's Camden Lock web-site contains four games: Phlong, a multi-player logic game; Ferret Frenzy, a racing game; Mornington Crescent (the nonsensical game derived from Radio 4 programme I'm Sorry I Haven't a Clue) and Netropolis, a corporate strategy game.

Netropolis is the newest and most advanced game. It is multi-player and has Sim-City style graphics. It's like corporate monopoly, with players as competing business tycoons. What really makes the game is the way competitors can affect

Games on the internet

- **Zarf's list of interactive games on the web** A best games list. <http://www.cs.cmu.edu/afs/andrew/org/kgb/www/zarf/games.html>
- **Netropolis** Probably the most advanced game on the web, needs a lot of bandwidth. <http://www.delphi.co.uk/netropolis/>
- **Lemonade** A simple, interactive, puzzle game but quite addictive. <http://www.fn.net/~jmayans/lemonade/>
- **Virtual Vegas** As the name suggests a virtual casino complete with show girls, slot machines and a hot java version of poker. <http://www.virtualvegas.com/playground.html>
- **Caissa's Web Chess** Allows you to play chess against anyone else who is currently connected. <http://caissa.com>
- **ChessWeb** An open chess game; anyone can make a move. <http://studwww.rug.ac.be/cgi-bin/cgiwrap?user=mjdbruyn&script=chess.cgi>
- **Sprawl** A good web introduction to MUDs. <http://sensemedia.net/sprawl>
- **Ferret Frenzy** Delphi's rodent racing game. <http://www.delphi.co.uk/delphi/interactive/ferrets/intro.html>
- **Phlong** Multi-player logic game from the Delphi stable. http://www.delphi.co.uk/delphi/interactive/phlong/Phlong_title.html
- **Mornington Crescent** More a surreal joke than a game — but interesting. <http://www.delphi.co.uk/cgi-bin/delphi/interactive/mcg/mcgames.pl>



Now, where has that giant got to?

characters, explore creature-infested areas, solve puzzles, and even create its own rooms, descriptions and items.

The best place to start is the Cardiff MUD page (<http://arachnid.cm.cf.ac.uk/User/Andrew.Wilson/MUDlist/>) which lists MUDs and related resources.

Beginners should try one of the Web MUDs such as The

each other. You lose if you go bankrupt, get caught playing too many dirty tricks on your opponents or don't participate for 96 hours (four years in Netropolis time).

The game has been a huge success, which inevitably means that the server has been overloaded. Gameplay over a 14.4Kb/sec modem can be tortuous but Delphi is looking

into making it more efficient by giving it its own graphical front end so that graphics do not need to be downloaded.

All Delphi's games are free. Chris Thomajan, Delphi Europe's Vice President, says that Delphi is currently looking at revenue models — which, roughly translated, means it hasn't quite worked out how to make money out of its games. Thomajan

believes Delphi's games work on the net because they have a "wicked spin" in keeping with the net's spirit. He hopes this spin is part of all Delphi's web projects as he feels most web sites are "way too bland".

Delphi's efforts are about as good as web gaming gets but as browsers advance so will the games. Already some games utilise Hot Java's capabilities, and more will do so as it becomes increasingly widespread. But as ever, software and hardware are closely connected. In the US everyone is waiting for the next generation of internet access hardware — the high-speed consumer cable modem. In the same way that each new Intel chip sparks a wave of software innovation, progress in modem technology will be followed by advances in browser software and online services.

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CUTTING EDGE

net answers



Nigel Whitfield guides you through the internet.

Q. I am a freeware/shareware programmer, and I have been on the internet for about a month and a half. As a relative newbie, I would like to know the best way to distribute my programs over the net, and then tell people where it is. Are ftp sites free? Is there any way to get a www site for free?

A. There are many different ways of distributing your software. The best way is to make them available by ftp, so that other people can download them whenever they want.

There are many ftp sites that hold large quantities of shareware and freeware, and they often have an "incoming" directory into which you can upload your files. Check to see if there's a file on the site that tells you how to submit uploads, as you'll often have to send email to a particular address when you've uploaded your file with a brief description. For instance, if you upload software to Demon Internet's ftp server, you should send a description to uploads@demon.net.

The best site to upload your software to will depend on what sort of program it is — remember to check and see whether or not shareware is welcome before uploading. You should also find out what right you're assumed to have been granted by uploading your software, because some sites publish CD-ROMs containing all the files on their server.

An alternative to uploading

files to a selection of different sites is to pay for your own ftp site, a service offered by some providers — though not many.

When you've uploaded files, a brief informational posting in relevant newsgroups is one of the best ways to bring attention to your programs, but remember not to make it into a blatant advert, or to post inappropriately. If you want to provide more information, it's a good idea to direct people to a web site, which can include links to the ftp server, so the file can be downloaded automatically.

Although there are some places (and it's a decreasing number) where you can have a home page without having to

pay anything, you usually won't be able to use it for anything commercial. But remember there are a lot of people who will host your web page for only a few pounds a month, and if a well-designed page makes it easier for people to register shareware, it could pay for itself.

Q. I've been offered a connection to the internet via a piece of software that uses something called UUCP. What is that, and what sort of connection will I get?

A. UUCP stands for Unix to Unix Copy Protocol, and as the name suggests, it was originally a method of transferring information between two computers

running the Unix operating system, though versions of UUCP are available for several different types of computer.

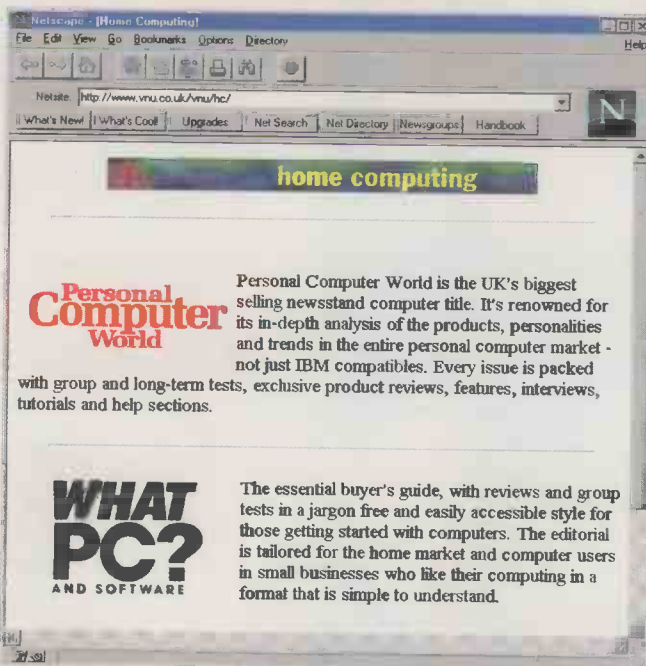
A connection to the internet via UUCP isn't as flexible as a direct connection. The internet itself uses TCP/IP, interactive connections which are used for things like accessing the world wide web, or contacting other computers by remote control.

UUCP is a batch system, which means that you have to create a list of requests which are then processed by the UUCP program. For instance, one request might be "copy this file to that computer," while another could be "copy this file to the other computer, and deliver it to X by email."

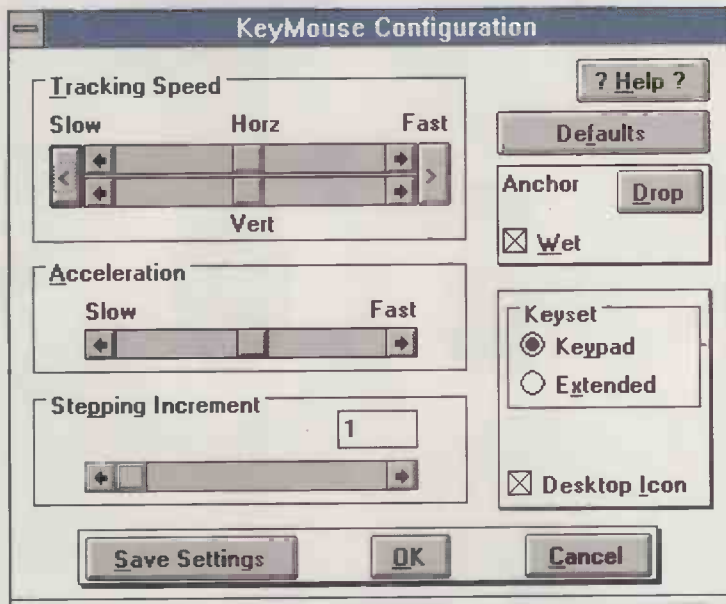
When your computer's UUCP program calls another, it sends all the files that you have waiting and then becomes the "slave", ready to receive any files waiting for you on the other computer.

In effect, the only thing that UUCP can do is copy a file from one place to another, and then run a program to do something to it. In practical terms, this means it's best suited to electronic mail, and other services that it controls. One example of a simple email service using UUCP is the IBM PC User Group's WinNet software. By sending email commands to special "ftp-mail" servers, it's possible to request any file that you could access via ftp on the internet.

But while you may be able to use UUCP to fetch files, or transfer mail and usenet news, you won't be able to use it for things like web access, IRC or telnet. In short, it's not designed for providing full internet access, and if anyone tells you otherwise, they're being economical with the truth.



PCW's site on the world wide web. It's surprisingly cheap to get your own site



If you don't have enough serial ports for a modem and a mouse, KeyMouse could be the solution

Q. I use OS/2's WebExplorer to surf but it doesn't have hierarchical hot lists like NetScape. Is there a way I can do something similar?

A. Yes. In fact, you can arrange a type of hot list in almost any way you like using OS/2 Warp and versions of WebExplorer from 1.02 upwards.

Create folders on your desktop for storing your hotlist: for example, a "Warp links" folder or a "Fun stuff" folder. You can have folders nested, just like normal. To save the reference to a page, click on it with the right mouse button, anywhere that's not an image or a link, and drag the page into one of your URL folders. It will appear as a special URL icon, with a name matching the title of the current web page.

To view one of the saved URLs, drag it back into the WebExplorer window, or drop it on to the icon. Double clicking on a URL icon allows you to edit it. If you don't have the latest version of WebExplorer, you can download it from the internet, from the pub/WebExplorer directory on ftp.ibm.net.

Q. I want to create a newsgroup. How do I do it?

A. The smart answer is that if you have to ask, you don't need one. While there might have been a bit of truth in that adage in the past, it's not so much the case now — though in many cases there might already be a newsgroup covering the subject that you want to talk about.

First of all you need to ask yourself what sort of newsgroup you want. If it's a local newsgroup, you should ask the people who run your news server to create it. Within the

UK, proposals for new groups are discussed in the group uk.net.news.config, and calls for discussion are posted to uk.net.news.announce. If there's no opposition, there probably won't need to be a vote before your group can be created.

Groups in the "alt" hierarchy have to be discussed in the alt.config newsgroup, while those in the "biz" hierarchy (for commercial postings) are discussed in biz.config. The main set of newsgroups (those with names beginning comp, humanities, misc, news, rec, sci, soc, and talk) have a set procedure that involves posting calls for discussion and voting. Discussion takes place in newsgroups and to have a new group created, you'll need to win a two thirds majority in a vote, and have 100 more "yes" than "no" votes.

In fact, it's possible to create a group just by issuing the appropriate command, but most service providers won't honour the commands unless the group was proposed in the right place. It's important to follow the rules, and you should begin by reading the appropriate discussion group for a while before submitting your own proposal.

If you really want a newsgroup, there are two important things that you need to put in your proposal. The first is the name, and the second is the charter. The name should be easy for people to work out, and should fit in with other names. For instance, if you wanted to propose a group to discuss PCW, just picking the name "uk.pcw" is a bad choice: there's already a group called "uk.media.mags.net" to discuss internet magazines, so "uk.media.mags.pcw" would be a better choice. Remember, no part of

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Making the connection

Q. How can I connect my Macintosh to the internet? All the books and articles seem to be designed for people using PCs.

A. Connecting your Mac up to a service provider is actually very straightforward — much simpler than using a PC. If you have System 7.5, you'll already have the most important piece of software: MacTCP. People with older Macs can either upgrade to the latest version of the system software or buy a book called *The Internet Starter Kit for Macintosh* by Adam Engst, which includes MacTCP on the free disk — it's worth buying the book anyway as it's an invaluable companion for Mac users.

The other important piece of software that you'll need is called MacPPP, which provides the link between your Mac and the internet, via a modem. There are two parts: the first is a driver that you select in the MacTCP control panel, just like selecting Ethernet or LocalTalk in the Network options on your Mac, and the second is called ConfigPPP which is used to fill in all the details of your internet service provider. The screenshot (below) shows the settings used for a connection to The Direct Connection, but it's very similar for other providers.

As well as a selection of other useful software, MacPPP is included on the disk that comes with Adam Engst's book, and it can also be downloaded from other online services, including the Macintosh conference on Cix.

Q. My company is thinking about connecting to the internet, but not for a while yet. We want to make sure that no one else can use the name for their email address. Can we register the name now, without connecting up?

A. Yes, you can. In fact, if you have a very distinctive name, it might be a good idea to register. *Don't* follow the example of some big US food companies that have registered virtually every product that they make as a domain name, like "margarine.com".

Depending on whether or not you want an international domain like .com (though many people will assume that you're American) or a UK name, ending in .co.uk, you'll have to register in a different way.

The InterNIC is the organisation in the US that looks after the top level domains,

and due to changes in the way that it's funded, you now have to pay an annual fee for each domain name that you register; an additional expense that you should bear in mind.

In the UK you will usually have to pay a service provider to register the name and keep their name servers up to date with information about your network. If you already have a connection to the internet, or are thinking of getting one, you should ask your service provider to arrange for registration of your name. If you're not connected, you should contact EUnet GB instead, who are in charge of the main database of UK domain information. EUnet charges a fee of £200 to register a name for you.

You'll also have to think hard about what name you want to give your company when you do connect, as the rules in the UK are quite strict, and you might not be able to have the name that seems most obvious to you.

As a general rule of thumb, your name shouldn't be too generic, and it should be longer than three letters. You'll only be allowed a short name if your company is universally known, such as the BBC. And if the name of your company is Celebrity Widgets Limited, don't try to fit it all into your internet domain, or people will quickly become tired of typing it all in.

More details about the naming process can be found on the world wide web, at <http://www.britain.eu.net/naming-co/> or by contacting EUnet GB, Wilson House, John Wilson Business Park, Whitstable, CT5 3QY, Kent, telephone 01227 266466.

the name of your group can be more than 14 letters long, so while "pc-world" would be a valid part of a name, "personal-computer-world" isn't.

After the name, the charter is the most important thing that you need to consider. It should say what the group is for, what topics can be discussed (and sometimes what can't) and whether or not the group will be moderated. A moderated group is one where someone has to read all the messages and decide which will be sent out, and this can be a lot of work.

Before you post a proposal for a new newsgroup, remember to do your homework and check to see if there are already groups or mailing lists that cover the topic — you might save yourself a lot of effort, or find plenty of people who are willing to help support your proposal. And most importantly, don't forget the golden rule — *always* read the guidelines to find out how to create a group before proposing one.

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.

Config PPP

PPP DOWN

Open Soft Close

Stats... Hard Close

Port Name: Modem Port ▼

Idle Timeout (minutes): 5 ▼

Echo Interval (seconds): Off ▼

Terminal Window

Hangup on Close

Quiet Mode

PPP Server: Dircon ▼

Config... New... Delete...

v2.0.1

Connecting your Macintosh to the internet is easy with MacPPP, and it's free with the Internet Starter Kit for Macintosh



net.news

PJ Fisher rounds up the online occurrences.

CIX finally joins the net

One of the most popular conferencing systems for the PC community has announced a full internet service. CIX is familiar to many PC users who have been using its conferencing system since the early eighties.

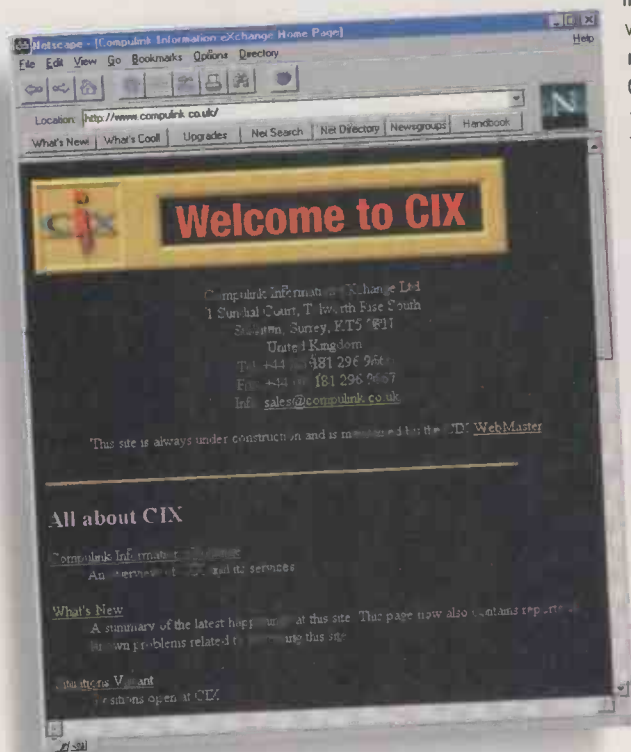
The introduction of the service was delayed by CIX due to scalability problems as it wanted to be sure that the system could withstand future growth and extra demand. CIX is now claiming performance levels three times those of rival services.

Matthew Sims, of CIX, said: "We have put a lot of money into the system at the start and are looking to the future so that we can expand easily. With 16,000 existing CIX subscribers, this was very

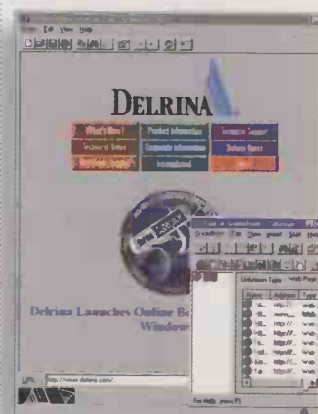
important." Sims claims that those users who have already sampled the service noticed significantly faster connections. CIX says that it caches a lot of popular web pages locally to help with access. The server network has been custom designed to allow further servers to be slotted in as and when required, without upsetting the network.

Pricing for the new service starts at £15 per month with a one time set up fee of £10. Existing CIX users will be able to mix and match subscription time between the CIX Conferencing system and CIX internet, giving access to all the usual internet services such as the world wide web and Usenet.

CIX uses 28.8 modems and expects to have local call access for 80 percent of the UK. Support lines are currently open from 9.00am to midnight and will be upgraded to a 24-hour service. CIX members can sign up to the new service on the web at <http://www.compulink.co.uk/cix/cixip.html> or by phoning 0181 296 9666.



Delrina pack



Delrina has announced what it claims is the first integrated comms package for Windows 95. It includes a fax package, voice messaging and internet access.

CommSuite 95 is aimed at the non-technical market, but also offers power features for more advanced users. Key aspects of the suite include CyberJack 7.0, an internet access, WinComm Pro 7.0, a general purpose comms software package and WinFax PRO 7.0 for sending faxes from the PC. A voice facility will be added in early 1996.

Delrina was recently acquired by Symantec, best known as suppliers of Norton Utilities and PC Anywhere.

SunSoft to offer Hot Java development tools

SunSoft, the software arm of Sun Microsystems, will offer a suite of development tools for Solaris or Windows platforms in early 1996. The kit will enable users to create web sites that take advantage of the Hot Java programming language. Hot Java promises to offer realtime video and interactive graphics on the web. Sunsoft claims this will be a complete web authoring and publishing environment.

Of real interest will be the WYSIWYG web editor. This will enable drag-and-drop editing of Web pages using Hot Java-based applets; mini programs that call up HotJava routines. The editor will be integrated with a dynamic browser for instant viewing of new page designs. And there will be a kit for distributing applets on the internet. The developers' kit is expected to be commercially available in 1996.

Novell's net vision

The immensely named Robert J Frankenberg, chairman and CEO of Novell, is determined that his company won't miss out on the networking revolution. Smart Global Network is a raft of ideas, alliances and new products which aims to enable any PC platform to work in a common networking environment, with NetWare forming a backbone.

An alliance with AT&T will bring AT&T NetWare Connect Services, designed as a public data network based on NetWare. It's claimed this will simplify connection to public networks and the internet within a secure environment.

Novell will also launch the NetWare world wide web server package in the first quarter of 1996. A new API, Net2000, will be released to develop the goal of internet access from any device, desktop or server platform.

Frankenberg believes that the Smart Global Network will be accessed not just from PCs but looks forward to a time when networks will be accessible from phones, cable TV, cars and even power lines.



Robert J Frankenberg

Schools Online

Perhaps stung by the Labour announcement at its annual conference, the DTI has launched its Schools Online project, aimed at encouraging schoolchildren to get net literate.

A joint venture between the DTI and 18 sponsoring companies, (including IBM, BT and Apple), the scheme is now piloting in 60 schools. A web server has been set up at the Anglia Polytechnic University.

Minister for Science and Technology, Ian Taylor, said that the scheme proved that the government was doing something about the internet. In response to the Labour announcement he said that "it was no good just putting a link into a school". He added that all schools already had a link to the Internet — "it's called the phone line".

A spokesperson for the project said that it had been designed to encourage participation and interaction rather than just passive web browsing.

Schools Online has been developed by the Ultralab at Anglia Polytechnic University. A dedicated server has been set up for the project which is connected to the SuperJanet backbone. The schools are mostly connected to the internet by 28.8 modems using local ISPs

such as Cityscape.

Schoolkids using the project are reported to be enthusiastic — some were designing pages of their own. The default web pages contain tips on html, advice on how to set up image maps, and CGI programming.

The Server site also contains a number of guidelines for the children about the dangers of replying to email from strangers, and the use of Netiquette.

To keep schoolkids away from internet porn and other undesirable newsgroups teachers are encouraged to use one of the number of barrier software packages such as SurfWatch now available. The Schools Online home page

can be accessed on http://sol.ultralab.anglia.ac.uk/pages/schools_online/.



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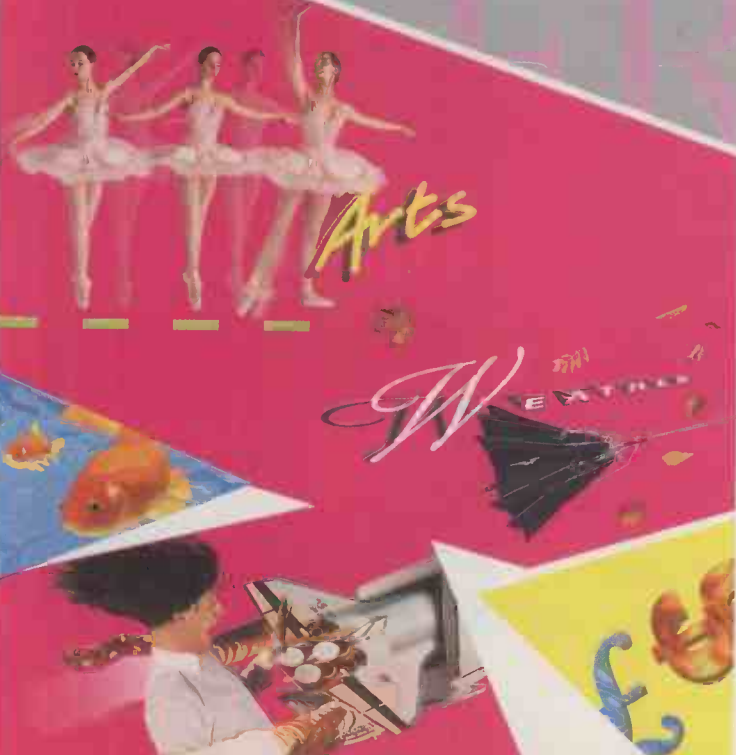
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CD-ROM uses www links

Two UK companies, Module Communications and Pow communications, have come up with an interactive CD-ROM with embedded links to the world wide web within the CD browser.

The hybrid CD-Net contains communications software that links to the internet when the CD is inserted into the PC. This then searches for updated information direct from a dedicated web server.

This presents a number of publishing opportunities. Potentially, it means CD-ROMs can potentially solve that eternal reference book problem — becoming out of date. Other potential users are retailers and shopping networks keen to offer a home shopping service based on the internet but worried about secure



transactions. Users could browse continually updated product lists and prices and buy products via a subscription number or store card.

As most of the graphics, sound and video files would be embedded on the master CD, the problems of slow downloads could be avoided. The web would simply be used to download up-to-date text information.

These two firms are not the first in the field however.

Another UK company, OmniMedia, recently demonstrated a CD-ROM music title that used similar web connections to download up-to-date tour information and trivia.

Shorts

Netscape takes on big boys

That's the view of industry watcher Forrester Research, which reckons that Netscape could outsmart Microsoft by turning the developer world upside down. The network will become the centre of the new world as programs will be "developed for, and delivered by, the internet". Forrester believes that a new trend towards corporate webs is developing (also known as the intranet) which could lead to "IT gurus reading the manual on html, instead of the one on Visual BASIC." The upshot of all this is that Netscape will be a threat to traditional corporate players such as Novell and Microsoft.

Bill's browser

Microsoft has released a Beta of Microsoft Explorer version 2.0, its proprietary web browser designed for Windows 95, based around Spyglass Mosaic. It ships with its own set of html extensions and can support realtime video and scrolling banners using AVI and background audio. However, none of these extensions will work with any other



kind of browser. Microsoft is on <http://www.microsoft.com>.

Server shenanigans

According to a Netcraft Web Server Survey, NCSA server software is the first choice of companies on the web. Of the 19,638 respondents to the survey, over 50 percent were using NCSA. Netscape and Apache however, were gaining sites with growth rates of over 20 percent per month each. Surprisingly Mac-based servers outnumbered NT servers. For more results go to <http://www.netcraft.co.uk/survey>.

Football shorts

Both the Electronic Telegraph and the Daily Mail have hitched onto the footy



<http://www.gold.net/flames/>

The Flaming Point

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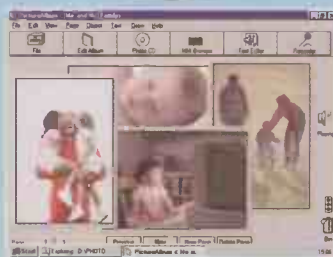
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bandwagon with the launch of new internet sites for soccer fans.



The Daily Mail's Soccernet aims to keep fans up to date with results, tables and match reports from the Premier League. Soccernet is <http://www.soccernet.com>.

● The Electronic Telegraph has hitched up with its printed sister to promote Fantasy League Online. The rules are the same as the traditional version, but players get to choose the teams' strip and use hotlinks to profiles of star players. The game runs until May 1996 and can be found on <http://www.telegraph.co.uk>. Still no sign of a Nick Hornby



home page however. (Thank God)

More coffee?

London can now boast a grand total of two internet cafés with the opening of the imaginatively named Café Internet. Aiming to be more than just a room full of PCs and very little refreshment, the Cafe offers a licensed bar, function rooms and hot and cold food. Equipped with a raft of ICL Indianas, Café Internet is at 22/24 Buckingham Palace Road.



Inside at the Cafe Internet

Libel agreement

The recent libel case involving Prodigy and a New York broker firm Stratton Oakmont Inc. has seen some progress. Stratton Oakmont sued for libel after seeing a derogatory comments posted by a Prodigy user on one of its bulletin boards. In May the judge ruled in Stratton's favour, ruling that Prodigy was a publisher and liable for comments on its bulletin boards. The ruling sent shockwaves down the online services industry.

Now an out-of-court agreement between the two litigants could lead to a reversal of the judge's original ruling. "The two sides are in agreement, this paves the way for the judge to reverse his judgment and then dismiss the case", said a Prodigy spokesperson.



net.surf

With all the publicity surrounding Sony's Playstation and the Sega Saturn, it's easy to forget that Atari has had a pretty good platform for some time in the shape of the Jaguar. Now it has launched an attractive web site called Jagwire for Jaguar fans. Get your claws into <http://www.atari.com>.



● Lottery fever has certainly gripped the nation, so no doubt the new InterLotto site will grab a few visits from wired gamblers. Based in Liechtenstein, Interlotto runs its lottery every week on the web with a guaranteed Jackpot of \$1 million. The downside? You need a credit card to enter (over the net) but at least you'll avoid the queue in the newsagents. Best of all there is absolutely no chance of seeing Anthea Turner. Roll your numbers at <http://www.interlotto.li>

● On the other hand if you are a fan of the "lovely" Anthea, you may care to check out her unofficial home page on <http://www.dur.ac.uk/~dcl0dr/anthea.html>. Like her brain, it is still under construction.

● Techies should check out Intel's excellent site which covers everything you could possibly want to know about Intel and Pentium processor technology. A wealth of information includes two online magazines for home computer users and advanced users. Be sure to try out the Pen-



tium Pro online 3d renderer, too, on <http://lanark.jf.intel.com/>.

Intel's home page is on <http://www.intel.com>.



● An excellent resource for PC, Mac and Amiga shareware has opened at the Virtual Software Library. This intelligently designed and researched site contains its own search engines and reviews of popular software. VSL is on <http://vsl.cnet.com/>.



● According to the Clothes Show, skate shoes are the coolest things to wear on your feet these days. Something that skateboarders and surfers (the real kind) have known for a long time of course but everybody can now see the entire range of Vans shoes on their new web



site located at <http://www.directnet.com/Crash/Vans/>. You'll find an online catalogue of the entire range of Vans, a history of the company, as well as skate and snowboarding video clips. It's just a shame that most of the shoes aren't available in the UK.

Special Compo

If the expression "surfing the net" makes you writhe with embarrassment, we want to hear from you. The proposers of the best alternatives to this awful phrase will be rewarded with a small prize. Email or post your entries to us here at PCW.



net.newbies

Getting started on the net

These pages are designed to be an easy-to-use reference guide to the internet for the novice — or “newbie”, as hardened netters will call you. Here’s an easy-reference guide to the tools which will help you make the most of the internet.

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 this appears to be doubling each year.

What is the world wide web?

It is not the internet. It is a service on the internet which uses special software (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.

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 computer to dial in to another computer with a modem and communicate with it. They come in different speeds, from 2400 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 2400 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 get back 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 num-

bers is available below. For more details, have a look at the supplement, banded with this issue of PCW.

Typically, a subscription that only provides electronic mail costs around £5 a month and Delphi offers this. But 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.

Online services: what do they offer?

Major online services like CompuServe or Delphi 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 £6 and £10 per month, plus a charge per hour if you are online for more than a set number of hours in that month. CompuServe is more expensive than the other internet providers, but you get what you pay for — it’s pretty foolproof. Demon Internet is the best

known and most popular of the standard internet operators but doesn’t cater too well for absolute beginners. Perhaps better for the raw newbie is Easynet (although it only has Pops in London and Edinburgh) or UK Online. UK Online 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.

Although programs like Windows Terminal can be used to access these services, it is normally easier to use specially-written online software. Any service provider should provide you with at least some of this software when you sign up, and if you want to choose something different, most of it can be acquired online, free of charge.

PCW Contacts

CompuServe 0800 289378
email: 70006.101@csi.
compuServe.com
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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.cmail.compuServe.com**, or “snailmail” (internet-speak for the post) to the address on page 12.



CUTTING EDGE

DIY Web pages

If you've surfed the Web, chances are you've seen at least a few pages that made you think: "I could do better than that." Nigel Whitfield takes the pain out of HyperTextMarkup Language.

For many people, the thought of anything to do with the internet seems technical and frightening — altogether much more like computer programming than it should be — but that needn't be the case with Web pages.

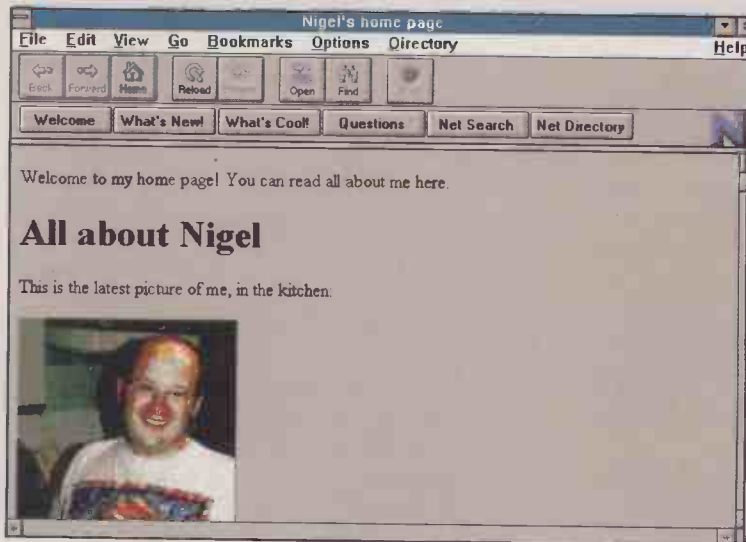
Over the next three months, we'll be looking at all the important aspects of writing your own Web pages, and by the time you've read this month's article, you'll be able to create simple pages.

Learning the lingo

Pages on the Web are written in a language called HTML — the HyperText Markup Language. Don't worry if the thought of a language sounds intimidating; HTML isn't really a programming language. If you've ever used the "tags" facility in a DTP program like Quark or Ventura, you'll be able to understand HTML easily.

An HTML document just consists of the text with tags that tell a browser how the text should appear on the screen, or to do specific things, like draw a horizontal line. To make a Web page, all you need to do is write the words and then add tags to say how you want them to appear — just like writing a page in your word processor and then selecting which lines are headings, or which words appear in bold.

There are now programs that make writing Web pages that simple, including add-



This is a simple home page, using only a few basic commands — you don't need to be an HTML wizard to get good results

ons for WordPerfect and Microsoft Word, so all you'll have to do is point and click. So why spend three months learning how it works? There are a couple of reasons. First, not all the tools designed to help you write Web pages can do all the things that you might want to and second, you'll be able to write much better web pages if you understand what's really happening.

When you design your web pages, remember that you don't have complete control over how things will look. Unlike PostScript, HTML isn't a "page description

language" — it's a "markup" language. What this means is that, while a PostScript document might contain commands to print text in 24-point Times bold, you can't do that in HTML. Instead you can say: "this is a heading." If the person reading it has told their web browser to display headings in 24-point Times bold, that's what they'll see, but they could just as easily set it to anything else that they like. So, no matter how much effort you put into your pages, they could look very different when someone else looks at them later.



made easy



Playing tag

Let's have a look at a really simple web page, like the one shown in the screenshot. It's got all the important things that you might want to put on your own page, like a picture and text with different headings.

You can write a web page using almost any program that lets you save text files. In the second screen, we've used Notepad, which comes with Windows 3.1, and the text file is the HTML that produced the first screen. If you're using a Macintosh, you can use SimpleText instead.

There are two basic things to remember when you write an HTML document. The first is that almost all the tags come in pairs. For instance, if you want to give your page a title, you would write:

```
<title>Nigel's home page</title>
```

The second tag tells your web browser that it's reached the end of the title section; you can write the names of the tags in capitals, lower case or a mixture — it doesn't matter which. If you forget the end tag, then everything else in your document will be taken to be the title — if the results of your web page don't look right, check to make sure that you've remembered the end parts of your tags.

The second point to remember is that when a web browser reads your document, it automatically fits all the words to the width of the window, so if you want a new line in a particular place, you'll have to say so. There are special markers for things like new line and new paragraph, which don't have to appear in pairs; the new paragraph marker is <P>, which you can see in the screenshot at the end of each section of text.

A title and paragraphs aren't the only

things that you might want on your page; it would look pretty boring if that's all you included. The first way of breaking up your page is by putting in headings to divide all the sections. For instance, the line

```
<h1>All about Nigel</h1>
```

will create a heading in large bold type. The number after the "h" says how important the heading is; <h1> is the most important, and <h6> the least, so by choosing the appropriate level you can make it easy for people to find their way through your document.

Picture this

You can now put in text, with a title and headings. What about a picture? That's simple. Most web browsers let you include images on the page, as long as they're saved in GIF format. The line in the sample page that displays a picture of me is this:

```

```

The "img" stands for image, and the next command, "src" says where the image is. If it's in a different directory, you can give the name inside the quotes as well, like

"images/nigel.gif" — make sure that the slashes point forwards, rather than backwards (like DOS or Windows).

The last part of the command isn't necessary, but it's good practice to put it in. "alt" stands for alternative, and the text inside the quotes will be displayed if your page is read by a web browser that doesn't display pictures. Many people turn off pictures to save time when they're web surfing, and they'll also see the text. If you don't use "alt" people will either see a bare icon or the word "IMAGE" which won't give them much idea of what's happening.

The final parts of our first page aren't needed by some older web browsers, but you should always put them in, as newer browsers may be fussier, and some won't even display your page without them.

<p><i>You can use a simple editor like Notepad to write your web pages. This is the HTML that produced the first screen</i></p>	<pre> Notepad - NIGEL.HTM File Edit Search Help <html> <head> <title>Nigel's home page</title> </head> <body> Welcome to my hone page! You can read all about me here. <P> <h1>All about Nigel</h1> This is the latest picture of me, in the kitchen: <p> <p> One day we'll finish building the kitchen, honest! <p> </body> </html> </pre>
---	--

To ensure that new browsers know your document is a web page, your file must start with the <html> tag, and end with </html>. All the tags for your page must be between these two, and are divided into two sections — the “head” and the “body”. The head is used to give information including the name of the page, and the body is the page itself. The simplest page you could write might look something like the box on the right.

Since web browsers format your page automatically, you don't need to have spaces between tags — you could put the whole page on one long line — but it's good practice to leave plenty of blank lines so that you can read the file easily.

Anchor away

Creating a web page with headings and pictures is all very well, but the most important feature of a page is links. Fortunately, you can easily insert a link by using “anchors.”

An anchor is a special type of tag that can do one of two things — it can tell the

Small but perfectly formed <html>

```
<head>
<title>This is a test page</title>
</head>
<body>

This is the text to appear on the
page

</body>
</html>
```

browser where to go when it's clicked on, or it can be a marker that people can jump to from somewhere else.

The second type might not sound very useful, but if you have a long page it can be very handy — you could, for instance, put a miniature table of contents at the beginning so that people can go straight to a particular place in the document.

Each anchor that you create in this way has a name:

```
<a name="info">
Here's an anchor</a>
```

This anchor is called “info” and when someone jumps to it, the text between the tags will be at the top of their browser window — but it won't be highlighted. Named anchors like this are invisible if you just read through the text.

The other type of anchor is a hypertext reference — it tells the web browser where to go when you click on it, and looks like this:

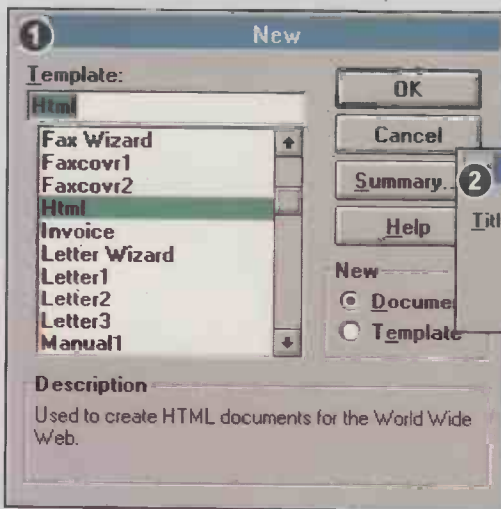
```
<a href="http://www.demon.co.uk/">
Click here</a>
```

The text in quotes is the URL (Uniform Resource Locator), and can point anywhere on the internet.

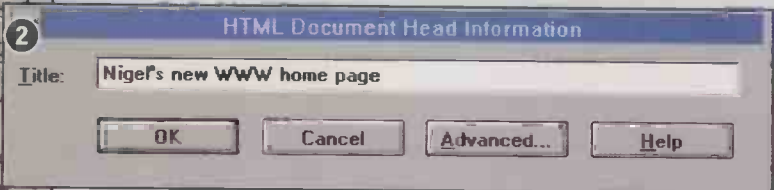
The actual link on the page for people to click on will be the text between the start and the end of the anchor tag — in this case the phrase “Click here”. If you just put the name of a file in the quotes, like “nigel2.htm” then the browser will read that file, which could be a movie clip, a sound or just another page.

You can put a reference anywhere in

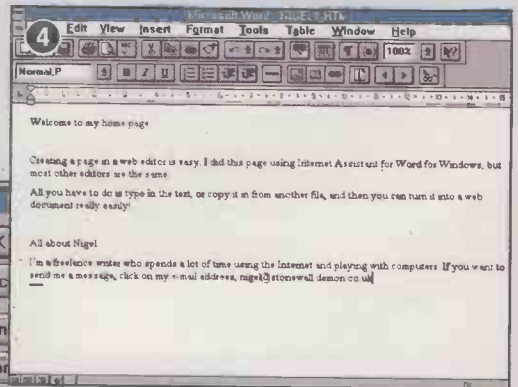
Creating a page with images and links



1 To start creating your document with Word, select File..New and then Html from the list of document types. If you don't have Internet Assistant for Word, then you can grab it from ftp.microsoft.com. Remember that you'll need Word 6.0a or later

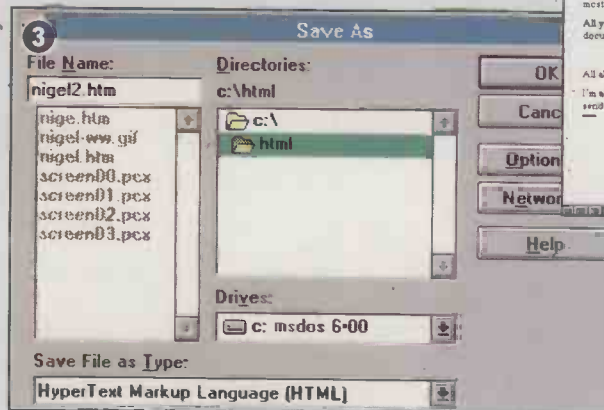


2 To give your document a title, select HTML Document Info from the File menu and type it in. Most browsers will display the title, though it's not seen in Word for Windows



4 This is the basic text of the document. You can type it in or just copy it from another document. If you want to add headings, just highlight the text and then select the heading you want from the drop-down style menu.

When you save the document, make sure you save it in HTML format — Word won't remember for you.



Basic HTML tags

Here's a quick summary of the tags mentioned in this month's article, plus a couple of others that you might find useful:

Compulsory tags:

<html> ... </html>

<head> ... </head>

<body> ... </body>

<title> ... </title>

Put these around the whole of your document

These denote the heading of your document, which should include the title tags

Put these tags around the main text of your page

The text between the tags will be the title for your page

Other tags:

 ...

 ...

 ...

 ...

Create a named anchor called "NAME"

Create a link to the named anchor "NAME"

Create a link to "filename" in the directory "path"

Create a link to a specified URL

Insert the picture "picname", or display the text "Words" instead

<h1> ... </h1>

<h6> ... </h6>

Put these tags around the text for a top level heading

Put these around the lowest level heading. You can use levels 2 to 5 as well.

 ...

<i> ... </i>

Text between these tags will appear in bold type

These tags make text italic

<p>

<hr>

End all your paragraphs with this tag

Force the browser to move to a new line

Draw a horizontal line across the page

your web page, and whatever's between the start and the end of the tags will become a clickable link. For instance, you can make a picture into a clickable button like this:

```
<a href="#info">
```

```

```

```
</a>
```

Headings, lists and anything else on the page can be made into links; the only thing that you must remember is that tags can't overlap each other — you can write:

```
<a href="#info"><h1>
```

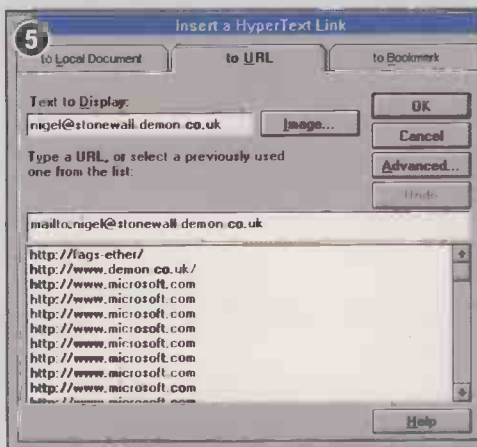
```
Click on this heading </h1></a>
```

but you can't write:

```
<a href="#info"><h1>
```

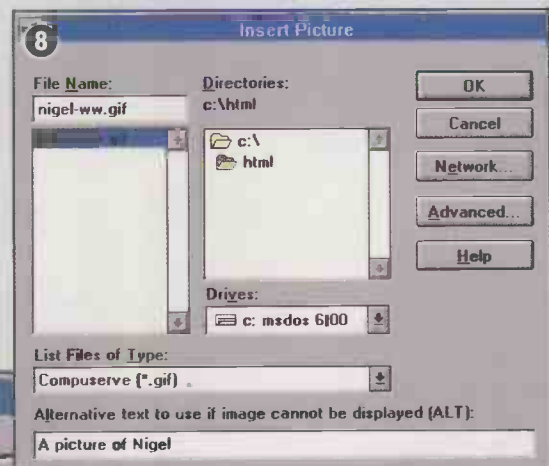
```
Click on this heading</a></h1>
```

The links in those last examples aren't quite the same as the first one — which calls up Demon Internet's home page. They're links to a named anchor called "info", just like the example earlier. You can even go to a specific place in another web page, if you know what it's called — in our example pages, a reference like

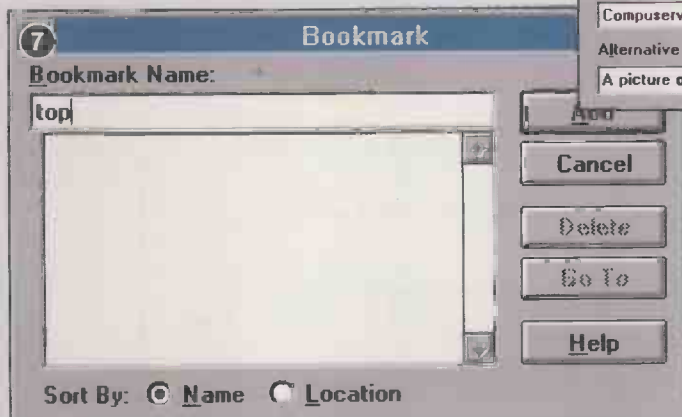


◀ To insert a link, click on the "chain" button. If you want a link to a URL, all you have to do is fill in the details in the space provided. A list of other links you've used appears at the bottom of the window so that you can select them easily

▼ To insert a picture, click on the icon in the button bar. You can specify the "alt" text in this dialogue box, for people who aren't looking at the pictures



◀ If you want to insert a named anchor, click on the bookmark button and then type the name into the space and click the "Add" button



Handy Hints

Turning your words into HTML is the easy part of creating Web pages. Follow these hints to help save time designing your pages and make sure that they're easy for people to read.

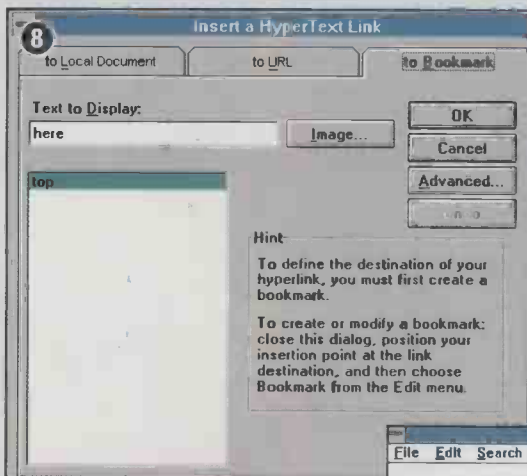
- Work out what you want to do first. If you're going to have more than one page with links between them, draw a diagram so you can see which ones should be linked, otherwise you'll end up with a confusing maze of pages.
- Make your first page short and simple. People don't want to have to wait ages to download a large home page. Have a quick summary and some links to other information on more pages.
- Don't overdo the graphics. Pictures are very nice, but they take time and money to download. If you must have lots of them, make them small and make sure you use "alt" text for people who don't download the pictures.
- Don't use too many headings. If you have lots, it'll be hard for people to read the text.
- Try to avoid using special features that rely on people using a particular Web browser. They may not work at all if people use a different program to read your pages.
- If you have a long document, break it up into sections and make a miniature index so that people can jump to anchors at useful points.
- When you give the names of files in links or "img" tags, don't give the full path; just say where they are relative to the file that you're reading, so they'll still work if everything is moved to another drive or directory.
- Always remember to use Unix-style forward slashes "/" in file paths, rather than DOS-style backslashes.
- If you're using Netscape to view pages, you can drag your HTML file into the Netscape window to view it.
- Save HTML files with the ".htm" extension on a Windows system, or with a name that ends in ".html" on a Macintosh — some Web browsers and servers prefer files to have names that end that way.

"nigel.htm#info" would go to the anchor called info on the page stored in the file nigel.htm.

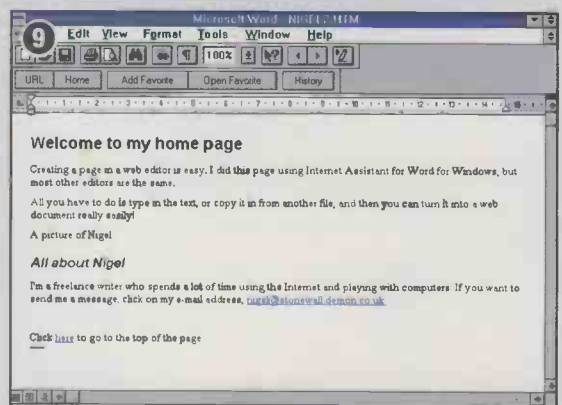
Browsing

If all this sounds like hard work, don't worry. Once you've done a few pages you'll soon get used to it. And you can always do it the quick way, using an HTML editor. The walkthrough, starting on pages 248/249 shows how to create a page with images and links using the Internet Assistant for Microsoft Word for Windows 6.0a; there are similar add-ons available for WordPerfect, and most shareware web editors work in the same sort of way.

In next month's feature, we'll look at some of the more advanced things that you might want to include on your page. For now, you should know enough to create a basic page; don't forget to check out the handy hints box for a guide to creating pages that are easy to use and look at.



This is the finished result (with images turned off) using Word for Windows as the viewer. If you've made a mistake, you can click on a button to edit the page straight away



▲ When you want to jump to a bookmark, click to insert a link in the usual way and then select Bookmarks — you can pick the one you want from a list of all the ones in the current document

```
File Edit Search Help
<BODY>
<H1><A NAME="top">Welcome to my home page</A></H1>
<P>
Creating a page in a web editor is easy. I did this page using
Internet Assistant for Word for Windows, but most other editors
are the same.
<P>
All you have to do is type in the text, or copy it in from another
file, and then you can turn it into a web document really easily!
<P>
<IMG SRC="..html/nigel-ww.gif" ALT="A picture of Nigel" >
<H2>All about Nigel</H2>
<P>
I'm a freelance writer who spends a lot of time using the Internet
and playing with computers. If you want to send me a message,
click on my e-mail address, <A HREF="mailto:nigel@stonewall.demon.co.uk"
>nigel@stonewall.demon.co.uk
</A>
<P>
Click <A HREF="#top" >here</A> to go to the top of the page
</BODY>
```

◀ This is the HTML that was generated automatically by Word. It's not complicated, but you can save a lot of time by using an HTML editor like Word or HoTMetaL

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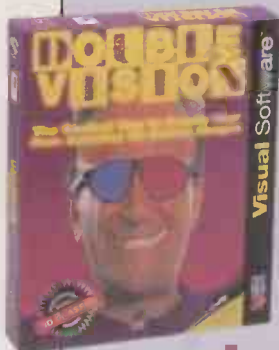


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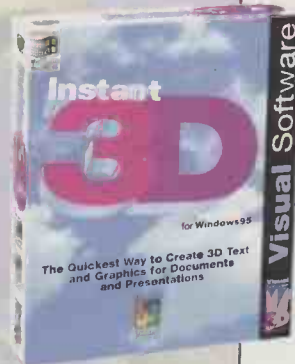
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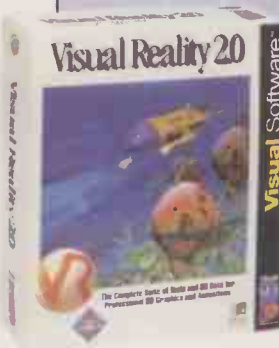
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Innovations

Less haste, more speed

Tim Frost sees trouble ahead for the burgeoning CD recorder market as conflicting standards and copy protection systems begin to make life difficult for end users.

After a spectacularly slow start, recordable CD seems at last to be gaining momentum. Hewlett-Packard's announcement of its L850 CD writer package has already spurred other companies like Yamaha and JVC to reconsider their pricing, with everyone aiming at the sub-£1,000 point for their entry-level 2x speed recorders.

The domestic market is now getting its first real hi-fi versions. The Kenwood machine is now available in Germany — albeit at twice the CD-ROM pricing level — and a new Pioneer recorder is hitting most of the European markets.

These two machines demonstrate the effectiveness of the SCMS (Serial Copy Management System) copy protection system in appeasing the record industry. It has traditionally been very hostile to CD-R on the basis that with perfect copies, CD-R technology creates a pirate's charter.

SCMS started life in the DAT world. The digital data stream used to record the sound digitally from one machine to another includes SCMS data bits. A recorder fitted with SCMS circuitry will record the tracks once, but writes a flag

onto the tape so that further digital copies can't be made from it. This is a long-winded way of trying to stop successive copying from one taped copy to another — it won't, of course, stop anyone making lots of copies from the original CD.

The CD-R SCMS system goes one step further than this. The discs themselves have SCMS data recorded onto them. To ensure that all domestic CD-R recorders use domestic CD-R media, their SCMS circuit searches for the blank CD-Rs SCMS flag and if it doesn't see it, then it will refuse to go into record mode.

Exactly how this is intended to stop copies is an interesting question. Technically, domestic discs are the same as other CD-Rs, so the only way it can be a deterrent is if the domestic units are more expensive than those used for CD-ROM drives. But if the domestic audio versions are, say, twice the price of a CD-ROM version, anyone interested in CD-R will simply move to a PC-based type.

The second plank of the protection offered to the record industry is the Recorder Identification system (RID). The domestic recorder has its own

unique ID number which burns onto every disc on which it records so that disc can be tracked back to a particular recorder. But no CD pirate is likely to use hi-fi CD-R recorders to bootleg CDs when PC versions are so much cheaper. And, the record companies are unlikely to start prosecuting people for one-off copies, so it is difficult to see how RID is going to help. Except, that is, from making the record executives (whose grasp of anything remotely technical is tenuous at best) feel comfortable that CD-R is no longer in danger of wiping out their industry.

The fact remains that all is not well in the world of CD-Rs, and this is nothing to do with SCMS. Those early adopters, who have been working with CD-R for some time, have found that certain combinations of recorders and discs work but others are a disaster.

This difficult situation has been further aggravated by the introduction of 2x, 4x and 6x speed recorders. Combinations of disc, recorder and recording speed can produce wildly varying reliability rates. This has been discovered by CD audio and CD-ROM pressing plants

who receive CD-R masters, and check for error rates. Some perfectly respectable discs recorded on respectable CD-writers, from companies who know what they are doing, have thrown up error rates up to ten times higher than the worst level acceptable for replication.

One initial problem has been that many of the first generation discs and recorders were produced before the Orange Book standard was finally completed, so they don't necessarily meet the latest specs.

The second, more important problem, is that when a CD-R blank is manufactured, it is designed with one particular recording speed in mind and will sometimes be more rigorously tested on one type of CD writer than another.

If you are using the right machine at the right speed there should be few problems; but change machine, or speed, and it might become impossible to produce a perfect disc.

As a general rule, working at 2x speed is most likely to produce reliable results. Although logic might suggest otherwise, single speed recording is not as effective.

An international committee is currently looking into the problem, and they will be producing guidelines to enable both disc and machine manufacturers to work towards a compatible world. In the meantime, if you are getting into CD-R and having problems, you may well cure them by using different media or simply changing the writing speed. ■

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Horizons

La crème de la RAM

Do the RAM manufacturers really innovate, or do they follow each other like sheep? Simon Rockman looks at the new devices appearing on the desktop.

In the old days it was all so straightforward. You bought little chips which looked like robot spiders and plugged them into the sockets on the motherboard. All RAM was dynamic (DRAM), so all it needed was a little nudge of electricity to keep the transistors charged and store the data. A more expensive version, static RAM (or SRAM) used capacitors as well as transistors, and only needed to use power when it was accessed. Ideal for low-voltage applications, SRAM is both expensive to make and physically bulky, so it is not well suited to notebooks — which gobble megabytes.

When the processor accesses the DRAM, it needs to wait for the regular nudge, send a charge down the row and column wires and wait for everything to stabilise before reading back the value. It may be a wait of only a few nanoseconds, but when you need to do this for every single access, it slows down the whole system. SRAM, however, doesn't suffer such delays, making it roughly ten times the speed of DRAM.

The best type of RAM depends on the application. For example, programs tend to run around in circles, looping and

branching back to the same place, while video datum is stored in long continuous areas of memory. So a program needs lots of cache. This is the idea behind CD-RAM. Each chip has its own area of very fast memory — when the processor wants the next instruction it's ready and waiting.

Meanwhile, different video data is used for each frame and held in long strings, quickly outstripping the cache. This keeps the row voltage high and works along the columns. The result is half the access time and half the time waiting for lines to stabilise. The system is known as FPM, or fast page mode. Unfortunately the row voltage isn't held high for long enough, so special circuitry has to be added to the chip to allow more time to retrieve the data.

This is the technology behind EDO-RAM, or extended data out RAM. Waiting for memory slows down faster machines (over 33MHz) but EDO-RAM is good for those over 50MHz. With extra circuitry which fetches in advance of a data request, it is good for 66MHz. This may not be important now, but as the Pentium Pro (P6) starts to ship in faster versions (maybe up to 266MHz), and needs three

instructions per clock it will be necessary to feed the processor cache at a higher speed.

A trick beloved of video card manufacturers is VRAM, or Video RAM, which is dual-ported. The CPU is not always the only processor which needs to talk to memory; very often the data is written to RAM by the CPU, but read by the video display processor. What with the refresh, the wait states and the processor all accessing the RAM, the video processor is lucky to get a decent look-in.

A "back-door" to the chip allows the video processor to retrieve data while the processor is writing to it. As this is added to the other tricks, you could end up with RAM with enough processing power it could do a lot of the work for the CPU, a highly parallel machine in fact.

Over the last six months, Supercomputer manufacturer Cray Computers has been working on just such a system with a limited RISC processor capable of three operations on each RAM chip. RISC is nothing new, indeed it is based on a theory dating back to the fifties.

The problem with RAM innovation is that it is expensive. It needs enough manufacturers to take the plunge and buy faster

RAM — bringing the price of the new technology down. This has happened to some extent with EDO-RAM, because manufacturers feel it is fast enough, but without the expense of SRAM.

What is needed is a major computer manufacturer to commit to making millions of machines with a new technology, and a number of RAM manufacturers to commit themselves to making huge volumes of the stuff.

RAMBUS, or RDRAM is a coalition including Nintendo, chip manufacturers NEC, Hitachi, Samsung and OKI. RDRAM is synchronised to the bus clock, and will provide data on both edges of the signal — providing the extremely high bandwidth necessary for video games. Nintendo's new Ultra 64 platform, designed by Silicon Graphics, will have the video power of an Indigo workstation but will cost \$250. The 500Mbit/sec bandwidth makes it an ideal choice for Pentium Pro and P7 machines.

The RAM world may sound full of promise but in practice the commodity nature of RAM makes innovation unlikely. It will still be more effective to have large amounts of cheap RAM than a little of the fast sort.

At the moment specialist RAM is only found in video cards. However, as PC architecture evolves we will see the advent of the unified memory machine. The video system will share RAM with the processor, so if you need 16.7 million colours at 1,600x1,280 double-buffered, the system will take a couple of megabytes. If you only need 800x600 in 256 colours it will only need 512k and the rest of the RAM is left free to be used by the system.

Ironically, this is the way most small micros worked in the 1980s and is much more efficient. Sometimes the old ideas are the best. ■

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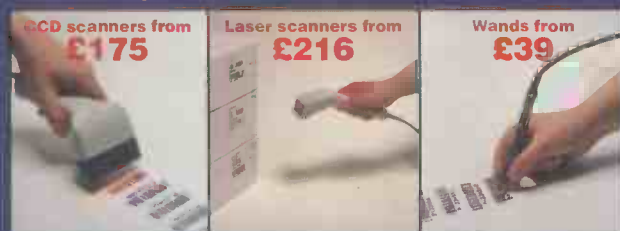


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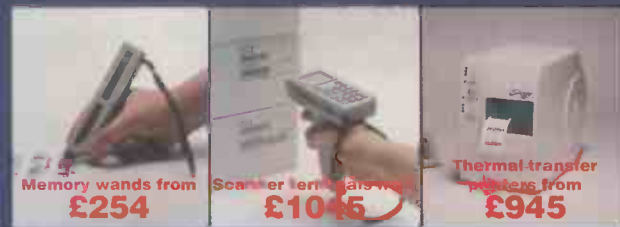
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Bluesky

Tolerance is a virtue

In the second part of his overview of fault tolerant software, Nick Beard looks at recovery blocks and N-version programming.

As we rely on software for increasingly sensitive areas of our lives, we have to be sure it will be reliable.

Software can never be 100 percent error-free: even the most diligently written packages are reckoned to contain a couple of errors per 20,000 lines of uncommented code. Although undesirable, it nevertheless represents the current limit on traditional fault avoidance techniques, and one must never forget that code remains — and will for the foreseeable future remain — a human resource. We have, of course, developed a number of fault-avoidance techniques to minimise the risks, including structured programming and reusable software modules.

But we need to look at new ways of creating fault tolerant software that will deliver expected, accurate results, even when it detects a failing in code. In other words; fault tolerant software. This may not be a problem when your word processor refuses to run its spellchecker, but when a nuclear power station goes down, as has happened in the past, it is slightly more worrying. This month we will take a closer look at the mechanisms through which software fault tolerance

can be implemented. This concerns software which assists in controlling hardware-implemented fault tolerance, such as hardware redundancy. The phrase also describes software where the overall system is able to continue to provide seamless delivery of services (as defined above) even where one piece of the overall software scheme proves faulty.

Studies of large computing systems such as big banking programs or airline systems show that "residual" software faults are a significant cause of system unavailability. Some of the components designed to manage hardware faults do a fine job of coping with occasional software failures. But they cannot always be relied upon to do so, and they tend to create additional systems complexity which is a source of error. So specific techniques to handle software faults were devised. Two of the main techniques are: recovery blocks and N-version programming.

The basic model for recovery block implementation is to produce a block of code which serves some specified functional purpose, and which shields the system environment from residual faults within the block. The blocks may be implemented

recursively, so each is embedded within "bigger" recovery blocks. Each retains a "recovery cache", or other information store, so that in the event of a failure key system variables or other factors can be restored to the values they held before the error state occurred.

The basic syntax for recovery blocks is:

```
ensure (acceptance test)
by (primary alternate)
else by (alternate 2)
.
.
else by (alternate n)
else error
```

If the acceptance test is passed, the recovery block is exited, and the "recovery cache" can be purged. If not, an exception is raised and the initial system state recovered. Recovery blocks can be nested, so an error may lead to a "higher level" block thus being in an error state. Hence, it will either try alternates of its own, or will return an error message and go back to the data in its recovery cache. Recovery block techniques are well suited to object-orientated programming techniques.

An alternative approach is N-version programming, which is defined by one of its primary developers, Algirdas Avizienis of

UCLA, as follows:

"N-version programming is the independent generation of $N \geq 2$ functionally equivalent programs from the same initial specification. The N-programs all possess the necessary attributes for concurrent execution, during which comparison vectors (c-vectors) are generated by the program at certain points. The program state variables that are to be included in the c-vectors are specified in the initial specification."

Avizienis wrote this definition in 1977, but the underlying notions can be traced back to Babbage. Writing about the work of calculators, or people who were employed to perform calculations, Babbage wrote in 1837: "When the formula to be computed is very complicated, it may be algebraically arranged for computation in two or more totally distinct ways, and two or more sets of cards may be made. If the same constants are now employed with each set, and if under these circumstances the results agree, we may be quite secure in the accuracy of all of them."

This is remarkably similar to the self-checking software approach of the Airbus 320 flight control system, which is based on two separate program modules, each based on the parallel execution of two variants whose results are compared. There are thus four variants, which provide a tolerance to a fault in any of the four base modules.

PCW Resource Guide

Software Fault Tolerance

Michael R. Lyu; Wiley
An up-to-date survey of techniques for making software fault tolerant. From Wiley's *Trends in Software* series.

Fault Tolerant Computing Systems

M Dal Cin & W Hohl Springer Verlag
Proceedings of a conference dedicated to many aspects of fault tolerance, including hardware and software issue.

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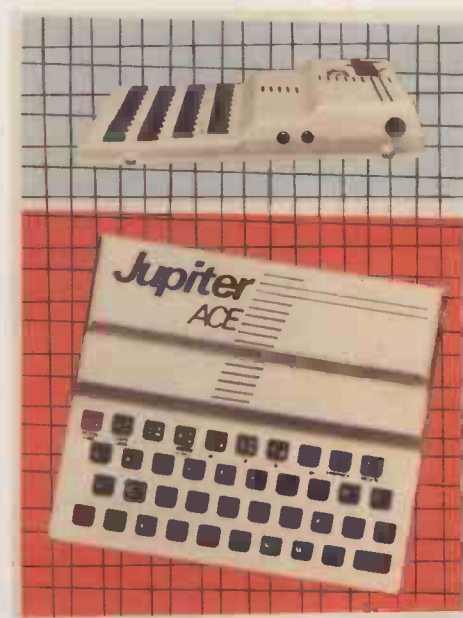
Go Forth and multiply

The makers of the Jupiter Ace relied on an eccentric language to speed up their Sinclair lookalike, but faith was not enough to send the machine flying into orbit. Simon Rockman looks back at Forth.

Twelve years ago the computer world was very different. Every new machine offered a Basic interpreter. Machines were judged by how quickly they could run a set of simple Basic tasks, so when a new computer appeared with Forth as its resident language, it created a stir.

The Jupiter Ace looked like a Sinclair ZX81, with a rubber keyboard like a Spectrum's and a cassette deck for storage. The similarities arose from the fact that the creators had left Sinclair to set up on their own. Their machine was based on the mistaken belief that Forth would make a good language for home users.

Forth was designed for controlling radio telescopes. It is a strange and quite entertaining computer language which relies upon a stack to hold the program. Instead of running a program from beginning to end you tell the computer what it needs to do. It then unpacks the routines from the end back to the beginning. For example, instead of saying PRINT 2+2 the Forth command would be 2 2 + . (the dot is the instruction to Print). The language is made up of around 140 key words, and



Jupiter Ace — the fastest micro computer in the universe 12 years ago?

fitted into the trivial amount of memory which computers had, 12 years ago.

This made the Jupiter Ace something of a Hot Rod. It was quick but not very good at actually doing anything. Mike Curtis, who looked at the machine in PCW

new words can be defined in terms of the old ones so a whole program can be a single keyword unravelling the definitions.

Programming in Forth is interesting in the same vein as doing hard sums, and of course debugging is a skill worthy of those who can juggle jelly while riding a unicycle. But it is very fast, and compact programs of tremendous complexity can be

(January, 1983) clearly liked Forth but being something of a purist, he criticised the Ace for its deviation from the standards; which included a BBC Micro-like ability to include assembler in-line with programs.

He didn't like the cheap finish, which for an £89 machine seems a little unreasonable, but the PCW conclusion was very accurate: "It does not have colour and with the price of

colour machines dropping fast this could be a big disadvantage. It has as yet no peripherals, though Sinclair ones can be adapted and Jupiter themselves are bringing out a parallel Centronics interface. There is no software around either, but hopefully this could change soon, especially if a large number of machines are sold; it could even bring about a boom in Forth software which could be run on a variety of machines."

That boom never happened and the Jupiter Ace was consigned to the curio category. It was only Forth which made it interesting, otherwise it was a simple machine; a Z80 processor running at 3.5MHz, 8K ROM, 3K RAM, a 40-key rubber keypad with no numeric keypad or function keys, a 1,500 baud cassette interface and modulated output through TV to give 32 x 24 characters. The character generator was soft-loaded so it could be programmed for a "high resolution" mode of 64 x 64.

Even in the days when a £90 computer was a sensible proposition, and being quirky had some advantages, the Jupiter Ace was never really a goer.

BOOKS

A behind the scenes account of electronic entrepreneurs, the essential source guide for computer shoppers and how to set up your own home office. PCW's book panel — Ben Tisdall, PJ Fisher and Dylan Armbrust — have Christmas all wrapped up.

Start-Up

Author: Jerry Kaplan
Publisher: Houghton Mifflin
Price: £15.99
ISBN: 0-395-71133-9
Pages: 322
Rating: ⚡⚡⚡⚡⚡

Start-Up is an account of the rise and fall of GO Corporation, the US startup that set out to launch pen computing. Six years and \$75 million later, GO corporation ceased trading. Jerry Kaplan's account of what happened in between makes fascinating reading, partly because the venture ultimately failed and particularly because Kaplan recorded GO's progress in great detail on tape and on paper. Kaplan, the brains behind the first PIM (Personal Information Manager) Lotus Agenda, describes the battle for venture capital, working to build the first prototype, and the protracted battle to obtain second round venture capital.

There are some priceless anecdotes. For example, in an early meeting between Kaplan and Apple Supremos John Sculley — then head of Apple — and Jean-Louis Gasse, president of Apple products, Gasse explained why Apple was doing so well: "Because we control the whole platform, both the hardware and the software. The rest of the PC manufacturers are going to the dogs, eating each other for lunch as they get squeezed by Microsoft on the software side and Intel on the hardware side." He gestured out

of the window to the world beyond Apple. "Would you believe they want us to license our software to others?"... "Windows is a joke...they'll never catch up."

Gasse was wrong about the PC manufacturers (just ask Compaq) and wrong about Windows. Ironically, he was also wrong about the desirability of controlling the whole platform. That was Apple's Achilles' Heel and proved to be GO corporation's too. As Kaplan says in Start-Up: "Creating an API is like trying to start a city on a tract of land that you own. First you try to persuade applications programmers to come and build their businesses on it...Once your city is established, owning the API is like being the king of the city." GO never did manage to get many programmers to develop for its operating system.

Even before GO had produced its first prototype, Kaplan arranged meetings with the heads of the big three software vendors, in those days Ashton Tate, Lotus and Microsoft. None of the big three ISVs were prepared to commit to developing software for the product and an internal memo from Bill Gates on the project is quite scathing in places: "Kaplan isn't the best CEO. They have some OK ideas but I don't think this thing will be big."

Early on, the founders of GO realised that the company was likely to be either a spectacular failure or a massive success. Ultimately, pen computing was

the flop of the decade but it was a seductive enough idea to persuade Microsoft to get involved on its own account (with Pen Windows) and for Apple to have a stab with the Newton personal organiser. In places, Kaplan's description of his endless flights around the States drumming up interest in his product get tedious, but in general it's a competently written and enthralling story of a phenomenon — the high-tech start-up — which barely exists in the UK.

deservingly won plaudits for their easy-to-understand but unpatronising style.

This new addition is no exception. The book takes you from the earliest developments in computing such as Jacquard's loom and Babbage's difference engine, right up to advances in GUI's and the arrival of the personal computer.

Key developments in technology as well as applications (in both senses) are duly listed. There is an excellent

chapter on how World War II fuelled the development of the computer including, of course, the cracking of the Enigma code by Alan Turing and his associates at Bletchley Park.

The chapter on the first postwar mainframes could only be entitled "Heavy Metal Dinosaurs", and is accompanied by the usual pictures of room-filling machines with less processing power

than a modern laptop.

The sixties and seventies ushered in the development of the microchip at Intel, the IBM Personal Computer and the Macintosh. Both machines get their own chapter and deservedly so as, current market share notwithstanding, there is no doubt that both revolutionised computing. As did a bespectacled gentleman from Seattle who of course gets his



The History Of Computers

Author: Les Freed
Publisher: Ziff Davis Press
Price: £22.99
ISBN: 1-56276-275-3
Pages: 153
Rating: ⚡⚡⚡⚡⚡

The History Of Computers is the latest in the Ziff-Davis "How" series. These popular books



story told too. And no matter how many times you've read this, it still makes you weep.

There are some omissions: there is no mention, for example, of the contribution that visionaries such as Douglas Engelbart or Alan Kay made to the development of the WIMP interface. A final chapter on the future concentrates on Digital Satellite Systems which is a little odd. And no mention of the internet. However this is a history not an oracle, and as such serves as an excellent general introduction to computing.

Each section contains a mix of product reviews and topical essays or "info-boxes" that cover issues or ideas related to its section. The reviews are fair and balanced and not above pointing out a product's shortcomings. The Microsoft Encarta review in the Learning section is fairly critical. Knowing that every product won't get a glowing recommendation makes you value the ones that do.

The essays found throughout the book cover varying topics, and contain information that

most with an interest in computers would find appealing. Tips on how to avoid viruses; information on the developing "smart battery" and the comedic "Top Ten Signs You Bought a Bad Computer" are just a few of the offerings. I like this book because it does what it says; it provides quick and easy information. One minor drawback: the prices listed are in US dollars. However,

one should be able to do a simple currency conversion and factor in VAT to overcome this.

Your Home Office
Author: Patrice-Anne Rutledge
Publisher: Ziff-Davis Press
Price: £23.49
ISBN: 1-56276-327-X
Rating: ◆◆◆◆◆

If you're contemplating working from home with your PC, you might want to have a quick browse through *Your Home Office*. It's a simple book that delves into the ever growing home office market. Patrice-Anne Rutledge talks about the growth of telecommuting and gives the reader helpful tips on the "how-to's" of setting up your own home office.

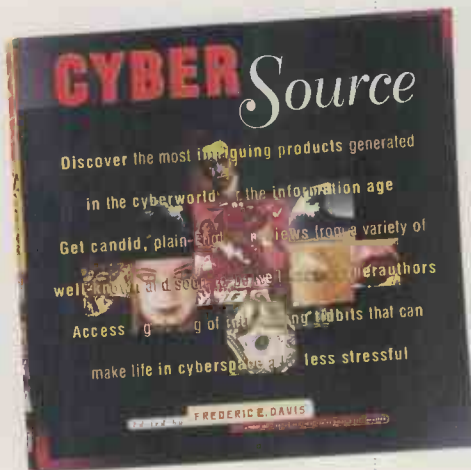
Rutledge discusses the growing trend towards telecommuting in the US and how industry



has begun to accept the idea as a way to reduce costs, increase employee productivity, and give its employees flexible work time. She begins the book by discussing whether or not telecommuting is for you. Some professions, such as writers or sales reps, are more obviously suited to home office work, but if you're not one of these it doesn't rule you out. She also provides a list of advantages and disadvantages to help the reader decide if they are a potential telecommuter. Rutledge takes a holistic approach to advice; headings such as "How to Avoid Isolation" or "How to Remain on the Fast Track" give you an idea of the tips she provides.

The bulk of the book, however, is devoted to the types of

hardware and software that one will need to set up a home office and where you can find them. It's helpful in that it tells you concrete specifications — you'll need a 486 or Pentium-based PC with a decent fax/modem — but fails abysmally for anyone living outside the USA. Almost all the contacts and services, especially the online services, are based in the US, have US contact numbers and are quoted in US dollars. This is incredibly frustrating for UK Joe wanting to move off to the High Street. It gives only general tips on how to become a telecommuter. But there is one distinct bonus to this buy; it comes with a CD-ROM containing helpful utilities and a nifty internal map of a computer. The verdict is: helpful, but far from indispensable.



Cybersource
Editor: Frederic E. Davis
Publisher: Ziff-Davis Press
Price: £18.49
ISBN: 1-56276-284-2
Rating: ◆◆◆◆◆

Are you looking for a good, interactive multimedia program for your kids? What about a couple of different types of printers? Or maybe you're curious about database programs. Whatever kind of computer product you're looking for, *Cybersource* is the resource for you. It bills itself as "the definitive catalogue for a complete cyberexperience" and backs it up with loads of information.

It's not a complex book and it's got a sense of humour to boot. The book is divided into five sections: Learning, Real World, Fun, Self and Commu-

Top Ten Books: January 1996

1	Windows 95 Resource Kit	Microsoft	£46.99
2	Windows 95 Secrets	IDG Books	£38.99
3	Using Windows 95 Special Edition	Que	£32.99
4	About Face: Essentials of User Interface Design	IDG Books	£28.99
5	Delphi Developer's Guide	Sams	£46.95
6	Using Visual Basic 4 Special Edition	Que	£37.49
7	Visual Basic 4 How-To	Waite Group	£36.50
8	PhotoShop 3 Wow! Book	Peachpit	£32.95
9	Using HTML	Que	£37.49
10	Dynamics of Software Development	Microsoft	£22.95

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For this month's competition prizes, NEC, Nikon and Lotus have showered us with goodies and one lucky reader can win it all. The winner will walk away with: a notebook, a monitor, a CD-ROM and a laser printer, all from NEC. There's a Nikon flatbed scanner, as well, and to top it all off, a copy of Lotus SmartSuite 96.

But so the rest of you don't feel left out, there are six more copies of Lotus SmartSuite to carry away.

NEC

The Versa 500 is NEC's new entry level notebook. With an upgradable DX4/75 chip, a 350Mb hard drive and 8Mb of RAM, and built-in flexibility in the form of two PC-card slots, the Versa 500 also has a DSTN (double super-twisted nematic) screen capable of 640 x 480 in 256 colours.

NEC's SuperScript 610plus is a GDI laser printer capable of virtual-600 x 600 dpi. It is ideal for the small business or home user with a 6ppm engine and SuperScript Level 2 software, to

allow you complete control over the printer via an on-screen manager.

For multimedia you could do a lot worse than the MultiSpin 4X-IDE. As you have doubtless already worked out, it is a quad-speed IDE drive. What you might not remember is that it won Editor's Choice in our last quad-speed CD-ROM drive round-up.

To complete the deal from NEC, is a MultiSync XV15 monitor. Capable of 1024 x 768 at 80Hz, it has a dot pitch of just 0.28mm. It is easy to set up

thanks to Plug and Play, and easy-to adjust using a pop-up menu activated by a button on the monitor itself.

Nikon

To add real class to your office, Nikon is offering one of its ScanTouch AX-1200 colour flatbed scanners, complete with a transparency unit. The prize comes with Photoshop LE and OmniPage Direct so you can get straight on with playing around with your photos and OCR-ing your documents.

The scanner is a little gem,



package



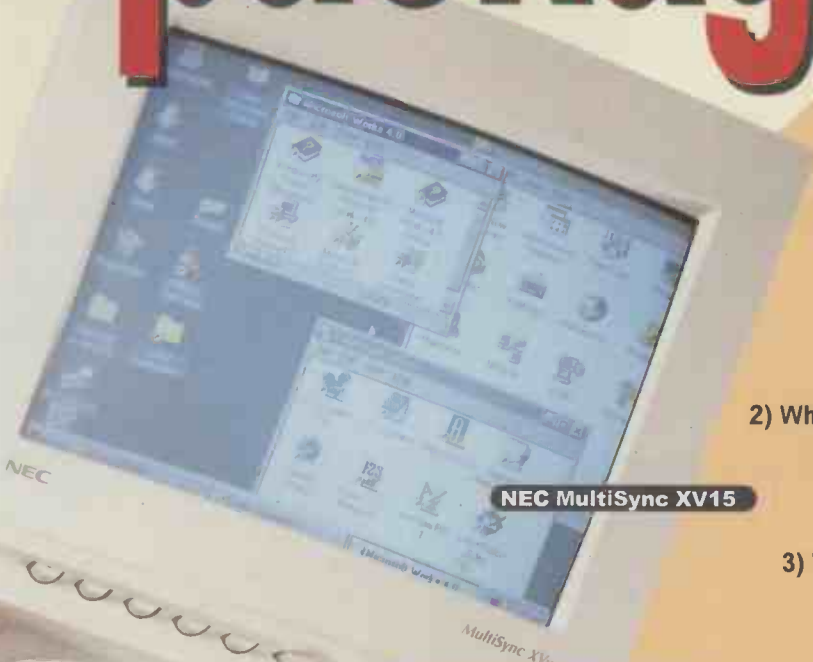
NEC Versa 500

Answer these questions:

- 1) What does GDI stand for?
 a) Graphical Device Interchange
 b) Graphical Device Interface
 c) Graphical Data Interface

- 2) Which three colours are referred to in the term RGB?
 a) Red, green, blue
 b) Rose, grey, beige
 c) Ruby, ginger, brown

- 3) What is the SmartSuite word processor called?
 a) WordPerfect
 b) Word Pro
 c) Word



NEC MultiSync XV15



LOTUS SmartSuite 96

Rules of entry

The competition is open to all readers of *Personal Computer World* except for employees, and their families, of VNU Business Publications, NEC, Lotus and Nikon. Entries to arrive by 19th January 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.

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Lotus

Lotus has given us seven copies of SmartSuite 96 (the new Windows 95 edition) with 32-bit versions of Word Pro, Freelance Graphics, Approach, the database, and SmartCentre, the suite command centre. Organizer, 1-2-3, and ScreenCam have been updated and made Win95 compatible.

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Kids' Surf

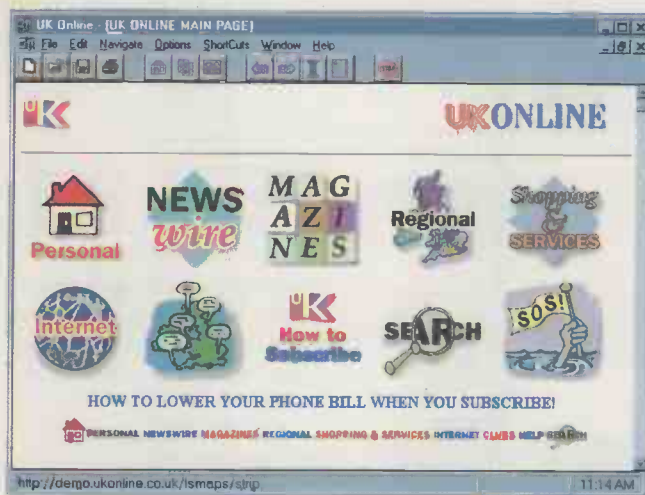
This month Paul Begg and daughter Siobàn have news of awards, price cuts, and the family online. They also climb their family tree, look at some new interactive books, and investigate the arts of prestigid..., presidit..., pregidistit..., er, magic. It's been a busy month.

Prominent at the Best Toy Awards this year was Iona Software, who beat off stiff competition from the likes of Dorling Kindersley and Europress. They won the software category outright for Millie's Math House, a Gold Award for Thinkin' Things, and got two "Highly Commendeds" for Bailey's Book House and Sammy's Science House. We're embarrassed to admit that we haven't looked at any of these products here and we promise to rectify this next month.

Software designed to give parents some control over what their children can access on the internet is a growth software category that needs to be looked at later. In the meantime, if you saw the December issue of PCW you'll probably have tried out the free demo of UK Online provided on the cover CD-ROM.

Just in case you missed that issue or didn't bother to try it out, let me comment here that UK Online is an online service with full internet access. What makes it different is that it is specifically designed for the UK home market, especially for family users, and has children at the forefront of editorial policy — meaning that the material available online will be for a family audience and that parents will have parental control over the time kids are on the system and over what they can access.

Launched in the summer of 1995, UK Online is funded and



Left UK Online — an online service with the family firmly in mind

Below All About Me — A great educational program which, with a little forethought, can introduce children to writing, history and more besides

largely owned by Olivetti Telemedia, Italy (a wholly-owned subsidiary of multinational Olivetti), so that financial clout should ensure quality. Subscription pricing is £14.99 including VAT for four email accounts and unlimited access (including free internet access), which is certainly a persuasive price pitch. So, if you want your kids and yourself to benefit from online access, but want control, check out UK Online.

A few months ago I noted the excellent price restructuring of Microsoft's titles. Now the Corel Corporation has been equally aggressive about pricing, slashing its CD Home range of titles to a recommended retail price of £19.99. Almost all the CD Home titles are for children: the two that aren't are a reference title on Marilyn Monroe and the All-Movie Guide (a Cinemania rival),



so the prospect of getting good quality and affordable software for kids in '96 looks better than ever before.

Easy Ball

And talking of Microsoft, the company has just introduced a trackball especially for children.

It's called EasyBall and is the result of extensive research into what young children want from an input device. Some of the research findings are all too familiar — that a mouse is hard to use and ties you to an uncomfortable desk. EasyBall is large (for holding in the lap), has a big



Left *George Shrinks* — A charming and witty story accompanied by great illustrations, but not enough interactivity

their own place in the family and to introduce them to wider historical interests. It comes on four floppy disks, by the way.

Interactive books

Also from Harper-Collins Interactive come two interactive books: *George Shrinks*, and *If You Give A Mouse a Cookie*. They follow the established pattern of letting you read the story or having it read to you and there are the usual hidden animations when you click parts of the screen. Neither disk enjoys as full a compliment of click-on surprises that distinguish the Living Books series, although they both contain good original music and songs. The illustrations in *George Shrinks* are wonderful, whether you're young or old, you'll love this CD-ROM.

Childrens' Classics

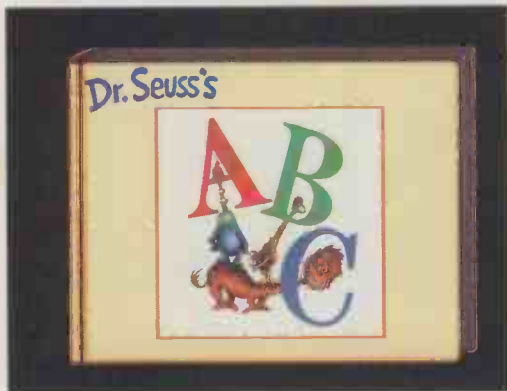
While we're on the subject of Living Books, two new titles reached me this month. The first is *Dr Seuss's ABC*. Theodore Seuss Geisel, born in Massachusetts in 1904, wrote childrens' books during the thirties and achieved huge popularity in the US but up till now never achieved wide recognition in the UK. This CD-ROM may change that. It has original music, sound effects, Dr. Seuss's well-loved characters and much besides to keep young children aged from three to seven years old entertained while being introduced to the letters of the alphabet.

The second title is Aesop's fable; *The Tortoise and the Hare*. It enjoys the same high standard and differs little in presentation from other Living Books titles, but there is one huge difference: this is a completely Anglicised version specially for UK audiences. Living Books has taken care to make its software nation specific; a more involved process than you'd think. The translation has to be spot on, the voice actors have to correctly time and deliver the jokes, and even the screen images some-

tory and genealogy. Tracing one's family history is one of the fastest growing hobbies in Britain and a great way to combine the computer with family days out. This is because the best way of building a family history is to talk to parents, grandparents and (if you're lucky) great-grandparents, recording their memories of childhood. Later on you can take the children to visit the remembered places, such as grandad's old school or first workplace. You can even take your research further, introducing children and maybe even yourself, to the Local History Library and other places.

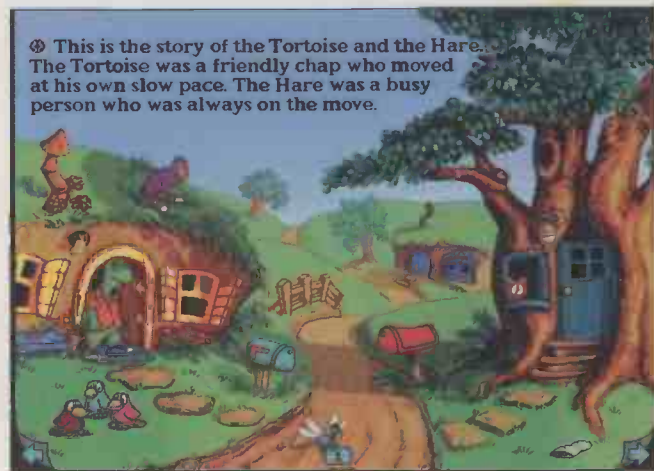
The Main Menu gives you four options: Calendar, Storymaker, Family Tree, and Card Maker. The Calendar is a place where you can enter special events such as birthdays and anniversaries. Family Tree is where you can build a record of your own family. It doesn't go beyond great-grandparents and it isn't very flexible (you must enter a birthdate before the program will let you enter a name, but, of course, a birthday is something you might not know), but nevertheless, it's a good starting place. The Storymaker is where you can write a story about your family. There are four ways of doing this, each with a few tips or guides to the questions to ask. With *Make A Card* you can create your own greeting cards.

Overall there's a lot here. The manual is well-written and the program is designed to stimulate a young mind. With a little parental help, it could be a great way to give children a sense of



Left *The latest from Broderbund Living Books*

Below *Tortoise and the Hare* — now anglicised



yellow ball and a blue button with an audible click when you press it. Best of all, there's a dual-input driver which lets parents use their own mouse or trackball simultaneously. *Easy-Ball* comes with some tasty software, too: *Pointerland*, an interactive farm scene to teach pointing and clicking, and *Explorapedia* (which has been

localised for the UK market.

All About Me

An unusual software package we looked at this month was *All About Me* from Harper-Collins Interactive. Designed for children aged from six upwards (I reckon it's probably too babyish to survive much beyond 11), it's an introduction to family his-



Above *There's a lot wrong with this disk but I liked it.*
Right *Learn the Art of Magic with Jay Alexander — Kid's will love it, but you could easily grow to want to kill Jay Alexander!*



times have to be changed to accommodate the language.

Magic

At a dinner party a few weeks ago, after we'd all eaten a wonderful meal, we took our coffee into the living room and the children entertained us with a little drama called *The Victorian Classroom*. It struck me then that no matter how sophisticated children are these days, they still love the old dressing-up box and putting on a show for family and friends, usually with an attempt at magic.

It struck me that interactive CD-ROM was well suited to teaching a few simple magic tricks. Learning a trick involves watching it repeated over and over again, which is something that multimedia lets you do so easily. But until recently there were no "magic" CD-ROMS. Then, like buses, two came along at the same time.

Learn the Art of Magic with Jay Alexander has the better pedigree of the two, as it comes from Broderbund, of Living Books. At first glance it looks a real winner. It comes with several magic tricks in the box and

full instructions about how to perform the magic are given on the CD.

The CD graphics are excellent: Jay Alexander could have stepped out of Monty Python, and the presentation is madcap enough to keep a kid entertained and drive a parent round the bend. Altogether, Jay Alexander demonstrates and teaches 26 magic tricks in five categories called Crazy Card Tricks, Radical Rope Tricks, Groovy Table Tricks, Magic Set and Money, Money, Money. Then there's the Magic Language (the patois of the prestidigitator, as it were) and *The Oath* — the secret every magician must know and uphold. There's also *Box Office*, a printing utility which allows kids to print their posters, tickets, and even fake their own magician's certificate.

Secrets of Magic with Dikki Ellis lacks all the Pythonesque madness, the poster printing

module, and the props of *Learn the Art of Magic*, but it does come with a VHS video — which is actually the origin of this CD-ROM. The only real benefit of having the CD-ROM is the ability to review tricks over and over until you get them right. And you'll want to practice some of these tricks because they are simple but good — such as how to flick a silk scarf onto a table three times and produce a knot in one end. Or, how about asking

nerves — remember, Jay Alexander may get a smile one time, but by the 20th re-run you'll cheerfully throttle him. Being perverse, kids will probably prefer Jay Alexander, especially with those magic props.

Which just about wraps it up for this month, and this year. To kick off 1996, we'll take a look at some of the titles we overlooked in 1995 as well as some exciting new ones.

PCW Details

All About Me

Price £29.99
Contact HarperCollins Interactive
Tel 0181 307 4158
Fax 0181 307 4158
Rating ★★★★★

George Shrinks. If You Give A Mouse A Cookie
Price £39.99
Contact HarperCollins Interactive
Tel 0181 307 4158
Fax 0181 307 4158
Rating ★★★★★

Dr. Seuss's ABC
Price £30.00 (inc VAT)
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Tel 01753 620909
Fax 01753 621404
Rating ★★★★★

Tortoise and the Hare
Price £30.00 (inc VAT)
Contact Broderbund
Tel 01753 620909
Fax 01753 621404
Rating: ★★★★★

Learn the Art of Magic with Jay Alexander
Price £30.00 (inc VAT)
Contact Broderbund
Tel 01753 620909
Fax 01753 621404
Rating: ★★★★★

Secrets of Magic with Dikki Ellis
Price £39.95 (inc VAT)
Contact FastTrak Software Publishing
Tel 01923 495496
Fax 01923 228796
Rating ★★★★★

somebody in your audience to examine and then divide a pack of playing cards into two piles, wrap each pile in a rubber band, then choose a card (not showing it to the magician). The member of the audience then places the chosen card between the two piles. You murmur the magic words, separate the two piles and the chosen card has vanished. If this doesn't have Granny sitting on the edge of her seat, you then drop the cards on a table top and out from the pack shoots the chosen card. Simple but impressive. There's a good but brief history of magic, with a few illustrations and an Encyclopedia of magic tricks you can perform sitting and standing. These tricks are accompanied by line drawings demonstrating how the trick is done.

Of the two, I preferred *Secrets of Magic with Dikki Ellis*, mainly because the frenetically zany Jay Alexander got on my

CD-ROMs

Scroll through new encyclopedias from Microsoft and Grolier, and cruise Robert Mapplethorpe's world of stylised homoeroticism with this month's CD-ROMs. Quizmaster Adele Dyer will be testing you later — don't forget the Battle of Bannockburn.



Encarta 96 Encyclopedia, and The 1996 Grolier Multimedia Encyclopedia

The new encyclopedias have hit the shops again in time for Christmas and Microsoft and Grolier have unveiled their latest offerings — rejigged, updated and in the case of Encarta, localised for the UK.

Encarta and Grolier both take very much the same approach to their subjects. Both offer search facilities through a list of article: and broad categories such as the world (maps), a timeline, a multimedia section (i.e. the collected photos, movies, audio clips, animations, and charts) and discovery sections.

Grolier and Microsoft have built internet capabilities into their products. Grolier has included hyperlinks to CompuServe, and Microsoft lets you download and integrate updates via MSN or through the Microsoft web pages.

As you can imagine, both are

extremely thorough in their approach. Encarta boasts 27,000 articles to Grolier's 34,000. However, the proof of the pudding is in the contents and this is where Microsoft just steals the edge on Grolier, by a hair's breadth.

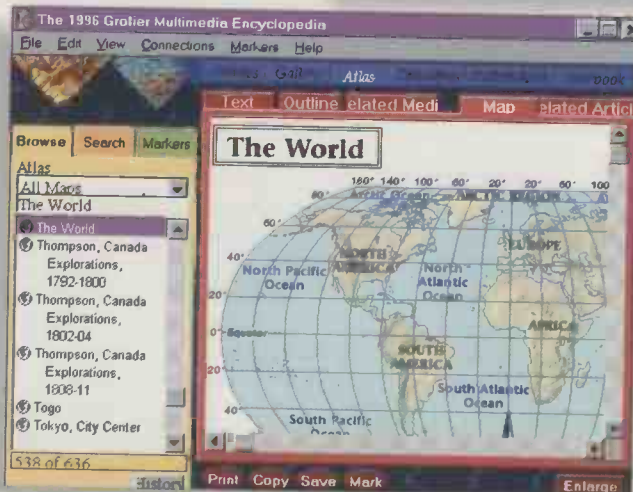
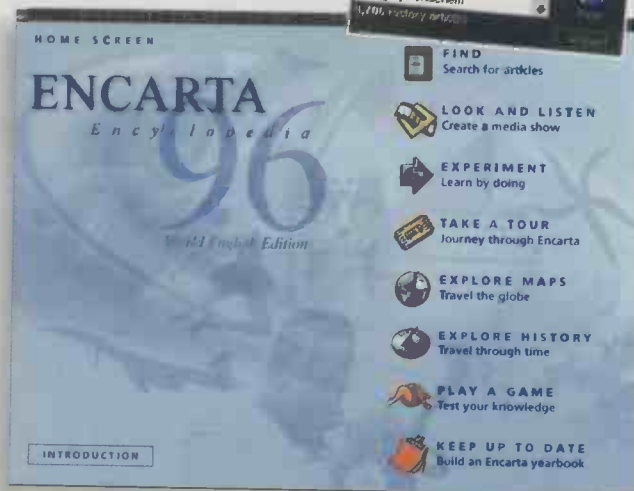
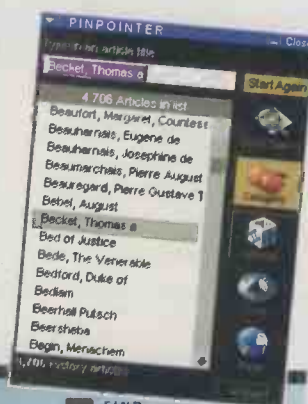
I used my own pet subject — French Literature — as the acid test, and although Grolier mentioned just as many of the important authors and movements, the Microsoft version was slightly more accessible and comprehensive.

On the other hand, Grolier's maps were far better. A cynic might say that this is because Grolier has not got an atlas product coming out soon, whereas Microsoft has.

The main area where the two products differ, however, is in localisation. Microsoft has employed a team of content specialists to tailor the product for the UK and Europe. But since there are no adaptations for the

other European countries, or for the Antipodes, these markets will have to choose either the US or the UK version.

The new UK slant has involved a lot of updating and writing of new material — the entire encyclopedia has been revised to eradicate Americanisms. The advantage with this is that you avoid such annoyances



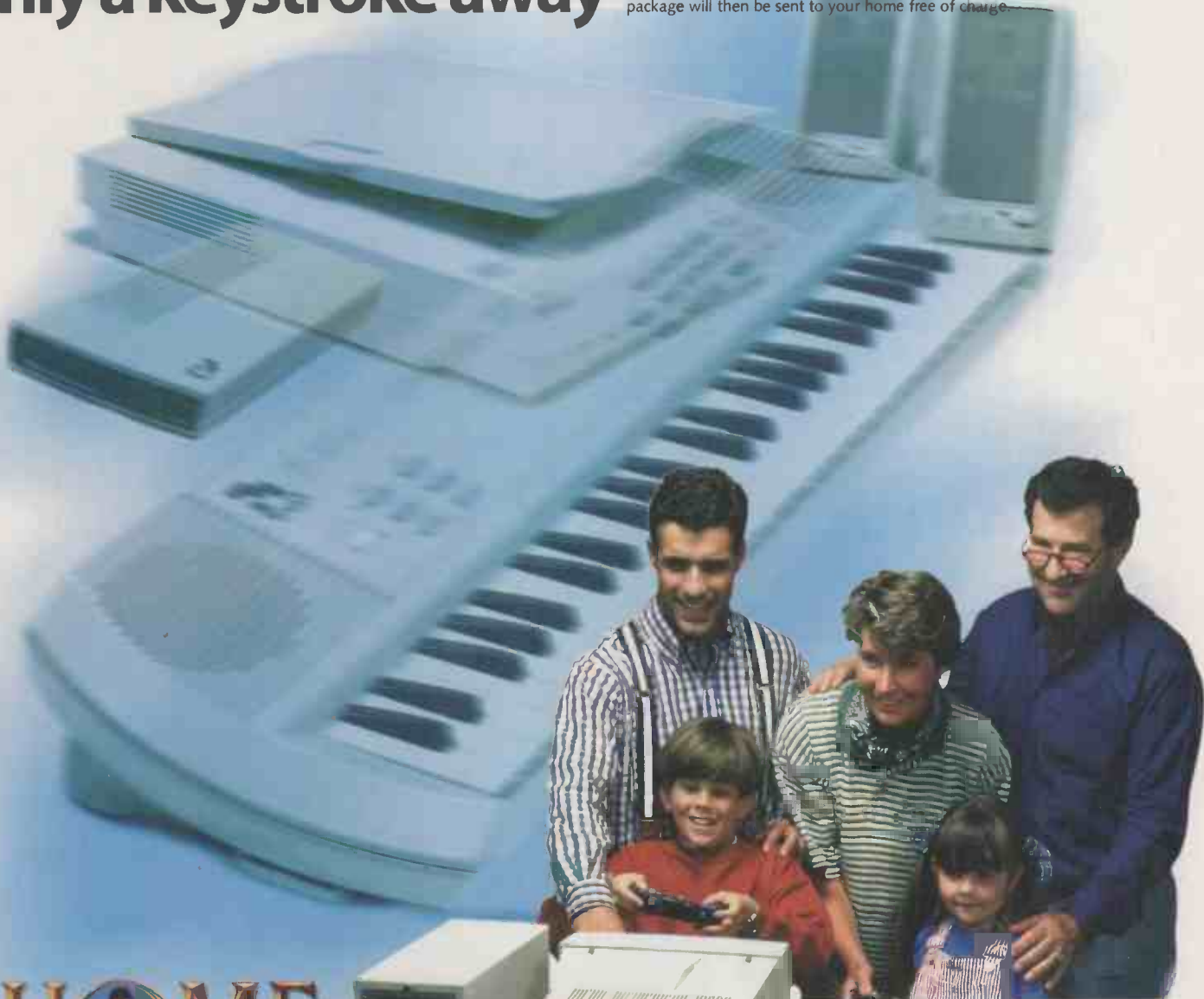
Encarta (above) and Grolier (left), both provide multimedia maps. Encarta's localised detail and general polish give it the edge





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is having to look up aubergine only to find that it's not there (the Grolier classes aubergine as eggplant).

There is also a lot of local information, which makes it more relevant to a British user. For example the history and arts sections respectively cover the Tolpuddle martyrs and Sir Ian McKellan — neither of which are in Grolier.

Localisation is not regarded as important by Grolier, but it does make a difference to a British user. It will be interesting to see whether Grolier 97 adopts the technique.

Localisation played a major part in my preference for the Microsoft, but it has to be said that this is generally a much slicker product. The interface on the Grolier is positively clunky compared to Microsoft's clean lines. In Encarta, the tours through the areas of interest are highly enjoyable, while the Grolier version, by comparison, seems to have been put together sloppily.

In terms of general content and ease of use there is little to choose between them. It's style that tips the balance, and Encarta wins this hands down.

Encarta 96 Encyclopedia

Contact Microsoft
0345 002000
Price £49.99
Rating ●●●●○

The 1996 Grolier Multimedia Encyclopedia

Contact MHM
0181 600 6023
Price £44.99
Rating ●●●●○



Braveheart

Proof positive that media moguls are getting interested in CD-ROM comes in the form of this offering from Icon Productions. As this is Mel Gibson's own production company, allied to Paramount and ViaCom, the CD could be viewed cynically as yet another piece of marketing to go with the posters and T-shirts.

However, the CD is much too good to be dismissed as just another marketing tool. It contains a lot of information about the background to the film, but can also stand on its own as an introduction to the historical period.

There is plenty of detail about the political situation, and how people of the time lived, fought and rebelled. The CD is designed as an educational tool for schools as much as to sell the film, and as the former it succeeds very well. The central figures of the time, including William Wallace, Robert the Bruce and Edward I are all discussed, as are means of warfare, the role of women, and agriculture and music.

The section on the film itself is a bonus to those who have seen it, but is otherwise not that important. It is more like a multimedia version of the sleeve notes you used to get on 12in vinyl records (remember them?).

There are 16 short scenes from the film itself, as well as interviews with the production team and cast, hints on how the film was shot and full CVs for all the actors. However, this does not take up too much of the disk, and is an additional section rather than the main event.

I must admit my status as a closet Mel Gibson groupie makes me biased. But this CD will be appreciated even by those not interested in the worship of a tall, dark handsome star. The educational sections are excellent and if it is a marketing scam, then I've been well and truly scammed.

Braveheart
Contact Koch Media 01252 714340
Price £34.99
Rating ●●●●○



Not just a pretty face: Braveheart provides a good overview of a certain place and a time



Robert Mapplethorpe — an Overview

This is one of the first CD-ROMs to come out of New Media Solu-

tions and. More importantly, it's also the first to be compiled using ImageAXS, a graphics database package also marketed by New Media Solutions, which was reviewed in the December issue of PCW.

As an image database, this CD-ROM takes a slightly different shape to many of the art CDs we have seen over the past year or so. The usual information on the artist and explanation of his work is complemented by a sim-

ple approach to accessing the images.

The photographs are presented in a catalogue, and you can view them initially as thumbnails and then look at the actual images, which can be blown up several times over to reveal them in great detail. The main catalogue can be adapted and you can build up your own sub-catalogues, or projects, to let you more easily access images of particular interest.

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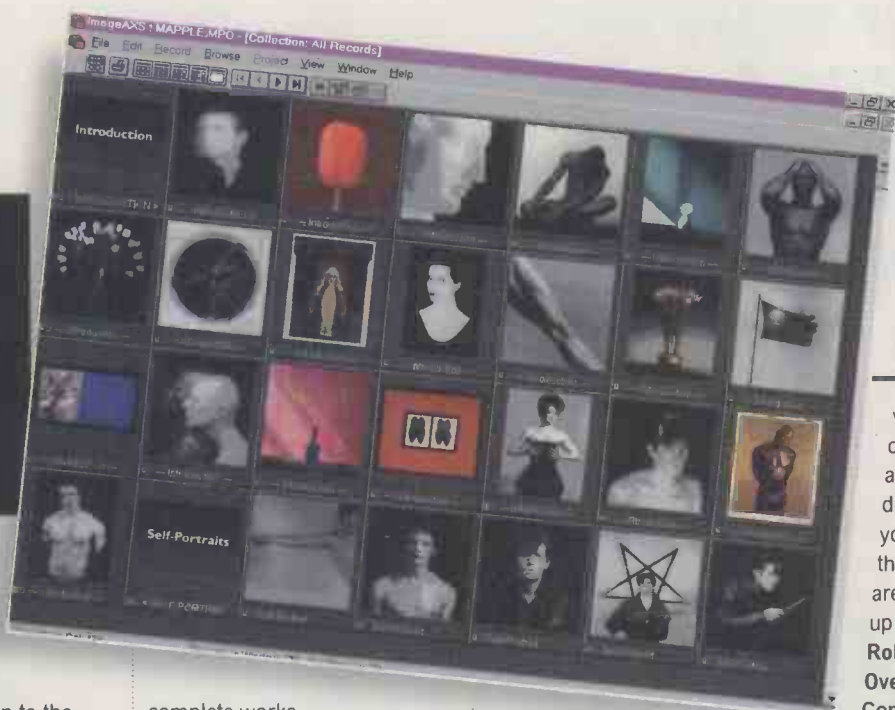


There are also features such as a slide-show facility and database searching.

As an introduction to the photographer's sometimes difficult work, this is an approachable and sympathetic CD. The overview does not dodge the more controversial elements — it makes allusions to all of his photographic styles and the narrative treads a fine line between admiring him for his daring, and acknowledging that some people find his images unacceptable.

Mapplethorpe tried to push back the boundaries of what may be defined as art, but for many his work was nothing more than pornography. The CD reviews, at some length and without bias, the debate over subsidies that engulfed one of his exhibitions. At this point on the CD there are a few of his controversial photographs, and while these are relatively inoffensive, they are not the kind of thing you would want to show your maiden aunt. Those of a delicate disposition should remember that almost all of Mapplethorpe's work (even or rather, especially, his flower compositions) could be deemed suggestive.

If, on the other hand, you do want to see the riskier side of his work there is a whole CD devoted to it, called aptly enough, *The Controversy*. Alternatively, for the full story there is *Catalogue Raisonné*, which offers access to the



Mapplethorpe: probably not ideal for those of a delicate disposition

Illustration ©The estate of Robert Mapplethorpe. ©Digital Collections Inc. 1995

with Mapplethorpe and others. His style and approach are well documented and while you are encouraged to see the best in his work, you are given the space to make up your own mind.

Robert Mapplethorpe — an Overview

Contact New Media Solutions
0171 229 1708

Price £69.95

Rating ●●●●○

complete works.

This is highly recommended as a basic introduction to Mapplethorpe. The photographs are

given prominence in the multimedia sections and are complemented by interviews

You Don't Know Jack

Berkeley Systems are better known as "the After Dark people" and true to form they have produced another superb product. A spoof of American quiz shows, this trivia quiz is loud, brash and hilarious nonsense. It refreshes the parts other spoofs cannot reach and takes the artform to the nth degree.

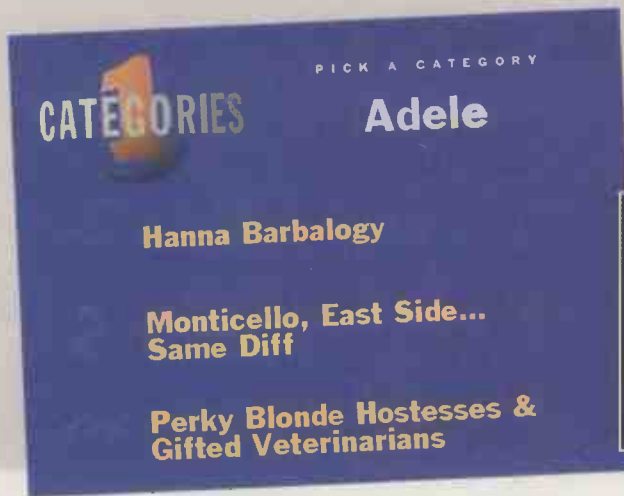
The CD plays as if you are on an imaginary radio quiz show, beginning with voiceovers of the production team setting up the show and continuing the theme with a quizmaster, musical introductions to questions and "Bronx cheer" buzzers that are used to answer questions. Needless to say, the whole thing is smoother than a pint of Guinness.

The questions are off-the-wall nonsense, but what makes them more fun are the equally wacky categories which you pick. Each is, ostensibly, related to the questions behind it. But don't think you're going to be able to guess the subject of the

question: the category "extra crispy" actually refers to anatomy. A typical question is: "If your cannibal neighbours invited you round for Kentucky Fried human, which bone would not be found in the pot at the end?" Yes, a lot of them are sick and many more appeal to vaguely smutty minds like mine, although the humour is more Steve Martin than Bernard Manning.

You can play on your own, or with others. In this latter case the game takes on a new angle. You have the opportunity to "screw your neighbour". Big, bouncing screws appear and you can play them like a joker, forcing your opponent to take a question to which you know they do not have the answer.

You Don't Know Jack
Contact Berkeley Systems 0181 741 8299
Price £29.95 inc VAT
Rating ●●●●●



Screw your neighbour with You Don't Know Jack



Screenplay

NEWS

Hex appeal



3D adventure lovers who got wrapped up in Id Software's shareware masterpiece Heretic will be pleased to hear that a sequel is on the way. Rumoured to be the last game to use the Doom graphic engine, Hexen continues the magic, mystery and mayhem.

Casting the player as a Fighter, Cleric or Mage, Hexen offers both swords and sorcery as you explore its levels. The aim this time is to defeat the evil serpent rider Korax, a nasty chap with a taste for world domination. Each character has

their own special armaments and abilities, and unlike Heretic or Doom, the game is divided into areas which are linked in a non-linear way, you access them with magical portals. Chances are you will have to visit each level more than once to complete the game.

Promising even more complex puzzles, improved sound and better graphics than its predecessors, Hexen will be released commercially on CD-ROM towards the end of the year by GT Interactive. Id has posted a four level Beta demo online for would-be heroes to try out.

GT Interactive 0171 258 3791

Developers dive in

Following the success of Windows 95-specific games like Pitfall 2: Mayan Adventure, Microsoft is set to release its own game software development kit (SDK) to 250,000 developers worldwide. The software giant is hoping that its new operating system will become a significant platform for entertainment and is promising that 30 SDK-based titles will be available this Christmas.

Microsoft 01734 270001

Dynamic Duo

US-based Crystal Dynamics and BMG Interactive Entertainment have joined forces to release 15 titles for the Sega Saturn, Sony Playstation and PC. Crystal Dynamics is best known for its leading 3DO titles, such as the 3D racing game Crash 'n' Burn and the Sonic-style platformer, Gex.

The launch console titles start with reworked conversions of the hit games Off World Interceptor, Total Eclipse and the strategy adventure The Horde. New releases include sports simulations, 3D Baseball '95 and an Arthurian graphic adventure written by Monty Python star Terry Jones, called Blazing Dragons.

On the PC side there's space spectacular Loadstar and Dust: A Tale of the Wired West. Set in 1882, the latter has you gunfighting with vicious killers, flirting with bawdy saloon girls and solving devious puzzles. Dust is available on CD-ROM only and has been written by Cyberflix, authors of Lunicus and Jump Raven. A Mac version will also be available.

BMG Interactive Entertainment International 0171 384 7500

Charts



HMV Games
LEVEL ONE

1	Command & Conquer (CD)	Virgin
2	Championship Manager 2 (CD)	DoMark
3	Need For Speed (CD)	EA
4	Phantasmagoria (CD)	Sierra
5	Fade To Black (CD)	EA
6	Complete Ultima 7 Classics (CD)	EA
7	PGA Tour Golf (CD)	EA
8	Rebel Assault — White Label (CD)	EA
9	7th Guest — White Label (CD)	Virgin
10	Ultimate Doom (PC)	US Gold
11	Space Hulk Classics (CD)	EA
12	Day of The Tentacle (CD)	US Gold
13	Dark Forces (PC)	Lucas Arts
14	3D Lemmings Demo (CD)	Sony Int
15	Full Throttle Demo Disc (CD)	US Gold
16	Indycar — White Label (CD)	Kixx
17	Banff Springs (CD)	US Gold
18	Magic Carpet 2 (CD)	EA
19	Star Trek — The Final Unity (CD)	Microprose
20	Star Trek 25th Anniversary (CD)	Virgin

Phantasmagoria



If you will insist on going down to the cellar alone and reading out the incantation that summons up the devil, don't go crying to Chris Cain.

Written by Roberta Williams, famed for her award-winning Kings Quest series, Phantasmagoria is the latest from leading PC adventurers Sierra On-Line. Boasting no less than seven CDs, it's a frightening tale of horror with an 18 certificate — a far cry from the company's usual fairy tales.

Without giving too much away, the game centres on a strange old house and a young couple, Don and Adrienne, who've just moved in. The opening sequence sees Adrienne having a ghoulish nightmare, complete with suitable music, and the action begins the next morning at the breakfast table.

Cast as the female lead, your first quest is to explore the house, located on a small island, and its surroundings. This leads to the discovery that it was once owned by Carno the Illusionist, a magician who put on a popular but scary side-show called Phantasmagoria. He also died a rather mysterious death at the house — you'll need to try it for yourself to find out what happens next. A large part of the game is finding out exactly what you have to do to complete it.

Phantasmagoria is split into seven chapters, each occupying a single CD. As you progress through the story, you're asked to swap discs, but you can play individual chapters in any order you like. However, leaping into the middle of the game will mean you miss out on information and useful objects from the previous parts.

Sierra has opted for a traditional point-and-click interface

with the main character wandering around the centre of the screen. Objects are easy to manipulate and anything can be highlighted when you pass the cursor over it. As you explore, a digitised Adrienne walks from room to room, occasionally stopping to check her appearance in the nearest mirror.

The reason for the game's 18 certificate is a number of what can only be described as horrific scenes. Blood splatters freely in the later chapters and there's plenty of violence; most of it against women. For example, one scene features a garden trowel being shoved through a woman's throat while another has someone being force-fed offal and blood through a funnel until they choke. These fit in well with the story, but the certification is certainly justified. The game can be censored and has a password scheme to stop uninvited players switching

things back.

Even though they're a little tasteless in places, Phantasmagoria's graphics are stunning. At 640 x 480 pixels they only run on machines with an SVGA chipset and the animation requires a Pentium or DX4 to do it justice. Impressive static rendered scenes are interlaced with captivating, if jerky, video footage. The audio is excellent and, combined with the images, generates an atmosphere that will have you jumping out of your seat during late night sessions.



Events in Phantasmagoria can become quite scary: you should see the shots we couldn't print!

Unfortunately, late night sessions will probably be limited due to the ease of the adventure. While I didn't finish it during the test period, I did manage to cover five chapters in one day and the puzzles aren't that difficult to solve. Some of Roberta's King's Quest games have proved more of a challenge, but if you're over 18 and like Sierra adventures then I thoroughly recommend playing it — just don't expect more than a couple of days' excitement.

System requirements

486/25 with 8Mb, Windows 3.1, 5Mb hard disk space, double speed CD-ROM, sound card with a DAC.
Price Suggested retail price £49.99
Contact Sierra On-Line 01734 303322

Magic carpet 2

Magic Carpet 2 is mana from heaven, says Steven Helstrip. You'll never sleep again.

It's tough being an apprentice wizard, everybody knows that. But doing battle with Vissuluth's demonic wizard servants in the realms of Netherworld, that's really tough. Just as hard, in fact, as fighting off the scariest of them all.

That's right, I'm talking about the Spider Demon from Doom. Fortunately, help is at hand. Along with your trusty airborne carpet, there are one or two spells to cast, soldiers to guard you, and all the guidance you need from Kafkar, your old master.

Your quest in Magic Carpet 2 is ultimately to restore the "mana balance" of the world, which was fine before Vissuluth got his hands on it. The task is achieved by collecting and storing mana balls that float around the game's texture-mapped landscapes. Certain

monsters and demons that roam the land explode when killed, leaving mana balls in their wake.

At the beginning of each level, or realm, you must first build a castle. This isn't as difficult as it sounds. You simply cast the old castle spell and not one, but several, appear in front of you. From then on your job is simple: carry on collecting mana. The more you gather, the

bigger the castle gets, and the bigger the castle the more mana it can hold. This also strengthens any spells you may have found on your travels, and eventually you'll collect enough mana to move onto the next realm.

Each realm is more difficult than the last. In the first, all you have to do is put a few bees in their place, fireball some helpless sheep and fly to the exit. Eventually, however, the game hots up and you find yourself being attacked by huge monsters with increasingly big

teeth and more spiders than Arachnophobia. The final showdown at the climax of the game pits you against Vissuluth himself.

Unlike the first Magic Carpet game, the scenery changes constantly and you find yourself battling through the night, above villages, in caverns and even at sea.

You ride the carpet in much the same way as the first game. The core graphics engine is similar, but faster. The scrolling is smoother and the landscapes more detailed. As with every game at the moment, a Pentium processor is recommended but even on a 486DX2/50 with 8Mb RAM the game played well. You can also have up to eight players on a network.

Magic Carpet 2 is up there with Doom and Descent on the playability scale. It's so addictive that you'll never get any sleep again.

System Requirements

486 DX2/50 8Mb RAM, double-speed CD-ROM drive, 8Mb hard disk space, SVGA video card and monitor.

Price £44.99

Contact Electronic Arts
01753 549442



Joystick jury

No Christmas games page would be complete without a selection of joysticks, so the PCW team forced themselves to look at four of the latest controllers.

Gravis Phoenix

You want buttons? The Gravis Phoenix has got more buttons than a truck load of 501s. It's a huge beast taking up over 30cm of desk space — hardly inconspicuous.

Connection is more complex than it needs to be — it won't plug directly into the joystick socket. You are required to unplug your keyboard and piece together a convoluted mix of male and female connectors.



You then have to connect the stick to the base with a phone-style connector and finally calibrate it in Windows.

So now you're ready to start firing on all buttons, yes? Well actually, no. None of the games I tried supported the Phoenix and so I was left using just two fire buttons: you might as well use a far simpler device.

The actual feel of the Phoenix was hardly inspirational — an over-sensitive joystick made it difficult to control movement.

Paul Fisher

Verdict Over-priced and over-engineered device. Give it the bird.
Price £99

Contact All Gravis sticks available from Mills and Mills 0171 352 9429

Gravis PC GamePad

The Gravis PC GamePad is a nice departure from your standard,



run-of-the-mill joystick. It's very compact and rather similar to a Nintendo game pad. There is a thumb-pad controller instead of a hand-held joystick although you can screw a small lever into the centre of the controller to make it look like a mini-joystick. It has four colour-coded, quick response buttons and two switches: one to give the option of left or right-handed play and

the other to select button configurations such as single shot and/or turbo-fire. It fits standard 15-pin joystick ports without difficulty and will work on PCs with an analogue joystick-compatible game card.

Dylan Armbrust

Verdict A good buy for those wanting subtlety, yet excellent performance.

Price £24.99

Euromax Phase 9 Phantom 2

The Phase 9 Phantom 2 is bulkier and sturdier than the



Gravis PC Game Pad. Finished in a fashionable clear plastic casing, it features an eight-way directional thumbpad and four colour-coded main fire buttons on top. Two extra buttons at the front

give left and right index finger action — a direct rip-off of Nintendo design.

No driver software is supplied but the pad connects directly to the PC's gameport and it worked straightaway with all the games tested. The feel is excellent and the Phase 9 proved ideal for arcade titles like FX Fighter and the long-awaited Mortal Kombat III.

Chris Cain

Verdict Not great for flight sims but ideal for arcade action, the Phase 9 Phantom 2 certainly gets the thumbs up from me.

Price £19.99

Contact Phase 9 Phantom 2 from Euromax on 01262 601006

Gravis Analog Pro

The Gravis Analog Pro is designed for both flight-simulation and arcade-style games. It consists of a padded joystick set into a paperback-sized base. There are two fire buttons and a trigger on the stick, with two more buttons on the base.

The buttons can support up to four independent functions, selected via two thumbwheels



on the right edge of the base.

A third thumbwheel acts as a throttle control and can be switched off to avoid conflicts with a second joystick.

The joystick tension is adjusted by means of a larger thumbwheel which peeps out from both the back and front of the device. The Analog Pro comes with a disk of calibration utilities, but proved responsive and easy to use when plugged in straight out of the box.

Clive Akass

Verdict Compact and versatile.

Price £39.99

Microsoft Sidewinder 3D Pro

The Sidewinder 3D Pro is a stylish looking joystick with ten buttons, a rotating shaft and both digital and analogue operation modes. Its semi-circular base creates the feel of a

space-age control panel and takes up only 22cm of your precious desk space. What more could you possibly want?

Well, how about one that works? Installation is easy but despite claims by Microsoft, getting it to work in DOS certainly isn't. After a rather scary, out-of-control experience in Descent and a few other games, I tried it under Windows 3.x only to get the same results. Only when calibrated within Windows 95 did the Sidewinder start to behave.

Nicola Kingsley

Verdict Pretty expensive, but possibly worth it under Windows 95.

Price £69.99 with Fury3.

Contact Microsoft 01734 270001



Leisure Lines

Brainteasers courtesy of JJ Clessa.

This Month's Quickie

I have a rectangular box — the area of the top is 72 square inches. The area of the front is 48 square inches and the area of the end is 24 square inches. What are the dimensions of the box?

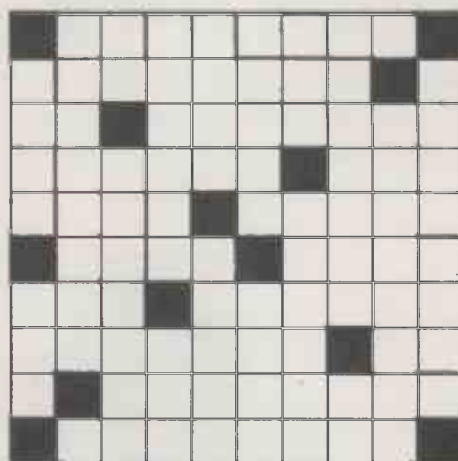
44	3548	2194480
67	6186	2746013
70	8818	3282601
94	9733	5468883
293	17689	32055162
430	67061	39486723
468	68986	60216141
682	355688	83396672
714	402683	88680472
1631	724301	89875671
2076	764156	92408817

This Month's Prize

Puzzle

A Merry Christmas and a Happy New Year to you all. Here's the usual not-too-difficult puzzle for the party season.

1631	724301	89875671
2076	764156	92408817



Arrange the numbers given into the grid — some across and some down — in the manner of a crossword. When you've done it, cut out (or photocopy) the completed grid and stick it onto a postcard, or the back of a sealed envelope. Then send it to the address below:

PCW Prize Puzzle January 1996, P.O. Box 99, Harrogate, N. Yorks HG2 0XJ, to arrive no later than 20th January 1996. Good Luck!

Winner of the October 1995 Prize Puzzle

A good response — just over 100 entries — to a problem which I thought was more difficult than usual. Perhaps a better assessment of the problem was given by the reader who said that it was not so

much difficult, as messy.

Anyway, the two correct solutions were 18181 and 18481. The winning card came from Ray Cook of Sheffield. Congratulations, Mr Cook, your prize is on its way.

THE BROTHER of INVENTION



THE
brother.

Solo

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Choice of Intel Pentium® Processors, PCI local bus

FLEXIBLE

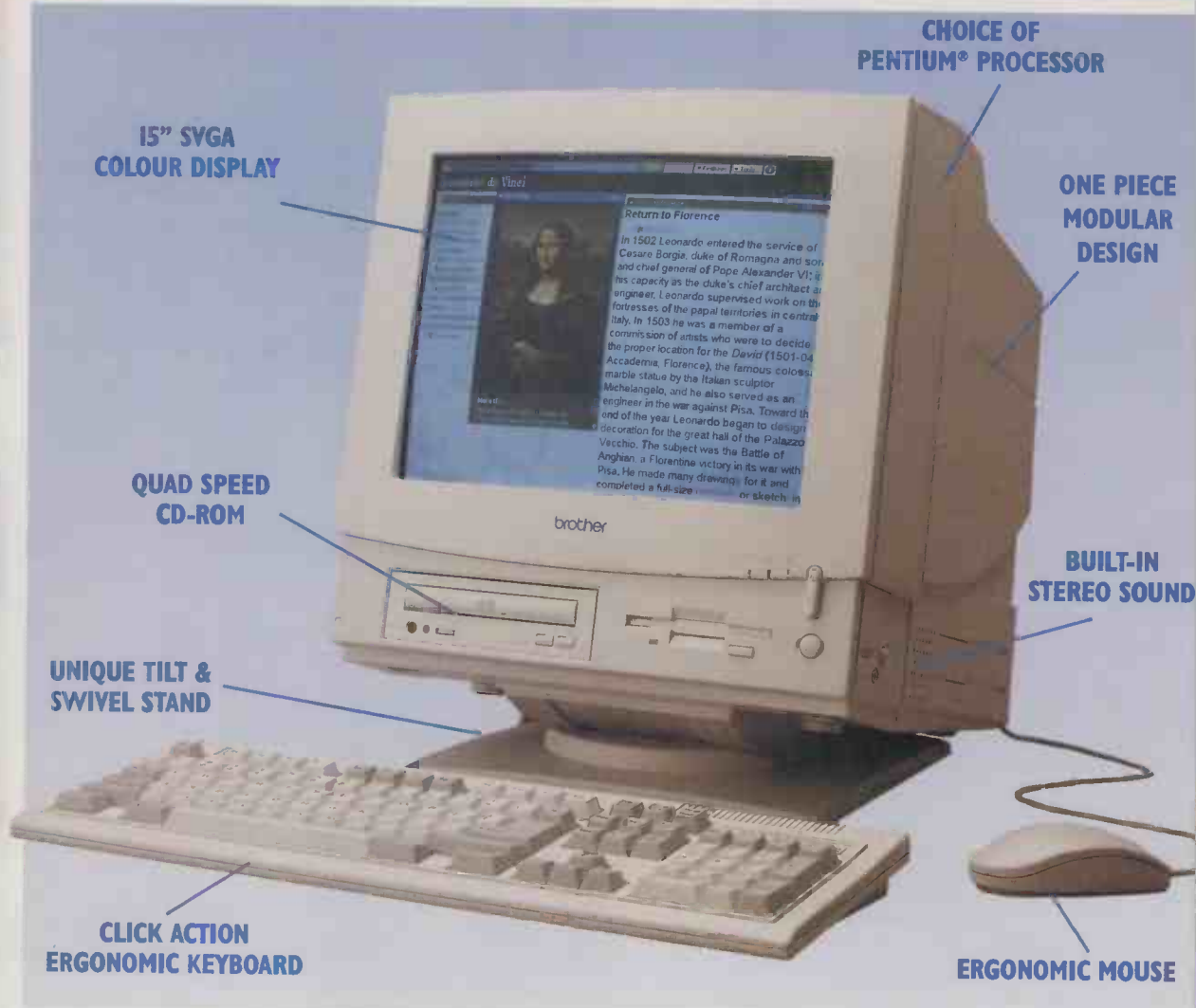
Fully expandable design 4 drive bays, 5 expansion slots.

VERSATILE

'Split and Swing Open' mechanism for easy reconfiguration and service

Solo

All you want All-in-One



15" SVGA
COLOUR DISPLAY

CHOICE OF
PENTIUM® PROCESSOR

ONE PIECE
MODULAR
DESIGN

QUAD SPEED
CD-ROM

BUILT-IN
STEREO SOUND

UNIQUE TILT &
SWIVEL STAND

CLICK ACTION
ERGONOMIC KEYBOARD

ERGONOMIC MOUSE

COMPACT

Only 10% larger than a 15" monitor, the smallest integrated monitor/PC of its kind, the compact Brother Solo transforms the smallest of areas into a high-productivity workspace.



POWERFUL

You can select from a variety of features to maximise performance. Choose from the family of Intel's powerful Pentium® Processors, double-sided RAM banks support a total of 128Mb. And the Solo offers PCI slots for powerful expansion.



ERGONOMIC

Conveniently front-mounted controls, combined with the practical Tilt & Swivel feature, allow you to customise display settings. Innovative features such as the full screen, mute, and suspend switches give you complete

control over the computing environment. In traditionally designed PC's, frequently used controls and

jacks are found on the rear panel of PC's. This makes access rather

awkward. On the Solo all these controls are easily accessible from the front panel.



VERSATILE

A spare drive bay allows for a second hard drive and six expansion slots provide the capacity for personalised configurations. The optional AV pedestal, with its 5W detachable speakers and hi-fi sub-woofer, is a must for the music connoisseur. Optional TV Tuner and MPEG cards allow you to optimise the full screen display.

EASE OF SERVICE

The rear panel of the Solo swings open to a full 60° angle revealing vertically placed expansion slots on the main board. This patented Split & Swing feature makes servicing and upgrading the Solo both quick and simple.



Solo The All-in-One MultiMedia Solution

Solo for the Office

Free up your desk space! The Solo is only 10% larger than a 15" monitor and the smallest integrated monitor/PC of its kind. Yet, behind the compact design, the Solo makes no compromises on performance or powerful features. Pentium® processor, PCI bus architecture, 15" display and the unique "Split and Swing Open" mechanism for easy reconfiguration and service, make sure the Solo will satisfy the most demanding office PC user. Pre-installed Microsoft Works software has word processing, spreadsheet and database modules to get you productive from the moment you power up.

Solo for the Home

No need to make special cabling connections, configure hardware or install software. The Solo is ready to use straight out of the box. With all the latest MultiMedia features built-in, the Solo is ready for the next generation of PC users. Place the Dangerous Creatures CD into the quad speed CD drive and bring the sights and sounds of the jungle to your home. Or for some light relief, enjoy a leisurely game of Multimedia Golf. The Solo also comes with Microsoft Money to help sort out the home finances.

Solo for Education

Understanding and using new technology is crucial to our children's education. And the Brother Solo represents the perfect PC solution for educational use. In the classroom the compact design, fewer cables and easy servicing, together with all MultiMedia features built-in make the Solo an ideal choice. The Microsoft Family CD's, including the Encarta encyclopaedia, help children explore the exciting world of MultiMedia computing like never before.



Solo FOR THE OFFICE



Solo FOR THE HOME



Solo FOR EDUCATION

Compact, powerful and easy to customise, the Brother Solo PC is truly all you want - All-in-One

BROTHER SOLO SPECIFICATION

- Intel Pentium® Processor: 75MHz, 90MHz, 100MHz or 120MHz
- PCI Bus Motherboard
- 8Mb RAM expandable to 128Mb
- 540Mb fast IDE Hard Disk (1Gb option)
- 256K Cache RAM
- PCI 1Mb Graphics Card
- Quad speed CD-ROM
- 16-bit Soundcard and built-in Stereo Speakers
- 15" SVGA LR NI 0.28 Colour Display
- EPA EnergyStar Compliant
- 3.5" 1.44MB floppy drive
- Serial, Parallel and games port
- Spare hard drive bay
- 4 x 16-bit ISA/2 x 32-bit PCI expansion slots
- 102 key keyboard and mouse
- Tilt & Swivel design
- 'Split and Swing Open' mechanism for easy reconfiguration and service
- Windows 95 or Windows 3.11 and MS-DOS 6.22
- Microsoft Family CD Bundle (see below)
- Dimensions: 360 x 375 x 430mm
- 2 year warranty (1st year on-site)

Microsoft Family CD Pack FREE with the Brother Solo MultiMedia

- MS Encarta 1995 Encyclopaedia CD
- MS Works for Windows Integrated Package CD
- MS Dangerous Creatures Wildlife CD
- MS Money Home Finances CD
- MS MultiMedia Golf Entertainment CD
- MS Scenes Backgrounds (3.5" disks)



Documentation included on CD. Works and Money supplied on 1 CD

Upgrade to the Solo SuperMax

- Fax / Modem with Voice
- Joystick
- SuperMax Software Package including:
 - Business Communications
 - Lotus SmartSuite v4.0:
 - Lotus 123
 - Lotus WordPro
 - Lotus Approach
 - Freelance Graphics
 - Lotus Organiser
 - Connection to CompuServe & Internet (Free for limited period)
 - Supervoice Comms Software
 - Education
 - Grolier's MultiMedia
 - MultiMedia Typing Tutor
 - Utilities
 - Pilot MultiMedia
 - Training for Lotus SmartSuite
 - Interlude and Get Organised
 - Professor MultiMedia
 - Professor Windows

Plus The Microsoft CD Pack

Brother Solo P75 MultiMedia	Brother Solo P75 SuperMax	OPTIONS
£1399 <small>PERSONAL CREDIT £59.87 inc VAT per month APR 26.8%</small>	£1549 <small>PERSONAL CREDIT £65.09 inc VAT per month APR 26.8%</small>	Upgrade Hard Disk from 540Mb to 1.275Gb £110 AV Pedestal with Hi-Fi Sub Woofer & External Speakers £79 MPEG Card £POA TV Tuner Card £POA Fax/Modem 14,400 with voice £90 Upgrade warranty to 2nd year on-site £29
P90 90MHz £1499 P100 100MHz £1579 P120 120MHz £1629	P90 90MHz £1649 P100 100MHz £1729 P120 120MHz £1779	

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PERSONAL CREDIT

Our monthly payment scheme is available to private purchasers only, subject to status. Example: PC Costing £899 + £20 (delivery) + 17.5% VAT = £1079.82 total cash price. 10% deposit of £107.98 followed by 36 equal monthly payments of £38.13 (APR 26.8%). Written quotation on request. Additional payment protection insurance available. Kyodai Electronics Ltd is a licensed credit broker.

BUSINESS LEASING Inc. 3 Year On-site Warranty

3 Year Rental is offered to businesses trading 1 year or more (subject to status). Includes 3 Year On-site Warranty. Call for a competitive quotation on most products. Special leasing facilities also available for Education establishments.

To the best of our knowledge the specifications and prices shown are correct at the time of press. Subject to change without notice. E & O.E.

The Brother *Super* MAX



Boxes shown for illustration only

Also includes Microsoft Family CD Pack



- 486DX4 100MHz processor
- 128K cache
- 540Mb 11ms IDE hard drive with PCI enhanced IDE Interface
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII, non-interlaced colour monitor (0.28 dp), EPA EnergyStar
- PCI 64-bit bus graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 serial, 1 parallel ports
- 3 x PCI/4 x ISA expansion slots
- Dual speed CD-ROM
- SoundBlaster 16-bit stereo soundcard
- Games pro joystick
- Deluxe stereo speakers
- Fax/Modem with communications software
- Microsoft compatible mouse
- 102 key enhanced keyboard
- SuperMAX Software Package (see panel for details)
- Windows 95 or Windows for Workgroups 3.11 & MS-DOS 6.2
- Desktop case
- 12 months on-site warranty

Amazing power. Fantastic features. And a stunning array of software. The Brother SuperMAX gives you everything you need to enjoy the MultiMedia experience - and much more besides.

The SuperMAX is designed for uncompromising performance - 486DX4 100MHz processor, PCI Local Bus, 8Mb of RAM, large 540Mb storage, a double-speed CD-ROM, 16-bit stereo soundcard and high-speed local bus graphics.

When it comes to getting the most from your system the SuperMAX is exceptional - all your Business, Education, Entertainment and Communications needs are catered for - we even include a modem and software to get you into the exciting world of the information superhighway.

The SuperMAX is the system you deserve. Built with attention to detail, quality engineered and designed to keep you up and running, year after year.

THE SUPERMAX SOFTWARE PACKAGE:

Business:

- Lotus Smartsuite v4.0 inc:
- Lotus 123 Spreadsheet
- Lotus WordPro Word Processor
- Lotus Approach Database
- Lotus Freelance Graphics
- Lotus Organiser

Entertainment: (Top 10 Games)

- Dragon Lore
- MegaRace
- Theme Park
- FIFA International Football

Communications:

- Connection to Compuserve and Internet (Free for limited period)
- Superservice Comms Software

Education:

- Grolier's MultiMedia Encyclopaedia
- MultiMedia Typing Tutor

Utilities:

- Pilot MultiMedia Graphical Interface
- Training for Lotus Smartsuite
- Interlude and Get Organised
- Professor MultiMedia
- Professor Windows

Microsoft Family CD Pack

- MS Encarta 1995 CD
- MS Works for Windows CD
- MS Dangerous Creatures CD
- MS Money CD
- MS MultiMedia Golf CD
- MS Scenes (3.5" disks)

£1199

PERSONAL CREDIT
£50.57
inc. VAT per month
APR 26.8%

SUPERMAX WITH PENTIUM PROCESSORS

Inc: 256K Cache, 4 x PCI/4 x ISA slots

P75 75MHz	£1269
P90 90MHz	£1369
PI00 100MHz	£1449
PI20 120MHz	£1499
PI33 133MHz	£1639



EnergyStar compliant with advanced Power Saving Facilities

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Great Value Brother PC Systems

"An Absolute Bargain"

PERSONAL COMPUTER WORLD June 1995

Including 6 Microsoft Titles worth over £400 (R.R.P.)



Model shown: Graduate MultiMedia.
Boxes shown for illustration purposes only.
Speakers supplied will be superior Deluxe Stereo Speakers

Enter a whole new dimension in creative computing with a MultiMedia PC. Integrate text, graphics, sound and live action on your PC to bring education, leisure and business software to

life. With the new Microsoft Family CD Pack the Brother range offers excellent value for the beginner through to the professional. And all hardware and software is installed, tested and ready to run straight from the box.

Worth over £400 (RRP)

Microsoft Family CD Pack
FREE with these Brother MultiMedia Systems

- MS Encarta 1995 CD Encyclopaedia
- MS Works for Windows CD Integrated Package
- MS Dangerous Creatures CD Wildlife
- MS Money CD Home Finances
- MS MultiMedia Golf CD Entertainment
- MS Scenes (3.5" disks) Backgrounds

Documentation included on CD.
Works and Money supplied on 1 CD

TUTOR Series

TUTOR 66

- 486DX2 66MHz processor
- 540Mb 11ms IDE HD with PCI Enhanced IDE Interface
- 128K Cache
- 4Mb RAM exp. to 128Mb
- 14" SVGA colour monitor
- PCI 64-bit graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 serial, 1 parallel ports
- 3 x PCI/4 x ISA expansion slots
- Keyboard and mouse
- Microsoft Works v3 for Windows
- Windows 95 or Windows for Workgroups 3.11 and MS-DOS 6.2
- 12 months on-site warranty

£729

PERSONAL CREDIT
£31.07
inc.VAT per month
APR 26.8%

LOTUS TUTOR 66

- As Tutor DX plus Lotus Bundle 1inc:
- Lotus 123 Spreadsheet
 - Lotus Ami Pro Word Processor
 - Lotus Organiser
 - Lotus SmartCam
 - Lotus Smartpics Clipart
- (Does not include MS-Works)

£739

PERSONAL CREDIT
£31.49
inc.VAT per month
APR 26.8%

TUTOR 66 MULTIMEDIA

- As Tutor DX plus:
- Dual Speed CD-ROM
 - SoundBlaster 16-bit Stereo Soundcard
 - Stereo Speakers
 - Microsoft Family CD Pack

£869

PERSONAL CREDIT
£36.88
inc.VAT per month
APR 26.8%

GRADUATE Series

GRADUATE 100

- 486DX4 100MHz processor
- 540Mb 11ms IDE HD with PCI Enhanced IDE Interface
- 128K Cache
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII non-interlaced colour monitor (0.28 dot pitch)
- PCI 64-bit graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 serial, 1 parallel ports
- 3 x PCI/4 x ISA expansion slots
- Keyboard and mouse
- Microsoft Works v3 for Windows
- Windows 95 or Windows for Workgroups 3.11 and MS-DOS 6.2
- 12 months on-site warranty

£899

PERSONAL CREDIT
£38.13
inc.VAT per month
APR 26.8%

OFFICE GRADUATE 100

- As Graduate plus:
- Microsoft Office 4.2 for Windows inc: MS Excel v5 MS Word v6 MS Powerpoint v4 MS Mail (License)

£1079

PERSONAL CREDIT
£45.59
inc.VAT per month
APR 26.8%

GRADUATE 100 MULTIMEDIA

- As Graduate plus:
- Dual Speed CD-ROM
 - SoundBlaster 16-bit Stereo Soundcard
 - Deluxe Stereo Speakers
 - Microsoft Family CD Pack

£1049

PERSONAL CREDIT
£43.93
inc.VAT per month
APR 26.8%

PROFESSOR Series

Professor Series Includes:

- Intel Pentium® processor for lightning fast 64-bit power
- PCI bus optimises data speed
- 540Mb 11ms IDE HD with PCI Enhanced IDE Interface
- 256K Cache exp. to 1Mb
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII, non-interlaced colour monitor (0.28 dp), EPA EnergyStar
- PCI 64-bit graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 serial/1 parallel/1 games ports
- 4 x PCI, 4 x ISA (1 shared) slots
- Windows '95 or Windows for Workgroups 3.11 and MS-DOS 6.2
- Microsoft compatible mouse
- Desktop case and keyboard
- 12 months on-site warranty



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P90 £1049 3 Year Business Rental: £9.66 per week
P100 £1129 3 Year Business Rental: £10.30 per week
P120 £1179 3 Year Business Rental: £10.70 per week
P133 £1319 3 Year Business Rental: £12.03 per week
- 3 year Business Rental includes on-site warranty, ex VAT & delivery

PROFESSOR MULTIMEDIA P75

- As Professor P75 plus:
- Dual Speed CD-ROM
 - SoundBlaster 16-bit Stereo Soundcard
 - Deluxe Stereo Speakers
 - Microsoft Family CD pack

£1099

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£48.08
inc.VAT per month
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Our monthly payment scheme is available to private purchasers only, subject to status. Example: PC Costing £999 + £20 (delivery) + 17.5% VAT = £1079.82 total cash price. 10% deposit of £107.98 followed by 36 equal monthly payments of £38.13 (APR 26.8%). Written quotation on request. Additional payment protection insurance available. Kyoda Electronics Ltd is a licensed credit broker.

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NEW Brother Surfer

- The Super Highway PC

With 1 Year
UNLIMITED
Access to the
Internet

- ➔ No Subscription Charges
- ➔ No Registration Charge
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The Brother Surfer is your ramp onto the information Super-highway, and the opportunity to take advantage of a wealth of global resources. This complete package includes a full featured DX4 100MHz PC, internal fax/modem, software and an amazing 1 whole year's free access onto the Internet via Premier Internet. With local call access from the majority of the UK, your call charges will be kept to local rates.

The software you need to surf the Internet will be pre-loaded onto your system - the latest Super Mosaic Web Browser, E-mail package and more.

When you receive your system you can register anytime of the day - enter your details, choose a password and you'll be up and running within 5 minutes.

Once on-line you'll see how easy it is to E-mail colleagues around the world, check up on the latest news, go shopping at an on-line store and surf the worldwide web at your leisure. The Brother Surfer is all you need to enter the exciting world of the Super-highway.

Brother Surfer

- 486DX4 100MHz processor
- 540Mb 11ms IDE HD with PCI Enhanced IDE Interface
- 128K Cache
- 8Mb RAM exp. to 128Mb
- 14" SVGA low radiation MPRII non-interlaced colour monitor (0.28 dot pitch)
- PCI 64-bit graphics accelerator
- 3.5" 1.44Mb floppy disk
- 2 serial, 1 parallel ports
- 3 x PCI/4 x ISA expansion slots
- Keyboard and mouse
- Internal Voice Modem 14,400
- 1 Year On-line Access to the Internet via Premier Internet
- Microsoft Works v3 for Windows
- Windows 95 or Windows for Workgroups 3.11 and MS-DOS 6.2
- 12 months on-site warranty

£1079

PERSONAL CREDIT
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inc VAT per month
APR 26.9%

Brother Printers

BROTHER HL-630 Laser Printer

- Superfast first page out
- Six pages per minute
- GDI mode for windows
- Built-in emulations for DOS printing
- Low cost per copy
- Network connectivity
- Microfine toner
- Straight paper path
- Auto emulation switching
- 12 months return-to-base warranty
- Economy print mode

only **£329**

BROTHER HL-631 Laser Printer

All the features of the HL-630 with

- 1Mb RAM buffer memory

only **£339**

BROTHER HL-660 Laser Printer

All the features of the HL-630 with

- 600dpi resolution
- 2Mb RAM expandable to 8Mb
- HP LaserJet™ 4, Epson FX-850 and IBM Proprinter XL emulations

only **£449**

The NEW 600 Series

SUPERFAST LASER PRINTERS

The amazing HL-600 series printers are completely different of laser printers. The first superfast all-rounders on the market.



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- Genuine 600dpi with 1200dpi achieved with high resolution control and photoscale technology
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- Duplex and Network options
- 75 Scalable Fonts
- 500 sheet paper cassette plus 150 sheet multi tray
- Microfine Toner
- PCMCIA card slot & Font cartridge slot
- 12 months on-site warranty

only **£929**



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Full Range of Printers from Brother, Canon, Epson and Hewlett-Packard available. All prices exclude VAT.

NEW Brother Pro'Book

- The Professionals Choice



PCMCIA Card Slots Type II and Type III

Removable long-life battery with 5-level charge indicator

Removable Hard Disk for Infinite Storage & Security

LCD Status Panel

Sleek design and ergonomic palmrests

Now with Free Carry Case



"A well designed portable... Of all the 256 Colour screens reviewed here, the Brother had the nicest TFT"

PERSONAL COMPUTER WORLD

"The Brother performed well in our battery life tests - lasting an incredible four hours, which is, by far, the top score"

WHAT PERSONAL COMPUTER

"A well designed portable, full of features that make it a pleasure to work with on the road...With its simple yet effective GlidePoint pointing device and its ergonomically positioned keyboard, the Brother ProBook is extremely comfortable in prolonged use...With its impressive battery life, extensive power management facilities, hot-swapping support and an attractive TFT screen, the ProBook is ideally suited for life on the road. It's also light and small enough to be carried around in comfort."

PC DIRECT



The revolutionary new GlidePoint® makes pointing and clicking simpler than ever

PRO'BOOK SPECIFICATIONS

- Choice of Display: Mono 9.4" VGA LCD 64 greyscales Dual Scan Colour 9.4" and 10.4" Colour Active Matrix TFT 9.4" and 10.4"
- Choice of Processor: 486DX2 66MHz, 486DX4 100MHz
- 4Mb RAM exp. to 8Mb, 16Mb or 32Mb
- Removable 420Mb hard disk (810Mb option)
- Built-in 16-bit SoundBlaster compatible stereo sound system (optional extra on mono models)
- Built-in 3.5" 1.44Mb floppy disk drive
- 1Mb VESA Local Bus graphics accelerator
- PCMCIA slots: 2 x Type II and 1 x Type III
- Docking Station Connector
- Ergonomic Palmrests
- Full feature power management with doze, sleep, suspend and suspend to disk mode
- LCD Status Indicator
- Removable battery pack with 5 level LED display of remaining capacity
- External colour (1024 x 768) SVGA port
- GlidePoint® trackpad with dual buttons
- 84-key keyboard with embedded keypad
- Ports: 1 serial, 1 enhanced bi-directional parallel, 1 SVGA + external keyboard
- 2 hour fast battery charge
- Microsoft Works v3.0 integrated package includes Word Processing, Spreadsheet, Database, Communications
- Windows 95 or Windows for Workgroups 3.11 and MS-DOS 6.2
- Weight 2.6kg, 286mm x 220mm x 45mm
- Free Carry Case
- 12 Months on-site warranty

PRO'BOOK OPTIONS

RAM Upgrades	Executive Carry Case	£49
4Mb to 8Mb RAM	Upgrade Hard Disk from 420Mb to 810Mb	£260
8Mb to 16Mb RAM		
16Mb to 32Mb RAM		
Internal Battery Pack	PCMCIA Fax/Modems with Delrina WinFax Lite Software	£149
Docking Station	14,400bps	£149
NiMH Battery Pack	28,800bps	£199
Car Adaptor		£49

Brother Pro'Book 486DX2-66 Mono/420Mb & Lotus Bundle 1* inc:	£1009
• Lotus 123 v5 • Lotus Ami Pro 3.1 • Lotus SmartPics • Lotus Organiser 1.0 • Lotus ScreenCam	
Brother Pro'Book 486DX2-66 Mono/420Mb and Lotus SmartSuite 4.0*	£1069
Brother Pro'Book 486DX2-66 Mono/420Mb and Microsoft Office 4.2	£1169

*Disks and manuals extra. Does not include Microsoft Works.

Pro'Book BCP700 Series All prices are for 420Mb Hard Disk.

BCP 741 486DX2-66

BCP 761 486DX4-100

9.4" Mono*	10.4" Dual Scan	9.4" Dual Scan	10.4" Dual Scan	9.4" TFT Colour	10.4" TFT Colour
£999	£1299	£1349	£1499	£1649	£1899
Business Rental Per Week	Business Rental Per Week	Business Rental Per Week	Business Rental Per Week	Business Rental Per Week	Business Rental Per Week
£9.42	£12.06	£12.46	£13.66	£15.31	£17.31

* Does not include sound system (available as an optional extra £50)

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Give
your eyes
and your
pocket a
refreshing
break.



The 17" Microscan 5EP Awarded
The best monitor
under \$800.

BYTE
MAGAZINE
January
1995

BUY ADI.



The features and quality YOU expect. The price YOU don't.

A billion \$ giant, ADI was established in 1979 and is recognised as a leading force in monitor manufacture. Our line of innovative monitors has set benchmarks for quality, performance and reliability.

The ADI MicroScan Monitor Range

- Microprocessor intelligence
- Fingertip front panel controls
- 76 Hz flicker-free refresh rate
- Brilliant, non-interlaced images
- Single-board design
- 2-year on-site warranty
- Optional 3-year warranty



US Edition
ADI MicroScan 3E+

Until now products populating the landscape of performance monitors have looked a lot alike. High in quality, long on features, hefty on price. Thanks to ADI, things are looking up. For much less, you can get the same quality and features ADI has for years built into the monitors of many of today's world class monitor and PC companies.

With the opening of our UK office, ADI can now offer the same quality of service and support which has helped us to sell over 4 million monitors world wide in the last two years.

So what's the big difference between us and the other so called top-line monitor manufacturers? The answer is the bottom line. ADI gives you something that we all need today - Better Value.

When it comes to quality, features and affordability, you can't beat an ADI MicroScan Monitor. For more information on ADI and our monitors, call **(0181) 236 0801**



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ADI

ADI Systems (UK) Ltd. Unit 3, Manor Place, Manor Way,
Borehamwood, Herts. WD6 1WG
Tel: (0181) 236 0801 Fax: (0181) 207 3842

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More than just a monitor

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Tim Nott investigates Explorer.



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Gordon Laing rants and reasons over a Christmas wish list; from RAM to resolution.

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.ccmil.compuserve.com

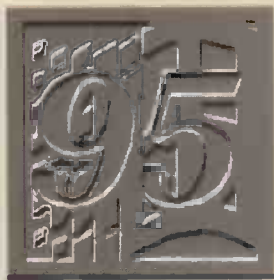
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The Explorer quest

Not quite your Ranulph Fiennes, but none the less intrepid for all that, Tim Nott leads you to the answer to an FAQ about Explorer and hacks his way through other little-known aspects of this utility.

The Lord, it is said, moves in mysterious ways. Equally mysterious are those of Windows 95 folders and Explorer.

Let's start with an FAQ — a Frequently Asked Question. How do I persuade Explorer to start without expanding a drive? By default, it starts with the left hand pane showing a tree structure, with Desktop at the top, then My Computer, Network Neighbourhood, Recycle Bin and Briefcase on the next level.

My Computer (or whatever you've renamed it) branches to each logical drive on your PC, as well as entries for Control Panel, Printers and possible other folders, such as Dial-up networking. However, it's the drives we're interested in.

Say you have a PC with floppy disk on A:, a hard disk split into two partitions C: and D:, and a CD-ROM on E:. Explorer will, by default, expand the first level of folders in C: and show all its contents in the right hand pane. If you've got more than a score or so of folders in the root of C:, this means you have to collapse the branch (click on the minus sign to the left of the drive icon) or scroll down to see D: or E:. All of which is rather a pain in the pane, so to speak.

Fortunately, Explorer has a variety of startup switches which enable it to perform in different ways. You'll find this information in a file called Tips.txt which should be in your main Windows 95 folder. Failing that, it's also in the Windows Resource Kit Helpfile on the CD-ROM, situated at Admin\Reskit\Helpfile\Win95rk.hlp. The command line parameters are:

```
EXPLORER [/n] [/e][,/root,object][[, /select],subobject]
```

If you find the explanation that follows

totally baffling, then you are not alone. However, after much trial and error with the final beta I did manage to get it to open, unexpanded. Then, when the release version arrived, I lost the magic formula and it reverted to its old ways. So a big thank you to Eric Chapman who posted the following hint on CIX:

Right-click on the Start button, then Open. Double-click on Programs in the folder that appears. In the next folder you should find a shortcut icon (it has a little arrow at the corner) for Explorer. Right-click on this and choose Properties. Click on the Shortcut tab in the property sheet, and change the entry in the Target box to:
`C:\WINDOWS\EXPLORER.EXE /n,/e,/select,C:\`

Make sure you get all the commas and slashes right. You can, if you want, put a different drive letter before the final backslash. Explorer will then open with no drive expanded, and C: (or the letter you've specified) highlighted.

Screen horror

Explorer is actually responsible for far more than the tree/contents window that appears when you click on its icon. It's the Windows "shell" and, like 3.1's Program Manager, is running all the time. Try closing any Explorer windows and press Ctrl+Alt+Delete. This will summon the Close Program dialogue box. You'll see a list of all programs running — including those that work behind the scenes and don't appear on the taskbar. Select Explorer and click on the End Task button, and the Shut Down Windows dialogue appears. Similarly, try running Explorer from the Run command without the /e

switch — you'll see a normal, single-paned folder window open.

You can also Explore from an open folder by right clicking on a sub-folder and choosing Explore. A quicker way is to shift-double-click on a folder. But there is a rather tedious trap here: if you're not careful this will open an Explorer for every folder up to the one on which you double-click. Once the process has started there seems no way of aborting it — you just watch in horror as the screen fills up with Explorers, and then close them all individually when it has finished.

What happens is that when you open a folder, the first item is semi-selected. It isn't highlighted, but there's a dotted box around it. Shift-clicking on another item selects everything in between, and if these are all folders, then they will all get Explored. Logically, it should take three clicks to do this, but logic keeps a low profile in Windows 95. The way to avoid it happening is to select the folder you want to explore with a single, unshifted click, then shift-double-click.

Windows allows you the option of opening new folders as separate windows, or replacing the contents of the existing one. You set this behaviour from the View/Options menu. Whichever option you choose, you'll probably find occasions when you'd rather it did the opposite. For example, in "same window" mode you might find yourself wanting two folders open so you can drag files between them. Or in "multiple windows" mode you might want to open a deeply-nested folder without cluttering up the screen with all its ancestors. However, if you hold down the Control key as you open a folder, the

behaviour reverses on a one-off basis. You doubtless know that pressing the Backspace key opens (or switches back to) the parent folder, but Ctrl+Backspace doesn't appear to work — you have to Ctrl-click on the "Up one level" button instead. And don't forget that holding the Shift key down when you close a folder closes all its ancestors.

Christmas reprise

This time last year, the *Hands On* editor, Gordon Laing, suggested that we each

produce a Christmas wish-list. Gordon has since moved to the other end of the magazine, but I'm pleased to say that our current squadron leader, Eleanor Turton-Hill, is upholding tradition, although management cutbacks mean we're down to five wishes against last year's ten.

Before I send this year's list (see the panel page 289) fluttering up the chimney, it's interesting to see how many of last year's dreams came true.

Wishes one and two concerned the price of RAM. We all need more of it, and

Mystery of the month

This month's mystery is one that had me completely stumped at first: reader Martyn Goodman wanted to know how it is possible to modify something that doesn't yet exist.

This is not a philosophical paradox, on the lines of "travelling back in time to before you were born and killing your parents", but refers to the information given in some file property sheets. Sure enough, when I looked, I found that I had a load of files that were created on 17th August 1995, but which had been modified more than five weeks earlier. The confusion stems from what is meant by "creation date".

Windows 95 keeps track of three dates per file: the date at which the file was created on your hard disk; the date it was last accessed (the last time you ran a program

file or read a data file without necessarily changing it); and the date it was last changed.

Windows 3.1 only showed the last of these, and this is also the date that appears in a folder with Details turned on. Since most of us don't modify program files, then this is usually the date-stamp given to the file by its original creators and was previously known, quite reasonably, as the "creation date". This is often a useful aid to identification: the time for Windows 95 files is shown as 9:50 a.m.; and Windows 3.11 as 3:11 a.m. However, the Created field in the property sheet refers to the date the file was created locally, on your hard disk.

Mystery solved, I hope.



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Creationists
— can
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really
time travel?

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DATA SOLUTIONS

my fervent desire was that someone would put out the fire in the resin factory, or at least come up with some plausible explanation for why it continues to be so expensive compared with processors and hard disks.

A quick look at the prices in corresponding issues of *PCW* shows that hard disk prices have once again tumbled dramatically — a 1Gb drive can be had for under £250, which works out at 25p a megabyte. Practically everything else is cheaper, too: motherboards, processors, peripherals and software. RAM, on the other hand has dropped only slightly in price; it's still about one hundred times the

price-per-meg of hard disk space. Five years ago the ratio was around ten to one. Keep trying, Santa.

Wish three was for a decent Windows text editor. At the time, I reported that I'd already opened this one, in the shape of Windows 95 beta WordPad, which had all sorts of improvements over Write such as: drag and drop editing, a toolbar, and the ability to read and save RTF and Word 6 documents. To my acute embarrassment, I actually wrote I think I'm in love. Not any more. For a start, the release version shows a distinct downturn in speed; it's only about 25 percent faster than Word 7 to load a big document. Write does it

almost instantly. Furthermore, Write had headers, footers, decimal tabs and full-justified margins. WordPad doesn't.

And if you're thinking of taking a Word 6 or 7 document home for the weekend, and editing it in WordPad, you'll notice that you've lost the greater part of the formatting. Sorry, Santa, but the wheels have fallen off this one.

Wish four was my periodic howl for a keyboard whose layout was based on something a little more ergonomic than the 1872 Scholes Typewriter. Dream on, Tim.

Wish five was for the Windows 95 programmers to move the Close button away from the Maximise and Minimise ones.

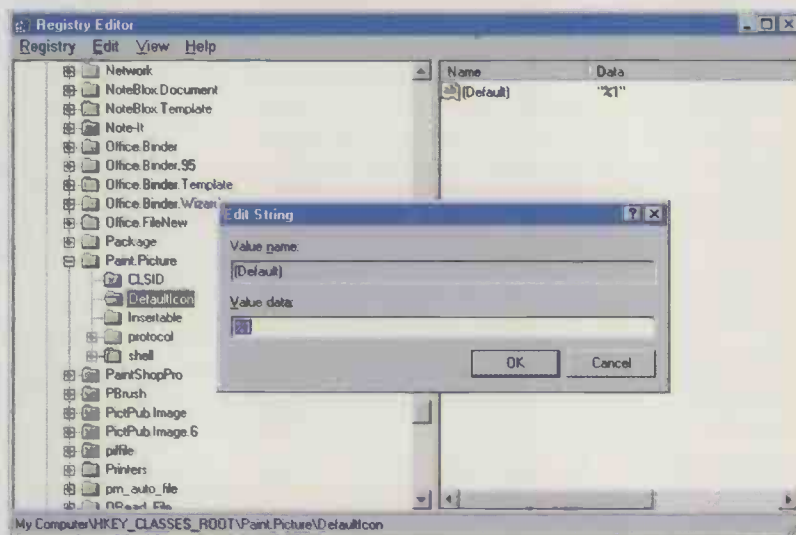
Bits & PCs

Good news and bad news for Microsoft Office users.

- The good news, which I discovered purely by trial and error, is that Windows Paint will use the graphic import filters supplied with Office. It tries to keep this secret, as they don't appear in the list of file types, but I've managed to load .GIF, .TIF and .JPG files. This is strictly a one-way exercise because you can't save in these formats, but I'm none the less impressed.
- The bad news, which I'm glad to say I didn't find by trial and error, is that if you enter 1.40737488355328 into a cell in Excel... well, try it and see. Weird, is it not?

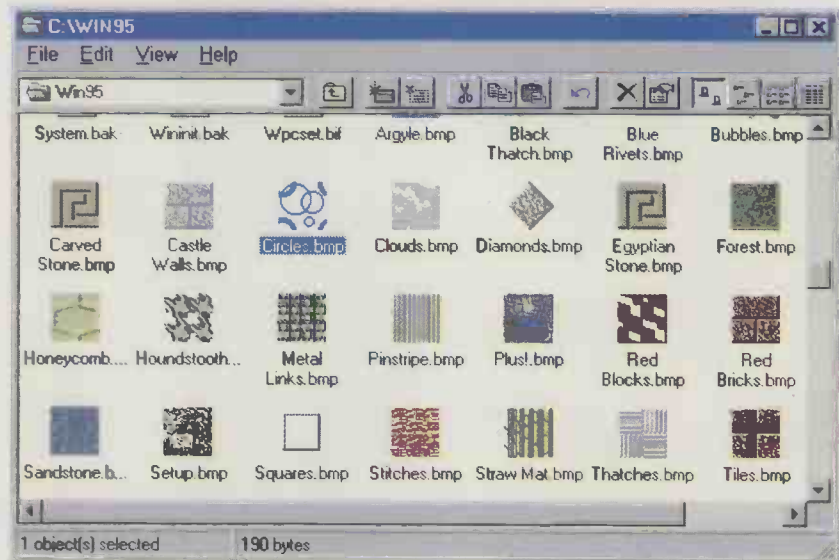
Pretty silly

● Here's a fairly useless, but rather clever, trick that involves editing the registry; so you may want to make back-ups of USER.DAT and SYSTEM.DAT first. Run REGEDIT, and click on the plus sign next to HKEY_CLASSES_ROOT. Scroll down until you see Paint Picture and click on its plus sign. Click on the folder that says DefaultIcon, then switch to the right-hand pane and double click on Default in the Name column. A dialogue box opens, letting you edit the contents of the entry in the Data column. This should contain the location of the icon — normally "C:\Progra-1\Access-1\MSPAINTE.EXE,1". Pausing only to wonder why the registry can't handle long folder names, change this



Left
Editing the registry entry for Paint Picture Icons...

Below
...and the result



to "%1". Don't type the quotes — the editor will add its own double quotes. Close REGEDIT (it saves automatically). You

should then find that all .BMP files appear in folders, not with the default Paint icon, but as miniatures of themselves.

Christmas wishes

Dear Santa,

Please ask Microsoft to place a few windows in its Chinese walls.

Then the developers of Office could see what the Windows 95 mob was up to. I like the way the accessories such as NotePad, WordPad and Paint show the file first, then the application on the title bar or the task bar.

This is the document-centric approach, and it's a great improvement — after all, you can tell the application from the icon picture. So why on earth didn't someone tell the Office team about this? To add insult to injury, it's not just "Word" or "Excel", followed by the data file that appears on the taskbar buttons, but "Microsoft Word..." Hence, after a busy hour or two you end up with several buttons all saying "Mic..."

And while the Office crew is making its products Windows 95-compatible, how about a bit of feedback the other way? Why not make the Windows 95 accessories Office-compatible so we can add Paint files to an Office Binder, for



instance?

And can you remind Microsoft about MDI — the multiple document interface? Opening separate folders, or Explorer sessions, is a tedious way to move files about compared with the old multi-paned File Manager.

And getting back to Binder again — why is there no way of tiling documents there? When I looked at the beta version of Windows Quickview, I distinctly remember having seen viewers for JPEG and GIF files. So why aren't they there any more? Can we have them back please?

Please give me the patience and understanding to get to grips with the way in which Windows 95 saves settings, or not, as the case may be. You may remember we used to be able to do this with the File and Program Managers. I realise this is going to take a long time, but I would like to pass this information on to the readers of my column. Can we please start with "How do I stop Windows re-opening all the folders I was using when I last shut down?"

They didn't, and now I've grown used to it I'm very glad they didn't and I retract that one completely.

Alas, the Whoops button (for cancelling the loading of a program one has launched by accident) didn't happen either, but my next wish did. It was for a create directory button in File/Save dialogues. Santa really went overboard on this one, as I can now rename, copy, move and delete files, Quickview them, send them to another application and generally do all the things possible in a normal folder, without leaving the Open/Save as... dialogue.

Wish seven was for a way of password protecting — particularly from six-year-olds — applications and directories on a standalone PC. Pausing only to update that to seven-year-olds, I can report that Windows 95 is better at this but still not good enough. I will cover this in greater detail in a later issue.

Wish eight was a subscription to Which Internet Book magazine. It was meant as a joke, but I am now informed that such a thing exists.

I'm still waiting for wish nine, the UK

version of Encarta, and since no-one fulfilled wish ten — a bottle of Bushmill's Black Label — I bought my own.

Grovel

In the November issue, I explained how to change the startup screen, and wrote Make a back up of LOGO.SYS, which you'll find in the root directory of your boot drive. My apologies go to all those who have been trying to find a non-existent file, and thanks to the readers who emailed me, pointing out the error.

Mark Lovell got there first, stating correctly that this file isn't installed by Windows, but by the Plus! pack. The default startup screen is built in, but any 256 colour .BMP file, 320 pixels wide by 400 high, saved as LOGO.SYS in the root directory, will override it.

PCW Contacts

Tim Nott can be contacted by post via PCW or by email at timn@cix.compulink.co.uk

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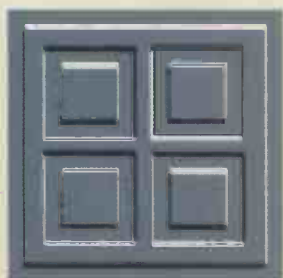
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A wish come true

Tim Nott was longing for one of the more useful facilities of Win95 until he discovered that it was available for Windows 3.1 — soon his screen was sprouting more buttons than a Christmas pantio.

One of the more pleasant aspects of Windows 95 is that you can do practically anything from the common "File Open/Save As..." dialogue box: rename, copy, delete and move files, view them and create new directories. No — there hasn't been a printing error, this is indeed the *Hands On Windows 3.1* column.

Such a feature has long been high on my wish list. In fact, I was going to include it in my "Dear Santa" section until, much to my surprise, I discovered that it already exists for 3.1 users. Even more surprising, it has been around for some time — the version 3.01 that I downloaded from the Windows/Files topic on CIX, dates from May 1994 (although there is a more recent beta version in circulation). With commendable respect for one's system, it doesn't add any files to the Windows or System directories, but adds just one line to WIN.INI and leaves SYSTEM.INI well alone.

Run Instant File Access (IFA) — the authors recommend you put it in your Startup group — and you'll find that your File Open/Save As... dialogues have sprouted a row of buttons and a status bar.

The latter, which is simpler, gives you the number of files, total size and creation date of the selected directory, or the details of a selected file — not vital, but nice to know. Turning to the button bar, this is indeed a thing of wonder: the first two buttons produce lists of recent files and directories accessed by the current

application. Next, four more buttons let you rename, delete, copy and move files. Then there is the magic Create Directory button. I've lost count of the times I've taken screenshots in Paintshop, and realised that I should have created a separate directory for them first. This saves the chore of having to stop whatever you are doing to fire up File Manager. Then it starts to get complicated, but fortunately each button has Tooltips which offer a brief description if you hold the pointer over it. More detailed pop-up help panels are available from the Windows 95-style

What's This? button.

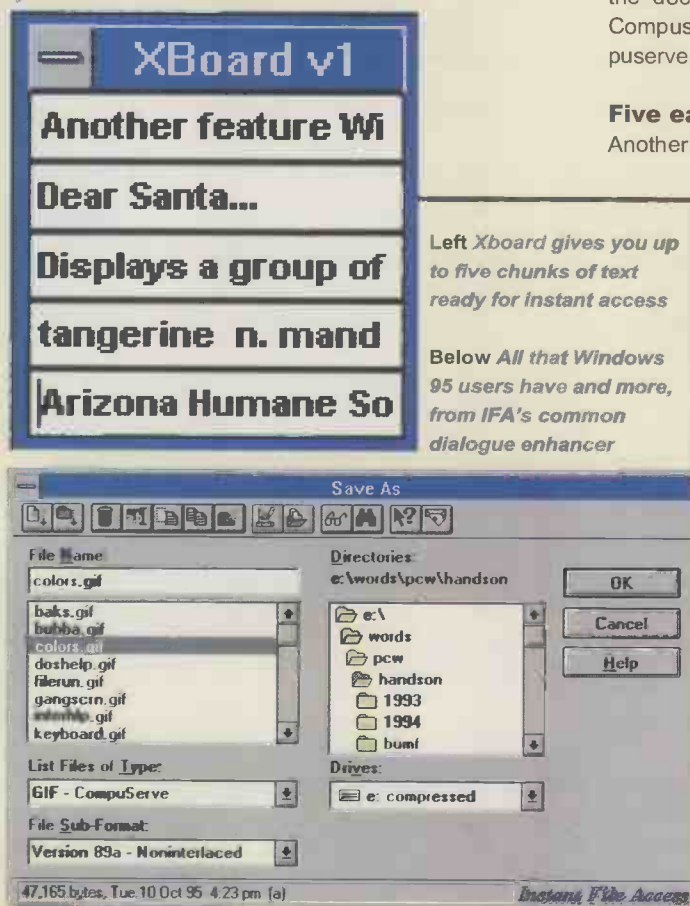
The authors at Alexoft of Quebec obviously can't leave a good idea alone as there are all sorts of options available for each application's database of recent files. You can make items permanent or display the list in a floating window, and if the application supports different file formats (such as .txt and .wri) you'll get separate lists for each. There's a button to edit file attributes as well as a search and, rather dangerously, replace feature for text within files. Finally, if you have an aversion to buttons, you can access the features through a right-mouse-click menu.

I was going to have a moan about it replacing the "added value" file dialogues of Word and Excel, but they've thought of that, too: hold down shift, and the original dialogues appear instead. Instant File Access should be on this month's CD and the documentation also gives Alexoft's CompuServe address: 72154.15@compuserve.com.

Five easy pieces

Another feature that Windows 95 users can play with is Scraps. These are OLE objects, created on the desktop by dragging and dropping, for example, a selection of text. One use for these is as a multiple clipboard; dragging sections of text in and out of WordPad or Word.

I've often pined for a multiple clipboard — without the inconvenience of having to save clips as individual files — and Ron Cox's Xboard seems just the thing. It's by no means new, judging by the file dates, but it's the first time I've come across it and it comes in both 16-bit and 32-bit versions. It's strictly text only, and consists of a little window divided into five panes; each can be filled from the clipboard by right-clicking, or re-loaded to the clipboard with a left click. And that's all there is to it. Neat, simple and on the CD. It's also



Top Tips for Windows

Registration Database The registration database editor (REGEDIT.EXE) will show you a list of all registered file types. It's worth going through this occasionally and removing entries that relate to applications no longer on your hard disk.

File Manager You can use the "Select Files..." command on the File Manager "File" menu in all sorts of ways. Entering "b*.*" in the box will select all files beginning with "b". Similarly, "*.EXE" will select all executables. Selections are cumulative so you can repeat the process, or use multiple criteria separated by a comma. "*.WRI, *.TXT, *.DOC", for example, will select all the Write, Notepad and Word documents in a directory.

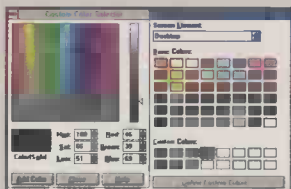
Colours Mix your own Windows colours by going to Control Panels/Colours. Click the Colour Palette button, then the Define Custom Colour button. Click on one of the 16 empty Custom Colour swatches and define the hue by dragging the cross horizontally across the spectrum. Adjust saturation by dragging vertically and luminance by dragging in the narrow bar to the right. When you find the colour you like click the Add button. To get pure rather than dithered colours you'll need a display card capable of showing more than 256 colours.

Paintbrush You can edit any of the colours in Paintbrush's palette by double-clicking on the swatch. You can then save or reload custom palettes from the Options menu. Again, you'll need better than a 256-colour display to obtain pure colours.

Memory loss If "Help/About..." reports your free memory to be around one-thousandth of

what you expected, check the Control Panel/ International/Number Format button. If you don't have a thousands separator defined, then Windows will exhibit this peculiar, but harmless, bug. It also affects the Word for Windows word-counter, according to which this column consists of just one word.

Fine tune your desktop colours from Control Panel



Christmas wishes

Dear Santa,

Could you please make sure developers carry on developing for Windows 3.1? Not everyone can, or even wants to upgrade to Windows 95. And seasonal good wishes to Lotus, which has just delivered the latest version of SmartSuite, with new Windows 3.1 versions of WordPro, ScreenCam and Organiser.

I'd also like a really, really nice display card. It has to be fast, capable of displaying 65K colours at 1,024 x 768 pixels, with a utility to switch resolution without restarting Windows. That's the easy bit: it must also come provided with both Windows 3.1 and 95 drivers that support all aspects of both platforms, not conflict with COM ports, not throw a wobbly when returning from a full-screen DOS session and not be prone to mysterious General Protection Faults. (That, I realise, probably is asking too much).

An all-purpose drawing package that combines the ease of use and precision drawing aids of Autosketch with the speed, transparency and image quality of Xara Studio would be nice. Let's make it difficult by asking for accurate perspective, as well.

Pure indulgent whimsy, but I'd like a screensaver of a waterfall. This would be written using some clever fractal coding, so it produced a near-photographic image of tumbling water that changed constantly without repeating itself, complete with suitable sound effects. In the same box would be a more tranquil Babbling Brook saver, and another of Drifting Clouds.

I'm only allowed five wishes this year, so I'm going to cheat by asking for a Software Users' Charter. This would provide draconian punishments for companies that release software without an uninstall routine, CD-ROM multimedia titles that copy more than 100Kb to the hard disk, or that don't copy the program icon so that it's lost when you change resolution, and any application that insists that you decrease the screen resolution and/or colour depth before running. Thanks.



Time

in the Windows/Files topic on CIX, as I have uploaded it there. According to the readme file Ron Cox can be contacted at roncox@indirect.com or 71722.3175@compuserve.com.

PCW Contacts

Tim Nott can be contacted either by post c/o PCW or by email on timn@cix.compulink.co.uk

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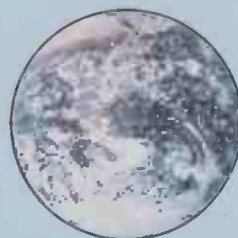
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Core blimey

Terence Green is pleasantly surprised by a common code base which brings OS/2 and Windows closer together, finds ways of making Warp run more smoothly and does his bit to revive the true spirit of Christmas.

In my first OS/2 column, I wondered why OS/2 general business applications were so slow in arriving and why develop-

ers appeared to lack interest in a reliable, field-tested 32-bit operating system. Having suggested that OS/2 Warp would be

seen in a more favourable light once Windows 95 had been shipped, I reckoned that 32-bit Windows 95 applications would be easier than 16-bit Windows 3.1 applications to port to 32-bit OS/2 Warp.

Only weeks later, an answer has arrived. A Lotus and IBM co-development called the Developer API Extensions for OS/2 (DAPI) will enable developers to create applications for OS/2, Windows 95 and Windows NT using a common code base that encompasses about 80 percent of the development effort.

Three Christmas wishes

What I'd most like for Christmas is for BT to provide every school with a free connection to the internet. Then for myself I would like a new home computer and a ThinkPad 755CX.

My first wish was actually written before the Labour Party conference but I'm not prescient — it's an old idea. It's about a sense of community and about giving as well as receiving; best of all it's about children, which is what Christmas is all about — remember that baby in the manger?

Deregulated communications infrastructures around the world that were built by public subscription are becoming cash cows for speculative shareholders. By giving kids access to a worldwide information resource, the telecommunications carriers won't simply be paying back the community input that built their profit engine — they'll be giving kids the chance to tap into a far bigger resource than any school library can deliver. They'll also be fostering generations of adults who'll deliver a far bigger payback for the carriers than the couch potato video viewers and home shoppers they seem to be banking on now.

Ignore those who say that the internet will lead to information overload — we've been brought up on centuries of minimal-content information streams, restricted by class or censored by government. Are we subject to good decisions as a result? Yugoslavia, Muroroa? The former British Rail? The Ozone hole? Doubly ignore the idiots who warn you about porn on the internet



— they'd just prefer you to read their who's shagging whom columns in the tabloids.

Wish number two is for a new home computer because my old one is wearing out. It only has a 486 processor, admittedly a 66MHz DX2, and 8Mb RAM which I'm beginning to find constricting. It's not enough to run any of my three favourite operating systems — Windows 95, OS/2 Warp Connect, Windows NT Workstation; 16Mb sounds about right. And while I'm about it, I might as well ask for a Pentium 100, a PCI bus, and a 1Gb hard disk.

My third wish is for an IBM ThinkPad 755CX. The ThinkPad is one of the best notebook computers I've seen. The design is great and the infra-red ports for LAN and printer communications are a terrific idea. But the best part of the ThinkPad is the Mwave Digital Signal Processor. Think of it as a second processor. It's a multimedia processor, a telephony processor, and it will soon be a voice recognition processor. At the moment you need a VoiceType adaptor to handle voice input, but next year IBM will ship software that lets the Mwave do what the VoiceType adaptor does now.

All the Mwave's cleverness is controlled through software and being a CPU in its own right, it leaves the ThinkPad's Pentium largely free to handle other computing tasks. As a telephony device, the Mwave delivers a 14.4Kb/sec fax/modem, a speakerphone, and an answerphone. With no more than a software upgrade, the modem will soon do 28.8Kb/sec.

Daffy about DAPI

The possibilities became clear in October when I watched a Beta demonstration of the next version of Freelance Graphics for OS/2 and talked to Greg Schumacher, senior manager for advanced technology at Lotus.

Schumacher says the Freelance code is actually 99 percent Windows 95 code re-compiled for OS/2. The magic that makes this work is DAPI, which was announced back in May (prematurely, it appears, given how long it is taking to finalise). DAPI makes the commonality usable where Windows and APIs are alike in all but name and adds APIs to OS/2 where it lacks some Windows features.

At the time DAPI was announced there was an incorrect suggestion that it was "OS/2 Warp supporting Windows 95". IBM was content to let that impression be given but DAPI looks like being a lot more useful than the ability to run Windows 95 applications on OS/2 Warp.

Many think that OS/2 won't survive if it can't run Windows applications. This is nonsense. The Win32 API for Windows 95 and OS/2's 32-bit API have much in common because they share common roots, but it's where they differ that developers can innovate and users can

Tips & Tricks

Tip of the month if you use Warp Connect is to dump UltiMail Lite. IBM has. It will be replaced by cc:Mail from Lotus. In the meantime, try out Post Road Mailer (see illustration). This is a neat shareware mailer that supports POP3 and SMTP and costs \$50 for a single user.

You can find the Post Road people and more information at <http://www.aescon.com/innoval/index.htm>

Another good tip is to download the latest IBM WebExplorer 1.03 from ftp.ibm.com in the pub/WebExplorer directory. It's heaps better than the previous version, has a newsgroup manager, and text and in-line pictures now stream in much faster than before.

Are you having trouble running Windows or DOS applications in Warp? Do they sometimes appear to start but then remain dormant? Try tuning your settings. Right-click on the program icon of the DOS or Windows application in question, open the Settings menu option, go to the Session notebook page and select the Settings icon. Make sure that the settings below are set, save them, and try running the program again.

DOS memory settings:

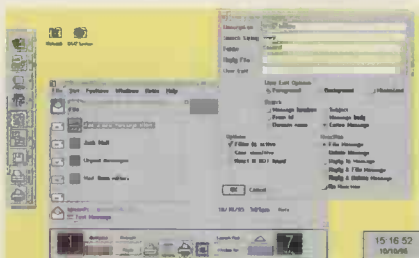
```
DOS_HIGH = 0n
DOS_UMB = 0n
EMS_MEMORY_LIMIT = 0 or 2048
DPMI_MEMORY_LIMIT = 64
XMS_MEMORY_LIMIT = 4-10Mb
```

DOS video settings:

```
VIDEO_FASTPASTE = 0n
VIDEO_WINDOW_REFRESH = 5
```

Other DOS settings:

```
HW_ROM_TO_RAM = 0n
IDLE_SECONDS = Max (60)
IDLE_SENSITIVITY = Max (100)
DOS_FILES = 50 (or more)
```



Post Road Mailer 1.03 in action — a nice piece of work and far easier to get to grips with than UltiMail Lite.

Are you having difficulty installing OS/2 Warp? Does it fail to complete the install process? Disable any Shadow RAM in the BIOS. If that fails, try disabling the secondary memory cache too.

Some motherboards have poor memory logic or timing; OS/2 uses all the memory to its limit and will stress out cheapo designs.

If you have an AMI BIOS, disable "hidden refresh" and "fast decode enable". Never mix and match RAM — it's asking for trouble. Three-chip and 9-chip SIMMs don't work well together. All RAM modules should be of the same type and speed, preferably 70ns or 89ns for 486s.

perceive the merits of each platform.

When an operating system hosts foreign applications it does so at the level of the lowest common denominator. Take Windows 95 applications running on Windows NT. Windows NT supports Unicode so making software international is much easier to manage. Windows 95 doesn't. Windows NT supports local security. Windows 95 doesn't. So you can develop a single application which runs on both platforms passably well but exploits the best features of neither.

It is better to develop a core code base that is compatible with both Windows 95 and Windows NT. Then you add the bits that allow the Windows NT version to exploit all Windows NT's capabilities — robust multitasking, Unicode, security. To the Windows 95 version you add all the flashy multimedia elements that Windows 95 can do now while Windows NT can't.

This way you get two applications that exploit their native OS but you don't have twice the work. DAPI lets developers put most of their effort into producing the core code. The rest of their work goes towards making sure that they fully exploit the capabilities of each platform.

Lotus is developing SmartSuite this way, instead of as before having two separate platform teams developing distinct applications and trying to keep them in sync, which as we know didn't work.

With luck we should see SmartSuite for Windows and SmartSuite for OS/2 converged by mid-1996.

PCW Contacts

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The word processor is dead...

Long live the text processor — Emacs is versatile, hardware-friendly, cross-platform and free. Is it too good to be true? asks Chris Bidmead. Plus news from AIX.

Back in the late seventies when I first started messing about with computers a debate raged about the relative benefits of WYSIWYG word processing versus what was then thought of as “conventional text processing”. To the average PC user today, it seems unthinkable that a mere text processor could challenge a word processor like Microsoft Word. Text processors merely handle text. They don’t deal (at least not directly) with refinements such as italics, bold, fancy paragraph formatting, embedded graphs and pictures. And they don’t show you in advance what your pages are going to look like when they hit the printer.

I must confess I’d readily accepted the pro-word processor proposition, until a number of mailings from readers started me thinking about it again. The debate has been sparked off by Caldera’s advertised move to port WordPerfect to Linux.

Let me fill in some background here. In 1988, in a move that was to prove dangerously debilitating to the company, Borland introduced a new word processor to the market. Borland Sprint challenged established word processor products like WordStar, WordPerfect and Microsoft Word on a number of fronts.

Firstly, it was easily adaptable, so it could be made to function like any of them — remember, these were all character-based; Windows had not yet caught hold. This was because it included a “deep” macro language that made it simple for even casual programmers to remodel not just the key-stroke mapping, but also the behaviour of the software. In fact Sprint was really just a bundle of low-level text handling primitives held together by the macro language. The macros were compiled, not interpreted, which made it fast and kept it fast, no matter how many complex macros you felt inclined to add.

Another key difference from the established word processors was that Sprint

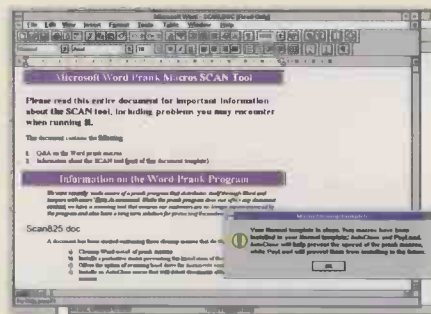
came with a separate formatting program. Yes, it made a stab at previewing the final page on the screen if you insisted, but primarily it kept text formatting separate. The formatter could do very complex page layout, picking up visible ASCII format commands that you left in the text, but you didn’t need to see the effects of these as you wrote (so went the theory) because you trusted the formatter to create the page according to pre-set rules you had laid down. A simple example: you didn’t need to check each page to make sure that paragraphs stayed attached to the headers that preceded them, because the formatter understood that certain types of headers shouldn’t be separated from the text that followed. Yes, I know that today’s word processors understand these kind of rules too, but that’s because they’ve absorbed the lesson.

Familiar friend

I used Sprint regularly until GUI word processors became dominant with the arrival of Windows 3.0. As a matter of fact, Sprint had arrived as a familiar friend, because it was based on a product called FinalWord, which I’d been using since the mid-eighties. FinalWord, in turn, was the offspring of PerfectWriter; a CP/M word processor on which I’d written a couple of my Doctor Who scripts back in 1980.

CP/M was very tight on memory, and all the other CP/M word processors I’d tried couldn’t cope with a whole script as a single file. And the separation between composing the script and formatting it for printing was a real boon. The convention for Doctor Who scripts was to confine the dialogue and stage directions to the right-hand half of the page, leaving the left section blank for camera directions. But composing the dialogue like this meant wasting half the screen. PerfectWriter let you forget about formatting while composing a scene.

Writers should never have to bother



The UK Windows NT-based systems vendor ServerWare sent out over 5,000 CDs to customers to demonstrate new applications. Unfortunately, the accompanying documentation in Microsoft Word format was infested with the so-called “Prank” macro virus, one of the first known viruses in the wild to be passed via data files. ServerWare quickly issued a fixed version of the CD, and thoughtfully included this unique Word document, which not only explains the virus, but contains its own anti-virus macros to get rid of it!

with formatting, in my opinion. (But writers are funny people. I remember discussing this with Lukas Heller, who did the screen play of *The Dirty Dozen* and many other films. Lukas came from the typewriter-and-cigarette generation of writers, and confessed that he amused himself while composing dialogue by choosing words that made the right hand column come out as even as possible...).

You are probably wondering why I am taking you on this trip down memory lane. Well, Borland Sprint, FinalWord and PerfectWriter may all be Norwegian blues, but they are the direct descendants of an awesome text processor that very much lives on. If you installed your Linux from any of the standard distributions like Linux-FT, Slackware or Caldera, you’ll either have it on your hard disk already, or it will be very close at hand. If you’re running AIX,

What's so great about Emacs?

● It's fast and economical on hardware. Because it uses plain ASCII (the X features are something we'll come to later), screens take no time to repaint and (for a slightly different reason) you can move from the top to the bottom of a huge text file in microseconds. It's also fast because it doesn't use a mouse (X features excepted), so your hands stay on the keyboard. This would be a mixed benefit without another important design feature: the Emacs cursor moves not just according to screen geometry, but also understands units of text. Simple keystroke combinations move it forward and back by word, sentence and paragraph. In the hands of an experienced Emacs user this makes navigating and editing very fast indeed.

● Emacs is totally configurable and extensible. I don't just mean that you can remap the keystrokes to match your favourite existing word or text processor — this is a trivial exercise, and one that will turn out to be a waste of time if, like me, Emacs quickly becomes your favourite text processor and you find yourself remapping everything back again in order to remain compliant with the standard. I mean you can change the behaviour of virtually every feature of Emacs, and add features of your own using Emacs Lisp macro language. The version of Emacs I'm using to write this — it comes with Caldera — has already been crazily extended to include Doctor, a variant of the old Eliza program that lets you

switch to another Emacs buffer and engage in dialogue with an electronic psychiatrist, and Spook, a random word generator that creates strings of words intended to alarm the US authorities supposedly monitoring internet email. More usefully, Emacs includes its own mail program and internet news readers, all written as Lisp extensions.

● Emacs is cross-platform. Yes, it's pretty complex to learn (although the built-in help pages and tutorial speed the process considerably), but once you've learnt it you have a set of skills that can pretty well be ported to any environment you can think of. Emacs is everywhere, and for a very good reason....

● Emacs is free. This isn't just a cheapskate attraction: Emacs is philosophically free. It's free of the political machinations of individual companies; it's free from being tied to the fortunes of any particular operating system. It's free (paradoxical thought this), of the onward march of new versions every 18 months that have become the marketing requirement of commercial software, and which cost users much more than just the upgrade fee. Like Linux itself, Emacs is issued under the GNU licence. This isn't just Open software, with that pompous, mendacious capital "O". Unix usefully distinguishes between upper and lower case. Like Linux, Emacs is not Open. It's open.

NeXTStep, UnixWare — you name it — a copy of this for your processor and operating system won't be more than a short FTP hop away. Likewise OS/2 and even DOS. As old hands will have realised, I'm talking about Emacs.

Word vs text

What's a word processor? The features that distinguish a word processor from a text processor seem to me to be all about preparing text for printing. I don't know about you, but I don't print anything much these days. Everything I write professionally goes straight down the telephone to people with their own definitive ideas about how the words I write should look in print. Yes, I have been sending stuff down in Microsoft Word format, but my occasional italics and my even rarer use of features like tables have probably hindered rather than helped the sub-editors at the other end.

More on Emacs and word processors next month.

AIX

At the recent IBM Technical Interchange at Disneyland, Paris, Mark Wieland of the Personal Power PC Group gave me a quick trip round the new version of AIX, version 4.1.3 which runs on a PowerSeries 850. I'll be rounding out the full picture of this machine and operating system once IBM manages to deliver the review machine they promised me in March 1985... ho-hum. But here are some introductory thoughts:

AIX is now (since version 4) a fully multi-threaded implementation of Unix. Version 3 implemented [pthreads], which is library support for threading in the user space only. In version 4, thread support was carried through to the kernel, so that every user thread has a kernel thread to support it. The importance of this is that each thread can now be handled in real-time, and in a multiprocessor AIX machine, different threads can be handed off to different processors.

Since I last looked at AIX, SMIT, AIX's

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PARLEZ-VOUS FRANÇAIS? SPRECHEN SIE DEUTSCH?

X-based system management tool, has been supplemented by a new Visual System Manager, VSM, which is activated through drag and drop. If you want to create a new user, it's simple: Pick up a "new user" icon and drop it among the collection of existing user icons. Pick up a password icon and drop that on the new user in order to pop up a dialogue box requesting the new password. And so on. There's a lot to drag and drop to in the CDE, the Common Desktop Environment now finding its way into the operating systems of the major Unix manufacturers. Mark showed me how you drop an Mpeg data file on the Mpeg player to power up the movie, and you can also, of course, open the movie directly by double clicking on the data item.

All this is distinctly old hat, I know, to OS/2 users. Indeed, it's from OS/2 that the technology to do this in AIX is coming, with the difference that the CDE associations between data files, their icons and their executables aren't dynamically established through SOM (System Object Model). Like Caldera's Looking Glass desktop manager, the AIX CDE associations are set up through a data file that you explicitly edit, either directly or via a special editor. CDE includes a floating launch tool very like the OS/2 Launchpad, but again this has to be configured via an editable data file. You can't just drag icons to it the way you can with OS/2.



The AIX Visual System Manager extends System Management Interface Tool with a drag-and-drop interface for tasks like setting up new users. OS/2 users may be wondering about the Launchpad-like bar at the bottom of the screen. This is a standard part of the Common Desktop Environment, and stems from the same Hewlett-Packard user interface technology that inspired Warp's Launchpad

Ironically, SOM is already a part of AIX, and as I understand it there's no reason that the AIX desktop shouldn't be as object-orientated as its OS/2 counterpart. I gather from Mark that this will happen eventually. But at the current pace of AIX development it may not be wise to hold your breath.

Christmas Wishes

This time last year, I drew up a list of goodies I'd like Father Christmas to stuff into my stocking. I wanted Cairo and Taligent, but guessed — rightly, as it turned out — that I'd have to make do with Windows 95 and another bunch of promises. I also wished for some rapid developments on the Linux front that would make the embryo Windows emulator, Wine, able to run a few standard Windows apps like Ameol, Excel and Word. That hasn't happened yet, but somehow I'm not holding my breath, and Linux is progressing fine without it. In the same spirit, I asked for a rather more substantial list of 32-bit apps for OS/2 to run. Again, disappointment. But IBM has promised that the new Windows extensions to the API will now, at last, bring them flooding in. I'll believe that when I see it.

Actually it's not apps I want anymore. I'm now in the mood for components. Deliver, somebody, somewhere, at least some of the promises surrounding OpenDoc. Just enough to get me believing that it's real. At Disneyland, Paris, I saw OpenDoc running on OS/2, and I can't say that the demonstrator was exactly fired with enthusiasm, or brimming with knowledge of the subject. It takes people to make this technology work, and alas real OpenDoc evangelists such as Kurt Piersol, one of the OD architects I met last year, are few and far between.

I also expressed a pious wish that the Unix community would get their act together. COSE, the Common Open Software Environment, is starting to become a fact of life, but in other respects, Unix seems more diffused than ever. SCO now owns the System V strain, which is probably good because they'll know how to sell it, something that totally defeated Novell. But I fear that SCO and AIX and the newly named Digital Unix are now going to be fighting each other rather than pulling together; something that's going to do Windows NT sales no harm at all.



Seminar

Speaking of OS/2, I had a chance to talk to Paul Giangarra, one-time chief architect of OS/2. He told me that it was his second time in Disneyland Paris that year — the previous visit had been as keynote speaker at what turned out to be an AIX seminar.

Closing the DisneyFest was David Barnes, IBM's OS/2 demo god. Personally I find Dave's high octane, joke-packed presentations just a little too shrill, particularly at a time when IBM is supposed to be concentrating on OS/2's corporate credibility.

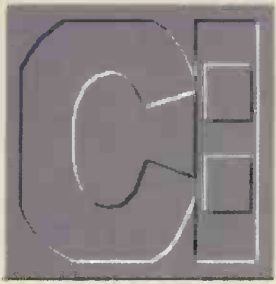
But one message came very clearly through the non-stop patter. He likened the way OS/2 runs multiple 16-bit Windows sessions to a mainframe operating system running virtual machines; "something IBM really knows how to do. Doesn't matter what the operating system is in the virtual machine..." He was talking, of course, about OS/2's potential ability to cope (or not) with future 32-bit Windows applications. "Is our technology built with ones and zeros," he asked rhetorically? "You bet it is. Just like Microsoft's. I can't say definitely that we'll support Windows 95. But if at some time there are compelling applications that our customers tell us they have to run, we can do that."

Incidentally, if any of you are listening to the gossip about IBM downgrading OS/2, or even killing it off, Paul Giangarra is living proof that IBM has no such thing in mind. Yes, it's closing down the Boca Raton OS/2 development in Florida and moving the whole thing to Austin, seat of IBM's AIX development.

Barnes joked that he'd sensed this coming, and made the move a couple of months ahead of time. Giangarra told me afterwards that Barnes's early move wasn't so smart, because it meant he'd missed the relocation package IBM was offering. "They are so serious about continuing with OS/2," said Giangarra, "that they've offered me a fabulous deal to haul up my roots and go to Austin, provided I promise to stay working on OS/2 for the next two years. And that's exactly what I want to do anyway. My wife works for IBM too, and the combined deal means we can go down there and build the house we've always wanted."

PCW Contacts

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Quit or I stop

Simon Collin explains what to do when a database acts up, makes sense of DOS program settings and finds a cunning way of redirecting batch files

I have been trying to get my DOS applications (or rather, one database in particular) to run under Windows 95. The software detects that Windows is running and refuses to continue; displaying an error message telling me to quit from all other applications (ie Windows). Is there any way of getting round this?"

PCW Many disk utilities and low-level products want sole use of the PC. Win95 includes two switches which let you tame DOS programs into working in a controlled Windows environment.

The first hides Windows from DOS programs. The second runs the DOS program in an exclusive mode that ensures no other applications (including Windows application) are running simultaneously

To access these two switches, highlight the DOS program icon that's being difficult and click the right mouse button to display the program's properties sheet. Select the Program page tag and click on the Advanced button. This Advanced page displays three check-boxes: the last lets you set up a unique environment for this DOS session (covered in previous issues); the first lets you hide the fact that Windows is running from any DOS application that might otherwise object to sharing resources.

To avoid problems in which two programs are running at the same time and possibly interfering, use the third checkbox in its simple mode to ensure that this application is running exclusively on this PC. To maintain exclusivity, select the MS-DOS Mode checkbox and make sure that the "Use current configuration" button is selected.

You can use both these settings to force applications to work with and under Windows, but consider why the application might not want to run with Windows before you use the options. For example, if it is a disk utility and will defrag the disk, it will run into problems since Windows could access its virtual memory disk file during the defrag and crash.

"I'm trying to get to grips with DOS under Windows 95 but am confused by the way my DOS settings are stored. I have read that all Windows settings are stored in a central registry rather than individual PIF or INI files. Is there any way of editing this file to make changes to program settings?"

PCW Win95 stores its settings for DOS and Windows applications in different places. The DOS program settings are stored in the equivalent of PIF files (a text file called APPS.INF). The settings for Windows programs are stored in a central Registry that you cannot edit using a text editor (as you did with INI files).

The APPS.INF file is interesting for DOS users because it acts as a master for all DOS program settings. If you view its contents, you'll see there's a section called [PIF95] which refers to specific DOS settings.

The first lines show: which DOS programs have been set up, their title, icon and extra details. These lines refer to relevant sections later on in the APPS.INF file that give more detailed settings for the particular program.

If you are installing a DOS program and it makes changes to a PIF file, these should be reflected in this settings file: if you are having problems finding a fault or

want to check the program settings, this is the place to look.

"I have been following your example batch files over the past months and would like to try and combine some of the features of each tip. The batch programs are in separate files (as in your examples) so I tried to combine two by using the redirection symbol to send the output of one to be the input of the second. Nothing worked, which I assume is a problem with the redirection. Is there any way of redirecting the output of batch files?"

PCW As you discovered, it's almost impossible to redirect the output from one batch file to the input of another. This is not a problem with standard DOS commands that you can type in at the prompt, but the two exceptions to the rule are batch files and the FOR statement. Neither will work with the redirection symbol >.

To solve the problem you have to use cunning and a peculiar loophole in the DOS operating system: you can redirect the output of the command COMMAND which is normally rarely used and serves to start another copy of the DOS command interpreter. The COMMAND word will run any other command that follows it as if it had been typed at the command prompt. For example, to get a directory listing you could type in:

```
DIR
or
COMMAND/C DIR
```

Both lines will run the DIR command. The difference is that the second is doing so in a separate copy of the command interpreter that is only loaded while DIR is being executed. If you don't use the /C switch, COMMAND will start a second copy of the command interpreter and you will have to remove it manually by typing in EXIT.

The point to this background, is that since COMMAND is a standard DOS command, you can redirect its output. You could use the following line to redirect the output of batch1.bat to be used as the input of batch2.bat.

```
COMMAND/C batch1 > batch2
```

This will solve your problem with multiple batch files and should prove useful if you are experimenting with batch files or the FOR command.

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Simplicity itself?

Tim Phillips looks at the pros and cons of Windows vs DOS word processing with special reference to Wordpad. There are lots of lovely macros and a clicking good hint, too.

One of the interesting features of the response to Windows 95 is a growing murmur that our beloved software applications aren't very easy to use after all.

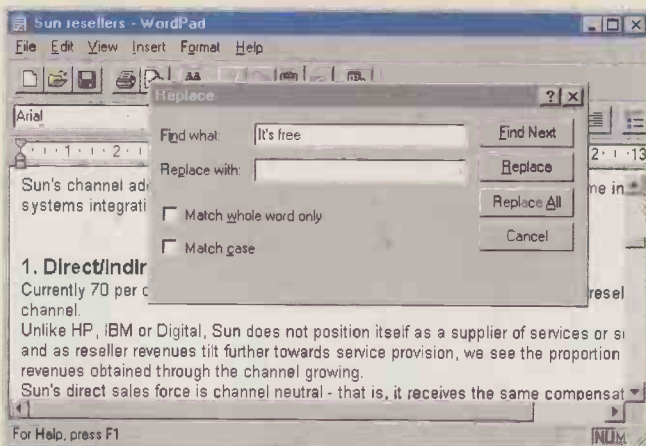
Could this be true? Could it be the case that all the usability testing, all the interface design and all the common user access standards which we have invested our future in have led to more complex products rather than simpler ones.

I've now decided that actually, DOS word processors aren't a waste of time and simple Windows word processors are even more welcome. Whether or not WordPad falls into that category, you'll have to read on to find out.

Here's a quick refresher on the simplicity debate:

1. A few other people take a pop at Microsoft

Oracle CEO, Larry Ellison, called Windows 95 "ridiculous". He wants to sell a "network computer" which will suck its operating system and applications from a server, using the internet. This will become the *de facto* "home computer" because the PC using Windows 95 is too complicated. Now, if this computer, which has no local storage, is going to suck a word processor into memory, it's unlikely it



WordPad — I'm only half pleased with the lack of functionality here. Any offers for enhancements and hacks gratefully accepted

will be anything as complicated as Word for Windows, is it...?

Ellison is a bit of a "head-the-ball" sometimes, but Oracle is the second largest software company in the world, so he must be doing something right. He has the public backing of Scott McNealy, CEO of workstation vendor Sun, who sees Windows 95 as "a giant hairball", and claims that no one at Sun uses a word processor. "Word processors aren't personal productivity tools, they are personal activity generators", he said while counselling businesses not to buy any new applications; they're already too complicated.

2. A robust defence of DOS

John Hines contacts me via email to make fun of windows users.

"This is being prepared in Autosig, the

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DOS freeware comms package, my word processing is done in PC-Write... Why introduce needless delays on working systems? When idiots need drawings of words, Sir... A keyboard-based system has the advantage that it is not necessary to take the hands off to find a mouse and point at some obscure symbol, different in each system, for anyone who's learnt to read."

I cut the most abusive bits, but Mr Hines asserts that: "I can be editing a letter on the Amstrad before my 40MHz 386 has got rid of the hourglass symbol. And then? I cannot type at much better than 30wpm, but the Amstrad can keep up with this."

PC Write is the word processor of choice here: "This has all the features I need for business letters. It will do copy, move, search and replace. It will support macros and I have some for various letterheads. It will include the occasional picture; the amount of wysiwyg is limited and slow, but I think I need pictures only once or twice per thousand letters.

The number of fonts is limited to the number that my printers will do, but so what? ...the cost of my word processing is only just over £5 a year. What would I get for an additional cost of several hundred pounds, apart from looking like just another prat?"

I don't like being called a prat, but there is substance here. If word processing is

Fig 1 Joe Tozer's macro

```
Sub MAIN
x = Asc(Selection$())
toggle = FALSE

If (x >= Asc("A") And x <= Asc("Z")) Then
x = x + 32
toggle = TRUE

ElseIf (x >= Asc("a") And x <= Asc("z")) Then
x = x - 32
toggle = TRUE
EndIf

If toggle = TRUE Then
EditClear
Insert Chr$(x)
EndIf

End Sub
(E.P.J.Tozer, 11th September 1995)
```

not central to your life, you may be just giving yourself a problem by learning a package like Word or WordPerfect.

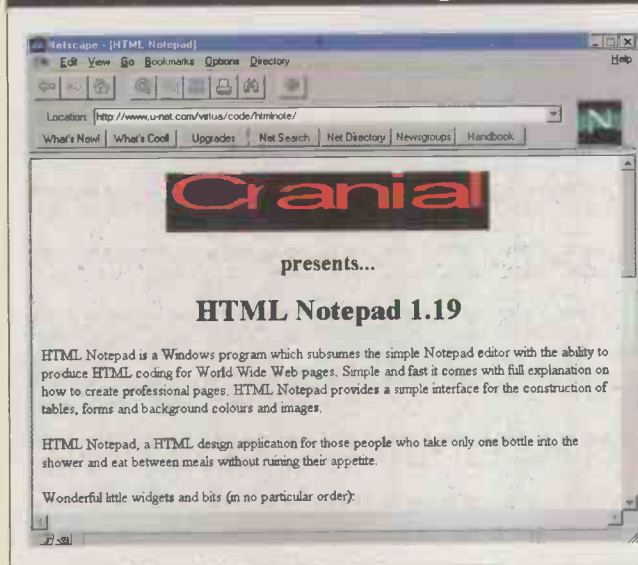
3. WordPad: the case for the prosecution

So you want to save money, but too late: you already have Windows 95. What you need is a good free word processor included.

Well, WordPad included with Windows 95, is free at least. Windows 95 users will be disappointed to find that WordPad isn't an improvement on Write. At least it doesn't give us a new file format: instead it uses Write, Rich Text and Word for Windows file formats.

It's great to be able to edit and create

Fig 2



Bart Smit's scrolling macros. I've called the four buttons DOL, UOL, DOB, UOB and clicking them scrolls the two documents simultaneously



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The source for the excellent html editor for Notepad. Now let's have one for WordPad, eh?

Word documents, but all the functionality that Microsoft could have put in, yet hasn't, is a real disappointment. A simple html editor and an outliner for a start. There's no macro language as might be expected, but a simple device to create help files would have helped. You can't zoom in and out, although you can print preview. You can also send your memos through electronic mail.

There's nothing intrinsically wrong with WordPad, it's just that Microsoft has made certain that it won't stop anyone buying Word.

4. Someone agrees with me about html, (almost)

I was moved recently to comment that all the sophisticated wysiwyg, html, editing add-ons you get for major word processors just add complexity to a language that is a lot easier than any macro to write. I offered the suggestion that budding html writers should just edit in Write.

"Actually the best editor is not Write but, of course, the ever-present and cuddly Notepad. That was our thoughts when we came up with `html Notepad` which has all the lovely squidgy bits of Notepad and also does some of that silly html coding.

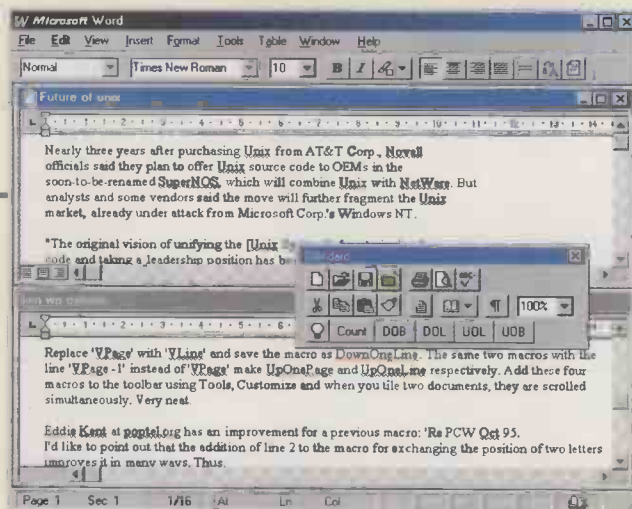
Have a look at <http://www.u-net.com/virtua/code/htmlnote> you are after version 1.19 for Windows 3.1. A Windows 95 version will be developed as soon as we buy some more memory," says Adam of virtua@cranial.demon.co.uk.

I looked and I was impressed. It's the html editor I was looking for, so have a go yourself.

Tim's macro club

You might have noticed that I am extremely deficient in my mailings to macro club members. I blame the upgrade to Windows 95, but then so is everybody else so I don't expect you to believe me for one minute.

Anyway, by the time I read this my macro club email administration will have been sorted. It's encouraging that despite the lack of proper feedback from myself,



you continue to send in your macros. It's this spirit that made the country great.

● An example of this pioneer spirit is Joe Tozer, who has put another nail in the coffin of the risible Archimedes (see Fig 1):

"I've just moved over to the PC and Word from the Archimedes and Impression Publisher. I was missing the amazingly handy swap case function, CTRL+S, so have written an ALT+S macro version for Word. It swaps the case of the character to the right of the cursor. Sounds simple but it's much handier than UPPER CASE or lower case or Title Case. Macro swaps the case of the character to the right of the cursor. Use [ALT] + [s] to execute."

● Good one. Now Bart Smit of the republic of Compuserve has solved the scrolling simultaneous Windows problem in Word for Windows: "This is the solution for John Lea's problem, I've written the macros in Word 6.0 but my Hacker's guide to WW2 says they'll work in Word 2.0.

John will have to upgrade to get the custom toolbar, but in the meantime, key combinations will do the trick."

You need four macros called `DownOneBlock`, `UpOneBlock`, `DownOnePage` and `UpOnePage` (also see Fig 2).

This is `DownOnePage`:

```
Sub MAIN
ThisWindow = Window()
For i = 1 To CountWindows()
    WindowList i
    VPage
Next i
WindowList ThisWindow
End Sub
```

Replace "VPage" with "VLine" and save the macro as `DownOneLine`. The same two macros with the line "VPage -1" instead of "VPage" make `UpOnePage` and `UpOneLine` respectively.

Add these four macros to the toolbar using Tools, Customise and when you tile two documents, they are scrolled simultaneously. Very neat.

● Eddie Kent at poptel.org has an improvement for a previous macro: "Re PCW Oct '95 issue, I'd like to point out that the addition of line 2 to the macro for exchanging the position of two letters

Fig 3 Peter Kahrel's macro

```
DISPLAY(Off!)

MakeFileArray( &FileArray )
FOR( t ; 1 ; FileArray[0] )
    FileOpen( FileArray[t] ; WordPerfect_60! )
    DoSomething( )
    ClearDoc
ENDFOR

PROCEDURE MakeFileArray( &FArray )
LOCAL Dlg ; Path ; F ; Count
Path:=""
DLGCREATE( Dlg ; "Select files" )
DLGCONTROL( CtrlText! ; Path ; "~Filemask: " ; ; ; 30 )
DLGEND
IF( Dlg=-1 OR Path="" ) QUIT ENDIF
DLGINPUT( On! )
FileManagerDlg
Type( Path ) EnterKey
F:=?List-2
IF( F<=0 )
DLGCREATE( Dlg )
DLGCONTROL( CtrlLabel! ; ; "Error: no files found" )
DLGEND
QUIT
ELSE
    PosLineDown
    PosLineDown
    FOR( Count ; 1 ; F )
        FArray[Count]:=?Entry
        PosLineDown
    ENDFOR
    FArray[0]:=F
    ExitDlg
ENDIF
DLGINPUT( Off! )
ENDPROC
```


A good clicking

Here's more from my favourite correspondent, Shane Devenshire, who this month has been researching his double-clicks. Someone should give him a column (ha-ha).

These are for Word 6.0, although I tested them with Word 7.0 too:

Double click on:	What you get:
Top of the ruler	Page setup dialogue
Bottom of the ruler	Tabs dialogue
Indent markers	Paragraph dialogue
Title bar	Maximises Word (or restores if already maximised)
Any symbol	Symbols dialogue box
Column separators	Columns dialogue
Left side of status bar	GoTo dialogue
Help icon	Search dialogue

There's loads more too. Try double clicking all over the place in Word. It's alive. Chris Collins contacts me via CompuServe to offer this advice if you want accented characters, following my Wordstar advice on a macro that's included with the package: "The EXTCHAR macro certainly works, but is so slow as to be unusable for anything but occasional use. No good for linguists! Just try typing an accented character several times at normal typing speed and you'll see what I mean.

"WordPerfect 6 for Windows is much quicker. I've set it up so that Control + character gives grave or cedilla, left hand Alt + character gives acute and right hand Alt + character gives circumflex. I haven't beaten it yet.

"Regressing to DOS (I began wordprocessing with programs called Word Master [editor] and Format [formatter] in CPM) a friend wrote me a very useful little accent routine which was set up by a hot key and executed by typing (say) e and g to get è (grave) and e and a to get é (acute). Much less laborious than the Alt + number combinations I've just used to write this."

I feel a macro coming on...

improves it in many ways. Thus:"

```
Sub MAIN
  CharLeft 2
  CharRight 1, 1
  EditCut
  CharRight 1
  EditPaste
End Sub
```

He's right of course, although "many ways" is probably pushing it a bit on a seven line macro (only kidding, Eddie).

● Proof, if proof were needed, that this country's academic institutions are at least as good as when I was getting a dodgy second from the Victoria University of Manchester, is provided by Lancaster University's Peter Kahrel, who has spotted the fact that Chris McCarthy's search macro is not needed in WordPerfect. (Actually Chris spotted this himself, but Peter beat him to it. I didn't spot it at all).

"The macro that searches text in a directory is not necessary in WordPerfect, since WP has a rather good search facility called QuickFinder. Press F5 (Filelist) then F4 (QuickFinder) and enter the search text. You can specify a directory and limit the file search by date. I think WP Win has a similar feature."

And Peter doubles the number of WordPerfect macros we've run in recent months with this one (see Fig 3): "The procedure MakeFileArray creates an array of

filenames. In the dialogue box you can enter a file mask using the normal DOS wildcards. You can also include a path to create an array of filenames in a different directory than the default one. MakeFileArray's output variable is the array with file names, which you can then process: open the first array element, do something with it, and clear the screen." For this contribution, Peter is this month's champion.

Great work

See you on the net, as they say: if you have a contribution, email it to me. I'm still looking for WordPerfect and Ami Pro macro writers.

Now for the great work that you can all do: I want search and replace routines for entire directories of files — and maybe sub-directories. This is prompted by Richard Eskins of Oldham, who wants to make changes to style tags in all his html pages. I want it, too, for the same reason. You can see how sloppy my html is by accessing <http://www.atlas.co.uk/online/>.

PCW Contacts

And that's that for this month. Surface or airmail to PCW, otherwise I'm on email at wong@cix.compulink.co.uk and CompuServe 100436,3616

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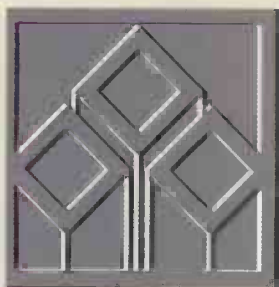
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And so, to beds

Stephen Wells passes on a reader's spreadsheet which calculates the availability (or lack), of NHS beds which demonstrates how easy it is to create your own Excel Function. Plus more on financial analysis.

Skimming back through my archives, I see that it's been about every five years that I've sprung for a new computer.

January '77 was the first. It was a COMPAL, from Computer Power & Light, with 16Kb of RAM. All the software was fed in from a cassette recorder. Spreadsheets hadn't been invented and I used to write accounting programs in BASIC. Most functions could be created using IF statements and GOTO subroutines.

Three computers later, in January '91, I bought a Viglen Genie 386SX with 2Mb

function for calculating that. Thanks to Neil Bain of West Sussex there is. He writes:

"I work in the health service with long-stay patients. We are asked to monitor Occupied Bed Days."

"This involves downloading patient details and calculating how many days in each month they were using a bed. Prior to creating a User Defined Function, the table contained a formula which checked to see if the patients overlapped the month in question and if so, how many days in the month were involved. This required

analysed is entered here in cell four, then dragged to I4 and formatted, mmm-yy. Then highlight this range C4:I4, choose Formula, Define Name and call it Obdm.

The range A5:B8 is formatted, d/m/yy. Then the A column block is named Start, and the B column block, End. These are the dates on which the patient enters and leaves. Incidentally, for administrative purposes the day of arrival (entered in column A) is included as a Bed Day and the day he or she leaves (entered in column B) isn't.

Enter the titles and totals. Save this file as BEDDAYS.XLS, then Open a new file, choosing Macro Sheet. Make the entries shown in Fig 2. Save this as BEDDAYS.XLM.

I've called the new Function, "Bed-Days" and its arguments Start, End and Obdm. This means it looks at the Names which are the same as its arguments and calculates the Occupied Bed Days.

Neil did all the work. The Function looks at the patient's dates of entry and departure, checks whether he or she had arrived in the month above, and if so, how many days of that month they were there.

To make a listed Function, put the cursor in cell A2 of the macro, choose Formula, Define Name. The cell reference and the new Function Name are entered automatically. Just click the Function option and Add — and the job's done.

Now you can switch over to the worksheet (press Ctrl+F6) and go to cell C5. Then choose Formula, Paste Function, and you'll find your new Function, Bed-Days, both in the All listing and under a new category, User Defined. Select it and press enter, twice. If you follow the example given, you should see 28 in C5. If

Microsoft Excel - BEDDAYS.XLS										
File Edit Formula Format Data Options Macro Window Help										
Occupied Bed Days by Month										
Episode	Episode Start	Episode End	Jun-95	Jul-95	Aug-95	Sep-95	Oct-95	Nov-95	Dec-95	Total
3	3/6/95	6/8/95	28	31	5					64
5	29/6/95	2/9/95	2	31	31	1				65
6	1/11/95	31/12/95						30	31	61
8	1/6/95	31/12/95	30	31	31	30	31	30	31	214
9		Totals	60	93	67	31	31	60	62	404

Fig 1 Layout of worksheet using a new function to calculate Occupied Bed Days

of RAM and a 40Mb hard disk. I've run every imaginable spreadsheet on this machine, though version 4 of both Excel and Lotus 1-2-3 for Windows are desperately dependent on the swap file. There is no way that it will load Excel 7, and my five years are up again. For what happened next, see "Christmas wishes" (below).

Bed scores

What with all the talk about the unavailability of NHS beds on the wards, you'd think there would be a spreadsheet

multiple-nested IF statements. I have reduced the individual formulas to OBD(Episode_Start,Episode_End,OBD_Month)." Neil's worksheet is shown in Fig 1.

I assume Neil is using Excel 5, because he provided a VBA listing (Visual Basic for Applications). As I know from my mailbag that many readers use Excel 4, and as an Excel 4 macro can be used in later versions, I've rewritten his contribution, see Fig 2. But Neil deserves a £20 book token for his effort, which gives me the opportunity to demonstrate how easy it is to create your own Excel Function.

To make an example, enter the worksheet in Fig 1. The first month to be

Fig 2

Listing for the macro which creates the BedDays function:

	Function
2 BedDays	
3 =RESULT(1)	Answer is a number
4 =ARGUMENT("Start",1)	Episode start date
5 =ARGUMENT("End",1)	Episode end date
6 =ARGUMENT("Obdm",1)	Particular month
7 OBD=0	Zero out answer
8 MS=DATE(YEAR(Obdm),MONTH(Obdm),1)	Day 1 of month
9 =IF(MONTH(Obdm)<>12)	
10 ME=DATE(YEAR(Obdm),MONTH(Obdm)+1,1)-1	Last day of month
11 =ELSE()	
12 ME=DATE(YEAR(Obdm)+1,1,1)-1	If last month of year
13 =END.IF()	
14 =IF(Start>MS)	Choose start date
15 OBDS=Start	
16 =ELSE()	
17 OBDS=MS	
18 =END.IF()	
19 =IF(End<ME)	Choose end date
20 OBDE=End	
21 =ELSE()	
22 OBDE=ME+1	
23 =END.IF()	
24 =IF(OR(End<MS,Start>=ME))	Calculate bed days
25 OBD=06 =ELSE()	
27 OBD=OBDE-OBDS	
28 =END.IF()	
29 =RETURN(OBD)	Go to worksheet

you don't, switch back to the macro and press Ctrl+' (the key to the left of numeral 1). In every working cell of the macro, from A3 down to A29, you should see the word, TRUE. If you don't, something has been entered incorrectly.

Once you see 28 in cell C5 of the worksheet, drag that entry across the full range to I8. You should now show the other results given in Fig 1.

A happy new year

David Carpenter of Norbury is asking for a macro to make a column-moving change, so that a new year's data can be added. Personally, I'd save any five-year financial

analyses you've made, with hard copies and on disk. Then I'd make another five-year form. As it's so easy, and you only need do it once a year, it hardly seems worth writing and debugging a macro.

Let's use the template David was interested in; the one for service companies. To change all the dates, just change the most recent year in cell B1, then all the dates in rows 1, 34, 68, 76 and 83 will correct themselves. Then copy and paste the Accounts Receivable (debtors) figure from F4 to G4. Copy the block B3:E28 temporarily to the block starting H3. Clear the entry range, C3:F28. Then copy and paste the temporary block H3:K28 back (into

EXCELent shortcuts and longshots

- **BACK UP** Choose Save As, Options and check Create Backup File. Then at each Save the older version will be saved under the file name with a .BAK extension.
- **CHECK UP** To see details of your Excel setup and its environment, run the macro, CHECKUP.XLM in the excellibrary\checkup directory.
- **COCK UP** If you get in a complete muddle, save your work under another name then open the last version again.
- **DOUBLE UP** Many Excel icons serve double duty. Hold the Shift key when you click on them and they change their picture and their actions. For example, the Print icon changes to the Print Preview icon.
- **OPEN UP** Press Alt Gr + F1 (or Ctrl + F11) to open a new macro sheet.
- **SPEED UP** With a large workbook, choose Options, Calculation, Manual (instead of the default, Automatic). You can still check the Recalculate Before Save button. At other times, recalculate with F9 (or Ctrl + =).

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	File	Edit	Formula	Data	Options	Macro	Window	Help
	A	B	C	D	E	F	G	
59								
60	PROFITABILITY (%)							
61	Operating Ratio	15.93	15.97	9.94	10.10	11.92		
62	Profit Margin	7.28	6.08	4.37	4.36	5.52	4.10	
63	Return on Assets	6.05	4.86	3.82	3.94	4.08	8.80	
64	Return on Equity	27.75	17.95	10.68	12.22	13.30	20.50	
65								
66								

Fig 3 Example results for the Profitability Ratios on the template for service companies

C3:F28). Now everything's set and ready to enter the new year's figures in column B.

Financial analysis

This month I'm looking at the profitability ratios for service companies.

The results produced from the example figures of an advertising agency which we have been using are shown in Fig 3. A listing for the four ratios is shown in Fig 4. Column B is replicated across to column F. Column G has manually-entered industry averages.

I would restate that the ratios produced by this template should be examined for trends and also compared with others in the same industry, if available.

Referral to a high ratio here means that it is higher than the median ratio for the industry, or a trend to a higher ratio over the five years of the business's activities. A low ratio means lower than average for the industry or the business.

The Operating Ratio can be defined as that portion of the Commissions and Fees income remaining after overheads have been deducted. Interest charges and taxes on company income are excluded, since rates for these two items are beyond the control of management. It is a good gauge of management's competence in controlling costs.

To summarise: £1 less this ratio shows the number of pence taken to generate £1 of sales. That means that if this ratio is 15.93 percent (see cell B61 in Fig 3) then it's taking 84.07 pence to make a £ of sales. It also means that 84.07 pence of each sales £ was absorbed by the operations of the company.

Fig 4

Listing for the profitability ratios section of the financial analysis template

A60 PROFITABILITY (%)
 A61 Operating Ratio
 B61 =Operating_Profit/Commission___Fees*100
 A62 Profit Margin
 B62 =Net_Income/Commission___Fees*100
 A63 Return on Assets
 B63 =Net_Income/Total_Assets*100
 A64 Return on Equity
 B64 =Net_Income/Net_Worth*100

Profit Margin is the best-known ratio, comparing Net Income with Commissions and Fees. A high percentage over the years shows that the company has learnt how to withstand adverse conditions like reduction of charges, rising costs or declining sales. Any one of these setbacks can occur, but good managers will take the actions necessary to protect the bottom line and maintain profit margins.

If this ratio is lower than or inconsistent with, the industry average, there will be less profit to pay out in dividends to the owners and to invest for the future.

However, the value of sales and total capital employed must also be taken into consideration. A low rate of return, accompanied by a large sales volume may produce satisfactory results.

Don't think this is a foolproof yardstick — it's only one measure of the profitability of a business. It does however, indicate the effectiveness of management and operation's efficiency.

A high percentage Return on Assets suggests that management is using the company's assets efficiently. A low return may indicate that the company is not being run as well as it should be.

To summarise: The ratio measures the profitability of the company expressed as a rate of return on total investments by both the stockholders and creditors. It shows the number of pence being earned by the company for every pound invested by both interests.

A high Return on Equity indicates that the company offers a good investment for stockholders and that the owners are getting a fair compensation for their risk.

If the Return on Equity is below that of other companies in the industry, you might want to look into the factors behind this. New policies may be required which will either raise charges or reduce costs.

Increased sales of more profitable services or reduction of overheads — or both — can help to raise the return.

The Return on Equity is a

measure of the owners', partners' or stockholders' rate of return on their investments. It is the "yield" or "interest rate" that the business is earning.

If you've sent for the template on disk, you'll find that (ignoring the list of Names at the end) it continues to row 88. The remaining rows offer you the opportunity to make three more charts which don't illustrate ratios. They show the company's five-year report of Assets; Debt and Equity; and Costs, Expenses and Income.

Christmas wishes

Last year, I asked Santa for "a Pentium 90 with all the trimmings, like loads of memory, a CD-ROM and a fax card"



which now, a year later, is pretty standard. As time passed and Santa didn't oblige, a month ago I ordered the system from one of the best known direct suppliers, and yesterday UPS delivered it to my door.

Ironically, the hold up had been that they were waiting for fax/modem cards. Whatever next — Marks and Sparks running out of knickers? Maybe so many people want to get on the internet that the world is suffering a modem shortage?

I'm reluctant to tell you the supplier's name (although I'm overjoyed with my new system) as you will think that I got a discount. To maintain my integrity and — more to the point — because they laughed when I asked, I didn't. But who cares? This dream machine is faster, cooler, quieter than my previous rig.

The documentation is excellent. Everything was set up and ready to go. With no experience of comms, I signed up to the MS Network with a local connection from the keyboard.

This year Santa? I'm content. But you're welcome to drop in for a sherry.

PCW Contacts

Stephen Wells welcomes comments on spreadsheets and solutions to be shared. Send them to PCW Editorial at the usual address or at Stephen_Wells@msn.com.

For the financial analysis Excel templates for service companies and those which carry stock, send a formatted 3.5in disk and a stamped, self-addressed envelope.

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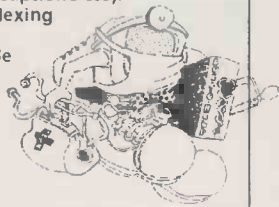
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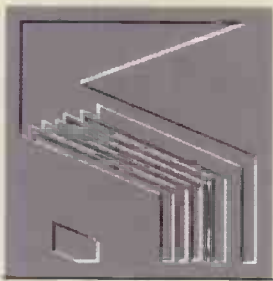
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The Perfect Gift

A chastened Mark Whitehorn eats more humble pie than mince pie, and asks: "What do database developers really want for Christmas?" Plus, using the Count function, and more lottery logic.

OK Santa, I am a humbled and chastened individual. Last year I was greedy: you know it and now I know it. I got carried away. I asked for a powerful workstation, a big file server, and an even bigger database server. Then I added a new network to the list, and finally a new house in which to keep it all. I was too greedy and, quite rightly, nothing appeared on Christmas Morn. Not so much as a mouse mat with a picture of a penguin.

I realise now that I was foolish and self-centred. There are far more deserving causes than my own self gratification, so this year I'll ask for things from which we can all benefit.

For a while now I have been covering those features which make a DBMS actually Relational (in other words, make it worthy of the term RDBMS). As I have been doing this, it has come home to me more forcefully than ever that the majority of DBMSs sold for the PC simply don't make the grade. This isn't a question of simple pedantry, or an insistence that definitions are met; it's about wanting DBMSs that actually deliver data security, speed and ease of use. I would be grateful if, over the next year, you could make all the manufacturers look seriously at their products, and either remove the word "Relational" from the box or deliver the goods. If you need a few names

of offending manufacturers, try IBM (Approach), Borland (Paradox, dBASE) and Microsoft (FoxPro).

Secondly, we (database developers) need more tools. Santa, you have no idea what it is like nowadays. Gone are the days when we could ask for, and get, a whole year in which to fail to deliver a complete database. Two-year extensions on projects which were originally scheduled for a mere six months are no longer the norm. Nowadays we are sometimes expected to deliver working systems within a few paltry months. I have even heard of projects with detailed specifications and, almost unbelievably, penalty clauses.

What we really need are more tools to take the slog out of the design and implementation work. After all, while much of our work is, of course, an art form and could never be replaced by a mere computer program, much of it is essentially a slog. With those bits we could really do with some help.

Access 95's new database designer is a step in the right direction, and of course Asymetrix's Info-Modeler, SDP's S-Designor Professional are doing a great job, but we need more. We also need these tools to be more tightly integrated into the RDBMSs that we use on a daily basis. Anything you could do in this direction would be greatly appreciated.

Well, that about wraps it up for the present (sorry, about the pun) I hope that Ms Claus, and all of the little sub-Clauses, are fine. Regards,
Mark.

Tips and tricks

Well, I asked for tips and tricks and here is some code sample from John S. Graham: "How do you feel about covering the elements of DAO in future

Fig 1 John S.Graham's sample code

```
Sub Form_Current ()
    'The ComboBox is called "Pick List"
    'The form is called "Employees"

    Dim ctlPickList As Control
    Dim rstEmployees As Recordset
    Dim rstEmployeesClone As Recordset
    Dim strName As String
    Dim intRow As Integer

    Set rstEmployees = Me.RecordsetClone
    rstEmployees.Bookmark = Me.Bookmark

    rstEmployees.MovePrevious
    If rstEmployees.BOF Then
        GoTo AtFirstRow
    End If

    Set rstEmployeesClone = rstEmployees.Clone()
    rstEmployeesClone.Bookmark = rstEmployees.Bookmark

    intRow = 0
    Do Until rstEmployeesClone.BOF
        rstEmployeesClone.MovePrevious
        intRow = intRow + 1
    Loop

    strName = [Pick List].ItemData(intRow)
    [Pick List].Value = strName

    rstEmployees.Close
    rstEmployeesClone.Close

Exit Sub

AtFirstRow:
    strName = [Pick List].ItemData(0)
    [Pick List].Value = strName
Exit Sub

End Sub

Sub Form_Load ()
    'Sets the default value for the combo when the form loads

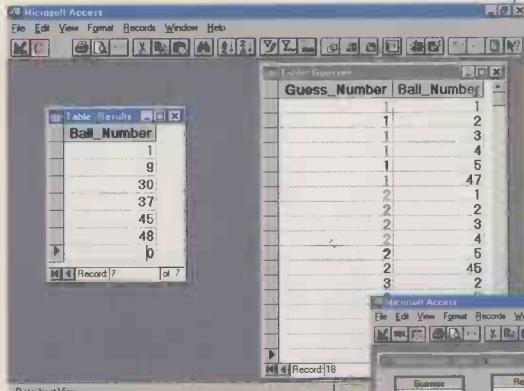
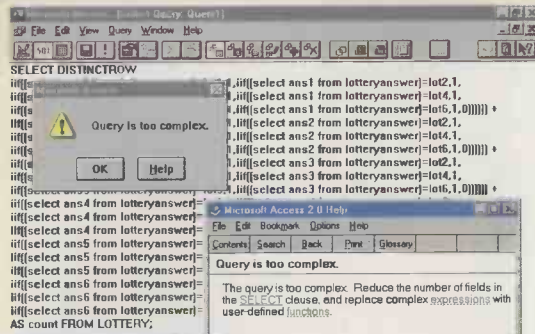
    Dim strName As String

    strName = [Pick List].ItemData(0)
    [Pick List].DefaultValue = strName

End Sub
```

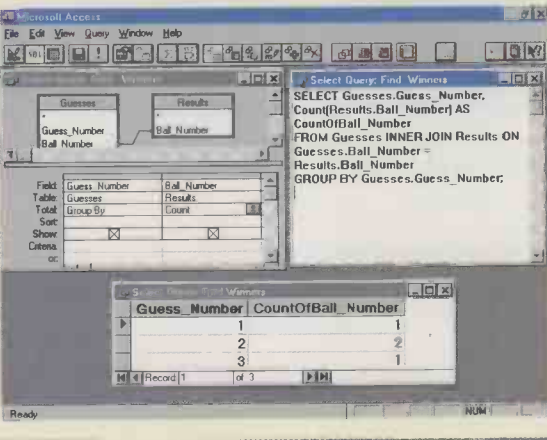
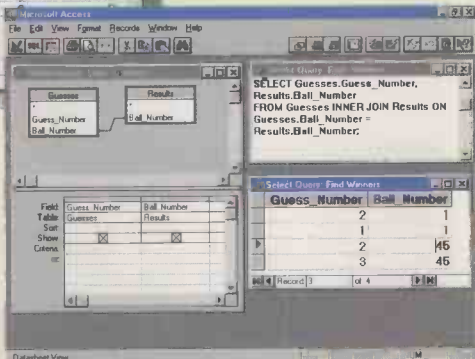

Fig 2 Lottery solutions

Right Access unable to swallow a complex SQL command



Left The tables used in Chris May's solution to the lottery problem

Right A simple query to find matches between the guesses and the winning numbers. The Access GUI, SQL and answer table shown are all from the same query



Left The final, desired result

articles?" (Sounds like a good idea to me. MW).

"I have some sample code that illustrates how to use complex things like BookMarks and Recordset Clones. This code is attached to the 'Current' event of a bound form which is the container object for a ComboBox. The ComboBox draws its data from the same query as the form and its main purpose is to move the form to a record corresponding to the value selected in the combo. This is trivial

stuff, as the code to do it is in the Access Help file. However, if the combo displays a value and the user moves to a different record (using the form navigation buttons), the value in the combo remains static and does not follow the form. My code corrects this so that the combo 'follows the form' in addition to the form 'following the combo'." (See John's sample code in Fig 1)

● And from Bob McQuattie: "Before identifying my problem, could I also add to the article in October's PCW" (in which I

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Fig 3 Roger Hipperson's SQL query

```

SELECT DISTINCTROW
iif((select ans1 from lotteryanswer)=lot1,1,iif((select ans1 from lotteryanswer)=lot2,1,
iif((select ans1 from lotteryanswer)=lot3,1,iif((select ans1 from lotteryanswer)=lot4,1,
iif((select ans1 from lotteryanswer)=lot5,1,iif((select ans1 from lotteryanswer)=lot6,1,0)))))) +
iif((select ans2 from lotteryanswer)=lot1,1,iif((select ans2 from lotteryanswer)=lot2,1,
iif((select ans2 from lotteryanswer)=lot3,1,iif((select ans2 from lotteryanswer)=lot4,1,
iif((select ans2 from lotteryanswer)=lot5,1,iif((select ans2 from lotteryanswer)=lot6,1,0)))))) +
iif((select ans3 from lotteryanswer)=lot1,1,iif((select ans3 from lotteryanswer)=lot2,1,
iif((select ans3 from lotteryanswer)=lot3,1,iif((select ans3 from lotteryanswer)=lot4,1,
iif((select ans3 from lotteryanswer)=lot5,1,iif((select ans3 from lotteryanswer)=lot6,1,0)))))) +
iif((select ans4 from lotteryanswer)=lot1,1,iif((select ans4 from lotteryanswer)=lot2,1,
iif((select ans4 from lotteryanswer)=lot3,1,iif((select ans4 from lotteryanswer)=lot4,1,
iif((select ans4 from lotteryanswer)=lot5,1,iif((select ans4 from lotteryanswer)=lot6,1,0)))))) +
iif((select ans5 from lotteryanswer)=lot1,1,iif((select ans5 from lotteryanswer)=lot2,1,
iif((select ans5 from lotteryanswer)=lot3,1,iif((select ans5 from lotteryanswer)=lot4,1,
iif((select ans5 from lotteryanswer)=lot5,1,iif((select ans5 from lotteryanswer)=lot6,1,0)))))) +
iif((select ans6 from lotteryanswer)=lot1,1,iif((select ans6 from lotteryanswer)=lot2,1,
iif((select ans6 from lotteryanswer)=lot3,1,iif((select ans6 from lotteryanswer)=lot4,1,
iif((select ans6 from lotteryanswer)=lot5,1,iif((select ans6 from lotteryanswer)=lot6,1,0))))))
AS count FROM LOTTERY;

```

talked about the problems of installing Access as a network application. MW).

1. We have installed Access 2.0 on individual networked PCs, with the database stored on the server. During development, only one machine was accessing this, so no problems. However, once we tried to go live, we found that messages were coming back advising that the database was already in use. We had omitted to amend the default access to "shared" rather than exclusive. A simple solution, but one which can drive you mad until you find the answer.

2. The article on modifying forms, etc made reference to "cut and paste" to a modified form. I would have thought that the simpler solution would be to open the original form, and then "save As", giving a modified form name; this can then be used for further changes without disturbing the original. Or have I missed something?

No, Windows often provides several ways of doing thing, these are just two alternatives. I find the Cut and Paste solution (especially with Ctrl C and Ctrl V), to be slightly faster, but it's just a matter of taste.

3. My problem. My database contains records which are extracted for the purpose of producing labels, for product certification. Within each batch of line items, there can be a variable number of labels per line item. I have now managed to construct the necessary form and print routines to produce the required number of labels. These are sent, via the server, to an Epson FX1170 Dot matrix printer, and printed two-across.

However, different customers take different labels, and while there is a marginal

difference in width, the problem stems from the length of the label. My labels form was originally designed around a label length of 1020mm although only approx. 800 mm is used (there is a pre-printed company logo). This label is, to all intents, satisfactory.

However, when I try to alter the settings to the other label length of 860mm, these changes being made in both Control Panel and Print setup, the label form becomes misaligned due to spacing up more than required, and seems to have a distance of 1020 mm between the first line of print on consecutive labels. Try as I might, I cannot find any reason for this spacing, as all the settings seem to be correct. Can you make any suggestion?

The simple answer is no, apart from questioning the overall efficiency of the printer driver. Has anyone else come across this problem?

● In the Nov. issue of PCW I published a lottery problem from Mark Broadbent. I supplied a solution in code, but wondered if anyone could come up with a solution which consisted of a single query.

Roger Hipperson replied: "Here is the (unpleasant) SQL query to check the rows of numbers in lottery against the ONE row of results in a table called lotteryanswer," shown in Fig 3. It is enough to make you want to do the lottery.

Nothing would induce me to do the lottery (except of course the thought of all the money). I tried to insert this SQL statement into Access and it replied succinctly (see Fig 2) but I am more than prepared to take Roger's word for its accuracy. He is, however, quite correct that it is unpleasant.

● A different solution came from Chris May: "I think your lottery SQL problem in the current PCW is more of a database design problem than an SQL one. If you simplify (normalise) the tables a bit more by making each ball prediction and result a row in its own right, you can just join the guesses and results tables on ball number and use "count(*)" and "group by" to find how many guesses match the results.

Here's the example, using your data:

```

select guess_number,
count(*) as matching_balls
from guesses, results
where guesses.ball_number
= results.ball_number
group by guess_number."

```

group by guess_number."

And Chris supplied the appropriate tables. This solution clearly comes from an RDBMS other than Access (Ingress, in fact), since the SQL syntax is different. It can be converted to the standard Access dialect as:

```

SELECT DISTINCTROW Guesses.Guess_Num-
ber, Count(Results.Ball_Number) AS
CountOfBall_Number
FROM Guesses INNER JOIN Results ON
Guesses.Ball_Number =
Results.Ball_Number
GROUP BY Guesses.Guess_Number;

```

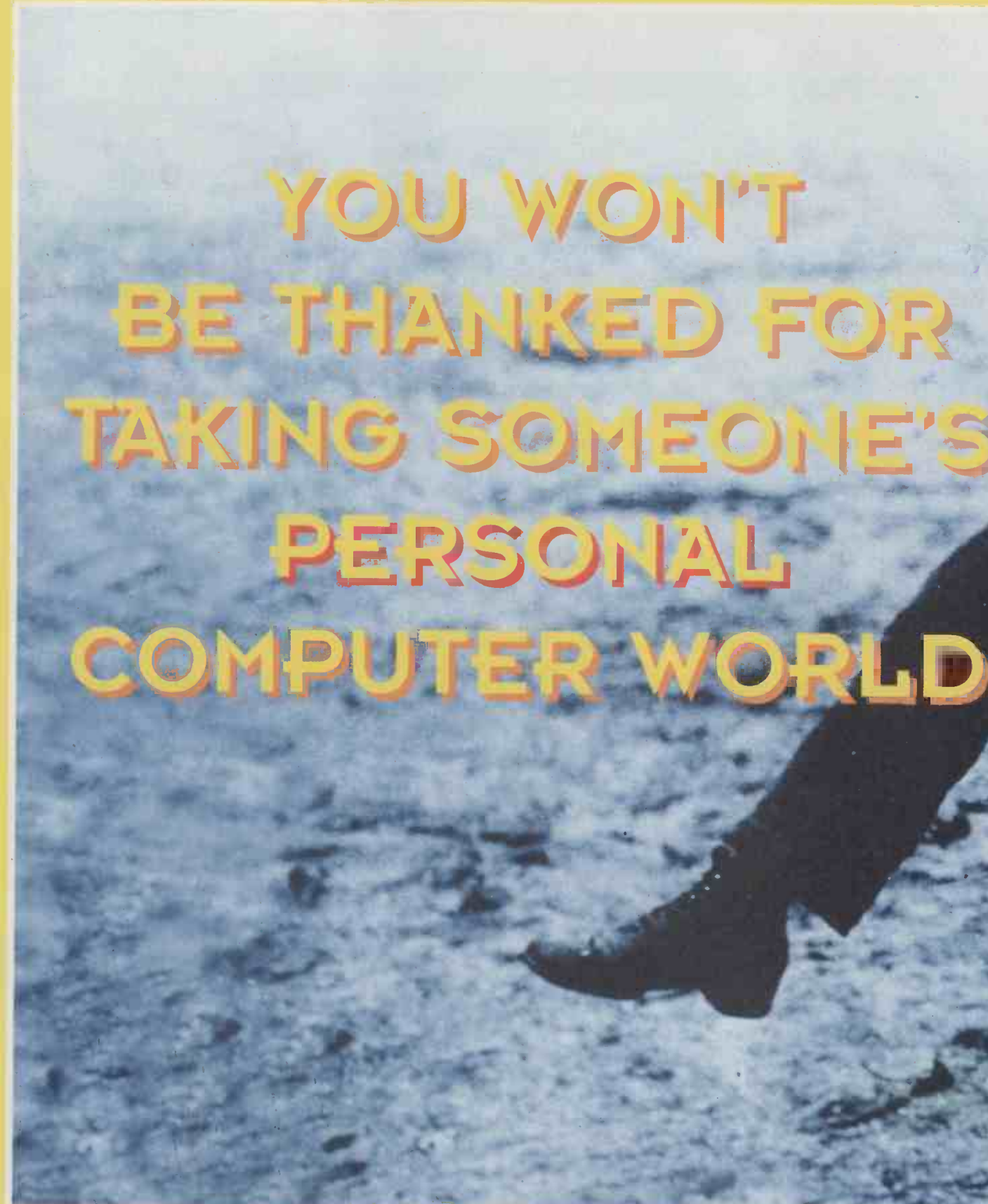
The burning question is "How does it work?". We start with two tables, "Results", which holds this weeks results from the Lottery, and "Guesses" which contains three guesses that we have made. These tables hold the same data as used in the November issue, it has simply been redistributed (see Fig 2).

A simple query can be used to find which numbers from the Results table are also found in the Guesses table (see Fig 2). Each time a match is found for a particular guess, a new record appears in the answer table. Thus we see two matches for guess 2, and one each for the other two.

Finally, all we have to do is to count the number of matches for each guess and we have accomplished the task (see Fig 2). I like this solution because it seems cleaner and more elegant than the one I originally suggested.

PCW Contacts

Mark Whitehorn welcomes readers' correspondence and ideas for the Databases column. He's on m.whitehorn@dundee.ac.uk

A photograph showing a person's leg and foot in a dark boot stepping on a light-colored, textured surface. The text is overlaid on the image.

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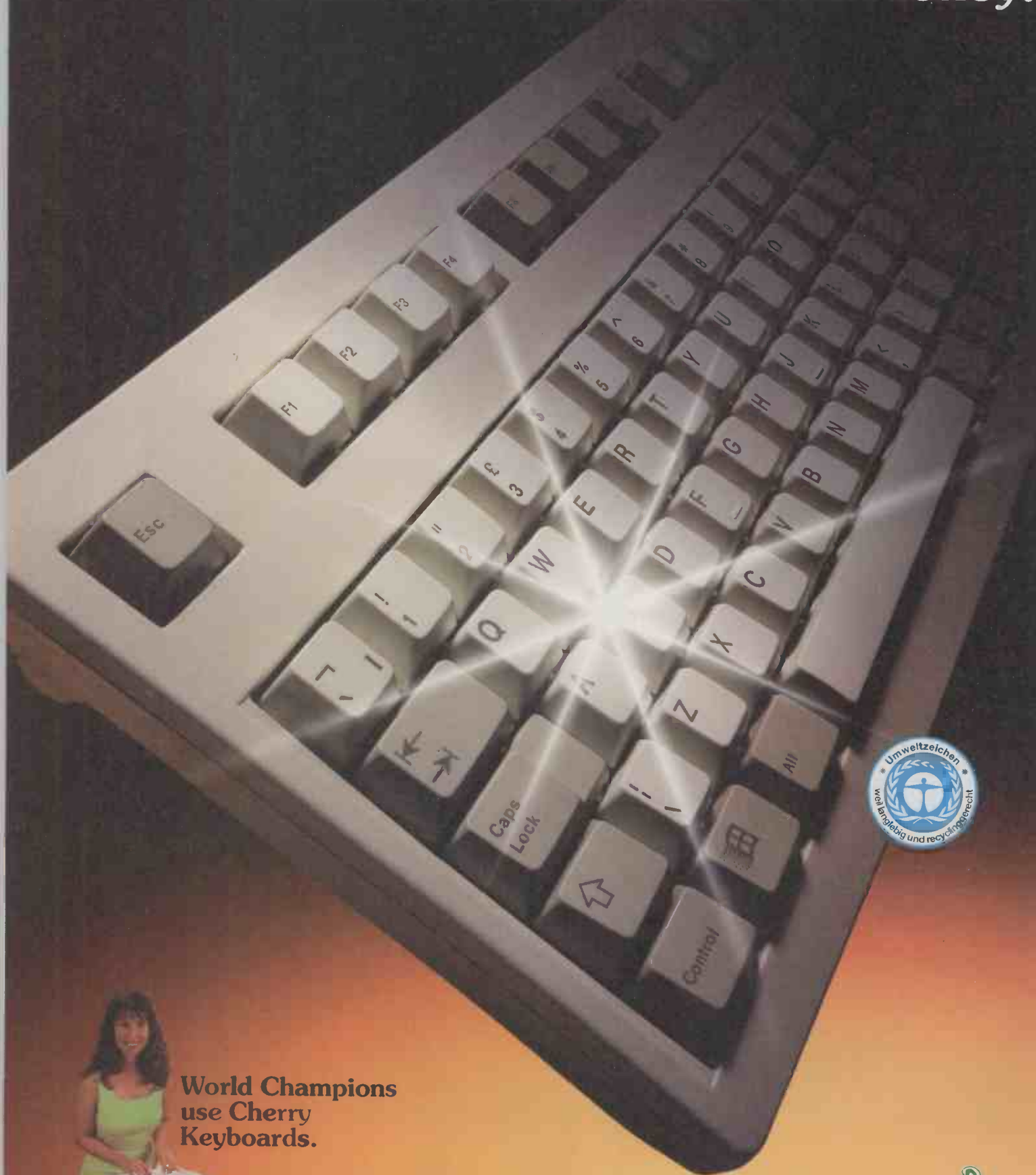
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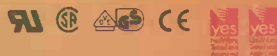


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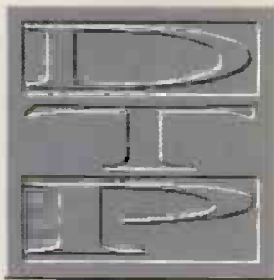
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So, dear Santa...

That time of year has come when **Gordon Laing's** wishful thoughts turn to all things Christmassy. But what you want is not always what you get, he says. Looks like he might have to make do with some festive fonts.

It's Christmas time again in the merry land of Graphics and DTP. To be honest, I'm writing this in early October and the weather's just beginning to turn chilly, but I love the festive period and start dreaming of snowflakes and the spoils of the season shortly after my birthday in the height of summer.

Last year, I persuaded the *Hands On* contributors to write a festive wish list, and even though this section's responsibility has long since changed hands, the sentiment still remains. So please indulge me for a few columns as I rant and hopefully reason, but there'll be some space remaining for some serious festive fun: I've certainly got a couple of groovy, or should that be funky, fonts for your perusal.

Christmas Wishes

I had a look over my wishes for last year, and funnily enough I'm still after the same things — admittedly more of them or bigger, faster versions — but the same principles. I suppose at least I'm consistent in my desires and the industry is consistent in not fulfilling them.

So, dear Santa...

1. More RAM. My number one wish last year was more RAM, and unsurprisingly the desire remains.

A year ago I upgraded from eight to 16Mb, and the difference was phenomenal. Windows 95 really loves those additional 8Mb, transforming a sluggish machine into one that feels

perfectly happy. At home, I have a 486DX4/100 with 16Mb and a PCI bus which runs Windows 95; doing its day-to-day housekeeping as fast as my P90 at work. Extra RAM refreshes the parts that many companies claim only a processor upgrade can. So where to go from 16Mb?

The obvious answer is 32Mb, and recently I was lucky enough to use a Power Macintosh 8100/80 with that amount. I thought it would only make a difference when working on particularly large graphics files, but I was surprised to see how much faster the system ran overall.

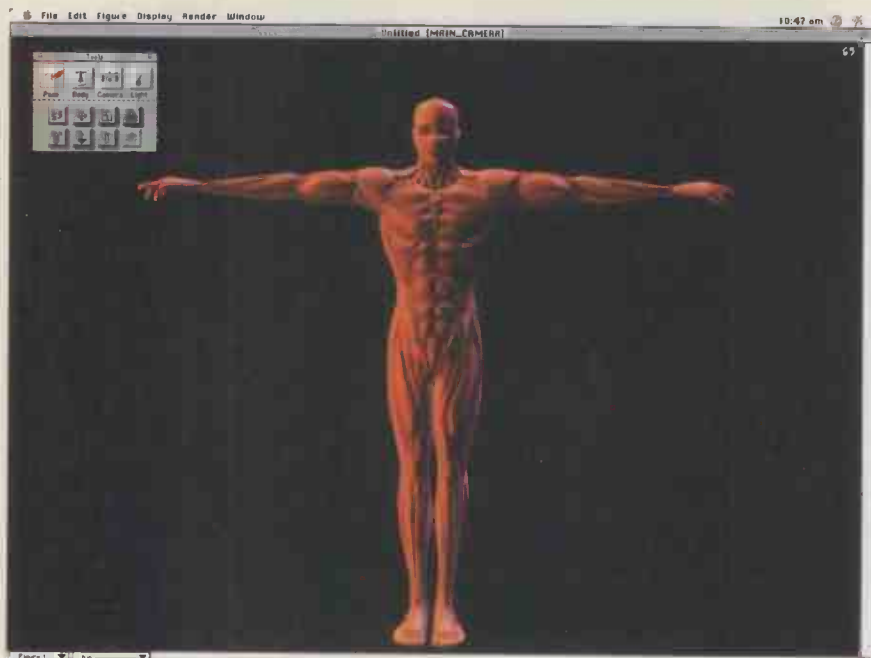
Different operating systems handle extra RAM in different ways, as do certain motherboards, but for an overall boost to your system, try fitting more RAM.

2. Windows wishes. Windows, particularly number 95, is a subject for several more wishes, so let's start getting them out the way now.

However much I love Macintosh, I still want to see more graphics developments on the PC. We've had Quark XPress, Adobe Photoshop, PageMaker (now under the Adobe wing), and FreeHand for Windows matching new Macintosh releases sooner or later, but that's where it all grinds to a halt.

The trouble is that you need all the little utilities and extensions as well. Adobe Dimensions and Fractal Designs Poser are two applications I would love to see on the PC. That's not to say that similar or, in some cases, better apps are not available under Windows, but it's nice to see some familiar faces and perhaps a little

Fractal's wonderful Poser, sadly a Macintosh-only product. Let's have more of this sort of thing for Windows, please



Ho ho ho



Hopefully this won't frighten too many young children... I've finally got around to designing my own Christmas card which you can see here. I must admit to being inspired by a few fifties kitsch cards I saw in the shops recently, but a little plagiarism is no bad thing. The original festive photograph is myself many years ago, a little the worse for wear at a university ball — the hat was sadly not added later. I scanned the original into Photoshop, cut out the edges, placed it on a rusty red background and added a feathered border; an effect I'd seen used before. All the objects scattered around are real — the holly, tinsel and baubles were placed directly on the scanner, and the beers taken from magazine shots. All were arranged using layers, then the type (Tape-Type) added in FreeHand, converted to curves and placed on top of the final, merged TIFF in Quark XPress — Merry Christmas.



cross-platform compatibility. Which leads me neatly onto the next wish.

3. I wish... This really is pie in the sky stuff — I'm talking about seamless cross-platform file exchange. Latest versions of XPress, PageMaker, Photoshop and FreeHand quite happily open documents created on another platform, but with varying degrees of success.

The first hurdle to overcome is file naming conventions. Up until Windows 95, PC users were limited to 8.3 file names and Mac users would laugh at the inadequacies. Going from Mac to PC the latter users would only see the first eight characters; often not giving much clue as to the file's identity. Windows 95 is not much better across platforms unless you use an NT server in between (or so I'm told).

Once you've worked out which is your desired file from a few nondescript characters, your problems are either over or they have only just begun. In the case of bitmap files, going from Windows files to Macintosh and vice-versa is pretty much foolproof. Even Photoshop 3 PSD files with multiple layers open seamlessly from one platform to the other.

The files that are problematic are the ones with fonts in them: most commonly DTP and drawing packages. Normally these files contain pointers to the font

outline files and instructions on what to do with them, such as: "put these words this big, over here, in this colour, and use this font which you can find in this folder".

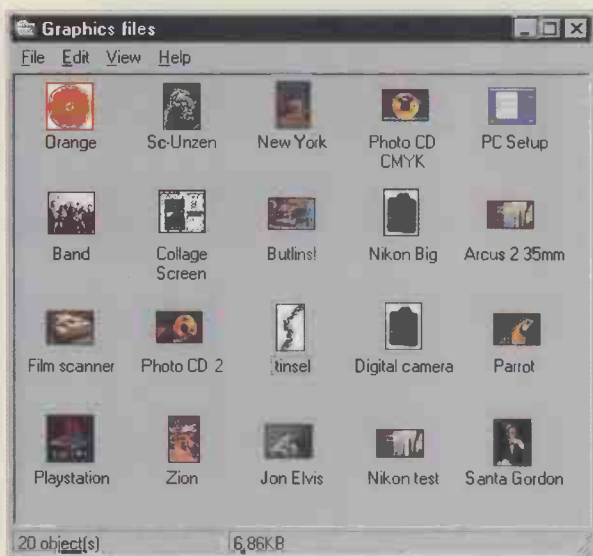
It's when you try to open these files on a different machine or platform that you get into difficulty. Either they don't have the fonts installed, or else they have something similar enough to get away with, but differently named. The result is a substitution which causes reflowing and completely messes up your design.

Dear Santa, please sort this out for me. Alternatively, I'll have a good old think, talk to some so-called experts and write a column about this infamous topic in the very near future.

4. And another: Here's a good one: a new version of Adobe Illustrator for Win-

dows. Missing — presumed dropped for good. At least let us know what's going on, Adobe. Oh, and how about totally bug-free versions of CorelDraw in the future — dream on.

Quark's official internet web site, complete with updater files for the latest revisions; one of them's bound to work



It's a Photoshop fake — Seriously though, wouldn't Windows 95 be so much better if thumbnails were used for graphic file icons like the Macintosh?

5. Quark. This one's even less likely: review copies of Quark XPress and a little bit of friendly UK Quark PR... No, that's ridiculous. How about a working copy of XPress 3.3, on either platform? — Hmm still extremely unlikely.

In fairness to Quark US, I had a fairly positive internet experience lately. I had vanilla XPress 3.3 for Windows, which failed to work post Windows 95 installation — imagine my surprise. I tried several third party internet ftp sites offering so-called revision updates, but none worked. Then very recently, Quark opened its official web pages, complete with downloadable updates. Within minutes, I had updated to 3.31 revision 5, working rather quickly under 95, but no long filenames yet.

Quark's website also had email technical support. I emailed a question about my 95 problems and got a reply by return of bytes — very helpful, friendly, and hopefully the way forward for Quark. I speculated last year that it would be able to purchase FreeHand, which it didn't, and the bitmap retouching XPosure hasn't turned up on my desk yet, so for the moment, Quark has to ensure the XPress user base is happy.

6. Thumbnails. Still on Windows 95 and equally unlikely to happen, but thumbnail icons for graphics files would really be a touch. A few months ago, I mentioned this and illustrated my point with a Macintosh window to show how it should be done. In

Fonts of the month come from Swifty Typographics; also responsible for this record sleeve, designed by Ian Wright

temporary defeat, I commented that the Quick-View feature of Windows 95 was a fair compromise, but ironically its graphic capabilities appear to have disappeared on the final release.

Many people kindly wrote or emailed me to explain how thumbnails can be created for BMP files, but what we really want is a solution for *all* file types. Hopefully, Adobe may implement this in the next version of Photoshop, or perhaps even Microsoft may have

plans for Windows 96: 2096 that is.

7. Suitable receivers. Back to the dual or multi-platform problems. I'm lucky enough to have a PC and a Macintosh on my desk; both connected to the same, wonderful, Taxan 2100LR monitor which boasts dual inputs. I simply press a button on the front panel to switch between operating systems. Oh, and one small thing I forgot to mention — I also have to swap keyboards, mice, and double up every other peripheral.

Apple kind of solved this problem with

its DOS card for a couple of selected Macs. The card boasted a 486 processor but shared every other resource including monitor, CD-ROM drive, network connection, keyboard (and using the Apple extended keyboard under DOS and Windows was such a treat), mouse, and so on.

I realise that there are separate connections on a PC for the mouse and keyboard, while the Apple ADB system daisy chains all to one socket, but it would be so nice if there were some way around this sharing problem. We've seen some really neat infra-red keyboards and pointing devices; perhaps the PC and Mac could have suitable receivers, each for a single input device. And let's make them decent ergonomic devices too.

Apple's asking price for its extended keyboard may seem like extortion but it really is so much better than any other I have ever used — I wish I had one with a PC plug on the end.

8. Storage: that place you, er, store things. That place which fills up at a frightening rate. Yes, I wish I had more of it. Fortunately this *is* an affordable wish.

Hard disk prices are dropping at an incredible rate and are getting faster and faster. Numerous removable, re-recordable devices are fighting it out for mass acceptance (see last month's round-up), and while none have been universally



chosen as standard, at least this competition has driven prices right down.

Even CD writers have finally broken the grand barrier. Hewlett-Packard's SureStore 4020i comes complete with software and SCSI card for just over £800 — remarkable, and reviewed in this issue's *First Impressions*.

Oh, one last thing: how about some miraculous CD-ROM drive which can open the biggest PhotoCD file in a few seconds? Impossible I'm afraid, since the encoding used by Kodak appears to slow the opening of images to nothing faster than quad speed. Bah.

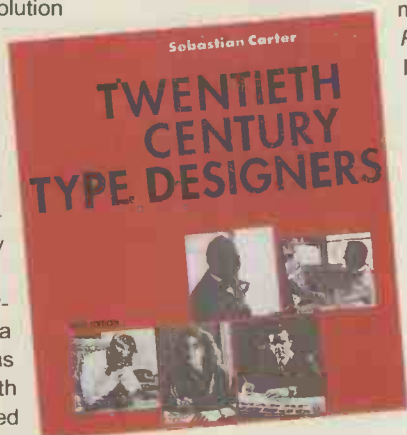
9. Best resolution. Whoops, it's inevitably back to our old friend Windows 95 once more. Windows 95 is a remarkable product in that it manages to turn what used to be the most difficult tasks into a doddle to set up — but in return sometimes makes the easy ones a nightmare.

I'm talking about graphics card drivers, which, to be fair, weren't *that* straightforward under any other version of Windows. My ninth Christmas wish was to have at least all the common video drivers sorted out in time for the autumn release of '95, but since that has passed, I'll make do with the very near future. In the meantime, many users have been forced back to working in VGA, or SVGA, when they've got hardware capable of so much more.

That's another wish by the way, that all computer suppliers set their machines up to run at the best resolution the supplied monitor will accept. So many get shipped out with decent 2Mb cards and capable monitors, yet are set up to run at VGA — and that really annoys me.

And while I'm having a gripe — here is a bugbear that has echoed back and forth across the hallowed walls of PCW, many other offices throughout the company (and in fact most of the rest of the world judging by the amount of mail I've had on the subject). Diamond Stealth 64 is probably one of the most common video cards available, and one of the weirdest to currently get working under Windows 95.

I ended up getting the answers from one of Diamond's pages on the internet, but the gist was that Windows 95 guessed the type of chipset incorrectly. Oh, and you also have to run a little DOS program every time you boot up — obvious really.



Fonts of the Month

DOLCE VITA

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ&1234567890

Miles Ahead

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz&1234567890

10. Books. One thing I always loved about Christmas were all the little goodies (oh no, I'm not shallow or missing the point), so here's the latest crop to catch my eye.

Books are always wonderful gifts, and in the field of design there are loads. Font fanatics should definitely have a comprehensive type bible, such as my favourites: Agfa's *Type Reference Book*, or FontWork's *FontBook*.

Also recommended, for a bit of history and background, are Lund Humphries' *Typographers on Type* and *Twentieth Century Type Designers*.

Techies could go for encyclopedias of graphics file formats or PostScript code reference books to while away the long winter nights.

Beginners should take a look at the numerous guide books like the "... for Dummies" series, from IDG books.

Fonts are always a good bet. Enthusiasts should call FontWorks for details on the fabulous FUSE issues, each with a disk of innovative typefaces and a poster of information; now available for both Mac and PC platforms

Font of the month

A few months back, Swifty's Funky Fonts caught my eye. I eventually got hold of the

pack called Command [z], which features two fonts designed by Ian Swift, (aka "Swifty"). The two faces, Dolce Vita and Miles Ahead are this month's Fonts of the Month. Swifty's Funky Fonts cost £30.50 and are accompanied by a beautifully produced booklet. They're Mac only now, but a PC version is hoped for in the new year.

Swifty and several other designers make up Swifty Typographics, responsible for loads of excellent work, including much for the Talkin' Loud record label. I'm a big fan of Talkin' Loud and sorted through my records to find a good example of their work. The sleeve reproduced here is for the Incognito cover of "Don't you worry 'bout a thing", released in 1992, and designed by Ian Wright.

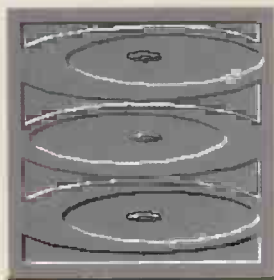
Here's a final bonus wish: I wish Apple the best of luck in 1996.

PCW Contacts

I wish you all a merry Christmas, happy New Year, and hope that many of your wishes come true. Feel free to send greetings cards to the PCW address on Broadwick Street or email me as gordon_laing@pcw.ccmil.com

compuserve.com
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FontWorks 0171 490 5390
Adobe 0181 606 4000
Paul Tully (for Swifty) 0171 729 3003
Quark home pages
<http://www.quark.com/>
Diamond page
<http://www.diamondpm.com/win95.html>

PCW



Multimedia Presentation

The visual glitter of multimedia makes it an obvious choice for the festive season. Panicos Georghiades and Gabriel Jacobs look at some of the best Christmas gift material, from 3D packages to a multimedia tutorial.

There's at least one thing that Christmas and multimedia have in common and that's razzmatazz — lights, sounds and pictures. There are other similarities too; they're both concerned with delivering messages. Christmas (supposedly) delivers the word of God, multimedia (and this is certain) delivers the word of anyone with enough money to develop and market a title. Furthermore, Christianity changed the world — many people say that multimedia will do the same.

But before we take the religion/technology analogy too far, let us not forget the biggest similarity: both multimedia and Christmas are big business, and we the public are stuck in the middle. At Christmas time, we're under pressure to buy presents, and multimedia products make very good Christmas presents. So we've decided this time to devote most of our column to ideas for multimedia presents for the festive season.

Get me an Expert

Expert Multimedia Help is a new CD-ROM title that will make an excellent present for anyone interested in buying a Multimedia PC, or for anyone who has already bought one and wants to know more about it and find out if it's up to scratch.

The CD works on both Windows 3.x and Windows 95, and provides an online tutorial, some performance tests and a troubleshooting section. The online tutorial describes aspects of multimedia and explains (with animation and video) how multimedia hardware works.

The performance tests cover the multimedia components of your machine: transfer rates of CD-ROM drives, video and sound playback, and so on. You're

told how these rates compare with MPC Levels 1 and 2 (but not Level 3).

The testing program doesn't test MPEG playback, but it does test Indeo, MS Video 1 and Cinepak at up to 320 x 240 resolution at both 15fps and 25fps. We used this test to find out whether Microsoft's claims of enhanced video playback on Windows 95 are true. They are indeed. Some of the results were amazing, with Windows 95 displaying as much as six times as many frames as Windows 3.1 using exactly the same PC, as the table below proves. It shows the frames displayed of a video clip running at 320 x 240 with the monitor resolution set at 800 x 600 at 65,000 colours.

This of course means that our second idea for a Christmas present (which has no doubt been recommended elsewhere), has to be Windows 95. There can be little doubt that this is the best operating system (performance-wise) for multimedia, especially for titles which take advantage of its 32-bit capability and all the other goodies which are bound to appear.

Enhanced video playback tests

	Windows 3.1	Windows 95
15 fps		
Video 1 (15 fps)	111	305
Cinepak (15 fps)	97	305
Indeo (15 fps)	62	292
(Total 305 frames)		
25 fps		
Video 1 (25 fps)	96	492
Cinepak (25 fps)	81	472
Indeo (25 fps)	54	336
(Total 507 frames)		

Another very interesting discovery made while using the Multimedia Help CD is that if a multimedia PC is made to play back video at a frame rate it can't handle — and is therefore forced to drop frames — it will play back at a lower frame rate than the one it's supposed to be capable of.

Our tests showed that a PC which can happily play a 15fps video clip without losing frames drops to an abysmal 6fps or so playback when forced to play a 25fps version of the same video clip, instead of dropping to 15.

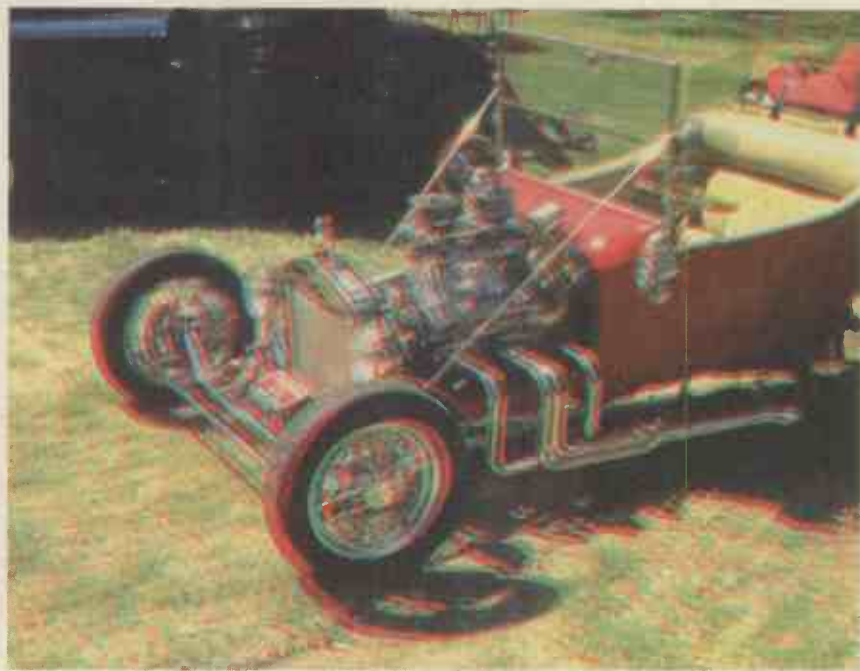
This finding is very important if you're developing video for multimedia. Bear in mind that your video will play back OK on the faster machines it's optimised for, but on weaker machines it will struggle, with the result that they will do far worse than their theoretical optimum.

However, the best part of the Multimedia Help CD is its troubleshooting section. During every test you're given a checklist of faults. You select whatever is happening when it shouldn't, or not happening when it should, as the case may be. The program then offers a list of possible solutions, such as driver versions or settings in the system files that you should check.

This troubleshooting section can also be run interactively — using cue cards — as you try things out. Very handy if you do have problems (and who doesn't?). Indeed, what better Christmas present could there be than the answer to all your problems? Wish someone would do the same for us this Christmas.

Add the third dimension

DoubleVision will make someone's Christmas. Your delighted recipient will be able to create 3D images similar to those used



in many fifties B movies, which you can view with coloured 3D glasses.

These images are called anaglyphs. They are actually 2D images which, when viewed through a pair of 3D glasses, appear to have physical depth, as opposed to images created in a 3D design program which have perspective but are only two-dimensional.

The product is easy to use, fast and inexpensive. For a 3D effect you need two images. These can be taken using a 35mm camera, a camcorder and frame grabber, a digital camera or a Kodak PhotoCD. The program accepts most of the commonly used image formats (such as BMP, PCX, GIF, TIF and JPEG).

When photographing an object you take one picture, then move a short distance to the side and take another. There's a simple rule: the distance you move to the side, in inches, is approximately half the distance between you and the object, in feet. So if the object is ten feet from the camera, you have to move five inches before taking the second photo. To exaggerate the 3D effect you can increase this distance a little.

Once you have imported the left and right images,

3D image created in DoubleVision. You need 3D glasses to view this (red on the left eye and blue on the right) — see the PCW Contacts panel.

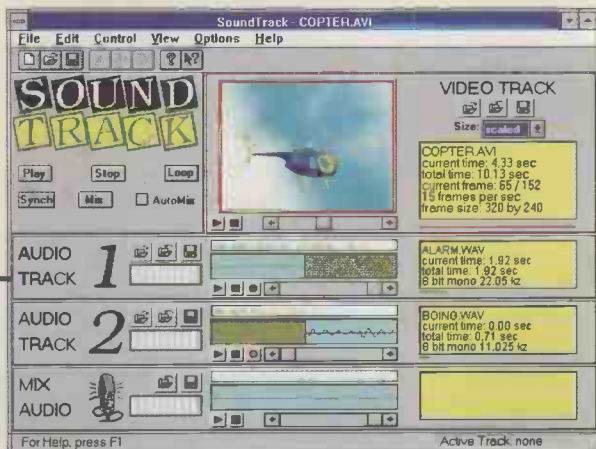
you have to set an alignment marker. This is a common point marked on each photo which defines a virtual central plane. When viewed with the 3D glasses, objects in the image behind this plane will appear to recede while those in front of it will appear to project forward.

And that's all. The program calculates the 3D image which you can save as a bitmapped image to view on the screen or print. See CAR.GIF and also the AVI files on this month's cover CD.

As a little extra, DoubleVision has a utility that can create a pseudo-3D effect out of a single picture.

2D or not 2D

Of course, 3D glasses are just another bit of equipment and 2D can be fine if the



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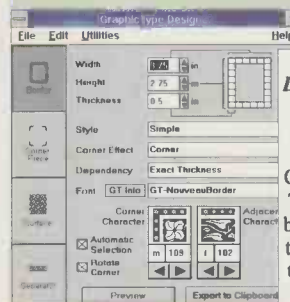
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effect is impressive enough. The Digital Video Kick Start CD-ROM would make a good present for anyone who wants to do 2D interactive animation and learn about producing digital video. It contains tools, clips, tutorials and everything else you need to get you started in the world of PC-based video.

First of all you get SoundTrack. This enables you to add sound to video files without too much fuss. You load a video (AVI) file and then click the Record button. You then see the video play as you record a voiceover. You can cut, copy, paste, delete, overdub and mix sound files, and there are three audio tracks available.

But the real *tour de force* in this CD is Starlet Movie. This is a full-featured 2D animation program that can be used not only for entertainment but also for serious business. You can create animations either to use as screensavers, or to incorporate into your sales and training business presentations.

Starlet Movie uses vector-oriented drawing, has relatively good image processing and unique interactive animation capabilities. You can create non-sequential animations which can be activated by hot-spots found on specific frames.

The program uses film strips as a storyboard to specify the animation's path, and you can navigate objects using other frame images as references. You can also include interactive buttons, branches, cycles and sound effects.

Bundled with Starlet Movie is a drawing, paint and image-processing program. Finished animations can be distributed with the included runtime module, or saved as a Windows AVI movie.

Another nice little utility that comes bundled with this CD is Matinée. It displays your videos as screensavers. You choose a backdrop, then drag and drop video clips

Christmas wishes

1 Our first, most ardently wished-for wish is an improvement in the three factors affecting multimedia performance: speed, speed and speed.

For instance, what about a fourth-generation authoring tool, such as Toolbook or Director, which produces compiled code and therefore doesn't run frustratingly slowly on a weak machine? What about faster, and cheaper, graphics cards providing software-only MPEG playback?

Multimedia is certainly the future in computing, but it's the present that concerns us. And (compatibility and standardisation problems apart), speed is the thing holding back the real advent of multimedia, because user-expectations (such as full-screen broadcast quality video) are ahead of what the technology can actually deliver at present.

We're bound to see increases in speed, in both software and hardware, before the end of next year, but it's the extent of those increases which will determine how far multimedia is able to fulfil its obvious potential.

2 Our second wish touches on compatibility. We'd like to see more mainstream multimedia authoring packages offering cross-platform functionality — with the Mac, but also Unix, and the Internet. We suspect this is one wish which will at least partly come true because the Mac is so much stronger in the USA than over here, and whatever



the efforts of the European Union to encourage innovation in computing, Uncle Sam is definitely in the driving seat, and will be for as long as anyone can imagine.

3 Wish number three is for a multimedia authoring package that's as easy to use as the mainstream presentation packages like Freelance Graphics, PowerPoint or Astound — and which uses Visual Basic as its scripting language. In our view, Visual Basic, because it's so easy to use yet so powerful, and because it comes from Microsoft, is now a kind of a standard. So the sooner it's incorporated into easy-to-use authoring packages, the better.

4 Fourthly, back to the question of speed. But this time speed of a different kind, though again linked to compatibility. We need to see faster agreement between companies on important issues such as high-density CD formats. Developers and manufacturers need to be able to get on with the job of development instead of worrying about what will be compatible with what. This is essential for users to get the full benefits of multimedia.

5 Our final Christmas wish is for a living-room multimedia console that will plug into a TV, play MPC-compatible CD-ROMs, and cost £300 or less. Any hope of this coming true? Well, it would require the price of RAM to drop to a fifth of its present value, but who knows what next year holds for chip prices.

into the video sequencer. There's also an option for password protection.

Although the CD doesn't include digital video editing facilities (Adobe Premiere style), there is a tutorial which attempts to get to grips with the mechanics of creating digital video. Topics include a com-

plete glossary of common video terms, a discussion on compression techniques and how to make them work for you, and a section which takes you through the process of creating digital video from scratch.

The CD contains about 150 video clips and about 170 audio files (music and sound effects) — hours of fun for you.



Starlet Movie's vector-oriented drawing provides scope for producing high-quality animation

PCW Contacts

Panicos Georghiadis and Gabriel Jacobs will be glad to answer your questions. Either write to PCW, or email g.c.jacobs@swan.ac.uk

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Delaying tactics

Create digital delay to enhance a part by using your sequencer, even if you haven't any special effects built in to your synth — Steven Helstrip tells you how. There's a new sampling CD with classic synths and one-off effects, and... what Steve really wants for Christmas (please).

If you don't have on-board effects on your synth, or you want to add a digital delay to a guitar part and your synth module only has reverb, you can create your own effects from your sequencer.

Adding delay to a part helps in several ways: it thickens and adds decoration to the part — helping it to stand out — and it allows you to create a wider stereo field when using a stereo delay.

To create a basic delay or echo, copy

the part you want to effect and place it on a separate track. In Cubase, for instance, highlight the part (or the whole track), select copy (Control K) and drag the new part to a new track. If you have a spare MIDI channel, the new track can be set to channel 2 or whatever is free. This will allow you to manipulate the delay even further.

Playing the two back simultaneously, on the same patch or instrument, will create a flanging, or chorus, effect (but we'll cover this another time). To

create the delay however, you must offset the second track. In Cubase, this can be found in the Track Info Panel. Depending on the tempo of your track, the offset will have to be adjusted accordingly. The table in Fig 1 shows delay settings.

In Fig 2 (delay1.arr on the PCW CD), the guitar part is playing an arpeggio pattern. The delay can be seen on a new track and has an offset of 176ms. In Cubase, each count on the delay parameter represents 3ms and is therefore set to 58. As the delay needs to be quieter than the lead, the track's volume has been reduced. To add further effect, the lead is panned towards the left, while the echo is in the right speaker.

Using the example, try altering the offset to create a longer delay. You may also like to try transposing the delay by 12 (one octave) to produce a sound similar to a 12-string guitar — even play around with the instrument to achieve different effects.

To create a second delay you'll

need to copy the original part to a third track. Fig 3 (delay2.arr on the PCW CD) shows the original with three delays, each playing on a separate MIDI channel. The second delay has been set to 29 (88ms) and the third to 116 (352ms). When each part has been panned-out, the effect is to create a richer and "bigger" sound. Again, try transposing each part and play around with the level and timbre of each of the tracks.

Fig 1 Table of delay settings

Tempo (BPM)	note	1/8 note	1/16 note
85	705 (ms)	352 (ms)	176 (ms)
90	666	333	166
95	631	315	157
96	625	312	156
97	618	309	154
98	612	306	153
99	606	303	151
100	600	300	150
101	594	297	148
102	588	294	147
103	582	291	145
104	576	288	144
105	571	285	142
106	566	283	141
107	560	280	140
108	555	277	138
109	550	275	137
110	545	272	136
111	540	270	135
112	535	267	133
113	530	265	132
114	526	263	131
115	521	260	130
116	517	258	129
117	512	256	128
118	508	254	127
119	504	252	126
120	500	250	125

Christmas Wishes



Well it's still not snowing in Queens Park. Sainsbury's hasn't ordered turkeys yet, and I certainly haven't thought about sending out any cards. But the

Christmas issue beckons once again, so here's my wish list for the man wearing the white beard.

First on the slate is a new power supply for my PC, since the last one went up in smoke — and it couldn't have happened at a more inconvenient time. I had three days in which to produce and mix three tracks for the band I work with before going on tour. This involved tidying up the sequences (which were on the broken PC), recording backing vocals, guitar, sampling-up all the vocals and arranging the track — a job that, realistically, takes two weeks. We'd been hard pressed enough as it was and we could have done without a major disaster like this on our hands.

Getting hold of a second PC wasn't too much of a problem, but getting the

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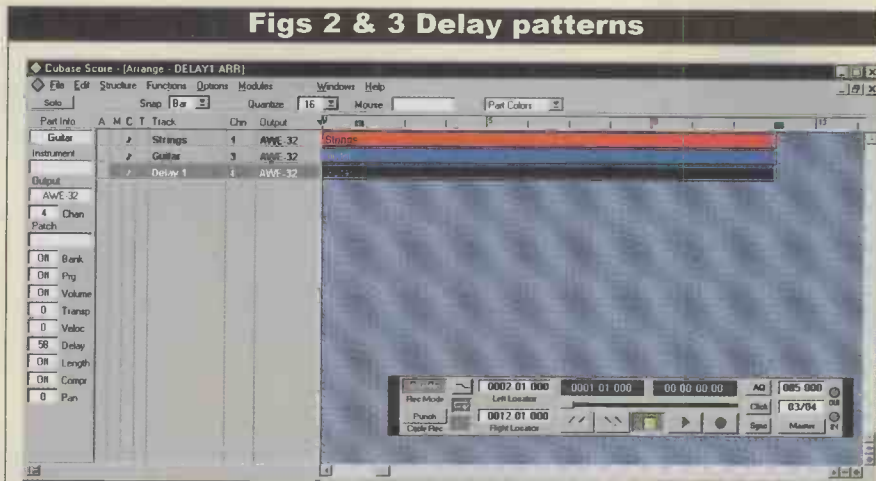


Fig 2

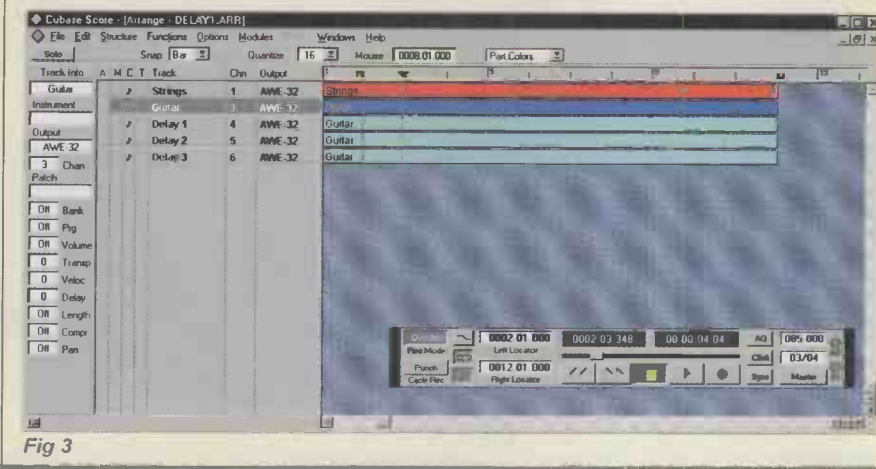


Fig 3

sequences off the hard drive was a nightmare. As it wasn't SCSI, it took a lot of persuading to get it to talk to another system. However, with the help of 40 cans of Diet Coke and 33 cups of coffee the job was finished within the two remaining days.

Secondly, I'd like a new sound card for Christmas, with a few useful extras. Therefore Creative Labs should stop spending so much time developing video conferencing equipment and make a card that has a digital I/O (SP/DIF), eight analogue outputs and 24Mb of sampling RAM. I tend to do most of my pre-production using the AWE-32, simply because it's convenient; the control panel sits beneath the Cubase window and most of my samples are grabbed digitally from the CD-ROM drive and stored on hard disk.

The big problem is that it only has a stereo output limiting the number of samples you can mix individually. An alternative to this would be to have a parametric EQ on each channel and several auxiliary sends with access to high-quality built-in effects such as reverb and delay.

The most important feature on this

sound card, however, is the digital I/O. Every sound card has its own digital-to-analogue and analogue-to-digital converter that turns an audio signal into ones and zeroes to be stored in RAM or disk, and vice-versa. The dilemma here is that they are not up to pro-audio standards and produce noise (no thanks to interference from processors and other cards).

With SP/DIF inputs and outputs, it would be possible to by-pass the on-board DAC/ADC and use a higher quality, external DAC/ADC to do the processing, resulting in a much cleaner signal. It would also mean you could use digital copies from DAT machines to perform edits, then dump it back without degradation. Digital Audio Labs produces the Digital Only card which allows you to do just this, but that takes up an extra slot which I don't have, and it costs more than £400.

Third on my list is several amendments to Cubase. Its most irritating feature is the remote control facility: this allows you to hold down a combination of keys on a MIDI device to activate play, record and so on. You can disable this remote feature but every now and again it

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decides to turn itself back on without warning, and I don't want it to. It would be nice to have a customisable button bar as well (like the one found in Word), which would allow you, for instance, to assign a specific groove template to a button instead of having to navigate through reams of drop-down menus.

As I'm allowed ten wishes, I'd like to add another one to the list: another 16Mb of RAM to cope with the increasing size of audio applications; a 4Gb hard drive for direct-to-disk projects; an operating system that gives me some warning when it's about to crash. A few extra buttons on my mouse would be nice too, to activate commands within applications and a 17in monitor to replace the 14in screen I have at the moment.

If I can't have any of these, then I guess a few pairs of socks would be fine. Oh, and some of that lovely aftershave from Marks and Spencer would be nice, too.

Now hear this...

● **Evolution** has announced Sound Studio Professional; a new package that integrates Samplitude (its direct-to-disk recording software) with Procyon Pro, a Cubase lookalike sequencing package. Together they provide up to 100 tracks for sequencing MIDI and four tracks for digital audio. It is also possible to synchronise the two packages.

Procyon's highlights include an intuitive interface; score, piano roll, drum and event editors; on-screen mixers and tempo maps. It was a worthy runner-up in the "Best Creative Software" category in this year's PCW Awards. Samplitude offers full parametric EQ, time stretching, built-in effects and a decent wave editor.

Sound Studio Professional costs £149. "Sound Studio", a scaled-down version, costs a mere £59.99. (Both prices include VAT). Sound Studio is available from Evolution (demos can be obtained from <http://www.evolution.co.uk>).

● **I mentioned** last month that Et Cetera

has developed an interface for WaveTable daughterboards, called MIDI Edge, allowing you to by-pass your sound card and enjoy noise-free output. MIDI Edge has four MIDI interfaces providing 64 independent MIDI channels and will be available this Christmas, for £129. You can buy the excellent Yamaha DB50XG daughterboard (reviewed elsewhere in this issue) with the MIDI Edge for £230.

● **More loops** for the AWE-32. D-Zone records, the people responsible for the Loopisms CDs (see *Hands On*, October) has decided to compile all its samples into one huge library for the AWE-32. The CD will be called "Loopisms the AWE-32 Compilation" (how original) and will contain 150 loops and more than 1,000 keyboard samples. The samples will be arranged into sound banks (or SBKs) and D-Zone is likely to feature several shareware titles. The CD should be available early next year and will sell for £29.99 (incl VAT).

Squishy blocks and bell drones

Time + Space has started to convert its CD library into PC wave-formatted samples. Ambient Volume 2, one of the latest to be reworked, contains a mixed bag of mono and stereo samples digitally recorded at 44.1KHz.

This CD-ROM brings together a fantastic collection of synth pads, vocoder loops and effects taken from the Roland System 100M, SVC 350 Vocoder, JD990, Memory Moog and Oberheim synths to name a few. The samples are arranged in 74 folders, each containing from two to 14 samples. Many can be grouped into the "soundtrack" category, working on their own as, believe it or not, ambient tracks. You'll also find hundreds of one-shot effects described as "Analog Bell Drones, Oscillator FX, Squishy Blocks" and so on. There are plenty of bass and percussion samples, too. And if you're looking for that Vince Clarke sound, you'll find it here. It costs £29.95, including VAT and delivery, from Time + Space. There are ten of the sounds on our free CD-ROM this month, under "hands\sound".

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 — or anything off Steve's Christmas list (just kidding) — send them in to the usual PCW address, or to steven_helstrip@pcw.ccmil.com.

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A Class Act

Tim Anderson investigates classes in Visual Basic 4.0, ODBC struggles and PACKing in Delphi.

Visual Basic has not embraced all the features of object orientation. That's no reason not to take advantage of the substantial language improvements which it offers, not least the new class module. This enables you to define objects with their own properties and methods. For those unfamiliar with classes, here is a short introduction. In VB, you create a class module by choosing Insert — Class module. Then press F4 to show the property sheet for the class. For example, you might create a product class, and set the Name property to clsProduct. Next, define custom properties and methods for the class. For example:

```
Option Explicit
Public name as string ' name of the
product
Public description as string '
describes the product
Public productID as string ' iden-
tifies the product
Public stock As Long ' number in
stock
```

Now you can use the class in your code, for example:

```
Dim Widget as new clsProduct
Widget.name = "Widget"
Widget.Description = "A very handy
thing indeed"
```

But this is no more than the old user-defined type by another name. The difference is that classes also support methods and property procedures. For example, it is dangerous to expose Stock as a public property. It would be all too easy to set it to a wrong value by mistake. The answer is to rewrite clsProduct as follows:

```
Private lstock as Long ' visible only
```

```
to class methods
Property Get Stock() as long
stock = lstock
end property
```

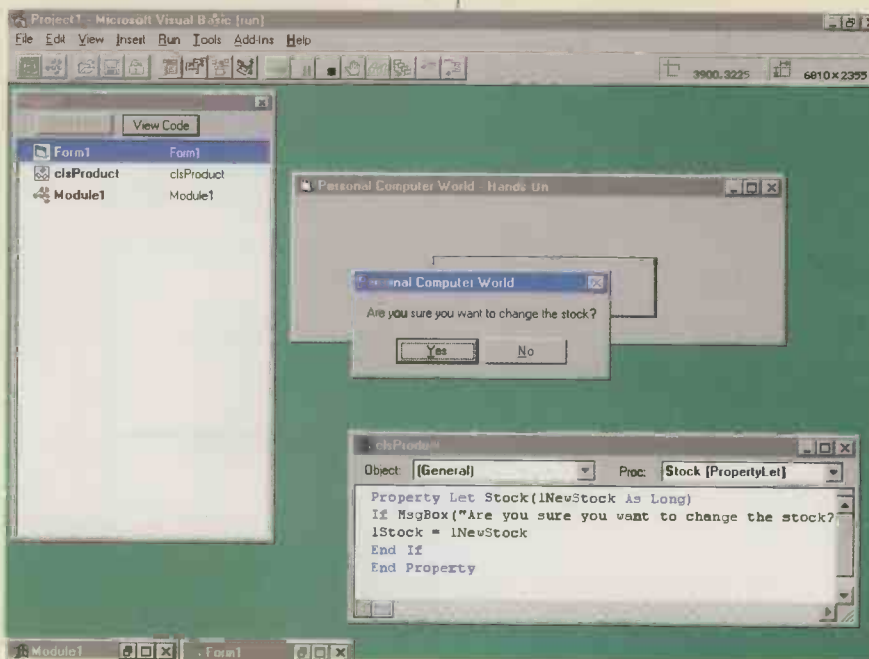
```
Property Let Stock(lNewStock) as long
if msgbox("Are you sure you want to
change the stock?", vbYesNo) = vbYes
then
lstock = lNewStock
endif
end property
```

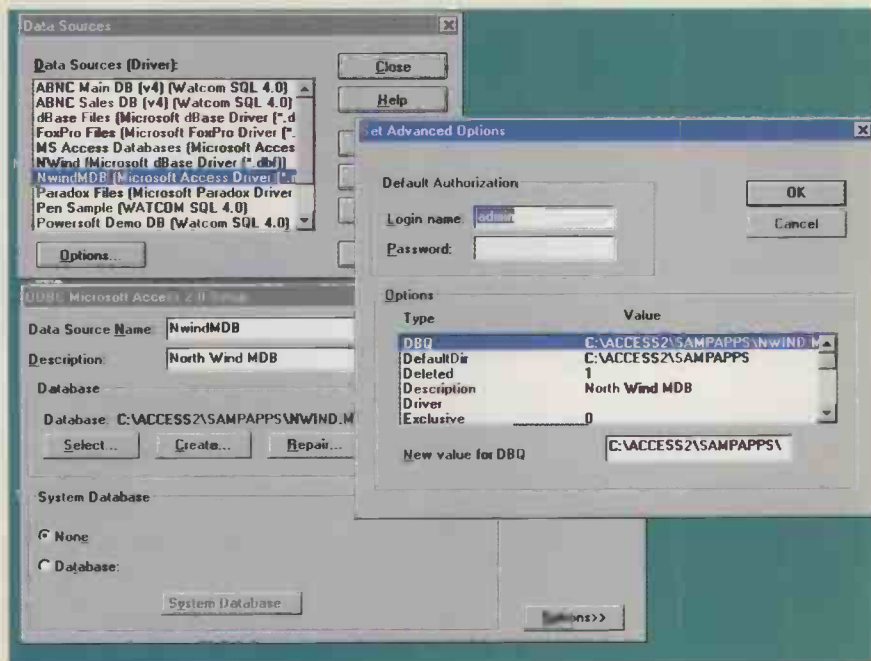
You can test the new class as follows:

```
Dim widget As New clsProduct
widget.Stock = 34
MsgBox widget.Stock
```

Note that when you set the Stock property, the confirming dialogue appears. In the real world, the confirming dialogue can be replaced by whatever code you require to ensure a valid stock update. You can prevent a negative value, for example; or check a User object for authorisation. Even better would be to replace the Property Set procedure with two methods, AddStock and ReduceStock. Gradually the code becomes more robust and easier to reuse (simply import the class module into another project).

Using VB 4.0's class modules, you can easily create applications that validate and protect key data





Setting up an ODBC driver — do you really want your users to see this?

There is more to say about OO programming in VB, and future *Hands On* columns will return to this subject.

● How are you finding Visual Basic 4.0? Please contact me to say what you think of the new release and how you are using the new features.

Wrestling with ODBC

Steven Fletcher has written a database application using Visual C++ and ODBC. He writes: "I decided to use Microsoft Access as the Database builder and standard. My programs access the databases via CRecordset and CDatabase using a ODBC link to my Access Database files. This has been an effective method so far. The main problem I have using ODBC is the installation of the software on other PCs. Firstly, ODBC has to be installed, then the database files have to be copied across. ODBC has to be set up to recognise the installed database and it must be given the correct name for the program to read.

"Is there an easier way of installing my program together with ODBC? And since JET is a direct MS Access engine, can I use and link via CRecordSet with JET?"


Steven has hit on one of the least appealing aspects of ODBC, when used for applications that are to be distributed. ODBC consists of manager software, plus one or more database drivers, plus one or more data sources which use those

Christmas Wishes

Dear Santa

It's that time of year again. And dear Father Christmas, I wrote to you last year with some very reasonable Visual Basic enhancement requests, few of which have been fulfilled. What did I ask for? Oh yes, a compiler. And object oriented extensions to the language — yes, I know we got the class module in VB 4.0, but somebody forgot inheritance. And decent error handling — what happened to that? And Visual Basic for the Mac, where are you?

Maybe I shouldn't complain. You did deliver three of the things I asked for. Version control was one, and VB 4.0 is miles better in this respect. A rich text edit control was another, although I had hoped it would run in Windows 3.x. And you excelled yourself with the third: I asked for more competition for VB, and now you can't move for VB lookalikes. Incidentally one of these, Borland's Delphi, delivers most of the other items on the list as well.



Software development, they say, is the triumph of hope over experience. Here's seven modest requests for 1996. Over to you Santa.

1. A VB compiler, OO VB, better error handling (for details, see last year's list).
2. Slimmed-down Microsoft Office, broken into small OLE components that make Office automation a more realistic proposition.
3. Microsoft and Borland to agree on a single DBF standard (see Fig 1, page.330).
4. An end to the O/S wars, Last year my VB 3.0 program ran fine on Windows 3.x, NT and OS/2. Now 32-bit Windows has messed up everything.
5. A 12-month break in publicity for Windows 95. No, make that a permanent break.
6. Visual Basic for Applications in Word.
7. Working OpenDoc applications, and not just on the Mac, but on OS/2 and Windows as well. If this is a superior alternative to OLE, we need to see it in operation — soon.

drivers to access specific databases. All these are a shared, system-wide resource. If you want to create an ODBC application which can be delivered as a shrink-wrap and easily installed onto any Windows PC, there are several problems to solve:

1. The target PC may or may not have ODBC installed.
2. The drivers you require may or may not be installed.
3. The data source will presumably not be installed, although if you are unlucky the

data source name (DSN) you chose may already be in use.

4. ODBC is a version control nightmare. If your application installs the latest versions of the manager and driver DLLs, there is always the chance that some other ODBC application will no longer work.

5. To add to the fun, there are now separate 16-bit and 32-bit ODBC versions, both of which may be installed on the same system.

The immediate conclusion is that ODBC is best managed in a corporate environment, where the IS department can control and configure the installations as required. But this is shrink-wrap software. That leaves two other possibilities. One is to ship the ODBC installation disks as supplied by Microsoft, and carefully explain to the user that they need to install ODBC from the separate setup disks, run the driver manager, and set up the data

source name. That is asking a lot: end users should not have to face intimidating dialogues asking them to configure data sources.

That brings us to the alternative, which is to control ODBC programmatically from your own installation routine. To do this you need to obtain the ODBC 2.x SDK from Microsoft; it is on the MSDN level two disks. Your setup program will need to copy across the ODBC DLLs, and then call the ODBC API to configure it. For example, there is a function called SQL-

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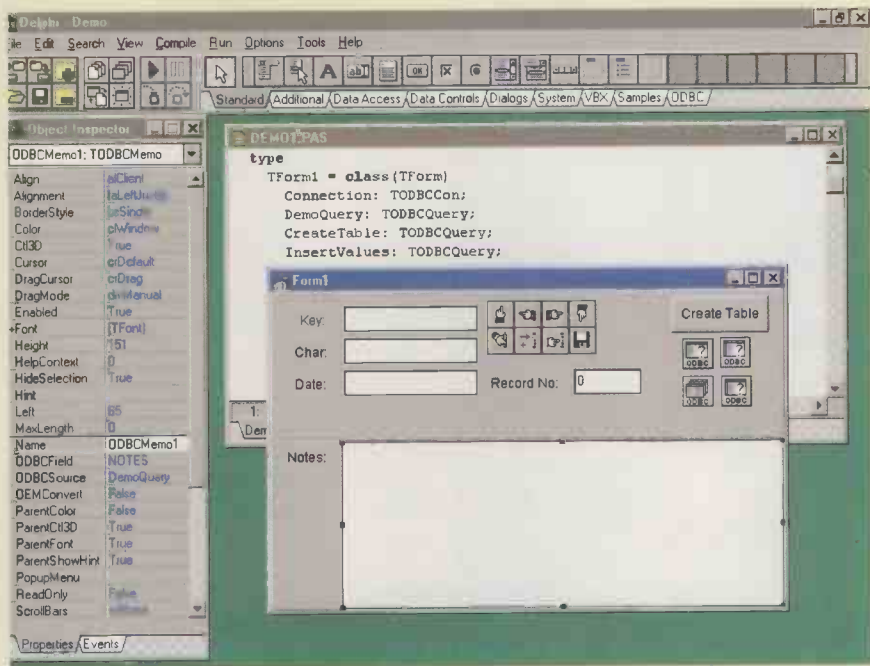
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Dan Daley has created a VCL wrapper for ODBC that bypasses the BDE entirely. The product is currently in beta, but can be downloaded from Compuserve

dBase or Paradox data, but not FoxPro or Access. That means using ODBC, which is not Delphi's strongest suit, along with an MDB driver. A better option is to give in and use the Paradox format instead; but other factors may make that impossible. So it's ODBC; and here the main tip is you need the Microsoft Desktop Driver set along with ODBC 2.0 or higher. The drivers supplied with Microsoft Office 4.x do not work. The desktop drivers are part of the ODBC SDK which can be found on MSDN level 2, or on the Visual C++ 2.x CD, or can be obtained separately from Microsoft.

Apparently Microsoft refuse to release the MDB file format specifications, which makes it unlikely that a custom VCL will appear. The problem is that the advanced features of the MDB format are intimately linked with JET. But you can avoid going through the Borland Database Engine by calling the ODBC API directly. At least one person has created a VCL wrapper for ODBC, and a Beta version can be found in the Delphi conference on Compuserve. The package includes some data-aware controls for ODBC, and completely bypasses the BDE. email the author, Dan Daley (daley@scruz.net), for more details.

Get packing in Delphi

Finally, Andrew Richmond asks: "How do you pack a dBASE table from a Delphi

ConfigDataSource, which adds, modifies or deletes data sources. With care, it should be possible to build an installer application which silently installs and configures ODBC, complete with version control, and checks for name conflicts. But it is a delicate business, and in my opinion a good reason not to use ODBC for shrink-wrapped database applications.

Steven also asks about CRecordSet. This is an ODBC class so cannot use JET (except via a roundabout route if a Microsoft ODBC driver itself calls JET). Visual C++ version 4 introduces the CDAORecordSet class. This is one of the new set of Data Access Objects (DAO) classes. Using DAO, Visual C++ programmers can use JET as easily as VB programmers. If you port your application to use DAO classes, and if (as Steven is) you are using a database supported directly by JET, then ODBC is bypassed entirely. In this case it looks like a wise move, except that the DAO classes do not exist in the 16-bit version of Visual C++. So if Steven needs to support Windows 3.x, it's back to ODBC with all its frustrations.

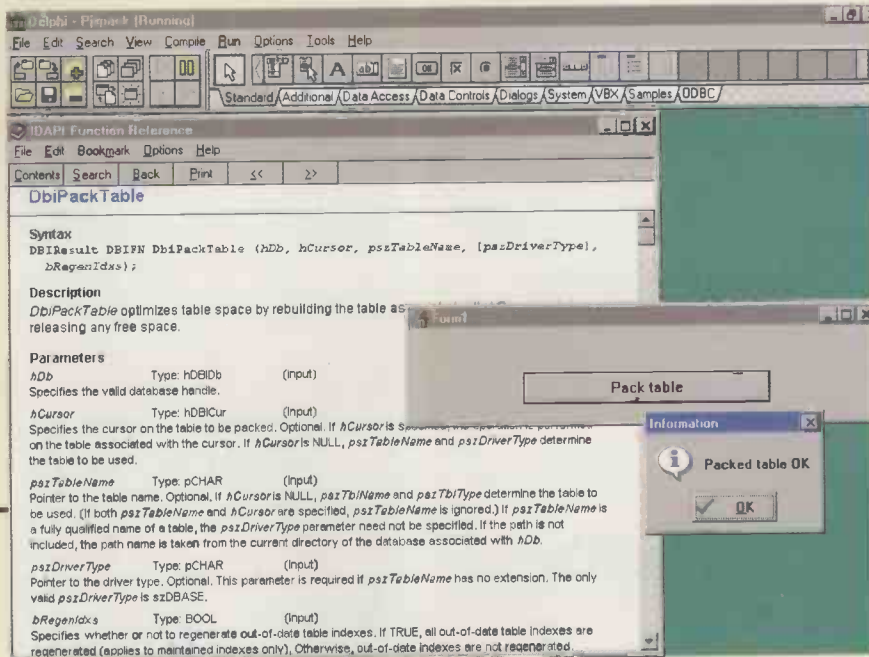
Getting Access from Delphi

Colin Dow raises a common problem: "Do you have any tips for connecting to an Access database using Delphi. There must be a few people out there who use Access databases but like the speed of

You can pack dBase tables from Delphi. It's not documented with the product, but requires the BDE help file (also shown), obtainable from Borland

Delphi. I don't know if there are any specific settings you can set up in the ODBC/IDAPI to make the connection more reliable, but tables with counters don't seem to behave very well. Or even better, is there an Access VCL along the lines of the Apollo engine which you recommended in September?"

Between them, Microsoft and Borland control the most popular desktop database formats on the PC. Microsoft have the FoxPro variant of the DBF, and their in-house invention, the Access MDB. Borland's equivalents are the dBase DBF variants, and the more sophisticated Paradox DB format. As you would expect, Borland's Delphi has native connections to



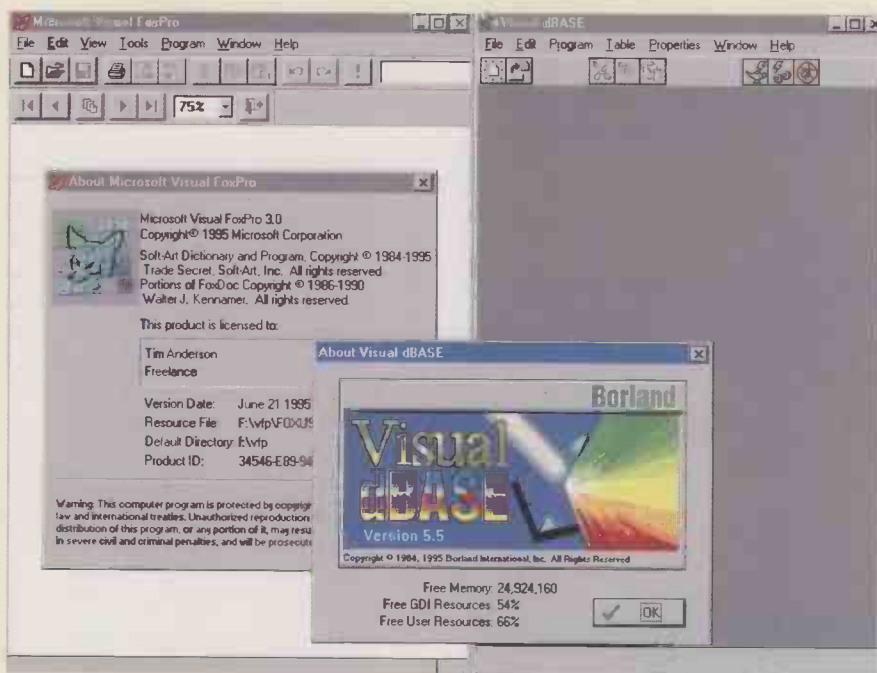


Fig 1 Two xBase databases — two incompatible data formats. Why?

program?" Strangely, although Delphi uses the same database engine as dBase itself, table objects have no Pack method. The only way round this is to use lower-level BDE functions, which Borland have documented in a file called BDE.HLP, available for download from CompuServe and no doubt elsewhere. Using these functions is much harder than programming the usual database components, and not often necessary. The following skeleton routine successfully packs a table on my system. Note that for this to work, the table must not be in use elsewhere. To use this in earnest, you need the full

description of the parameters and possible error messages, contained in the Borland help file:

```
uses
... DBiTypes, DBiProcs, DBiErrs;

implementation

procedure PackTable;

var
hMyDb : hDBIDb;
iResult: Word;

begin
```

```
dbiInit(nil);

iResult := DbiOpenDatabase(nil, 'STANDARD',
dbiREADWRITE, dbiOPENEXCL, '', 0, nil, nil, hMyDb);
{note database must be opened exclusive}

if iResult <> DBIERR_NONE then
MessageDlg('Error opening database', mtError, [mbOk], 0)
else
iResult :=
dbiPackTable(hMyDb, nil, 'C:\MYTABLE.DBF', 'DBASE', False);
{table must not be in use elsewhere}

if iResult = DBIERR_NONE then
MessageDlg('Packed table OK', mtInformation, [mbOk], 0);

iResult := dbiCloseDatabase(hMyDb);
iResult := dbiExit;
```

PCW Contacts

Tim Anderson welcomes your Visual Programming comments and tips. He can be contacted via PCW at the usual address, or freer@cix.compulink.co.uk

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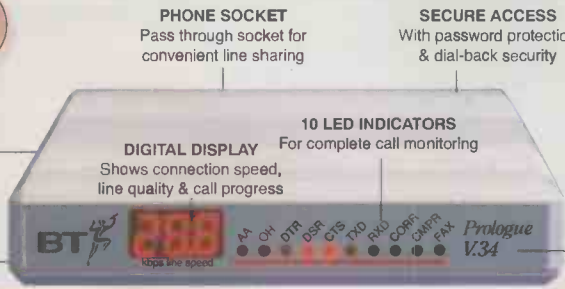
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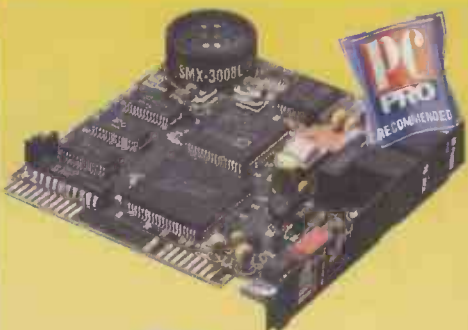
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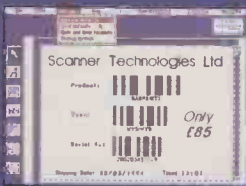
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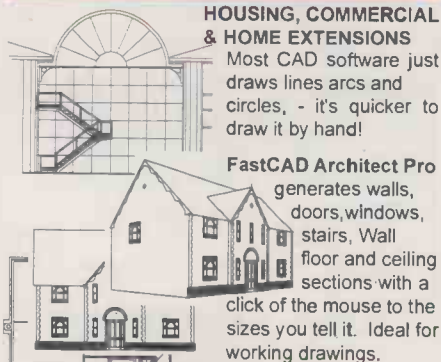


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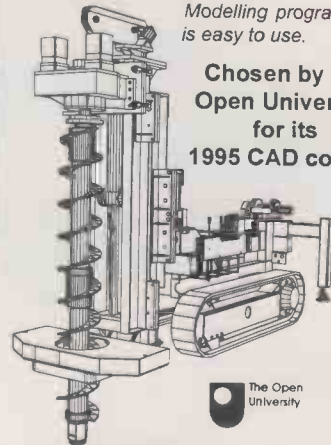
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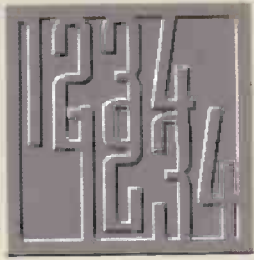
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High interest

Mike Mudge gets to grips with the Hugo Steinhaus problem, and plays around with powers.

Given an initial positive integer, n_0 , written as $a_r a_{r-1} \dots a_1 a_0$ in radix 10; that is, $n_0 = a_0 \times 10^0 + a_1 \times 10^1 + \dots + a_{r-1} \times 10^{r-1} + a_r \times 10^r$, (where the a_i are digits from 0,1,2...9) an interactive process is defined by repeatedly forming the sum of the q^{th} powers (where q is a positive integer) of these digits. Thus, $n_1 = a_0^q + a_1^q + \dots + a_{r-1}^q + a_r^q$ etc.

Case (1) $q=2$. It has long been known that this iteration leads either to the cyclic sequence of length one (1), or to the octad (4, 16, 37, 58, 89, 145, 42, 20). See Arthur Porges', *A Set of Eight Numbers*, *American Mathematical Monthly*, Vol.52, pp 379-382, 1945.

Case (2) $q=3$. Here, there result five possible cyclic sequences of length one (1), (153), (370), (371), (407); two possible cyclic sequences of length two (136,244), (919,1459); together with two such cyclic sequences of length three (55,250,133) and (160,217,352). See Kiyoshi Iseki, *A Problem in Number Theory*, *Proceedings of the Japanese Academy*, Vol.36, pp 578-583, 1960.

Moving on in the natural way to

Case (7) $q=8$. Ichiro Takada, *Computation of Cyclic Parts of the Steinhaus Problem for Power 8*, *Mathematics Seminar Notes, Kobe University*, Vol.7, No.3, pp 543-546, 1979 reveals four cyclic parts of length one (1), (24678050), (24678051), and (88593477); one cyclic period of length three (54642372,7973187,77124902); one cyclic period of length twenty-five (9514916,....65602117) and one cyclic period of length one hundred and fifty-four (14889347,....67672102).

Note; these latter two cycles can be entered from $n_0=2$ and $n_0=3$ respectively, whilst the smallest number leading to the cyclic period of length three is 111348.

Case (9) $q=10$. The only cyclic period known to the writer is of length one and is (4679307774) see, for example, Tim Sole, *Computer Bulletin*, page 9, 1981.

PROBLEM STEINHAUS A. Investigate the Steinhaus Problems of order 8, 9 and 10 confirming and completing the results quoted above.

PROBLEM STEINHAUS B. Generalise the investigation to $q=11,12$, etc and attempt to construct a theoretical model for predicting the behaviour of this algorithm.

PROBLEM STEINHAUS C. Investigate the effect of change of radix of the arithmetic from ten to say 8 and 12, i.e from decimal to octal and hexadecimal.

PROBLEM ASSOCIATED STEINHAUS. What happens when the sum of the q^{th} powers of the digits is replaced by the q^{th} power of the sum of the digits?

UPDATE ON SOPHIE GERMAIN PRIMES. These numbers were introduced to *Numbers Count* readers in *PCW* December 1993. P is a Sophie Germain Prime if and only if $2P + 1$ is also a prime. SG proved a truly beautiful theorem: If P is a Sophie Germain prime, then there are no integers x, y, z different from 0 and not multiples of P , such that $x^P + y^P = z^P$. A recent communication, via Nigel Backhouse, advises that Harvey Dubner has regained the record for the largest SG Prime (at 3rd October, 1995) with the same 5082 digit number

$$P=2687145 * 3003 * 10^{5072} - 1.$$

WHAT ABOUT AN UPDATE ON WILSON PRIMES?

Readers of *PCW* June 1984 learnt that if P is a prime and $N!$ (factorial n) denotes the continued product of all the integers from 1 to N inclusive, then $(P-1)!$ is congruent to -1 , modulo P : which means that the WILSON QUOTIENT, $W(P) = ((P-1)! + 1)/P$ is an integer. Now if $W(P)$ is congruent to 0, modulo P ; which means that $(P-1)!$ is congruent to -1 modulo P^2 , then P is called a WILSON PRIME. Only three such numbers are known; 5, 13 and 563....causing H.S. Vandiver to observe "This question (whether there are infinitely many Wilson Primes) seems to be of such a character that if I should come to life any time after my death and some mathematician were

to tell me it had been definitely settled, I think I would immediately drop dead again."

CAN POWERS OF TEN BE INTERESTING?

An INTERESTING POWER OF TEN is defined as one which can be expressed as the product of two ZERO-FREE factors.

10^{18} together with $10^{93} = 8589934592 \times 116415321826934814453125$

are the only interesting powers of ten between 10^9 and 10^{5000} . Reference, Mike Mudge, *Computer Weekly*, 5 September 1985. Do there exist infinitely many interesting powers of ten? Is there an algorithm (other than search and test!) for finding them? What are the next terms in the sequence 18,33,....used in this context? Any investigations of the Steinhaus problems and other matters referred to above may be sent to Mike Mudge, 22 Gors Fach, Pwll-Trap, St. Clears, Carmarthen, DYFED SA33 4AQ to arrive by 1st April, 1996. The sender of the best solution will receive a £25 book token. Contributors should include details of hardware, coding, run times and results. Please note that material can only be returned if a stamped addressed envelope is provided.

Review of Numbers Count -146-, *PCW* June 1995

A disappointing overall response — could this be a function of the summer vacation or the choice of topics? There is a great deal of Smarandache-related material available, the latest collection being *Smarandache Function Journal*, vol. 6, no.1, June 1995, ISSN 1053-4752, published by the Department of Mathematics, University of Craiova, Romania, and available from Dr R. Muller, Number Theory Publishing Co, PO. Box 10163, Glendale, Arizona, 85318-0163, USA. However, the "suitable subjective criteria" has yielded a prizewinner from The Permutation Problem, Mark W. Lewis of 6 Hill Drive, Failand, Bristol BS8 3UX, with a neat combination of computation and algebraic theory. Details available on request.

PCW Contribution 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.



Backup to Basics

Stephen Rodda checks out Hewlett-Packard's new Windows 95 DAT backup package, has an argument with Winfaw Pro 7.0 and creates web pages with the help of a Hot Dog.

With Yuletide firmly in mind, I have been perusing the world wide web, and I've found a few locations which we of the networking fraternity might find interesting: <http://www.engr.wisc.edu/~ballard/bofhserver.html> contains almost everything a BOFH ("Bastard Operator From Hell") could wish to read, including an excuse server: this gives you an excuse of the day for why the network isn't working. And there are several stories from <http://prime-mover.cc.waikato.ac.nz/simon.html> which might give you some ideas about what you can do to your users. Don't think that I actually *condone* any of the activities he gets up to, though.

In a more serious vein, I've been looking at the latest present from Hewlett-Packard, Colorado Backup for Windows 95 which, it is said, will back up under Windows 95 to a SCSI DAT. I tried it out, backing up my 3Gb of (visible) disk space and the NetWare server to my drive. It seemed to have worked perfectly. But being a sceptic to the last, I decided to do a test restore. Unfortunately, the whole thing blew up in my face as it was reading the tape, and caused an exception error.

Giving it the benefit of the doubt, I tried again, just backing up one 1Gb partition, but no — a gig of files (perhaps it's got something to do with the number of files on the partition) was too much for it. I think this version must have escaped, rather than being released. Whilst I was writing this column, H-P released another version, 1.01, which is now available and seems to have most of the bugs fixed. I downloaded it from CIX and tried again.

I installed the program, and this time it seemed to work properly, turning in a very

respectable 25Mb per minute in backup speed. "This is too good to be true," I thought. I waited until the backup was complete and then left it to compare. Once this was over, with no errors, I thought I'd restore a few files to another area of the disk. This I did, and compared them using the DOS utility. I found that they all compared.

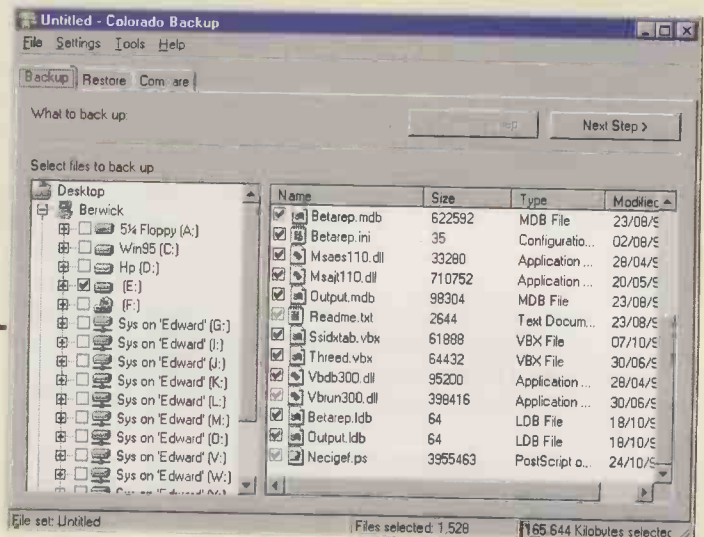
Remember, it's not enough to back files up, you should restore a random selection and compare them with the source files. That way you can be sure you have a valid backup. It's also a good idea to occasionally try restoring a few files from an archived tape since you never know when you might need them, and it'd be a pity if your drive couldn't read them due to head wear or misalignment. Don't forget it's important to clean a DAT regularly (and any other form of tape drive too, for that matter). Some DATs will give an error condition if they have not been cleaned frequently enough. Sometimes this error condition will, unfortunately, indicate that it's too late for cleaning and

H-P Colorado Backup for Windows backup screen

the drive needs to be returned for servicing. A DAT uses approximately the same sort of transport technology as a video recorder, only it's a little more choosy. Please keep your heads clean and only use a proper cleaning tape.

Windows NT

Just hitting the BBSs as I write is the Microsoft Windows NT service pack 2 for 3.51. Version 3.5's service pack 3 has arrived, too. Both these are included on this month's cover CD. I still find, however, that the new NT Explorer shell (also available on MSN and Compuserve), doesn't seem to approve of either of these service packs, so you either get your bugs fixed or you have the new shell. Service Pack 2 addresses a few bugs found in the disk utility of NT and in Services for Macintosh, as well as a few esoteric ones (which, incidentally I haven't noticed) in



Problem solving

More hard disk on NetWare

I was recently passed a page torn from your article in PCW addressing the problem of upgrading a 2G hard disk on NetWare 3.12 to a 4.2G hard disk. I have mirrored the disk successfully and have even set it active, and everybody here at our office is using it — however, the remaining disk space is still unavailable.

How do you partition span? Is it an option within Install or is it a little more fundamental with FDISK? I've tried various methods to no avail. Can you help?

SN@cis

First and foremost, I suggest you get a subscription to PCW, so that you don't have to rely on the generosity of others in order to read my column. Seriously, though, I'm sorry I didn't give the complete procedure in my article, but for the benefit of you and all the others who asked the same question, here follows the procedure:

First set up the new disk, naturally with a DOS boot partition and, still in DOS, having formatted the DOS partition with the /s switch to transfer the operating system, use XCOPY C:.* D: /s to copy all the files and directories from that partition to the new disk.

Make sure that you have a boot floppy with a copy of FDISK on it to hand. Now run AUTOEXEC.BAT to load the server and start NetWare. Once the server is started, load the install NLM, choose the Disk option, and edit the partition table of the new disk to give it one large NetWare partition, spanning the whole of the available hard disk surface.

Hot fix areas are not important with modern hard disks as they do their own hot fixing, so a small hot fix area (of about half of one percent should be enough). If you see any NetWare hot fix areas being used, this is a danger sign, it means that the disk's own hot fix area is now full, and the disk is probably on its way out.

Now choose the volume option and make a note of the exact size of the old volume. Create a volume with the same number of blocks on the new disk, and establish a mirror between the new volume and the old. Now go away and leave NetWare to its own devices until the new has mirrored the old. Break the mirror and down the server.

Change the new disk to be the primary boot disk, either removing the old disk or re-addressing it as another drive. Now boot using the floppy and run FDISK to activate the DOS partition of the new drive as bootable. Removing the floppy and FDISK should now reboot your system. With NetWare up and running, load install once again and select

Continued on page 337

other modules. I know there's a school of thought which says "If it ain't broke, don't fix it" but the patches for NT are wide-ranging, and I recommend that you pop the CD into the drive and run the patch routine.

Winfax Pro 7.0

I tried installing the Beta version of Delrina's Winfax Pro 7.0: I imagine the version numbers were skipped so that it integrates with Microsoft Office 95 (also running currently as 7.0, of course) under Windows NT 3.51 with the explorer shell.

It gave me a somewhat enigmatic message, telling me that I had to be installing it under Windows 95, Windows NT 3.5 or later. "I have got a later version," I yelled. Unfortunately, Winfax wasn't paying attention.

Turning this time to Windows 95, Winfax installed very smoothly and even managed a small amount of MAPI integration.

The second quarter of next year should see voice messages integrated into Winfax (for those with voice modems) so

perhaps I may have some of my wishes granted by Santa this year.

It seems a pity that more people don't use modems as they're intended. As far as sending faxes is concerned, they're great. Many people though, seem to forget the technology by which these modems (even over ordinary telephone lines) can extend your network arbitrarily.

This technology isn't totally seamless but if you know someone will use a modem to pick up your fax, and that the technology is capable of doing it, using either Windows MS At Work Fax or Winfax's Fax a File, it is possible to send things quickly. I know one firm with an email account which has only just got around to teaching one of its staff members how to use it.

Unfortunately, this particular member of staff is generally out of the office, so their email system is out of commission for more than 50 percent of the time. I'm currently waiting for a file from them, and I'd get it faster if they were to parcel up the floppy disk up and sent it by

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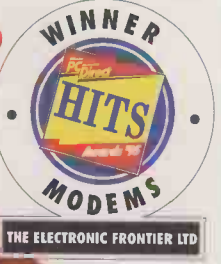
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Problem solving (contd)

the volume option. Add the free space to SYS: and your new drive's full extent is now addressable under NetWare. Oh, just one thing. Don't even think about this (or any form of server upgrade) unless you have three working backups on separate tapes. You never know what might happen; backup tapes seem to be very attracted to mugs of hot coffee.

Two machines on one modem

Mr Rodda, I know that you are a busy man but could I pick your brain about networks and connecting to the internet?

I have two machines which run under Microsoft's Windows 95 peer-to-peer network using TPX/SPX protocol with Genius Ethernet adaptor cards. I know they are cheap, but they seem to work OK and I also have a dial-up internet connection. I wonder if it is possible to connect to the internet on both machines using only one modem? Can you enlighten me on this subject, or point me in the direction of some good books to read?

Alex McF@cityscape

There seems only to be one question: "Can I share my modem or internet connection over the LAN?"

There is a great number of answers. The most expensive (and almost definitely overkill for you) is to use the Instant Internet box which I reviewed. Since it's in the region of £3,000 (and you did mention that the Ethernet adaptors are cheap and cheerful), I reckon that you, like me, would find this out of your price range. The other methods all involve sharing the modem.

One method which doesn't really involve sharing the modem would be to buy a modem for the other machine so that it could access the internet all by itself. This may not be as stupid as it seems, since sharing software can cost as much as a modem.

The other method would be to share the modem over the network using Winport from Lansource (contactable as lansource@cix.compulink.co.uk). About £100 for (I think) five users.

Install Windows NT on the one computer that has the modem connected. That will share the TCPIIP connection over the LAN. This method may well be cheaper, because you may find someone with an unwanted copy of Windows NT who would be willing to sell it for a small consideration.

I hope this answers your question (it may however, only pose more...).

international courier.

Kodak XLS 8600 PS Printer

This month I managed to get Kodak to let me look at the XLS 8600, a colour PostScript printer which also allows its input to be in a raster format — useful if you're initially working with a raster image, such as in Photoshop. You can select this raster input format from the control panel (it's not available concurrently with the PostScript mode). The new printer has quite an advantage over the Kodak ColorEase PS which I last reviewed. Whereas the ColorEase PS had a maximum print area of 10ins x 8ins; with its different ribbon and media the new machine will print full A4, with trim marks. It also comes with an optional Ethernet interface for network connection, supporting TCP/IP, NetWare and Apple EtherTalk.

It comes as standard with an external SCSI connector and 32Mb of RAM. This external SCSI connector may be used in PostScript mode by an external hard disk, or in raster mode by a machine which can transfer the raster image data to it direct

(as can the Ethernet connection). It uses thermal transfer technology and fonts are sharpened by anti-aliasing.

The result is near-photographic image representation. My graphic designer colleague, Jeff, tried it out from his Macintosh: he was impressed, and Jeff isn't easily impressed by computer equipment.

I set it up on my NT server, installed the correct driver for the printer and networked it around the Windows network in about three minutes, publishing a spooler for the printer onto the AppleTalk network at the same time. I reflected that it would have taken me between ten and 15 minutes to do this under NetWare. Although this sort of printer shouldn't be looked upon primarily as a production printer, at £2 per sheet it compares favourably with a small run on a four-colour press. Especially when you consider that the ribbon will also (optionally) laminate the print.

The PostScript interpreter didn't seem to know anything about creating multiple copies. I later spoke to the people at

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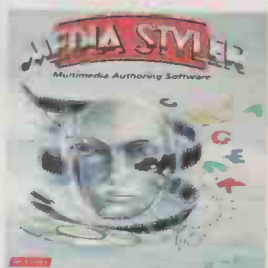
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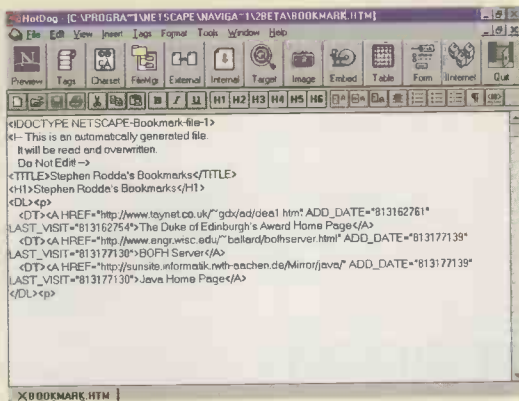


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Kodak and they told me that the interpreter would certainly create multiple copies — either our test program or the driver must have had a buglet.

The three-colour print technology consisting of yellow, magenta and cyan is extremely lifelike, although CMYK ribbons are available for pre-press colour proofing. I tested it as well with monochrome prints.

Apart from a very slight mis-registration between the process colours (yes, I was being extremely critical), the



Hot Dog editing one of my Netscape bookmark HTML pages

Christmas wishes

Dear Sinterklaas

According to legend in the Netherlands, Santa Claus (known there as Sinterklaas) comes from Spain on the 5th December, along with his Moroccan helper, Piet who deals with naughty children by putting them in his sack to take to Spain in his boat.

Last year I asked him for an 8Gb DAT drive with software which runs on any platform you care to throw at it, more hard disk space, and a super turbo nutter machine with a truecolour adaptor and a 21in monitor.

I got the H-P SureStore 6000 8Gb DAT and a really nice H-P 2Gb hard disk. I suppose if I really wanted to, I could actually backup and restore using a much-ported UNIX utility called "tar", which will run on every operating system I use. It reads all of its own backups, no matter which platform they came from along the way, but I'd really prefer a friendlier utility. So far I've tried Arcada, ArcServe and H-P's Beta



version of Colorado. I confess my favourite is Arcada, but at present I'm still looking for something which will run on every platform I have, and Arcada doesn't quite do that yet.

With last year's failings out of the way I shall deal with this Christmas. Apart from the super turbo nutter machine, I'd like a leased line to an internet service provider. And I want the internet to go faster. Oh, yes, I'd like totally integrated telephony and communications, dealing seamlessly with data, fax, email and voice.

Oh, yes, please give all my friends PCs if they haven't got them, and an internet connection too, so that I can talk to them via internet telephony, saving international telephone calls. Oh, just save yourself time and effort: cable up the whole world with fibre optic data and television and give us all our own IP addresses while you're about it.

Hey, Piet, Put me down! I don't want to go to Benidorm.

black was good and solid. Kodak tells me there is also a monochrome ribbon available. In all cases, the output was near-photographic.

The cost of this printer is \$10,000, (about £6,000). This is cheaper than the ColorEase which weighed in at about £7,000. Now I know this isn't a cheap option, but for a professional in repro, or even for a firm's DTP department where presentation quality is all-important, it will soon justify its cost.

Hot Dog

Just as a very quick aside, I've recently been creating a few world wide web pages (with Jeff looking over my shoulder now

and again, making helpful comments like "Ugh!") and I've found that by far the best product was Hot Dog. I recommend it to anyone trying out HTML editing. It's written in Visual Basic and as a result it may possibly be a little sluggish with a few files open, but on my 486-50 it seemed tolerably fast. I'll be comparing it to Netscape Gold when that's available and will let you know all about it. At the moment, though, Hot Dog's the business.

FW Contacts

Stephen Rodda is an independent computer consultant specialising in DTP and networking. He can be contacted at the_bear@cix.compulink.co.uk

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Finger clicking good

You can't use the keyboard to click on web hyperlinks, or can you? Stephen Cobb suggests we should be prepared to shell out for our computers, plus, move over PCs and make room for the NC.

Brian Taylor asks: "Is it possible to click on hyperlinks at web sites using a keyboard, without a mouse?" As a seasoned keyboard user, I have wondered about this myself, but never had the time to investigate further. Brian has been

forced to investigate, because his PC allows only one serial device at a time. It's mouse or modem, but not both.

To avoid having to remove my fingers from the keyboard to grab a mouse, I have learned just about every Windows

keystroke.

For example, you can use Ctrl and Tab to switch between open documents in most Windows applications except Word and WordPerfect, where you have to use Ctrl plus F6. When I hunt for files with File Manager I press Alt, then F-for-File, then h-for-hunt, then I can re-name a file with n-for-name (the key letter for Rename) and so on.

One of my complaints about Windows 95 is that not only has it changed the key characters (m is now the key for Rename), it has also abandoned any pretence of providing a keystroke for every command. In my opinion, this is one Macintosh emulation we could do without.

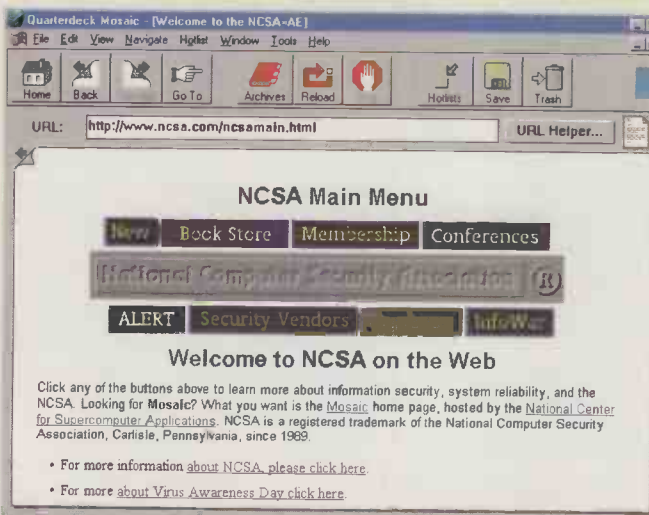
After loading four web browsers onto a Windows 95 machine I found that one, Quarterdeck Mosaic, does allow you to use the Tab key to select links and the Enter key to activate them. These keystrokes complement the usual Page Up/Down keys which most browsers support, in addition to some handy Ctrl keys for Forward and Backward. If these keystrokes prove popular, we may see other browsers following suit. The browser market is becoming very competitive, resulting in growing feature lists. For example, Quarterdeck Mosaic has the best link organising capabilities that I have seen. The more you surf the web the more important these become. And Quarterdeck Mosaic comes with a very extensive hot list already arranged by category, giving you a great selection of sites from which to begin your explorations.

'Tis the season

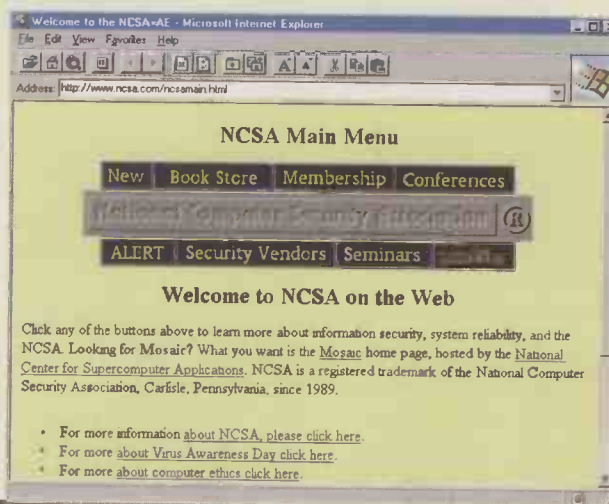
Either I am having an exceptional run of bad luck or the reality of PCs today is a dismal saga of crashes, conflicts and blatant over-selling. I used to put this down to Beta-testing; a chore which a few experienced users performed as a courtesy to product developers. Since I was always reviewing products that were not quite finished, I naively assumed that by the time they got to market someone would have removed all the bugs and incompatibilities that I had experienced.

But these days it seems as if we are in a constant state of Beta-testing. Just look at the hottest sector of the market, communications, and the hottest spot of all, the world wide web. Most people are using browsers that are Beta versions. Even the "shipping" versions are updated so fast it makes your head spin. For example, when I called Quarterdeck about its Mosaic browser, I was told: "Next week we will have a new version with more "Netscapisms" and the version coming out the week after that will have even more." Companies are talking about product cycles in terms of weeks, not months or quarters, let alone years. One reason my wish list includes a plea for more bandwidth is that even 28.8Kb/sec seems awfully slow when you are downloading 2Mb worth of program upgrade.

It's not just software, either. My wife



Top The display of pages in Quarterdeck Mosaic illustrates how much difference a browser makes — and compare it with the same page in Microsoft Internet Explorer on the Right: Microsoft Internet Explorer is an attractive browser, but why such a confusing name? (The page displayed is the same one as in the Quarterdeck screen)



Christmas wishes

1. A PC that works properly
I am sick and tired of PCs that don't work as they should. I love my Compaq Concerto notebook, but every time I use the PCMCIA fax modem for faxing, my internet dialler has a fit and I have to slide the modem out to reset it. I like my wife's Macintosh PowerPC, but we still can't get TCP/IP running. I've debugged scores of computers since the three days I spent in January 1983 figuring out how to get a Kaypro to boot up and print.
2. More bandwidth
Communication continues to be the most exciting part of computing and today's V.34 modems are a quantum leap over the first 300-baud unit I plugged into that Kaypro. But even at 28.8Kb/sec the web fails the teen test (that's when you tell your teenager to come and see a cool web site and the pages load too slowly to keep her attention).
3. A really good operating system
You know, one that doesn't gobble up your RAM and devour your hard disk. One that installs and upgrades easily. One that doesn't use confusing commands and land inconsistent function key shortcuts.
4. More bandwidth
At 28.8Kb/sec it still takes far too long to download software. Of course, these days downloading software means 2Mb



- demo versions of web browsers.
5. Agreed standards for secure online transactions
Wouldn't it be great if Microsoft and Visa and Netscape and MasterCard and all the others would just agree on a standard and we could all get on with cyber-shopping in time for next Christmas?
6. More bandwidth
Imagine a world where everyone had ISDN. We could video-visit and telecommute and reduce pollution and improve productivity and regenerate our communities.
7. Software that doesn't crash
Is it just me or are we all losing too much work because the software crashed?
8. More bandwidth
What if we could run the internet on the co-axial cable TV line? We could get megabytes per second instead of kilobytes. The world would be a better, faster place.
9. Fresh air
I could do with more time away from the computer. It's getting bad when you come home and say "I'm ready to download", instead of "Let me tell you about my day".
10. Peace on earth
And goodwill to all creatures great and small (this should really be top of the list).

uses a Compaq Presario CDS774, which generally works quite well. But for the first month she struggled to diagnose a vexing problem with the built-in modem, which insisted on operating in silent mode. Eventually she fixed it after opening the case for a peek at the Pentium processor (to make sure it wasn't one of those flawed chips). Next to a "Made in China" sticker was a modem card improperly seated in the bus slot, looking as though it had been assembled that way.

Or take the slender, Pentium-powered Venturis 590 desktop machine that I have on loan from Digital — a lovely machine, but I have not been able to access the floppy disk drive ever since I installed Windows 95. Since I had to take the network card out to get past a hiccup in the Win95 install routine, the serial ports are currently the only way in or out. Microsoft support, after a one-hour call on my bill and a 90 minute call-back on theirs, decided to "kick it upstairs" for further research. The last word from Digital was to "load the latest

version of the flash BIOS", which suggests that hardware, like software, has entered a never-quite-finished state of being.

It is 13 years since I ordered my first personal computer, a KayPro II, with twin 360K floppy drives and 64K of RAM, for approximately £1,795. A 15-characters-per-second Brother daisywheel printer cost another £1,000. Today, the same cash outlay gets you a powerful multi-media system with a 600dpi laser printer. Perhaps we should be prepared to shell out a bit for our computers. That way, vendors could afford to fix problems, either in product development or by employing service people who arrive immediately and don't leave until everything is working.

If a KayPro II, which came with a suite of software, including spreadsheet, database and word processor, was the standard personal computer of 1982, today's standard, a multimedia PC, should cost at least £4,500 (£1,795 converted from 1982 values to allow for inflation).

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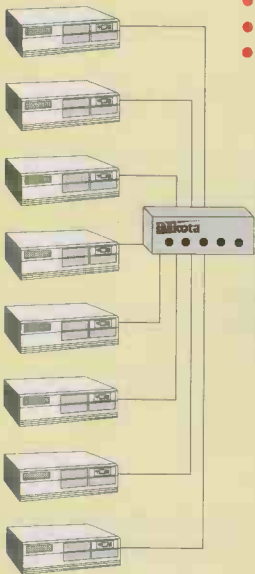
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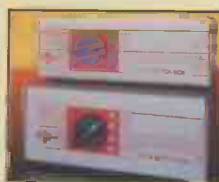
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Whence the NC?

"Fast, cheap, networks mean (powerful multi-media) computers will cost \$500, not \$5,000," according to Oracle CEO, Larry Ellison, who calls the new devices network computers, or NCs. He sees the network computer as a basic input/output system that downloads a complete operating system when switched on; a process that will only take a few seconds. The advantages of NCs are many, says Ellison. For example: "If there is a new operating system you don't go down to the store — you turn the NC on the next day and it's there. It's not a major cultural event." Ellison believes that such machines can be sold profitably for a fraction of the price while achieving higher performance than PCs. "The reason you need 16Mb of memory is that

Windows 95 needs 8Mb — that's half for them, half for you," he says. On the other hand NCs will require only between 4Mb and 8Mb of memory, even to accomplish multimedia tasks. With a dig at Intel, Ellison notes that NCs will not have to wait for new technology. "For \$20 we can buy a faster microprocessor than an Intel Pentium at \$460 — sounds like a good deal to me." In another wry prediction, Ellison observes: "Network computers will not replace PCs; after all the PC didn't replace the mainframe. PCs have hundreds of thousands of uses. The NC has just four: internet browsing, electronic mail, word processing, and video-conferencing." He adds: "By the way, that's all I ever do with my PC, and that's all my friends ever do with theirs"

A Happy New Year?

Hardware has to be less complicated and software has to become leaner and smarter so that users can spend more time being productive and less time trying to become computer consultants and upgrade experts.

Consider what happens when you use a sophisticated comms program like WorldGroup. When you log on, the server checks to make sure your client software is current. If not, it upgrades you automatically and in the background. Now suppose you replace your modem with a network card attached to the coaxial line from the cable TV company, running at 10Mb/sec. Finally, replace your hard disk with a ROM that boots the operating system from the network. That is where we are headed, according to Larry Ellison,

The browser, I presume

Can anyone explain why Microsoft chose to name its internet browser the Microsoft Internet Explorer, right after launching the File Manager in Microsoft Windows 95 as the Microsoft Windows Explorer. Not confused yet? Well, try troubleshooting a Microsoft internet Explorer problem with a Microsoft Support Engineer, using Microsoft Windows Explorer.

This choice of product name is not the only evidence of verbal fixation in the Microsoft web browser. The darn thing insists on referring to hypertext links embedded in web pages as Shortcuts, as though Microsoft had invented the entire notion (Windows 95 users can create desktop icons that launch applications with a feature called Shortcuts). Before we know it the word will be trademarked and cash registers will ring every time someone says "Turn right at the roundabout, I know a Shortcut."

chairman and CEO of Oracle.

Speaking at the Telecom 95 expo in Geneva, Ellison predicted: "Personal computers will be replaced by new devices that rely almost exclusively on fast networks and have very little intelligence inside." He cited Oracle's interactive television set-top box, now being used in trials in the UK and the US, as the first example of such a next-generation device. He went on to describe the network computer, or NC, as another such device (see *Whence the NC*, above). This has seismic implications for the traditional structure of the computer industry. For example, software and data storage might become a subscription service. Software and hardware conflicts could be banished, eliminating end-user frustration and slashing support costs for vendors.

Now it is beleaguered network managers who wrestle with access control, backups, anti-virus protection and fault tolerance. All this could be shifted to a central service, with huge economies of scale. There would need to be adequate protection of privacy. Access would have to be tightly controlled. But the technology to achieve this already exists. Users could be issued with smart cards to control access to the network, which would incidentally eliminate "laptop-lugging" as an executive health risk. The card would give you personalised access from any NC, such as the ones installed in hotel rooms or the backs of airline seats. You insert the card and instantly begin work, as if you were at home using your own NC.

PCW Contacts

Stephen Cobb can be reached on CompuServe as 72662,546 or the net as cobb@iu.net

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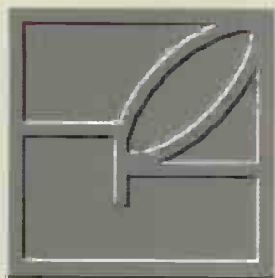
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Keep taking the upgrades

It's never a perfect world, even for Mac users, but **Chris Cain** points out some recent releases to help make it better, and dreams of the ten best things Apple could do to make him happy in 1996.

As it's that time of the year again, I've been compiling my top ten Mac wish list for 1996. It includes products that are scheduled to appear in the near future, and things that would be beneficial to Mac users everywhere. But first, there are a few important software updates that you should know about.

After my experiments with PCW's 9500 last month, I've discovered that RAM Doubler 1.5.2A doesn't work properly with any of the PCI PowerMacs. An email to Connectix brought the news that version 1.6 is in beta testing and should, hopefully, be available by the time you read this. As with the company's other updates, it will be a free fix, downloadable from all good online systems.

Apple's Open Transport networking code for PCI Macs has also undergone several bug fixes. The current release is

Christmas wishes

Here is a summary of my complete list of wishes for 1996.

- 1 Copland OS
- 2 Clearer error messages
- 3 Stable, native QuarkXpress
- 4 New Microsoft Office
- 5 RAM Doubler v1.6
- 6 A catchier name for the Performa
- 7 Better software bundles
- 8 PCI Mac clones
- 9 QuickTime and QuickDraw 3D accelerators
- 10 All systems sold complete

If all or most of the wishes on the list are granted it'll be a very happy new year for the Mac.

If you have a Mac wish list or something that you think I should have included, please drop me an email.



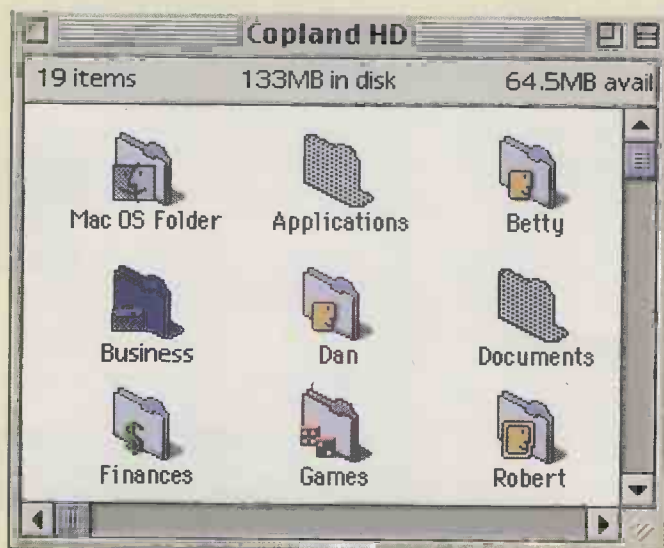
1.0.7 and can be downloaded from Apple's usual software support sites on the World Wide Web. If you use this regularly I recommend moving up to the latest version as soon as possible — several people here at VNU towers have experienced grief with older versions. You need to be using version 1.0.6 to upgrade to 1.0.7. Users of earlier versions should contact their dealers.

On the applications front, there has been another change to Photoshop and a new release of Quark Xpress 3.3 is on the cards. Last month saw the release of Photoshop 3.0.4 and now 3.0.5 has been posted on the internet to fix a small bug with previews. As for Quark, the company's home page reveals that version 3.3.8 is just around the corner. Quite what features this will offer is not known, but even if it only manages to crash less it will be a worthwhile upgrade.

Other software upgrades include Plaintalk 1.4.1, an improvement to Apple speech recognition software; Aaron 1.1.3, now with awful spinning windows; and version 1.0.2 of Id's Doom 2, which adds more music and cleans up a few graphic glitches. All are available online.

Transport problems

It appears that even if you don't use a network, Open Transport can still give you major hassle. Because of the way the OT code is designed, it significantly increases the size of your system software. This can cause a serious memory shortage on 8Mb and even 16Mb machines, limiting users to loading only one or two applications at a time. Even removing the shared libraries from the Extensions folder doesn't help.



Along with changes to the user interface, Copland promises a substantial performance increase

Why doesn't OT follow the QuickTime example and load code only when needed?

Top of the pops

Making my top ten Mac wishes for 1996 (see boxout opposite) wasn't easy. There are quite a few things I'd like to see happen and narrowing the list down to ten took some doing.

Preferably without the spinning windows, or at least with the option to turn them off, Copland is easily my first choice. This more up-to-date and PowerPC-native version of Mac OS should provide a tremendous performance increase for PowerMac users when it arrives.

At present a large portion of the PowerMac OS runs under Apple's 68000 emulation software. While a few key system extensions have been re-coded for RISC, we won't see the true power of the architecture until everything that can be is reprogrammed. It's no good making the jump to new hardware if your system software doesn't follow suit.

As well as at least 95 percent native code Copland promises a robust pre-emptive multi-tasking microkernel, an improved file system and a customisable interface. You'll be able to adjust the levels of interaction to the ability of the user and the Apple Guide help system is expected to move from a Show Me to a more satisfactory Do It For Me arrangement. Apple also claims that Copland will incorporate QuickDraw 3D, much-needed improvements to virtual memory and enhanced multimedia functions. An early release next year is essential to keep Apple ahead of the game now that Windows 95 is here.

Repeat in English, please

While we're waiting for Copland, my second wish would be for more understandable system error messages. I get quite annoyed when I'm told "the application failed due to an error of type 1". I've used a Mac for long enough to know that this is usually the result of a bus error, and that restarting and possibly assigning more memory to an application will solve the problem. But that's only a guess. Besides, that message is only one among many others that have me and most systems departments baffled.

So, Apple, how about converting error messages into English phrases like "This program requires more memory to run" or "This application has unexpectedly quit with a Bus Error because..."? Even MS-DOS gives you more of a clue with "bad command or file name" when you type



Games like Doom II would be better for Performa software bundles than old titles such as Spectre

something it doesn't understand. It's impossible to know the reason for every error, but the Mac could certainly be more friendly when they occur.

Number three on the list is a more stable PowerPC native version of QuarkXpress, the most popular Mac application for DTP. The latest version has caused more headaches in our production department than any other software. In fact, some people have refused to use it and have gone back to running the 68K version under emulation. It's slow but it's stable and most of the bugs are well known. I know I'm not the only person looking forward to the release of 3.3 revision 8.

Fourthly, the PowerMac version of Microsoft Office is in dire need of a rewrite. Compared to WordPerfect 3.5, Word is ridiculously slow, and Excel takes an age to load up even on an 8100/80. For no good reason, both products are nowhere near as impressive as their PC counterparts, and many Mac users prefer to use older, non-native versions.

Microsoft has some of the best coders in the world and it's about time the company sat a few of them down in the Mac Office division. It would be good to ring in the new year with a new improved version.

Double RAMmy

The PCI Mac-compatible version of RAM Doublor also makes it onto the wish list. This program is the best-selling Mac utility in the world and for a good reason — it actually does what it claims to do. An excellent idea would be a pack that combines both Speed Doublor and RAM Doublor for a reasonable price. Connectix could call it something cheesy like the Mac Performance Pack, and it would sell like hot cakes.

Number six is a request that Apple comes up with a better name for its "ready-to-go" Performa series. Although the machines are well specified, and the latest 5300 model is especially nice with its MPEG1 decoder and 16-bit stereo sound, the name makes these models sound inferior to the Power Macintosh line. What's

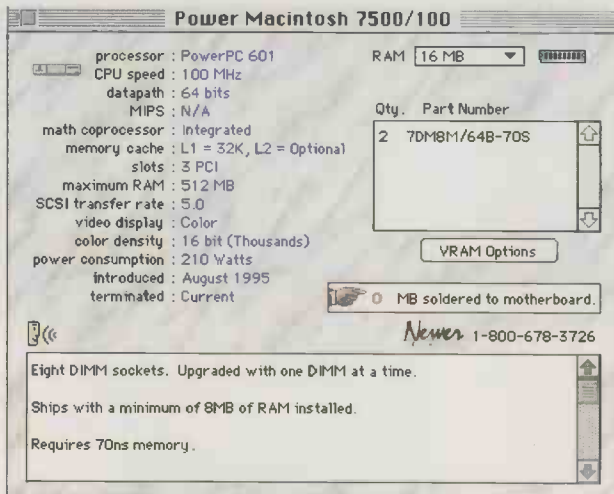


Utility of the Month

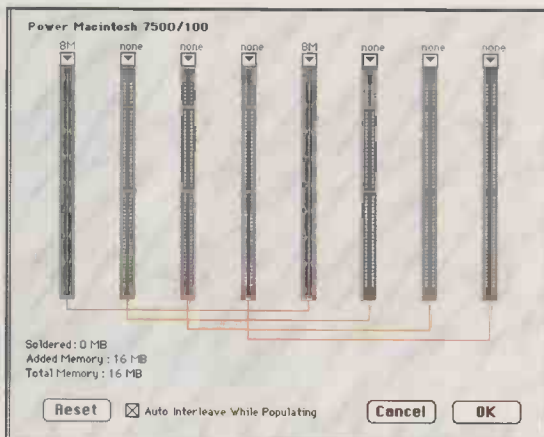
January's Utility of the Month is ideal for anyone who's thinking of adding more memory to their Mac. Guru 1.1.1 from Newer Technology is a freeware application that tells you how much and what type of RAM you can install in your machine, complete with diagrams.

After selecting the type of hardware you have, from a comprehensive list including the new PCI machines, Performas, Powerbooks and even some Apple printers, up pops a box showing basic specifications. From here you can tell the program how much RAM you want and it shows the correct SIMM configuration. An interactive picture of the motherboard lets you change SIMM sizes about in different slots to see the results. Guru 1.1.1 will also test exist-

ing memory for any defects. It's available from online services and is on this month's cover CD.



Left and below
Guru takes the
guesswork out of
memory
upgrades
Bottom Jazz up
your Mac with
some Christmas
icons



wrong with calling all of them PowerMacs, with some models sold more cheaply than others? If the range has to be segmented, how about using the old LC or Classic name extensions? Performa just doesn't say "come and buy a Mac" to me.

If this isn't possible, then I'd settle for a better selection of bundled software. Most PCs come complete with Microsoft Office, and it should be standard on Macs as well. ClarisWorks, a great little integrated package that's ideal for a one man band, is not really in the same league. Speed Doubler and RAM Doubler are natural choices for a bundle, and how about some good games instead of out-of-date titles like Spectre Supreme and Super Maze Wars? Marathon, Doom II, Dark Forces and Descent (when it arrives) would all be much more appealing. For kids, the Broderbund Living Books series is ideal, as is Microsoft's Encarta.

The last three items on my wish list are PCI Mac clones; affordable QuickTime and QuickDraw 3D acceleration cards; and finally, every Mac to come with a monitor and keyboard as standard.

Taking the plunge

Inspired by Cliff Joseph's article about PCI PowerMacs in the November issue, I decided it was time to upgrade to one of them. Having hesitated between the 7200 and 7500, I finally settled on the latter, almost entirely on the grounds that I'll be able to add a 604 processor card to it, saving another major upgrade in one or two years' time.

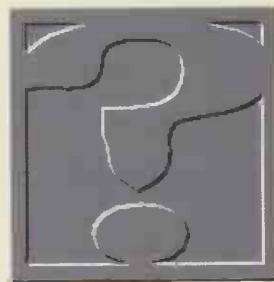
So far I can report that the machine has been compatible with everything I used before, save RAM Doubler, and that the difference in performance between the new machine and my old 7100 is quite noticeable. If you are thinking of making the same move, I will continue to report on its status in the next few months.

Merry Christmas, everyone. I'm off to download some festive icons to put me in the right mood for the holidays.

PCW Contacts

Chris Cain can be contacted via email as chris_cain@PCW.cmail.com, compuserve.com, or chris@cix.compulink.co.uk or as [cain](#) on eWorld. He welcomes suggestions for this column and is quite happy to accept outrageously expensive Christmas presents!

Apple Computers 0181 569 1199
Quark <http://www.quark.com>
Connectix utilities available from Computers Unlimited 0181 200 8282
Microsoft 01734 270001



Any questions?

If you've got a PC problem or think you could help out other readers, contact **Frank Leonhardt**.

Hewlett-Packard LaserJet 4L — a classic

You've probably heard about Hewlett-Packard's laser printers. They're the ones with which all the other manufacturers have to make sure their offerings are compatible.

This should not imply that Hewlett-Packard is necessarily the best, but it is generally considered that you can't go too far wrong if you buy the real thing. At the very least, your software is guaranteed to work, and if it doesn't, the supplier has no excuse.

Now that the baby of the range (the LaserJet 4L) has suddenly dropped in street price to around £350 it might seem like a good deal. After all, you can't beat the crisp, clarity of a laser printed page compared to an inkjet.

Now the LaserJet costs about the same as a mid-range inkjet, you don't have to pay extra for the quality. Okay, so it won't do colour and the inkjets will. But colour comes at a price in terms of speed, output quality and running costs. If you're out to impress your bank manager, the near-perfect black-and-white of the laser has something while the slightly smudged, gaudy colours of the inkjet just won't cut it.

But how does the cut-price LaserJet 4L compare to the competition? You can get a Windows GDI laser for less than £300 now. Yes, but that's not LaserJet compatible. PCL5, the LaserJet's language, will be spoken for many years to come but GDI (Windows' language) might be changed with Windows 96? No thanks; I'd personally prefer a printer which will be supported for a long time to come, especially if it only costs an extra £50.

For a few quid more, you can pick up



The HP LaserJet 4L — now it's down to £350, it's a good investment

a Kyocera FS400. These talk PCL5 too and, as Kyocera keeps reminding us, are cheaper to run. They have several nice features including the ability to re-fill with toner without the need to replace the whole drum assembly. You wouldn't be paying Hewlett-Packard £70 per Megabyte for upgrade RAM either.

Whether lower running costs make a difference to you depends on the anticipated printing volume. Many LaserJet 4L users are still on their first cartridge after two years.

If you were suspicious, as I certainly am, you might be wondering why the price of the 4L has suddenly dropped. The answer is simple — at the time of

writing, all other models in the LaserJet 4 range have been superseded by the 5 series. Rumour has it that the LaserJet 5L, when it appears, will support 600dpi printing as opposed to the 300dpi of the 4L.

When the 5L does show up, it will either cost considerably more than the 4L, allowing old 4L stock to be shifted, or the price of the 4L will fall further still. 600dpi may be better, but it's not that much better. The 4L always worked well and has stood the test of time. This could be your last chance to buy a classic.

Start me up, let me down

I currently use a Pentium, running Windows NT and 3.1. I decided to load Windows 95 on the system but because I am a software developer I wanted to keep all three platforms separate. I proceeded to

load Windows 95 into a separate directory.

After loading 95, I booted the system up. The NT startup menu was given, Windows NT or Windows 95 — but my MSDOS selection had vanished. Windows 95 had overwritten MSDOS with Windows 95 DOS.

I selected the Windows 95 option and was launched into Windows 95. The only way to start Windows 3.1 was to launch into Windows 95 then shut 95 down to DOS, change directory to the original Windows 3.1 and type Win. Not the perfect method.

Later I decided to take Windows 95 off the system until I was fully ready to upgrade the installed 3.1. Because Windows 95 had not been installed over 3.1 it did not give the option to backup DOS and 3.1 in case I needed to uninstall them later.

I decided to delete the Windows 95 directory and reinstall DOS 6.2. After deleting the Win 95 DOS directory and the Windows 95 directory I rebooted the system with the DOS 6.2 installation disk in. I selected to install DOS but was given the message "Cannot install over present version of DOS".

I still had the NT platform I could start up. In the end I had to load NT and delete the IO.SYS and MSDOS.SYS files to install DOS (a dirty job but it had to be done). I re-installed DOS 6.2. Finally I had my system back to its former glory.

Is there a way to install Windows 95 and keep MSDOS 6.2? Would there be an easier way of launching 3.1 without having to go through Windows 95? I hope this doesn't happen to anybody else.

Steven Fletcher
steven@ams-neve.com

This sort of thing should definitely be tried on a "friend's" machine first. I've had Windows 95, Windows NT, DOS 6.2 and OS/2 all installed on the same hard disk. The tricky one is to get DOS 6.2 and Windows 95 to co-exist.

As you discovered, Windows NT only allows for one DOS partition in its boot selector and if you install Windows 95 on your primary DOS partition — and you have no choice in this — then selecting DOS will take you to Windows 95 instead.

What isn't so obvious is that Windows 95 has its own hidden startup menu. If you press F8 when the message "Starting Windows 95..." appears on the screen you will get eight choices. Most of these are to do with starting Windows 95 in different debugging modes, but option eight will load and run your previous

version of MSDOS — the one you installed Windows 95 over.

Option six — Command prompt only — will take you straight to a DOS 7 command prompt, though it still insists on announcing itself as Windows 95. This DOS-only mode appears to be completely compatible with DOS 6 and, as I mentioned in last month's issue, this includes Windows 3.11.

If you want to get rid of Windows 95 after installing it in a directory on its own, simply use the MSDOS SYS.COM command to put DOS 6 back into the boot sector and then apply DELTREE to any directories it has left behind.

Upgrading on a budget

I have a 386SX 33 with 4Mb RAM and 290Mb total hard disk space. Do you have any suggestions about the best way I should approach upgrading?

I don't have much money to spare. I am thinking about maybe a co-processor, or a CD-ROM or more memory. Which would you recommend? I do a lot of work in Windows and dabble in ray-tracing.

Chris.Roberts@p0.f152.n441.z2.fidonet.org

I wouldn't invest in any more old-style SIMMs. 4Mb should be enough to run all the software a 386SX is capable of handling sensibly. If you want to run the current generation of software, everything will have to be changed.

A CD-ROM drive would be an investment for the future but it would help to have an up-to-date IDE compatible one to work with your next machine.

As you imply, you have more than one hard disk you would have trouble attaching it — the standard IDE adaptors can only handle two drives.

If I had a machine like this I'd save up my pennies for a P75 motherboard. This would be useful if you want to do lots of hard sums like those involved in ray-tracing.

Don't bother with a maths co-processor for the 386SX — it won't deliver nearly the same bang-per-buck ratio as the Pentium.

Here we go hacking DOS again

I am doing some programming and I need to know how Win95 keeps track of the long file names.

As you probably know, DOS directory saves only space for 11 characters and Win95 can have 255-character file names.

I need only technical information; over

here in Yugoslavia we don't have much literature on the subject.

Boris Dragovic
lynx@galeb.etf.bg.ac.yu

I'm afraid I don't have an official answer from Microsoft about this, but I got curious and decided to have a look for myself. The extended file name is actually stored in the normal directory space on the disk, where you would expect to find traditional directory entries.

Each standard directory entry takes up 32 bytes. This consists of the actual name, (11 bytes), the file attributes byte, ten bytes of padding, the time/date stamp (4 bytes), the starting cluster number (2 bytes) and the length (4 bytes).

Windows 95 makes use of at least eight of the ten bytes' worth of padding but I haven't figured out what it does with them. The long directory name itself is simply stored in as many of the preceding 32-byte directory slots as required. It appears that 16-bit ASCII is being used as every other byte in the name is a null on my English version of Windows.

The first slot prior to the conventional directory entry contains the first 13 characters of the long name, the next slot back contains characters 14 to 26 and so on. The mathematically adept will probably have spotted that each 32-byte slot should have room for 16 letters, but some of the positions are used for other purposes.

The first byte appears to hold a counter to show how far back from the true directory entry we are. Bit six is set to show that this is the earliest slot in the list.

Offsets 12 and 13 are used for some purpose I haven't guessed yet. 26 and 27 seem only to contain nulls. As this is usually a pointer to the first cluster in the FAT for the file in question, they could be left at zero to prevent some disk utilities from doing something unfortunate.

This just leaves offset 11. In a normal directory entry, this is the attribute byte and so it is here. It always contains 0x0F which translates to a hidden, read-only, system volume label which doesn't need backing up. This combination of attributes is what prevents older versions of MSDOS from displaying garbage when it encounters one of these strange directories.

I should stress that this is guesswork on my part. It should allow you to write a DOS 6 utility to read long file names, however, which is about the only reason for needing this information. If you're trying to write disk hacking utilities for Windows 95, drop me a line and we'll discuss fees.

Christmas Wishes

Dear Santa,

A year has passed since I last wrote to you — apart from the postcard from Benidorm. So how well did you do? Last year I asked for:

- **More memory and hard disk space:**

Well, I upgraded to 8Mb and fitted a second 540Mb hard drive. Sorry Santa, but as it turned out, this just wasn't enough RAM. It was okay until Windows 95 appeared, together with that enormous new version of Office. Another 8Mb, please.

- **A set of hexagon ball drivers, torx drivers and Bristol Multiple Spline drivers** so I can take these new portables apart:

Got'em, thanks. Zenith, Dell, TI and HP watch out — your notebooks' little secrets are no longer as safe as you thought!

- **Plug and Play** (retrofitted to the whole world's PCs)

This was a tough one and I didn't expect too much. As it turned out, Windows 95 and Windows NT seem to handle hardware management quite well using old non-P&P machines.

On the other hand, the P&P machines I've come up against don't appear to be that good at configuring themselves automatically. So far so good, but you could do better.

- **A paper-less office**

Nought out of ten for that one, I'm afraid. Back to the drawing board.



- **Something to re-attach the pins** which snap off ICs when you remove them from their sockets.

Very funny — switch everything to surface mount so that there are no more pins to break off.

This wasn't quite what I had in mind, and you know it.

I want:

Two and a half out of five isn't bad, but see if you can do better with this year's requests:

1. A version of Windows 95 which works as well as Windows NT or as fast as Windows 3.11.
2. A good enough excuse to justify the purchase of a Hewlett-Packard 4020 CD-ROM writer. At around £750 it may be excellent value, but it's still too expensive to get away with buying it on impulse.
3. An electronic stills camera which can realistically replace a good quality 35mm SLR, priced so that an amateur can afford it. It would be a distinct advantage if it worked with my existing collection of outrageously expensive lenses, while you're designing it.
4. A floppy-disk substitute which holds at least 100Mb per disk. Sorry Yamaha, Iomega et al. Any drive with media costing more than a couple of quid doesn't count. Perhaps Sony could be persuaded to develop the audio Minidisk?

Christmas may be the only excuse to justify buying the HP 4020 CD-ROM writer



5. A colour printer which produces output as good as a laser and is as cheap as an inkjet.
6. Some way to let a room full of people see what is on a PC screen without it costing an arm and a leg. Projection monitors are far too expensive, not to mention heavy. Flat LCD panels for overhead projectors aren't cheap and the OHP itself is bulky. What would be nice is a small, low cost LCD display which can fit into a standard 2in slide projector. How about it, Santa?

I don't want:

And while you're listening, how did you do at keeping last year's nightmares away? — you know, the things I didn't want to find in my stocking:

- **A Pentium PC** — let some other mug find out which expansion boards work with Pentiums and which don't.

I was right, wasn't I? You remember what happened just after I wrote, but I'm pleased to say that these are off my most unwanted list at last. Even that "good value" Escom P60 which turned up for review a few months later with a dodgy configuration and detached floppy drive has been purring away quite happily every since. No, I'm not going to risk a P6.

- **A SoundBlaster "compatible" audio card** Unless these beasties use the same hardware as a SoundBlaster, they never turn out to be 100 percent compatible in practice. No change there!

- **An upgrade** to the latest version of any application.

Let someone else find the bugs. I think I'll include operating systems this year.

- **Anything written in Visual Basic** (real programmers use C or assembler)

You cheated. Now the dabblers are using MFC or OWL to produce colossal, badly designed applications with C++ too.

Yours,
Frank.

PCW Contacts

Frank Leonhardt is an independent computer boffin who can sometimes be contacted on 0181 429 3047 or via email as frank@dircon.co.uk or leo2@cix.clink.co.uk. Letters may be sent to PCW at VNU House, 32-34 Broadwick Street, London W1A 2HG, but individual replies are not normally possible. Please do not ask about cover disks or CD-ROMs.

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ELECTRONE

General

▼ PRECISECASH KEYBOARD ▼

The P.O.S. Keyboard with QWERTY keys; 58 programmable keys, full QWERTY typing area, magnetic card reader and bar-code port.



▼ 8001 P.O.S. KEYBOARD ▼

One of our newest P.O.S. keyboard products, the 8001 has a host of features packed into a very small footprint. Includes 105 programmable keys. Built in magnetic card reader optional.



▼ CARY 9000 P.O.S. KEYBOARD ▼

The Cary 9000 Programmable Keyboard looks and feels like a cash register keyboard. New Membrane Expansion module for 56 extra keys. Featuring tactile membrane and changeable inserts.



▼ BARCODE READERS ▼

Both CCD Scanner and wand readers include built-in decoder and interface. Bar code data is entered as keyboard data. Serial versions also available.



▼ CASH DRAWERS ▼

Available for serial port connection or with dedicated adapter card, the cash drawers offer a variety of coin and note compartments.



▼ KEYPORTS ▼

The range now includes 7 models for use in all environments including stainless steel Industrial/ P.O.S. models. Fully user programmable. Call for full details of models and interface options.



▼ CUSTOMER DISPLAY ▼

The 8003 pole display is specially designed for point of sale applications. Back-lit L.C.D. displays 2 lines of 20 characters, 12.7mm high characters.



▼ KEYCAT ▼

A real space saver, includes 102 keyboard with separate cursor controls numeric pad and serial trackball in a standard footprint.



▼ MCK142 PRO ▼

The MCK 142 Pro has all the keys you'll ever need: two sets of function keys, enhanced style 102 layout with separate cursor pad and 24 user programmable keys.



▼ MINIKB ▼

Occupying less space than an A4 notepad, the MINIKB has 85 full sized tactile click keys. Includes QWERTY keys, function keys and cursor controls. Optional numeric pad available.



▼ 5100 MINIATURE KEYBOARD ▼

Only half the size of an ordinary keyboard, the 5100 squeezes 81 keys into the smallest footprint yet. Includes embedded numeric pad.



▼ MICROPADS ▼

Micropads for all applications. Include notebook numeric pads, keyboard replacement pads and fully programmable, customised keypads.



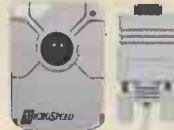
▼ KEYBOARD MASTER ▼

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That internet thing

If just thinking about the internet brings you out in a cold sweat, take heart. Eleanor Turton-Hill's Christmas present to you is a guide which even your Granny will understand. And she's got plenty of time to email her Christmas list to Santa, too.

Just recently, I've received a deluge of phone calls and mail from people asking naive but nevertheless strangely astute questions about the internet. Things like: "What is it?".... "Why is it?" ...and more specific questions like "How on earth do you attach your phone cable to the back of your PC?"and "Why would I want to be connected to it anyway?"

All this leads me to the conclusion that it's high time we had a beginners' column on the internet, explaining what it is, what use it may be to you, and how you actually get connected.

What is it?

At present, there's something of a competition going on to define the internet; probably because it's not the easiest thing to explain in a few clear sentences.

Essentially, the internet is a huge network of smaller networks connecting millions of people all over the world. But when people talk about the internet they aren't really talking about the physical machines and wires which make it work. They're actually

referring to the facilities they use and the people they meet when they're online. According to recent statistics there are now over 30 million people using the net worldwide and this is growing by an estimated one million per month.

So, what on earth are all these people doing? You may well ask. The internet is not, (as you might think) a tool for extremely technical people who do incredibly sophisticated things with their computers all day. It's actually a usable facility for people with any level of computer expertise. You can exchange electronic mail, transfer files, search for information, discuss your political opinions, get news updates, place orders to buy things and obtain access to software. The list is end-

less. If you have any kind of specialist interest, or a problem which requires expert advice, the chances are that someone out there will know about it.

TCP/IP

If you have an internet connection in your office, you may have heard your network administrator talking about TCP/IP. To any normal human being this sounds like complete gibberish but it actually refers to a fairly simple concept.

All over the world there are networks of machines connected to the internet, and hence to each other, by whatever means are available. For example, you can make connections using a dedicated leased line, an ordinary telephone line or even a microwave link.

The computers connected to the internet are very different in terms of their hardware platforms and operating systems, so standard communications protocols are needed to ensure compatibility between different setups. The protocols which developed out of the ARPANET project (*see the internet panel, adjacent*) were the Transmission Control Protocol and the Internet Protocol (usually referred to as TCP/IP).

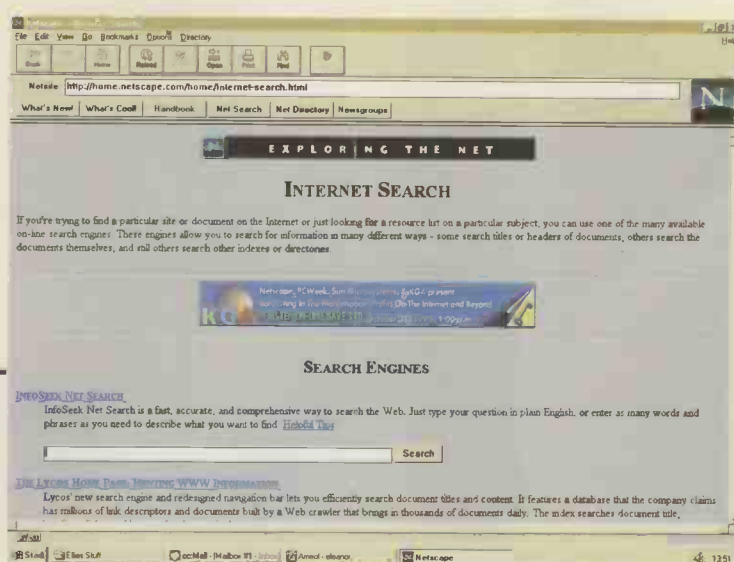
The networks which make up the internet are connected by computers called routers, which decide how to transmit data in the most efficient way from one part of the network to another. The Internet Protocol addresses data in small packets, ensuring that the router knows where to send the data. TCP makes sure that these tiny packets of data are protected by placing them in a kind of electronic "envelope". Without the envelope, the packets of data could very easily get damaged or lost. Essentially what TCP/IP means to you is that it doesn't matter whether you've got a

powerful Pentium PC or an old 8086 — it ensures compatibility between machines

How to connect

Getting onto the internet is a fairly simple operation these days. You don't have to be an academic or a manager in a big corporation to get yourself online.

What you need is a computer and a modem. So if you haven't got either of these, you're going to have to buy them. Next on the list is to find a "service



Netscape is one of the most popular navigating tools for retrieving and viewing documents on the internet

provider" — an organisation which will provide you with an internet connection.

There are three basic types of connection: the direct connection, the SLIP/PPP connection, and the dialup/terminal version.

A direct connection provides you with a permanent and dedicated link to the internet. This is extremely expensive and is generally only available to people in big corporations, academic institutions, and government departments.

The second method is to get your access from a company which has a direct connection itself and allows subscribers to dial in and use it. Using an ordinary telephone line, SLIP and PPP are the protocols which make this technically possible.

There are three main benefits from connecting in this way. You get your own hostname; you can download files direct to your computer; and you can use a graphical browser on the world wide web.

Third is the dialup connection which is offered by commercial service providers like Demon, Delphi or Compuserve. You will be charged on a monthly basis for a range of services and access to their internet gateway. With this type of connection, you are not linked directly to the internet. You're actually connected to their system, which in turn is connected to the net, so you don't have a hostname as such. Instead, you're seen by the rest of the internet as name@bigservice.co.uk.

Downloading files happens in two stages: once to download to the online system and the second time to download to your own machine. See *Net.newbies* in our *Cutting Edge* section for more information on how to get online.

Christmas Wishes

Around this time of year we usually make a few wild wishes about what we'd like for Christmas, or some even wilder wishes about what we'd like the industry to deliver in the near future.



Of course, there are lots of computer products we'd like Father Christmas to dump on our doorsteps on Christmas day, and like a lot of people, I'd be quite partial to a nice Pentium 120 with all the trimmings — preferably with a nice big 17in monitor. I'd also like a nice big flat-bed scanner, a high quality A3 colour laser printer, ...oh and a CD-writer please ...the list could go on and on.

But there are other, more fundamental, wishes on my Christmas list for which I'd gladly sacrifice my Pentium120.

The PC is hampered by a whole load of historical accidents, which have

So, where did this internet thing come from?

The original idea for the internet developed out of an American defence department agency called DARPA (Defence Advanced Research Projects Agency). In 1969, it began a project entitled "Resource Sharing Computer Networks", which attempted to provide a system to enable the exchange of military information between distant sites. This project was motivated by a certain amount of paranoid cold-war thinking: ie finding a way to communicate over long distances in the event of a nuclear war. The solution was a simple network of four computers called ARPANET (later changed to ARPANET).

The system was a great success and by 1972, the network had grown to include 37 computers with a well-used email system. By 1983, the system had grown to such an extent that the military research component was moved to a separate network called MILNET. A year later NSFNET was established by the National Science Foundation, another US government agency. This linked together five supercomputers and made their information available to educational establishments. For the first time, the internet had become open to people outside the area of defence work, and the

number of people using the system mushroomed. By 1987, NSFNET had so many sites connected to it that the whole system infrastructure needed a complete overhaul. At this time NSFNET was opened to academics, government employees, educational centres and international research organisations.

During this period, of development a lot of experimental work was carried out to find the best way of connecting computers. Different networking methods were demonstrated using various media including satellite, radio, telephone, and Ethernet and several different packet switching methods were used. All of this experimental work formed the foundations of TCP/IP (Transmission Control Protocol/Internet Protocol), but it wasn't until 1983 that all nodes on ARPANET were required to use it.

There's a lot of debate about precisely when the internet began — it all depends on how you define it. The internet as we now know came into existence in about 1990. It is now available to anyone who has the means to connect to it. Over the past ten years the growth of the internet has been incredible, increasing from 5,000 users to about 30 million.

Unfortunately been built one on top of the other. The result is a machine which is intimidating, frustrating and at times very hard to explain, especially to people who have no computer knowledge. If computers are ever going to become a real mass-market product, they have to be usable by ordinary people who are not prepared to spend large amounts of their time struggling with interrupt conflicts.

The Plug and Play standard has gone some way to sorting this out. In case you don't know, Plug and Play is a design philosophy and a set of specifications set up to improve the level of integration between PC components.

The ultimate Plug and Play dream is that when you install a new device in your PC, the process should be entirely automatic and transparent: no more endless tinkering with system files and jumper settings to get your hardware bits to talk to each other.

The Windows95 installation procedure has gone some way towards achieving this goal, but unfortunately it's all still very hit and miss. A Plug and Play BIOS in your system will help matters by resolving device conflicts, and these have begun to ship on systems from major manufacturers including Dell, Gateway, and Packard Bell. But perfect Plug and Play still has a

long way to go, and will probably be on my Christmas wish list for a few years yet.

Following on from this month's column, I'd like more people to be using email. Like a lot of people in the computer industry, I use email for a good proportion of my work-related communication, and I also have a handful of computer-literate friends who have email addresses. But wouldn't it be great if email was just as everyday and universal as the telephone.

You could send your Auntie Ethel (you know, the one you never remember until it's too late) that last minute birthday wish, laced with sound and graphics. You could book up meals in your favourite restaurant at the click of a button, order your shopping from the local supermarket and so on.

Some of these things are beginning to happen already, but so far they're on a very small scale. The email party has only just begun.

PCW Contacts

Eleanor Turton-Hill welcomes any feedback and suggestions from readers, on
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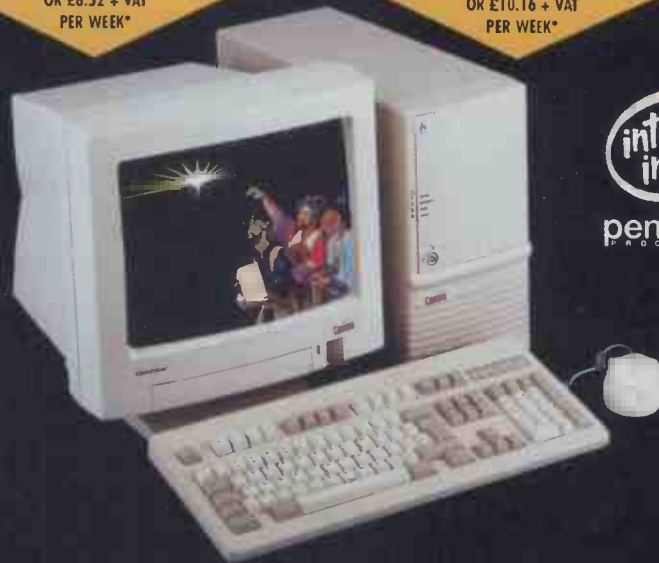
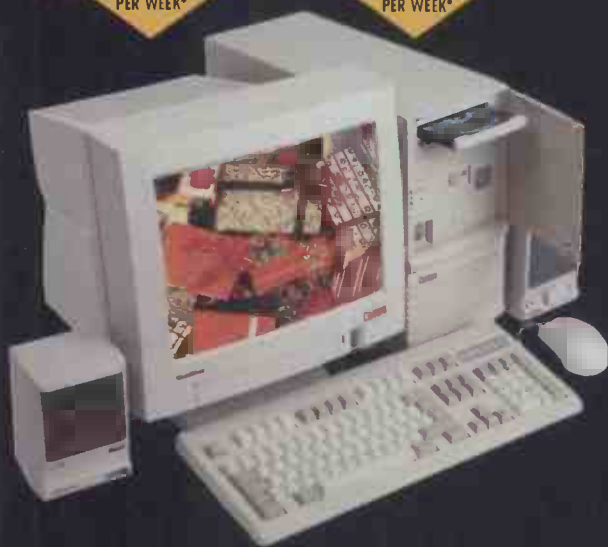
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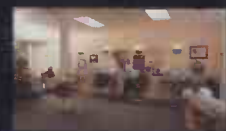
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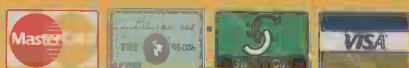
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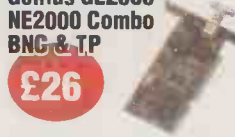
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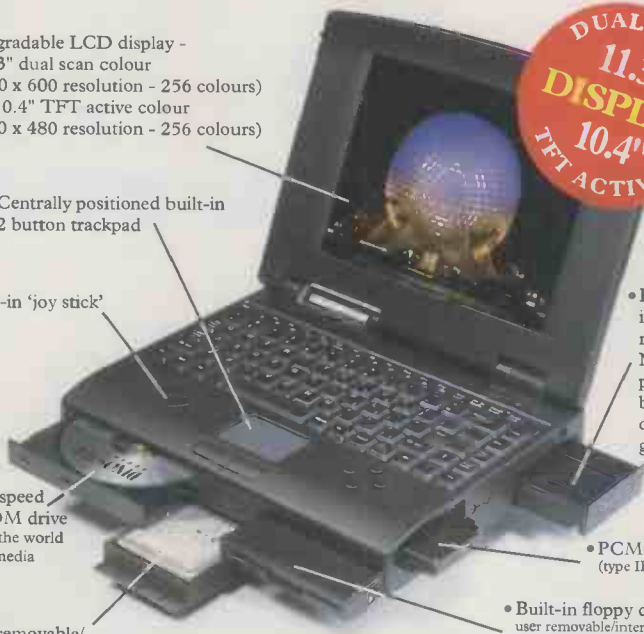
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- Rechargeable internal removable NiMH battery pack with built-in visual capacity gauge

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- Weight: 3.5 kg
- Size: 300mm (W) x 227mm (D) x 54mm (H)

AJP 5400

8 MB RAM 510 MB HDD

	54-75 Pentium® 75 chip	54-90 Pentium® 90 chip	54-100 Pentium® 100 chip	54-120 Pentium® 120 chip	54-133 Pentium® 133 chip
D Dual Scan Colour (11.3")	£ 1899	£ 1949	£ 1999	£ 2049	£ 2199
T TFT Active Colour (10.4")	£ 2299	£ 2349	£ 2399	£ 2449	£ 2599



- Up to 5 hours continuous use with optional additional NiMH battery pack



- Optional internal full-range universal auto-switching AC adaptor available - replaces battery pack

- Supplied with external full range universal auto-switching AC adaptor



- Optional docking station offering desktop port replication with ISA slot, built-in PCMCIA type IV slot and FDD bay



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4 MB RAM 340 MB HDD
RAM upgradable to 36 MB

7575 7599
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M Mono VGA (9.5")	£ 849	£ 879
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RAM upgradable to 40 MB

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Pentium® 75 chip Pentium® 90 chip

	7675 Pentium® 75 chip	7690 Pentium® 90 chip
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RAM upgrade per MB.....	£40.00
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MS Windows 95.....	£79.00
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486DX2-66	£2499.00
486DX4-75	£2549.00
486DX4-100	£2599.00
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BENEFITS OF THE ELITE PRO



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- ◆ Simultaneous Display (not dual scan models)
- ◆ Three Year Warranty Plan

Includes 340Mb Hard Disk & 4Mb Ram

Processor	Mono	Dual Scan	TFT
486DX2-66	£699	£999	£1299
486DX4-100	£899	£1199	£1499

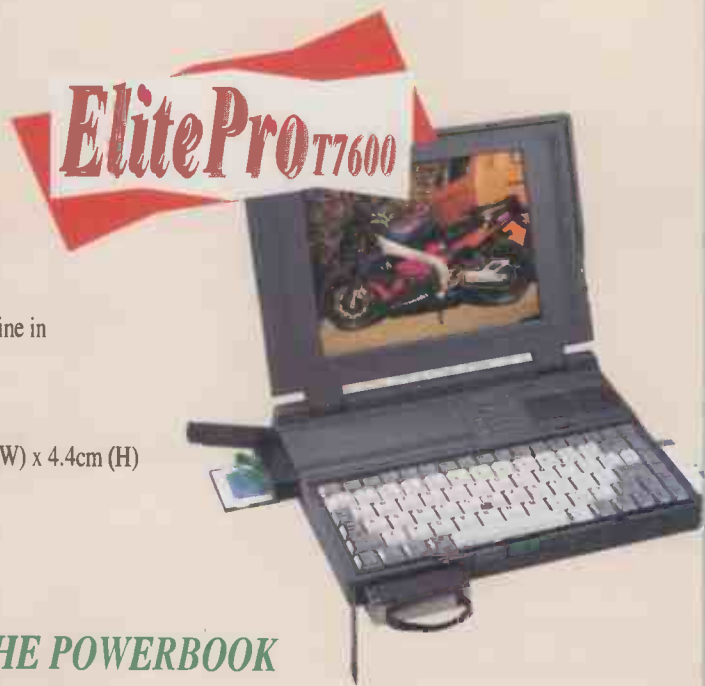
BENEFITS OF THE ELITE PRO T7600

- ◆ 486 Upgradeable Processor
- ◆ 2 x Type II PCMCIA Slots
- ◆ Removeable 2.5" 340Mb Hard Disk Drive
- ◆ 3.5" (1.44Mb) Floppy Disk Drive
- ◆ Mono/Dual Scan/TFT Screen Options
- ◆ 4Mb RAM upgradeable to 32 Mb
- ◆ 32 Bit Vesa Local Bus
- ◆ Removeable NiMH Battery Pack
- ◆ Auto-Switching mains battery charger
- ◆ Trackpoint situated between G & H Keys
- ◆ COM 1, Parallel Port, CRT Port

Includes 340Mb Hard Disk & 4Mb Ram

Processor	Mono	Dual Scan	TFT
486DX2-66	£799	£1049	£1399
486DX4-75	£849	£1099	£1449
486DX4-100	£899	£1149	£1499

- ◆ MIC, Midi Joystick Port, Speaker out, Line in
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& External Keyboard Port ◆ Docking Station Port
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- ◆ 2 NiMH Batteries with hot swap facility
- ◆ Carry Case ◆ Three Year Warranty Plan

Includes 340Mb Hard Disk & 4Mb Ram

Processor	Mono	Dual Scan	TFT
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486DX4-75MHz	£869	£1169	£1549
486DX4-100MHz	£889	£1189	£1589

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340 HARD DISK AND 16 BIT SOUND

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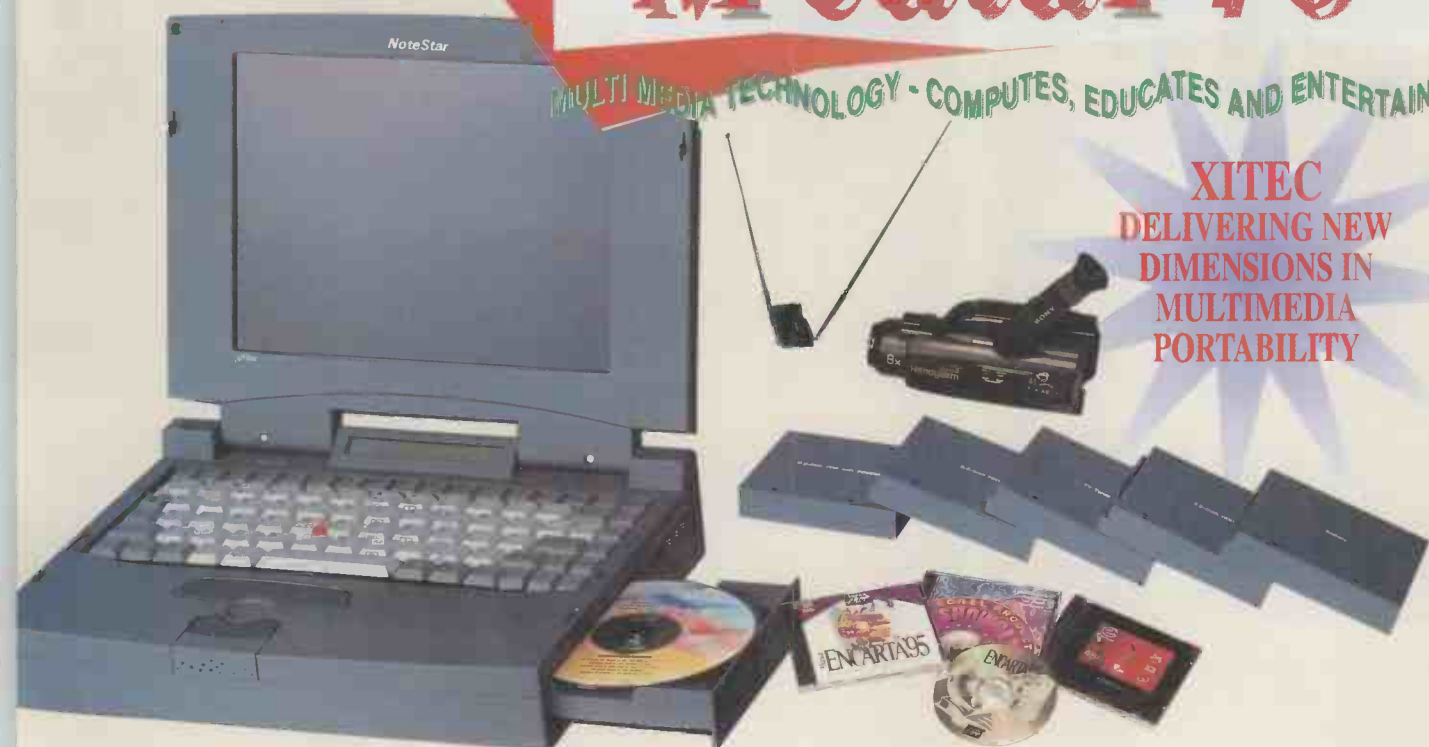
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- ◆ 1xType III or 2xType II PCMCIA Slots

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Processor	Dual Scan	TFT
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486DX4-100	£1399	£1749
PENTIUM 75	£1489	£1839
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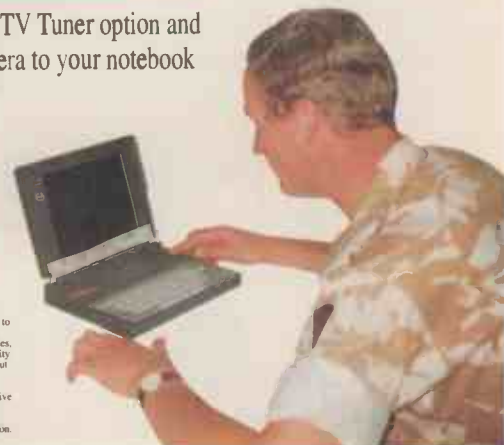


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Because the fastest chip is only as good as it's surrounding hardware we've included a 32 bit VESA local bus display card with 1MB of dedicated video memory. Add to this an MPR 1 14" digital colour monitor with on screen display and a maximum resolution of 1024 x 768 in

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- 486 DXII/66 MHz processor
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- Quad Speed Option +£80
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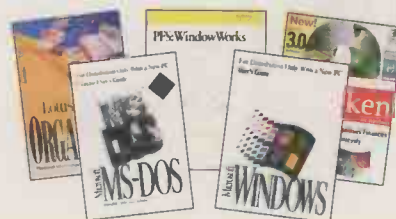
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Accura Modular Server



Modular features

- Intel Pentium® 90/120mhz CPU
- Plug and play compatible with auto configuration (PCI and ISA bus)
- 512k external cache
- 32mb RAM (max 192mb)
- Modular expandable RAID enclosure with redundant PSU's
- 2.0gb addressable RAID level 5 array, with 3 x 1gb fast SCSI-II hard drives
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- 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 250w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Operating systems: OS/2 Lan Server, Novell, SCO Unix, Windows NT (not supplied).

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Prices	Accura Modular RAID Server with Intel Pentium® 90 CPU, as specified	£4899
	Accura Modular RAID Server with Intel Pentium® 120 CPU, as specified	£5049

Modular Options	1gb → 2gb fast SCSI-II HDD (per drive)	£369
	1gb → 4gb fast SCSI-II HDD (per drive)	£699
	Main system memory upgrades per 1mb	£36
	RAID upgrade to 5 drives (4gb capacity)	£899
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	5 x 1gb RAID → 5 x 4gb RAID	£2899
	18gb total capacity	
	Motherboard and RAID controller ECC memory upgrade (per 1mb)	£CALL
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Whoppers!

Accura Integrated Server

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	Accura Integrated RAID Server with dual Intel Pentium® 120 CPU's as specified	£8549

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	16gb total capacity	
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Integrated features

- Intel Pentium® 90/120mhz CPU
- Dual Pentium motherboard with Intel Neptune II 3.3v chipset, PCI and EISA slots.
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- 32mb RAM (max 512mb)
- 3 channel bus mastering, PCI RAID fast wide SCSI-II controller with 8mb cache. Max data transfer as configured 50-60mbps
- 4.0gb addressable RAID level 5 array, with 3 x 2gb fast wide SCSI-II hard drives, mounted on alloy "hot plug-gable" mounts.
- 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 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: OS/2 Lan Server SMP, SCO Unix with SMP extns, Windows NT 3.5 (not supplied).

Adams service

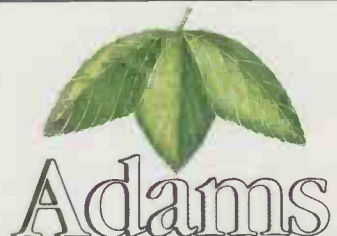
Warranty: For your peace of mind Adams offer a 3 year parts and labour warranty on your Accura Server. The first year of this warranty is on-site with BS5750 standard eight hour response provided by our partner ICL. All main system components are covered except monitors which are warranted by their own manufacturers. The on site service can be extended up to 3 years, and in certain areas, a four hour response time can be provided. Please call for specific quotations.

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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Case accommodates 6 removable RAID drives and 5 secondary units. HDD's mounted in alloy glitch free carriers, hot spare provision. 400w PSU's can be hot swapped, spare unit fitted in lower case.

Nearly!

The perfect computer, now there's something. Imagine, just what you wanted, everything exactly right, perfectly trouble free with no hardware wobbles and software crashes. Sounds good to be true? Well unfortunately computers tend to have a mind of their own and do the most unwanted things at the wrong time.

So, Mr. Adams are you going to tell me then that yours are perfect? No. Nearly perfect though, as close as we can possibly get them. We're constantly fine tuning and improving both our products and our company's service with the aim of making our whole customer relationship...perfect!

Adams have many, many corporate clients who value the effort and hard work we put in for them. We'll do the same for you when you become an Adams customer.

Talking about things perfect, here's a little barrage of software:



Like it? We did so we thought that we would include Novell PerfectOffice with some of our

Accura Premium

Premium 586

P75 £1249
P90 £1349

- Intel® Pentium® 75/100mhz CPU
- PCI local bus
- 256k level 2 cache
- 8mb RAM
- 850mb 11ms IDE hard drive with PCI 32-bit EIDE controller
- 3.5" 1.44mb floppy drive
- Ultra fast PCI graphics card with 1mb RAM
- 16 bit sound card and speakers
- Quad speed, multi session 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
- Ergonomic 2 button mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 Warp v3 with Lotus Smartsuite for OS/2 or Windows 95 with Microsoft Works

Premium 586 Work Station

P100 £1449
P120 £1549

- Intel® Pentium® 100/120mhz CPU
- PCI local bus
- 256k level 2 cache
- 8mb EDO RAM
- 850mb sub 11ms IDE hard drive with PCI 32-bit EIDE controller
- 3.5" 1.44mb floppy drive
- #9 Fx Vision 330 graphics card with 2mb DRAM
- Quad speed, multi session ATAPI CD-ROM drive
- 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
- Ergonomic 2 button mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 Warp v3 with Lotus Smartsuite for OS/2 or Windows 95 with Novell PerfectOffice Standard

Perfect C

PC's. If you choose an Adams PC, loaded with Microsoft Windows 95, we will offer either PerfectOffice standard with our Accura Premium range, or PerfectOffice Professional with the Accura Professional machines. Win OS/2 Warp V3 is available as an alternative to Windows 95, this time we load Lotus Smartsuite for OS/2. Decisions, decisions!

All this talking about software, we haven't mentioned the PC's themselves. Our Premium range is designed for the home user who would like a quality PC. The Professionals are of the highest quality and are the fastest that we can possibly make them; for the serious user. Our Professional 586 Workstation was Personal Computer World's Editors choice, by the way.

Our 3 year warranty remains unchanged, with on site support from our partner ICL. For those wishing to spread the financial burden, we can now offer you a "Buy now pay in Summer 1996" credit option. Of course at 0% APR*

Help us to make the perfect PC. Call Adams sales on 0161 877 8822 and say "Perfect PC!"

PS: A very merry Christmas to all our customers and friends, we've had a great 1995 and everyone at Adams would like to wish you all the best for 1996.

Accura Professional Powered by MICRONICS

Professional 586

P100 £2099
P120 £2199 P133 £2249

- Intel Pentium® 100/120/133 mhz CPU
- Intel Triton® chipset
- Plug and play compatible with auto configuration
- 256k synchronous SRAM
- 16mb EDO RAM (max 128mb)
- 1.2gb sub 10ms IDE hard drive with PCI 32 bit mode 4 enhanced IDE controller
- Six speed multi session ATAPI CD-ROM drive
- 3.5" 1.44mb floppy drive
- Soundblaster Pro 16 with speakers
- Matrox Millennium graphics card with 2mb WRAM (u/g to 8mb)
- 15" Accuscan energy saving, MPR-II monitor, NI, max res 1280 x 1024, 75hz refresh
- 2 serial (16550), 1 parallel port (EPP/ECP)
- Desktop Case with 200w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 Warp v3 with Lotus Smartsuite for OS/2 or Windows 95 with Novell Perfect Office Professional

Professional 586 Multimedia

P100 £2699
P120 £2799 P133 £2949

- Intel Pentium® 100/120/133 mhz CPU
- Intel Triton® chipset with 256k synchronous SRAM
- Plug and play compatible with auto configuration
- 16mb EDO RAM (max 128mb)
- 1.2gb sub 10ms IDE hard drive with PCI 32 bit mode 4 enhanced IDE controller
- Eight (x8) speed multi session ATAPI CD-ROM drive
- Soundblaster® AWE32 sound card and Yamaha M10 speakers
- 3.5" 1.44mb floppy drive
- Matrox Millennium 2mb WRAM graphics card (u/g to 8mb)
- 17" Iiyama Vison Master, MPR-II monitor, NI, max res 1280 x 1024, (1600 x 1200 @ 69hz), max refresh 100hz
- 2 serial (16550), 1 parallel port (EPP/ECP)
- Desktop Case with 200w PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 Warp v3 with Lotus Smartsuite for OS/2 or Windows 95 with Novell PerfectOffice Professional

superb quality and value for money

Premium 586

Work Station Plus



P100 £1799
P120 £1899 P133 £2049

- Intel® Pentium® 100/120/133mhz CPU
- PCI local bus with 256k level 2 cache
- 16mb EDO RAM (max 128mb)
- 1gb sub 10ms IDE hard drive with PCI 32-bit mode 4 enhanced EIDE controller
- Quad speed, multi session ATAPI CD-ROM drive
- Soundblaster® Pro16 and speakers
- 3.5" 1.44mb floppy drive
- #9 Fx Vision 330 64 bit PCI graphics card with 2mb 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
- Ergonomic 2 button mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 Warp v3 with Lotus Smartsuite for OS/2 or Windows 95 with Novell Perfect Office Standard

Premium 586

Multi Media



P100 £2049
P120 £2199 P133 £2349

- Intel® Pentium® 100/120/133mhz CPU
- PCI local bus with 256k level 2 burst cache
- 16mb EDO RAM (max 128mb)
- 1.2gb sub 10ms IDE hard drive with PCI 32-bit IDE mode 4 controller
- Quad speed, multi session ATAPI CD-ROM drive
- Soundblaster® Pro16 and speakers
- 3.5" 1.44mb floppy drive
- #9 FX Motion 771 64 bit PCI graphics card with 2mb VRAM (u/g to 4mb)
- 17" Accuscan MPR-II monitor, NI, max res 1280 x 1024
- 2 serial, 1 parallel port
- Desktop case with 200W PSU
- Windows 95 UK keyboard
- Ergonomic 2 button mouse
- 3 year parts and labour warranty (first year on site)
- Win OS/2 Warp v3 with Lotus Smartsuite for OS/2 or Windows 95 with Novell Perfect Office Standard

Accura options

Premium

850mb IDE → 1gb 10ms IDE HDD	£45
1gb IDE → 1.2gb 10ms IDE HDD	£35
Std memory upgrades per 1mb	£29
EDO memory upgrades per 1mb	£32
Ultra fast PCI graphics 1mb →	£55
#9 Fx Vision 330 with 2mb DRAM	
#9 Fx Vision 330 with 2mb DRAM → #9 FX Motion 771 2mb VRAM	£99
VRAM upgrades 2mb → 4mb	£150
14" → 15" Accuscan Monitor	£85
1280 x 1024, MPR-II	
15" → 17" Accuscan Monitor	£219
1280 x 1024, MPR-II	
17" Accuscan Monitor 17" → 17" Iiyama Vision Master	£109
NE2000 compatible ethernet card	£35

Professional

1gb IDE → 1.6gb IDE hard drive	£75
6 speed → 8 speed ATAPI CD-ROM	£89
2gb SCSI → 4gb SCSI hard drive	£360
DPT 2024 → DPT2124 SCSI controller	£135
DPT CM4000 cache module (0 mb) for DPT controllers	£349
Memory for CM4000 (per 1mb)	£32
DPT DM4000 RAID module	£349
Matrox Millennium 2mb → Matrox Millennium with 4mb WRAM	£150
Matrox Millennium 4mb → 8mb WRAM u/g	£270
17" Iiyama Vision Master → 17" Vision Master Pro DiamondTron	£99
17" Iiyama Vision Master → 21" Iiyama MF-9121 DiamondTron Pro	£869

PLEASE CALL FOR MANY MORE OPTIONS

computers?

no compromises for power users

Professional

586 Server



P90 £2399
P100 £2499

- Intel Pentium® 90/100 mhz CPU
- Plug and play compatible with auto configuration (PCI and ISA bus)
- 256k external cache
- 16mb RAM (max 192mb)
- 2.0gb 8.0ms fast SCSI-II hard drive with DPT 2024 PCI 32-bit bus mastering SCSI controller (caching and RAID upgradeable)
- 4.4 speed multi session 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 bus mastering ethernet card
- 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: OS/2 Lan Server, Novell, SCO Unix, Windows NT (not supplied).

Professional

586 Dual Server



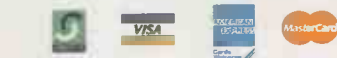
P90 £2999
P120 £3399

- Two Pentium® 90/120mhz CPU's
- Plug and play compatible with auto configuration (PCI and EISA bus)
- 512k external cache
- 16mb RAM (max 192mb)
- 2.0gb 8.0ms fast SCSI-II hard drive with DPT 2024 PCI 32-bit bus mastering SCSI controller (caching and RAID u/g)
- 4.4 speed multi session 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 bus mastering ethernet card
- Server case with 300 W PSU
- Accutouch 102 key UK keyboard
- Microsoft Ergonomic Mouse
- 3 year parts and labour warranty (first year on site)
- Operating systems: OS/2 Lan Server, Novell, SCO Unix with SMP extns, Windows NT 3.5 (not supplied).

ordering

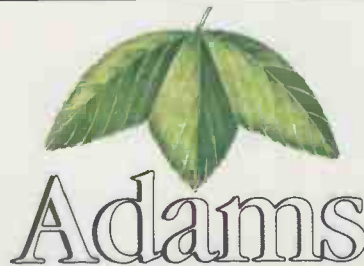
Adams Technology sales lines are open from 9am till 6pm from Monday to Friday. Technical sales staff are available to answer questions on any of our products to help you with any differing requirements that you might have. Please add VAT to all prices quoted. We welcome payment by Visa, Mastercard and American Express, or on a cheque with order basis. We charge £20 for carriage on all systems. A 14 day money back guarantee* is offered on systems.

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 1995/1996

0161 877 8822



Advanced Computer Technology

ADAMS TECHNOLOGY LTD, CITY POINT, CHESTER RD, OLD TRAFFORD, MANCHESTER M32 0RW UK. FAX: 0161 877 8884

*Warranty and money back guarantee subject to Adams Technology's terms and conditions.

SVGA, WAVE, 11.8", MPEG, CD-V!

What on earth is all this? All these letters is our way of telling you that the Accura Portable+ Notebook has lots and lots of features, enough to make it the most comprehensively appointed notebook on the market.

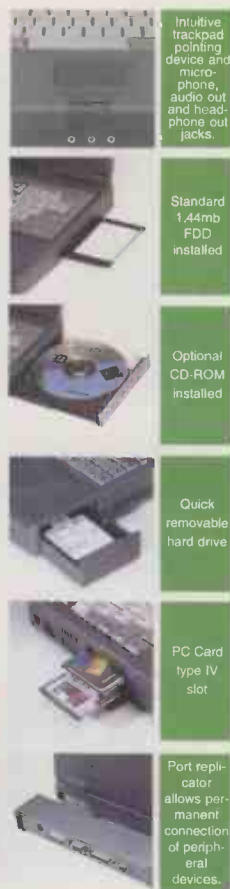
Whereas the 486 version is not quite as comprehensively specified, the Pentium version has the largest TFT LCD panel currently available at 11.8" and with SVGA 800 x 600 resolution. Being able to display 65,000 colours, your corporate multimedia presentation never looked better.

A full 30fps CD-Video presentation can be made using the optional in built CD-ROM with glorious stereo sound using the software MPEG capabilities of the Pentium Portable+. Now that will impress your customer! No more flicking through colour transparencies, let your Accura Portable+ do the work for you.

Sale! We have a wonderful pre-Christmas sale on at present of all portables (excluding the "Plus") Snap up a bargain, call to find out model availability and pricing before everything goes.

0% Adams has a new Personal Finance package to offer on certain portables. Buy now and pay in Spring 1996. APR 0%. Written details available.

Call Adams sales on 0161 877 8822 to find out more about the right notebook to suit you and your budget!



Intuitive trackpad pointing device and microphone, audio out and headphone out jacks.

Standard 1.44mb FDD installed

Optional CD-ROM installed

Quick removable hard drive

PC Card type IV slot

Port replicator allows permanent connection of peripheral devices.

Accura Portable+

Pricing and personal finance

Buy now and pay in 6 months time!

Model	Dual Scan SVGA 11.3"	TFT Active SVGA 10.3"	TFT Active SVGA 11.8"
486DX2-66	£1399	£1699	N/A
486DX4-100	£1449	£1749	N/A
Pentium 75	£1899	N/A	£2399
Pentium 100	£2049	N/A	£2549

Finance example

Pentium 75, 11.3 SVGA DSTN
Cash price £1849 + Carr £12 + VAT
Total price inc VAT £2186.68
Deposit 15%, £328, pay the balance of £1858.68 in six months time.
Subject to status, written details available.

Completely

Accura Portable+ Pentium® features

- Pentium® 75 or 100mhz CPU's, with 256k level 2 cache
- PCI local bus with 64 bit memory addressing
- 8mb standard memory upgradeable to 32mb
- Quick removable 520mb 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 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 wavelable sound card with built in speakers
- Optional CD-ROM or 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 3.2kgs with hard drive and battery
- 1 year parts and labour warranty
- Windows 95 or DOS 6.22/Win FWG 3.11 or Win OS/2 v3 preloaded and running
- 14 day money back guarantee of satisfaction

Accura Portable+ 486 features

- 486DX2-66 or DX4-100 CPU's
- 4mb standard memory upgradeable to 32mb
- Quick removable 340mb 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 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 CD-ROM or 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 3.2kgs with hard drive and battery
- 1 year parts and labour warranty
- Windows 95 or DOS 6.22/Win FWG 3.11 or Win OS/2 v3 preloaded and running
- 14 day money back guarantee of satisfaction

Accura 750 Value for money entry level



- 486DX2-66 CPU upgradeable to 486DX4-100
- 4mb standard memory upgradeable to 20mb
- 340mb 2.5" fast IDE hard drive upgradeable to 1.2gb.
- 9.5" Mono LCD with 64 grey levels, Dual Scan passive colour displaying 256 colours.
- Local bus graphics accelerator giving simultaneous LCD/CRT display and CRT resolutions up to 1024 x 768
- 1.44mb floppy disk drive built in
- BIOS controlled dual level power management facility
- Built in LED status indicator
- 19mm trackball built in
- 1 PC Card type III slot (takes type I and II also)
- Ni CD battery standard
- 1 serial port, 1 parallel port, external CRT port, external keyboard port
- Full function 84 key UK keyboard
- Multi voltage 90-240v charger power supply (2 hour charge time)
- Light weight 2.2kgs with hard drive and battery
- Compact size - near sub-notebook dimensions
- 1 year parts and labour warranty
- 14 day money back guarantee of satisfaction

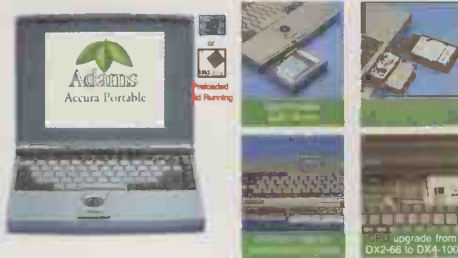
Accura Portable+ Some options and accessories

Memory upgrade to 8mb (486)	£159
Memory upgrade to 16mb (486)	£420
Memory upgrade to 20mb (486)	£595
Memory upgrade to 32mb (486)	£980
Memory upgrade to 16mb (Pentium)	£299
Memory Upgrade to 24mb (Pentium)	£595
Memory upgrade to 32mb (Pentium)	£821

HDD upgrade from 340mb to 520mb	£99
HDD upgrade from 520mb to 810mb	£139
HDD upgrade from 520mb to 1.3gb	£299
Internal x4 speed CD-ROM	£199
Internal MPEG-1 card (for 486)	£229
Additional primary battery or secondary battery	£79
Docking Station	£349
Port replicator	£55

Model	Mono	Dual Scan 486
486DX2-66	£849	£1199
486DX4-100	£929	£1279

Accura Portable Top selling modular notebook



- 486DX2-66 CPU upgradeable to 486DX4-100
- 4mb standard memory upgradeable to 20mb
- Quick removable 340mb 2.5" fast IDE hard drive upgradeable to 1.2gb.
- Yamaha audio chip providing Sound Blaster® compatibility with built in speaker and microphone
- 9.5" Mono LCD with 64 grey levels, Dual Scan Passive Colour or TFT active colour displaying 256 colours, quickly interchangeable
- Local bus graphics accelerator with 1mb RAM giving simultaneous LCD/CRT display and CRT resolutions up to 1024 x 768
- Removable 1.44mb floppy disk drive
- BIOS controlled power management with SMM stop clock with suspend to disk function and built in battery meter
- 19mm Logitech trackball built in
- 2 PCMCIA type II and/or 1 type III slot
- Ni MH battery standard (quickly interchangeable)
- 1 serial port, 1 enhanced parallel port (EPP/EPS), external CRT port, external keyboard/mouse port, d/station port
- Full function 86 key UK keyboard
- Multi voltage 90-240v charger power supply (1.5 hour charge time)
- Weight 2.4kgs mono, 2.7kgs colour, carry slip and utility disk included
- 1 year parts and labour warranty and 14 day money back guarantee

Model	Mono	Dual Scan Colour	TFT Active Colour
486DX2-66	£949	£1319	£1649
486DX4-100	£1029	£1399	£1739

Accura 7600 Value 586



- Intel Pentium® P75 or P90 CPU with 256k level 2 cache
- 8mb standard memory upgradeable to 40mb
- VESA local bus IDE HDD interface with 340mb 2.5" fast IDE hard drive upgradeable to 1.2gb
- Sound Blaster® 16 bit stereo compatibility with built in speakers
- 10.2" DSTN passive colour or 9.5" TFT active colour display
- VESA local bus graphics accelerator giving simultaneous LCD/CRT display and CRT resolutions up to 1024 x 768
- Built in 1.44mb floppy disk drive
- BIOS controlled power management
- 2 PCMCIA type 2 and/or 1 type 3 slot
- Ni MH battery standard (quickly interchangeable)
- 1 serial port, 1 enhanced parallel port (EPP/EPS), external CRT port, external keyboard/mouse port, d/station port
- Full function 86 key UK keyboard and 19mm trackball built in
- Multi voltage 90-240v charger power supply (2.0 hour charge time)
- Dimensions(mm) 283w x 232d x 53h Weight 2.9kgs
- Utility disk set included
- 1 year parts and labour warranty and 14 day money back guarantee

Model	Dual Scan Colour	TFT Active Colour
P75	£1699	£1949
P90	£1799	£2049

Accura 6000 Premier 586 notebook



- Intel Pentium® P75 or P90 CPU with 256k level 2 cache
- 8mb standard memory upgradeable to 40mb
- 32 bit PCI local bus mode 3 hard drive controller with 520mb 2.5" fast IDE hard drive upgradeable to 720mb.
- Sound Blaster® 16 bit stereo compatibility with built in speakers
- 10.3" STN double refresh (Quad Scan) Passive Colour or 10.4" TFT active colour displaying 256 colours
- PCI 32 bit local bus graphics accelerator with 1mb RAM giving simultaneous LCD/CRT display and CRT resolutions up to 1024 x 768
- Built in 1.44mb floppy disk drive
- BIOS controlled power management with suspend to disk function
- 2 PCMCIA type 2 and/or 1 type 3 slot and infrared comms port
- Ni MH battery standard (quickly interchangeable)
- 1 serial port, 1 enhanced parallel port (EPP/EPS), external CRT port, external keyboard/mouse port, d/station port
- Full function 86 key UK keyboard and 16mm trackball built in
- Multi voltage 90-265v charger power supply (2.0 hour charge time)
- Dimensions(mm) 279w x 218d x 51.5h Weight 3.09kgs
- Carry slip and utility disks included
- 1 year parts and labour warranty and 14 day money back guarantee

Model	Passive Colour	TFT Active Colour
P75	£1899	£2349
P90	£1999	£2449

Initialled!

Accura 6000 Power users dream



The Accura 6000 is now available with 100 or 133 mhz CPU's and with a 10.4" SVGA 800 x 600 TFT LCD display. With built 16 bit stereo sound and a ruggedised magnesium alloy case, super fast SCSI-II hard drive, the Accura 6000 is *the* notebook of the future.

- Intel Pentium® 100/133mhz CPU
- 16k level 1 and 256k level 2 cache
- 8 mb standard memory upgradeable to 128mb (64 bit)
- 32 bit PCI local bus controller with 340mb 2.5" fast SCSI-II hard drive upgradeable to 1.2gb.
- Sound Blaster® 16 bit stereo compatibility with built in speakers and microphone
- 10.4" TFT active colour displaying 65,536 colours, max res 800 x 600
- PCI 32 bit local bus graphics accelerator (WD90C24A2) with 1mb RAM giving simultaneous LCD/CRT display and CRT resolutions up to 1024 x 768
- External 1.44mb ultra-low profile floppy disk drive
- BIOS controlled power management with sleep, suspend & resume functions
- Trackpoint, pointing device integrated into keyboard
- 2 PC card type 1/2 or 1 type 3 slot
- Ni MH battery standard (quickly interchangeable)
- 1 serial port, 1 enhanced parallel port (EPP/EPS), external CRT port, external keyboard/mouse port, d/station port
- Full function 82 key Lexmark UK keyboard
- Multi voltage 110-240v charger power supply (2.0 hour charge time)
- Dimensions(mm) 300w x 216d x 51h Weight 3.4kgs
- Leather carrying case included
- 1 year parts and labour international warranty

Model	15" SVGA monitor
P100	£4480
P133	£4810

Accura Notebooks some options

750	
Memory upgrade to 8mb	£159
Memory upgrade to 12mb	£299
Memory upgrade to 20mb	£599
Upgrade HDD from 340mb - 520mb	£99
Upgrade HDD from 340mb - 810mb	£235
Upgrade HDD from 340mb - 1.3gb	£399
Additional main battery	£89

Portable	Memory and HDD upgrades as Accura 750
Additional main battery	£89
Docking station	£375
Car Power Adaptor	£49
Deluxe Carry Case	£39

7600	HDD upgrades as Accura 750
Memory upgrade to 16mb	£309
Memory upgrade to 24mb	£679
Memory upgrade to 32mb	£988
Memory upgrade to 40mb	£1358
Additional main battery	£95
Docking station	£CALL
Car Power Adaptor	£CALL

5000	HDD upgrades call
Additional main battery	£95
Docking station (with speakers and floppy drive)	£399

6000 Call for all 6000 options

Our pledge

Adams Technology pride ourselves on our products and service. We offer a 14 day money back guarantee* on all Accura Portables and most systems. A direct technical support line and technical information line are available during business hours. We do our best to ship notebooks within 2-3 days and desktops within 7-10 days. Please don't forget to add VAT to all prices quoted. See previous page for ordering details.

We will keep you up to date with the latest technological advances and where possible offer advantageous upgrades to your Accura Computer

Try something different, try Adams Technology for quality, value for money products and a service second-to-none.



0161 877 8822



ADAMS TECHNOLOGY LTD. CITY POINT, CHESTER RD, OLD TRAFFORD, MANCHESTER M32 0RW UK. Fax: 0161 877 8884

*Warranty and money back guarantee subject to Adams Technology's terms and conditions.

If I told you that you only needed **ONE** piece of software to run your **ENTIRE BUSINESS**, what would you think of me?



Isn't it funny how every business software company claims it sells an integrated system.

Well, that's a load of old baloney!

Most of these systems comprise a mish-mash of different pieces of software with a limited ability to talk to one another.

Modulus is different. Modulus is **ONE** piece of software which can handle just about every function you ever dreamed about: sales prospecting, customer care, accounts, stock control, word processing and so on.

Goddamit, it can even answer the telephones!

There are no questions about compatibility or information sharing as all the data is held at the core of the program.

In fact, there is no other system like it.

If your business management software seems a bit of a joke in comparison, you should take a look at Modulus. 'Modulus Silver from £145. Modulus Gold from £3,495 to £134,950.'

For more information, send in the coupon or phone us on 0181 224 8080.

After all, business is business and it's no laughing matter.



In return for your investment you get so much more than just an accounting system. There is no other system on any platform that offers similar functionality



Mac User

24 hr ENQUIRY LINE
0181-224 8080

SEND TO: VECTOR SOFTWARE LTD., 79 BRIDGE ROAD, HAMPTON COURT, SURREY, KT8 9HH. FAX: 0181-941 7600

Name: _____

Job Title: _____

Co. Name: _____

Address: _____

Postcode:

Telephone: _____

Fax: _____

Single User: Multi User:

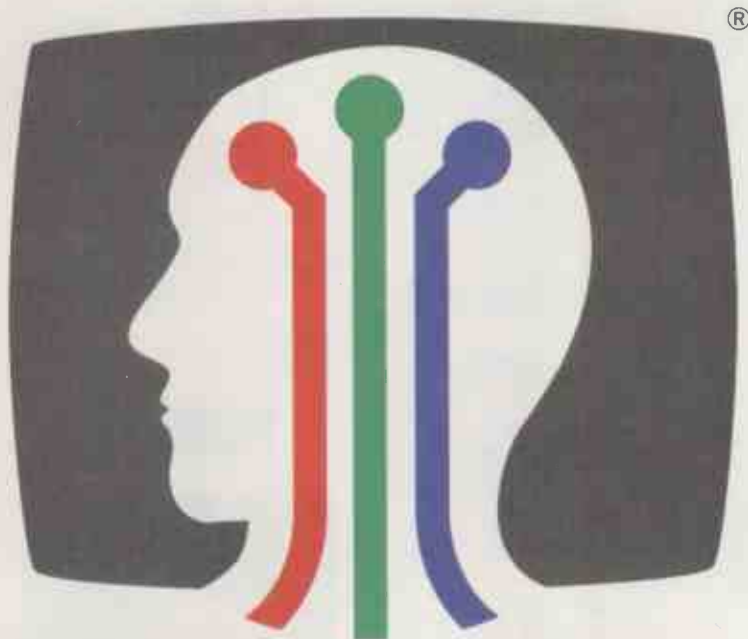
Nature of Business: _____

Current Software: _____

PCW 01/96



Expand Your Memory...



...it's as easy as



30 Pin



72 Pin
PARITY



72 Pin
NON PARITY

Memory Type / Size ▾	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb
30 Pin	£27	-	£89	-	-	-
72 Pin Parity	-	-	£95	£195	£359	£699
72 Pin Non Parity	-	-	£82	£163	£299	£625
EDO	-	-	£95	£185	£395	£call

Amstrad

7 Series
9 Series

AST

Bravo LC, L, PMS, MT
Premia 486

Compaq

ProLinea 4/25, 4/33, 4/33s,
4/50, 4/66, MT, P75
Presario all models

Dan

95s, Premum, Windows,
Dantium, Ultimate

Dell

Performance L, M, T
ME
Dimension XPS
XPS Pentium

A Optiplex
B Precision Non-Pentium
Pentium

C Elonex
B PC433m, 450m, 466m
PC500 Series, PC560

B Escom
DX2/66, P60, P75, P100

B Evesham
Vale Popular, Prestige,
Premier, Platinum

C Gateway
PC4sx33, DX33v, 66v, P/v
P4D

C P575, 90, 100, 120, 133
B EDO

C
B
C
B

C Highmead
C DX2/66, DX4/100
B P75, P90, P100

B Hewlett Packard
Vectra/Netserver
C LF/LM
N2, M2, XM2, VL2

C IBM
Aptiva 300 Series
700 Series
C Valuepoint
PS/2

B
C
D

Mitac

C DX2/66, DX4/100, P60

MJN

C DX2/66, DX4/
100, P75, P100

C Opus
DX2/66, DX4/100,
Triton,
C Prelud, Premier, Prestige

C Simply Computers
B DX2, DX4, P60, 75, 90

Viglen

C Genie 486VLB, PCI
C Pentium Series EX
D Pentium Series EDO

C Watford Electronics
Aries 486SX2, 486DX2

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PERSONAL COMPUTER WORLD
JANUARY 1995

E&OE

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brother

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HL631 300dpi 1Mb	£344
HL660 600dpi	£454
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Canon

Inkjets	
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BJ20Dex	£154
BJ230	£235



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BJC600e	£317
BJ300	£344
BJ330	£388
BJC800 A3 Colour	£988
BJC820 A3 Colour	£1219

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FX1170	£297
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LQ870	£368
LQ1070+	£291
LQ1170	£427
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Stylus 2s Colour New!	£199



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Stylus Colour Pro A4	£389
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EPL9000 12ppm A3	£1124
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No of * = No of years On-Site Maint.

Printers

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DeskJet 340 Colour Kit	£28



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DeskJet 660C	£241
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LaserJet 4MV Pscript A3	£1963

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DesignJet 230/250 legs & bin A0	£219
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DesignJet 600 A4-A0	* £3159
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DesignJet 750C A4-A0	* £4350
DesignJet 755CM A4-A0	* £Call
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KX-P2023	£108
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Sharp Lasers require Windows 95

star

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Wintype 4000	£288

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STAR		
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BJC600 Black Long Life	9.00	8.00
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BJC4000 BC21Black	8.00	7.00
BJC4000 BC21Colour	14.00	13.00
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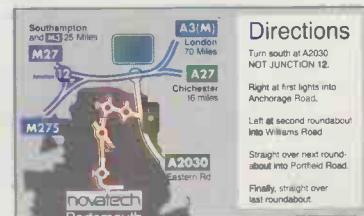


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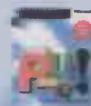
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To take advantage of MGA Millennium's powerful video, 3D and DOS performance, we have thrown in a number of multimedia titles absolutely free! They include 3D/FX by Asymmetric Design - a drag and drop 3D software for Windows Papyrus, NASCAR racing 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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MGA MILLENNIUM

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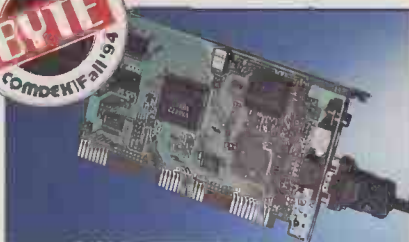
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11.3 Quad scan 11.4 TFT colour

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486DX4/75
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OPTI 1000™ ML

- New Cyrix 486 DX2/66 processor.
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- 32 Bit Lotus SmartSuite

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Min requirement 8Mb RAM. Pre-loaded software.

NOTEBOOK OPTIONS



Multi-Media Option



14" Monitor Option



Docking Station

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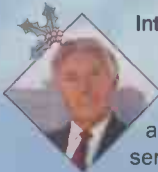


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Power for



Intel's powerful Pentium processors drive the MESH Elite⁹⁵ Pro series to an unheard of performance plateau. Graphics acceleration through the latest VRAM and WRAM technologies and an array of lightning fast disk and memory options means that our MESH Elite⁹⁵ Pro series puts you where you want to be... at the leading edge.



Designed specifically with the demands of Microsoft Windows 95 in mind, the MESH Elite⁹⁵ Pro series has the ability to accelerate both 16 and 32 bit applications safely and effectively. Our build standards and commitment to customer care are second to none, ensuring that you get the best Windows 95 system available today.

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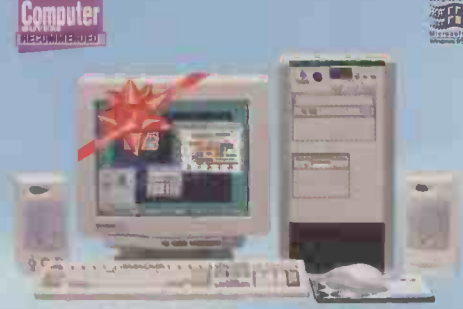
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MESH Elite⁹⁵ Pro 90

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Mesh Elite Pro 75

File Edit View Help

- ◆ Pentium P75 Processor
- ◆ Intel Triton chipset Motherboard
- ◆ Upgradeable to 180MHz Pentium & P6
- ◆ 256Kb Pipeline Burst Mode cache
- ◆ Full Windows 95 plug & play support
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- ◆ Fast PCI Enhanced IDE controller
- ◆ 1.08 Gb Fast IDE hard disk drive
- ◆ Quad Speed CD ROM drive
- ◆ MESH Multimedia Kit 1 (see bottom of page)
- ◆ 2 fast serial UART 16550 & 1 bi-directional parallel ports
- ◆ 2 Mbyte VRAM Stealth PCI Accelerator with Software MPEG Decode
- ◆ 15" SVGA NI Monitor (non-interlaced to 1024x768, low radiation, 0.28 pitch, Energy Star)
- ◆ 1.44 Mbyte 3.5" Floppy Drive
- ◆ 102 Key Keyboard
- ◆ Microsoft Original Mouse
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- ◆ Desktop/Mini tower case c/w TUV approved 200W PSU
- ◆ Comprehensive 1st year parts & labour Warranty
- ◆ Free Lifetime Technical Support

Mesh Elite Pro 90

File Edit View Help

- ◆ Pentium P90 Processor
- ◆ Intel Triton chipset Motherboard
- ◆ Upgradeable to 180MHz Pentium & P6
- ◆ 256Kb Pipeline Burst Mode cache
- ◆ Full Windows 95 plug & play support
- ◆ 16 Mbyte EDO RAM (max 256Mb)
- ◆ Fast PCI Enhanced IDE controller
- ◆ 1.08 Gb Fast IDE hard disk drive
- ◆ Quad Speed CD ROM drive
- ◆ MESH Multimedia Kit 1 (see bottom of page)
- ◆ 2 fast serial UART 16550 & 1 bi-directional parallel ports
- ◆ 2 Mbyte VRAM Stealth PCI Accelerator with Software MPEG Decode
- ◆ 15" SVGA NI Monitor (non-interlaced to 1024x768, low radiation, 0.28 pitch, Energy Star)
- ◆ 1.44 Mbyte 3.5" Floppy Drive
- ◆ 102 Key Keyboard
- ◆ Microsoft Original Mouse
- ◆ Windows 95 c/w disks & manuals
- ◆ Desktop/Mini tower case c/w TUV approved 200W PSU
- ◆ Comprehensive 1st year parts & labour Warranty
- ◆ Free Lifetime Technical Support

Mesh Elite Pro 100

File Edit View Help

- ◆ Pentium P100 Processor
- ◆ Intel Triton chipset Motherboard
- ◆ Upgradeable to 180MHz Pentium & P6
- ◆ 256Kb Pipeline Burst Mode cache
- ◆ Full Windows 95 plug & play
- ◆ 16 Mbyte EDO RAM (max 256Mb)
- ◆ Fast PCI Enhanced IDE controller
- ◆ 1.08 Gb Fast IDE hard disk drive
- ◆ Quad Speed CD ROM drive
- ◆ MESH Multimedia Kit 1 (see bottom of page)
- ◆ 2 fast serial UART 16550 & 1 bi-directional parallel ports
- ◆ 2 Mbyte VRAM Stealth PCI Accelerator with Software MPEG Decode
- ◆ 15" SVGA NI Monitor (non-interlaced to 1024x768, low radiation, 0.28 pitch, Energy Star)
- ◆ 1.44 Mbyte 3.5" Floppy Drive
- ◆ 102 Key Keyboard
- ◆ Microsoft Original Mouse
- ◆ Windows 95 c/w disks & manuals
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Upgrade RAM	32Mb £460	64Mb £1200
Upgrade Hard disk	1Gb SCSI* £295	2Gb SCSI* £495
Upgrade Monitor	17" ADI SVGA £195	17" Idek SVGA £299
Upgrade Graphics	2Mb Matrox VRAM £20	4Mb VRAM/WRAM £110

* Includes Adaptec 2940 PCI controller (2Gb, 4Gb & 9Gb options available)

Upgrade RAM	32Mb £460	64Mb £1200
Upgrade Hard disk	1Gb SCSI* £295	2Gb SCSI* £495
Upgrade Monitor	17" ADI SVGA £195	17" Idek SVGA £299
Upgrade Graphics	2Mb Matrox VRAM £20	4Mb VRAM/WRAM £110

* Includes Adaptec 2940 PCI controller (2Gb, 4Gb & 9Gb options available)

Upgrade RAM	32Mb £460	64Mb £1200
Upgrade Hard disk	1Gb SCSI* £295	2Gb SCSI* £495
Upgrade Monitor	17" ADI SVGA £195	17" Idek SVGA £299
Upgrade Graphics	2Mb Matrox VRAM £20	4Mb VRAM/WRAM £110

* Includes Adaptec 2940 PCI controller (2Gb, 4Gb & 9Gb options available)

MESH SERVICE

Our customer service strategy is an integral part of our business and we give it greater emphasis than almost anything else including...

- Initial consultation
- Lifetime technical support
- Over 500 engineers country wide

We can create training programs, tailored to your needs, for...

- Individuals
- Teams
- At our training suite or in-house

Our systems are designed to be fully upgradable, a service that we gladly offer...

- Every customer
- For the lifetime of the machine
- With warranty options

MULTIMEDIA KIT 1

- Soundblaster Vibra 16 Sound Card
- Amplified Speakers
- 6 CD ROMs (see below for details)

All Mesh Elite⁹⁵ Pro PCs are supplied with Quad Speed CD ROM drive as standard. To upgrade to 6 speed IDE CD ROM drive add £95.

* Personal finance prices shown are for illustration purposes based on 10% deposit with the balance paid over 36 months and are subject to status (14.9% APR). Please call for details and a quote. Prices exclude VAT (1.7.5%) and delivery (£18 + VAT within mainland UK).

Windows 95

Designed for

 Microsoft
 Windows 95

3 MONTH DEFERRED PAYMENT SCHEME
 Please call for details

Windows 95 is undoubtedly more usable than Windows 3.11 in a way that accommodates the needs of its expected major user groups... So should you upgrade to the much hyped Windows 95? The answer is a clear Yes. It's a better product than its predecessor and opens far more doors to far more people." **PC Magazine** (Usability Approved) October, 1995

IS2 LAN Manager TCP/IP NT NOVELL 

MESH Elite Pro 120

MESH Elite Pro 133

MESH NT WorkStation



Mesh Elite Pro 120

File Edit View Help

- ◆ Pentium P120 Processor
- ◆ Intel Triton chipset Motherboard
- ◆ Upgradeable to 180MHz Pentium & P6
- ◆ 256Kb Pipeline Burst Mode cache
- ◆ Full Windows 95 plug & play
- ◆ 16 Mbyte ED0 RAM (max 256Mb)
- ◆ Mode 5 PCI Enhanced IDE controller
- ◆ 1.08 Gb Fast IDE hard disk drive
- ◆ 6 Speed CD ROM drive
- ◆ MESH Multimedia Kit 2 (see bottom of page)
- ◆ 2 fast serial UART 16550 & 1 bi-directional parallel ports
- ◆ 2 Mbyte Matrox Millenium WRAM PCI Graphics Accelerator
- ◆ 17" Idek Iiyama Visionmaster monitor
- ◆ 1.44 Mbyte 3.5" Floppy Drive
- ◆ 102 Key Keyboard
- ◆ Microsoft Original Mouse
- ◆ Windows 95 c/w disks & manuals
- ◆ Desktop/Tower case c/w TUV approved 200W PSU
- ◆ Comprehensive 1st year parts & labour Warranty
- ◆ Free Lifetime Technical Support

Mesh Elite Pro 133

File Edit View Help

- ◆ Pentium P133 Processor
- ◆ Intel Triton chipset Motherboard
- ◆ Upgradeable to 180MHz Pentium & P6
- ◆ 256Kb Pipeline Burst Mode cache
- ◆ Full Windows 95 plug & play
- ◆ 16 Mbyte ED0 RAM (max 256Mb)
- ◆ Mode 5 PCI Enhanced IDE controller
- ◆ 1.08 Gb Fast IDE hard disk drive
- ◆ 6 Speed CD ROM drive
- ◆ MESH Multimedia Kit 2 (see bottom of page)
- ◆ 2 fast serial UART 16550 & 1 bi-directional parallel ports
- ◆ 2 Mbyte Matrox Millenium WRAM PCI Graphics Accelerator
- ◆ 17" Idek Iiyama Visionmaster monitor
- ◆ 1.44 Mbyte 3.5" Floppy Drive
- ◆ 102 Key Keyboard
- ◆ Microsoft Original Mouse
- ◆ Windows 95 c/w disks & manuals
- ◆ Desktop/Tower case c/w TUV approved 200W PSU
- ◆ Comprehensive 1st year parts & labour Warranty
- ◆ Free Lifetime Technical Support

NT WorkStation

File Edit View Help

- ◆ Pentium P90 Processor (P100, P120, P133 and P150 add P.O.A.)
- ◆ Intel Triton chipset Motherboard
- ◆ 256Kb Pipeline Burst Mode cache
- ◆ Full Windows 95 & NT Support
- ◆ 32 Mbyte ED0 RAM (max 256Mb)
- ◆ DPT 2420 SCSI-II Controller with 4Mbyte Caching Module
- ◆ 2Gbyte SCSI-II Drive
- ◆ 6 Speed SCSI CD ROM drive
- ◆ 2 Mbyte VRAM Stealth PCI Accelerator with Software MPEG Decode
- ◆ 21" IDEK Iiyama Monitor
- ◆ US Robotics Sportster Fax/Modem
- ◆ 2 fast serial UART 16550 & 1 bi-directional parallel ports
- ◆ 1.44 Mbyte 3.5" Floppy Drive
- ◆ 102 Key Keyboard, Microsoft Original Mouse
- ◆ Microsoft Windows NT Workstation
- ◆ MESH Combo Network Card
- ◆ Tower case c/w TUV approved 200W PSU
- ◆ Comprehensive 1st year parts & labour Warranty
- ◆ Free Lifetime Technical Support

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£4895 + VAT (E5772.77 inc. VAT + delivery)
 EASY FINANCE APR 14.9% Only £178 per month!

Upgrade RAM	32Mb £460	64Mb £1200
Upgrade Hard disk	1Gb SCSI* £295	2Gb SCSI* £495
Upgrade Monitor	20" Hitachi SVGA £495	21" Idek SVGA £895
Upgrade Graphics	4Mb VRAM/WRAM £110	

* Includes Adaptec 2940 PCI controller (2Gb, 4Gb & 9Gb options available)

Upgrade RAM	32Mb £460	64Mb £1200
Upgrade Hard disk	1Gb SCSI* £295	2Gb SCSI* £495
Upgrade Monitor	20" Hitachi SVGA £495	21" Idek SVGA £895
Upgrade Graphics	4Mb VRAM/WRAM £110	

* Includes Adaptec 2940 PCI controller (2Gb, 4Gb & 9Gb options available)

MULTIMEDIA KIT 2

- ◆ AWE32 Wavetable (value pack) Sound Card
 - ◆ Power Speakers
 - ◆ 6 CD ROMs (see below for details)
- MESH Elite Pro PCs are supplied with Quad Speed CD ROM drive as standard. To upgrade 6 speed IDE CD ROM drive add £95.
- Kits 1 & 2 include Microsoft Encarta, Dangerous Creatures, Works for Windows, Money, Golf, CD Sampler, Entertainment Pack & Scenes. Plus CD Power: over 400 additional programmes & files.

Superb FREE Fiorucci hamper!



Celebrate the purchase of your new MESH PC with a unique Christmas present from us - a superb hamper from Italy's leading supplier of speciality foods.
(Call for further details. Subject to availability.)

MESH COMPUTERS

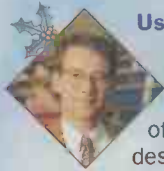
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MESH COMPUTERS PLC 0181 452 1111 SHOWROOM OPEN 10AM - 6PM (MON - FRI) & 10AM - 2PM (SAT)

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RELINED Burst Mode MODE 5 IDE DIAMOND Stealth PCI

MESH Elite⁹⁵ PCs - the



Using the experience we have gained from creating quality systems for over **160,000** satisfied customers during the last **8** years, **MESH Computers Plc** now bring you a range of award winning Pentium systems, specifically designed for **Elite** users.



The **MESH Elite⁹⁵** range is built to the highest standards and competes effectively at the leading edge of technology. Our Business Solutions Division encompasses **Networking, Software Development and Systems Migration** - ensuring you get a system exactly tailored to your needs.

MESH Elite⁹⁵ 75

Now 15% faster



Model shown with optional Family Pack

"From the moment you unpack the **MESH Elite⁹⁵ 75**, there is a reassuring feel to the system... It arrives fully configured... and won't have a problem with expansion. The pricing is extremely competitive making this our favoured system in the review"

Computer Shopper "Best Buy" - September '95

- Pentium P75 Processor
- Intel Triton chipset Motherboard
- 256Kb Pipeline Burst Mode cache (System runs 15-20% faster than standard Pentium PCs)
- Full Windows 95 plug & play support
- 8 Mbyte RAM (max 256Mb)
- Fast PCI Enhanced IDE controller
- 850 Mbyte Fast IDE hard disk drive
- Quad Speed CD Rom drive (see MESH Multimedia for upgrade options)
- 2 fast serial UART 16550 & 1 bi-directional parallel ports
- 1 Mbyte Stealth PCI Accelerator with Software MPEG Decode
- 14" SVGA Non-interlaced Monitor
- 1.44 Mbyte 3.5" Floppy Drive
- 102 Key Keyboard, Microsoft Original Mouse
- See below for Operating System options
- Desktop case/Mini tower c/w TUV approved 200W PSU
- Comprehensive 1st year parts & labour Warranty
- Free Lifetime Technical Support



MESH Elite⁹⁵ 90

Now 15% faster



Model shown with optional Family Pack

"A low cost Pentium system with the latest Triton chipset motherboard, large capacity hard disk, offering good performance and complemented by a 15" monitor. **Good value**"

Computer Buyer "Recommended" - June '95

- Pentium P90 Processor
- Intel Triton chipset Motherboard
- 256Kb Pipeline Burst Mode cache (System runs 15-20% faster than standard Pentium PCs)
- Full Windows 95 plug & play support
- 8 Mbyte EDO RAM (max 256Mb)
- Fast PCI Enhanced IDE controller
- 850 Mbyte Fast IDE hard disk drive
- Quad Speed CD Rom drive (see MESH Multimedia for upgrade options)
- 2 fast serial UART 16550 & 1 bi-directional parallel ports
- 1 Mbyte Stealth PCI Accelerator with Software MPEG Decode
- 15" SVGA NI Monitor (non-interlaced to 1024x768, low radiation, 0.28 pitch, Energy Star)
- 1.44 Mbyte 3.5" Floppy Drive
- 102 Key Keyboard, Microsoft Original Mouse
- See below for Operating System options
- Desktop case/Mini tower c/w TUV approved 200W PSU
- Comprehensive 1st year parts & labour Warranty
- Free Lifetime Technical Support



MESH Elite⁹⁵ 100

Now 15% faster



Model shown with optional Family Pack

"We felt that the **MESH Elite⁹⁵ 100** offered the most overall and clearly deserved the Best Buy... As Intel introduces more and more powerful Pentium chips, even 100Mhz power is within the means of a much wider range of buyers" **What PC? "Best Buy"** - September '95

- Pentium P100 Processor
- Intel Triton chipset Motherboard
- 256Kb Pipeline Burst Mode cache (System runs 15-20% faster than standard Pentium PCs)
- Full Windows 95 plug & play
- 8 Mbyte EDO RAM (max 256Mb)
- Fast PCI Enhanced IDE controller
- 850 Mbyte Fast IDE hard disk drive
- Quad Speed CD Rom drive (see MESH Multimedia for upgrade options)
- 2 fast serial UART 16550 & 1 bi-directional parallel ports
- 1 Mbyte Stealth PCI Accelerator with Software MPEG Decode
- 15" SVGA NI Monitor (non-interlaced to 1024x768, low radiation, 0.28 pitch, Energy Star)
- 1.44 Mbyte 3.5" Floppy Drive
- 102 Key Keyboard, Microsoft Original Mouse
- See below for Operating System options
- Tower/desktop case c/w TUV approved 200W PSU
- Comprehensive 1st year parts & labour Warranty
- Free Lifetime Technical Support



£999 (£1194.97 inc. VAT + delivery)

EASY FINANCE APR 18.5% Only £38 per month*

Upgrade RAM	16Mb £230	32Mb £600
Upgrade Hard disk	1Gb £40	1Gb SCSI* £410
Upgrade Monitor	15" FST SVGA £70	17" FST SVGA £265
Upgrade Graphics card	2Mb DRAM PCI £39	2Mb VRAM £119

Operating System* MS DOS 6.22 & WFWG 3.11 £49 Windows 95 £69
 * Includes Adaptec 2940 PCI controller (2Gb, 4Gb & 9Gb options available)
 * Operating System supplied with disks and manuals.

£1199 (£1429.97 inc. VAT + delivery)

EASY FINANCE APR 18.5% Only £46 per month*

Upgrade RAM	16Mb £230	32Mb £600
Upgrade Hard disk	1Gb £40	1Gb SCSI* £410
Upgrade Monitor	17" ADI SVGA £195	17" Idek SVGA £299
Upgrade Graphics card	2Mb DRAM PCI £39	2Mb VRAM £119

Operating System* MS DOS 6.22 & WFWG 3.11 £49 Windows 95 £69
 * Includes Adaptec 2940 PCI controller (2Gb, 4Gb & 9Gb options available)
 * Operating System supplied with disks and manuals.

£1299 (£1547.48 inc. VAT + delivery)

EASY FINANCE APR 18.5% Only £49 per month*

Upgrade RAM	16Mb £230	32Mb £600
Upgrade Hard disk	1Gb £40	1Gb SCSI* £410
Upgrade Monitor	17" ADI SVGA £195	17" Idek SVGA £299
Upgrade Graphics card	2Mb DRAM PCI £39	2Mb VRAM £119

Operating System* MS DOS 6.22 & WFWG 3.11 £49 Windows 95 £69
 * Includes Adaptec 2940 PCI controller (2Gb, 4Gb & 9Gb options available)
 * Operating System supplied with disks and manuals.

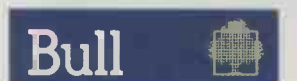
† Personal finance prices shown are for illustration purposes based on 10% deposit with the balance paid over 36 months and are subject to status (14.9% APR). Please call for details and a quote. Prices exclude VAT (17.5%) and delivery (£18 + VAT within mainland UK).

MESH SERVICE

Our customer service strategy is an integral part of our business and we give it greater emphasis than almost anything else including...

- Initial consultation
- Lifetime technical support
- Over 500 engineers country wide
- We can create training programs, tailored to your needs, for...
- Individuals
- Teams
- At our training suite or in-house
- Our systems are designed to be fully upgradable, a service that we gladly offer...
- Every customer
- For the lifetime of the machine
- With warranty options

Prices exclude VAT (17.5%) and delivery (£18 + VAT within mainland UK). Prices and specification subject to change without notice. All sales subject to Mesh Computers PLC Terms and Conditions of Sale which are available on request.



Call for on-site warranty options

SHOWROOM OPEN 10AM - 6PM (MON - FRI) & 10AM - 2PM (SAT)

Editors' choice.

Designed for

 Microsoft
 Windows 95

Whether you have just started up and are looking to computerise for the first time or want to expand an existing network system - we have a separate division that concentrates solely on business systems. All MESH systems can be configured to run with the market leading Network Operating Systems, including:-

 LAN Manager

TCP/IP

 NT

 NOVELL


 Windows 95

MESH ^{Now 15% faster} Elite⁹⁵ 120/133



Model shown with optional Family Pack

PC Magazine's Editor's Choice is an assurance of quality, power and performance. By combining the Pentium P120CPU, latest Intel Triton chipset board, EDO RAM, Burst Mode cache, ADI monitor, Mode 4 hard disk, Matrox Millennium, Microsoft Mouse and, of course, our own expertise - we give you the ultimate PC.

- Pentium P120 Processor (P133 add £100)
- Intel Triton chipset Motherboard
- 256Kb Pipeline Burst Mode cache (System runs 15-20% faster than standard Pentium PCs)
- Full Windows 95 plug & play
- 16 Mbyte EDO RAM (max 256Mb)
- Mode 5 PCI Enhanced IDE controller
- 1 Gbyte Mode 4 hard disk drive
- 6 Speed CD Rom drive (see MESH Multimedia for upgrade options)
- 2 fast serial UART 16550 & 1 bi-directional parallel ports
- 2Mbyte Diamond Stealth VRAM PCI Graphics Accelerator or 2 Mbyte Matrox Millennium WRAM PCI
- 15" ADI SVGA NI Monitor
- 1.44 Mbyte 3.5" Floppy Drive
- 102 Key Keyboard, Microsoft Original Mouse
- See below for Operating System options
- Tower/desktop case c/w TUV approved 200W PSU
- Comprehensive 1st year parts & labour Warranty
- Free Lifetime Technical Support















MESH Multimedia





Mesh Professional Pack shown with Elite mini tower PC

MESH Computers Plc were the first to bring you a system with 6 speed CD ROM. We are proud to present the first MPC3 compatible Multimedia machine.

As specifications change monthly, standards are becoming more and more important - none more so than the MPC standard that defines multimedia. The combination of a powerful MESH Elite⁹⁵ PC, Polyphonic Wavetable Multimedia and the latest hardware MPEG decoder will give you a system designed to the highest standard, the latest standard... MPC3!

MESH Family Pack - MM KIT 1

- Soundblaster Vibra 16 Sound Card
- Amplified Speakers (see below for details)
- 6 CD ROMs

£135 + VAT

All Mesh Elite⁹⁵ Elite PCs are supplied with Quad Speed CD ROM drive as standard. To upgrade to 6 speed IDE CD ROM drive add £95.

MESH Professional Pack - MM KIT 2

- AWE32 Wavetable (value pack) Sound Card
- Power Speakers (see below for details)
- 6 CD ROMs

£195 + VAT

All Mesh Elite⁹⁵ Elite PCs are supplied with Quad Speed CD ROM drive as standard. To upgrade to 6 speed IDE CD ROM drive add £95.

MESH MPC3 - MM KIT 3

- Requires MESH Elite⁹⁵ PC c/w 850Mb Hard disk
- Mesh Professional Pack-MM Kit 2
- VideoLogic MPEG Decoder
- GrafixStar 300 2Mb DRAM Graphics Accelerator





£499 + VAT

CD ROM Titles included:

All the above MESH Multimedia Kits include Microsoft Encarta, Dangerous Creatures, Works for Windows, Money, Golf, CD Sampler, Entertainment Pack & Scenes. Plus CD Power: over 400 additional programmes & files.



Technology Update

UPGRADE MESH Elite⁹⁵ PCI Motherboard

Uses the latest Intel Triton chipset, with full support for both EDO Ram and Burst Mode Cache, as well as our integrated Mode 5 Enhanced IDE Controller. This superb motherboard allows single chip upgrades through to Pentium 166 and beyond.



MESH Elite⁹⁵ Pentium Power

The most powerful processors available today, have the dual-processor architecture necessary to fully exploit Windows 95, NT and OS/2 32-bit applications.

TRITON Intel Triton Chipset CHIPSET

Design specifically for the latest generation of Pentium processors, it supports the latest memory sub-systems including EDO Ram and Pipeline Burst Mode Cache.



Burst Mode Cache

Synchronised with your systems main memory, Burst Mode SRAM spends less time "hand shaking" and more time working. Your Pentium processor isn't kept waiting and, as a result, the system can run 20% quicker.



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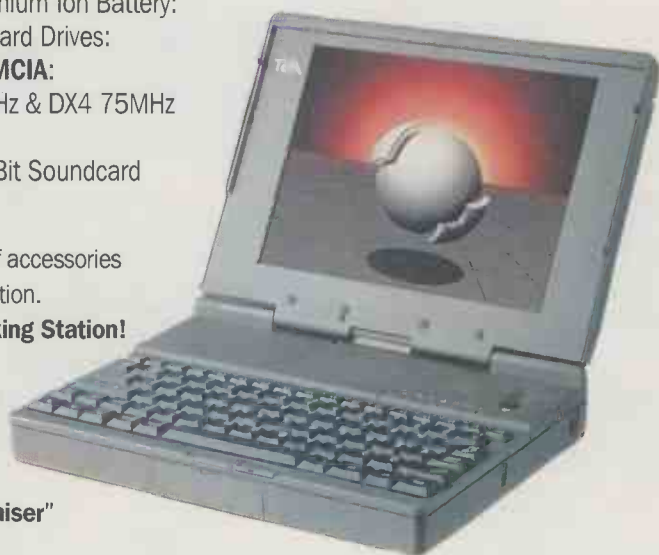


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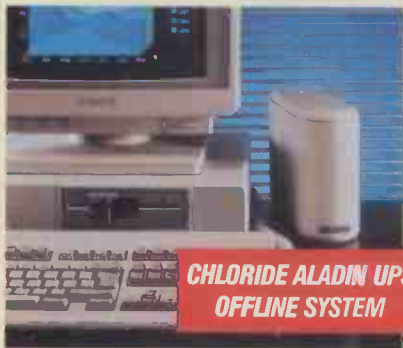
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Floppy Disk Drive: Built-in 3.5" 1.2MB/1.44MB Floppy Disk Drive
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Display: VGA 32-bit VESA LB architecture; 1MB Video RAM; 9.4" screen, 256 colours
Audio System: Built-in speaker/mic.
PCMCIA Interface: PCMCIA 2.0 standard compliant; 1xType III, 1xType II slots

I/O Interfaces: 1xEPP/ECP compliant Parallel Port; 1x16C550 compliant Serial Port; 1x15-pin External Monitor connector; 1xExternal Keyboard connector; 1x200-pin VESA Bus Docking Station connector
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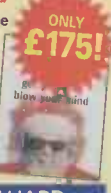
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4Gb ST15150N Barracuda 8ms SCSI-2	£1,045
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1Mb 9FX Vision 531 PCI or VLB	£134
2Mb 9FX Vision 330 PCI or VLB	£138
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4Mb Imagine 128 1600 PCI or VLB	£599
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Plextor 4PLEX External Quad Speed	£359
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LQ1070+ 24-pin Dot Matrix	£303
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PB4-256

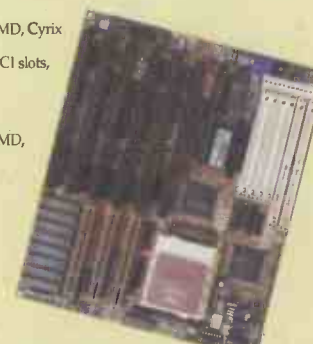
- 1/2 Baby AT size board. 486SX, SX2, DX, DX2, DX4 Intel, AMD, Cyrix Processors, 256K write-back cache,
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- 2 PCI IDE channel and floppy controller
- 2 serial 16550 UART, 1 parallel ECP/EPP

GA-486AM

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- 2 PCI fast IDE channel and floppy controller
- 2 serial 16550 UART, 1 parallel ECP/EPP

PCI48AL

- 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

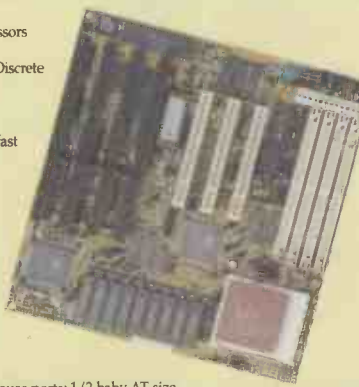
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Pentium™-90	£179	£304	£314	£328
Pentium™-100	£205	£330	£340	£354
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- Up to 128MB RAM Fast Page and EDO support
- SIS Chipset; Plug and Play AWARD BIOS; 4 PCI slots, 3 ISA slots
- 2 PCI E-IDE channel (mode 3/4) & floppy controller 2.88; 2 serial fast UART 16550 compt., 1 parallel ECP/EPP; 1 serial/2 mouse ports; 1/2 baby AT size

PCI54IT

- Intel P54C/CT 75/90/100/120/133/150/166/180/200MHz processors
- 256K or 512K write-back cache; Up to 64MB RAM
- Pipelined Burst Synchronous module, Asynchronous module, or Discrete Asynchronous on board
- 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 parallel ECP/EPP; 1 serial/2 mouse ports; 1/2 baby AT size




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HEWLETT PACKARD	4MB	8MB	16M	32M	64M
HP 3000 9x7 SERIES 937; 947; 957; 967; 977; 987; 9x7LX SERIES 917LX; 927LX; 937LX; 947LX; 957LX; 967LX; 9000 SERIES 807S; 817S; 827S; 837S; 847S; 857S; 867S; 877S; 887S; 897S			520	980	1800
HP APOLLO 9000 SERIES 375; 380; 400d; 400s; 400t; 425s; 425t; 433s	160	275	500	920	
HP APOLLO 9000 SERIES 382; 425e	160	275	500		
HP APOLLO 9000 SERIES 700/RX 16Ca; 16C; 19Ca; 19M	140	260			
HP APOLLO 9000 SERIES 705; 710		300	560	1000	
HP APOLLO 9000 SERIES 745; 747; 715/33; 715/50; 725/50		300	560	1000	1950
HP APOLLO 9000 SERIES 720; 730; 735; 750; 755			560	1000	1950
IBM	4MB	8MB	16M	32M	64M
XSTATION 120; 130	140				
RS/6000 POWERSTATION/ POWERSERVER 220 SERIES	140	260			
RS/6000 POWERSTATION/ POWERSERVER 320; 320E; 320H; 340; 340R; 350; 350R; 520; 520H; 530; 530E; 530H; 550; 550E; 550S; 560; 560F; 580; 730; 930; 950; 970; 980			780	1150	2100
SUN MICROSYSTEMS	4MB	8MB	16M	32M	64M
MODEL 3/60; 3/80; 4/110	140		440		
SPARCSTATION ELC (4/25); IPX (4/50)			420		
SPARC SERVER/ SPARCSTATION 330; 370; 390		260			
SPARCSTATION SLC (4/20)	140				
SPARCSTATION IPC (4/40); 1 (4/60); 1+ (4/65); 2 (4/75)	140		440		
SPARCSTATION CLASSIC LC (4/15); LX (4/30)		260		880	
SPARC SERVER/ STATION/ ENGINE 10 MODEL 30; MODEL 41; MODEL 52/ 54			500		1850
SPARC SERVER 630MP; 670MP; 690MP					1850

DESKTOP MEMORY

AST	2MB	4MB	8MB	16M	32M	64M
ADVANTAGE 386SX/20; 386SX/25; PRO 386SX/25 BRAVO 3/25s; 3/33s	56		220			
ADVANTAGE 486/25; 486/33; 486/33p; 486SX/20; BRAVO 4/33(original); 486/25 PREMIUM 386/33TE; 486/25; 486/25E; 486/25TE; 486/33; 486/33E; 486/33TE PREMIUM II 386/33; 386/33; 486/33; 486SX/20. POWER PREMIUM 3/33; 4/33; 4/33s; 4/50d; 4/66d; PREMIUM SERVER SE 4/33	60		300			
ADVANTAGE PRO 486DX/33; 486SX/25; BRAVO 4/25s; 4/33; 4/33s; 4/50d; 4/66d BRAVO LC 4/25s; 4/33; 4/33s; 4/50d; 4/50s; 4/66d; 4/100t BRAVO LP 4/25s; 4/30s; 4/33; 4/33s; 4/66d; BRAVO MS 4/50s; 4/66d; 4/100t; P/60; P/90; P/100; BRAVO MT 4/33; 4/33s; 4/50s; 4/66d; P/60	80	115	220	380	720	
ADVANTAGE PLUS 486DX/33; 486DX/50; 486DX/66		115	220	400		

AST (CONT.)	2MB	4MB	8MB	16M	32M	
BRAVO 286's; 386SX/16; 386SX/20; 386SX/25	70		210			
PREMIUM 386; 386C		120				
PREMIUM 386/25; 386/33; 386/33T; 386SX/16; PREMIUM II 386SX/20; 386SX/25 PREMIUM SERVER SE 4/50; 4/66; CUPID MEMORY BOARD		140				
PREMMIA 4/33; 4/33s; 4/50d; 4/66d; PREMMIA SE 4/66d; P/60; PREMMIA MTE 4/66d; P/60	150	270	500	920		
PREMMIA GX P/90; P/100; PREMMIA LX P/60; PREMMIA MX 4/66d; 4/100t; P/60			240	470	810	
COMPAQ	2MB	4MB	8MB	16M	32M	
DESKPRO 286N; 3/25; 3/33; 386/25M; 386/33M; 386N; 386s/20; 386s/20N; 4/25S; 4/33; 4/66; 486/33M; 486s/16M; 486s/25M; 486DX/250M; 486DX/266M; DESKPRO XE 4/33s; 4/50; 4/66; PROLIANT 1000 486DX/266; ENHANCED PROLINEA PROLINEA 4/25s; 4/33; 4/33s; CDS; 4/50; 4/66; NET 1/25e; 1/25s; 1/25r; PROLINEA MT 4/33s; 4/50; 4/66; PROSARIO 400; 425; 433; 520; 520 CDTV; 600; 633; 660; 720 CDS; 724; 800; 833 CDS; 850; 866; 860 CDS; 920 CDS; 920 CDTV; 924; 924 CDS; PROSIGNIA PC SERVER 486/33; 486DX/266; PROSIGNIA VS; SYSTEMPRO/ LT 386/25; 386/33; 486/33; 486DX/50; 486SX/25	75	130	240	400	790	
DESKPRO 386/33; 386/33L; 486/25; 486/33L; 486/50L; SYSTEMPRO 386/33; 486/33	80		280		1000	
DESKPRO 5/60M; 5/66M; XE 5/60; PROLIANT 1000 5/60; PROLIANT 2000 486/50; 5/66; PROLIANT 4000 486/50; 5/66; PROSIGNIA PC SERVER 5/60; 5/90			280	520	960	
PROLINEA 3/25s; 3/25zs	56		220			
SYSTEMPRO /XL 486/50; PENTIUM	1MB	2MB	4-8MB	8MB	4MB MOD.	4MB BOA
DESKPRO 386/16	80	180	320	470	150	185
					150	185
DESKPRO 386/20; 386/20e; 386/25; 386/25e					150	185
DELL	2MB	4MB	8MB	16M	32M	6
SYSTEM 316SX; 320SX (REV.1); 325SX	70					
SYSTEM 320SX (REV.2); 325D; 325P; 333D; 333P; 433P		130				
DIMENSION 386DX/33; 486SX/25; 486SX/33; 486DX/50; LOW PROFILE DESKTOP 486P/16; 486P/20; 486P/25; 486P/33; LOW PROFILE POWER DESKTOP 486P/50; 486P/66; NETPLEX P SERIES; POWER DESKTOP 486D/16; 486D/20; 486D/25; 486D/33; 486D/50; 486D/66; PRECISION 386DX/33; 486 SERIES	130	240	420	750		
DIMENSION XPS 450V; 466V; 4100; DIMENSION XPS midesize 466; DIMENSION XPS midesize 4100; OPTIPLX 433E; 450E; 466E; 4100E; 425s/L(V); 433L(V); 433s/L(V); 450L(V); 466L(V); 425s/M(V); 433M(V); 433s/M(V); 450M(V); 466M(V); PERFORMANCE 425s/L; 425s/M; 433L; 433M; 433s/L; 433s/M; 433T; 450L; 450M; 450T; 466L; 466M; 466T	130	240	420	750		
DIMENSION XPS P60; P60FS; P60MDT; P90; P90MDT; OMNIPLEX 433/ME; 450ME; 466ME; 4100ME; OPTIPLX XL590; XM590; POWEREDGE XE433; XE433s; XE450; XE466		240	470	810	1	
OMNIPLEX 560ME; 566ME; 590ME POWEREDGE SP433; SP450; SP466; SP560; SP566; XE560; XE566; XE590; XE5100		260	520	925	1	
OPTIPLX 425/Lx; 433/Lx; 450/Lx; 460/Lx; 4100/Lx OPTIPLX 425/Mx; 433/Mx; 450/Mx; 466/Mx; 4100/Mx	130	250	460	910		
PERFORMANCE 425s/ME; 433/ME; 433s/ME; 450ME; 466ME 4000XE SERIES 486/33; 486/50; 486/66		260		925		
SYSTEM 425TE; 433TE; POWERLINE WORKSTATIONS 420DE; 420SE; 425DE; 425SE; 433DE; 433SE; 450DE; 450DE/2; 450SE; 450SE/2; 466DE; 466SE	80	150	260	520		
HEWLETT PACKARD	2MB	4MB	8MB	16M	32M	6
NETSERVER LE SERIES 486DX/33; 486DX/66; 486SX/33; NETSERVER LM SERIES 4/33 LM; 4/66 LM; VECTRA 386/25 PC; 486/25M; 486/25MI; 486/25N; 486/25NI; 486/25T; 486/33U PC; 486/25V; 486/33M; 486/33MI; 486/33N; 486/33NI; 486/33ST; 486/33T PC; 486/33VL; 486/33VM; 486/50N; 486/50U PC; 486/50XM; 486/66XM; 486/66N; 486/66ST; 486/66U PC; 486/66VL; 486 PC; 486s/20; 486s/33M; 486s/33MI; 486s/33NI; 486s/33XM		130	260	460	910	
VECTRA 386/16N PC; 386/20N PC; 386/35N PC; 386/33N; 386/33NI	80		240			
VECTRA M2; N2; XM2; XP; XU; VECTRA VL2 4/25e; 4/33s; 4/33se; 4/50; 4/66; 4/100		130	260	460	910	
VECTRA QS/16S; QS/20; RS/20; RS/20C; RS/25; RS/25C		130				
IBM	1MB	2MB	4MB	8MB	16M	3
APTIVA 310; 330; 350; 510; 530; 710; 730; PC 300 (6571); (6573); (6575); (6581); (6583); (6585); PC 700 (6875); (6878); (6885); (6886)			120	230	400	7
PS/1 286 (2011); PS/1 386SX (2121)	80	140				
PS/1 PRO 386SX (2123); (2133- 72PIN); (2155- 72PIN); (2168- 72PIN) PS/Valuepoint (6381); (6382); (6384- 72PIN); (6387); (6472); (6482); (6484); (6492); (6494)	75	130	240	400		
PS/1 (2133- 30PIN); (2155- 30PIN); PS/VALUEPOINT (6384- 30PIN)		120		440		
PS/2 25/286; 30/286		75				
PS/2 25SX; 35LS; 35SX; 40SX; 50Z; 55LS; 55SX; 56; 56SLC LS; 56SX; 56LS; 57; 57SLC; 57SX; 60; 65SX; 70; 76; 77; 80; 90 XP 486; 95 XP 486 (8595); E (9533); SERVER 85; PREMIER PS/2 56; 57; 76; 77; ULTIMEDIA-M57; M77	40	75	130	240		
PS/2 95 XP 486 (9595); SERVER 95 (9595); SERVER 95 ARRAY (9595)			140	280	460	
PS/2 SERIES 16/32 BIT MCA MEMORY BOARD (6450609 & 34F3077)		190	250	360	600	



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PORTABLE MEMORY

AST	2MB	4MB	8MB	16MB
ADVANTAGE EXPLORER: ASCENTIA 700N; BRAVO NB		140		430
ASCENTIA 800N; 810N		140	270	460
ASCENTIA 900N; 910N		140	280	450
PREMIUM EXECUTIVE 286/12; 386SX/20, 386SX/25, 386SX/25C		140		
POWER EXECUTIVE 3/25SL; 3/25SL-C; 4/25SL (SE); 4/33SL; COLOUR; COLOUR PLUS; EL	75	140	260	430
POWER EXECUTIVE 4/25SL; COLOUR; COLOUR PLUS		140		450
CANON		2MB	4MB	8MB
NOTEJET 486/25 (BN-22)		75	130	250
NOTEJET II 486C50 (BN-32P)		75	130	250
NOTEJET 486C25 (BN-100C); 486C33 (BN-100C); 486M33 (BN-120); INNOVA 486NX			140	240
COMMODORE		2MB	4MB	
C286-LT; C386SX-LT (16 MHZ)			85	
C386SX-LT (20 MHZ)				180
COMPAQ	1MB	2MB	4MB	8MB
CONCERTO 4/25; 4/33; LTE ELITE			145	260 480
CONTURA 3/20; 3/25; 3/25C		75	130	240
CONTURA 4/25; 4/25C; 4/25CX, 4/25EX			140	260 480
CONTURA 400; 410			145	260 480
CONTURA AERO			140	240 480
LT 286	45	80	130	
LTE 386s/20	60	90	160	
LTE LITE/20; LITE/25; LITE/25C; LITE/25E		90	160	290 480
LTE LITE 4/25; 4/25C; 4/25E; 4/33C			145	260 480
PORTABLE 486/66; 486C/66	40	75	120	240
SLT 286	60		120	
SLT 386s/20	55	95	160	
DELL		2MB	4MB	8MB
212N; 320N; 320N+		80		
316LT; 320LT; 320LX		70		
320SLi; 325SLi		80		
LATITUDE 433; 433C; 433CX; 450C; 450CX			140	430
LATITUDE 433M; 433MC; 450NC; 450MCX			140	270 460
LATITUDE XP 450C; 450CX; 475C; 4100CX			130	245 435
NL20, NL25		80		
EVEREX		2MB	4MB	16MB
TEMPO CARRIER		80		
TEMPO LX		80		
STEPNOTE 486SX/33; 486DX/25; 486DX/4/75			130	435
IBM	1MB	2MB	4MB	8MB
AMBRA TREKA 386SL		75		
LEXMARK SE10		145		
PS/2 CL57SX; THINKPAD 700, 700C, 720, 720C		155	215	

IBM (CONT.)	1MB	2MB	4MB	8MB	16MB
PS/2 L40 SX; N33 SX; PS/NOTE 182		75	135	280	
PS/2 N51 SLC; N51 SX		75	135	265	
PS/2 P70 031; 061; 121; P75	40	75	130	240	
PS/NOTE 2618 C45; E35; M40, THINKPAD 350, 350C			120	235	410
PS/NOTE N45 SL		90			
THINKPAD 230C; 230Cs			130	260	
THINKPAD 300		75	255		
THINKPAD 330; 340; 355; 360; 730T			140	265	430
THINKPAD 360; 360C; 360CS; 360P; 750; 750C; 750Ce; 750Cs; 750P; 755C; 755Cs; 755Cd			140	265	430
THINKPAD 500; 510Cs			145	270	525
THINKPAD 710T		75	135	280	
THINKPAD TP701 SERIES			130	260	460
MITAC	4MB				
3026E	180				
PANASONIC	1MB	2MB	4MB	8MB	16MB
CF-170; 270; 370	40				
CF-380; 480C		90	170	240	
CF-580			140	480	
CF-1000			170		
CF-V21P (CD-NOTE); CF-41			150	270	480
PHILIPS	2MB	4MB			
PCL 300; 304	85	180			
SANYO	2MB				
17/NB; 18/NB; NB/6	80				
SHARP	1MB	2MB	4MB	8MB	16MB
PC 6200; 6220; 6240	55				
PC 6440		140			
PC 6600; 6621; 6641; 6661		90			
PC 6700; 6741; 6781; 6785; 6800; 6841; 6881; 6891		75	125		
PC 7700; 7750; 8150; 8650; 8650i; 8660			135	435	
PC 8501 COLOURSTAR		95			
PC 8700; 8900			140	245	460
TEXAS INSTRUMENTS	1MB	2MB	4MB	8MB	16MB
TRAVELMATE 2000	60				
TRAVELMATE 3000; 3000 WinSX; WinSLC/25		80			
TRAVELMATE SERIES 4000 Win; 4000E Win; 4000M			160	790	
TOSHIBA	2MB	3MB	4MB	8MB	16MB
DYNAPAD T100NX			145		
T1000LE; 1000SE; 1000XE; 1800; 1850; 1850C; 2000; 2000SX; 2000SXe; 2200SX	40		145	260	
T1600	40				
T1900; 1900C; 1910; 1950; 1950CS; 1950CT; 1960; T4500; 4500C; 4600; 4600C; 4700; 4700CS; 4700CT; 4800; 4850; 4900; DYNAPAD T200			145	280	540
T2100; 2105; 2150CT			150	280	520

TOSHIBA (CONT.)	2MB	3MB	4MB	8MB	16MB
T2400; 2450; 3400; 3600			140	260	480
T3100	60				
T3200		50			
T3300SL	80		145		
T4400C DX; 4400SX; 4400C SX; 4400SX; 6400DX; 6400DXC; 6400SX; 6400SX; 6600C; 6600C/CD; 6600C/CDV	80		150	260	480
T5200; 5200/100; 5200/200; 5200C; 8500	80			320	
TWINHEAD			4MB	8MB	16MB
SLIMNOTE 386SL; 386SX; 486SLC		145		440	
SLIMNOTE 330S; 550S; 550T; 575T; 5100T		145	260	470	
ZENITH	1MB	2MB	4MB	8MB	
SLIMSPORT 286; SUPERSPORT 286; 286e	50				
SUPERSPORT SX		100			
MASTERSPORT 386SL; 386SLe; II; ZDS-600nl; 620nl; 625nl; Z-STAR 433VL			80		
MASTERSPORT 386SX			80		
Z-SPORT 420S; 425S			160		
Z-STAR EX			140		
Z-NOTE 320L; 320Lb; 325L; 325Le; 325Lp		75		260	
Z-NOTE 200; 425Ln; 425Lnc; 425Lnp; 425Ln+; 425Lnc+; 433Ln+; 433Lnc+			145	295	
Z-NOTEFLEX			140	260	

LASER MEMORY

BROTHER	1MB	2MB	4MB	8MB
HL-4; 4PS; 4V; 4Ve	70	100	165	
HL-8; 8D; 8e; 8V	75	105		
HL-6V		105	165	
HL-10DPS; 10DV; 10PS; 10V		100	165	
HL-10h; 660; 1260	40	130	240	
HL-630; 641; 645	65	85		
CANON	1MB	2MB	3MB	4MB
LBP-4; 4 LITE; 4 PLUS	90	125		
LBP-4SX	65	95		
LBP-430; 8IV; 4I; 4U	40		130	
LBP-8II; 8IIR; 8IT	70	105	170	
LBP-8III; 8III PLUS	100	130	160	
LBP-8SX	75	100		
LBP-860; 1260	40	75	130	240
COMPAQ	2MB	4MB	8MB	16MB
PAGEMARQ 15; 20	80	150	240	440
EPSON	512	1MB	2MB	3MB
ACTIONLASER 1000; 1500; 5000; 5200	15		70	
ACTIONLASER 1100; 1400		40	70	115
ACTIONLASER 1600; EPL5600		40	75	135
ACTIONLASER II; EPL-4000; 4100; 4300; 8000; 8100		50	80	120
ACTIONLASER PLUS & EPL-6000		95		155
EPL-7000		60	95	125
EPL-7100; GQ-5000	24			

EPSON (CONT.)	512	1MB	2MB	3MB	4MB
EPL-7500			170		
HEWLETT PACKARD	256	1MB	2MB	4MB	8MB
DESKJET 500; 500C; 510; 520; 550C; 560C; PLUS	30				
DESIGNJET 200; 600; 650C; PLOTTER; DESKJET 1200; 1200C; 1200C/PS; LASERJET 4; 4 PLUS; 4M; 4MP; 4MV; 4M PLUS; 4P; 4Si; 4SIMX; 4V; COLOUR; 5		40	70	135	260
LASERJET II; IID		60	95	165	
LASERJET IIP; IIP PLUS; III; IIID; IIP; FAX		60	90	160	
LASERJET IIISi		40	70	115	240
LASERJET 4L		40			
PAINTJET XL300		95		185	300
IBM / LEXMARK	1MB	2MB	3.5	4MB	8MB
LASERPRINTER (4019-001); (4019-E01); PENNANT SYSTEM (4028)	65	95	140		
LASERPRINTER 5E(4029- 010); 6(4029-020); 6A(4029- 021); 10(4029-030); 10A(4029- 041); 10L(4029-040); (4037- 5E); VALUEWRITER 300; 600; WINWRITER 200; 400; 600	40	75		130	
LASERPRINTER 4039 10R; 10R DUPLX; 12L; 12R; 16L COLOUR JETPRINTER PS 4079; OPTRA L; Lx; LxR; R; Rx				130	250
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	
OL 400	65	95			
OL 400e; 400ex; 410e; 410ex	65	95	165		
OL 410; 810	65	95	165		
OL 800; 820	65	95	165		
OL 830; 840; 850		85			
OL1200			165	260	
PANASONIC	32K	1MB	2MB	4MB	
KXP-1124	15				
KXP-4410; 4430		65	95	165	
KXP-4420; 4450; 4451		65	95	165	
KXP-4400; 4401; 5400; SP100		55	85		
KXP-4440; 5410		60	80	160	
KXP-4450		70			
KXP-4455				110	
STAR		1MB	2MB	4MB	
LASERPRINTER 4; STARSRIPT	65	95	170		
LASERPRINTER LS-5; 5EX; 5TT	65	110	190		
LASERPRINTER 8; 8II	70	95	175		
TEXAS INSTRUMENTS		1MB	2MB		
MICROLASER; PLUS; PLUS PS; PS; TURBO; XL; XL PS; XL TURBO				45	
MICROWRITER PS17; PS35				55	90

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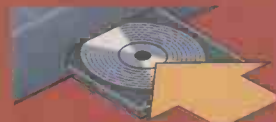
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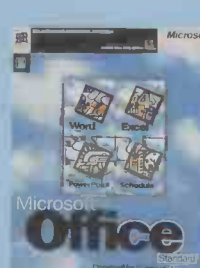


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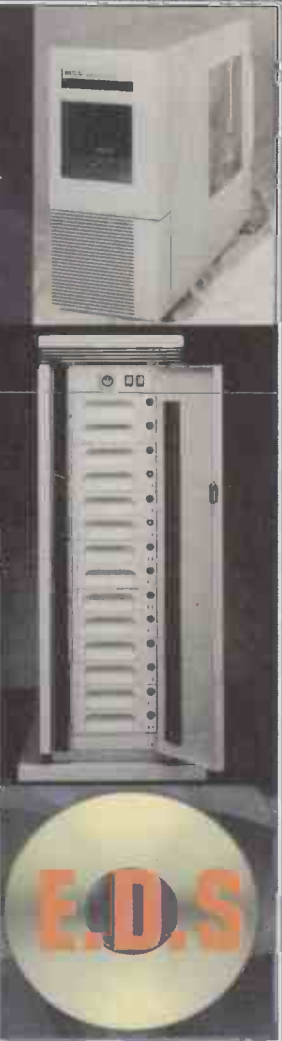
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3M Inkjet Film Removable Stripe (50)	19.95
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Epson Stylus Transparency (50)	48.95
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Apple Stylewriter I/II	14.95	
Canon BN22/32 (BJ1101)	4.25	
Canon BJ10/20 (BC01)	13.95	
Canon BJ200 (BC02)	15.95	
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Canon BJ30/70 TANKS 3's	10.75	
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Canon BJ70 TANKS 3's	8.95	13.95
CANON BJC-600 (BJ1-201)		
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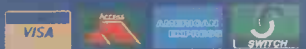


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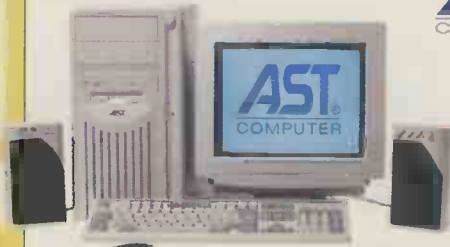
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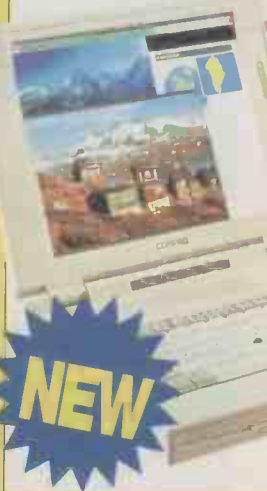


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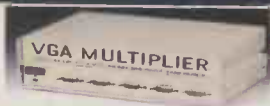
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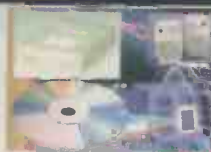
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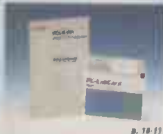
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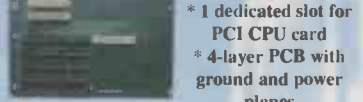
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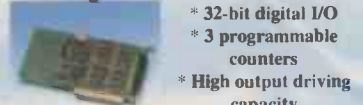
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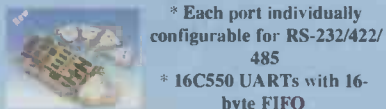
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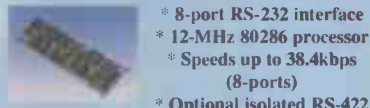
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71260AT 1.260Gb E-IDE, access time: 12ms, 256k cache, speed: 4500rpm	£189
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SCSI	
Conner - 5 Year Warranty	
CFP1080 ANVICUA 1080Mb access time: 11ms, speed: 5400rpm, 256k cache	£190
CFP2108 CAYMEN 2.108Gb access time: 9ms, speed: 5400rpm, 288k cache	£469
CFP2107 CAYMEN 2.105Gb access time: 9ms, speed: 7200rpm, 512k cache	£519
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M1603S 540Mb 3-Year Warranty, access time: 10ms, speed: 5400rpm, 128k cache MR	£127
M1606S 1.1Gb 5-Year Warranty, access time: 10ms, speed: 5400rpm, 128k cache MR	£208
M2932S 2.1Gb 5-Year Warranty, access time: 10ms, speed: 5400rpm, 512k cache MR	£519
M2934S 4.35Gb 5-Year Warranty, access time: 10ms, speed: 7200rpm, 512k cache MR	£749
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ST31230N Hawk Fast 1Gb Fast SCSI-2, access time: 10ms, 512k cache	£281
ST31230W Hawk Fast 1Gb Fast WIDE SCSI-2, access time: 10ms, 512k cache	£371
ST32430N Hawk Fast 2.1Gb SCSI-2, access time: 10ms, speed: 5400rpm, 512k cache	£538
ST32430W Hawk Fast 2.1Gb Fast WIDE SCSI-2, access time: 10ms, speed: 5400rpm, 512k cache	£693
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ST32520N Hawk Fast SCSI-2, 4.0Gb access time: 9ms, speed: 5400rpm, 512k cache, 1.6"	£739
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M3243AV 2Gb 8.5ms - Audio Visual	£639
M3243AV 4.2Gb 8.5ms - Audio Visual	£839
M1991AV 9.1Gb 12ms - Audio Visual	£1479

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2Gb SureStore 5400rpm, 9.5ms	£479
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- HP Laserjet 4M Plus £1289
- HP Laserjet 4SI £2053
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- HP Laserjet 4MV A3 Postscript Laser Printer £1967
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- NEC Superscript 660i 6ppm Laser £545
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- Panasonic KX-P-2023 24 Pin Mono Dot Matrix £107
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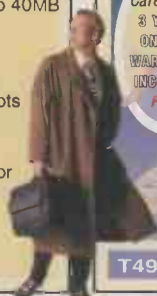
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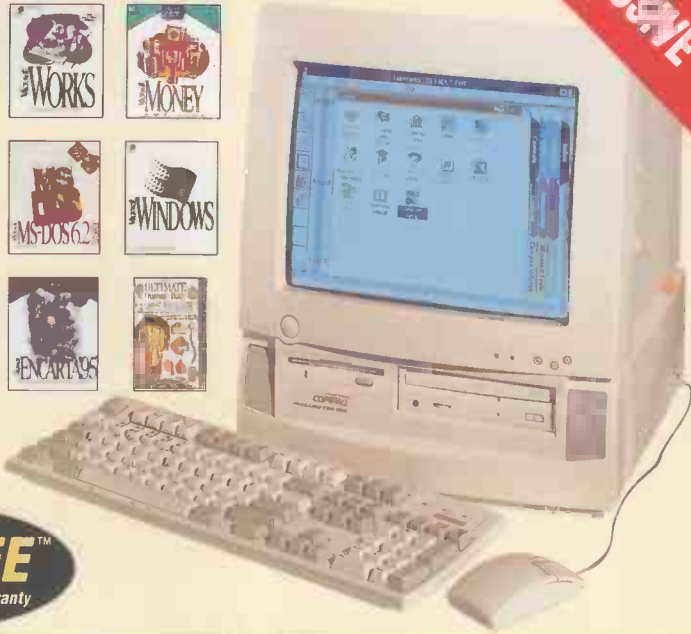
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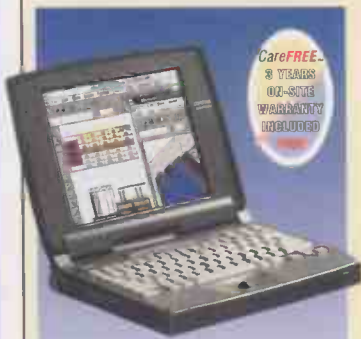
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- 2.5ppm with very fast return to application times
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- Built in Enhancements eliminate banding
- Smart drivers allow for image handling prior to printing
- Interchangeable colour and black cartridges
- Low running costs
- Suitable for MS DOS & MS Windows®
- 3 Year Warranty



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STYLUS COLOUR II

- 4ppm with very fast return to application times
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- PC Bi-direction Parallel and RS 422 Mac Support
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- 4 colour cartridge
- Low running cost
- Suitable for MS DOS & MS Windows®
- 3 Year warranty



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- 2.5ppm with very fast return to application times
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- Colour Kit available
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- 100 Sheet A4 input tray
- Small footprint
- Low running costs
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- HP PrintSmart
- 100 Sheet Tray

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NEW

HP LASERJET 5L

- 4ppm Print Speed
- 600 x 600dpi Resolution
- 1MB Memory Exp. to 9MB
- 26 Scalable Fonts
- HP PCL5e or HP PrintSmart

LaserJet 5L £355 LaserJet 5ML £749

HP DESKJET 660C

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- 600dpi (600 x 300dpi Colour) Resolution
- 14 Scalable Fonts
- HP PCL3 Emulation
- 100 Sheet Tray

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HP LASERJET 5P

- 6ppm Print Speed 600 x 600dpi Resolution
- 1MB Memory Exp. to 50MB
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- HP PCL5e Language
- Parallel Interface

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HP DESKJET 850C

- 6ppm Print Speed
- 600dpi (600 x 300dpi Colour) Resolution
- Supports PC and Mac
- 26 Scalable Fonts
- 150 Sheet Tray

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- 600 x 600dpi Resolution
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- Parallel Interface

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Panasonic MONITORS



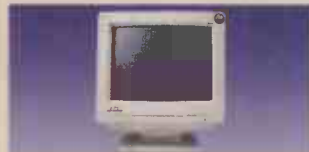
TX-D1562	£269
TX-D1733	£439
TX-D1733FU	£539
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Microlin FX34 PC Internal FX	£165
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Includes:

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8MB RAM Upgrade LTE Elite	£270
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Ethernet 10BT	£135
Token Ring	£235
V32bis Thumpcard	£375
V34bis Thumpcard	£475

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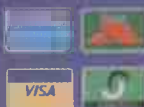
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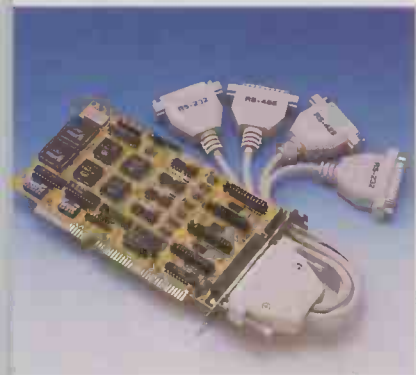
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High Quality AT Bus 4-Port Serial Communications Card. Shown above. Supplied with 16550 UARTs for baud rates to 115kbps

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- ▼ Interrupts IRQ2-7, 10-12, 15
- ▼ Transmit & Receive LEDs
- ▼ Compatible with Arnet 4-Port Card
- ▼ Can be used for adding 4 ports to Windows and SCO Unix
- ▼ Also supports RS422/RS485
- ▼ Supplied with 4-way cable set

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16550 Serial Card

Ideal for hardware requiring high speed communications. Highly recommended for Windows.

- ▼ Two 16550 serial ports COM1-COM4, IRQ2-5
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- ▼ Optional games port
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AT bus Serial Card

The most flexible 2-Port Serial Card on the market. Supports any port address and high interrupts. Perfect for COM1-COM4 under windows.

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- ▼ Port address 100H-3F8H
- ▼ 16 bit AT bus

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Add £20 for 16550 option

Dual RS422/RS485 Card

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 Best Engineered Multi-Channel Boards on the market today. The DigiCHANNEL PC/X is ideal for use in multi-user environments, most operating systems are supported with drivers available for DOS, XENIX, UNIX, OS/2, and many more.

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PC/4s	4-Port with 16550	£325
PC/8s	8-Port with 16550	£450
PC/16s	16-Port with 16550	£850

DigiBoard PC/Xe Cards

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.

PC/2e	2-Port Intelligent Card	£189
PC/4e	4-port Intelligent Card	£395
PC/8e	8-Port Intelligent Card	£495

Digiboard PC/Xem System

An Intelligent Modular System offering 16 to 64 high speed serial channels. The system comprises one host adapter with on-board 20MHz RISC processor and 1 to 4 external concentrators each providing 16 serial ports. Data rates of 115kbps can be achieved on 32 ports. Drivers for DOS, SCO UNIX, OS/2, Netware Connect and Windows NT.

PC/Xem	Host Adapter	£395
Ports/16m	Connector Box	£600

Isolated RS232 and Current-Loop Card

Providing 2 Isolated RS-232 or current loop serial ports with baud rates up to 56Kbps.

- ▼ Supplied with 16550 UARTs
- ▼ Provides 500VDC isolation
- ▼ Port address 200H - 3F8H
- ▼ Interrupts IRQ2-7, 10-12, 15
- ▼ 16-Bit AT bus

£119

Synchronous Serial Card

Single channel, multi-protocol communications adapter which uses an AMD 85C30-10 serial communications controller (SCC) as standard.

- ▼ RS232 interface
- ▼ Synchronous mode to 1.23M baud
- ▼ IRQ2-7, 10-12, 14-15
- ▼ DMA Channels 1 - 3

£220

Also Synchronous RS422/RS485 £220

Remote Data Acquisition Modules for RS485 Network

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

£99

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.

- ▼ Input for thermocouple, mV, V, or mA
- ▼ Input range 15mV to 2.5V, 20mA
- ▼ 10 samples per second
- ▼ 1 digital input / event counter
- ▼ 2 digital outputs
- ▼ Baudrate 1.2K to 19.2K

£165

ADAM Modules

ADAM 8ch Analog Input Module	£210
ADAM 8ch Thermocouple Module	£225
ADAM Analog Output Module	£165
ADAM Digital I/O Module	£119
ADAM Relay Output Module	£119
ADAM Counter/Frequency Module	£210
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.

- ▼ Powerful, easy to use software command set
- ▼ DMA & Interrupt
- ▼ On-board firmware driver
- ▼ 16 digital outputs
- ▼ Basic, Pascal & C drivers
- ▼ IEEE-488 cable 2m

£199

Digital I/O Card

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.

- ▼ 144 Digital I/O lines
- ▼ Buffered circuits for higher driving capacity than the 8255
- ▼ Interrupt handling
- ▼ Output status readback

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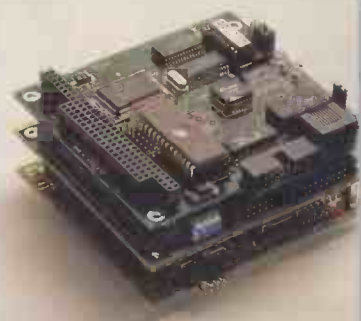
Wiring Kit & Relay Boards

Wiring Terminal Board	£35
Industrial Wiring Kit	£30
Isolated Digital input board 16ch	£99
Isolated Digital input board 24ch	£109
Relay Board 16ch, 120V 1A	£115
Relay Board 24ch, 120V 1A	£135
Relay Board 16ch, 250V 5A	£130
Relay Board 24ch, 250V 5A	£165
SSR Module Carrier Board 8ch	£70
SSR Module Carrier Board 16ch	£80
SSR Module 280V AC 3A	£9
SSR Module 60V DC 3A	£9

PC-104 MODULES

PC-104 Modules (shown below) simply stack together to form a compact modular PC-based system which has very low power consumption.

PC-104 386SX/33 CPU Module 1Mb	£299
PC-104 SVGA Display Module	£169
PC-104 Ethernet Module	£109
PC-104 Super I/O Module	£99
PC-104 RAM/ROM Disk Module	£89
PC-104 PCMCIA Memory Module	£250
PC-104 RS422/RS485 Module	£199
PC-104 Digital I/O Module	£129
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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
- ▼ 16 digital inputs
- ▼ 16 digital outputs
- ▼ Pacer Clock
- ▼ Timer/Counter
- ▼ DMA and Interrupt
- ▼ Wiring Terminal Board

£199

Industrial Workstation with 14" Colour CRT

Rugged heavy duty workstation for 19" rack or panel mounting.

- ▼ Highly integrated PC Workstation
- ▼ 1024 x 768 Colour CRT Monitor
- ▼ 27-key membrane keypad
- ▼ IP56/IP52 sealed hardened front panel
- ▼ Heavy duty aluminium and steel chassis
- ▼ 250-watt power supply
- ▼ 8 ISA slots

£1600

Industrial 19" Chassis

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.

- ▼ Supports 286/386/486 CPU Cards and Pentium CPU Card (ISA bus)
- ▼ Mounting for up to 4 drives
- ▼ Hold down clamp to protect plug in cards from vibration
- ▼ Positive air pressure inside generated by dual (push-pull) cooling fans
- ▼ Removable air filters

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Flash ROM Disk Card

Half-size solid state disk card fitted with 1Mb - 32Mb of Flash memory which can emulate hard disk drives C: or D: Simple installation, no software required, transparent operation. Auto-bootable. Read/write cycles, 100,000 writes minimum (typically 1,000,000), Reads unlimited. Supports DOS, Windows and QNX.

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Flash Disk Card 2Mb	£129
Flash Disk Card 4Mb	£199
Flash Disk Card 8Mb	£330
Flash Disk Card 16Mb	£599

High Performance A/D Card

The complete and cost-effective solution for your PC based automation needs.

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- ▼ 16 single-ended or 8 differential A/D inputs
- ▼ Built in 1K word FIFO
- ▼ Amplifier x0.5 to x1000
- ▼ 1 D/A Output
- ▼ 16 digital inputs
- ▼ 16 digital outputs
- ▼ Pacer Clock
- ▼ Timer/counter
- ▼ DMA and Interrupt
- ▼ Wiring Terminal Board

£375

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
- ▼ 640 x 480 colour TFT display
- ▼ 19" rack/panel mount
- ▼ IP56/IP52 front panel
- ▼ 200-watt power supply
- ▼ 8 ISA slots

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Relay Output and Isolated Digital Input Card

Offering 8 programmable electro-mechanical relays for ON/OFF control or small power switching, and 8 opto-isolated inputs which can be used as digital input under noisy environment or floating potential.

- ▼ 8 on-board SPDT relays
- ▼ LED indicators to show activated relays
- ▼ 8 opto-isolated digital input channels
- ▼ Easy to use and program

£109

Industrial Chassis + Intel Motherboard P100

Robust 19" Industrial Chassis fitted with Intel Motherboard P100. Ideally suited for heavy duty use in professions requiring Pentium processor power in a rugged industrial grade format.

- ▼ 19" Industrial Chassis 250W
- ▼ Intel Motherboard P100
- ▼ 4 ISA slots, 3 PCI slots
- ▼ 2 serial ports, 1 parallel
- ▼ 8Mb RAM, 256K cache
- ▼ 540Mb IDE Hard Drive
- ▼ 1.44Mb Floppy Drive
- ▼ PCI S3 Display Card

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Options: P120 add £125, P133 add £300, 16Mb RAM add £250, 1Gb Drive add £70. For other configurations, please call.

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CPU Card 486DX4/100 256K cache	£475
CPU Card Pentium/66 256K cache	£750
CPU Card Pentium/100 256K cache	£990
CPU Card Pentium/120 256K cache	£1060

Display and Keyboards

14" SVGA Colour Monitor	£225
Rack Mount Kit for 14" Monitor	£250
SVGA Display Card 1Mb ISA bus	£80
SVGA Display Card 1Mb PCI bus	£99
Rack Mounted Compact Keyboard	£199
Compact keyboard	£60
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Memory Components

Only supplied as part of a system	
SIMM 1Mb 72pin parity	£50
SIMM 4Mb 72pin parity	£140
SIMM 8Mb 72pin parity	£280
SIMM 16Mb 72pin parity	£460
SIMM 4Mb 72pin no parity	£125
SIMM 8Mb 72pin no parity	£250
SIMM 16Mb 72pin no parity	£420

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D/A Output Card 2ch.	£155
D/A Output Card 6ch.	£285
D/A Output Card 12ch.	£399
24 bit Digital I/O Card	£60
48 bit Digital I/O Card	£80.
32 ch Isolated Digital I/O Card	£105
32 ch Isolated A/D Card	£275
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Only supplied as part of a system.	
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Adaptec ISA SCSI Board only	£170
Adaptec PCI SCSI Master Kit	£220
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IDE Hard Drive 540Mb	£150
IDE Hard Drive 1Gb	£220
SCSI Hard Drive 1Gb	£350
SCSI Hard Drive 2Gb	£700

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Passive Backplane 14 slot	£70
Passive Backplane 20 slot	£130

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12w Speakers	14
25w Speakers	21
80w Speakers Bass, Treble	35

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Tape Streamer 800Mb Travan Int add	112
Microsoft Natural Keyboard add	50
250/280VA UPS (single PC) add	90
USR Sportster 14k4 modem add Vi Ext +/-/Net	89
USR Sportster 28k8 Int modem add +/-/Net	155

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16Mb EDO RAM instead of 8Mb add	180
32Mb EDO RAM instead of 8Mb add	540
256k synchronous - Cache Ram	60
Extra 1Mb DRAM on Video card	30
Full Tower (3 x 5.25" bay) add	10

486 OPTIONS

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Extra 1Mb DRAM on Video card	30
Full Tower (3 x 5.25" bay) add	10

Adaptec 1542C and to change from IDE to SCSI HD 150

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17" LR, MPR-II add	330
20" LR NI, MPR-II add	900
21" LR NI, MPR-II add	1000
Sony CPD-15SF add	150
17" Iiyama VisionMaster MF-8617E add	355

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All DABS Systems include: •PCI Motherboard with Triton Compatible chipset and ZIF socket for easy upgradeability •EDO RAM (486DX4 contains standard RAM) •Enhanced IDE Hard Disc •PCI 64 Bit Accelerated 1Mb video card •Onboard EIDE Mode 3 controller •14in non-interlaced SVGA monitor •256k 15ns standard secondary RAM (120 & 133 use synchronous cache RAM) •1.44Mb Floppy drive •4 PCI and 3 ISA expansion slots (486 has 3 PCI & 3 ISA) •Onboard, 2 fast serial, ECP parallel •Cherry high quality Win 95 105 key keyboard •Original Microsoft Serial Mouse V2.0 •MS Windows 95 •5 Year Warranty*

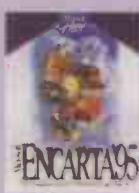
HD	486DX4-100	Pent 75	Pent 90	Pent 100	Pent 120	Pent 133
	8mb	8mb	8mb	8mb	16mb	16mb
850Mb	785	895	960	1005	1150	1375
1.2Gb	860	970	1035	1080	1225	1450
1.6Gb	995	1105	1170	1215	1360	1585

DABS MULTIMEDIA SYSTEMS

All DABS Multimedia Systems include standard components mentioned above with the addition of: •PCI 64 Bit Accelerated 1Mb video card with MPEG software playback •Creative Labs 16 bit Sound Card •Quad speed CD drive •12w Mains Power Active Speakers •MS Works, MS Encarta •5 Year Warranty*

HD	486DX4-100	Pent 75	Pent 90	Pent 100	Pent 120	Pent 133
	8mb	8mb	8mb	8mb	16mb	16mb
850Mb	995	1105	1170	1215	1360	1585
1.2Gb	1070	1180	1245	1290	1435	1660
1.6Gb	1205	1315	1380	1425	1570	1795

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4 years RTB
(labour only)

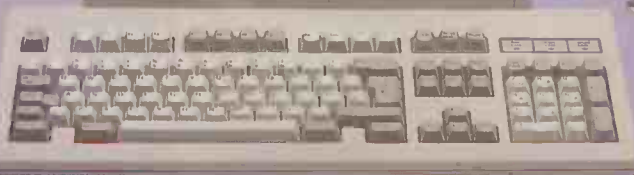
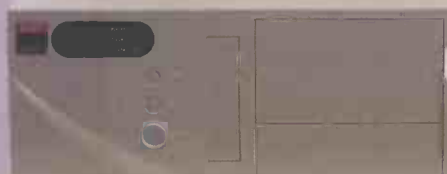
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LIFETIME
TECHNICAL
SUPPORT

Desktop or Mini Tower available at the same price

Manufactured in UK

OSM

Plug & Play



* 5 year warranty comprises 1 year OSM, 4 years RTB (labour only) OSM agreement on hardware commences 14 days after receipt of goods.

† Subject to status



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CD-ROM DRIVES

AZTECH	
Quad Speed	89 Six Speed IDE INT 140
CREATIVE LABS	
Discovery 2x	145 Multimedia Home 4x277
Discovery 4x kit PNP	190 Gblaster 32 4x kit PNP239
Blaster CD 6x Kit	175
DIAMOND	
Ultra 8000 kit	410
GOLDSTAR	
GCD-R5 20x 2x	69 GCD-R5 40x 4x 99
MITSUMI	
FX400 IDE 4x	99 Secondary IDE i/f 9
NEC	
Quad Speed IDE Int	105 4x1 Int SCSI 109
3xp+ SCSI External	242 6x1 SCSI Internal 265
6x SCSI External	319 2x 7-disc SCSI Ext 349
Parallel SCSI i/f	90 4 IDE Changer call
PANASONIC	
CR-562J	52 AT interface 10
CR504B Quad SCSI	147 CR581 Quad IDE 102
PIONEER	
DRU-124X 4x SCSI	195 DRUA-124X 4x IDE 126
DRM-624X 6x SCSI Ext	427
TOSHIBA	
XM5302B Int 4x IDE	104 5201B Int 3.4x SCSI 129
XM3601B Int 4.4x SCSI 205	3501B Int 4x SCSI 220

MONITORS

More than Just a Monitor...

ADI

- All ADI Monitors Feature
- 2 Year On-Site Swap out warranty
- Energy Star Versa DPMS Power Saving
- MPRII Low Radiation
- Digital Image Control
- Non-Interlaced Flicker free res.
- Full Scan image for up to 15% larger display area.

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Better Monitors at Competitive Pricing

All Monitors listed are MPR-II, Low Radiation

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ProVista 14"	Q28	1024x768	155
Microscan 3v 14"	0.28	1024x768	185
Microscan 4v 15"	0.28	1280x1024	249
Microscan 4GP 15"	0.28	1280x1024	269
Microscan 5EP 17"	0.28	1280x1024	449
Microscan SAP 17"	0.26	1280x1024	459
AOC			
4S 14" 0.28dp	145	4NLR 14"	145
4 CLR 14" NLR	167	5HLR 15"	225
Iiyama			
MF-8115 15"	279	MF-8617E 17"	516
MF-8221E 21"	1165	MT-9121 21"	1293
MF-9017E 21"	582	9021E 21"	1246
GOLOSTAR			
GS14620M 14"	169	GS1468	170
GS1505DM 15"	194	GS1520DM 15"	227
GS1725DM 17"	440	GS2210DM 20"	849
HITACHI			
15MVX Value	239	17MVX Value	469
CM1711	529	CM2096	855
CM2038	1075	CM2111	1299
CM2139	1799		
MICROVITEC			
Autoscan 1450 14"	147	Autoscan 1438 14"	205
Proscan 1565 15"	231	Proscan 1782 17"	515
NEC			
Multiview XV14 14"	212	Multiview XV15 15"	273
Multiview XE15 15"	388	Multiview XV17 17"	549
Multiview XE17 17"	679	Multiview XP17 17"	896
Multiview XE21 21"	1139	Multiview XP21 21"	1745
NOKIA			
449E09P 15"	299	447V090 17"	489
449M092 15"	325	447M090 17"	529
447X092 17"	710	447M092 17"	629
445M090 21"	1199		
PHILIPS			
14C LR 14"	162	14A 14"	195
15B 15"	242	15A 15"	259
17C 17"	415	17A 17"	625
20C 20"	775	20T Trinitron 20"	1065
21B 21"	1299		
PANASONIC			
TX-D 1562	270	1752 17"	call
call	1733Mu (M/M/Media)	525	
2151	1219	1562Fu (M/M/Media)	270
2 Year On Site Warranty Swap Out			
SONY			
CPD-15SF1 15"	297	CPD-17SF1 17"	539
GDM-17SE1 17"	785	GDM-20VT 20"	1215
GDM-20SE1 21"	1360		
TAXAN			
400 LR 14"	188	410 LR 14"	189
420 LR 14"	238	580 LR 15"	275
880 LR 17"	515	885 LR 17"	589
895 LR 17"	799	1080 LR 20"	869
2100 LR 21"	1499		
WYSE			
WY-1450 14"	165	WY-14+ 14"	185
WY-1570 15"	239	WY-15E 15"	249
WY-1791 17"	469	WY-ME	call

HITACHI
A Touch Easier

CM1711

All Hitachi monitors include 3 Year Warranty, first year on-site.

PC Magazine - rated **112% vs Editor's Choice**

- Upto 1280 x 1024 @ 75Hz
- Plug & Play
- RGB Control
- Power-saving
- Easy Menu on-screen display
- MPRII low radiation.

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Multimedia Kit 2000
Everything you need to create your own affordable entertainment centre

- Quad speed CDROM, 600kb/s access time
- Updatable upgradable Diamond sound card
- Pair of stereo speakers
- 7 Top titles:
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 - Magic Carpet, Sim City 2000, Cybermission Norway
 - Dragon Lore, Wing Commander II Deluxe, The Lemmings Chronicles

£255 **DIAMOND**

The New VisionMaster family from iiyama

MF-8115

- 15" 0.28mm FST colour
- Up to 1024x768 N@75Hz
- Microprocessor Control
- VESA & Energy Star Power Saving
- MPRII, TUV & CE Compliance

£279

MF-8617E

- 17" 0.26mm FST colour
- Up to 1280x1024 N@75Hz
- On-Screen Display Menu
- Colour Balance Control
- VESA & Energy Star Power Saving
- MPRII, TUV & CE Compliance

£516

MF-9017E

- 17" 0.25mm Diamond/Triton colour
- Up to 1600x1200 N@72Hz
- On-Screen Display Menu
- Colour Balance Control
- VESA & Energy Star Power Saving
- MPRII, TUV & CE Compliance

£587

MF-8221E

- 21" 0.22mm(Hz) FST colour
- Up to 1600x1200 N@75Hz
- On-Screen Display Menu
- Colour Balance Control
- VESA & Energy Star Power Saving
- MPRII, TUV & CE Compliance

£1165

MF-9021E

- 21" 0.30mm Diamond/Triton colour
- Up to 1600x1200 N@75Hz
- On-Screen Display Menu
- Colour Balance Control
- VESA & Energy Star Power Saving
- MPRII, TUV & CE Compliance

£1246

iiyama

Valuegraph 447V090

- 17" FST, Antiglare Antistatic
- Built-in Stereo Speakers
- Max resolution 1024x768, 0.28mm dot pitch
- Refresh rate 1024x768@80Hz
- Power Saving, MPRII

£479

For pricing on other monitors please call

AUTOSCAN 1450

- 14" monitor with tilt & swivel base
- 0.28mm dot pitch CRT
- MPRII Low Radiation
- Autoscan (30-50KHz) VGAS/VGSA

£147

TERMINALS

WYSE	
WY-35	275 WY-55 249
WY-85	255 WY-120 295
WY-160	340 WY-185 305
WY-285	269 WY-520 250
WY-325	469 WY-370 699
<i>For LR models add £20</i>	
DEC	
VT-510	239 VT-510 LE 249
VT-520	275 VT-520 LE 285
VT-525C System Unit	205

Available in Green/Amber/White. Prices include keyboard

Panasonic TX-D1562

15" Digital Multi-Scan Colour FST Display for Multimedia

- 15" FST, 0.27 dot pitch
- Upto 1280 x 1024 @ 86Hz
- RGB Control
- Power-saving
- MPRII low rad
- Front control panel

2 Year On Site Warranty Swap Out

£270

MOTHERBOARDS

All exclude processor and heatsink

486/P24C 3VLB/BI5A 256k 72pin ZIF	69
486/P24C 3PCU/BI5A 256k 72pin IDE SIS	79
75-180 4PCU/BI5A + IO Async 256k SIS	125
75-180 4PCU/BI5A + IO Sync 256k TRITON	195
75-180 4PCU/BI5A + IO Async 512k TRITON	285
75-120 4PCU/BI5A + IO Async 256k Dpti	129
INTEL	
Endeavour P 75-180-H0 +256K cache	207
Advanced ZP Trinitron 75 & 8Mb EDD	513
Adv EV P90 + Sound	540
Adv EV P100+Sound	625

PROCESSORS

AMD	
DX4/120	69
INTEL	
486DX4/75	45 486DX4/100 55
Pentium 75	110 Pentium 90 195
Pentium 100	215 Pentium 120 255
Pentium 133	370 486 Heatsink+Fan 5
Pentium Heatsink	12
INTEL OVERDRIVE	
Any 486 -> DX4/75	85 Any 486 -> DX4/100 112
486 -> Pentium63	160 486 -> Pentium83 call

SIMM MEMORY

30pin 30		30pin 48		72pin 32		72pin 36		72pin 32		32 60	
256k 10	10	10	10	10	10	10	10	10	10	10	10
1Mb 26	29	36	38	38	38	38	38	38	38	38	38
2Mb	-	79	65	69	-	-	-	-	-	-	-
4Mb 89	94	90	102	99	-	-	-	-	-	-	-
8Mb	-	-	175	199	199	-	-	-	-	-	-
16Mb 475	-	-	309	369	-	-	-	-	-	-	-
32Mb	-	-	625	689	-	-	-	-	-	-	-

Memory pricing is volatile - please call before ordering

INTERFACE CARDS

IDE DRIVE CONTROLLERS	
2 HD+2 FD+2 serial+1 parallel+1 game ISA	10
2 HD+2 FD+2 16550A ser+1 ECP para-1 game ISA	23
4 HD+2 FD+2 16550A ser+1 ECP para-1 game PCI	25
ADAPTEC SCSI CONTROLLERS	
1505 kit ISA	42 1515 kit ISA 65
1542CP PnP	120 1542CP PnP kit 155
2825 kit vlb EIDE+SCSI	110 2842C kit vLB 165
2940 kit PCI	189 2742 kit EISA 245
2940w kit PCI	259 1348 Parallel 84
T358 EPP Parallel	115 460 PCMCIA 155

DISPLAY ADAPTERS

CIRRUS LOGIC	
5422 1Mb ISA	45 5428 1Mb VLB 50
5434 1Mb PCI	64 5434 2Mb PCI 114
CREATIVE	
3DD Blaster	265 TV Color External 115
VideoBlaster SE100	125 VideoBlaster FS200 220
VideoBlaster RT300	205 VideoBlaster MP400 115
VideoBlaster Dev Kit	55 Sharevision PC3000 910
DIAMOND	
Stealth 64 1280 160	89 Stealth 64 2048 160 125
Stealth SE 1Mb	60 Stealth SE 2Mb 119
Stealth 3240 2Mb PCI	189 Stealth 3400 4Mb 299
Motion Video player	205 Motion Video 2Mb 315
HAUPPAUGE	
WinTV Prisma	145 WinTV Cinema 182
WinTV Celebrity	245
MIRO	
DVI Plus	289 OC20 750
NVP card	215
No.9	
9FX Motion 531 1Mb	119 9FX Motion 531 2Mb160
9FX Motion 330 1Mb	85 9FX Motion 330 2Mb130
9FX Motion 771 2Mb	230 9FX Motion 771 4Mb329
ORCHID	
Kelvin MPEG 1Mb	229 Kelvin MPEG 2Mb 269
Kelvin E2 1Mb	78 Kelvin 64 1Mb 98
Kelvin 64 2Mb	129 Vidalia 265
Vidalia Pro	425 Vidalia Premium 560
Fahrenheit 64 1Mb VLB	89 Fahrenheit 64 1Mb PCI95
Fahrenheit 64 2Mb VLB 130	Fahrenheit64 2Mb PCI134
Fht Pro 64 2Mb VLB	210 Fht Pro 64 2Mb PCI 210
Fht Pro 64 4Mb VLB	325 Fht Pro 64 4MbPCI 325
VIDEOLOGIC	
GrafixStar 300 1Mb	99 GrafixStar 300 2Mb 139
GrafixStar 500 1Mb	109 GrafixStar 500 2Mb 145
GrafixStar 700 2Mb	240 GrafixStar 700 4Mb 379
GrafixStar 400 1Mb	call PCI Movie 225
MPEG Add-on	229 Captivator Pro TV 189

All GrafixStars are available in PCI and VLB, except GrafixStar 400 which is PCI only

STREAMERS

COLORADO			
Jumbo 350Mb Int	73 Jumbo 1.4Gb Int 180		
T1000 Travan Int	115 Trakker 350Mb Par 152		
T1000E 800Mb Ext	175 FC-20 Fast Controller 45		
KE-10 External Kit	60		
COLORADO POWERTAPE			
1100 1Gb SCSI Int	370 2400 2.4Gb SCSI Int 629		
2400 2.4Gb SCSI Ext	720 4000 4Gb SCSI Int 779		
4000 4Gb SCSI Ext	949 3000 Interface 96		
CONNER			
Tapestor 420Mb Int	90 Tstor 420Mb Par 179		
Tstor 800Mb Travan Int	110 Tstor 800Mb Trav Par 185		
Tapestor 850Mb Int	135 Tstor 850Mb Par 225		
Tstor 3200Mb Travan Par 185	Tapestor 4000 Int 345		
Tstor 4000 Ext	395 Tapestor 1700 Int 225		
HEWLETT PACKARD			
Model	Int	Ext	Kit
SureStore 2000 2Gb	525	699	859
SureStore 5000 2-8Gb	639	749	1869
SureStore 6000 4-16Gb	759	869	1739

All in-stock bare drives include Colorado Backup Win SS 2000 kit inc. FirstServe 5. SS 5000/6000 kit inc. drive & Arcserve 5

OMEIGA

Tape 700 Insider	135 Ditto 420 Int 80
Ditro 800 Int PNP	99 Ditro 800 Parallel 105
Ditro 800 Int	120 Ditro 1700 Int 185
Ditro 3200 Int	189 Ditro 3200 Parallel 249
WANGTEC SCSI	
5250ES 250Mb Int	295 5250ES 250Mb Ext 439
5525ES 525Mb Int	335 5525ES 525Mb Ext 539
51000HT 1Gb Int	495 51000HT 1Gb Ext 639
9500 10Gb Int	710
WANGDAT SCSI	
3100 2Gb Int	489 3100 2Gb Ext 569
3200 4-8Gb Int	595 3200 4-8Gb Ext 655
3400DX B-16Gb Int	675 3400DX B-16Gb Ext 745

COLORADO MEMORY SYSTEMS

Colorado Trakker 350

- EXTERNAL PARALLEL PORT BACKUP SYSTEM
- Plug and Play. No hardware installation
- Up to 340 Megabyte Capacity with data compression
- Dual Connectors on back panel
- Easy portability, light weight durable format
- QIC-80 industry standard recording format
- Two year limited warranty

£152

Colorado T1000 TRAVAN

INTERNAL TAPE BACKUP SYSTEM

- 400Mb uncompressed, 800Mb compressed
- 9.5Mb/Minute backup speed
- Easy auto-configuring installation
- Automated, scheduled or customized
- Two year limited warranty

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PRINTER SERVERS

EMULEX	
NetQUE Zport	279
HP	
JetDirect MID	285 JetDirect External 229
INTEL	
Netport EL 2p	250 Netport XL 1s 2p 290

UPS

APC	
BackUPS 250	76 BackUPS 400 104
BackUPS 600	145 BackUPS 900 255
BackUPS 1250	345 Powerchute 44
Backups Pro 280i	92 Backups Pro 420i 135
Backups Pro 650i	189 Backups Pro 1000i 315
Backups Pro 1400i	405 Smartups 250 155
Smartups 450	219 Smartups 700 229
Smartups 1000	365 Smartups 1400 479
Smartups 2200	call Powermanager call
UPSICON	
PCMight 140 1400VA	285 PCMight 200 2000VA 450
Station 28 2800VA	88 Station 40 4000VA 124
Station 60 600VA	155 Station 90 900VA 183
Station 140 1400VA	Call Station 200 2000VA 585
System 60	411 System 100 1000VA 585
System 200 2000VA	1015 System 3

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REMOVABLE DRIVES

D2 - SYQUEST DRIVES		
88Mb Ext Par PC	305	105Mb Ext Par PC
200Mb Ext Par PC	425	270Mb Ext Par PC
88Mb Ext SCSI	230	135Mb Int IDE
135Mb Ext SCSI	155	200Mb Ext SCSI
270Mb Ext SCSI	349	Shark SCSI-Par cable
IOMEGA		
ZIP 100Mb Ext SCSI	129	ZIP 100Mb Parallel
Jaz 1Gb Par	call	Jaz 1Gb Ext call
PANASONIC		
PD Drive + SCSI i/f	490	PD Drive SCSI

Macintosh complete systems also available

SOUND CARDS

AZTECH		
Sound Galaxy Pro 16 bit	40	Wavemaster 32+
CREATIVE LABS		
SB 16 Value IDE	62	SB 16 Pro IDE
SB 16 Pro ASX IDE	103	SB Pro 16 SCSI-2
SB AWE 32 PnP	155	SB 32 PnP
SB AWE 32 Full IDE	155	SB AWE 32 Value IDE
MIDI Lead	15	WaveBlaster 2
BlasterKeys midi Keyboard	115	BlasterKeys + AWE32 val
MIRO		
Sound FM10	58	Sound PCM1D
Sound PCM1 Pro	121	
ORCHID		
Gamewave 32+	70	Sounddrive 16 E2
Sounddrive E2 SCSI	78	Soundwave 32 Pro
Soundwave 32 Pro SCSI129	129	Wavebooster 2Mb
Wavebooster 4Mb	85	Wavebooster 4MbFX

NETWORK CARDS

3COM		
3C-5098 BNC UTP	55	3C-5098 Combo
3C-589 ComboPCMCIA	125	3C-5298 BNC MCA
3C-579 BNC EISA	139	3C-590 PCI Combo
DLINK		
DE-220C BNC	37	DE-220CT Combo
DE-220CAT Combo/AUI	30	DE-220T UTP ISA
DE-8051P	75	DE-530CT
DE-620CT Combo Par	85	8500CT Combo PCM
GENIUS		
NE2000 Combo	20	NE2000B Combo
NE2000 Combo PnP	45	NE2100B Combo
Pocket Parallel	49	PocketPCMCIA BNC/AUI/83
KINGSTON		
EtherRX LC	39	
INTEL ETHEREX PRO		
10 Combo PnP	62	10 Combo PnP PCI
10 Combo Flash PnP	72	100 PCI UTP
SMC		
Elite Ultra 16	45	Elite Ultra 16 Combo
EliteCard UTP	84	EliteCard Combo
EtherPower PCI Adapter UTP/BNC	89	
EtherPower PCI Adapter Combo	96	
EtherEZ Plug 'n' Play Adapter BNC/UTP	58	
EtherEZ Plug 'n' Play Adapter SCSI	49	
Fast Enet 10/100 PCI	129	FastEnet 10/100EISA149
XIRCOM		
BNC Parallel	185	BNC PCMCIA2
UTP Parallel	185	UTP PCMCIA2
Combo Parallel	199	Combo PCMCIA2
CEM II PCMCIA2 10BT Ethernet & FAX/Modem	285	
CEM II PCMCIA2 10BT Ethernet & FAX/Modem	265	
CEMII PCMCIA2 Combo ethernet & FAX/Modem	265	

PORTABLES

COMPAQ CONTURA		
410 M250	822	410C M350
410CK M350	1873	420C M350
420C M420	1566	420CX M420
430C M720	1897	430CX M720
HP OMNIBOOK		
600C DX2/50 4170MHz	1413	600C DX4/75 8170MHz
600C DX4/75 8200MHz	1809	600C DX4/75 8260MHz
4000C DX2/50 3400MHz	1650	4000C DX4/75 8240MHz
4000C DX2/50 8250MHz	1872	4000C DX2/50 8250MHz
4000C DX4/75 8240MHz	2188	4000C DX4/75 8250MHz
4000C DX4/75 8240MHz	2660	4000C DX4/75 16180MHz
4000C DX4/100 8240MHz	2327	5000C DX4/100 8250MHz
4000C DX4/100 8210MHz	2770	5000C P90 16120MHz
5000C P90 16120MHz	3784	
TOSHIBA		
T11950CT/200	1689	T21100CT/250
T2110 4/350	832	T2150CDS/260
T2150CDS/520	1926	T2150COT/520
T3800CT/500	2087	T4800CT/200
T4800C/320	2337	T4800CT/500
T4800CT/772	3342	T6500C/510
T2110CS 4/350	1335	T2130CS 8/520
T2130CT 8/520	1920	Satellite Pro 400C/S2384
SatellitePro400CDDT	3090	Portégé 610CT

olivetti portable computers		
Echos 24C 486DX2/50 4/260		£1124
Echos 24C 486DX2/50 4/350		£1212
Echos 26C 486DX4/75 4/350		£1338
Echos 48C 486DX4/75 4/340		£1338
Echos 48CP 486DX4/100 8/540		£1924

Notepc Specifically designed for your notebook computer available in other colours

£26

Universal Notebook 44 Business Traveller 149
 Notepac black 26 Notepac green 26
 Premier Leather case 107 Fabric Premier 76

HANDHELDS

HEWLETT PACKARD		
Omnigio 100	225	
PSION ORGANISER SERIES II		
Model LZ	99	Model LZ64
32k Rampak	39	32k Datapak
128k Flashpak	49	256k Flashpak
Formatter 256k	17	Mains Adapter
PC Link	45	Carry Case
PSION SERIES 3		
Series 3a 256k	175	Series 3a 512k
Series 3a 1Mb	249	Series 3a 2Mb
Series 3s 256k	129	PC Commis Link
Parallel Cable	23	Leather Wallet
Fax Modem	129	128k Flash SSO
128k RAM SSD	37	256k Flash SSO
128k RAM SSD	89	512k Flash SSO
1Mb RAM SSD	175	1Mb Flash SSO
2Mb Flash SSO	137	4Mb Flash SSO
Autorestore Ser 3	50	Act Ser 3
Chess Ser 3a	31	Toolkit 1 Ser 3
Dataview Ser 3/3a	45	

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MICE/KEYBOARDS

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LE Non click Win 95	20	
MICROSOFT		
Mouse IP Combo	33	Home Mouse
LOGITECH		
Pilot Serial or PS/2	17	Pilot Trackball
Mouseman PC or Mac	31	Trackman Portable
Mouseman Cordless	47	Trackman Combo
Trackman Live	95	Trackman Voyager
PRIMAX		
3 button serial (white/black/blue/red)	7	
Master Mouse	19	

HUBS

3COM LINKBUILDER		
FMS II 12port & AUI	355	FMS II 24port & AUI
DLINK		
DE809T 8port & BNC129	DE812T 8port BNC BAL	175
DE161T 16port 8 BNC & AUI	235	DE24T 24port 8 BNC & AUI
DE1200 12port	299	DE1600 12port
HP ADVANCESTACK		
Hub 8i 8port	132	Hub 12u 12port
Hub 12 12port	415	Hub 24 24port
Hub 4R 48port	1132	Hub 12 SNMP
Hub 24 SNMP	819	Hub 48 SNMP
SMC		
TIGERHUB		
TP6 6port	120	TP6B 6port
CX3 3port	199	TP12 12port
CX6 6port	430	FL6 6port
TIGERJET		
3312C 12port	325	3314T 14port
3326TC 26port	575	3328T 28port

PLOTTERS

HEWLETT PACKARD		
Designjet 230 A1	1385	DJet 230 A1 mono
Designjet 250C A1	1696	Designjet 600 A1
Designjet 600 A0	3246	Designjet 650C A1
Designjet 650C A0	4387	HP Designjet OSM
DesignJet 750C A1	3524	
DesignJet 750C A0	4319	
ROLAND		
Sketchmate A4	409	Sketchmate A3
DXY-1150	585	DXY-1250
DXY-1350	945	GRX-350
SUMMAGRAPHICS SUMMAJET		
Mono A1	1225	Colour A1
Mono A0	1695	Colour A0

DIGITISING TABLETS

CALCOMP		
Drawing Board II A5	205	Drawing Board II A4
SUMMAGRAPHICS SUMMASKETCH RANGE		
II A4	215	III Pro A3
FX A4 4 bit cursor	275	FX A3 Pro
SUMMAGRID IV RANGE		
AZ	969	A1
A0	1665	A0
WACOM TABLETS		
ArtPad II	129	ArtPad & Dabblor
ArtPad & Painter 3	359	A5 Menu Overlay
A4+ Menu Overlay	355	A3 Menu Overlay

Wacom Graphics tablet

A range of digitising tablets and a stylus that feels, draws and acts just like a pen. Tablets vary from A5 up to A0. Each tablet comes standard with a stylus which is cordless and batteryless, allowing total freedom to draw. The stylus is pressure sensitive, so applied pressure will alter line thickness, colour intensity and transparency in real time. A2, A3 and A4 tablets also come with a four button cursor, which is ideal for CAD applications.

Prices from £129

BRANDED PC'S

COMPAQ PRESARIO		
CD5524	1041	CDV528
7106	879	7110
7150	1125	7170
COMPAQ PROLINEA SLIMLINE (3X3)		
4/66 Model 420	748	5/75 Model 270
4/66 Model 270	740	5/90 Model 630
5/75 Model 420	1029	4/100 Model 420
4/50 Model 270	619	4/66 Model 630
4/100 Model 630	848	4/100 Model 420
5/75 Model 630	1067	5/75 Model 1080
5/100 Model 630	1178	5/90 Model 1080
5/100 Model 1080	1286	5/100 Model 1080
5/120 Model 1080	1765	
COMPAQ PROLINEA STANDARD (4X4)		
4/100 Model 420	909	4/66 Model 270
4/66 Model 420	839	5/75 Model 420
5/75 Model 270	1335	5/90 Model 420
5/90 Model 630	1178	5/90 Model 630
5/90 Model 720	1418	5/90 Model 1080
5/100 Model 630	1319	5/100 Model 630
5/100 Model 1080	1616	5/120 Model 1080
5/133 Model 1080	1943	5/133 Model 1080
5/133 Model 1080	1929	5/133 Model 1080
COMPAQ PROLINEA MINI TOWER (5X5)		
4/66 Model 270	844	4/66 Model 420
5/75 Model 420	1104	5/75 Model 420CDS
5/90 Model 420	1187	5/90 Model 420CDS
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MN3300M	115	MN7700
AVRO PACIFIC		
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fax-473	233	Fax-475M
Fax-4900T TAM	325	Fax-1400M
5000P	749	
HEWLETT PACKARD		
Officejet XL	489	FX Support Pack
PANASONIC		
UF305 plain paper	585	
SAMSUNG		
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SF800 TAM	246	SF1505
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SHARP		
UX70	178	UX75
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MT1932ZPX Int	151	MT2834 PKI
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MT2834PCS	435	
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SUPRA		
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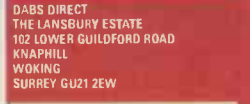
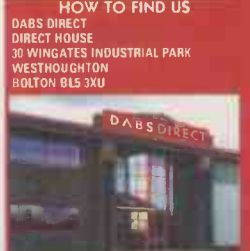
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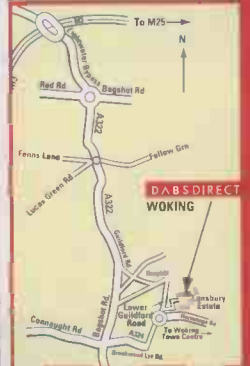
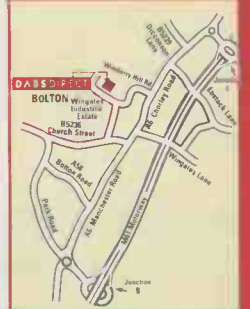
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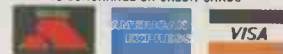
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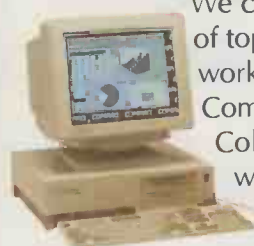
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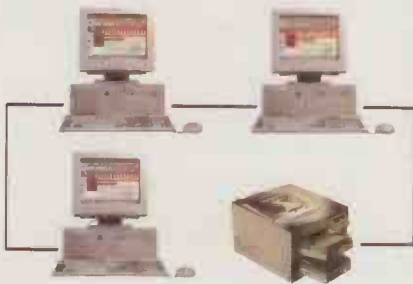


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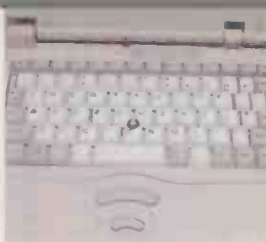
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The easy to use integral Mousepoint on all except T4850



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KEYBOARD

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INTERFACES

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POWER

Autosensing AC adaptor (100 to 240V) suitable for world wide usage provides power for notebook and recharges batteries. Removable rechargeable batteries are standard (type of battery and life varies as shown).

SOFTWARE

Microsoft MS DOS 6.2 with Toshiba notebook enhancements, Windows 3.1 (Rel 3.11) or WFWG 3.11 are pre-loaded. CardWare PCMCIA support provides transparent use of PCMCIA cards without incompatibility problems and supports 'insertion'.

SPECIAL FEATURES

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- Standard ports
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- NiH2 removable battery. Up to 4 hours usage

Options

4Mb RAM (PA2012U).....	£170
8Mb RAM (PA2013U).....	£208
16Mb RAM (PA2014U).....	£245
NP2 Battery (PA2429UR).....	£94

£845

COLOUR 486DX4-75



T2110 CS

A superb large colour 10.4" dual scan screen. Local bus video makes this 486DX4-75 the ideal platform for high-quality graphics and mobile presentations.

- Intel DX4-75 processor
- 4Mb RAM expandable to 28Mb
- 350Mb hard disk
- Internal 3.5" 1.44Mb floppy drive
- VGA/SVGA (640 x 480 pixel resolution) STN 10.4" diagonal display
- 84 Key keyboard
- Standard ports and port replicator
- PCMCIA Rel 2.0 one type III or two type II)
- 11.8" x 8.9" x 2.1" with 3.1Kg (6.8lb) weight
- NiH2 removable battery (4 hours use)
- MS DOS 6.22, MS Windows 3.11

T2110CS (illustrated above) Call for details and availability

Options

4Mb RAM (PA2026U).....	£187
8Mb RAM (PA2027U).....	£240
16Mb RAM (PA2028U).....	£275
Port replicator (PA2708U).....	£128
Battery (PA2437U).....	£95
Battery charger (PA2438U).....	£149

£1356

COLOUR DX4-75 CD ROM



T2150CDT

The DX4-75 notebook offers spectacular performance using a 520Mib hard disk and top of the range TFT colour LCD 10.4" screen.

- Intel DX4-75 processor
- 8Mb RAM expandable to 32Mb
- 520Mi.b hard disk
- Dual Spin internal 5.25" CD-ROM
- External 3.5" 1.44Mb floppy drive
- VGA/SVGA (640x480 pixel resolution) TFT 10.4" diagonal display
- 84 Key keyboard with mousepoint
- Standard ports, and port replicator
- Built in AC adaptor
- PCMCIA Rel 2.0 two Type II or one Type III
- 11.8" x 8.9" x 2.1" with 3.2kg (7 lb) weight
- Soundblaster Pro compatible sound system
- NiH2 removable battery (3 hours use)
- MS DOS 6.22 and MS Windows for workgroups 3.11

T2150CDS260.....	£1658
T2150CDS520.....	£1866

Options

4Mb RAM (PA2026U).....	£187
8Mb RAM (PA2027U).....	£240
16Mb RAM (PA2028U).....	£275
Port Replicator (PA2708U).....	£128
Battery (PA2437U).....	£95
Battery charger (PA2438U).....	£149

£2546

TFT COLOUR PENTIUM NOTEBOOK



Satellite Pro 400CS

Toshiba's first modular notebook with Pentium processing power. Swappable CD-ROM and floppy disk drive modules and one touch docking.

- Intel 75MHz Pentium® processor
- 8Mb EDO RAM expandable to 40Mb
- 810Mb hard disk
- Swappable internal external 3.5" 1.44Mb floppy drive
- VGA/SVGA (640 x 480 pixel resolution) colour STN 10.4" diagonal display
- 84 key keyboard and mousepoint device
- Parallel, serial port
- Serial infra-red port
- Enhanced port
- Replicator port
- SVGA port
- External FDD port
- Memory exp slot
- PCMCIA Rel.2.0 slot, 2 x type II slot or 1 x type III
- Rechargeable, removable Lithium Ion battery (4 hrs use)
- Microphone, headphone and speaker sockets
- MS DOS 6.22 and Windows for workgroups 3.11

OPTION

8Mb EDO RAM (PA2031U).....	£420
16Mb EDO RAM (PA2032U).....	£804
32Mb EDO RAM (PA2034U).....	Call
Quad speed CD-ROM (PA2653U).....	£255
Li Ion battery 4hrs use (PA2487UR).....	£166
Battery charger (PA2488U).....	£166

£2425

TFT COLOUR PENTIUM NOTEBOOK



Satellite Pro 400CDT

Unbeatable high end performance A4 package with modular storage and Pentium® processing power coupled with flexible connectivity facilities.

- Intel Pentium® 75MHz processor
- 8Mb EDO RAM expandable to 40Mb
- 810Mb hard disk
- Swappable enhanced IDE quad speed CD-ROM
- Swappable internal external 3.5" 1.44Mb floppy drive
- VGA/SVGA (640 x 480 pixel resolution) colour TFT 10.4" diagonal display
- 84 key keyboard and mousepoint device
- Parallel,serial port
- Serial infra-red port
- Enhanced port
- Replicator port
- SVGA port
- External FDD port
- Memory exp slot
- PCMCIA Rel.2.0 slot, 2 x type II slot or 1 x type III
- Rechargeable, removable Lithium Ion battery (4 hrs use)
- Microphone, headphone and speaker sockets
- MS DOS 6.22 and Windows for workgroups 3.11

8Mb EDO RAM (PA2031U).....	£420
16Mb EDO RAM (PA2032U).....	£804
32Mb EDO RAM (PA2034U).....	Call
Li Ion battery 4hrs use (PA2487UR).....	£166
Battery charger (PA2488U).....	£166

£3139

TOSHIBA



Two PCMCIA slots on all models provide ultimate expansion. Intel fax/data modem at an incredible £99 (except T3600)



Built-in Microsoft Sound System on T4850, and T4900



With Sounblast Pro compatible sound system on T2150, Portégé and Satellite Pro



Deskstation IV turns your T4850 and T4900 notebooks into expandable desktop systems

TFT COLOUR DX4-75

TFT COLOUR DX4-75

TFT COLOUR SUBNOTE



T2130CS

Brilliant notebook, offers greater memory than the T2110CS. Has top end 75MHz DX4 processor and a large 10.4" dual scan screen combine with a high capacity nickel hydride battery providing long lasting quality performance.

- Intel DX4-75 processor
- 8Mb RAM expandable to 28Mb
- 520Mi.b hard disk upgradeable
- Internal 3.5" 1.44Mb floppy drive
- VGA/VSVA (640 x 480 pixel resolution) STN 10.4" diagonal display
- 84 key keyboard and mousepoint device
- Parallel, serial port
- Replicator port
- SVGA port
- Memory exp slot
- PS2 keyboard port.
- PCMCIA Rel.2.0 slot, 2 x type II slot or 1 x type III
- Rechargeable, removable nickel hydride battery (4 hrs use)
- MS DOS 6.22 and Windows 3.11

Options

4Mb RAM (PA2026U).....	£157
8Mb RAM (PA2027U).....	£340
16Mb RAM (PA2028U).....	£744
24Mb RAM (PA2029U).....	£1526
Battery (PA2437U).....	£80
Battery charger (PA2438U).....	£149

£1611



T2130CT

The T2130CT combines top-end DX4-75 processing with a TFT 10.4" colour screen and comes with 8Mb RAM, 520Mi.b hard disk.

- Intel DX4-75 processor
- 8Mb RAM expandable to 32Mb
- 520Mi.b hard disk upgradeable
- Internal 3.5" 1.44Mb floppy drive
- VGA/VSVA (640 x 480 pixel resolution) TFT 10.4" diagonal display
- 84 key keyboard and mousepoint device
- Parallel, serial port
- Replicator port
- SVGA port
- Memory exp slot
- PS2 keyboard port.
- PCMCIA Rel.2.0 slot, 2 x type II slot or 1 x type III
- Rechargeable, removable nickel hydride battery (4 hrs use)
- MS DOS 6.22 and Windows 3.11

Options

4Mb RAM (PA2026U).....	£167
8Mb RAM (PA2027U).....	£340
16Mb RAM (PA2028U).....	£744
24Mb RAM (PA2029U).....	£1526
Battery (PA2437U).....	£80
Battery charger (PA2438U).....	£149

£1951



Portégé 610CT

The world's first 90MHz Pentium ultra notebook and the most powerful Toshiba portable. It offers very high performance in a lightweight ultra notebook package.

- Intel Pentium® 90MHz processor
- 8Mb EDO RAM expandable to 40Mb
- 720Mi.b hard disk
- External 3.5" 1.44Mb floppy drive
- VGA/VSVA (640 x 480 pixel resolution) TFT 9.5" diagonal display
- 84 key keyboard and mousepoint device
- Parallel, serial port
- Replicator port
- SVGA port
- External FDD port
- Memory exp slot
- PCMCIA Rel.2.0 slot, 2 x type II slot or 1 x type III
- Rechargeable, removable Lithium Ion battery (4 hrs use)
- Microphone, headphone and speaker sockets
- MS DOS 6.22 and Windows for workgroups 3.11

Options

8Mb EDO RAM (PA2031U).....	£420
16Mb EDO RAM (PA2032U).....	£804
32Mb EDO RAM (PA2034U).....	Call
Li Ion battery (PA2489U).....	£166
Battery charger (PA2482U).....	£136

£3019

TFT COLOUR DX4-75

TFT COLOUR PENTIUM

TOSHIBA OPTIONS

THIRD PARTY OPTIONS

SPECIAL OFFER



T4850CT

The DX4-75 has all the power you will ever need out on the road - even for multimedia applications. Whatever your requirements, the T4850CT is perfectly equipped to handle them all.

- Intel DX4-75 processor
- 8Mb RAM expandable to 40Mb
- 810Mi.b hard disk
- Internal 3.5" 1.44Mb floppy drive
- VGA/VSVA (640x480 pixel resolution) TFT 10.4" diagonal display
- 84 full size keys with overlay numeric keypad, 12 function keys
- Standard ports
- PCMCIA Rel. 2.0 one Type II and one Type III
- 11.7" x 8.3" x 2.2" with 3.2kg (6.9 lb) weight
- NiH2 removable battery 3.5 hours use
- MS DOS 6.2 and MS Windows for workgroups 3.11

Options

4Mb RAM (PA2012U).....	£170
8Mb RAM (PA2013U).....	£298
16Mb RAM (PA2014U).....	£745
NiH2 battery (PA2429U).....	£34
DeskStation IV.....	£374

£2395

NEW TECRA DETAILS

See below



T4900CT

The T4900CT is the first notebook to have Intel 3.3volt 75MHz Pentium processor. Offering unsurpassed performance for all power-hungry applications.

- Intel 75MHz Pentium® processor
- 8Mb RAM expandable to 40Mb
- 810Mi.b hard disk
- Internal 3.5" 1.44Mb floppy drive
- VGA/VSVA (640 x 480 pixel resolution) TFT 10.4" diagonal display
- 84 key keyboard with mouse point
- Standard ports
- PCMCIA Rel. 2.0 one Type II and one Type III
- 11.7" x 8.3" x 2.2" with 3.1Kg (6.8 lb) weight
- Soundblaster Pro compatible sound system
- Built in speakers and microphone
- NiH2 removable battery 3 hours use
- MS DOS 6.2 and MS Windows for workgroups 3.11

Options

8Mb EDO RAM (PA2031U).....	£420
16Mb EDO RAM (PA2032U).....	£804
32Mb EDO RAM (PA2034U).....	Call
Li Ion battery 4hrs use (PA2487U).....	£166
Battery charger (PA2488U).....	£166

£3056

NEW TECRA

Toshiba's latest high end notebook PC offering blistering Pentium® performance with 1.2Gb hard disk and quad speed CD-ROM
Tecra 700CT 120MHz Pentium®, 1.2Gb/16Mb TFT£Call

- External Battery Charger:
- T3400/T3600 (2482U) ...£166
 - T2100£149
 - T1910CS£107
 - Others (PA2422U-E)£107

- ExtraUniversal AC Adaptor:
- T1910, T4700CT, T4800 (PA2478U).....£56
 - T2400 (PA2430U).....£48
 - T4600 (PA2411U).....£48
 - T3400, T3600 (PA2426U-E).....£48

- Toshiba PCMCIAcards:
- PCMCIA ethernet adaptor (PCE-10BC).....£192
 - PCMCIA V34 modem£254

- Other Options:
- Carry case T6600C (T239L).....£39
 - Carry case others (T202L).....£34
 - Ballpoint Quickport mouse (PA22805U).....£73
 - Deskstation IV.....£374 (Docking station for T4900, T4700 and T4800 models. It includes all standard ports, two full-size 16-bit slots, 5.25" drive bay, power supply and monitor stand)

- PCMCIA Options
- Intel 2496 fax/data modem£99
 - New media Bus Toaster SCSI adaptor£173
 - New Media Visual SCSI adaptor.....£149
 - New Media 16-bit sound card.....£196
 - New Media Combo ethernet card£125
 - MiniStore 130Mb hard disk£399

- Parallel Port Devices
- Backpack DS CO-ROM drive£299
 - Backpack 5.25" floppy drive£149
 - Logitech Scanman Easytouch scanner£142
 - Trakker 250Mb tape back-up.....£208

- Keyboards & Mice
- External COL 130 key keyboard (needs PS/2 adaptor).....£29
 - PS/2 to DIN keyboard adaptor.....£9
 - Microsoft Natural keyboard.....£69
 - IMSI PC Stylus PS/2.....£29
 - IMSI Mini Thumball.....£24
 - Logitech Trackman portable.....£32

- Portable Printers
- HP DeskJet 320.....£169
 - Canon BJ30.....£193

- Other Options:
- Universal third party car adaptor.....£99
 - Laplink XL & serial cable.....£39
 - Laplink Pro v5 for Win.....£74
 - Time external speakers£18

TDRTOB1C

All prices exclude delivery and VAT(17.5%). Delivery: Systems £19, Lasers and large-items £15, software and small items £10. Visa /Access/ American Express /Switch and Government orders welcome. Prices, specifications and offers are subject to change and subject to our conditions of sale copies of which are available on request. Mail order only. No collections please. Goods are normally despatched within 7 days. All orders will be fulfilled within 28 days unless otherwise specified. E&OE



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Multimedia CD-ROM docking station for the 4000m series



Built-in CD-ROM and soundcard in Extensa 550CD models



The T5000/5100 provides two lithium ion batteries without sacrificing size, weight or eliminating the floppy drives.

TEXAS INSTRUMENTS RANGE

The new range of high performance colour notebooks from Texas Instruments offer exceptional quality and features at truly remarkable prices.

The 4000M range provides fast 486DX2 or 486DX4 models with superb Dual Scan or TFT colour screens, built-in sound and the option of adding the portable CD Rom Dock for full-feature multimedia.

The new Extensa notebooks feature the new easy to use touchpad and are available in 2 ranges. The attractively priced 486 range (Extensa 450) does not include multimedia and features a 486DX4-75 processor with large Dual Scan or TFT colour screens. The Pentium range (Extensa 550CD) is based on the 75Mhz Intel Pentium processor with 8Mb RAM, 525Mb hard and includes full-feature multimedia with built-in sound, CD-ROM Drive, speakers and Microphone. The 550 model is also available without soundcard and CD for just £1899

The top of the range 5000 models come with Pentium 75 or 90 Processors, advanced docking options, exceptional battery life, built-in sound & infra-red comms and hard drives upto 1.2Gb.

4000M DX2-50 340 DS COLOUR



The UK's best value Dual Scan multimedia notebook - Attach a CD-ROM for just £399

- 486DX2-50 Processor
- 4Mb RAM, 20Mb max
- 8Kb Internal Cache
- 340Mb hard drive
- 1.44mb 3.5" Floppy Drive
- 9.5" Dual Scan colour display
- 640 x 480 Resolution
- 1Mb Video RAM
- Interfaces: parallel, serial, keyboard/mouse, audio-in, audio out, Fast SCSI II, microphone and 16-bit MIDI with game port
- Sound capabilities: 16-bit media vision jazz 16 sound card, thunderboard, CD multisection photo, CD audio and pro audio 16, Internal microphone, internal speaker and bi-directional MIDI interface
- NIMH battery (3-5 Hours)
- Integral pointing device with Microsoft drivers
- MS DOS, MS Windows for Workgroups, Adaptec EZ-SCSI, Windows Sound Software and Real Time Video with Indeo Video
- 2.9Kg weight, 21.6 x 27.9 x 5.1cm
- Free upgrade to Windows 95

DX2-50 340Mb DS 9.5" Colour£1149

Other Options

- 4Mb RAM£149
- 16Mb RAM£945
- NiMH Battery£85
- AC Adaptor£85
- Carry case (for main unit and accessories)£39
- CD-ROM Dock£399

£1149

4000M DX4-75 525 TFT



Full feature TFT colour multimedia notebook. Attach a CD-ROM for just £399

- DX4-75 Processor
- 4Mb or 8Mb RAM, 20Mb maximum
- 8Kb Internal Cache
- 525Mb hard drive
- 1.44Mb 3.5" floppy drive
- 10.4" TFT colour display
- 640 x 480 Resolution
- 1Mb video RAM
- Interfaces: parallel, serial, keyboard / mouse, audio-in, audio out, Fast SCSI II, microphone and 16-bit MIDI with game port
- Sound capabilities: 16-bit media vision jazz 16 sound card, thunderboard, CD multisection photo, CD audio and pro audio 16, internal microphone, internal speaker and bi-directional MIDI interface.
- NIMH battery (3-5 hours)
- Integral pointing device with Microsoft drivers
- MS DOS, MS Windows for Workgroups, Adapter EZ-SCSI, Windows sound software and real time video with indeo video
- 2.9Kg weight, 21.6 x 27.9 x 5.1cm
- Free upgrade to Windows 95

DX4-75 525/4Mb 10.4" TFT£1799

Other Options

- 4Mb RAM£149
- 16Mb RAM£945
- NiMH Battery£85
- AC Adaptor£85
- Carry case (for main unit and accessories)£39
- CD-ROM Dock£399

£1799

Extensa 550 P75 Dual Scan



The Extensa 550 series has a 10.4" dual scan screen, 75MHz Pentium® processor, 8Mb RAM, 524Mb removable hard disk and removable floppy drive which is interchangeable with an extra lithium ion battery or CD-ROM module (both are optional).

- 75MHz Pentium® processor
- 8Mb RAM, 40Mb max
- 524Mb hard disk
- 1.44Mb 3.5" floppy drive
- 10.4" Dual scan colour display
- 640 x 480 Resolution at 256 colours
- 1Mb video RAM
- Interfaces: EPP/ECP parallel; 16550 serial; external VGA port; PS/2 keypad / keyboard / mouse port; PCMCIA type III slot; audio in/out, microphone in; serial infrared port for wireless connection; external PCI expansion bus
- Primary NiMH battery
- 100-240v AC adapter
- Built in touchpad pointing device
- Windows 95
- 6.2lbs with primary battery
- One year limited warranty

Extensa 550 P75/8Mb Dual Scan£1899

Options

- Lithium ion battery£159
- PCMCIA cards£Call
- Numeric keypad£60
- External battery charger£149
- Additional AC adapter£77
- Auto adapter£99
- Port replicator£85
- Carrying case£50
- CD-ROM module£299

£1899

Extensa 550 CD P75 Dual Scan



Full feature multimedia Pentium® notebook with built-in CD-ROM drive, sound card and microphone. Power and portability, the Extensa 550CD multimedia notebook has the power of the Pentium® with CD-ROM drive and 10.4" dual scan colour screen

- 75MHz Pentium® processor
- 8Mb RAM, 40Mb max
- 524Mb hard disk
- 1.44Mb 3.5" floppy drive
- 10.4" Dual scan colour display
- 640 x 480 Resolution at 256 colours
- 1Mb Video RAM
- Interchangeable CD-ROM (2x)
- Interfaces: EPP/ECP parallel; 16550 serial; external VGA port; PS/2 keypad / keyboard / mouse port; PCMCIA type III slot; audio in/out, microphone in; serial infrared port for wireless connection; external PCI expansion bus
- 16-bit sound
- Primary NiMH battery
- 100-240v AC adapter
- Built in touchpad pointing device
- Windows 95
- 6.4lbs with primary battery
- One year limited warranty

Extensa 550CD P75/8Mb Dual Scan£2299

Options

- Lithium ion battery£159
- PCMCIA cards£Call
- Numeric keypad£60
- External battery charger£149
- Additional AC adapter£77
- Auto adapter£99
- Port replicator£85
- Carrying case£50

£2299

Extensa 550CDT P75 TFT



The Extensa 550CDT multimedia notebook comes with all the other features of the Extensa 550CD range. Includes CD-ROM and 10.4" TFT colour screen, yet another example of Texas Instruments value.

- 75MHz Pentium® processor
- 8Mb RAM, 40Mb max
- 524Mb hard disk
- CD-ROM drive
- 1.44Mb 3.5" floppy drive
- 10.4" Dual scan colour display
- 640 x 480 Resolution at 256 colours
- 1Mb Video RAM
- Interchangeable CD-ROM (2x)
- Interfaces: EPP/ECP parallel; 16550 serial; external VGA port; PS/2 keypad / keyboard / mouse port; PCMCIA type III slot; audio in/out, microphone in; serial infrared port for wireless connection; external PCI expansion bus
- 16-bit sound
- Primary NiMH battery
- 100-240v AC adapter
- Built in touchpad pointing device
- Windows 95
- 6.4lbs with primary battery
- One year limited warranty

Extensa 550CDT P75/8Mb TFT£2699

Options

- Lithium ion battery£159
- PCMCIA cards£Call
- Numeric keypad£60
- External battery charger£149
- Additional AC adapter£77
- Auto adapter£99
- Port replicator£85
- Carrying case£50

£2699

TEXAS INSTRUMENTS

Notebooks



There are two docking stations available, the EZ Dock for the T5000 and the Dock Mate for the T5100 both offering greater connectivity



The Extensa Range features an easy to use touch pad pointing device with spacious palm rest and full size keyboard.



The Extensa 550 includes a serial infrared port for cable free printing.

4000M DX4-100 525 TFT



Full feature TFT colour multimedia notebook. Attach a CD-ROM for just £399

- DX4-100 Processor
- 4Mb or 8Mb RAM, 20Mb maximum
- 8Kb Internal Cache
- 525Mb hard drive
- 1.44Mb 3.5" floppy drive
- 10.4" TFT colour display
- 640 x 480 Resolution
- 1Mb video RAM
- Interfaces: parallel, serial, keyboard / mouse, audio-in, audio out, Fast SCSI II, microphone and 16-bit MIDI with game port
- Sound capabilities: 16-bit media vision jazz 16 sound card, thunderboard,
- CD multisection photo, CD audio and pro audio 16, internal microphone, internal speaker and bi-directional MIDI interface.
- NiMH battery (3-5 hours)
- Integral pointing device with Microsoft drivers
- MS DOS, MS Windows for Workgroups, Adapter EZ-SCSI, Windows sound software and real time video with indeo video
- 2.9Kg weight, 21.6 x 27.9 x 5.1cm
- Free upgrade to Windows 95

486DX4-100 525Mb 4Mb£1999

Other Options

- 4Mb RAM£149
- 16Mb RAM£945
- NiMH Battery£85
- AC Adaptor£85
- Carry case (for main unit and accessories)£39

£1999

Extensa 450 Dual Scan



The new Extensa 450 notebook gives you power, flexibility and above all, value for money. Comes with 10.4" dual scan screen, Intel DX4-75 processor, 340Mb hard disk and 4Mb RAM.

- Intel® DX4-75 processor
- 4Mb RAM, 32Mb max
- 340Mb hard disk
- 1.44mb 3.5" Floppy Drive
- 10.4" Dual scan colour display
- 640 x 480 Resolution at 256 colours
- 512Kb video RAM
- Interfaces: EPP/ECP parallel; 16550 serial; external VGA port; PS/2 keypad / keyboard / mouse port; PCMCIA type II slot; serial infrared port
- Primary NiMH battery
- 100-240v AC adapter
- Built in touchpad pointing device
- Windows 95
- 5.0lbs (2.27kg) with primary battery
- One year limited warranty

Extensa 450 DX4-75 4Mb Dual Scan£1199

Options

- Lithium ion battery£159
- PCMCIA Fax modem£249
- External battery charger£149
- Additional AC adapter£77
- Port replicator£85
- Carrying case£50
- 4Mb RAM module£185
- 8Mb RAM module£375
- 16Mb RAM module£849

£1199

Extensa 450T TFT



The new Extensa 450T notebook gives you power, flexibility and above all, value for money. Comes with 9.4" TFT colour screen, Intel DX4-75 processor, 340Mb hard disk and 4Mb RAM.

- Intel® DX4-75 processor
- 4Mb RAM, 32Mb max
- 340Mb hard disk
- 1.44mb 3.5" Floppy Drive
- 9.4" active matrix colour screen
- 640 x 480 Resolution at 256 colours
- 512Kb video RAM
- Interfaces: EPP/ECP parallel; 16550 serial; external VGA port; PS/2 keypad / keyboard / mouse port; PCMCIA type II slot; serial infrared port
- Primary NiMH battery
- 100-240v AC adapter
- Built in touchpad pointing device
- Windows 95
- 5.0lbs (2.27kg) with primary battery
- One year limited warranty

Extensa 450T DX4-75 4Mb TFT£1599

Options

- Lithium ion battery£159
- PCMCIA Fax modem£249
- External battery charger£149
- Additional AC adapter£77
- Port replicator£85
- Carrying case£50
- 4Mb RAM module£185
- 8Mb RAM module£375
- 16Mb RAM module£849

£1599

5000 SERIES P75/P90



The TravelMate 5000 series combines notebook mobility and connectivity with the performance of a pentium desktop PC. With TI intergrated PCI bus architecture and wireless connectivity through a serial infrared port. Plus intergrated multimedia that includes 16-bit sound

- 75MHz Pentium TCP processor, 3.3volts
- PCI bus architecture
- 8Mb RAM expandable to 32Mb
- 10.4" Active Matrix colour display or 10.5" DS colour on 5100 model
- 722Mb hard disk on 5000 TFT model, 500Mb on 5000 DS model, 1.2Gb on 5100 TFT model
- 1.44Mb 3.5" floppy drive
- EPP/ECP parallel 16550 serial interfaces
- 16-bit Media Vision Jazz 16 sound card, internal dual mode microphone, internal speaker, Line In and Out with mixer
- Intelligent battery system with two lithium ion battery packs
- 4mm travel keyboard, The Point pointing device with Microsoft drivers
- MS DOS and Windows for workgroups
- Weight 6.7lbs. (2.9kg) with two battery packs
- Size 8.7" x 11" x 2.2" (22.1 x 27.9 x 5.6cm)

Models

- TM5000 75MHz Pentium® processor dual scan 8Mb 500Mb£2199
- TM5000 75MHz Pentium® processor TFT 8Mb 722Mb£2699
- TM5100 90MHz Pentium® processor TFT 8Mb 1.2Gb£3399

Options

- TM5000 EZ-Dock£175
- TM5000 EZ-Dock plus£349
- 8Mb RAM option kit£349
- 16Mb RAM option kit£999
- 8Mb RAM add-on kit£349

£2199

SPECIAL OFFERS



**END OF LINE
NOTEBOOKS AT
VERY SPECIAL
PRICES**

- 4000M SX25 200Mb/4 8.4" TFT 330-11-011£899
- 4000M SX2-50 340Mb/4 8.4" TFT 330-11-016£1099
- 4000M DX2-50 455Mb/4 8.4" TFT 330-11-013£1349
- 4000M DX2-50 340Mb/4 9.5" TFT 330-11-014£1299
- 4000M DX4-75 340Mb/4 8.4" TFT 330-11-012£1599

FROM AS LOW AS £899

OFFER OPTIONS



The Portable CD-ROM Docking System gives your TravelMate 4000M notebook the power of a desktop multimedia system, with all the advantages of portability. With a weight of under five pounds including battery, the ergonomically styled Portable Docking System includes:

- A Double-Speed CD-ROM Drive That Operates at 250 Milliseconds
- Built-in Stereo Speakers
- Controls for Volume, Balance and Mix
- Microsoft headphones and external microphone
- A Separate NiMH Battery, giving you the options of AC or Battery-Powered Operation
- A 50-pin Centronics SCSI II Connection
- Battery Charger System
- Optional SCSI II Bay

£399

All prices exclude delivery and VAT (17.5%). Delivery: Systems £19, Lasers and large items £15, software and small items £10. Visa /Access/ American Express /Switch and Government orders welcome. Prices, specifications and offers are subject to change and subject to our conditions of sale copies of which are available on request. Mail order only. No collections please. Goods are normally despatched within 7 days. All orders will be fulfilled within 28 days unless otherwise specified. E&OE.



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Colossus Power Notebooks

The new range of high performance Colossus notebooks incorporate advanced features and high specification such as removable hard disks up to 1.2Gb, 32Mb RAM, multimedia capability, advanced touchpad mouse, VESA local bus graphics and a choice of advanced upgradeable screens. These high specification systems are now available directly from Time Direct at truly amazing prices.



Choice of Removable Screens
9.5" STN VGA mono screen, 10.5" dual scan colour or 9.5" TFT colour screens with 256 vivid colours. Modular design allow the screen to be upgraded

LCD Status Display
All the important parameters are easily visible on this LCD display

External Ports
One advanced bi-directional parallel port, 9 pin fast serial ports with 16550 UART, keyboard, external monitor and PS/2 mouse ports

486DX4-75 or 486DX4-100 Processors
These Intel processors are the fastest processors available and use low power consumption SL technology

Advanced Ports
Ports for docking, and optional infra red and TV tuner modules

Ample RAM up to 32Mb
Two memory module slots allow flexible memory upgrade to 32MB using 4, 8 or 16Mb modules

PCMCIA 2.0 Slots
One type III or two type II slots suitable for advanced modems and network cards

Fast Local Bus Graphics
Advanced 32-bit VESA local bus graphics card with 1Mb Video RAM and Windows® Accelerator

High Quality 84-Key Keyboard
with 12 function keys and embedded numeric keypad with ergonomic palmrest

Light Weight
Only 6.2lb weight with dimensions of 8.8"x11.6"x1.9"

Multimedia Ready
Twin speaker system built-in with microphone. Sound card module option available

Large Removable Hard Drives
High capacity state-of-the-art 2.5" IDE drives with 340Mb, 540Mb, 810Mb or 1.2Gb capacity

Removable 3.5" Floppy
The 1.44Mb floppy drive comes standard and is removable to reduce weight

Long Life Battery
The latest NiMH rechargeable battery is removable. There is full advance power management support with suspend to RAM and suspend to disk

Advanced Touchpad Mouse
The incredible touchpad is easier to use and more reliable than any trackball. This is the most advance pointing device available for notebooks

Pre-loaded Software
All systems are ready to use with MS DOS 6.22 and Windows 3.11

9.4" MONO

486 DX4-75 340Mb / 4Mb

£**1049**

486DX4-100 model£50 Extra
RAM upgrade per 4Mb£140
540Mb model£90
810Mb model£260
1.2Gb model£480
Sound card£80

10.4" DUAL SCAN COLOUR

486 DX4-75 340Mb / 4Mb

£**1319**

486DX4-100 model£50 Extra
RAM upgrade per 4Mb£140
540Mb model£90
810Mb model£260
1.2Gb model£480
Sound card£80

9.4" TFT COLOUR

486 DX4-100 540Mb / 8Mb

£**2149**

RAM upgrade per 4Mb£140
810Mb model£170
1.2Gb model£390
Sound card module£80

TDRCN30C

All prices exclude delivery and VAT (17.5%). Delivery:- Systems £19, Lasers and large items £15, software and small items £10. Visa /Access/ American Express /Switch and Government orders welcome. Prices, specifications and offers are subject to change and subject to our conditions of sale copies of which are available on request. Mail order only. No collections please. Goods are normally despatched within 7 days. All orders will be fulfilled within 28 days unless otherwise specified. E&OE.



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NEC

SuperScript 610 Plus

SuperScript 610 Plus.
The ultimate laser printer for the small business or home user.

NEC combine high resolution print quality, superfast print speed with a real value for money price.

For the small business or home user, nothing can match the performance of the SuperScript 610 Plus. Using NEC's Sharp Edge Technology with a 6ppm laser engine, print quality is virtual 600dpi. Put simply, that means page after page of text or graphics are reproduced continuously and in exquisite detail.

What's more, the SuperScript 610 Plus features GDI technology. So you don't have to spend unnecessary time waiting for the computer to translate your document into other emulations. With GDI there are no translations to be made and this allows the printer to start printing almost instantaneously. And with PCL5e compatibility, you can use a SuperScript 610 Plus even when using DOS software under Windows.

Using Windows GDI also provides true WYSIWYP (What You See Is What You Print), so whatever the Windows application, now or in



the future, there's no problem matching screen fonts with your printer's fonts. And since SuperScript uses the computer's processor and memory, it is infinitely upgradeable by simply upgrading the PC.

- 300 x 300 dpi, 600 x 300 using Sharp Edge Technology (SET)
- 6 ppm print speed
- Uses TrueType or other Microsoft Windows fonts
- Prints on A4 paper, envelopes and overhead transparency film
- Dimensions 370mm wide, 358mm deep, 120mm high

All printers come with free 12 month on site warranty

Claim your FREE Corel Draw v4 CD

£279

SuperScript Color 3000



SuperScript Color 3000 is three colour printers in one. SuperScript prints by Thermal Transfer, Variable Dot Thermal Transfer and Dye Sublimation, and it's compatible* with both Mac and PC (including OS/2 Warp) so almost any software can be used.

- 32k colours (thermal transfer)
- 256k colours (variable dot thermal transfer)
- 16.7 million colours (dye sublimation)
- 3 ppm Mono Thermal Transfer print speed
- 1 ppm Colour Thermal Transfer print speed
- 0.1ppm Colour Dye Sublimation print speed
- Prints on A4 paper and overhead transparency film
- Dimensions 375mm wide, 220mm deep, 270mm high

£599

*Macintosh and OS/2 Warp require additional software

SuperScript 660

Claim your FREE Corel Draw v4 CD



If your business needs consistent, high-quality text in letters and reports or you often use detailed graphs, charts and illustrations in documents, you couldn't do better than SuperScript 660.

- 600 x 600 dpi, 1200 x 600 using Sharp Edge Technology (SET)
- 6 ppm print speed
- Uses TrueType or other Microsoft Windows fonts
- Prints on A4 paper, envelopes and overhead transparency film
- Dimensions 370mm wide, 358mm deep, 120mm high

£379

SuperScript 660i



If you're looking for a network printer (i.e. one that will be connected to more than one PC), or you're using DOS or software other than Windows, SuperScript 660i has all the performance of the SuperScript 660 with complete DOS and network support.

- 600 x 600 dpi, 1200 x 600 using Sharp Edge Technology (SET)
- 6 ppm print speed
- 35 scalable fonts, uses TrueType or other Microsoft Windows fonts
- Prints on A4 paper, envelopes and overhead transparency film
- Dimensions 370mm wide, 358mm deep, 120mm high

£535

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All prices exclude delivery and VAT (17.5%). Delivery:- Systems £19, Lasers and large items £15, software and small items £10. Visa /Access/ American Express /Switch and Government orders welcome. Prices, specifications and offers are subject to change and subject to our conditions of sale copies of which are available on request. Mail order only. No collections please. Goods are normally despatched within 7 days. All orders will be fulfilled within 28 days unless otherwise specified. E&OE.



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AVAILABLE

Firstly, we would like to introduce an Akhter of note, the *AkhterNote!* This is one of our finest lines, bringing modular construction to deliver one of the most flexible notebook packages around. With an unlimited upgrade path and digitised audio record and playback capabilities, this performer has a surprise up its sleeve – an *unbelievably low price*. Just look at the specification and be enthralled!

Some of our top Akhters are demonstrating their audio and video talents. Our *multimedia workstations* bring fun to education, games and business applications using music and moving pictures. With dual speed CD-ROM and enhanced PCI graphics they are destined for a long and successful run.

And at prices like these you can afford to get in on the act, too! *Our finance packages* are a smash hit with everyone, and of course all our lines are delivered right on cue.

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A Classic performance from the AkhterNote

From **£899**

True outstanding Windows performance with supporting sound capabilities, with an unlimited upgrade path – at an unbelievable price!

System supplied with carrycase, AC/DC adaptor and rechargeable NiMH battery offering double the capacity of NiCAD batteries and giving a maximum of 5.15 hours of continuous operation with quick recharge of 90 minutes.

SPECIFICATION

- 66MHz, 75MHz or 100MHz SL enhanced processors
- 4Mb memory expandable to 20Mb
- 1Mb VESA local bus Windows accelerator
- removable LCD screens, Mono 64 gray-scale, Colour DSTN 256 colours or TFT 512 colours
- Built-in SoundBlaster compatible card with multi-directional microphone, earphone and audio-in jacks
- Removable 3.5" 1.44Mb floppy drive
- Two PCMCIA Type II or one Type III slots
- 1 serial port, parallel port with EPP support, SVGA monitor, external keyboard/mouse port, 160-pin docking station port
- Full-function 85/86 key keyboard with soft-key switch and 19mm diameter trackball
- Weight 5.7lbs approx., size 286mm (w) x 224mm (d) x 44mm (h) Mono or 49mm (h) Colour
- 12 months Warranty



NOTEBOOKS

LCN486DX2-66	REMOVABLE HARD DISK DRIVE				
	170Mb	340Mb	540Mb	810Mb	1.2GB
MONOCHROME	£899	£999	£1099	£1199	£1349
DUAL-SCAN COLOUR	£1249	£1349	£1449	£1549	£1699
TFT COLOUR	£1549	£1649	£1749	£1849	£1999

WINDOWS 95 £79.00, MSDOS 6.22 + WINDOWS 3.1 £59.00
DX4-100 UPGRADE £100.00

from **£6** per week

Over 36 Months at 9.7% APR, 10% Deposit, Monthly Payments of £27.54 including DOS and Windows.

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Multimedia Workstations from **£1065**

Everything you need for multimedia – utilising the latest PCI local-bus technology with dramatically enhanced throughput speeds for graphics and video plus superb sound capability. All at a very reasonable price.

SPECIFICATION

- 8Mb memory expandable to 128 Mbyte
- PCI motherboard, incorporating enhanced IDE, EPPECP parallel port and fast (16550) serial port
- 256kbyte cache memory expandable to 512K
- Choice of 428Mb, 525Mb, 850Mb and 1.2Gb IDE hard disks
- 1Mb PCI Windows accelerator card
- 16-bit SoundBlaster compatible card with headphone and microphone
- 3.5", 1.44Mb floppy disk drive
- Internal quad-speed, multi-session, MPC2 compatible CD-ROM drive
- 2 Serial and 1 Parallel ports & Zero Insertion Force (ZIF) CPU socket
- Power saving modes: On/Doze/Stand By and Suspend
- 102 key tactile keyboard and mouse
- Standard Desktop case with built-in speakers, size: 420mm (w) x 420mm (d) x 145 (h)
- 12 month Warranty



MULTIMEDIA WORKSTATIONS

Includes 14" MPRII NI Colour Monitor	428Mb	525Mb	850Mb	1.2Gb
LC486DX2-66MHz	£1065	£1075	£1105	£1145
LCP75-M 75MHz (Pentium Processor)	£1195	£1205	£1235	£1275
LCP90-M 90MHz (Pentium Processor)	£1295	£1305	£1335	£1375
LCP120-M 120MHz (Pentium Processor)	£1495	£1505	£1535	£1575

MS-DOS 6.22 + WINDOWS 3.11 add £59 – For WINDOWS 95 add £79. For 15" FST monitor add £80, 17" add £330

from **£7** per week

Monthly Payments of £30.62

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For 0% finance all you need is 30% deposit and you can pay the balance over 12 months.
Or you can choose to spread payments over 24 or 36 months with a 10% deposit and a flat rate of 5% p.a. (APR 9.7%).

All schemes subject to status.

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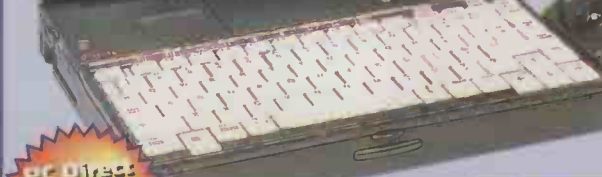


SALE SALE SALE SALE

A TFT Colour notebook 486

THE LOWEST PRICE
Remember, this is a TFT (Thin Film Transistor) Colour screen. Check it out! Look through this magazine and see if you can purchase a TFT system for less!

Intel 486SL 25Mhz 3.3v processor • Integrated 486SL maths co-processor • 8Kb internal cache memory • Built-in sound system and speaker • 4Mb of fast system RAM • RAM expandable to 32Mb • Removable IDE 120Mb hard disk drive • 1.44Mb removable 3.5" floppy disk drive • 8.4" Thin Film Transistor (TFT) Active Matrix colour LCD display • On-board video controller with 512KB of video RAM • Resolution: 640 x 480 in 256 colours on integrated LCD TFT display, or up to 1024 x 768 in 16 colours on external monitor - simultaneous display in 640x480 mode • PCMCIA version 2.0 type III slot • 98/99 key keyboard • Integrated pop-up trackball mouse • Interfaces: 1 serial, 1 parallel, external monitor & PS/2 standard mouse / keyboard socket, dock box connector port • Nickel-Metal-Hydride (NiMH) battery pack • Battery life up to 9.45 hours (maximum) • Advanced power management • Intelligent peripheral time-outs and suspend mode • Service LCD panel "Fuel Gauge" • Autosensing power supply - quick charges in only 85 minutes with system off • MS DOS and Windows 3.1 included • Weighs only 2.5Kg including battery • FREE Carrying case • Three year return-to-base warranty.



Lowest Price in The Book!

DECpc 425SLC/e TFT

£799 ← **Top Value!**

PC Direct Best Value Notebook October 1995

170Mb PCMCIA Type III hard disk drive with Cardsoft software

Add-on Hard Disk Drive

£289 ← 170mb more disk space!

4Mb Additional Memory card upgrade

RAM Expansion

£158 ← Double your RAM!

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5819	CLARIS WORKS FOR WINDOWS	£18	49371	IBM PC330 466DX2 16/364/DW	£599	40014	MICROSOFT PROJECT 3.0/W MLP 1	£40
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5658	LEATHER NOTEBOOK CARRY CASE	£19	0071	LOTUS 123 3.1 10USER UNIX	£90	38009	TOSHIBA DESKSTATION III	£40
47674	FRONTLINE PCMCIA ETHERNET ADAPTOR	£29	39459	LOTUS 123/W MULTIPACK 5	£90	53089	TOSHIBA HARD DRIVE FOR T2400CS M250	£200
42145	HAYES MICROCOMPUTER PRODU OPTIMA 2400	£40	39465	LOTUS FREELANCE/WINDOWS MPAK 5	£90	5897	TOSHIBA 200MB HD FOR T1900C	£200
39901	HAYES MICROCOMPUTER PRODU ULTRA 144 V32.BIS	£95	54531	MANNESMANN TALLY MT150	£135	49919	TOSHIBA T2100CS/350	£1,199
46003	HP JETSTORE 5000 EXTERNAL DAT DRIVE	£1,194	341489	MICROGRAFX DESIGNER/W 3.5	£50	45036	TOSHIBA T1950CT/320	£1,316
44849	HEWLETT PACKARD COLOUR KIT D3 320	£13	44448	MICROSOFT MOUSE 2.0 H/W SERIAL DUAL	£9	47971	TOSHIBA T2400CT/320	£1,381
50200	HEWLETT PACKARD DESKJET 540	£80	45234	MICROSOFT AUTOROUTE EXPRESS (UK) DOS	£12	49920	TOSHIBA T2100CT/350	£1,836
45381	HEWLETT PACKARD JETSTORE 5000 SCSI	£105	44452	MICROSOFT MOUSE 2.0 COMBI & WIN 3.5"	£20	54678	WORDPERFECT DOC SET 6.1 WIN	£4
1484	HEWLETT PACKARD LJ3 SI POSTSCRIPT OPTION	£155	3372	MICROSOFT WINDOWS 3.11 MAN	£4	8863	WORDPERFECT OFFICE DUAL	£14
47166	HEWLETT PACKARD JETSTORE 5000I I/DRIVE	£1,099	39788	MICROSOFT ENTERTAINMENT PACK	£4	339539	WORDPERFECT 5.1/WINDOWS	£20
45374	HEWLETT PACKARD JETSTORE 5000(INC KIT)	£1,099	42567	MICROSOFT MUSICAL INSTRUMENTS	£7	5380	WORDPERFECT 5.2/W DOUBLE ACT	£20
47512	HEWLETT PACKARD JETSTORE 5000E	£1,194	47019	MICROSOFT MOUSE V2.0 B/PNT P5/2	£12	44703	WORDPERFECT OS/2 V5.2	£20

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IBM Aptiva 911

It's whatever you want!

The IBM Aptiva is a superbly specified, reliable, robust system built to the highest specifications.

- 486 DX2/66 MHz processor
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- RAM Expandable to 540MB
- 540MB Hard drive
- 1MB Video memory
- Quad speed CD ROM drive
- 3.5" floppy disk drive
- 16 bit Soundblaster compatible audio
- Powerful 30w Speakers
- 14" SVGA Multisync display
- High quality Keyboard
- High quality Mouse
- IBM PC DOS version 6.3
- Microsoft Windows version 3.11

(Speakers may differ from those illustrated)



IBM Aptiva Model 911
935.32 + VAT = £1,099
 Everything you need!

LANTEC's price also includes the following software packages:

- Compton's Encyclopaedia
- Cyberia
- Hyperman
- Jump Start Kindergarten
- Complete Hi-fi system software
- Launch Pad
- Magic Theatre
- Photo Gallery
- Music Mentor
- Jack Nicklaus' Signature Golf
- Sports Illustrated for Kids
- Undersea Adventure and
- Wall Street Money

PLUS Interest Free Credit! PLUS

Personal and business INTEREST FREE CREDIT terms are available on this system at 0% APR to businesses and persons over the age of 18, subject to status and payment of instalments by direct debit. A deposit of 25% is required and six equal instalments. Example: Purchase price: £1,410 including VAT. £352.50 deposit is required, plus six monthly instalments of £176.25p. LANTEC are licensed Credit Brokers. Offer is subject to change without notice. Written quotations available upon request.

COMPAQ



The COMPAQ ProLinea 4/100

- Exceptional affordability
- Up to 32% faster than 486DX2/66Mhz
- Designed for typical business use
- Compaq quality and reliability

- 100 MHz 486 Intel processors
- Processor upgradeable with Pentium Overdrive
- 8MB RAM as standard
- RAM Expandable to 136Mb
- 420Mb IDE hard disk drive
- 3.5" Floppy disk drive
- Integrated PCI local bus graphics controller
- 1MB Video RAM
- 256

colours at up to 1024 x 768 pixels • Serial and parallel ports • 3.5" floppy disk drive • Compaq Spacesaver slimline keyboard • Compaq mouse • "Plug and Play" compliance makes it easy to add your choice of options • User-selectable Energy Star Compliant features • only 25 watt consumption in low power mode • MS DOS 6.2 • Microsoft Windows v 3.1

- Microsoft Windos '95 Upgrade - (via coupon fulfillment on some models)
- Extensive Security provided by power-on password, Setup Password, Diskette Boot control, Parallel and serial interface controls
- Three year warranty
- CompaqCare telephone support
- Choice of colour monitors (not included in price).



Windows 95

Without Monitor

Compaq ProLinea 4/100 Model 420
821.00 Ready for the 'Net!

With Compaq 140 Monitor

Compaq ProLinea 4/100 Model 420
1029.00 Ready for the 'Net!

Compaq Options and Upgrades:

15" 800 x 600 Compaq 150 Monitor £254
 Extra 4Mb Compaq RAM Memory for ProLinea £159
 Compaq Quad speed IDE CD ROM £136

apricot MS 540 Model 575



Windows 95



- 75 MHz (internal clock speed) Intel Pentium Processor
- 8Mb of RAM
- RAM Expandable to 128Mb of enhanced performance EDO SIMM memory
- 850Mb high performance disk drive
- Cirrus logic GD5434 graphics
- 1Mb of video RAM
- 16.8 million colours at 640 x 480 resolution
- Up to 1024 x 768 in 256 colours (with appropriate display)
- Apricot 14" SVGA Colour Monitor (up to 800 x 600) included
- SoundBlaster Vibra-16 audio
- High quality 20watt external speakers
- Sony Quad speed (600Kb/sec) CD ROM Drive
- Enhanced 102 key keyboard
- Two button mouse
- Power-saving standby mode with two-second recovery
- BIOS-level security
- Two serial ports (16550 compliant)
- Parallel printer port
- Microsoft Windows '95
- Comprehensive software pack for education, personal productivity and entertainment: Word Perfect Home Works for Windows • Lotus Organizer • Hutchinson Multimedia Encyclopedia • 3D Atlas
- Audition • Wing Commander III • Magic Carpet • Hi-Octane

Specification as above

Apricot MS540 575 8/850/CD
1399.00 CD ROM built in

"Internet Ready" version

Apricot MS540 On-line 575 8/850/CD
1499.00 Ready for the 'Net!

Optional Upgrades:

15" Apricot HiVision EVGAe Colour Monitor, 1600 x1280 £259
 Additional 8MB RAM £216
 Details of other models and further options available on request

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T2110CS



- Intel 486DX4 Processor
- 75Mhz clock speed
- 4Mb RAM expandable to 28Mb
- 350Mb hard disk
- 3.5" 1.44Mb floppy drive
- 10.4" STN colour display
- External SVGA monitor port
- 2 x PCMCIA type II or 1 x type III slot
- Mousepoint pointing device
- 4 hours battery life
- Built-in autosensing AC adapter
- Optional Port Replicator
- DOS 6.2 and Windows 3.1/W95
- 1 year world-wide warranty



T2130CS



- Intel 486DX4 Processor
- 75Mhz clock speed
- 8Mb RAM expandable to 32Mb
- 520Mb hard disk
- 3.5" 1.44Mb floppy drive
- 10.4" STN colour display
- External SVGA monitor port
- 2 x PCMCIA type II or 1 x type III slot
- Mousepoint pointing device
- 4 hours battery life
- Built-in autosensing AC adapter
- Optional Port Replicator
- DOS 6.2 and Windows 3.1/W95
- 1 year world-wide warranty



T2130CT



- Intel 486DX4 Processor
- 75Mhz clock speed
- 8Mb RAM expandable to 32Mb
- 520Mb hard disk
- 3.5" 1.44Mb floppy drive
- 10.4" TFT colour display
- External SVGA monitor port
- 2 x PCMCIA type II or 1 x type III slot
- Mousepoint pointing device
- 3.5 hours battery life
- Built-in autosensing AC adapter
- Optional Port Replicator
- DOS 6.2 and Windows 3.1/W95
- 1 year world-wide warranty



LANTEC DIRECT PRICE

Toshiba T2110CS STN Colour

With FREE InfoMover Ethernet Card
£1349

LANTEC DIRECT PRICE

Toshiba T2130CS STN Colour

With FREE InfoMover Ethernet Card
£1599

LANTEC DIRECT PRICE

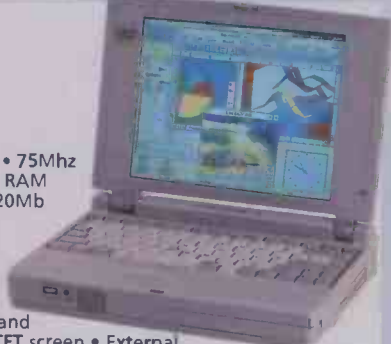
Toshiba T2130CT TFT Colour

With FREE InfoMover Ethernet Card
£1949

T2150CD



- Intel 486DX4 Processor • 75Mhz clock speed • 8Mb RAM • RAM expandable to 32Mb • 520Mb hard disk • 1.44Mb 3.5" external floppy drive • Internal IDE CD-ROM drive • 10.4" TFT or STN colour displays • 640 x 480 x 256 colour on STN and up to 65,536 colours on TFT screen • External SVGA monitor port with up to 65,536 colours • 2 x PCMCIA type II or 1 x type III slots • Mousepoint pointing device • Up to 3 hours battery life • Built-in autosensing AC adapter • Built-in Sound system • Optional Port Replicator • 84 full-size keys and 12 function keys • DOS 6.2 and Windows for Workgroups 3.11/W95 • 3 years world-wide warranty.



Satellite Pro 400



- Intel Pentium Processor • 75Mhz clock speed • 8Mb EDO RAM • RAM expandable to 40Mb • 810Mb hard disk • Swappable Internal/External 3.5" floppy drive • Swappable internal quad speed CD-ROM Drive (Optional in CS Model) • 10.4" TFT or STN colour display • 640 x 480 pixels and up to 256 colours on STN and up to 16.7 million colours on TFT screen • External SVGA monitor port • 2 x PCMCIA type II or 1 x type III slot • Mousepoint pointing device • 4 hours battery life • Built-in sound system • Built-in Autosensing AC Adapter • 84 full-size keys and 12 function keys • Optional Card Station • MS-DOS 6.22 • Windows for Workgroups 3.11/W95 • 3 years world-wide warranty.



STN MODEL

Toshiba T2150CD STN Colour

With FREE InfoMover Ethernet Card
£1699

TFT MODEL

Toshiba T2150CD TFT Colour

With FREE InfoMover Ethernet Card
£2539

STN MODEL

Toshiba Satellite Pro 400CS STN

810Mb hard disk and 8Mb RAM!
£2419

TFT MODEL

Toshiba Satellite Pro 400CDT TFT

TFT Display 16.7 million colours!
£3139

COMPAQ Contura

The Compaq Contura 420C colour

- 486DX4 75Mhz
- 5L enhanced microprocessor
- 8Mb RAM expandable to 32Mb
- 420Mb Hard disk drive (upgradeable)
- 3.5" Floppy drive
- 10.4" colour STN display (upgradeable)
- 1Mb Video RAM
- 3.53M WinMarks local bus graphics performance
- 256 colours at 640 x 480 on built-in screen
- UP to 1024 x 768 on optional external monitor
- 1 x PCMCIA Type III or 2 x Type II slots
- Ports: Serial & Enhanced Parallel, external monitor, keyboard/mouse
- Integrated Optical Trackball
- NIMH industry standard rechargeable battery
- Typical battery life 3.5 hours
- Integrated Status Panel
- AC Adapter with unique DC cord wrap



Includes: MS DOS 6, Windows 3.1, Compaq TabWorks, Lotus Organizer, MS Works for Windows, and Game Pack

Compaq 420C Colour Notebook
 75MHz 420Mb Hard disk NIMH Battery
£1549

digital HiNote family

The Digital "HiNote Ultra" colour notebooks

- 486DX2 50MHz or DX4 75MHz Intel processors
- 340Mb or 528Mb hard drives
- 9.5" colour TFT or STN displays
- 4Mb RAM expandable to 20Mb on Dual Scan or 24 Mb on TFT model
- Integrated Trackball Mouse
- Business Audio/MS Sound System, Microphone and Speaker (Soundblaster compatible)
- Zero footprint, hot dockable snap-on 1.44Mb 3.5" floppy drive
- 640 x 480 in 256 colours
- External SVGA support 1024 x 768 in up to 256 colours
- Wireless Infra-red connectivity
- 2 x PCMCIA Type II or 1 x Type III slot
- Long life Lithium Ion flip down battery
- Serial and Parallel ports
- MS DOS 6.22 and Windows for Workgroups 3.11 pre-Installed
- Free Windows '95 upgrade
- Lotus Organizer
- Unique ultra-thin design
- Light weight - weighs just 2Kg
- 3 year return to base warranty (DX4 75MHz models have 1st year Passport Warranty)
- PLUS a FREE copy of Claris Works while stocks last!



DEC 486DX2 50MHz STN 4Mb
£1639 + Free Claris Works

DEC 486DX2 50MHz TFT 340Mb
£2239 + Free Claris Works

DEC 486DX4 75MHz TFT 4Mb
£2619 + Free Claris Works

DEC 486DX4 75MHz TFT 5Mb
£2689 + Free Claris Works



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The Hewlett-Packard DeskJet 660C



Fast, professional-quality black printing for crisp, sharp characters • Enhanced, clear and vivid colours • Easy to use • Easy to set up • Built-in sheet feeder • Three years warranty

Hewlett-Packard DeskJet 660C
£251.00 ← HP Support Pack: £65

HP DeskJet 660C SupportPack £65
 HP DeskJet 660C spare black cartridge £19
 HP DeskJet 660C spare colour cartridge £21



The Hewlett-Packard DeskJet 340 A great companion to any PC

Shown here with the optional Desktop Sheet Feeder

- 3 pages per minute in black and white • Up to 4 minutes per page in colour (with optional colour kit) • 600 x 300 DPI with RET on plain paper (in monochrome), 300 x 300DPI in colour • built-in HP ColourSmart Technology • 500 pages monthly usage • Optional wireless (Infra-red) printing • 30 sheet input tray • 6 typefaces and 13 scaleable Windows fonts • 1 year warranty included

Hewlett-Packard DeskJet 340
£176.00 ← Price now includes Sheet Feeder!

• Warranty extendable with HP SupportPack.
 • NOW INCLUDES SHEET FEEDER!
 Colour Kit - £28
 Battery pack £25
 Spare black cartridge £15
 Spare colour cartridge £22

The Hewlett-Packard LaserJet 5L

- 4 pages-per-minute • 600 DPI Resolution • 26 internal scalable typefaces • 26 TrueType fonts on floppy • 1Mb standard memory with MEt • memory expandable to 9Mb • 4,000 Pages/month capacity • parallel interface • PCL5e or HP PrintSmart language • 1 year return-to-base warranty • Warranty extendable with HP SupportPack • Supports paper, envelopes, transparencies, cards and labels.



Hewlett-Packard LaserJet 5L
£357.00 ← HP Support Pack: £105

HP LaserJet 5L SupportPack £105
 HP LaserJet 5L Toner cartridge £47
 HP LaserJet 5L 1Mb memory expansion kit £77



The Hewlett-Packard DeskJet 600

Replacing the HP DeskJet 540, the HP DeskJet 600 is easy to set up and install. Designed to be "Family-friendly" the Dr. DeskJet troubleshooting software tools

will help you if things go wrong. Basically a mono-chrome printer, (at up to 4 pages per minute), the DeskJet 600 will print occasional colour (with the optional Colour Kit) at up to 1 minute per page.

Hewlett-Packard DeskJet 600
£190.00 ← HP Support Pack just £40

HP DeskJet 600 SupportPack £40
 HP DeskJet 600 Spare black cartridge £19
 HP DeskJet 600 Optional Colour Kit £29

Enjoy total peace of mind by purchasing a Hewlett-Packard SupportPack. This will extend your warranty to 3 years and will provide you with on-site, next day response for each of the above printers. The costs are: HP DeskJet 340 and HP DeskJet 600 - £40, HP DeskJet 660C - £65, and HP LaserJet 5L - £105.

PC Enhancement Products From LANTEC DIRECT

Easy to install and a delight to use!

SoundBlaster 16 Value Edition, 16 Bit stereo sound card £69.00
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MS Windows '95 full copy £118.00
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 MS Office Pro '95 full copy £449.00
 MS Plus for Windows '95 £27.00

Make the most of Windows '95 with a sound card, speakers and a CD ROM drive. We have easy-to-install complete packages at very reasonable prices. Call for details. We also sell all regular software packages.

Microsoft Windows 95

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New Filing Cabinets from £1,299* with storage options up to 38.4GB

The facsimile, personal computer and mobile phone have all revolutionised the way we work in business today. Now thanks to a new combination of powerful Windows based Document Image Processing/ Retrieval software, low cost CD Revolution CD recorders, high-speed scanners & high-performance Procom CD ROM Towers (we think of them as filing cabinets), the document management system is about to come of age.

With a customised CD Revolution Pentium® processor based PC, you can say goodbye to those time consuming trips to your filing cabinets. No more time wasting; no more searching for misplaced or lost files.

All your paper is safely imaged and readily accessible with pin point accuracy and speed, from recordable CD.

A 650MB recordable-CD can typically store about 20,000 bitmap pages at 200dpi. So to access a stack without costing a stack give us a call to find out more.

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Procom-7 CD-ROM Drive Towers for PC & Mac - A complete range of Ethernet, Token Ring, Single SCSI ID - CD-ROM Drive Towers In a choice of x4 or x6 speed drives & up to 4,500MB of data storage. Ethernet & Token Ring versions compatible with Novell Network. Simple installation. Prices start from **£1,299 +VAT**



Procom-21 CD-ROM Drive Towers for PC - A complete range of Ethernet, Token Ring, 3 SCSI IDs - CD-ROM Drive Towers in a choice of x4 or x6 speed drives & up to 13,600MB of data storage. Ethernet & Token Ring versions with integral 486/ Pentium® CPU. Full range of CD Server software available. Prices start from **£6,254 +VAT**



Procom-56Rax CD-ROM Drive Tower for PC is compatible with most popular networks. It is the perfect solution for 7-days-a-week data distribution. It comes equipped a Pentium® based PC and with up to 56 CD-ROM drives providing 38.4GB of storage. Available with hot-swappable CD-ROM modules, power supplies & fans.



ZyIMAGE - For use with Windows it offers complete scalable document scanning and OCR. Whether you are processing a few hundred pages or millions we/ you can easily tailor a system to meet your needs. You can't possibly comprehend the power of a ZyIMAGE search until you've had the opportunity to use it. **ZyIMAGE - £995 +VAT**

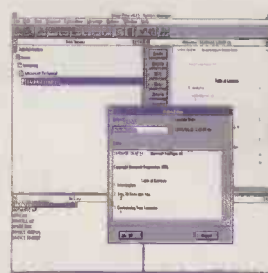


Image Tree - Document Management System (DMS) - For use with Windows, it's a full featured DMS and includes advanced Document Image Processing without needing any third party add-ons. Documents can be found quickly from the filing cabinets or by using the powerful search features. **Image Tree - Professional - £1,350 +VAT**

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TOSHIBA- The world leader in portable computing

The T2110/350 - presenting the facts in black and white

The T2110/350 is the latest addition to the Toshiba range of portable PCs providing you with a powerful specification at a price you'll find difficult to resist.

Power is provided by the Intel DX4/75MHz processor, with 4MB of RAM as standard (easily expandable to 28MB) and an upgradable 350MB hard disk. Its advanced dual scan 9.5" monochrome STN screen offers great mobile viewing clarity. Advanced Toshiba portable technology is now even more affordable and accessible.

- Features:**
- ✓ Processor: i486DX4(75MHz), 3.3v (includes numeric co-processor)
 - ✓ RAM: 4MB expandable to 28MB
 - ✓ Hard Disk: 350MB (upgradable)
 - ✓ Graphics: VGA/SVGA, VESA Local Bus Support
 - ✓ Display: dual scan STN mono, up to 64 grey scales, (640 x 480 pixels), 9.5" diagonal display
 - ✓ Floppy Drive: Internal 3.5" 1.44MB
 - ✓ PCMCIA Expansion: 1 x R2.0 III or 2 x R2.0 II
 - ✓ Ports: ECP parallel; RS-232C serial (16550 UART); port replicator; SVGA monitor; PS/2 keyboard.
 - ✓ Battery: Battery NiH, with up to 4 hours battery life
 - ✓ Ops System: MS-DOS 6.22 with Toshiba enhancements, MS Windows 3.11,

- Cardware PCMCIA card support software, MaxTime Power Management and Plug & Play BIOS.
- ✓ Included: Mousepoint, password security and Kensington cable lock provision.
- ✓ Weight: 3.2Kg (7lbs)
- ✓ Warranty: 12 months international (return to Toshiba)



New models and low prices.

Safelite Pro 400 - "PENTIUM POWER NOW COMES IN A UNIQUE MODULAR FORMAT"

The Satellite Pro 400 is the first modular notebook from Toshiba. It combines Pentium processing power with a massive 810MB hard disk and Toshiba's unique configurable format of swappable CD ROM and floppy disk modules. Connectivity is assured via an in-built Type III PCMCIA slot and the optional CardStation port replicator.

- Features:**
- ✓ Processor: Pentium 75MHz, 2.9v (includes numeric co-processor)
 - ✓ RAM: 8MB EDO expandable to 40MB
 - ✓ Hard Disk: 810MB
 - ✓ Graphics: VGA/SVGA compatible, VESA Local Bus Support
 - ✓ Display: 10.4" diagonal display size with 640 x 480 pixel resolution and simultaneous internal/external display mode 400CS: advanced (dual scan) colour STN. Up to 256 colours, 400CDT: high res. TFT colour LCD up to 16.7m colours,
 - ✓ Floppy Drive: swappable internal/external 3.5" 1.44MB
 - ✓ CD ROM: swappable quad, E-IDE 5.25" format

- (210ms random access time)
- ✓ PCMCIA Expansion: 1 x R2.0 III or 2 x R2.0 II
- ✓ Battery: Battery Li-Ion (up to 4.0 hours battery life)
- ✓ Docking Unit: CardStation port replicator
- ✓ Ops System: MS-DOS 6.22 with Toshiba enhancements, MS Windows for Workgroups 3.11, Cardware PCMCIA card support software, MaxTime Power Management, ESS sound system compatible, infra-red file transfer and Flash BIOS.
- ✓ Included: Integrated MousePoint, Kensington cable lock provision.
- ✓ Weight: max 3.3Kg (6.9lbs)
- ✓ Warranty: 36 months international (return to Toshiba)



Toshiba Accessories for the 2100/2150 Series - ready to go!

MEMORY EXPANSION	TOSHIBA PART NO.	ITEM NO.	PRICE
T2100/T2150 4MB	PA2026U	77-41-5Q	£215
T2100/T2150 8MB	PA2027U	77-41-6Q	£395
T2100/T2150 16MB	PA2028U	77-41-7Q	£799
T2100/T2150 24MB	PA2029U	77-41-8Q	£1599



BATTERIES	TOSHIBA PART NO.	ITEM NO.	PRICE
Battery pack (NiH2)	PA2437-UY	77-41-9Q	£95

Connectivity & Multimedia	TOSHIBA PART NO.	ITEM NO.	PRICE
Adv. PCMCIA V32 Fax Modem	TPCV32PF-UK	71-81-4Q	£185
Adv. PCMCIA V34 Fax Modem	TPCV34PF-UK	70-85-4Q	£215
Port Replicator	PA2708-UY	77-42-1Q	£145
Adv. PCMCIA Ethernet adaptor	PCE-10BC	75-61-1Q	£213

DESCRIPTION	PROCESSOR	RAM	DISK	SCREEN	ITEM NO.	PRICE	DESCRIPTION	PROCESSOR	RAM	DISK	SCREEN	ITEM NO.	PRICE
T2110	486DX4/75	4MB	350MB	Mono	79-28-5Q	£835	T4850CT	486DX4/75	8MB	810MB	TFT COL	76-56-9Q	£2545
T2110CS	486DX4/75	4MB	350MB	stn COL	78-39-0Q	£1335	T4900CT	Pentium/75	8MB	810MB	TFT COL	76-57-0Q	£3025
T2130CS	486DX4/75	4MB	520MB	stn COL	78-39-1Q	£1595	Satellite Pro 400CS	Pentium/75	8MB	810MB	STN COL	78-40-3Q	£2399
T2130CT	486DX4/75	8MB	520MB	TFT COL	78-39-2Q	£1925	Satellite Pro 400CDT	Pentium/75	8MB	810MB	16.7 TFT	78-40-4Q	£3115
T2150CDS	486DX4/75	4MB	260MB	STN COL	77-28-5Q	£1475	Portégé	Pentium/90	8MB	720MB	16.7TFT	78-40-5Q	£3015
T2150CDS	486DX4/75	4MB	520MB	STN COL	77-28-6Q	£1695	Tecra	Pentium/120	16MB	1.2GB	16.7TFT	79-56-6Q	£CALL
T2150CDT	486DX4/75	8MB	520MB	TFT COL	77-28-7Q	£2552							

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NEW

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Every USR Sportster shipped contains Pipex Dial Trial software. This provides you with 30 days free access to the World Wide Web (WWW) and news. Upgrade to Pipex Dial full-product will cost £50 and comes with a further 60 days free access. Full product will give FTP, E-mail, TelNet and Ping access. Pipex are a subsidiary of the Unipalm group and are the UK's leading Internet provider which currently gives you 80% coverage for local call rates. After your 90 day introductory period further subscription is available at £15 per month.



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Sportster - Best selling modem brand in the world

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Jumbo Trakker 700, 680MB	£199
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420DX4/75 9.5" COL STN 4MB/420MB	£1625
420 cdDX4/75 9.5" COL STN 4MB/720MB	£1949
430c DX4/100 8.4" COL STN 4MB/420MB	£1949
430c DX4/100 8.4" COL TFN 4MB/720MB	£2347
LTE 5 Series	
5000 510 CSTN/75 8MB/510MB	£2525
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Microlin FX 32 + PC 8-BIT ISA V32bis, FAX	£129
Microlin FX NB32 PCMCIA 2.1 V32bis, FAX	£180
Microlin FX NB34 PCMCIA, FAX	£185
PSION DACOM - 2 Year Warranty Gold Card V32bis PCMCIA 2.1 V32bis, FAX	£175
Gold Card V.34 PCMCIA V34, FAX	£195
WORLDPORT - 5 Year Warranty PCMCIA 28.8 2.0 V34bis fax	£165
US ROBOTICS - 5 Year Warranty Sporster 14.4 WITH FAX V32bis, FAX	£104
Sporster 28.8 WITH FAX, v34 ISA	£156

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LapCat GT-300	£278
SICOS Sicos Colour Page Scanner - ISA	£236
LOGITECH PageScan Colour Sheetfed	£275
ScanMan Easytouch	£198
ScanMan PC Colour Win	£138
ScanMan 256 WIN	£69

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NetLink Gold Internet Kit, V34	£175
WORLDPORT - 5 Year Warranty Dual STD. cellular v32bis, fax	£122

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Samsung SF2800 FAX/ANSWERING	£275
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BT DF200 Dark grey	£249
BT DF400, Dark grey	£325
BT DF400, Alpine	£325
Panasonic UF-V60	£344
PLAIN PAPER FAX	
BT S50	£589
BT BF800	£745
Canon B320	£639
Canon B34	£745
PLAIN PAPER FAX-LASER	
Panafax UF-745	£1089
Panafax UF-755E	£1399

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Accura 288, Vfc, Internet Kit FAX	£173
Accura 288, Vfc, Message, FAX	£99
Optima 144, V32bis, Business, FAX	£245
Optima 288, V34, Business, FAX	£245
ESP Communication s Accelerator V2.0 (16-bit Serial Board, ISA PC's & Windows)	£329
MOTOROLA - 2 Year Warranty 3400 Pro V34bis, Fax	£149
On-Line Internet solution (with 3400 Pro)	£159
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Linnet FX V34, Fax	£165
US ROBOTICS - 5 Year Warranty Sporster 14.4 with Fax, V32bis, FAX	£104
Sporster 28.8 with Fax, V34 Fax	£156

MONITORS

ADI

Model	Size	RGB	Temp Adj.	Item No.	Price
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MicroScan 3V	14" 0.28	8		71-79-20	£185
MicroScan 4V	15" 0.28 FST	8		72-00-90	£249
MicroScan 4GP	15" 0.28 FST	4		72-01-40	£269
MicroScan SEP	17" 0.28 FST	4		72-01-50	£449
MicroScan SAP	17" 0.28 FST	4		72-01-70	£459

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ITEM NO.	PRICE
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LX-300 Colour Kit	£29
FX-870 9 Pin	£245
FX-1170 9 Pin	£299
LQ300 24 Pin	£147
LQ-570+ 24 Pin	£212
LQ-870 24 Pin	£377
LQ-1070+ 24 Pin	£298

DFX-5000 9 Pin	£1179
DFX-8000 9 Pin	£2019
DLQ-3000 24 Pin	£789
PANASONIC KX-P1150 9 Pin	£189
KX-P3696 9 Pin	£266
KX-P2023 24 Pin	£108
KX-P 2124 24Pin	£199
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Item No.	Price
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BJ-200EX	£158
BJ230	£236
BJ300	£344
BJ330	£388
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BJC-4000 Colour	£326
BJC600 9 Colour	£1064
BJC800 Colour	£1636
EPSON Stylus 8500	£173
Stylus 820 Colour Kit	£55
Stylus Colour IIS	£198
Stylus Colour II	£255
Stylus Pro XL A3 Col	£1329

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Brother HL-6301 GDI, 6ppm	£345
Brother HL-660 GDI	£458
Brother HL-1260 GDI	£895
Kyocera FS-400	£359
Kyocera FS-1550	£875
Kyocera FS-1600	£1069
NEC SuperScript 610+, 6ppm	£279
NEC SuperScript 660, 6ppm	£385
OKI DL1600ex, LED, 6ppm	£2999
OKI DL1601ex, LED, 6ppm	£3859
OKI DL1601ex, 4ppm	£665
Panasonic KX-P4430, 5ppm	£484
Panasonic KX-P4440, 10ppm	£699
Panasonic KX-P6100, 6ppm GDI	£265
Panasonic KX-P6150, 6ppm GDI	£305
Star WinType 4000 GDI 4ppm	£288

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Quicken4 Deluxe Business Pack WIN 3 1/2"	£45
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Sage Sterling V2 FAYROLL WIN 3 1/2"	£32-00
Sage Sterling V3.0 Fin. Cont. WIN 3 1/2"	£33-40

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Corel-Draw V4.0 CD	£85
Corel-Draw U/G V4.0 V5 CD	£118
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Corel-Draw V5.0 CD	£278
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Lotus Organizer V2.1 Win 3 1/2"	£85
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Lotus SmartSuite R4.0 Upgrade: 3 1/2"	£245
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MS Office V4.2 Win 3 1/2"	£324
MS Office V4.2 Win CD	£324
MS Office V4.2 Win Trade in Voucher	£159
MS Office V4.2 Win Trade in Voucher	£222
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MS Office Pro V4.3 Win CD	£424
MS Office Pro V4.3 Win CCP Upgrade 3 1/2"	£249
MS Office Pro V4.3 Win Trade in Voucher	£162
Novell Perfect Office Sid U/G 3 1/2"	£114
Novell Perfect Office Trade Up 3 1/2"	£134
Novell Perfect Office Pro U/G 3 1/2"	£174
Novell Perfect Office 3.0 Pro U/G 3 1/2"	£199

(SEE INTEGRATED SECTION FOR WORKS)

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HP LaserJet 5P




HP DeskJet 5P
£574
Item No. 77-07-8Q

Designed for the office with low/medium volume requirements

Features:

- ✓ Up to 6 pages per minute
- ✓ 2MB RAM with memory enhancement (expandable to 50MB)
- ✓ 600dpi, with 300dpi compatibility mode;
- ✓ Economode
- ✓ Emulates enhanced HP PCL5 with optional Adobe PostScript™ Level 2 SIMM
- ✓ Fonts: 45 scalable typefaces (35 Intellifont and 10 TrueType)
- ✓ Universal 250 sheet A4 input cassette and one 100 sheet or 10 envelope multipurpose tray as standard (with flat paper path)
- ✓ HP JetDirect Option
- ✓ 12 months return to HP warranty (upgradable to 36 months home/office cover with HP SupportPack)

HP LaserJet 4 Plus



HP LaserJet 4Plus
£972
Item No. 75-15-8Q

The laser printer for medium to large volume requirements.

Features:

- ✓ up to 12ppm
- ✓ 2MB RAM (exp. to 34MB)
- ✓ Resolution : 600 x 600dpi.
- ✓ Emulates enhanced HP PCL5
- ✓ Fonts: 45 scaleable typefaces (35 Intellifont, 10 TrueType)
- ✓ 250 sheet A4 and 100 sheet/10 envelope input cassette and 250 sheet output tray .
- ✓ 12 month return to HP Warranty

HP LaserJet 5L




HP LaserJet 5L
£345
Item No. 78-45-4Q

Brand new low cost, personal laser printer with instant-on fuser.

Features:

- ✓ up to 4ppm
- ✓ 1MB RAM (exp. to 9MB)
- ✓ Resolution : 600 x 600dpi.
- ✓ Emulates enhanced HP PCL5
- ✓ Fonts: 26 TrueType scaleable typefaces
- ✓ 100 sheet A4 input cassette and 100 sheet output tray (alternate flat paper path)
- ✓ 12 month return to HP Warranty .

HP DeskJet 600




HP DeskJet 600
£185
Item No. 79-02-7Q

Designed to produce professional quality documents in the home or in the office.

Features:

- ✓ 80 column
- ✓ Monochrome with optional colour kit available
- ✓ Up to 4ppm in Econofast mode, 1ppm (Best mode) for black text
- ✓ Up to 1mpm in Econofast mode, 4mpm (Best mode) for colour graphics
- ✓ Resolution : 600 x 600 dpi mono; 300 x 300 colour; 300 x600dpi on film or glossy.
- ✓ Emulates HP PCL3
- ✓ Fonts: 4 portrait & 4 landscape for DOS and 14 TrueType for Windows
- ✓ Built-in A4 100 sheet feeder (or 50 transparencies or 20 envelopes)
- ✓ 36 month return to HP Warranty (upgradable to 36 months home/office cover with HP SupportPack).

HP DeskJet 660C



HP DeskJet 660C
£245
Item No. 77-07-3Q

The versatile inkjet printer for the office.

Features:

- ✓ 80 column
- ✓ Integrated monochrome and colour
- ✓ Up to 4ppm in Econofast mode, 1ppm (Best mode) for black text
- ✓ Up to 0.6mpm in Econofast mode, 3mpm (Best mode) for colour graphics
- ✓ Resolution: 600x600dpi mono (300x300dpi colour)
- ✓ Emulates HP PCL3+
- ✓ Fonts: 8 for DOS and 14 TrueType fonts for Windows
- ✓ Built-in 100 sheet A4 feeder (or 50 transparencies or 20 envelopes)
- ✓ 36 month return to HP warranty (upgradable to 36 months home/office cover with HP SupportPack)

HP DeskJet 850C



HP DeskJet 850C
£330
Item No. 77-07-5Q

Fast print quality for the professional user.

Features:

- ✓ 80 column
- ✓ Integrated monochrome and colour
- ✓ Up to 6ppm in Econofast mode, 4ppm (Best mode) for black text
- ✓ Up to 3ppm in Econofast mode, 1ppm (Best mode) for colour graphics
- ✓ Resolution: 600x600dpi mono 300x300dpi with C-RET colour
- ✓ Emulates HP PCL3+
- ✓ Fonts: 26 scaleable typefaces and 14 TrueType fonts for Windows
- ✓ 150 sheet multi purpose feeder
- ✓ 12 month return to HP warranty (upgradable to 36 months' home/ office cover with HP SupportPack)

SCANNERS	ITEM NO	PRICE
HP ScanJet 45 ISA	79-52-0Q	£229
HP ScanJet 4C	79-46-2Q	£629

INKJET PRINTERS	ITEM NO	PRICE
DeskJet 340	78-45-3Q	£1170
DeskJet 340 & Support	79-23-4Q	***£207
DeskJet 340 & CSF	79-23-5Q	£1192
DeskJet 340 & CSF & Support	79-23-8Q	***£228
DeskJet 600	79-02-7Q	£1185
DeskJet 600 & Support	79-24-3Q	***£220
DeskJet 600 & Colour Kit	79-24-0Q	£214
DeskJet 600 & Colour Kit & Support	79-24-2Q	***£245
DeskJet 660C Col	77-07-3Q	£245
DeskJet 660C Col & Support	77-08-2Q	***£299
DeskJet 850C Col	77-07-5Q	£330
DeskJet 850C Col & Support	77-08-4Q	***£394
DeskJet 1200C Col	71-69-4Q	£629
DeskJet 1200C & Support	76-09-3Q	***£719
DeskJet 1200C/PS Col	71-75-0Q	£1012
DeskJet 1600C Col	77-07-6Q	£829
DeskJet 1600C & Support	77-08-5Q	***£935
DeskJet 1600CM Col	77-07-7Q	£1219
DeskJet 1600CM & Support	77-08-6Q	***£1329
PaintJet XL300 Col	71-56-9Q	£1585
HP DeskJet XL300 Col & Support	76-13-3Q	***£1675

LASER PRINTERS	ITEM NO	PRICE
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HP LaserJet 5P, 6ppm	77-07-8Q	£574
HP LaserJet 5P & Support	77-08-7Q	***£699
HP LaserJet 5L & Support	79-24-4Q	***£445
HP LaserJet 5MP, 6ppm	77-07-9Q	£725
HP LaserJet 5MP & Support	77-08-8Q	***£829
HP LaserJet 4 Plus, 12ppm	75-15-8Q	£972
HP LaserJet 4 Plus & Support	75-15-9Q	***£1135
HP LaserJet 4M Plus, 12ppm	75-10-6Q	£1290
HP LaserJet 4M Plus & Support	76-46-3Q	***£1439
HP LaserJet 4V 16ppm,	76-02-9Q	£1365
HP LaserJet 4V & Support	76-13-1Q	***£1565
HP LaserJet 4MV 16ppm,	76-03-0Q	£1965
HP LaserJet 4MV & Support	76-46-4Q	***£2185
HP LaserJet 4SI 16ppm	71-69-2Q	£2085
HP LaserJet 4SI & Support	76-11-3Q	***£2555
HP LaserJet 4SI/MX, 16ppm	71-75-6Q	£2965
HP LaserJet 4SI/MX & Support	76-46-2Q	***£3395
HP Color LaserJet A3	76-69-8Q	£4195
HP Color LaserJet A3 & Support	77-05-7Q	***£5395

HP OfficeJet LX - if you can't decide between a new printer, fax or copier-get all three



HP OfficeJet LX
£465
Item No. 78-61-7Q

PRINTER MANUFACTURER'S WARRANTY DETAILS
 † Does not include On-Site Maintenance * = 1 Year On-Site Maintenance ** = 2 Year On-Site Maintenance *** = 3 Year On-Site Maintenance
 (Please note: Panasonic on-site warranty is limited to the UK Mainland)

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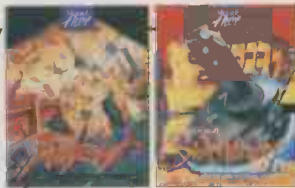


MS Encarta 96
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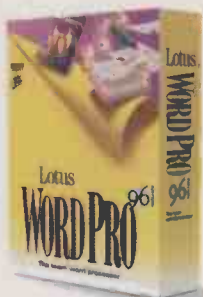
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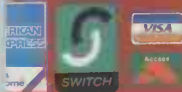
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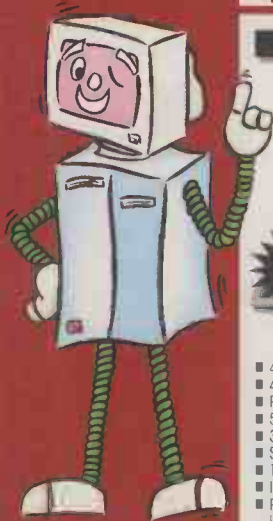
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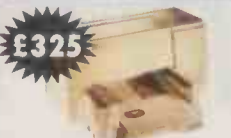
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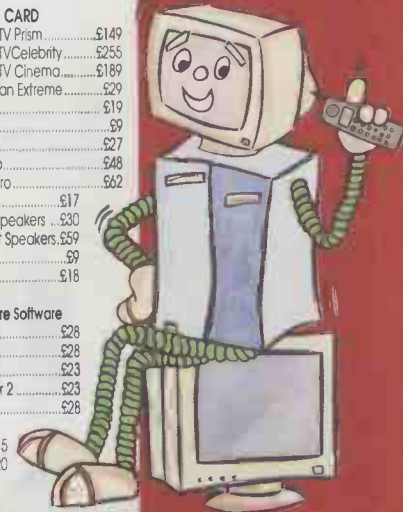
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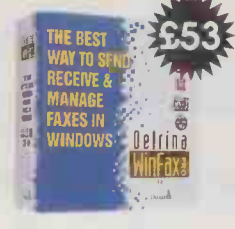
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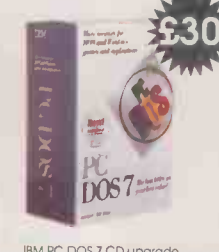
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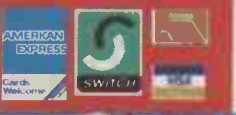
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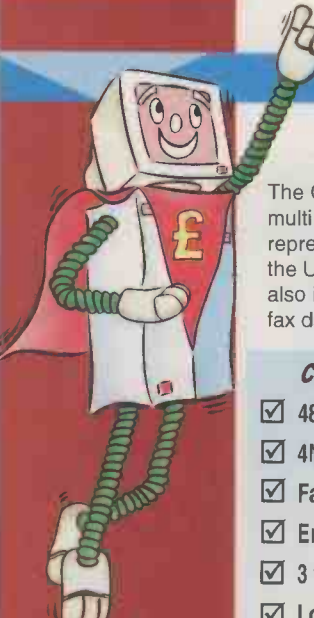
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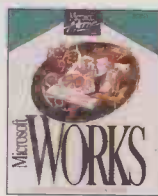
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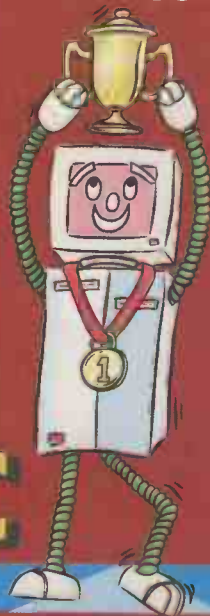
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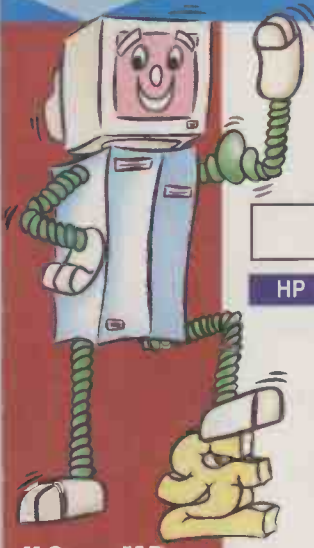


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- ◆ As above with Postscript & 6Mb RAM£1294

HP LASERJET 4V

- ◆ The new network printer that offers A4/A3 paper size printing
- ◆ Prints upto 16ppm
- ◆ 600 dpi
- ◆ 4Mb RAM



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HP LASERJET 4MV

- ◆ As above with built-in network interface..£1963

HP LASERJET 4Si

- ◆ High speed with 45 scalable fonts
- ◆ Prints upto 16ppm
- ◆ 600 dpi
- ◆ 2Mb RAM
- ◆ Network printer



£2053

HP LASERJET 4Si MX

- ◆ As above with PostScript & 10Mb RAM...£2899

HP DESKJET

HP DESKJET 340

- ◆ Superb portable with optional auto sheet feed & colour kit
- ◆ Prints up to 3ppm
- ◆ 600 x 600 dpi
- ◆ 6 built-in fonts
- ◆ Built-in sheet feeder



£171

Options

- ◆ Colour kit £38

HP DESKJET 600

- ◆ Standard 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



£185

HP DESKJET 660C

- ◆ Colour DeskJet with simple operation and exceptional quality output
- ◆ 80Kb buffer
- ◆ Prints up to 4ppm
- ◆ 600 x 300 dpi
- ◆ 6 built-in typefaces
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486DX4-100 4Mb£309
Pentium® 75 8Mb£479
Pentium® 100 8Mb£579
Pentium® 120 8Mb£629

2. Select the IDE Hard Disk.
540Mb£100
850Mb£130
1.08Gb£180
1.6Gb£280

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14" SVGA colour£120
14" SVGA NI£160
15" SVGA NI£230
17" SVGA NI£440

4. Select the CD / Multimedia Options.
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Double speed CD-ROM Plus 16-bit sound card & speakers£80
Quad speed CD-ROM drive alone£100
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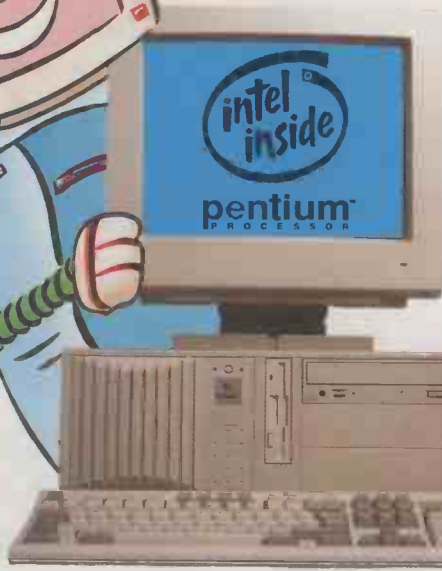
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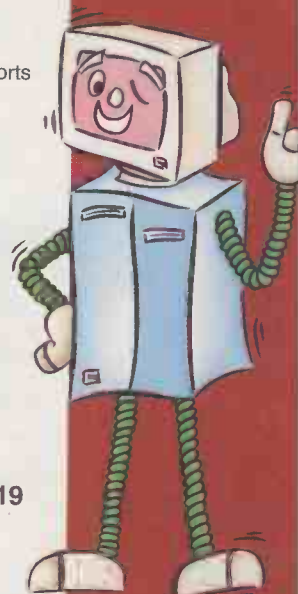
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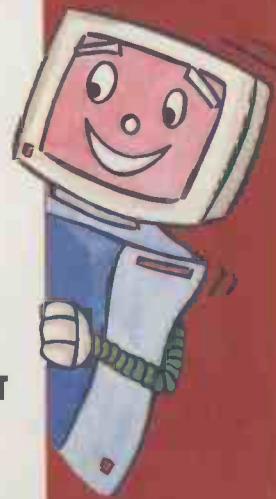
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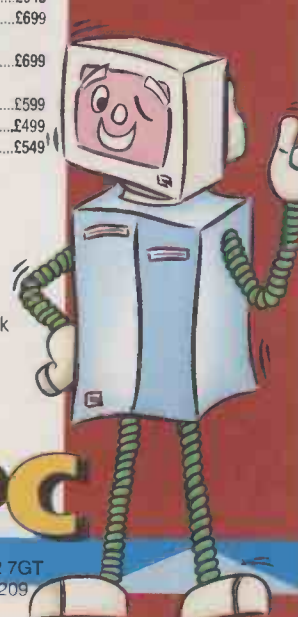
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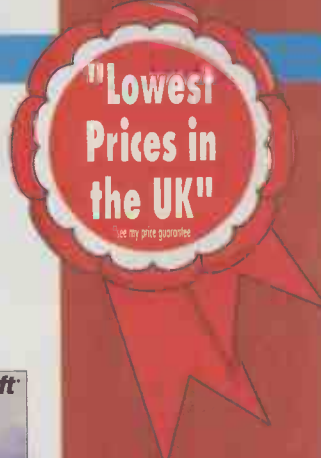
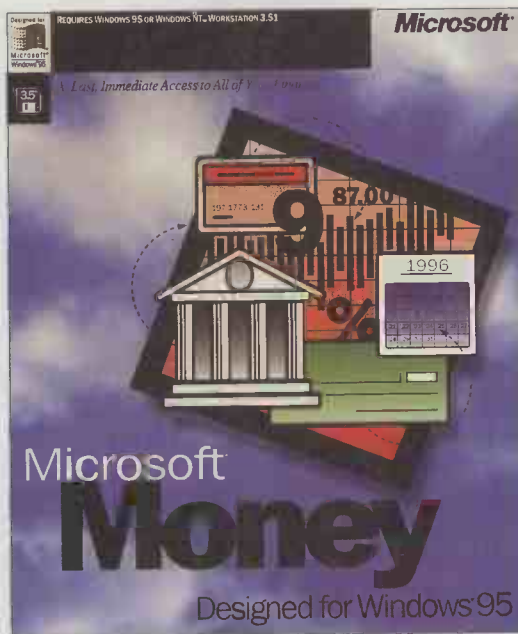
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TAG networks use exactly the same top quality components as in our standard systems.

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3 x TAGNET Workstations	3 x Windows for workgroups
486 DX4-100	3.11 & DOS 6.22
8Mb RAM	Installation for above system £500
850Mb hard drive	Includes travel within the M25 area, all cabling sockets etc.
14" SVGA colour monitor	

£2400

TAG SERVER



TAG 5 USER

1 x TAGNET Fileserver	5 x TAGNET Workstations
P5-90	486 DX4-100
16Mb RAM	8Mb RAM
1.3Gb IDE hard drive	850Mb hard drive
14" SVGA colour monitor	14" SVGA
PCI Ethernet card	5 x DOS 6.22 & Windows 3.11
Full tower case	Installation for above system £750
1Gb tape streamer	Includes travel within the M25 area, all cabling sockets etc.
Quad speed CD-ROM	
Novell 4.1 5 user	

£6000

TAG 10 USER

1 x TAGNET Fileserver	10 x TAGNET Workstations
P5-100	486 DX4-100
16Mb RAM	8Mb RAM
2.1Gb SCSI II hard drive	850Mb hard drive
2Gb DAT drive	14" SVGA
Quad speed CD-ROM	10 x DOS 6.22 & Windows 3.11
PCI Ethernet card	Installation for above system £995
Novell 4.1 10 user	Includes travel within the M25 area, all cabling sockets etc.
Full tower case	
14" SVGA colour monitor	

£11550

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"An attractive prospect, competently put together with a good level of performance."

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486DX4-100
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486DX4-100

- Intel® 486DX4-100MHz processor
- 3 PCI & 4 ISA slots (1shared)
- Energy Star compliant power saving features
- P24T Pentium™ upgrade socket
- SIS Chip set
- 8k internal and 256k external cache
- 4Mb RAM expandable to 64Mb
- 3.5" diskette drive
- 850Mb 11ms enhanced IDE hard drive
- Diamond Stealth 1Mb PCI graphics accelerator card
- 1 parallel port, 2 serial (16650 UART) ports
- 14" .28DP NI MPR-II colour SVGA display
- Enhanced keyboard & MS compatible mouse
- Available in desktop or mini tower case

£695

P5-75

- Intel Pentium™ 75MHz processor
- PCI (75MHz to 200MHz) mother board
- 3 PCI & 4 ISA slots (1shared)
- Energy Star compliant power saving features
- Plug & play BIOS for easy upgradeability
- Intel Triton chip set
- 16k internal and 256k external cache
- 8Mb RAM expandable to 128Mb
- 3.5" diskette drive
- 850Mb 10ms enhanced IDE hard drive
- Diamond Stealth 1Mb PCI graphics accelerator card
- 1 parallel port, 2 serial (16650 UART) ports
- 14" .28DP NI MPR-II colour SVGA display
- Enhanced keyboard & MS compatible mouse
- Available in desktop or mini tower case

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P5-90

As P5-75 but with Intel Pentium™ 90MHz processor

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10. GUARANTEED excellent value for money

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You need X-ray vision to see under the skin of a TAG system

Then you can see that TAG use only the highest performing components, chosen after long term testing and proven use, combined within a fully integrated system that ensures maximum performance with longer life and outstanding reliability.

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There is a perfect solution for virtually any computing need, from our 3 ranges. Or our engineers can custom build systems for specialised solutions.

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- Intel® 486DX4-100MHz processor
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- Energy Star compliant power saving features
- P24T Pentium™ upgrade socket
- SIS Chip set
- 8k internal and 256k external cache
- 8Mb RAM expandable to 64Mb
- 3.5" diskette drive
- 850Mb 11ms enhanced IDE hard drive
- Diamond Stealth 1Mb PCI graphics accelerator card
- 1 parallel port, 2 serial (16650 UART) ports
- 14" .28DP NI MPR-II colour SVGA display
- Quad speed internal CD-ROM drive
- Sound Pro 16 sound card (Creative Labs chip set)
- Yamaha YST-M5 powered Hi-Fi speakers
- MPC-2 Compatible
- Enhanced keyboard & MS compatible mouse
- Available in desktop or mini tower case
- **FREE microphones & earphones PLUS FREE 26 CD bundle (worth £300)** see panel for details

£1025

PS-75

- Intel Pentium™ 75MHz processor
- PCI (75MHz to 200MHz) mother board
- 3 PCI & 4 ISA slots (1shared)
- Energy Star compliant power saving features
- Plug & play BIOS for easy upgradeability
- Intel Triton chip set
- 16k internal and 256k external cache
- 8Mb RAM expandable to 128Mb
- 3.5" diskette drive
- 850Mb 10ms enhanced IDE hard drive
- Diamond Stealth 1Mb PCI graphics accelerator card
- 1 parallel port, 2 serial (16650 UART) ports
- 15" .28DP NI MPR-II colour SVGA display
- Quad speed internal CD-ROM drive
- Sound Pro 16 sound card (Creative Labs chip set)
- Yamaha YST-M5 powered Hi-Fi speakers
- Microphones & earphones
- MPC-2 Compatible
- Enhanced keyboard & MS compatible mouse
- Available in desktop or mini tower case
- **FREE microphones & earphones PLUS FREE 26 CD bundle (worth £300)** see panel for details

£1195

PS-100

As P5-75 but with Intel Pentium™ 100MHz processor

£1325

MULTIMEDIA

- Creative Labs, soundblaster AWE 32 **£149**
- Sound Pro 16 (Creative Labs chip set) **£59**
- TAG QUAD SPEED MULTIMEDIA KIT:**
- Sound pro 16 card • Quad speed CD-ROM
- Yamaha YST-M5 • Encarta 95 **£229**
- DIAMOND 8X MULTIMEDIA KIT:**
- 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, IDE connector
- Yamaha YST-M5 Hi-Fi speakers
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1280 x 1024

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PS-100

- Intel Pentium™ 100MHz processor
- PCI (75MHz to 200MHz) mother board
- 3 PCI & 4 ISA slots (1shared)
- Energy Star compliant power saving features
- Plug & play BIOS for easy upgradeability
- Intel Triton chip set
- 16k internal and 256k external cache
- 16Mb EDO RAM expandable to 128Mb
- 3.5" diskette drive
- 850Mb 10ms enhanced IDE hard drive
- Diamond Stealth PCI 2Mb Video DRAM graphics accelerator card
- 1 parallel port, 2 serial (16650 UART) ports
- 15" .28DP NI MPR-II colour SVGA display
- Quad speed internal CD-ROM drive
- Enhanced keyboard & MS ergonomic mouse
- Available in desktop or mini tower case

£1575

PS-120

- As P5-100 but with
- Intel Pentium™ 120MHz processor
- 16k internal cache and 256k Pipe Line Burst Mode cache
- 1.3Gb 10ms Enhanced IDE hard drive

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PS-133

- Intel Pentium™ 133MHz processor
- PCI (75MHz to 200MHz) mother board
- 3 PCI & 4 ISA slots (1 shared)
- Energy Star compliant power saving features
- Plug & play BIOS for easy upgradeability
- Intel Triton chip set
- 16k internal cache and 256k Pipe Line Burst Mode cache
- 16Mb EDO RAM expandable to 128Mb
- 3.5" diskette drive
- 1.3Gb 10ms enhanced IDE hard drive
- Diamond Stealth PCI 2Mb Video DRAM graphics accelerator card
- 1 parallel port, 2 serial (16650 UART) ports
- 15" .28DP NI MPR-II colour SVGA display
- Quad speed internal CD-ROM drive
- Enhanced keyboard & MS ergonomic mouse
- Available in desktop or mini tower case

£1795

PS-133 S

- As P5-133 but with
- Diamond Stealth PCI 4Mb Video DRAM graphics accelerator card
- 2.1Gb 9ms fast SCSI II hard drive
- 17" .28DP Samsung FST colour SVGA display
- Eight speed internal CD-ROM drive

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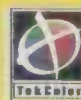
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SCSI		
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* KIT INCLUDES - EXT DRIVE, SCSI CABLE, 1 PC OF MEDIA & HEAD CLEANING TAPE.

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* KIT INCLUDES - DRIVE, SCSI CABLE & 5 PCS OF MEDIA



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Deskjet 1600c	£823		
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Designjet 600	£2760	35480 2-8GB	£659
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WITH 5 CART £359

HEWLETT PACKARD DAT STORAGE

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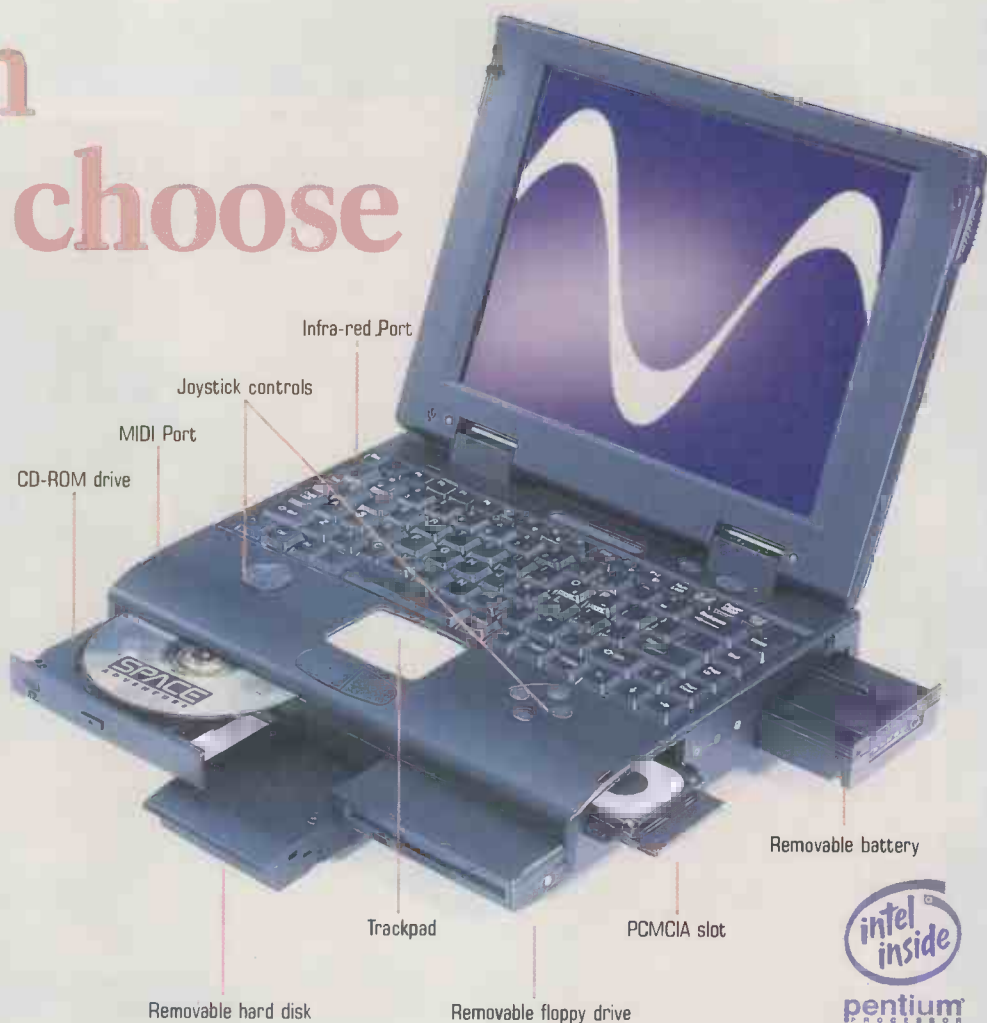
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VLB - I/O & E-IDE	
IC75 Vesa Super I/O Card	£11
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IC55 Vesa Super I/O (Mode 3,4,5) 4HDD/2FDD/2S, 1P	£24
IC60 Vesa Super I/O (Mode 3) 4HDD/2FDD/2x16550/1 ECP/EPP	£25
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IC10 PCI Multi I/O W/CMD Chip	£21
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PR50	CANNON Mono Portable Printer BJ30	£139
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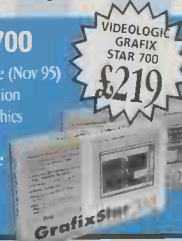
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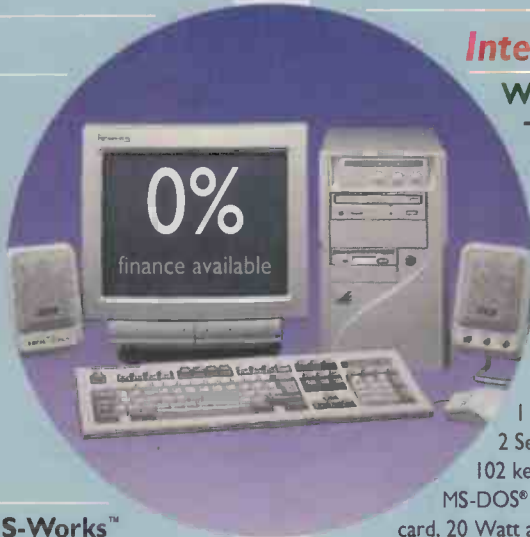
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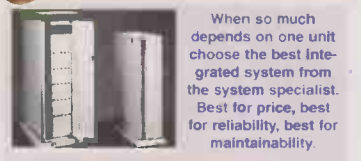
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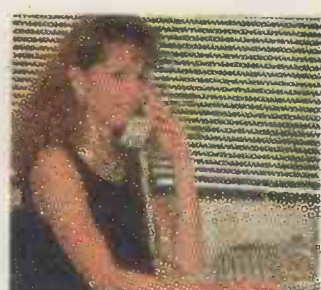
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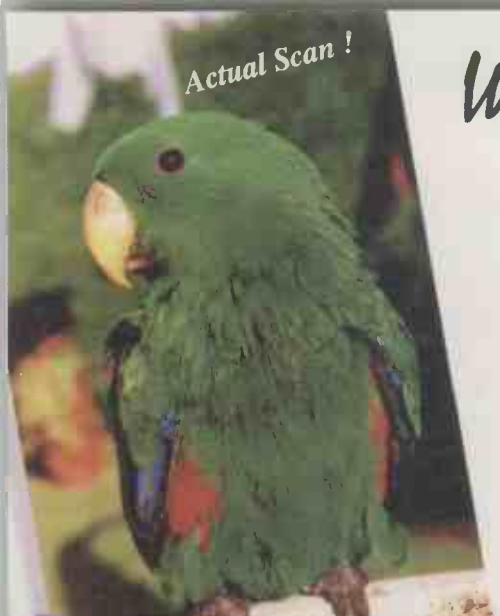
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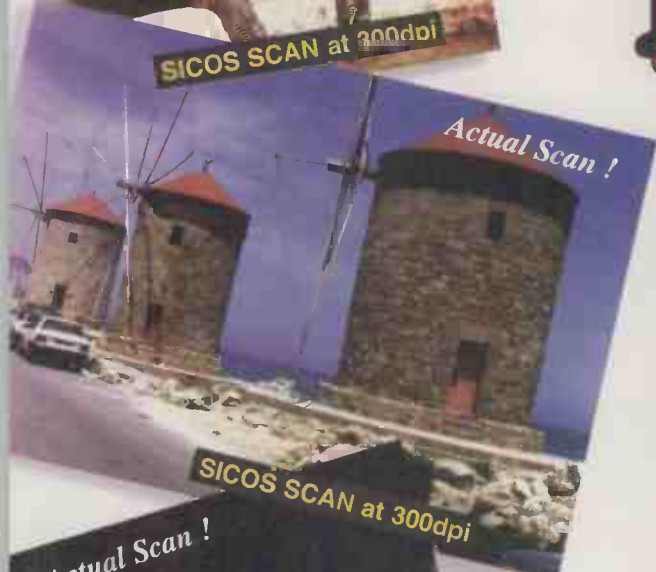
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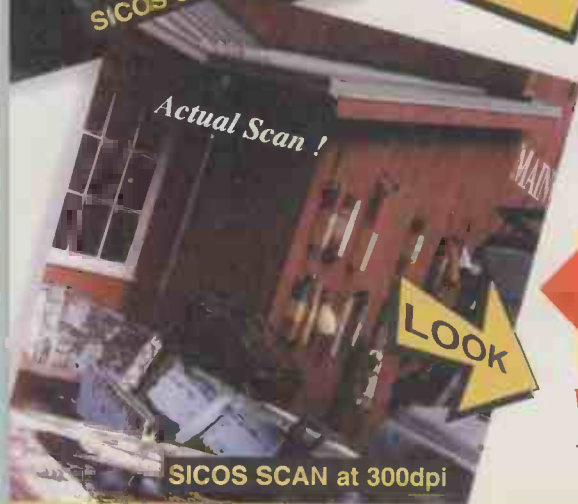
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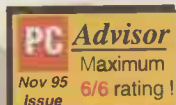
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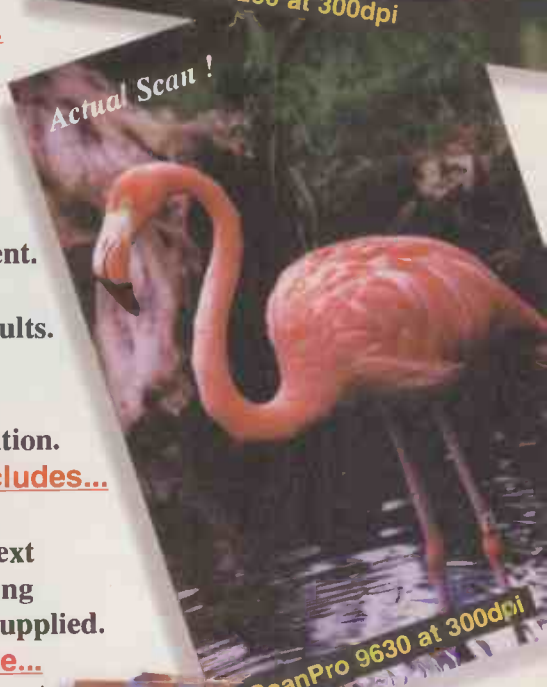
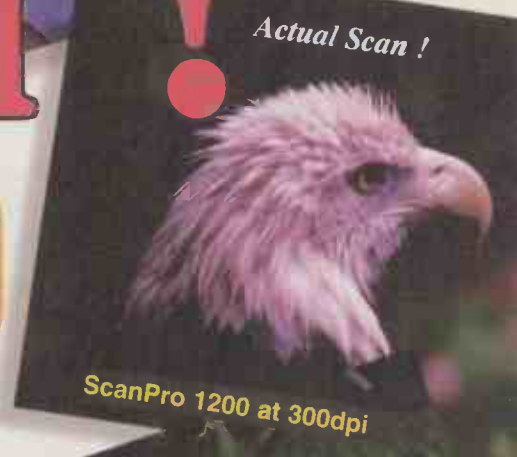
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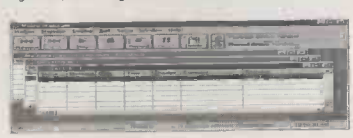
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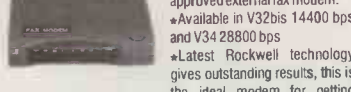
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▶ V34 EXTERNAL FAX MODEM £119 2834E

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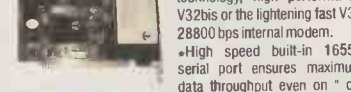
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- V17 - 14400 bps S/R Fax
- Group 3 Class 1 & 2 Fax
- V42 / MNP 2-4/10 error correction
- V42bis / MNP 5 data compression
- Asynchronous Synchronous
- Lease line operation 2 wire
- Auto self test modes
- Auto dial / Auto answer
- Pulse and tone dialling

▶ V32bis INTERNAL FAX MODEM £64 1414CI

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•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
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- Auto dial / Auto answer
- Pulse & tone adaptive dial

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✔ 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.

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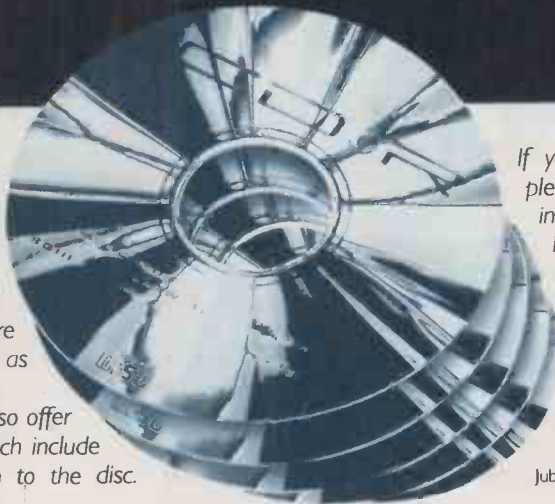


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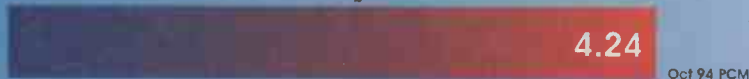
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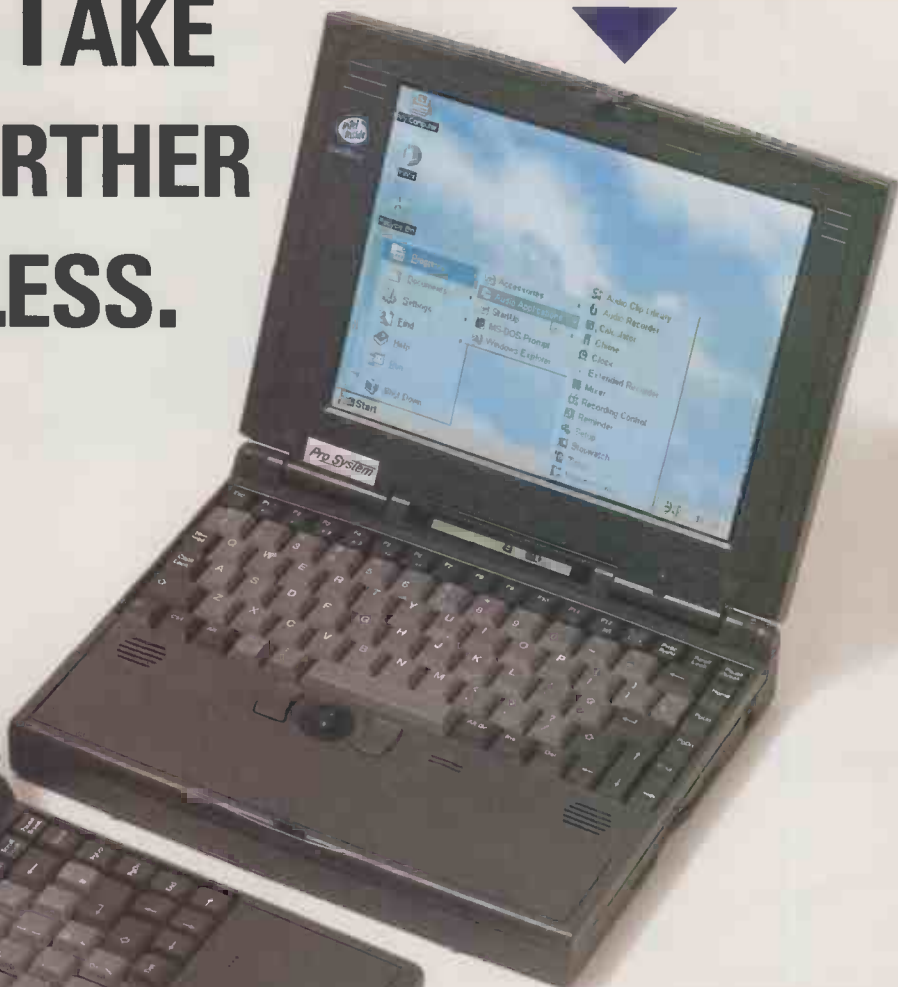
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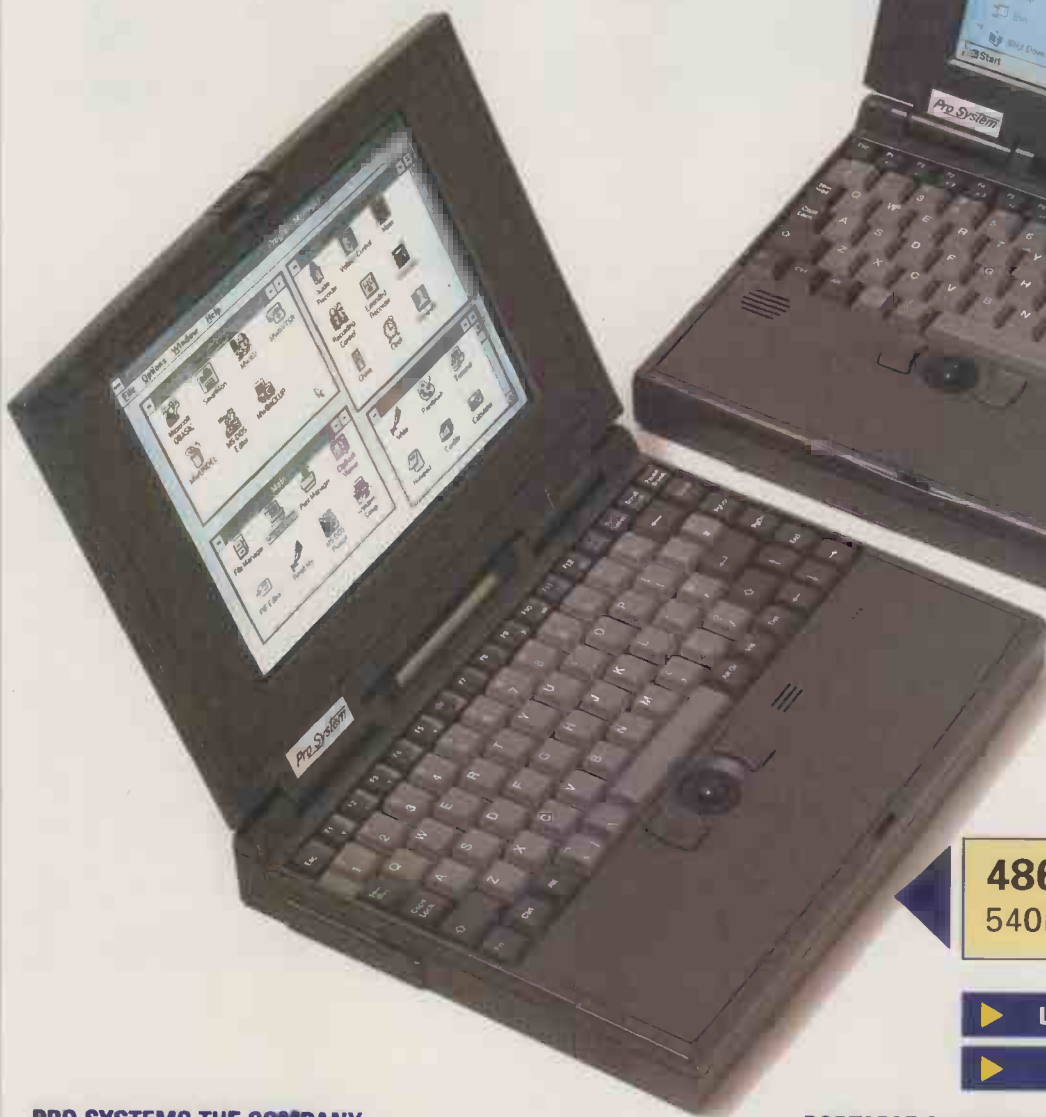
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- ★ Full 12 months warranty

486DX4-100MHz	540Mb	720Mb	810Mb	1.0Gb
Mono 64 Greyscales	£995	£1069	£1089	£1189
Dual Scan Colour	£1269	£1339	£1369	£1459

RAM Upgrades	
DX4-100 Notebooks	Pentium Notebooks
4Mb to 8Mb RAM £105	8Mb to 12Mb RAM £105
4Mb to 12Mb RAM £219	8Mb to 16Mb RAM £219
4Mb to 16Mb RAM £439	8Mb to 20Mb RAM £439

Options - all ProSystem Models	
AC/DC Adapter	£59
Ni-Mh Battery	£89
Car-Adapter	£49
External Charger	£59
Docking Station	£329
External Dual Speed CD-ROM (including PCMCIA interface card)	£179

Upgrade DX4-100 notebook to 8Mb RAM and Windows 95 for only **£169**

Upgrade Pentium® notebook to Windows 95 for only **£59**

Dual Scan Colour	540Mb	720Mb	1.0Gb
P-75MHz	£1629	£1699	£1829
P-90MHz	£1749	£1829	£1949

TFT Colour	540Mb	720Mb	1.0Gb
P-75MHz	£2130	£2199	£2349
P-90MHz	£2199	£2269	£2459

ProSYSTEM MULTIMEDIA PC'S

When you choose a Pro System multimedia system you will experience graphics, sound and animation at its best level. Quad speed CD-ROM's bring to life full motion video and animation. The PCI local bus offers the most advanced solution for the 486 series with 32 bit architecture the same as used in the Pentium systems. Beyond superb performance we give you the Microsoft Family CD bundle that provides hundreds of hours of education, entertainment and adventure.

- ★ PCI Motherboard
- ★ 256K cache memory
- ★ 850Mb EIDE hard disk (10ms)
- ★ 8Mb RAM expandable to 128Mb
- ★ 14" SVGA non-interlaced 0.28dp colour monitor
- ★ 1.44Mb floppy disk drive
- ★ 1Mb video card
- ★ 2 serial, 1 parallel & 1 games port
- ★ Microsoft compatible serial mouse
- ★ Quad-Speed multisessional CD-ROM
- ★ 16-bit SoundBlaster Vibra 16 soundcard
- ★ External 10 Watt speakers
- ★ Joystick & Microphone
- ★ Microsoft Family CD Pack
- ★ Microsoft Windows 95
- ★ Mini-Tower Case
- ★ 12 Months Warranty on site (DX4-100 RTB)



RAM Upgrades:

8Mb to 16Mb RAM **£189** 8Mb to 24Mb RAM **£369**

*To upgrade to on-site warranty add £25

486DX4-100 Multimedia PC		P90 Pentium® 90MHz Multimedia PC	
486DX4-100MHz Processor	850Mb £999*	850Mb £1179	1.0Gb £1199
P75 Pentium® 75MHz Multimedia PC		P100 Pentium® 100MHz Multimedia PC	
850Mb £1099	1.0Gb £1129	850Mb £1199	1.0Gb £1249

MICROSOFT FAMILY CD PACK

- MS Encarta 95
- MS Dangerous Creatures
- MS Works
- MS Money
- MS Golf

We will be happy to configure any PC to your requirements

Pro System

Professional Systems Direct Ltd
The Business Centre - G, Faringdon Avenue,
Romford, RM3 8EN Tel: 01708 344461
Personal Callers Welcome

Order Hotline

Tel: 01708 344461 Fax: 01708 345008

Pay by Credit Card, or Cheque (please allow 5 working days for cheque clearance)
Opening Times: Mon-Fri 8:30am - 6:00pm, Sat 10:00am - 2:00pm

Carriage: £15 + VAT per system. Delivery will normally be effected within 5 working days. Please allow 5 working days for cheque clearance.

A NEW NAME WITH
30 YEARS
EXPERIENCE
BEHIND IT

Specification subject to change without notice. E & OE.

Power

MEMORY



Ma

Technical Sales
Order Line
0181
951 335
(50 lines)

QUALITY
QUALITY
QUALITY

Being the largest direct
memory supplier
means we buy memo
direct from world class
manufacturers.

Powermark plc only
supply factory original
memory.

42
pages!
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Certificate no. FS 26535

MEMORY LANE

Do you remember...?

- ... Maggie
- ... Silver
- ... Threepenny Bits
- ... Roller Skates
with Steel
Wheels



**DELIVERY
CHARGES**
See
page 9

A great
new way
to buy...



See above

**EARLY BIRD
Order Bonus**
See page 33



Everyone at
Powermark passes
through our
training college



Season's Greetings from Powermark

We would like to thank you, our customers for your business
this year and we look forward to serving you throughout
next year.

If you haven't purchased from Powermark before, then do try
the Powermark experience in 1996.

To all our customers and readers - seasons greetings and best
wishes for a successful, healthy and very happy new year.

Trevor, Robin, Julie, Wayne, Peter, Don, Marina, Lloyd, Aaron, Natalie,
Mark, Sanjay, Jamie, Carole, Cliff, Gary, Jenny, Alex, Nira, Ian, Ratanbal,
Symon, Tariq, Tim, Stuart, Hans, Stephen, Karen, Nichola, Adam, Corsa,
Francisco, Andre, Alastair, Adam, Anne, Jason, Kim, Adam, Sumit, Rod,
Phil, Naran, Jane, Suresh, Pascal, Paul, Colin, Michelle, Simon, Paul,
Alan, Steve, Dalida, Liz, Peter, Mark, Danielle, Phil, Lynn, Vince, John,
Joanne, Roland, Grant, Claire, David, Akbar, Ellen, Warren, Kwang, Ian,
Vijay, John, Sammy, Sunny, Mandy, Gerry, Martin, Billy
and of course Toby.

A great new way to buy from
Powermark...

The MEMORYBANK GOLD CARD

The only credit card that
offers you these benefits:

- **Powermark Points** - Every time you buy you earn Powermark Points. Accumulate Powermark Points for savings against future purchases
- **Two easy ways to pay** - Settle your monthly account in full by the date shown on your statement and get up to 56 days interest free credit

or

Settle by Direct Debit (£10 minimum payment or 5% of your statement balance if higher) and take advantage of our competitive interest rate of only **20.9% APR**

Once only card fee of £10 includes a **free CD ROM** and a **£5 rebate** after your first purchase over £99 (plus VAT and carriage).

With all these benefits and competitive interest rates too

... you know it makes sense!

Call our Technical Sales Lines today and ask for an application form.

Powermark plc is a licensed credit broker. Cards are issued subject to status and are available only to persons aged 18 or over. Written quotations available.



BANK

New Products every month!



THE LARGEST DIRECT MEMORY

Every month Powermark plc supply thousands of memory upgrades to thousands of satisfied customers, making us the largest direct supplier of memory in the United Kingdom.

Lower Prices!
on most regular SIMMs

Technical Sales Order Lines
0181-951 3355
(50 lines)

MEMORY

"Adding memory to your computer is undoubtedly the easiest, most cost effective way of increasing the performance of your system"

More and more applications demand large amounts of memory to work effectively. By increasing the standard memory in your PC you can:

- Radically increase the performance of your system
- Run multimedia applications at optimum speed
- Keep fonts and desktop accessories in RAM for instant access
- Run more than one application at a time, enabling true multi-tasking

DON'T JUST TAKE OUR WORD FOR IT...

"For at least two years we've recommended 8MB machines

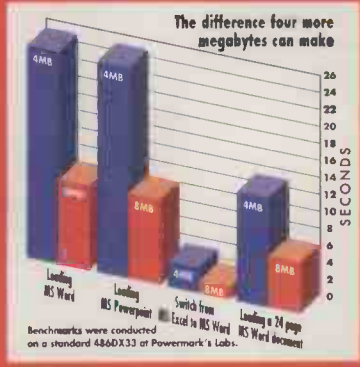
to our readers. Under Windows 95 this recommendation becomes a must and because Windows 95 is much better at handling extra memory than 3.x you'll get even better performance from 16MB RAM. If you can afford it, get 16MB RAM."

Personal Computer World, September 1995

"Possibly the greatest upgrade you can offer a flagging PC is an increase in memory.

The difference in speed between 4MB and 8MB is enormous, as is the jump from 8MB to 16MB. Anyone attempting to run Windows 3.1 in less than 4MB should upgrade now."

Personal Computer World, January 1995



MATCHED MEMORY SIMM KITS

If you're unsure about upgrading then our Matched Memory SIMM Kits are for you. They're guaranteed to be totally memory matched. That means speed, voltage, refresh, parity and physical characteristics are all matched to give optimum performance to your system.

From our listings on the following pages, just select the upgrade kit for your PC. They cost a little more but you get:

- full installation instructions
- anti-static wrist strap
- dedicated support hotline
- our famous double guarantee - full lifetime warranty and the Powermark Promise - our 14 day 'no-quibble' money back guarantee

If your PC is not listed then call us. Our Memory Database has the upgrade path for almost every PC supplied in the UK over the last five years.

UPGRADING IS EASY

With most memory upgrades it's just a case of:

- switching off PC
- removing lid
- locating SIMM sockets
- installing SIMMs
- closing lid
- switching back on

HANDLING MEMORY

Static can degrade a DRAM, shortening its life. That's why we include an anti-static wrist strap in every Matched Memory SIMM Kit.

If you're buying loose SIMMs then do ask for an anti-static wrist strap. For multiple installations we can supply complete ESD (Electro Static Device) protection equipment.

PRICE INSTABILITY!

CALL FOR LATEST OFFERS ON MEMORY BEFORE ORDERING

REGULAR SIMMS

30 PIN SIMMS

• 5 year warranty on all SIMMS listed here

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	£36
1M x 9	1MB	70ns	£30
1M x 9 (3cs)	1MB	70ns	£30
1M x 9	1MB	60ns	£30
4M x 9 (3cs)	4MB	70ns	£114
4M x 9	4MB	70ns	£109
4M x 9	4MB	60ns	£119
16M x 9	16MB	70ns	£557
16M x 9	16MB	60ns	£567

GOLD EDGED SIMMS

• Specified by many PC manufacturers
• Longer MTBF

1M x 9	1MB	70ns	£35
1M x 9	1MB	60ns	£45

72 PIN SIMMS

• 10 year warranty on all SIMMS listed here

Type	Capacity	Speed	Price
256K x 36	1MB	80ns	£59
256K x 36	1MB	70ns	£59
512K x 36	2MB	80ns	£82
1M x 32	4MB	70ns	£105
1M x 32	4MB	60ns	£105
1M x 36	4MB	80ns	£118
1M x 36	4MB	70ns	£116
1M x 36	4MB	60ns	£116
2M x 32	8MB	60ns	£231
2M x 32	8MB	70ns	£215
2M x 36	8MB	80ns	£239
2M x 36	8MB	70ns	£239
2M x 36	8MB	60ns	£249
4M x 32	16MB	70ns	£357
4M x 36	16MB	70ns	£399
4M x 36	16MB	60ns	£409
4M x 32	32MB	60ns	£399
8M x 32	32MB	60ns	£839
8M x 32	32MB	70ns	£839
8M x 36	32MB	70ns	£849
8M x 36	32MB	60ns	£899
16M x 36	64MB	60ns	£2001

72 PIN EDO SIMMS

• Call for full details

1M x 32 EDO	4MB	-	£119
2M x 32 EDO	8MB	-	£229
4M x 32 EDO	16MB	60ns	£449

NEW! 72 PIN DIMMS

1M x 32	4MB	70ns	£159
2M x 32	8MB	70ns	£279
4M x 32	16MB	70ns	£499

HUGE STOCKS
Guaranteed same day despatch on a virtually all stock items for orders placed even up to 4.00pm.

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
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices too.

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 Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

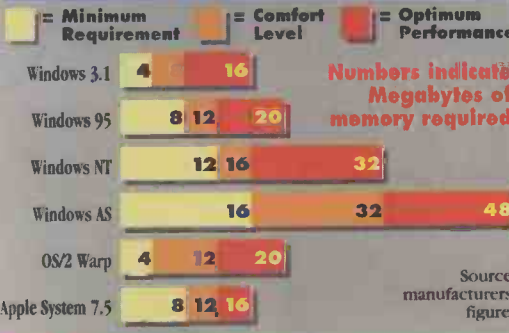
TURN THE PAGE FOR MORE

UPGRADE DRIVE THRU
While-you-wait installation service available. See page 3 for details.

PERSONAL CALLERS VERY WELCOME
Save on delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

Powermark plc
Premier House, 112 Station Rd, Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355 (50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com

HOW MUCH MEMORY DO YOU NEED?

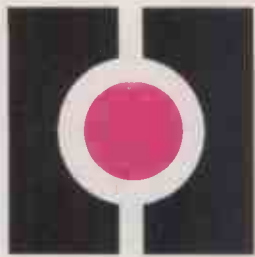


Public Sector customers can purchase through HMSO by calling 01603 694153.



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.

Gold Card VISA MasterCard SWITCH
Cards are not debited until despatch
VAT at 17.5% will be added to all prices



Mark®

**Technical Sales
Order Lines
0181-
951 3355
(50 lines)**



Unsure about upgrading?

Upgrading is easy but if you would like us to upgrade your computer then our **UPGRADE DRIVE THRU** is for you. It's fast, it's simple and it's convenient. Just drive into our loading bay at the rear of Premier House and your computer will go directly to our on-site labs for instant upgrading by our fully qualified engineers.

For upgrades that take a little while we'll even hand you a Pager enabling you to visit the shopping centre next door. You'll be paged the minute your computer is ready.

In most cases you need only bring your base unit along, but do call first to discuss your requirements and to confirm our stock position on the upgrades you require.

DESKTOP MENU

(Call for notebook menu)

Memory	£34
Hard Disk	£47
Processor	£31
Tape Backup	£34
Sound or Modem Card	£29
Graphics or Video Card	£29
Multimedia Kit	£47

**Save £££s with
combo orders!**

**TURN THE PAGE
FOR MORE**

MEMORY



MATCHED MEMORY UPGRADES FEATURE

THE LARGEST DIRECT MEMORY SUPPLIER

Every month Powermark plc supply thousands of memory upgrades to thousands of satisfied customers, making us the largest direct supplier of memory in the United Kingdom.

MATCHED MEMORY UPGRADES FOR HP

• Authorised HP dealer

HP VECTRA 386/25 PC, 486 PC, 486s/20

4MB Kit	£131
8MB Kit	£260

HP VECTRA VL3

S/75/90/100, VE SERIES

8MB Module	£259
16MB Module	£460

NEW! HP VECTRA XU 5/75/90/100 VE SERIES

4MB Kit	£139
8MB Kit	£260

HP NETSERVER 486 SERIES

8MB Kit	£269
16MB Kit	£499

HP95, HP100, HP200

1MB Card	£149
2MB Card	£245

HP OMNIBOOK 530, 630C SERIES

4MB Module	£209
8MB Module	£399

NEW! HP OMNIBOOK 4000 SERIES

8MB Kit	£299
16MB Kit	£579



“UPGRADING TIPS

You own a DX2/66MHz, 8MB of memory and 250MB hard disk. Verdict: It's definitely well worth upgrading to Windows 95 and when you can afford it add more memory and a bigger hard disk for better performance.”

Personal Computer World
September 1995

MATCHED MEMORY UPGRADES FOR OLIVETTI

PCS386SX

1MB → 2MB	POWERCUT! £64
1MB → 4MB	POWERCUT! £129
1MB → 6MB	POWERCUT! £209
1MB → 8MB	£272

PCS40, 44

4MB Kit	£129
8MB Kit	£279

M290

2MB Kit	POWERCUT! £74
4MB Kit	POWERCUT! £149

M486/CP486

2MB Kit	£99
4MB Kit	£168

PCS 11, 33

2MB Kit	POWERCUT! £66
8MB Kit	£259

M300-30

4MB Kit	£139
8MB Kit	£279

M400-10/40/60

4MB Kit	£156
16MB Kit	£539

MODULO RANGE

4MB Module	£149
8MB Module	£279
16MB Module	£489

SUPREMA M6-600, 700

4MB Module	£149
8MB Module	£289

PCI/ISA PENTIUMS

8MB Kit	£279
16MB Kit	£575

MATCHED MEMORY UPGRADES FOR ELONEX

PC386SXM, SXB, 386/16, B/33

2MB Kit	£64
4MB Kit	£139
8MB Kit	£279
8MB Kit	£249

PC386 V/E, 486 V/E

4MB Kit	POWERCUT! £139
8MB Kit	POWERCUT! £279
16MB Kit	POWERCUT! £469

WS RANGE

4MB Kit	£139
8MB Kit	£279
16MB Kit	£499

PC433M, 450M, 466M

4MB Kit	£129
8MB Kit	£279
16MB Kit	£469

LT386SX/P

2MB Kit	£64
4MB Kit	£135

PC-500 SERIES, PC-560M

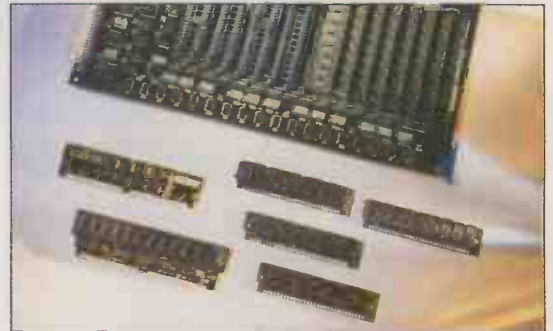
8MB Module	POWERCUT! £279
16MB Module	POWERCUT! £479

ELONEX 560F EISA

8MB Kit	£329
16MB Kit	£499

PC 575M/L, PC5120M/L, PC5133M/L

8MB Kit	£329
16MB Kit	£499



MATCHED MEMORY UPGRADES FOR TOSHIBA

T1000/E/XE/LE, T1800, T1850C, T2000SX, T2000SX, T2200SX, T2200SX

2MB Card	£85
4MB Card	£155
8MB Card	£289

T3300SL

2MB	£66
-----	-----

T1600/T5100

2MB Card	£75
----------	-----

T2100, T2100CS

4MB Card	£149
8MB Card	£289

T2105CS, T2130CS, CT, T2150 CDT

16MB Card	£575
-----------	------

T2400CS, T2450, T2400CT, T3600

4MB Module	£165
8MB Module	£299

T3100SX

2MB Card	£85
4MB Card	£159

T3200SX/C

4MB Module	£159
8MB Module	£299

T3200

3MB Card	£159
----------	------

T4400, T6400 SX/C, DX/C

4MB Card	£179
8MB Card	£319

T1900, T1910, T1950CT, T1960, T3400CT, T4500, T4600, T4700CT, T4800CT, T4800CT

4MB Module	£169
8MB Module	£295
16MB Module	£549

T4850/4900

8MB	£299
-----	------

T5200/C & T8500/6400/6600

2MB Module	£89
8MB Module	£329
16MB Module	£569

DYNAPAD T100X

6MB Card	£259
----------	------

DYNAPAD T200, T200CS

4MB Module	£149
------------	------

PROTEGE 610CT, T2130CS

8MB Module	£425
16MB Module	£799

SATELLITE PRO 400 SERIES

8MB Module	£399
------------	------

**PRICE INSTABILITY!
CALL FOR LATEST OFFERS ON MEMORY BEFORE ORDERING**

MATCHED MEMORY UPGRADES FOR AMSTRAD

PC1286/PC1386/PC3286/PC3386/PC5286

1MB → 4MB	£129
1MB → 4MB	£129
1MB → 4MB (Zero-wait state)	£139

ALT286/386SX

1MB → 4MB	£129
1MB → 4MB (Zero-wait state)	£139

PC7286, 7386

2MB	POWERCUT! £62
4MB	£129

PC7486 SLC

4MB Kit	£139
16MB Kit	POWERCUT! £459

PC9486

4MB Kit	£139
16MB Kit	£499

ANB386SX

4MB Module	POWERCUT! £169
------------	-----------------------

386SX25 MEGA PC

4MB Kit	£129
8MB Kit	£235

NEW! PC955i

8MB Kit	£279
16MB Kit	£499

LIFETIME WARRANTY ON ALL MATCHED MEMORY

BEWARE
Beware of low grade 5 volt notebook memory that reduces battery life by up to 40%. Powermark plc only supplies 3.3 volt devices from market leaders with manufacturers' approvals.

DELIVERY CHARGES
See page 9

A great new way to buy...
Gold Card
See page 1

EARLY BIRD
Order Bonus
See page 33



Everyone at Powermark passes through our training college

BANK

at Powermark



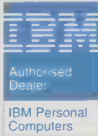
MATCHED MEMORY UPGRADES FEATURE

THE LARGEST DIRECT MEMORY SUPPLIER

Every month Powermark plc supply thousands of memory upgrades to thousands of satisfied customers, making us the largest direct supplier of memory in the United Kingdom.

MATCHED MEMORY UPGRADES FOR IBM

- Planar memory plugs directly onto system board
- Price instability - check latest offers on IBM matched memory before ordering

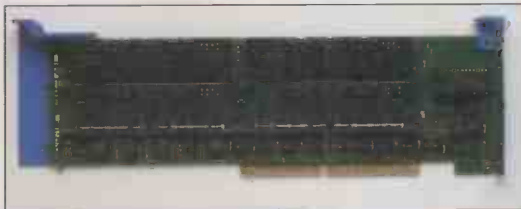


PS/2 55SX, 60, 65SX/57SX/M57	
4MB	£139
PS/2 70, Portable 70/75	
4MB	£149
8MB	£279
PS/2 80	
4MB	£149
PS/2 140SX, N335SX, NSL	
4MB Card	POWERCUT! £149
8MB Card	£309
PS/2 90, 95, 95A	
4MB Kit	£139
8MB Kit	£269
PS/2 95 ARRAY PENTIUM	
8MB Kit	£259
16MB Kit	£699
VALUEPOINT 6381, 6382	
4MB	£139
8MB	£429
VALUEPOINT 6384 RANGE	
4MB Kit	£139
8MB Kit	£269
PENTIUM VALUEPOINT PERFORMANCE SERIES	
4MB Kit	£139
8MB Kit	POWERCUT! £299
16MB Kit	£529
THINKPAD 350, 350C	
4MB Kit	£159
8MB Kit	£289
THINKPAD 355C, 355CS, 360, 360C, 360CS, 730T	
4MB Kit	£159
8MB Kit	£299
THINKPAD 500, 510	
4MB Kit	£179
8MB Kit	£335
THINKPAD 700, 720	
4MB Kit	£159
8MB Kit	£329
THINKPAD 710	
4MB Kit	£159
8MB Kit	£289
THINKPAD 750, 750C, 755C, 755CDV	
8MB Kit	£319
16MB Kit	£619
PC466DX2, 100DX4	
8MB Module	£259
TREKKA	
2MB	£89
HURDLA, SPRINTA	
4MB Kit	£139
16MB Kit	£469
PS/1 - PRO 486	
4MB	POWERCUT! £139
8MB	£269
CONSULTANT, ESSENTIAL, WILLOW, EXPERT SERIES	
4MB	£129
8MB	£269

MATHS CO-PROCESSORS

Installation of a Co-Processor results in a significant speed increase in maths intensive applications eg. spreadsheets, databases, CAD and graphics packages.

	INTEL	ITT	CYRIX
80387 SX (16 MHz → 20MHz)	£53	£35	POWERCUT! £40
80387 SX (40 MHz)	£53	£35	£48
80387 SL (25 MHz)	£53	-	-
80387 DX (16 MHz → 33MHz)	£56	£32	POWERCUT! £41
80387 DX (40 MHz)	£35	-	£41



MATCHED MEMORY UPGRADES FOR SIMM KITS

Include:

- full installation instructions
- anti-static wrist strap
- dedicated support hotline
- our famous double guarantee - full lifetime warranty and the Powermark Promise - our 14 day 'no-quibble' money back guarantee

MATCHED MEMORY UPGRADES FOR IBM

NEW! APTIVA SERIES

4MB Module	£129
8MB Module	£259
16MB Module	£439
PENTIUM APTIVA	
16MB Kit	£449
PC 300 SERIES	
4MB Module	£129
PC 700 SERIES	
8MB Module	£259

MATCHED ADAPTER BOARDS FOR IBM PS/2

Completely user expandable

PS/2 50, 50Z, 60 & 65	
16MB Board with 4MB	£295
16MB Board with 8MB	£425
PS/2 70, 80, 90 & 95	
64MB Board with 4MB	£295
64MB Board with 8MB	£465

MATCHED MEMORY UPGRADES FOR VIGLEN

Complete range for Executive, Professional and Tower

GENIE 386SX	
2MB Kit	£64
4MB Kit	£129
VIG II ELITE	
2MB Kit	£69
4MB Kit	£179
VIG III LS (Type 1)	
4MB Kit	£129
8MB Kit	£269
VIG III/25, III/33	
4MB Kit	£129
8MB Kit	£269
16MB Kit	£469

NEW! PENTIUM

75/90/100/135MHz	
8MB EDO Kit	£299
16MB EDO Kit	£549
EX 4DX33/50	
4MB	£129
8MB	£269

VIG 4SX25, 4DX33, 4DX50, 4DX2-50, 4DX2-66

4MB Kit	£129
8MB Kit	£269
16MB Kit	POWERCUT! £469

CONTENDER RANGE

4MB	£139
8MB	£269

GENIE 486VLB RANGE

4MB Module	£139
8MB Module	£269
16MB Module	POWERCUT! £469
64MB Kit	£1999

GENIE PCI RANGE

4MB Module	£139
8MB Module	£269
16MB Module	£469

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

XEN 486SX-25, 486DX2-50, 486 DX2-66, PCM	
4MB Module	£149
8MB Module	£269
16MB Module	£499
NEW! SHOGUN SERVER	
16MB Kit	£689
32MB Kit	£1199

MATCHED MEMORY UPGRADES FOR PACKARD BELL

LEGEND 200/316SX	
2MB Kit	POWERCUT! £69
4MB Kit	POWERCUT! £139
LEGEND 605, 900	
4MB Kit	£139
8MB Kit	POWERCUT! £279
486 VLB, EXECUTIVE, ELITE RANGE	
4MB Module	£139
16MB Module	£449
FORCE RANGE	
4MB Kit	£139
16MB Kit	£449
MULTIMEDIA 486/586 RANGE	
8MB Kit	£279
16MB Kit	£519

MATCHED MEMORY UPGRADES FOR APPLE

Complete range stocked Authorised Reseller



BEWARE

Beware of third party, low grade memory. Powermark plc only supply factory original memory.

Technical Sales Order Lines

0181-951 3355
(50 lines)

MEMORY

It's time once again to Ponder Memory Moments



with Professor Paul

Dear Professor Paul, Auntie Agnus has been up to her tricks again. One hairpin later and the computer innards are strewn across the floor. She has seen information on cache memory and I fear nothing will stop her now. Would you please explain what this is and how I obtain it? Hurry as she has her eyes on other screws holding the system together.

Panicking of Portsmouth

Dear Panicking, Cache RAM is a fantastic concept - high speed memory used to hold frequently used data from main system RAM. This will therefore allow the processor to work much faster as it not waiting for the slower memory. It can be easily obtained from our Technical Sales Department. Auntie Agnus should be able to insert them into the motherboard herself, but advise her to use an anti-static strap, not a hairpin during the process.

Best wishes, Professor Paul

Send your thoughts and queries to Professor Paul, c/o Powermark plc, Premier House, Station Road, Edgware, Middlesex, HA8 7AQ or fax them to 0181 905 6233. 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!

Powermark plc Premier House, 112 Station Rd, Edgware, Middlesex HA8 7AQ

Tel: 0181-951 3355 (50 lines)

Fax: 0181 905 6233

Email: sales@powermark.com



Cards are not debited until despatch VAT at 17.5% will be added to all prices



Public Sector customers can purchase through HMSO by calling 01603 694153.



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Power



Mark®

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(50 lines)**

... and here's what some of our customers have said ...

... your company is a credit to the industry generally and I have seldom dealt with such courteous and efficient personnel. I shall most certainly be doing further business with Powermark in the future.

J V B Robinson
Composite Solutions Ltd
Avon

Having dealt with your company (a gentleman called Kwang) for the first time this week, I was amazed to be able to call you up on Monday afternoon, place an order and have the software installed on my machine by lunch-time Tuesday. You need to be congratulated 100 per cent. Well done!!

A reliable supplier - what a God send.

N Mapletoft
Nimis Information Services
Newcastle upon Tyne

MEMORY

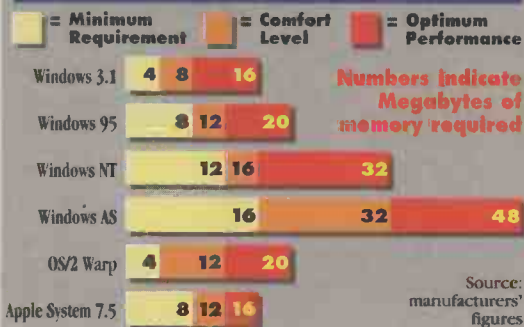


MATCHED MEMORY UPGRADE FEATURE

THE LARGEST DIRECT MEMORY SUPPLIER

Every month Powermark plc supply thousands of memory upgrades to thousands of satisfied customers, making us the largest direct supplier of memory in the United Kingdom.

HOW MUCH MEMORY DO YOU NEED?



PCMCIA MEMORY

- All formats stocked: JEDEC, FLASH, OTPROM, DRAM, etc
- Check compatibility before ordering

256K SRAM	£48
512K SRAM	£74
1MB SRAM	£122
2MB SRAM	POWERCUT! £99
2MB FRAM	£149
4MB FRAM	£439

DRAMS

- Call for devices not shown
- Full range of PROMs, SRAMs & ZIPs available
- 5 year warranty

64K x 1	120ns	£1.79
256K x 1	80ns	£2.80
256K x 4	70ns	£5.77
256K x 16	70ns SOJ	£25
1M x 1	80ns	£4.99
1M x 1	70ns	£5.20

VRAMS

256K x 8	70ns SOJ	£20
----------	----------	-----

SRAMS

32K x 8	15ns SRAM	£11
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

HP OMNIBOOK 300,425 SERIES	
4MB	£189
6MB	£289
HP OMNIBOOK 530 SERIES	
8MB	£389
12MB	£599
HP 95LX & 100LX	
1MB	£129



MEMORY UPGRADES FOR TANDON

POSITIVE 386SX25, 386DX40, 486SX25, 486DX33	
4MB Kit	£129
16MB Kit	£499

LIFETIME WARRANTY ON ALL MATCHED MEMORY

“ For at least two years we've recommended 8MB machines to our readers. Under Windows 95 this recommendation becomes a must and because Windows 95 is much better at handling extra memory than 3.x you'll get even better performance from 16MB RAM, if you can afford it, get 16MB RAM.”

Personal Computer World
September 1995

MATCHED MEMORY UPGRADES FOR DAN

DAN VANTAGE, WINDOWS NT SERIES	
4MB Kit	£129
16MB Kit	£479
PREMIUM, DANTIUM, ULTIMATE	
8MB Kit	£269
16MB Kit	£499
32MB Kit	£899

PRICE INSTABILITY!
CALL FOR LATEST OFFERS ON MEMORY BEFORE ORDERING

MATCHED MEMORY UPGRADES FOR AST

ACENTIA 900N, 910N	
4MB Module	£179
8MB Module	£339
BRAVO LCII, III	
4MB Module	£139
8MB Module	£249
PREMIUM, POWER PREMIUM	
8MB Kit	£319
POWER EXEC 4/25/33	
4MB Module	£189
16MB Module	£579
BRAVO NOTEBOOK SERIES	
4MB Kit	£159
16MB Kit	£599
BRAVO MS P/75, PREMIA GX /P90/P100	
8MB Kit	£249
16MB Kit	£499



FREE Baseball Cap
With every order over £500

When ordering just ask for your FREE baseball cap as it is not shipped automatically.

MATCHED MEMORY FOR NOTEBOOKS & PALMTOPS

COMMODORE LT286/386	
4MB Kit	£169
SANYO 17NB, 18NB	
2MB	£79
4MB	£165
SHARP PC 7700	
4MB	£169
SHARP PC 6891	
4MB	£179
PANASONIC CF1000	
4MB Module	£198
PANASONIC CF580	
4MB Module	£185
LIBREX V386SX	
1MB → 4MB	£199
DEC HI-NOTE RANGE	
4MB Module	£197
8MB Module	£398
HP OMNIBOOK RANGE	
Complete range stocked	



BEWARE!

Beware of third party, low grade memory. Powermark plc only supply factory original memory.

TURN THE PAGE FOR MORE

DELIVERY CHARGES
See page 9

A great new way to buy...



See page 1

EARLY BIRD Order Bonus
See page 33



Everyone at Powermark passes through our training college

BANK

at
Powermark



MATCHED MEMORY UPGRADE FEATURE

THE LARGEST DIRECT MEMORY SUPPLIER

Every month Powermark plc supply thousands of memory upgrades to thousands of satisfied customers, making us the largest direct supplier of memory in the United Kingdom.

MATCHED MEMORY UPGRADES FOR COMPAQ

DESKPRO 386/20/25/e/s	
4MB Add-on Module	£169
4MB Expansion Board	£205
SYSTEMPRO, DESKPRO 486/33L, 50L & 486/25	
2MB Module	£99
8MB Module	£294
32MB Module	£1199
SYSTEMPRO XL 486/50, PENTIUM	
256MB Board with 16MB	£549
256MB Board with 32MB	£1099
DESKPRO 386N, 386S/20	
2MB Module	£75
4MB Module	£139
DESKPRO XL 5/60/75/90	
8MB Kit	£279
16MB Kit	£519
DESKPRO 386A/486, 486/25M, 486S/33M, 486DX2	
64MB Board with 4MB	£249
64MB Board with 8MB	£399
DESKPRO XE & XL FAMILY	
4MB	£129
8MB	£259
DESKPRO 5/90	
8MB Module	£279
16MB Kit	£519
PROLINEA 4/25S, 4/33, 4/50, 4/66, NET 1, MT	
4MB	£129
8MB	£259
PROLINEA 5/75/90MX RANGE	
4MB Kit	£139
8MB Kit	£269
PROLIANT 1000, 2000, 4000, PROLIANT PENTIUM	
4MB	£159
8MB	£279
16MB	£519
PROSIGNIA VS SERIES	
8MB Kit	£279
16MB Kit	£519
32MB Kit	£899
SLT386	
2MB	£109
4MB	£169
LITE LITE 386, 386s/20	
4MB Card	£169
LITE LITE 4120/25/25C/25E	
4MB Card	£159
8MB Card	£289
16MB Card	£549
LITE ELITE SERIES	
4MB Card	£165
8MB Card	£324
CONTURA 400 C/CX, 4100, 410C/CX	
4MB Module	£155
8MB Module	£299
16MB Module	£675
CONTURA 3/25/20/25C, 4/25	
4MB Card	£155
8MB Card	£279
CONCERTO 4/25, 4/33	
8MB	£335
16MB	£599

MATCHED MEMORY UPGRADES FOR COMPAQ

AERO 4/25/33	
4MB	£139
NEW! PRESARIO CDS 510, 720, 972, 982, 990, 992	
4MB Kit	£139
8MB Kit	£259
16MB Kit	£449
NEW! PRESARIO 425, 633, 833, 850, 866, 800 SERIES	
4MB	£129
8MB	£259
PRESARIO 700/900	
16MB Module	£449
PROSIGNIA 500	
8MB Kit	£279
16MB Kit	£519

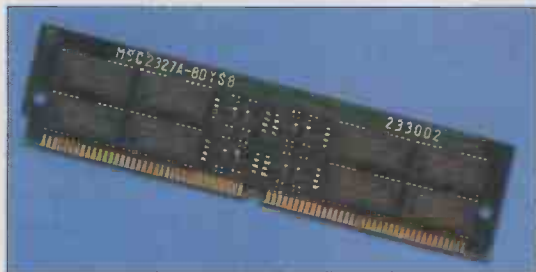
All our Matched Memory Kits come with our famous double guarantee - full lifetime warranty and 14 day money back guarantee

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

MEMORY EXPANSION BOARDS

KINGSTON ATA BOARD	
16MB Board with 4MB	£239
16MB Board with 8MB	£349
16MB Board with 16MB	£649



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



BEWARE

Beware of economy memory modules that use ASIC parity generation. Powermark plc only supply SIMMs with genuine parity DRAMs.

MATCHED MEMORY UPGRADES FOR MITAC

486SX/DXDV Series	
4MB Kit	£129
16MB Kit	£459
PENTIUM RANGE	
8MB Kit	£279
16MB Kit	£539

MATCHED MEMORY UPGRADES FOR ICL

MATCHED MEMORY UPGRADES FOR ICL

DRS 40, 45	
2MB Kit	£86
4MB Kit	£169
ERGOPRO C4, D4	
8MB Kit	£249
16MB Kit	£539
DRS M95	
4MB Kit	£180
32MB Kit	£1199
VALUEPLUS DL RANGE	
4MB	£168
ZENO SERIES	
4MB Kit	£149
16MB Kit	£539

WE ALSO SUPPLY UPGRADES FOR...

Acorn, ALR, AST, Austin, Canon, Commodore, Goldstar, Hyundai, MJN, NEC, NeXT, Opus, Philips, QMS, Tandy, TI, Unisys, Wyse and all Pentium and multimedia systems.

PRICE INSTABILITY!
CALL FOR LATEST OFFERS ON MEMORY BEFORE ORDERING

MEMORY

Technical Sales Order Lines

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(50 lines)

HUGE STOCKS
Guaranteed same day despatch on a virtually all stock item: for orders placed even up to 4.00pm.

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
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices too.

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 Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

TURN THE PAGE FOR MORE

UPGRADE DRIVE THRU
While-you-wait installation service available. See page 3 for details.

PERSONAL CALLERS VERY WELCOME
Save on delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

Powermark plc
Premier House, 112 Station Rd, Edgware, Middlesex HA8 7AQ

Tel: 0181-951 3355
(50 lines)

Fax: 0181 905 6233

Email: sales@powermark.com



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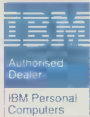


Cards are not debited until despatch
VAT at 17.5% will be added to all prices



**Technical Sales
Order Lines
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951 3355
(50 lines)**

MATCHED MEMORY UPGRADES FOR IBM PRINTERS



IBM 4019 & 4019E	
3MB	£140
IBM 4029	
2MB	POWERCUT! £79
IBM 4039 & 4079	
4MB	POWERCUT! £139
8MB	£249
LEXMARK OPTRA LX/L/R/RX	
4MB	£139
WINWRITER 200/400/600	
2MB	£79



**FREE
Baseball Cap**
With every order
over £500

When ordering just ask for your FREE baseball cap as it is not shipped automatically.

**TURN THE PAGE
FOR MORE**

MEMORY QUIZ

???????

"Your starter for 10MB"

1. What is RLL?
2. What is MFM?
3. What was ESDI?

Answers on fax form page

MEMORY



MATCHED MEMORY UPGRADE FEATURE

THE LARGEST DIRECT MEMORY SUPPLIER

Every month Powermark plc supply thousands of memory upgrades to thousands of satisfied customers, making us the largest direct supplier of memory in the United Kingdom.

MATCHED LASERPRINTER MEMORY

• Price instability - check latest offers on laser printer memory before ordering

APPLE LASER WRITER SELECT 300/310	
4MB	£149
APPLE LASER WRITER PRO 810	
4MB	£179
APPLE LASER WRITER PRO 600/630	
4MB	£149
BROTHER HL 660, 1260	
2MB	POWERCUT! £79
4MB	POWERCUT! £119
BROTHER HL8/E/V, HL10, DPS	
2MB	£109
CANON NOTEJET 486, BN22/BJC-880	
4MB Module	£149
CANON LBP4, 4+, LITE, SX	
2MB Board	£125
CANON LBP8II	
2MB	£95
CANON LBP8IV	
4MB	POWERCUT! £119
CANON LBP 860, 1260	
4MB	£129
16MB	£499
COMPAQ PAGEMARQ 15/20	
8MB	£269
16MB	£579

EPSON EPL4000/4100/ 4300/8100	
2MB	£99
EPSON EPL7000	
3MB	£125
EPSON ACTION LASER 1600/1100	
4MB	£135
FUJITSU VM4, VM8	
4MB Module	£149
KYOCERA F800	
2MB	£109
KYOCERA FS400, 410, 1500, 1550	
2MB	£85
4MB	£139
NEC SILENT WRITER 95/95FX/97/97FX	
2MB	£85
OKI LASER 400, 410E	
2MB	£109
OKI 800/820	
2MB	£109
OKI LASER 830/840/850	
2MB	£99
PANASONIC 4420, 4450i	
2MB	£95
PANASONIC 5410, 4440	
2MB	£109
TEXAS MICROLASER PS, MICROWRITER	
1MB	£69

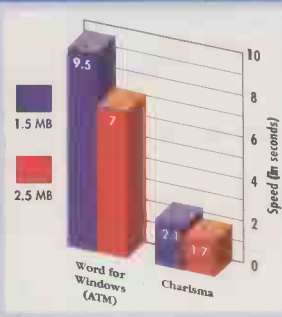
LASER PRINTER MEMORY - AN EXPLANATION

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	2MB
Soft fonts	1MB	8 - 10 PostScript fonts	4MB
PostScript cartridge	1.5MB	Network printer sharing	4MB



MATCHED MEMORY UPGRADES FOR HP PRINTERS



AUTHORISED RESELLER

LASERJET II, IID	
2MB	POWERCUT! £89
4MB	£169
LASERJET IIP, III, IIID, IIP	
2MB	POWERCUT! £89
4MB	£169
LASERJET 5P, 5MP	
4MB	POWERCUT! £129
8MB Module	£259
LASERJET IIIsi, 4, 4M, 4si, 4MV, 4MP, 4P, 4V	
4MB	POWERCUT! £129

LASERJET 4L	
1MB	£59
DESKJET 500, 500c, 550 256K	£39
DESKJET 520, 540, 560C 256K Kit	£39
DESKJET 660C/PS	
4MB	£129
8MB	£259
DESKJET 1200 C/PS/1200, 1600C	
2MB	£85
4MB	£149
8MB	£259

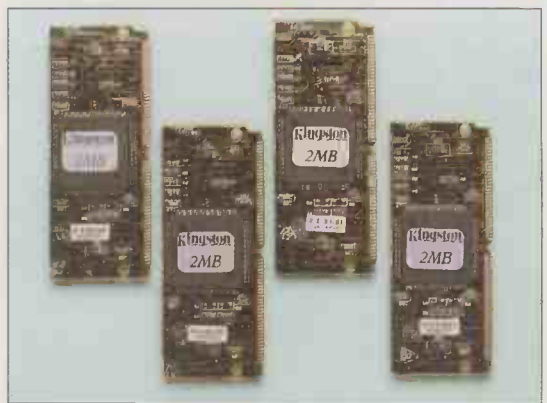
NETSERVER SERIES	
32MB Module	£1399
DESIGNJET 600/650	
4MB	£129
PAINTJET XL300	£Call
HP COLOUR LASERJET	
4MB Module	£129
8MB Module	£259

All our Matched Memory Kits come with our famous double guarantee - full lifetime warranty and 14 day money back guarantee

MATCHED MEMORY UPGRADES FOR DEC Workstations

• Call for models not listed here

MICROVAX 3100 MODEL 30 & 40	
8MB Kit	£386
DEC-SYSTEM 5100	
8MB Kit	£386
32MB Kit	£1986
ALPHASTATION 200/400 SERIES	
16MB Kit	£575
32MB Kit	£1099



MATCHED MEMORY UPGRADES FOR IBM RISC Workstations

• Call for models not listed here

RISC SYSTEM 6000	
32MB Kit	£1299
64MB Kit	£2699
448MB Kit	£17,384
POWERSTATION/ POWERSERVER 200	
8MB Kit	£298
X STATION	
6MB Kit	£228

MATCHED MEMORY UPGRADES FOR SUN Workstations

• 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! £162
16MB Kit	£499
SPARC ELC	
16MB Kit	POWERCUT! £489
SPARC STATION LX	
32MB Kit	£1199
SPARC 330, 370 & 390	
32MB Kit	£1802
SPARC SERVER 630MP, 670, 690	
64MB Kit	£2812
SPARCSTATION 10/20 16MB	£699

QUALITY! QUALITY! QUALITY!

Being the largest direct supplier means we buy memory direct from world class manufacturers. Powermark plc only supply factory original memory.

MATCHED MEMORY UPGRADES FOR SILICON GRAPHICS Workstations

POWER SERIES IRIS	
32MB Kit	£2030
PROFESSIONAL IRIS	
4MB	£265
INDIGO, 4D/30, 4D/35/533	
64MB Kit	POWERCUT! £1999
CHALLENGE M/ POWER CHALLENGE SERIES	£Call



DELIVERY CHARGES
See page 9

A great new way to buy...



See page 1

**EARLY BIRD
Order Bonus**
See page 33



Everyone at Powermark passes through our training college

BANK

at Powermark



MATCHED MEMORY UPGRADE FEATURE

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MATCHED MEMORY UPGRADES FOR DELL

325/D/P, 333/D/P	
2MB → 6MB	£129
2MB → 10MB	£289
POWERLINE	
WORKSTATION SERIES	
4MB Kit	£155
8MB Kit	£259
16MB Kit	POWERCUT! £499
POWER DESKTOP SERIES	
4MB Module	POWERCUT! £139
POWEREDGE SP/XE SERIES	
8MB Kit	£259
16MB Kit	£499
NL20, NL25	
2MB Module	£109
320SLI	
2MB	£99
DIMENSION 'I'	
4MB	£139
16MB	£479

MATCHED MEMORY UPGRADES FOR DELL

DIMENSION XPS, P100C, 133C	
NEW! 8MB EDO Kit	£249
NEW! 16MB EDO Kit	£499
NEW! 32MB EDO Kit	£819
OMNIPLEX 466/50ME	
8MB Module	£259
16MB Module	£499
OMNIPLEX PENTIUM RANGE	
8MB	£261
16MB	£519
OPTIPLEX XL/XM/XMT 5/75/90/100	
16MB Module	£499
LATITUDE M SERIES	
4MB	£149
8MB	£299
LATITUDE XP SERIES	
8MB	£289
16MB	£599
NETPLEX SERIES	
4MB Module	£125
8MB Module	£259
16MB Module	£439
PERFORMANCE 4/33/50/66	
4MB	£129
8MB	£259

MATCHED MEMORY UPGRADES FOR GATEWAY

PC 4SX-33	
4MB Module	£129
16MB Module	£475
PC 4DX-33V, PC 4DX-66V	
4MB Module	£129
16MB Module	£475
32MB Module	POWERCUT! £949
PC 4DX2-66P/V	
4MB Module	£129
8MB Module	£299
16MB Module	£475
32MB Module	£1099
PC P5-60, P5-66, P90, P100	
8MB EDO Kit	£299
16MB EDO Kit	£499
32MB EDO Kit	£1099
64MB EDO Kit	£2299
PC 4D-66, PC 4DX-100	
8MB Kit	£249
32MB Kit	£1099
PS-120/133 ELITE, P90 PREMIUM SERIES	
NEW! 8MB EDO Kit	£299
NEW! 16MB EDO Kit	£499
LIBERTY NOTEBOOK	£Call

MATCHED MEMORY UPGRADES FOR DIGITAL

VENTURIS DESKTOP RANGE	
4MB Module	£159
8MB Module	£299
16MB Module	£549

MATCHED MEMORY UPGRADES FOR ESCOM

486 DESKTOP RANGE	
4MB Kit	£139
16MB Kit	£475
P90/100PCI	
8MB Kit	£269
16MB Kit	£529



BEWARE!
Beware of economy memory modules that use ASIC parity generation. Powermark plc only supply SIMMs with genuine parity DRAMs.

30 Memory Specialists ready to take your call

CYRIX FEATURE

CYRIX 386 TO 486 PROCESSOR UPGRADE



THE CYRIX MICROPROCESSOR UPGRADE FAMILY



The package consists of one Cx486DRx² Microprocessor, a 386DX removal tool, (SX version is a clip-on chip), installation manual, upgrade cache installation software (on both 3.5" and 5.25" media) and a pin 1 locator arrow (for correctly aligning the upgrade processor in the socket). A Cyrix-green heatsink is also included with 20/40, 25/50 and 33/66 versions.

CYRIX DRx²/SRx²

- Single chip upgrade solution for 386 DX and SX personal computers
- Clock doubling technology for increased performance
- 1K on-chip cache
- Very easy to install
- Compatible with DOS, Windows and OS/2
- Free technical support
- Limited lifetime warranty

Plug in the Cyrix 386 to 486 Processor Upgrade. It's the fastest, most cost effective way to a 486 computer and it's totally compatible with the world's leading software: DOS, Windows and OS/2 operating systems.

and load the cache installation software. It's as simple as that. You're ready to run in minutes.



See page 3 for details

EVEN LOWER PRICES!

386DX	
DX 16MHz → 486 32MHz	£128
DX 20MHz → 486 40MHz	£128
DX 25MHz → 486 50MHz	£139
DX 33MHz → 486 66MHz	£149
386SX	
SX 16MHz → 486 32MHz	£139
SX 20MHz → 486 40MHz	£139
SX 25MHz → 486 50MHz	£139



HMSO

Public Sector customers can purchase through HMSO by calling 01603 694153.



Certificate no. PS 20545

BS7570 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.

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(50 lines)

MEMORY & PROCESSOR UPGRADES

Email from America

I've just purchased an amazing product - NoiseBuster active noise reducing headphones and they really work! The NoiseBuster reduces rumbles and hums by between 50 and 95% whilst leaving desired sounds such as speech, ringing telephones and music clearly audible.



Microphones in the headphones listen for offensive noise and feed those sounds to the controller pack that produces 'anti' noise waves at 180° out of phase. These waves help cancel out annoying sounds like vacuum cleaners, air conditioners, aeroplane engine drone and vehicle engines.

Just clip the pager sized pack to your belt, switch on and relax. There is also a line out jack socket so you can plug the NoiseBuster in to your Walkman or aircraft entertainment system.

I've instructed my purchasing team to source them and now you can buy them from stock at a very low price of only £67.

Mark Simon

PS. Professor Paul will go bananas when he sees one! NoiseBuster includes battery and line-in cord with volume control
NOISEBUSTER £99

Powermark plc

Premier House, 112 Station Rd, Edgware, Middlesex HA8 7AQ

Tel: 0181-951 3355

(50 lines)

Fax: 0181 905 6233

Email: sales@powermark.com



Cards are not debited until despatch
VAT at 17.5% will be added to all prices

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**Technical Sales
Order Lines
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(50 lines)**



**DELIVERY
CHARGES**

UK MAINLAND
Next working day
courier
delivery to
your door

SMALL ITEMS

Examples: memory, sound/video cards, CD ROM titles, small software packages

**UP TO 3 ITEMS
£6.95 total**

**4 ITEMS OR MORE
£1.95 for each
additional item**

LARGE ITEMS

Examples: CD ROM drives, monitors, multimedia kits, software suites

**1ST ITEM
£8.95**

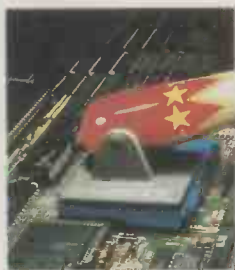
**EACH ADDITIONAL ITEM
£4.95**

Call for rates outside
UK mainland

MEMORY

INTEL OVERDRIVE®

**LOWER
PRICES!**



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. Intel OverDrive® processors are available for all Intel 486 CPU-based systems with or without an OverDrive® socket.



INTEL DX4 OVERDRIVE®

- 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



INTEL DX4 25MHz - 75MHz £103

Order codes
Single socket PC DX4/2575DX
Dual socket PC DX4/2575SX

INTEL DX4 33MHz - 100MHz £135

Order codes
Single socket PC DX4/33100DX
Dual socket PC DX4/33100SX



INTEL DX2 OVERDRIVE®

- Give your Intel 486 SX or DX PC 66MHz performance with the Intel DX2® OverDrive® processor
- For any 16, 20, 25 or 33MHz Intel 486 SX or DX CPU-based systems
 - Features Intel's "speed doubling" technology
 - 8K on-chip cache memory
 - On-chip Maths Co-processor
 - Opens and runs all your software applications faster on your system

INTEL DX2 25MHz - 50MHz £78

Order codes
Single socket PC DX2/2550DX
Dual socket PC DX2/2550SX

INTEL DX2 33MHz - 66MHz £99

Order codes
Single socket PC DX2/3366DX1
Dual socket PC DX2/3366DX2

**LIFETIME WARRANTY
ON ALL INTEL
OVERDRIVE®
PROCESSORS**



**Can be
installed in seconds
by anyone**

INTEL PENTIUM® OVERDRIVE®

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 £175

NEW! INTEL P24T 83MHz DX5/P24T83 £189

**TURN THE PAGE
FOR MORE**

REAL HARD DRIVES

Famous hard drives...

**A Reliant Robin
Any Tracked
Vehicle**

**A trip from London
to Newcastle on a
Friday night**



**DELIVERY
CHARGES**
See page 9

A great
new way
to buy...



See page 1

**EARLY BIRD
Order Bonus**
See page 33



Everyone at
Powermark passes
through our
training college

BANK

at Powermark

ADAPTEC ADAPTER FEATURE

AIRPORT AHA9320

These products are designed to connect to the serial port of a PC and/or portable and enables wireless file transfers. The kits include TranxIt Software for Infra-Red transfers.



- IrDA compliant
- Serial port connection
- Up to 2 metre range
- High speed file transfer

AIRPORT 1000 PORTABLE CONNECTION	£59
AIRPORT 2000 DESKTOP CONNECTION	£69
AIRPORT 2500 COMBO KIT	£115



I/O. NOW MORE IMPORTANT THAN EVER.™

SLIMSCSI AHA1460

The SlimSCSI adapter delivers high performance peripheral connections to your PCMCIA portable PC.



- Type II, III & Toshiba IV compatible
- Adaptec EZ-SCSI Software
- Card & Socket software
- 10Mb/Sec data transfer

SLIMSCSI PCMCIA CONNECTION	£149
-----------------------------------	------

SCSI MASTER AHA1542CP



- The industry standard, high performance ISA solution

SCSI MASTER AHA1542CP KIT	£169
----------------------------------	------

PCI SCSI MASTER FAMILY

High performance, intelligent host adapters support advanced SCSI features for demanding desktop and Network applications.

- PCI SCSI MASTER**
- AHA2940 KIT** £179
 - Up to 10Mb/s transfer rate
 - PCI SCSI MASTER AHA2940W KIT** £239
 - Fast & Wide SCSI
 - Up to 20Mb/s transfer rate with support for 15 devices
 - PCI SCSI MASTER AHA3940 KIT** £289



- Multichannel Fast SCSI
 - Up to 14 device support on two SCSI channels
- PCI ULTRA WIDE SCSI HOST ADAPTER AHA2940UW KIT** £229
- Increase data transfer to up to 40Mb/s, with 15 peripheral devices supported
- ADAPTEC 3985 PCI (FAST RAID)** £Call

VALUE AND PERFORMANCE ADAPTERS

TOTAL CD AVA1505 KIT	£39	SCSI DIRECTION AHA1522 KIT	£109
TOTAL CONNECT AVA1515 KIT	£62	<ul style="list-style-type: none"> • All the connectivity advantages of SCSI with OS & Peripheral support • Up to 10Mb/s transfer rate • Floppy support 	

EISA SCSI MASTER AHA2742AT KIT	£239
<ul style="list-style-type: none"> • 14 device support 	
MINISCSI PLUS	£65
MINISCSI EPP	£119
<ul style="list-style-type: none"> • Plugs into parallel port • SCSI-Works 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	£379
DUAL SPEED CD ROM	£199
QUAD SPEED CD ROM	£289
DUAL SPEED CD ROM WITH AUDIO	£229

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 DUAL	£169
EZCD QUAD	£239



AMACOM EZ DISK

- External 3.5" parallel port hard drive**
- Easy connection to parallel port
- | | |
|----------------------|------|
| EZ DISK 420MB | £239 |
| EZ DISK 850MB | £279 |
| EZ DISK 1.2GB | £329 |

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
- | | |
|--------------------|-----|
| EZ PARASCSI | £99 |
|--------------------|-----|

DISKLITE

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
- | | |
|-----------------------|------|
| DISKLITE 170MB | £165 |
| DISKLITE 340MB | £269 |
| DISKLITE 540MB | £339 |
| DISKLITE 810MB | £469 |
| DISKLITE 1.2GB | £699 |



EZCD QUAD

PROCESSOR & MASS STORAGE UPGRADES

Technical Sales Order Lines
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(50 lines)

- HUGE STOCKS**
Guaranteed same day despatch on virtually all stock items for orders placed even up to 4.00pm.
- 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**
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.
- LOW, LOW PRICES**
We only supply products from leading manufacturers and at low, low prices too.
- 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 Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

TURN THE PAGE FOR MORE

- UPGRADE DRIVE THRU**
While-you-wait installation service available. See page 3 for details.
- PERSONAL CALLERS VERY WELCOME**
Save on delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

Powermark plc
Premier House, 112 Station Rd, Edgware, Middlesex HA8 7AQ
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**DATA
CARTRIDGES**

	Each 10 Pack	
DC6150	£12	£109
DC6250	£15	£139
DC6525	£17	£169
DC9100Magnus	£27	£249

All QIC tapes are preformatted

QIC	Capacity	Each	10 Pack
DC2120	120-250MB	£13	£119
DC2120XL	350MB	£15	£139
QIC3010	700MB	£17	£185
QIC3020	1.7GB	£23	£209

QIC-Wide	Capacity	Each	10 Pack
5500c	420MB	£19	£169
9000c	850MB	£21	£190

DAT	Length	Each	10 Pack
1.3GB	60m	£6	£58
2GB	90m	£9	£89
4GB	120m	£15	£145
Head Cleaner		£26	

TURN THE PAGE
FOR MORE

**VERBATIM
FEATURE**

DISKETTES

3.5" HD 10 Pack	£4
3.5" HD Preformatted 20 Pack + 2 free!	£8

**DATA AND DAT
CARTRIDGES**

	Unit 10 Pack	
DC2120 QIC 80	£13	£119
DC2120XL	£15	£139
MC 3000 XL	£15	£139
4mm 60m	£6	£58
4mm 90m	£6	£58
8mm 112m	£6	£58

BLANK CDS

CD-R 74 Min	£10
-------------	-----

OPTICAL DISKS

3.5" 128MB	£17
3.5" 230MB	£22
5.25" 600MB	£45
5.25" 1.3GB	£57

MEMORY

CONNER FEATURE

CONNER

The Storage Answer

IDE DRIVES

CFS635A HD0635	635MB	12ms	£128
CFS850A HD0850	850MB	14ms	£139
CFS1275A HD1.06/1	1.275GB	14ms	£177

SCSI DRIVES

CFP1080 HD01.08S	1.08GB	10ms	£259
CFP2107 HD02.1/S	2.1GB	9ms	£599
CFP2105 HD02.16/S	2.1GB	11ms	£549
CFP4207 Caymen HD4.2S	4.2GB	8ms	£999

1GB HARD DISKS AND ABOVE

FEATURE:

- 5 year warranty on all SCSI drives
- Embedded servo systems eliminate the need for thermal recalibration and provide consistent data transfer rates
- Hot pluggable for uninterrupted data access in RAID applications
- Low power consumption means less heat and component wear



NEW!

**CONNER TRAVAN
800MB**

The Travan 800 is the latest in value data protection. Each kit includes

- Backup Exec software
- Interface cable
- User Guide
- 800MB Travan cartridge
- 9.5MB/minute backup rate
- Backward compatible with QIC80 and QIC40

TAPE-STOR 800MB

INTERNAL CONTRAV800/1 £149

TAPE-STOR 800MB

EXTERNAL CONTRAV800/E £225

TAPE-STOR 800MB

CARTRIDGE DC8001 £22

**CONNER
TAPE-STOR 420MB**

Kit includes: Tape, Software, Manuals and cables

- Backward compatible with QIC80 and can read QIC40
- 9.5MB/minute backup rate

TAPE-STOR 420MB

INTERNAL CONTS420/1 £89

TAPE-STOR CARTRIDGE DCS122 £14

**HARD DISK EXPERTS AVAILABLE FOR
SPECIALIST ADVICE**

NEW! MAXTOR HARD DISK KIT FEATURE

Maxtor

- Available in the following EIDE capacities: 850MB, 1.0GB, 1.2GB and 1.6GB
- Ideally suited for upgrading to Windows 95 or Windows NT
- Exclusive, hotline technical support, BBS and faxback service available to onlt to Maxtor customers
- "No quibble" Maxtor service and warranty

MAXTOR IDE DRIVE KITS

K127850A HDMA850	850MB Kit	12ms	£159
K1271080A HDMA1.1A	1.0GB Kit	12ms	£205
K1271260A HDMA1.2A	1.2GB Kit	12ms	£229
K1271620A HDMA	1.6GB Kit	12ms	£389



ALL KITS INCLUDE:

- Easy step by step installation guide
- Dual IDE cable
- Formatting software that can format hard drives greater than 528MB
- 5.25" mounting brackets
- Rail supports
- Screws

**Complete
Hard
Disk
Kits!**

11

**DELIVERY
CHARGES**
See page 9

A great new way to buy...
MEMORIBANK Gold Card
See page 1

**EARLY BIRD
Order Bonus**
See page 33

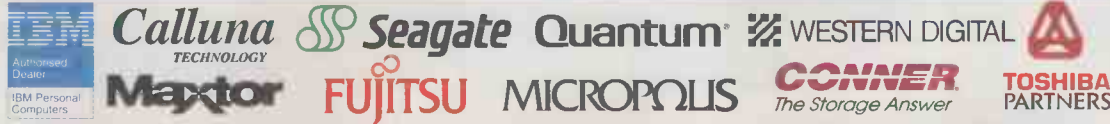


Everyone at Powermark passes through our training college

BANK

at
Powermark

HARD DISK DRIVE FEATURE



IDE HARD DISK DRIVES

Conner	CFS635A	635MB	12ms	£128
Western Digital	AC2635	639MB	10ms	£115
Maxtor	7850AV	850MB	12ms	£135
Conner	CFS850A	850MB	14ms	£139
Western Digital	AC2850	853MB	10ms	£144
Western Digital	AC31000	1.0GB	10ms POWERCUT!	£177
IBM	Pegasus	1.05GB	9ms (mode 4)	£329
Seagate	ST31220A	1.08GB	12ms	£169
Fujitsu	M1606T	1.09GB	10ms	£161
IBM	Deskstar	1.2GB	9ms (mode 4)	£339
Maxtor	71260AT	1.26GB	12ms	£187

Conner	CFS1275A	1.275GB	14ms	POWERCUT!	£177
Western Digital	AC31200	1.28GB	10ms	POWERCUT!	£220
Western Digital	AC31600	1.62GB	10ms	POWERCUT!	£285
Maxtor	71626AP	1.63GB	12ms		£342

SCSI CONTROLLER CARDS

FUTURE DOMAIN

8-bit SCSI	ISA	Bare Card	£39
16-bit SCSI	ISA	Bare Card	£55
16-bit SCSI	ISA	Power SCSI Software	£109
32-bit SCSI II	PCI	Bare Card	£135
16-bit SCSI	PCMCIA	SCSI Software	£169
16-bit SCSI	MCA	Bare	£129

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

Adaptec - page 10

IDE CONTROLLER CARDS

FUTURE DOMAIN

NEW! 32-Bit E-IDE	IDE Software and cables	£49
	<i>Ideal for hard drives over 540MB</i>	
E-IDE	IDE Software and cables	£39

POWERMARK

IDE	PCI	Bare	£29
IDE	VLB	Bare	£29



SCSI HARD DISK DRIVES

Quantum	LT730S	730MB	12ms	£167
Fujitsu	M1606SA	1.0GB	10ms	£232
IBM	Deckstar	1.05GB	9ms	£249
Seagate	ST31230N Hawk-2	1.05GB	9ms	£283
Conner	CP1080	1.08GB	10ms	£259
Quantum	Fireball	1.08GB	10ms	£295
Micropolis	4221	2.05GB	8.5ms	£819
Conner	CFP2107	2.1GB	9ms	£599
Conner	CFP2105	2.1GB	11ms	£549
IBM	Ultrastar	2.1GB	8ms	£958
Seagate	ST32430N Hawk-2	2.1GB	9ms	£599
Seagate	ST32550N Barracuda Fast SCSI 2	2.1GB	8ms	£899
Micropolis	1936	3.02GB	12ms	£999
Conner	CFP4207 Caymen	4.2GB	8ms	£999
IBM	Ultrastar	4.3GB	8ms	£1419

Micropolis	3243	4.3GB	8.5ms	£1059
Seagate	ST15230N Hawk-4	4.3GB	9ms	£1079
Seagate	ST15150N Barracuda Fast SCSI 2	4.3GB	8ms	£1379
Seagate	ST410800N Elite	9.09GB	8ms	£2399
Micropolis	1991	9.1GB	12ms	£1799

Audio Visual SCSI

Micropolis	4221AV	2.05GB	8.5ms	£819
Quantum	Atlas XP32150	2.1GB	8ms	£895
Micropolis	1936AV	3.02GB	12ms	£1029
Micropolis	3243AV	4.3GB	12ms	£1069
Quantum	Grand Prix XP3430S	4.3GB	8ms	£1460
Micropolis	1991AV	9.1GB	8.5ms	£1995

PCMCIA HARD DISK DRIVES (Type III)

Calluna	Calluna170	170MB	16ms	£299
Calluna	Calluna260	260MB	16ms	£379
Kingston	DPPCM/260	260MB	11ms	£439
Ministor		260MB	12ms	£379

2.5" HARD DISK DRIVES

2.5" IDE

Hitachi	DK212A/34	340MB	12ms	£159
Hitachi	DK212A/54	540MB	12ms	£249
Hitachi	DK212A/81	810MB	12ms	£429
Hitachi	DK212A/10	1.0GB	12ms	£579
Seagate	ST9240AG	210MB	16ms	£149
Toshiba	MK1924FC	543MB	12ms	£259
Toshiba	MK2628FC	810MB	12ms	£396
IBM	85G3627	1.2GB	12ms	£595
Toshiba	MK2720FC	1.35GB	13ms	£599



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(50 lines)

HARD DISKS

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Guaranteed same day despatch on virtually all stock items for orders placed even up to 4.00pm.

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
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices too.

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
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Save on delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm. Technical Support and Customer Service from 10.00am to 2.00pm.

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Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
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Fax: 0181 905 6233
Email: sales@powermark.com



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Powermark plc is regularly assessed by the British Standards Institution to ensure compliance with the quality standard.



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Order Lines
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951 3355**
(50 lines)

“... and here's what some of our customers have said ...
“I am putting digit to keyboard to thank Mr Simon Borny for all the help he has extended to me over the memory upgrade of one of our servers.
Mr Borny was very helpful and supportive throughout and I am sure that without his help the upgrade would have cost us much more in both time and money.”
K Vella
Opt-Tel Limited, Bucks



**FREE
Baseball Cap**

With every order over £500
When ordering just ask for your FREE baseball cap as it is not shipped automatically.

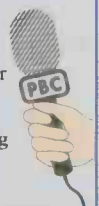
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FOR MORE**

**MEDIA
MOMENTS**
Famous media moments...

The first moon landing

The first Telstar transmission

Eurovision song contests in the 1960s



MEMORY

HP COLORADO FEATURE



HP COLORADO T1000

TRAVAN

HP COLORADO T1000

- New, advanced TRAVAN technology
- 800MB capacity (with compression)
- Up to 9.5MB/min backup speed
- Fits into 3.5" or 5.25" drive bay

HP COLORADO T1000 CMST1000 £108

HP COLORADO BACKUP

- Easy to use software
- Works with all HP Colorado devices

COLORADO BACKUP COLORBUPW £39

PARALLEL PORT

TRAKKER 350 CMSTRAK/350 £142
TRAKKER CARRY CASE CMST5/CARRY £37

HP COLORADO JUMBO

- Connects to your floppy controller
 - Includes software and cables
- JUMBO 350 CMST5350 £79
JUMBO 1.36GB CMST51.36/1 **POWERCUT!** £184
QIC 3020 DC3020 £23
FAST CONTROLLER CARD CMST5/7C-20 £49
EXTERNAL MOUNTING KIT CMST5E £61

Mass storage experts available for specialist advice

COLORADO® MEMORY SYSTEMS

A division of
hp HEWLETT®
PACKARD

HP SURESTORE TAPE SERIES

- Very fast DAT drive system
- Capacity from 2GB to typically 8GB
- PC Magazine Editors' Choice

HP SureStore Tape 2000 Int HPSS2000/I £589

HP SureStore Tape 2000 ISA Kit HPSS2000/KIT £859

HP SureStore Tape 5000 Int HPSS5000/I £679

HP SureStore Tape 5000 ISA Kit HPSS5000/KIT £1699

HP SureStore Tape 6000 Int HPSS6000/I £799

HP SureStore Tape 6000 ISA Kit HPSS6000/KIT £1899

NEW! HP SureStore Tape 12000 Int HPSS12000 £799

NEW! HP SureStore Tape 12000 ISA Kit HPSS12000/KIT £1899

ISA Kit includes cable, cartridge, head cleaner & full software

SYQUEST STORAGE FEATURE



SyQuest®



SYQUEST SQ5200

Unsurpassed warranties -
2 years on drives and 5 years on data cartridges

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

EZ135 DRIVES

135MB Removable Disk Drive

SYQ135/I EZ135 IDE Internal £164
SYQ135/E EZ135 SCSI External £195
SYQ135/P EZ135 Parallel £189
SYQ135/C 135MB Cartridge £17

Free cartridge with all EZ135 disk drives

SYQUEST REMOVABLE CARTRIDGE HARD DISK DRIVES

	Type	Capacity	Internal	External
SYQ270/I	SyQuest 3.5" IDE	270MB	£249	-
SYQ270/E	SyQuest 3.5" SCSI	270MB	£254	£344
SYQ270/P	SyQuest 3.5" PARALLEL	270MB	-	£425
SYQ88	SyQuest 5.25" SCSI	88MB	£179	£269
SYQ200	SyQuest 5.25" SCSI	200MB	£259	£349

SYQUEST CARTRIDGES

Capacity	Form	Each	5 Pack
105MB	3.5"	£39	£190
270MB	3.5"	£40	£195
44MB	5.25"	£29	£140
88MB	5.25"	£35	£170
200MB	5.25"	£50	£245

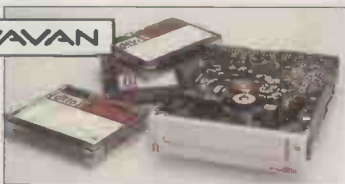
IOMEGA TAPE BACKUP FEATURE

IOMEGA®
Makers of Bernoulli

DITTO 800

- New, advanced Travan technology
 - 800MB capacity (with compression)
 - Backward compatible with 250, 350 and 420MB tapes
 - Direct drive - no belt
 - Network compatible
- DITTO 800 INTERNAL IODITTO800/I £129
DITTO 800 EASY PARALLEL IODITTO800/E £199

TRAVAN



DITTO 800

NEW! TRAVAN 3.2GB DRIVE
INTERNAL IOTRAV3/I £249
PARALLEL IOTRAV3/E £335

1.7GB INTERNAL IOMEGA1700 £209
QIC 3020 TAPES (for 1.7GB) DC3020 £23
QIC & WIDE 420MB DC5122 £89
TAPE ACCELERATOR CARD IOMEGA/DATA £49
700MB DATA CARTRIDGE DCMC3000 £17

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 IOZIP/PT £159 100MB Cartridge Single £16
IOZIP SCSI IOZIP/SCSI £159 5 Pack £68 10 Pack £115

NEW! IOMEGA JAZZ DRIVES

1GB Internal SCSI £419 1GB External Parallel £509

DELIVERY CHARGES
See page 9

A great new way to buy...
MEMORYBANK Gold Card
See page 1

EARLY BIRD
Order Bonus
See page 33



Everyone at Powermark passes through our training college

PANASONIC OPTICAL & CD ROM DRIVE FEATURE



Panasonic QuadPro IDE

4xSpeed Upgrade Kit

- New quad speed CD ROM drive
- PowerIDE! software to eliminate conflict with hard disk drive
- Complies with MPC level 3
- 32-bit disk access
- Video-CD and CD-i movie
- Includes all accessory parts for quick, trouble free installation
- Optional IDE interface card available

QUADPRO KIT IDE	PAN/PRO/IDE	£139
OPTIONAL INTERFACE CARD	PAN/INTERFACE	£10



Panasonic QuadPro SCSI

4xSpeed Upgrade Kit

- New quad speed CD ROM drive
- Corel SCSI! software supports most SCSI host adapters
- Complies with MPC level 3
- 256Kb cache memory
- Video-CD and CD-i movie
- Includes all accessory parts for quick, trouble free installation

QUADPRO SCSI KIT WITHOUT INTERFACE CARD	PAN/PRO/SCSI/WO	£155
QUADPRO SCSI KIT WITH INTERFACE CARD	PAN/PRO/SCSI	£205



Panasonic PD System

2 in 1 CD ROM and Optical Disk drive

- New combined quad speed CD ROM drive and 650MB rewritable optical drive
- Removable 650MB optical media for archiving or re-distribution
- SCSI-2 interface for Mac or PC
- Corel SCSI! supports most SCSI host adapters
- Supports Video-CD and CD-i movie

PD SYSTEM KIT WITHOUT I/F CARD	PAN/PDI	£489
PD SYSTEM KIT WITH I/F CARD	PAN/PDIWI	£575
PD 650MB MEDIA	PAN/POCARD	£37
PD SYSTEM EXTERNAL KIT	PAN/PDE	£699

Technical Sales Order Lines

0181-951 3355
(50 lines)

BACKUP & MULTIMEDIA

It's time once again to visit...



Dr Jane's Storage Surgery

Dear Dr Jane,
I have a small fishing shop, and am proud to own a comprehensive collection of data that has been in the family for years. The problem is not disk space but protection of this data. I currently have a shoe-box full of floppies, but I sometimes need to refer to them in a hurry. There must be other options but I am at a loss of where to turn.

Yours,
Ardent in Anglesea

Dear Ardent,
I glanced at my medicine cabinet last night, and a prescription that would suit your needs came to mind. An Iomega Zip Drive, which plugs directly into your parallel port, for easy installation and transportability, would give you 100MB of storage per cartridge. Furthermore, with extra cartridges you could keep your most precious data in other safe locations.

Yours, Dr Jane

Send your thoughts and queries to Dr Jane, c/o Powermark plc, Premier House, Station Road, Edgware, Middlesex, HA8 7AQ or fax them to 0181 905 6233. You can also Email Dr 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!

Powermark plc
Premier House, 112 Station Rd,
Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com



Cards are not debited until despatch
VAT at 17.5% will be added to all prices

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
- MAET technology support: on board motion artifacts elimination
- Teletext feature is Reuters 1000 ready, supporting dynamic data exchange (DDE) see page 876 on CNNtext, for updated news

WIN/TV CELEBRITY	WIN/TVCELEB	£259
VIDEO OUT MODULE FOR WIN/TV CELEBRITY	WIN/VIDOUT	£149
WIN/CINEMA 95	WIN/CINEMA	£169
WIN/TV PRISMA	WIN/PRISMA	£149

- SVGA compatible
- 640 x 480, up to 800 x 600 resolution, audio line-out

Windows 95 compatible



NEW! WIN MOTION 60 WINMOTION £389

INNOVATIVE COMMUNICATIONS FEATURE

PORTABLE SOUND PLUS

- Ideal solution for portable PCs
- Perfect for multimedia presentations



PORTABLE SOUND PLUS IREPORT £109



The first slimline CD ROM drive with our optional built in 16-bit sound card and it's Windows 95 compatible too!

CYBERROM DUAL CD ROM

- Designed for the newest generation of 'sound ready' computers
- Play Audio CDs

CYBERROM DUAL CD ROM CYBERROM2X £269



Windows 95 compatible

CYBERROM QUAD CD ROM

CYBERROM QUAD CD ROM CYBERROM4X £395

Public Sector customers can purchase through HMSO by calling 01603 694153.



Certificate no FN 26545

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.



MEMORY

CREATIVE LABS FEATURE

SOUNDBLASTER CARDS

- SOUNDBLASTER 16 VALUE IDE** SB16B/IDE £60
- IDE interface
 - 16-bit stereo sampling and playback
 - 20 voice enhanced 4-operator stereo FM-synthesiser
 - Power amplifier (4 watts per channel) and volume, bass and treble control
 - Full software control of fade-in, fade-out, pan, volume, left/right steering and microphone mixing
 - Bundled software
- SOUNDBLASTER 16 PRO IDE ASP** SBP16A/IDE £103
- With voice recognition software
 - With Panasonic interface
- SOUNDBLASTER AWE 32 IDE VALUE** SB32AWE/IDEV £103
- Includes upgrade socket
- SOUNDBLASTER AWE VALUE** SB32AWE/V £121



SOUNDBLASTER DISCOVERY CD QUAD SPEED KIT

!!! NEW!!!
BLASTERKEYS

MIDI keyboard for SoundBlaster cards
£115

VIDEO BOARDS

- VIDEObLASTER SE100** VBLS1/SE £159
- Live full motion video
 - Capture single frames in BMP, TIFF, GIF, MMP, PCX, TGA or JPEG
- VIDEObLASTER RT300** VBLSRT300 £225
- Intel i750PE chip inside
- VIDEObLASTER MP400** VBLSMP400 £125
- Displays full motion MPEG video in a scalable window up to full screen
- 3DO BLASTER 3DOBLASTER** £269
- Requires CR-563 CD ROM drive and SoundBlaster with CD audio connector
- TV CODER INTERNAL** £99
TV CODER EXTERNAL £115

MULTIMEDIA KITS

- GAMEBLASTER VALUE KIT** GAMEBLASTER/V £169
- SoundBlaster AWE Value sound card
 - Dual speed IDE Panasonic CD ROM
 - SX2000 joystick
 - Speakers
 - Doom, Heretic, Theme Park
- HOMESTUDIO KIT** HOMESTUDIO £299
- MIDI compatible keyboard
 - AWE 32 IDE Lite sound card
 - Windows software included
- DISCOVERY QUAD SPEED KIT** SBDS/4XKIT £265
- Quad speed internal drive
 - SoundBlaster 16 Pro
 - Top selling bundled software
 - Ideal for home and office use
- DISCOVERY QUAD VALUE KIT** SBDS/4XKIT/V £225

SHAREVISION

- PC3000** SHAREPC3000
- Easy to use video conferencing over a regular telephone line. Realtime application sharing
- PC300** SHAREPC300
- Easy to use audio conferencing over a regular telephone line
- Call for pricing

NEW FROM CREATIVE!

- Infrared pointing devices**
- Aero Mouse** £69
 - Aero Pen** £69

POWERMARK MULTIMEDIA KITS

- POWER PERFORMANCE PACK** POWERP/PK £489
- Toshiba 3601 4.4 SCSI CD ROM drive
 - 16-bit SCSI controller card
 - AWE 32 sound card
 - Quality 25 watt speakers
- SMART QUAD KIT** SMART/PK £219
- Mitsumi FX4 quad speed internal drive
 - SoundBlaster 16 Pack
 - 10 CD ROM bundle
 - Lotus SmartSuite
 - 15 watt speakers
- TOSHIBA 4x4 KIT** TOSH4X4/PK £365
- Toshiba 5302 quad speed internal IDE drive
 - SoundBlaster 32 AWE Value Pack
 - 25 watt speakers
 - 10 CD ROM bundle
 - MS Encarta
 - Enhanced IDE controller
- Also available with SoundBlaster 32 AWE full version TOSH4X4/PKFULL £399
- JUNIOR KIT** JUNIORMKIT £179
- Double speed internal drive
 - SoundBlaster 16 Value Pack
 - Screenbeat speakers
 - 10 CD ROM bundle
- GAMEBLASTER AWE 32 KIT** GAMEBLST/AWE £287
- Quad speed internal drive
 - SoundBlaster AWE32 IDE Lite
 - Stereo speakers
 - Joystick
 - Top selling bundled software titles
 - CSP Socket

!!! NEW!!! AERODUET KIT

Only £99



- Aero Mouse
- Aero Pen

MOUSEMAN COMBO LOGCOMBO £34

- Ergonomic design
- Ready for Windows 95

SENSA LOGSEND each £38

- Ergonomic design
- Ready for Windows 95, available in: soft matt Blue Leopard or Silver Pearl, or Deep Wood and Black Chess with their brilliant lacquered surface

CORDLESS LOGC £49
CHROMA LOGCHROMA £24

- 3 button mouse with co-ordinated mouse mat, available in: Apple green with orange mat, luminous orange with blue mat, bright blue with yellow mat and canary yellow with green mat

TRACKMAN VISTA LOGVISTA £43

- Ergonomic design
- Ready for Windows 95

TRACKMAN LIVE LOGLIVE £99

- A unique radio-wireless solution for presentations can be used for controlling slideshows or as a handheld
- Ready for Windows 95

TRACKMAN VOYAGER LOGTV £48

- Sets new standards in comfort, flexibility and performance for travellers

POWERPAGE SCANNER LOGPPAGE £290

SCANMAN COLOUR LOGSCC £179
SCANMAN 256 LOGSCAN £87
FOTOMAN PLUS DIGITAL CAMERA LOGFOTD £439

TRACKMAN MARBLE LOGMARBLE £59
WINGMAN EXTREME JOYSTICK WINGMAN/EXT £32
THUNDER PC GAME PAD THUNDERPC £14



SOUNDBLASTER AWE32 IDE

Multimedia experts available for specialist advice



SOUNDBLASTER 16 VALUE IDE

SOUNDBLASTER CARDS

- SOUNDBLASTER AWE 32 IDE** SB32AWE/IDE £159
- IDE Interface
 - Next generation SoundBlaster card offering unbelievable sound quality
 - Full 16 channels, 128 instruments, 6 drum kits, 32 voice polyphony
 - Microphone included
 - Comprehensive software bundle including Creative VoiceAssist, Creative TextAssist, WaveStudio, Creative Sound Panel, Creative Mosaic, Creative Ensemble and more
- WAVEBLASTER II** WBLSII £94
- Programmable Advanced WaveEffects generator

DELIVERY CHARGES
See page 9

A great new way to buy...
Gold Card
See page 1

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DFI MULTIMEDIA KIT FEATURE

DFI®

DFI MULTIMEDIA KIT

All you need to start exploring the world of multimedia together with some of the best selling software from Microsoft. Full installation instructions included to get you up and running quickly and easily.

QUAD SPEED DFI/SANYO CD ROM DRIVE

- Internal quad speed E-IDE drive
- 600Kb/sec data transfer rate
- 190ms access time
- Tray loading
- 256Kb cache



Amazing Value

ORCHESTRA 16 SOUND CARD

- Fully compatible with SoundBlaster 16, SoundBlaster Pro, SoundBlaster 2.0, AdLib and Microsoft Windows Sound System
- Built-in stereo amplifier
- IDE CD ROM interface
- Full duplex MIDI port to let you record and play back at the same time

- Jumperless plug and play for easy installation
- 15 treble/bass tone control and stereo balance

Also includes: Audiosession, a powerful Windows application that gives you a mixer, wave player, CD player and MIDI player. Audiosession makes it easy to record, edit, play files, adjust volume, balance and a lot more

CONTAINS:

- Quad speed IDE CD-ROM drive
- High quality 16-bit sound card
- Quickshot SoundMate II stereo amplified speakers
- Microsoft Home pack consisting of:
 - Microsoft Encarta 95
 - Microsoft Works
 - Microsoft Dangerous Creatures
 - Microsoft Golf
 - Microsoft Home Sampler

Complete Multimedia Bundle

£199

DFI QUAD SPEED CD ROM DRIVE ONLY

£99

ORCHESTRA 16 SOUND CARD ONLY

£59

Special Limited Offer while stocks last

10 pack of top CD ROM titles for only £18

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SUPER SPECIAL CD ROM BUNDLES!

10 CD ROMs for £29!

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| The Blues Brothers | Fire Forget II |
| The Blues Brothers Juke Box Adventure | Battlestorm |
| Titus Fox | Super Cauldron |
| Crazy Cars 3 | Titan |
| | Prehistorix |
| | Prehistorix II |

11 CD ROMs for £19!

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| Return to Ringworld | Spectre VR |
| Microcosm | Compuserve Starter CD |
| Jutland | The Psychotron |
| The Cyberplasm | Jurassic Park |
| Formula | Shadowlands |
| Bodyworks | Sleepwalker |
| Voyager | |

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| Lenny's Musicoons | Family Circus |
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16 TITLES ON 10 CDS for £29

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| Animals | Enchantla |
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| Space | Outrun |
| Encyclopaedia | Print/Paint Power |
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| Winter Olympics | Madonna |
| Links Golf | Michael Jackson |
| Thunderhawk | Phil Collins |
| Curse of | Abba |

10 CDs MEGAPACK Now only £19

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|-------------------|--------------------------------------|
| Links Golf | Freakin' Funky |
| Test Drive III | Fuzzballs |
| The Passion | Ultima: The Savage Empire |
| F14 Tomcat | The Magic Death |
| Mike Ditke | Virtual Murder II |
| Ultimate Football | Absolutely no shareware or clip-art! |
| Dinosaur Safari | |
| Audubon's Mammals | |

Powermark plc
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Fax: 0181 905 6233
Email: sales@powermark.com

NEW! TEAC 6 SPEED CD ROM DRIVE FEATURE

TEAC

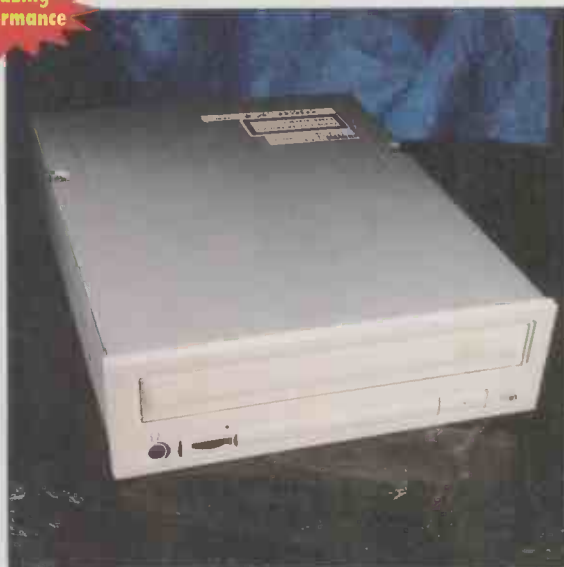
TEAC CD-56E 6 SPEED CD ROM DRIVE

Amazing performance

The winner in speed!
The future is now with TEAC's 6 speed CD ROM drive.

TEAC's 6 speed is three times faster than double speed and one and a half times faster than a quad speed drive. Every CD ROM you run will jump alive.

- 900Kb/sec transfer rate
- 139ms access time
- Tray loading
- CD ROM XA compatible
- Audio output
- Windows 95 compliant
- 256Kb buffer
- IDE interface



- Can be mounted vertically or horizontally

TEAC 6 SPEED CD-ROM DRIVE £199

Multimedia experts available for specialist advice



FREE Baseball Cap
With every order over £500
When ordering just ask for your FREE baseball cap as it is not shipped automatically.

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An interactive educational experience for pre-schoolers. Take the ComfyKeyboard, attach it to any PC and run a ComfyLand movie.



- Self-guided learning in a nurturing and delightful play-world
 - Hundreds of animated stories
 - An ever-expanding list of interactive movies
- PC Magazine November '94 rating ★★★★★ (Excellent)
PC Kids rating ★★★★★
- COMFYKEYBOARD** £49
- INTERACTIVE MOVIES**
The Great Concert in ComfyLand £25
Colourful Adventures: The Missing Bone £25
Christmas in ComfyLand £19

**TURN THE PAGE
FOR MORE**

KEY TRONIC COLORKEYS COOL STUFF KIT

ColorKeys keyboard, Klikmate mouse, Mouse pad, Screen bezel for 14" monitor, Microsoft Fine Artist software and cables & connectors



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CHARGES**
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MEMORY

CD ROM DRIVES, SOUND CARDS AND SPEAKERS FEATURE

MULTIMEDIA KITS

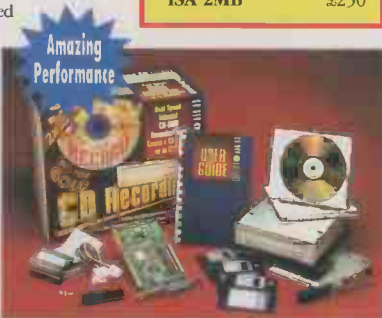
- AZTECH HOME OFFICE KIT** £269
- 16-bit sound card
 - Quad speed CD ROM
 - Speakers
 - Microphone
 - MS Encarta, Money, Works
- AZTECH STELLA KIT** £222
- AZTECH VOYAGER KIT** £245
- MIRO CONNECT 34 WAVE** £299
- CD quality 16-bit sound card
 - 32 voice wave table synthesis
 - V34 integrated fax/modem
 - Software included

DIAMOND ULTRA 8000 KIT

- £469
- 8 Speed CD ROM
 - 16 bit Wavetable sound card
 - 3D sound
 - Yamaha YST-M5 speakers
 - Games software

RECORDABLE CD ROMS

- PLASMON CDR4220** £849
- Record dual speed
 - Playback quad speed
 - INCAT CD PRO software
- JVC XR-W2001** £1449
- Internal
 - Dual speed SCSI
 - Windows software included
 - 1505 SCSI card
- Also available: Philips and Sony CD ROM recorders



PLUG & PLAY CD ROM RECORDER

VIDEO CARDS

- TV BUSTER PRO EXTERNAL** £69
- TV ENCODER**
- PROFESSIONAL PLUS** £229
- REELMAGIC MAXIMA** £Call
- Watch VideoCDs on your PC
 - Resolution up to 1280 x 1024
 - Includes bundled software
- MIRO VIDEO 20TD LIVE** £345
- MIRO VIDEO 20SD TWIN** £549
- MIRO DCI+** £289
- Adobe Premier V4 LE
 - Photoshop LE
 - Asymmetric 3D
- MOVIE MACHINE II** £475
- MOVIE MACHINE PRO** £299

THE GRAPHICS GARAGE SPECIALS!

- No.9 GXE 64 PCI 2MB** £180
- No.9 GXE ISA 2MB** £250

SPEAKERS

- Quality speakers supplied as matched pairs
- CREATIVE LABS SBS 300 STEREO SPEAKERS** £79
- 10 watts
 - Magnetically shielded
 - Built-in amplifier
- CREATIVE LABS SBS 37 STEREO SPEAKERS** £18
- SCREENBEAT** £9
- Amplified
- QUICKSHOT SOUNDMATE 4** £12
- LABTEC CS-1000** £59
- 'Under Monitor' unit
- YAMAHA YST-M10** £49
- 10 watts per channel
 - 80Hz - 20KHz frequency
- YAMAHA YST-M5** £39
- YAMAHA YST-SW10 SUB WOOFER** £79

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
- STB 64 VIDEO**
- 1MB EDO DRAM VLB/PCI £129
 - 2MB EDO DRAM VLB/PCI £149

CD ROM ACCESSORIES

- QUALITY DISK CADDY 10 PACK** £5
- CD ROM DISK CLEANER KIT** £19
- CD ROM BLANK DISKS (700MB)** £10

SOUND BOARDS

- The widest range of Sound Boards
 - Multimedia experts available for specialist advice
- AZTECH SOUND GALAXY PRO** £65
- SoundBlaster compatible
- AZTECH SOUND GALAXY WAVERIDER 32+** £96
- AUDIOTRIX PRO** £169
- Wavetable synthesiser
 - 16-bit stereo record and playback
 - On-board CD ROM instruments
 - ADPCM compression software
- GRAVIS ULTRASOUND** £99
- GRAVIS ULTRASOUND MAX** £144
- 16-bit record and playback, 48KHz
 - Multi CD ROM interfaces
 - Dedicated digital sound processor
- WAVJAMMER** £199
- 16-bit PCMCIA sound card
 - Includes MS Sound System
- YAMAHA SW20 SOUND CARD** £139
- 16-bit sound card
 - Wave table synthesis

CD ROM DRIVE SELL OUT!

NEC 3XI SCSI £99

TOSHIBA 3501 QUAD SCSI £254

SOUND BOARD HARDWARE

- ANALOGUE 'Y' CABLE** £11
- MIDI ADAPTER CABLE** £21
- MIDI ADAPTER 5 DELUXE** £45
- DESK MICROPHONE** £11
- HEADPHONES 'PROFESSIONAL'** £9
- HEADPHONES** £21

SOUND BOARD SOFTWARE

- CREATIVE VOICE EDITOR** £37
- MICROSOFT WINDOWS SOUND SYSTEM SOFTWARE** £47

	Type	Speed	Transfer rate	Access	Loading	Cache	Interface	Int	Ext
Argosy 592CD	PCMCIA	D	307Kb/sec	320ms	Tray	64Kb	PCMCIA	-	£249
NEW! Aztech 6X1	IDE	6	900Kb/sec	150ms	Tray	256Kb	E-IDE	£147	-
Aztech 4X1	IDE	Q	600Kb/sec	300ms	Tray	256Kb	E-IDE	£95	£109
DFI / SANYO	IDE	Q	600Kb/sec	190ms	Tray	256Kb	E-IDE	£99	-
Goldstar GCD-R520B	IDE	D	300Kb/sec	250ms	Tray	64Kb	E-IDE	£67	-
Goldstar GCD-R540B	IDE	Q	600Kb/sec	220ms	Tray	128Kb	E-IDE	£99	-
Mitsumi FX400	IDE	Q	600Kb/sec	230ms	Tray	128Kb	E-IDE	£104	-
Nakamichi (7 CD-ROM)	SCSI	D	330Kb/sec	380ms	Caddy	256Kb	16-bit SCSI	-	£255
NEC 3XP	SCSI	T	450Kb/sec	250ms	Caddy	128Kb	16-bit SCSI	-	£245
NEC 6X1/e	SCSI	6	900Kb/sec	150ms	Caddy	256Kb	16-bit SCSI	£268	£345
Plextor 6x	SCSI	6	900Kb/sec	115ms	Caddy	512Kb	16-bit SCSI	£369	£439
Panasonic 562B	SB	D	300Kb/sec	320ms	Tray	64Kb	SB16 card	£49	-
Panasonic LF1004PDO	SCSI	Q	600Kb/sec	220ms	Caddy	512Kb	16-bit SCSI	£499	£569
NEW! Pioneer DRM624X	SCSI-II	Q	670Kb/sec	150ms	Caddy	256Kb	16-bit SCSI	£419	£499
Pioneer DRU124X	SCSI	Q	660Kb/sec	150ms	Tray	256Kb	16-bit SCSI	£185	£259
Pioneer 124X	IDE	Q	600Kb/sec	150ms	Tray	256Kb	E-IDE	£118	-
NEW! Powermark	IDE	Q	600Kb/sec	190ms	Tray	256Kb	E-IDE	£95	-
Sony CDU4X	IDE	Q	600Kb/sec	190ms	Tray	256Kb	E-IDE	£124	-
Sony CD76S	SCSI	Q	600Kb/sec	150ms	Tray	256Kb	16-bit SCSI	£149	-
NEW! TEAC CD56E	IDE	6	900Kb/sec	139ms	Tray	256Kb	E-IDE	£215	-
Toshiba XM3601	SCSI	Q	660Kb/sec	130ms	Tray	256Kb	16-bit SCSI	£209	£277
NEW! Toshiba XM-3701B	SCSI-II	6	1000Kb/sec	135ms	Caddy	256Kb	16-bit SCSI	£279	-
Toshiba XM5301B	SCSI	Q	600Kb/sec	190ms	Tray	256Kb	16-bit SCSI	£135	£199
Toshiba XM5402B	E-IDE	Q	600Kb/sec	190ms	Tray	256Kb	E-IDE	£Call	£Call

Key to drive speeds: D=Double, Q=Quad, T=Triple, 6=Six speed

BANK

at
Powermark

POWERMARK MULTIMEDIA FEATURE

Power
Mark
Multimedia

POWERMARK MULTIMEDIA KIT

- Quad speed CD ROM drive
- Sony, Mitsumi, Panasonic interface
- 16-bit sound card
- Stereo speakers
- Microphone
- CD ROM game pack

MBMULTI POWERMARK MULTIMEDIA KIT £145



Multimedia experts available for specialist advice

POWERMARK QUAD CD ROM DRIVE

- Quad speed CD ROM drive
- 600Kb/sec transfer rate
- 190ms access time
- Manufactured by Pioneer
- Top quality design
- Tray loading

MBQROM POWERMARK QUAD CD ROM DRIVE £97

POWERMARK 16-BIT SOUND CARD

- SoundBlaster compatible
- Sony, Mitsumi, Panasonic and IDE interface
- Integrated MIDI interface
- 20 voice music synthesizer
- Wave table synthesizer
- Upgrade connector

MBSR16 POWERMARK 16-BIT SOUND CARD £42

POWERMARK VALUE AUDIO KIT



- Quad speed CD ROM drive
- Sony, Mitsumi, Panasonic interface
- 16-bit sound card

MBVALKIT POWERMARK VALUE AUDIO KIT £129



POWERMARK KEYBOARD FEATURE

Power
Mark
KEYBOARDS

POWERMARK ERGONOMIC KEYBOARDS

Conventional keyboards have a major ergonomic problem, users must angle their hands along the side of the keyboard when typing. This posture is unnatural and can lead to injuries. This problem is known in the medical profession as Repetitive Strain Injury (RSI). The Powermark Ergonomic

Keyboard can greatly reduce the risk of developing RSI.

- **Micro joystick for full mouse control**
 - 106-key ergonomic enhanced keyboard layout
 - Built-in Windows 95 keys
 - Comfortable tactile feel
 - Arc shaped arm and wrist rest
 - Membrane key switch
 - Full functioned keyboard for complete compatibility with Windows applications
- MBKBERG95/MJ £49
MBKBERG95 - As above but without joystick mouse £39



POWERMARK ERGONOMIC KEYBOARD

WINDOWS 95 KEYBOARDS

- Top quality design
 - Full 105 key design
 - Optional ergonomic wrist support
- MBK95 WITH REST £19
MBK95 WITHOUT REST £17

Technical Sales
Order Lines

0181-951 3355
(50 lines)

MULTIMEDIA & KEYBOARDS

Another Case For The Backroom Boys To Investigate



Dear Backroom Boys, I have an old faithful computer that has done me proud over the years. As time goes on I'm wondering whether a multimedia kit will work in my PC. I don't wish to spend much money, but I do want value for it. Would you please source a good deal, and get in touch soon?

Yours, Quentin Quad

Dear Quentin

We are only happy to take on this case. Last month saw the launch of Powermark's Multimedia Kit, and at £145 it won't break the bank. It contains everything you need, from a quad speed CD ROM drive to a 16-bit sound card. Why, even the speakers are included! With this under your bonnet, your PC can open up a new world of entertainment.

The Backroom Boys

Send your investigations to The Backroom Boys, c/o Powermark plc, Premier House, Station Road, Edgware, Middlesex, HA8 7AQ or fax them to 0181 905 6233. You can also Email The Backroom Boys on: bboys@powermark.com

The Backroom Boys make every effort to investigate your problems, but they cannot guarantee to reply to everyone.

Powermark plc
Premier House, 112 Station Rd,
Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com

HMSO

Public Sector customers can purchase through HMSO by calling 01603 694153.



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.



Cards are not debited until despatch
VAT at 17.5% will be added to all prices

18



MEMORY

MICROSOFT® MONEY FEATURE

Introducing Microsoft Money 4.0 for Windows 95 for £21

PROMOTIONAL PRICE UNTIL 31/1/96

Microsoft®

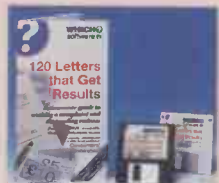
Technical Sales Order Lines
0181-951 3355
(50 lines)

Microsoft Money 4.0 for Windows 95 is the next generation task orientated personal finance programme which makes it easy to manage your personal finances. Ideal for professional and self employed people managing their own business affairs. No longer do you have to spend hours over receipts, dockets and scraps of paper to manage your finances. Microsoft Money makes tracking your finances easier than ever with:

WHICH? SOFTWARE FEATURE

WHICH? software

Ever been frustrated by a garage over-charging? A shop selling faulty goods? A misleading holiday brochure? Inexplicable debits from your bank account? Noisy neighbours?



For these and many other kinds of problems '120 Letters that get Results' contains a carefully worded letter template - written by Which? lawyers - for you to adapt. A full WP package is included as is text from the Which? Book 350 Legal Problems Solved in an easily accessible question and answer format. All letters can be exported to your own WP application. Just insert your details, print and post your professionally written letter and see the difference it makes to the results you obtain.

120 Letters That Get Results £24

ACCOUNT REGISTER

Consolidate all your bank, investment, and loan account information in one place

INVESTMENT PORTFOLIO

Ideal for tracking and analysing personal investments from bonds and share options to your retirement fund. The wizard walks you step by step through estimating what to invest in order to result in your desired retirement fund.

REPORTS AND CHART GALLERY

Enhanced reports and charts to make it easier to graph and plot how to judge and improve your financial investments

AUTOMATIC ON LINE BANKING

Now with on line banking services. Once you have a modem simply register with any financial institution in the United States to avail of

- Online Bill Payment
- Online payment tracking
- Online account statements
- Electronic fund transfers
- Check account balances
- Automatic payment making
- Check your securities and investments on line

FORMS WIZARDS

Multiple type of forms available

FILE PASSWORD PROTECTION

To ensure that all you personal and business finances are kept secure and safe. Microsoft Money 95 gives you your own personal P.I.N number for added security

CALCULATOR

Use the calculator to manage all your current and future expenditures with, The Savings Calculator The Mortgage Calculator

INTEREST ESTIMATOR

Estimate the interest that you have earned or had to pay on investments of credit cards.

REMINDER FUNCTION

No longer will you get those reminder letters or have to pay extra interest charges. Simply set the Reminder function to alert you when your bills are due.



INTEGRATION/ CONVERSION

MS Money 95 will work with popular tax software programs from publishers such as Quicken amongst others.

CURRENCY CONVERSION

Ideal for people who deal and invest in foreign currency, bonds, and portfolios

Microsoft Money 4.0 for Windows 95 CD £21

Microsoft Money 4.0 for Windows 95 3.5" £21

TURN THE PAGE FOR MORE

DELIVERY CHARGES See page 9

A great new way to buy...



See page 1

EARLY BIRD Order Bonus See page 33



Everyone at Powermark passes through our training college

BANK

at
Powermark

MICROSOFT® FEATURE

Microsoft®



NEW! ENCARTA® 1996

- New 40 country fact boxes, covering climate, religion, economy, geography, musical styles and more
 - Over 9 million works, 8,000 photographs, 300,000 links, 26,000 articles and over 15,000 multimedia elements with 400 minutes of video and animation
 - Now on screen link to the Concise Oxford Dictionary - 140,000 definitions
- ENCARTA 1996 £33

NEW! CINEMANIA® 1996

- Nearly 20,000 film reviews, 1,000 movie stills, 168 dialogue excerpts, and 139 tracks of film music
 - Now includes 1994 films
- CINEMANIA 96 FOR WINDOWS 95 £20

BUY 2 GET 1 FREE!

Buy Creative Writer & Fine Artist Bundle...

...plus one of these titles

- 3D Movie Maker £29
- Explorapedia £21
- How the Leopard Got His Spots £22
- Magic School Bus - Inside the Human Body £26
- Solar System £26
- Explores the Oceans £22
- Gahan Wilson's Haunted House £21

...and choose one of these titles, FREE!

- Explorapedia £21
- How the Leopard Got His Spots £22
- Dangerous Creatures £21
- Ancient Lands £21

(Offer ends 30/04/95)

MICROSOFT® HARDWARE FEATURE

MICROSOFT® MICE

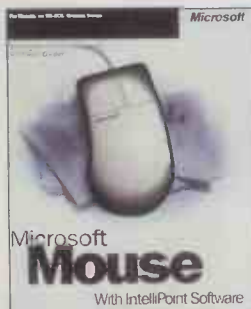
MICROSOFT MOUSE 2.0

- Plug and Play with Windows 95
- Ergonomically designed
- Teflon 'gliders' - moves smoother and swifter
- New improved IntelliPoint software

MICROSOFT MOUSE 2.0 £35

SPECIAL OFFER

Buy a Microsoft Natural Keyboard and order a Microsoft Mouse 2.0 from Microsoft for only £7.99 (Offer ends 31/1/96)



MICROSOFT® HOME MOUSE £27
• 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 £65

REFERENCE AND EXPLORATION

LIMITED OFFER

Until 31/1/96
Money95 £21

500 Nations	POWERCUT!	CD ROM	£21
Wine Guide	POWERCUT!	CD ROM	£21
Oceans V1.0		CD ROM	£21
Autoroite Express		CD ROM	£21
AutoRoute Express			
UK and Ireland V4		floppy	£35
UK and Ireland V4		CD ROM	£39
Europe V4		floppy	£29
Europe V4		CD ROM	£39
Cinemaniam '96		CD ROM	£23
Bookshelf '95	POWERCUT!	CD ROM	£58
Dinosaurs	POWERCUT!	CD ROM	£21
Art Gallery	POWERCUT!	CD ROM	£27
Musical Instruments		CD ROM	£21
Schubert	POWERCUT!	CD ROM	£21
Stravinsky	POWERCUT!	CD ROM	£21
Strauss	POWERCUT!	CD ROM	£21
Mozart	POWERCUT!	CD ROM	£21
Beethoven	POWERCUT!	CD ROM	£21
Composer Collection		CD ROM	£49
• 3 CD ROM set includes Mozart, Beethoven and Schubert			

NEW! World Of Flight
NEW! For Windows CD ROM £29



ENTERTAINMENT

NEW! Flight Simulator 5.1		CD ROM	£27
Space Simulator		floppy	£29
Arcade		floppy	£15
Golf	POWERCUT!	floppy	£22
Golf	POWERCUT!	CD ROM	£22
Golf course - Mauna Kea		floppy	£15
Golf course - Pinehurst		floppy	£15
Golf course - Banff Springs		floppy	£15
Best of Entertainment			
Packs	POWERCUT!	floppy	£16
Return Of Arcade			£Call

Technical Sales Order Lines

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(50 lines)

MICROSOFT FEATURE

HUGE STOCKS
Guaranteed same day despatch on virtually all stock items for orders placed even up to 4.00pm.

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
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices too.

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 Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

TURN THE PAGE FOR MORE

UPGRADE DRIVE THRU
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PERSONAL CALLERS VERY WELCOME
Save on delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

Powermark plc
Premier House, 112 Station Rd, Edgware, Middlesex HA8 7AQ
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Gold Card VISA MasterCard SWITCH

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MEMORY

DIAMOND MULTIMEDIA FEATURE

DIAMOND MULTIMEDIA

Diamond have established themselves as the industry standard for high speed graphics accelerators, combining dependable quality with value and high performance.



SPEEDSTAR 64 PRO

- The best price/performance card for Windows games packages
- DRAM based
- ISA bus
- Includes Corel Draw 3 software

SPEEDSTAR 64 ISA 1MB	£105
SPEEDSTAR 64 ISA 2MB	£169

STEALTH SE

- The best price/performance card for Windows/games packages
 - DRAM based
 - PCI or VLB bus
- STEALTH SE PCI 1MB £69
STEALTH SE VLB 1MB £69



NEW! STEALTH 64 VIDEO DRAM

- The world's fastest DRAM graphics accelerator
 - DRAM based
 - PCI or VLB bus
 - Now with software MPEG support
- STEALTH 64 VIDEO DRAM PCI 1MB £87
STEALTH 64 VIDEO DRAM PCI 2MB £134
STEALTH 64 VIDEO DRAM VLB 1MB £89
STEALTH 64 VIDEO DRAM VLB 2MB £134

STEALTH 64 VIDEO VRAM

- The world's fastest 64-bit graphics accelerator
- Now with software MPEG support

STEALTH 64 VV PCI 2MB	£213
STEALTH 64 VV PCI 4MB	£309
STEALTH 64 VV VLB 2MB	£213
STEALTH 64 VV VLB 4MB	£309

Technical Sales Order Lines
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(50 lines)

MONITOR MANIA!

COMPAQ 14" SVGA MONITOR	£192
COMPAQ 15" SVGA MONITOR	£275

FISKARS POWER FEATURE

POWERSERVER 10

Cost-effective UPS for servers, workstations and other LAN applications.

Model	Power Range	Watts at Power Factor 0.7	Typical Backup Time	
PS10/0.4	400VA	280W	10 Mins	£229
PS10/0.6	600VA	420W	10 Mins	£259
PS10/1.0	1000VA	700W	10 Mins	£459
PS10/1.4	1400VA	980W	10 Mins	£539
PS10/1.8	1800VA	1260W	10 Mins	£849
PS10/2.2	2200VA	1540W	10 Mins	£950

FISKARS

POWERRITE PLUS

	Power Range	Typical Backup Time	
PRP/250	250VA	5 Mins	£85
PRP/400	400VA	5 Mins	£119
PRP/600	600VA	5 Mins	£155

VIDEOLOGIC FEATURE

A new generation of leading price/performance 64-bit Windows accelerators... expandable with low-cost multimedia options



MPEG PLAYER

The quality solution for Video CD playback
MPEG PLAYER VID92BMP £199



SPECIAL OFFER! 928MOVIE & MPEG card



ISA 1MB	£189
ISA 1MB plus sound	£199

	300	400	700
64-bit Graphics Controller	S3 Trio64	S3 Trio64V+	S3 Vision968
Performance	85+ million Wm	95+ million Wm	110+ million Wm
Memory	DRAM 1	DRAM 1	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	LPB	VMC
Bus	PCI/VLB	PCI	PCI/VLB
Price	£99	£105	£269 POWERCUT!
Code	VIDGS/300	VIDGS/400	VIDGS/700

CAPTIVATOR PRO TV

Sensational quality still/ video capture upgrade	
CAPTIVATOR PRO TV VIDCAP.PTV	£199
CAPTIVATOR PRO VIDCAP/PRD	£165
GrafixStar 300/400 1MB upgrade VIDGS/300/400	£47
GrafixStar 300/400/700 VMC Controller VIDGS/VMC	£39
GrafixStar 700 2MB upgrade & VMC Controller VIDGS/VMC2MBUG	£149

MEDIATOR XLC

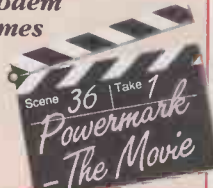
Low cost PC to TV converter	
MEDIATOR XLC VIDMEDIATOR	£135

... and here's what some of our customers have said ...
I recently required a tape streamer. Having looked through all the advertisements I had no hesitation in choosing Powermark. I could have purchased the unit £5 cheaper elsewhere, but your excellent combination of presentation style, humour, price and BSI accreditation won me over. I appreciated the little ditties scattered around and liked your approach with the fancy dress. It was nice to see some humour and originality in an otherwise stale collection of ads.
P.S: The salesperson didn't let me down either!
C. Jenkins
Leyfield Systems Ltd
West Glamorgan

TURN THE PAGE FOR MORE

MOVIE MEMORIES

Maximum Overdrive
The Net
Of Mice and Men
Modem Times



DELIVERY CHARGES
See page 9

A great new way to buy...



See page 1

EARLY BIRD Order Bonus
See page 33



Everyone at Powermark passes through our training college

BANK

at
Powermark

TAXAN FEATURE

MONITORS



Personal Computer World
EDITOR'S CHOICE

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 COMMENDED



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 2100LR

	Size	Dot pitch	Resolution at up to:	Frequency	Tube		
400LR	14"	0.28mm	800 x 600	60Hz	Conventional	POWERCUT!	£189
410LR	14"	0.28mm	1024 x 768	60Hz	Conventional	POWERCUT!	£197
420LR	14"	0.28mm	1280 x 1024	60Hz	Conventional	POWERCUT!	£239
580+LR	15"	0.28mm	1280 x 1024	60Hz	FST	POWERCUT!	£285
880LR	17"	0.28mm	1280 x 1024	60Hz	FST	POWERCUT!	£515
885LR	17"	0.26mm	1600 x 1200	65Hz	FST	POWERCUT!	£599
895LR	17"	0.25mm	1600 x 1200	67Hz	Trinitron	POWERCUT!	£799
1080LR	20"	0.28mm	1600 x 1200	65Hz	Conventional	POWERCUT!	£869
2100LR	21"	0.30mm	1600 x 1200	72Hz	Diamondtron		£1379
CV100	9.4"	0.30mm	640 x 480	72Hz	TFT LCD Colour		£1659
CV200	9.4"	0.30mm	640 x 480	72Hz	STN LCD Colour		£1199



TAXAN 410LR



TAXAN 580+LR (PLUG & PLAY)



TAXAN 880LR

TAXAN GRAPHICS CARDS

POWERED BY

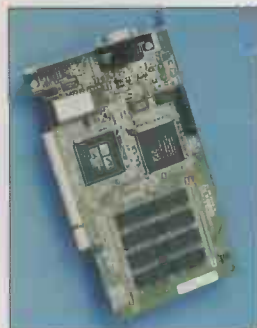


A strategic alliance to provide the perfect graphics solution.

WINTURBO ACCELERATORS

GTS WINTURBO (VRAM)

ISA	2MB VRAM	£197
ISA	4MB VRAM	£339
VLB	2MB VRAM	£195
VLB	4MB VRAM	£339
PCI	2MB VRAM	£196
PCI	4MB VRAM	£339



GTS WINTURBO

- With Windows 3 & Windows 95 software MPEG player
- Windows 95 Plug & Play

WINBOOST ACCELERATORS

GTS WINBOOST (DRAM)

ISA	1MB DRAM	£99
ISA	2MB DRAM	£136
VLB	1MB DRAM	£99
VLB	2MB DRAM	£136
PCI	1MB DRAM	£99
PCI	2MB DRAM	£136

- All cards now shipping free software MPEG
- Up to 100Hz flicker free display
- Up to 16.7 million colours



- Windows motion video accelerator
- Easy Installation with no DIP switches



GTS WINBOOST

Technical Sales
Order Lines

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(50 lines)

MONITORS &
GRAPHICS CARDS

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Guaranteed same day despatch on virtually all stock items for orders placed even up to 4.00pm.

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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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Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices too.

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
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PERSONAL CALLERS VERY WELCOME
Save on delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

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... and here's what some of our customers have said ...

"I would like to thank you for your good service, and hope that I will deal with you again in the near future."

D Broderick,
Middlesex



**FREE
Baseball Cap**
With every order over £500

When ordering just ask for your FREE baseball cap as it is not shipped automatically.

**TURN THE PAGE
FOR MORE**



**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*

MEMORY

HITACHI MONITOR FEATURE

HITACHI

Hitachi is one of the largest manufacturers of high resolution computer monitors, and is able to offer a complete range of models which will meet the needs of both home or small-business users, as well as the more demanding needs of the professional designer, publisher or DTP user.

All monitors offer the latest in screen ergonomics including tilt and swivel bases, anti-glare screen treatment, MPR-II low radiation, energy save function and flicker free resolution capability.

All monitors are IBM PC, Apple Macintosh compatible, and can connect to most workstations.



HITACHI 15MVXValue

**Monitor experts
available for
specialist advice**

	Size	Dot pitch	Resolution	Refresh	Tube	
15MVXValue	15"	0.28mm	1280 x 1024	60Hz	FST, Energy Star	£249
17MVXValue	17"	0.26mm	1280 x 1024	60Hz	FST, VESA-DPMS	£479
CM1711	17"	0.26mm	1280 x 1024	77Hz	FST, VESA-DPMS	£589
CM2096	20"	0.31mm	1280 x 1024	75Hz	Standard, VESA-DPMS	£895
CM2098	20"	0.28mm	1600 x 1200	72Hz	Standard, VESA-DPMS	£1139
NEW! CM2111	21"	0.28mm	1600 x 1200	75Hz	FST, VESA-DPMS	£1469
NEW! CM2112	21"	0.26mm	1600 x 1280	107Hz	FST, VESA-DPMS	£Call
CM2199	21"	0.26mm	1600 x 1280	80Hz	FST, VESA-DPMS	£1969



HITACHI 17MVXValue

17MVXValue

- 17" Flatter Squarer Tube
- Superfine .26mm dot pitch
- Dynamic focusing gun for sharp focus in all areas
- Optimum flicker-free resolution of 1024 x 768 @ 75Hz
- PC & Mac compatible
- VESA, DPMS power save
- Microprocessor control for optimising image size, position and geometry
- MPR-II low emission
- Colour adjust facility
- 12 months on-site replacement warranty

15MVXValue

- PC and Mac compatible (when supplied with appropriate Mac adapter)
- Supports resolution standards - VGA / SVGA / ESVA / XGA / 8514A / MacII, Mac Quadra
- High refresh rate in all modes
- Microprocessor control
- MPR-II compliant
- VESA-DPMS compliant

CM1711M

This new multi-scanning colour monitor with 0.26mm dot pitch tube offers sharp and clear images right up to the bezel. Images are flicker free to over 75Hz for resolutions from 640 x 480 to 1280 x 1024, and screen adjustments are made by a microprocessor-based on-screen display.

In a recent PC Magazine 'First Looks' review, this monitor was rated 12% better than the previous Editor's Choice.

VIEWSONIC MONITOR FEATURE



VIEWSONIC 21PS

ViewSonic has become synonymous with providing superior advanced colour monitors. ViewSonic are dedicated to innovative in design and manufacture of high quality monitors. As a result we have gained the respect and acknowledgement of Blue chip companies and European industries.

ViewSonic range of monitors are designed for user of every requirement,

ViewSonic®

from the Economy range for the home user to the Graphics and Professional range for office and professional users.



VIEWSONIC 17GS

	Size	Dot pitch	Resolution	Frequency	Tube	
14ES	14"	0.28mm	1024x768	60Hz	FST	£222
15ES	15"	0.27mm	1024x768	77Hz	FST	£309
17GS	17"	0.27mm	1280x1024	65Hz	FST	£599
20G	20"	0.28mm	1600x1280	60Hz	FST	£1119
Multimedia series with built in speakers						
15GA	15"	0.27mm	1280x1024	65Hz	FST	£429
17GA	17"	0.27mm	1280x1024	65Hz	FST	£657
17EA	17"	0.28mm	1280x1024	65Hz	FST	£609
Professional series						
17PS	17"	0.25mm	1600x1280	60Hz	FST	£699
21PS	21"	0.25mm	1600x1280	60Hz	FST	£1559



VIEWSONIC 17GA
PerfectSound™

**Monitor experts
available for
specialist advice**

**DELIVERY
CHARGES**
See page 9

A great new way to buy...
Gold Card
See page 1

**EARLY BIRD
Order Bonus**
See page 33



Everyone at Powermark passes through our training college

BANK

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POWERMARK MONITOR FEATURE

Power



Mark.
Monitors

New from Powermark - top quality monitors packed with leading edge features at very low prices.

MBMON14

14" LOW RADIATION MONITOR (MPRII)
Top quality, low radiation, non-glare, non-interlaced monitor. 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.

All Powermark monitors (except 14") are MPRII compliant and feature EPA Energy Star power saving

15" minimum recommended screen size for Windows 95

MBMON15

15" FLATTER SQUARER TUBE MONITOR (MPRII)
Top quality, low radiation, non-glare, non-interlaced monitor with Energy Star power saving. Has the same picture quality as the 14" model but with a flatter squarer tube and Invar mask to give even crisper fuller screen images.

MBMON17

17" FLATTER SQUARER TUBE MONITOR WITH OSD
To really get the most out of Windows 95, choose Powermark's 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!

EXCLUSIVE MONITORS AT LOW, LOW PRICES!



MBMON15
15" Monitor

Size	Dot pitch	Resolution	Frequency	Features		
MBMON14	14"	0.28mm	1024 x 768	48MHz	NG, TSB	£149
MBMON15	15"	0.28mm	1024 x 768	65MHz	FS, NG, IM, TSB	£208
MBMON17	17"	0.28mm	1280 x 1024	64MHz	FS, NG, IM, OS, TSB	£399
MBMON20	20"	0.28mm	1600 x 1280	82MHz	DF, IM, AS, TSB, DIG	£839
MBMON21	21"	0.28mm	1600 x 1280	82MHz	FS, DF, IM, TSB, DIG	£1149

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

NOKIA MONITOR FEATURE

NOKIA

In a world where energy consumption and conservation is continuously discussed in the media, Nokia has come up with an innovative approach to power consumption on their range of monitors. Nokia's "PowerSaver" is based on the NUTEK and VESA standards. This means that all their monitors meet the strictest industry energy emission regulations.

The broad range of monitors that Nokia manufacture means that they have a monitor to meet everybody's needs. For the graphics, CAD and DTP professional, the Multigraph 17" range offers a powerful mix of features and performance.

Other features such as the on-screen menu give an overview

about the actual user-mode and make programming of parameters very easy.

NOKIA 449M

- 15" TRINITRON TUBE
- 0.25mm dot pitch
- 1024 x 768 @ 80Hz
- On screen menu
- Power saver option
- MPRII
- Minimum screen edge distortion



Model	Size	Dot pitch	Resolution	Frequency	Tube	
Multigraph 449M	15"	0.25mm	1024 x 768	80Hz	Trinitron	£365
Multigraph 447M	17"	0.25mm	1024 x 768	60Hz	Trinitron	£639
Multigraph 447X	17"	0.25mm	1280 x 1024	76Hz	Trinitron	£829
Multigraph 447M092P	17"	0.25mm	1024 x 768	76Hz	Trinitron	£789
Multigraph 445M	21"	0.28mm	1280 x 1024	65Hz	FS Invar	£1449
Multigraph 445X092P	21"	0.28mm	1600 x 1200	80Hz	FS Invar	£1799

Technical Sales Order Lines

0181-951 3355
(50 lines)

MONITORS

HUGE STOCKS
Guaranteed same day despatch on a virtually all stock items for orders placed even up to 4.00pm.

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
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices too.

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 Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

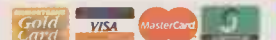
TURN THE PAGE FOR MORE

UPGRADE DRIVE THRU
While you wait installation service available. See page 3 for details.

PERSONAL CALLERS VERY WELCOME
Save delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

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(50 lines)

Fax: 0181 905 6233
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VAT at 17.5% will be added to all prices

HMSO

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Certificate no. FS 26355

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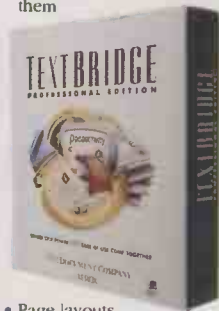
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**TEXTBRIDGE
PROFESSIONAL
EDITION
OCR SOFTWARE
FEATURE**

- Award winning accuracy on normal, faxed and dot matrix text
- Exclusive DocuRT technology re-constructs cell tables that can be edited as if you created them



- Page layouts with columns and pictures are maintained for true text flow editing
- Instant Access OCR from within your Windows application
- Post Recognition Editing within your word processor
- On-line word training, user dictionaries and saving for future use
- OLE 2.0, drag and drop support
- 11 European languages
- Easy to use automatic functions

**Includes voucher for
FREE upgrade to
Windows 95 version**

TEXTBRIDGE 3.0	£65
TEXTBRIDGE PROFESSIONAL EDITION	£269
COMPETITIVE UPGRADE	£129

**TURN THE PAGE
FOR MORE**

DELIVERY CHARGES
See page 9

MEMORY

PC GUARDIAN FEATURE

PC Guardian™

SECURITY PRODUCTS

A complete range of security devices to safeguard your notebooks, PC's and data. Designed and manufactured in the United States the products are easy to install and use the highest quality materials for maximum security. Lifetime warranty for all PC Guardian products.

We can supply Master Keying and Keyed Alike options for easy management of multiple units.

**NOTEBOOK
GUARDIAN KIT**

- Designed to prevent theft of most notebook PCs
- Fixed into floppy 3.5 drive with security cable.
- Also prevents copying of sensitive data

NOTEBOOK GUARDIAN KIT	PGG7350+	£34.95
10 PCK	PGG7350+/10	£310



NOTEBOOK PROTECTION



**UNIVERSAL
ANTI-THEFT KIT**

Secures all PC's, monitors, keyboards and external drives. Each kit contains 3 - 3"x3" Perma Plates (2,000 PSD), 6' security cable, case-hardened padlock and two keys.

UNIVERSAL ANTI-THEFT MOUNTING KIT	PGGUT36	£25.95
10 PACK	PGGUT36/10	£210

**LIFETIME
WARRANTY ON
PC GUARDIAN
RANGE**

**PC GUARDIAN
ENCRYPTION
PLUS
SOFTWARE**

- Prevents data against unauthorised access and use
- Enables files to be transferred and transported securely.

PC GUARDIAN ENCRYPTION PLUS SOFTWARE	PGEGEN+	£45
--------------------------------------	---------	-----

**NOTEBOOK
FLOPPY
LOCK**

- Prevents copying of data

NOTEBOOK FLOPPY LOCK	PGG7350	£14.95
10 PACK	PGG7350/10	£120

**DEALER
ENQUIRIES VERY
WELCOME**

UMAX SCANNERS FEATURE

**UMAX
FLATBED
SCANNERS**

- Umax is one of the world's largest manufacturers of flatbed scanners
- All Umax flatbed scanners come with 12 months on-site warranty

Vista T630	UMAX/T630	£299
• 300 x 600 dpi up to 4800 dpi interpolated		
• A4 scan area		
• 16.7 million colours		
• Adobe Photoshop LE V.3		
Vista S8	UMAX/S8	£535
• 400 x 800dpi up to 6400 dpi interpolated		
• A4 scan area		
• 16.7 million colours		
• Adobe Photoshop LE V.3		
UC1260	UMAX/UC1260	£699
• 600 x 1200 dpi up to 2400 dpi interpolated		
• A4 scan area		
• 16.7 million colours		
• Full Adobe Photoshop V.3		
POWERLOOK II	UMAX/POWERLOOKII	£2349
• 600 x 1200 dpi up to 9600 dpi interpolated		
• 36 bit		
• Enhanced calibration		
• Full Adobe Photoshop V.3		
Document Feeder	UMAX/SDFI	£399
Omnipage Direct	OMNIPAGE/DIR	£39
Transparency Adapter	UMAXTRANS	£399

UMAX



PAGEOFFICE

PageOffice is the way to bridge the gap between piles of paper accumulating on your desk and PC. Its impeccable design lets you work efficiently and easily.

PageOffice performs important functions including: document filing OCR translation, image editing, electronic mail, faxing, form-filing and copying.



- 300 dpi optical resolution
- 8-bit 256 shades of grey
- 5-10 sheet built-in document feeder
- 16-bit ISA SCSI interface included
- Fully TWAIN compatible

**NEW! Now with PRESTO
OCR software**

PAGEOFFICE	UMAX/PAGE	£249
------------	-----------	------



**EARLY BIRD
Order Bonus
See page 33**



Everyone at Powermark passes through our training college



A great new way to buy...
See page 1

HP SCANNERS FEATURE

NEW FROM HP

HP SCANJET 4Si

- Mono 400 dpi enhanced to 1200 dpi
- Up to 12 pages per minute
- Includes award winning *Visioneer Paperport V3.0* and *Autolaunch* software

HP SCANJET 4Si HPS4Si	£1649
AUTOMATIC DOCUMENT FEEDER HPS4Si/ADP	£139
3 YEAR ON-SITE MAINTENANCE	£85
HP SCANJET 4S HPS4S	£235
• A4 mono	



hp HEWLETT PACKARD
Authorised Reseller Personal Computer Products

HP SCANJET 4c

- 600 dpi enhanced to 2400 dpi
- 30-bit colour gives you 1 billion colours
- Up to 18 pages per minute



NEW! Caere Omnipage Limited Edition and Visioneer Paperport V3.0 software included

HP SCANJET 4C HPS4C	£625
AUTOMATIC DOCUMENT FEEDER HPS4C/ADF	£315
TRANSPARENCY UNIT HPS4C/TRANS	£449

Windows 95 compatible
Scanner experts available for specialist advice

KYOCERA PRINTER FEATURE

KYOCERA FS-400

In our opinion, the best compact printer available

A compact 4 pages per minute, low cost personal page printer that also offers full system printer capabilities and savings on print costs due to its cartridge-free design. The FS-400 has a wealth of features, including 300 dpi resolution, enhanced to 300 x 1200 dpi by Kyocera resolution technology, 13 scalable in-built fonts, and for addition cost savings, Energy Star compliance and draft print mode. Other features include industry standard LaserJet III and optional PostScript emulations and full compatibility with Windows applications.

KYOCERA FS-400 KYOF5400	POWER CUT! £365
NETWORK-SPECIFIC ETHERNET INTERFACE KYOF5400/N	£169
TONER KIT KYOF5400/TONER	£16
3 YEAR ECOSHIELD ON-SITE WARRANTY KYOWARR/FS400	£99



KYOCERA FS-400

KYOCERA FS-1550

The FS-1550 10 pages per minute printer offers substantial savings on running costs compared with competitive printers - where the ongoing cost of consumables can amount to far more than the purchase price.

It is ideal for word processing, database and spreadsheet printing, and with resolution enhancement, graphics. As your requirements grow, ECOSYS paper handling options include extra paper trays, a duplex unit and a sorter/collator. Other features include industry-standard LaserJet III and optional PostScript emulations, sophisticated networking and IBM connectivity options, and full compatibility with Windows applications.

KYOCERA FS-1550 KYOF1550	£899
NETWORK-SPECIFIC ETHERNET INTERFACE KYOF1550/N	£279
TONER KIT KYOF1550/TONER	£51
3 YEAR ECOSHIELD ON-SITE WARRANTY KYOWARR/FS1550	£199
Also available -	
KYOCERA FS1600 KYOF1600	£1089
KYOCERA FS3600 KYOF3600DX	£1789



KYOCERA FS-1550



KYOCERA FS-1550 WITH ACCESSORIES

ECOSYS
Printing costs. Stop paying the price.

PRINTER ACCESSORIES

HP SupportPack

- Onsite warranty by HP engineers
- Recommended for all HP Laserjets & Deskjets



ORIGINAL TONER CARTRIDGES

HEWLETT-PACKARD LaserJet II/IIID/III/IIID	£47
LaserJet II IIP/IIIP+/IIIP	£46
LaserJet III/III+/III+/4MX	£77
LaserJet 4/4+/4M/4M+	£67
LaserJet 4L/4ML/4P/4MP	£44
LaserJet 4V/4MV	£115
LaserJet 5 Series	£Call

DESKJET CARTRIDGES

HP DESKJET BLACK CARTRIDGE	£18
HP DESKJET COLOUR CARTRIDGE	£21

PRINTER CABLES

	1.5m	3m
PARALLEL	£4	£8
25M - 25M	£4	£9
25M - 36M	£6	£8

PRINTER SHARERS

AUTO SWITCHES	
2 PCs to 1 printer	£18
4 PCs to 1 printer	£18
AUTO SWITCHES	
• 256K buffer	
4 PCs to 2 printers	£127

Printer experts available for specialist advice

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SCANNERS & PRINTERS

- HUGE STOCKS**
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- TECHNICAL SALES PEOPLE**
Our sales people are the best. They are trained specialists in their chosen field - multimedia, storage, networking and communications.
- FINANCIAL STABILITY**
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.
- LOW, LOW PRICES**
We only supply products from leading manufacturers and at low, low prices too.
- 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 Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

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- UPGRADE DRIVE THRU**
While you wait installation service available. See page 3 for details.
- PERSONAL CALLERS VERY WELCOME**
Save on delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

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DELIVERY CHARGES

UK MAINLAND
Next working day courier delivery to your door

SMALL ITEMS

Examples: memory, sound/video cards, CD ROM titles, small software packages

UP TO 3 ITEMS
£6.95 total

4 ITEMS OR MORE
£1.95 for each additional item

LARGE ITEM

Examples: CD ROM drives, monitors, multimedia kits, software suites

1ST ITEM
£8.95

EACH ADDITIONAL ITEM
£4.95

Call for rates outside UK mainland



FREE Baseball Cap

With every order over £500

When ordering just ask for your FREE baseball cap as it is not shipped automatically.

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DELIVERY CHARGES
See page 9

MEMORY

HP PRINTER FEATURE

hp HEWLETT PACKARD
Authorised Reseller
Personal Computer
Products

NEW!
HP OFFICEJET LX

The complete office solution

- High quality printer
- Integrated fax
- Photocopier
- Scanner

HP OFFICEJET LX HP OFFICE LX £495



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 WITH CUT SHEET FEEDER HPDJ340 £189

COLOUR KIT
UPGRADE HPDJ340COLUG £32

3 YEAR ON-SITE WARRANTY HPWARR/DJ340 £45



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 £343

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 600

- 600 x 600 dpi, REt
- Colour option
- High resolution in black

HP DJ600 HPDJ600 £207



HP DESKJET 660C

HP LASERJET 5P

- 6 pages per minute
- 600 dpi, REt, microfine toner
- 2MB RAM, up to 50MB

HP LASERJET 5P HPLJ5P £597

HP LASERJET 5MP HPLJ5MP £729



HP LASERJET 5P

NEW!
HP LASERJET 5L

- 4 pages per minute
- 600 x 600 dpi in black
- 1MB RAM
- New innovative style case

HP LASERJET 5L HPLJ5L £355

Printer experts available for specialist advice

HP LASERJET 4 PLUS

- 12 pages per minute
- Up to 600 dpi
- 2MB RAM

HP LASERJET 4 PLUS HPLJ4PLUS £1018

HP LASERJET 4M PLUS HPLJ4MPLUS £1335

HP DUPLEX UNIT HPLJ4PLUS/DUP £479

3 YEAR ON-SITE WARRANTY HPWARR/LJ4V £159

HP DESKJET 660C

- 600 x 600 dpi in black
- 14 TrueType fonts

HP DESKJET 660C HPDJ660C £269

HP DESKJET 1600C

- 600 x 600 dpi in black
- 4MB RAM

HP DESKJET 1600C HPDJ1600C £835

HP LASERJET 4V

- A3 paper handling
- 8 pages per minute in A3, 12 in A4
- Delivery: £27 on this printer

HP LASERJET 4V HPLJ4V £1409

HP LASERJET 4MV HPLJ4MV £2039

HP LASERJET 4V 500 SHEET TRAY SYSTEM HPLJ4V/SHEET £279

3 YEAR ON-SITE WARRANTY HPWARR/LJ4V £199

Matched Memory Kits for HP Printers on page 7

HP COLOR LASERJET

- Up to 10 pages per minute in black
- Up to 2 pages per minute in colour
- 300 dpi
- 1 year on-site warranty
- Delivery: £27 on this printer

HP COLOR LASERJET HPLSR/COLOUR £4338

250 SHEET REAR FEED UNIT HP250SHEET £315



HP COLOUR LASERJET

HP LASERJET 4Si

- 16 pages per minute
- 600 dpi
- 1 year on-site warranty
- Delivery: £27 on this printer

HP LASERJET 4Si HPLJ4Si £2099

HP LASERJET 4SiMX HPLJ4SiMX £3041

3 YEAR ON-SITE WARRANTY HPWARR/LJ4Si £479

NEW!
HP LASERJET 5Si

- 24 pages per minute
- 600 dpi
- 4MB RAM
- 1 year on site warranty

HP LASERJET 5Si HPLJ5Si £Call

HP LASERJET 5SiM HPLJ5SiM £Call

• 12MB RAM

HP SupportPack

- Onsite warranty by HP engineers
- Recommended for all HP Laserjets & Deskjets



A great new way to buy...
MEMORYBANK Gold Card
See page 1

EARLY BIRD Order Bonus
See page 33



Everyone at Powermark passes through our training college

BANK

at Powermark

MOTOROLA MODEM FEATURE



Motorola 3400 Online 28.8 bps Internet Solution comes 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

Comms experts available for specialist advice



DFI MODEM FEATURE

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

Windows 95 compatible

Model	V32bis	V32terbo	V34	MNP2-4	V42	V42bis	MNP5	Fax	Voice	External
MOT034/0W	3400 Online	●	●	●	●	●	●	●	●	£168
MOT034/MAC	3400 Pro Mac	●	●	●	●	●	●	●	●	POWERCUT! £175
MOT034	3400 Pro PC	●	●	●	●	●	●	●	●	POWERCUT! £156

F1114V

- Features**
- Data/Fax speed: 14,400 bps
 - V.32, V.32 BIS, V.42, V.42BIS
 - MNP level 2-4, 5
 - Fax Class 1, 2 & 3
 - Call back security
 - Full/half duplex and auto fallback
- Accessories included**
- Serial cable
 - Telephone lead
 - User's manual
 - AC adapter
- Software**
- Delrina's 4 in 1 Win/DOS Fax Lite and Comit Lite Win/DOS software for data transmission
- Access**
- Introductory membership to CompuServe
- Warranty**
- 5 years

DFI manufactures a comprehensive line of high quality PC components which are the strength behind its custom-built desktop and notebook PCs. To supplement this product line, DFI have now moved into the data communications arena, launching the passport range of BABT approved fax modems. This complete package offers you state of the art technology and incorporates everything you need to gain access to the information super highway at a highly competitive price.

DFI MODEMS

Model	V32bis	V32terbo	V.34	MNP2-4	V42	V42bis	MNP5	HST Cellular	Fax	Internal	External
DJIM00144	Passport F1114V	●	●	●	●	●	●	●	●	£85	£85
DJIM00288	Passport F1128V+	●	●	●	●	●	●	●	●	POWERCUT! £155	£155



F1128V+

- Features**
- Data/Fax speed: 28,800/14,400 bps
 - V.32, V.32 BIS, V.42, V.42 BIS, V.34
 - MNP Level 2-4, 5
 - Fax Class 1, 2 & 3
 - Call back security
- Accessories included**
- Telephone lead
 - User's manual
- Software**
- Delrina's 4 in 1 Win/DOS Fax Lite and Comit Lite DOS/Win software for data transmission

- Access**
- Introductory membership to CompuServe
- Warranty**
- 5 years



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PRINTERS & 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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Premier House, 112 Station Rd, Edgware, Middlesex HA8 7AQ
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Fax: 0181 905 6233
Email: sales@powermark.com

Gold Card VISA MasterCard SWITCH
Cards are not debited until despatch
VAT at 17.5% will be added to all prices



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(50 lines)**

SPECIAL OFFER!

**Powermark
Dual High Speed
Serial Card**

- Dual 16550 UART serial connections providing data transfer rate three times faster than V.34 modems
- Prevents interrupt overruns and data loss
- Easily installed even into heavily loaded systems
- Shorter communication times reduce costs
- Ideal for other high bandwidth communications including ISDN

HSSC10 £27

**Save £8 -
Only £19 when
purchased with any
modem**

CABLES

- 2 metre 9F to 25M £8
 - 2 metre 25F to 25F £8
- Call for modem/serial cables and adaptors not listed here.

**TURN THE PAGE
FOR MORE**

**FAMOUS
COMMUNICATORS**

Sobell

Ferguson

Dansette

MEMORY

LASAT MODEM FEATURE

LASAT MODEMS

Model	V32bis	V.34	MNP2-4	MNP5	MNP10	Fax	External
LASATUNQ Unique 144	●	●	●	●	●	●	£169
LASATS4F/144 Safire 144 (Mains only)	●	●	●	●	●	●	£114
LASAT/P Credit 144 PCMCIA	●	●	●	●	●	●	£147
LASAT/P28 Credit 288 PCMCIA	●	●	●	●	●	●	£189
LASATS4F/28 Safire 288	●	●	●	●	●	●	£195
Unique 640i single channel ISDN/A							£399



LASAT

SAFIRE 288

The Safire 288 V34 modem has V.42 error correction; V.42bis

data compression, MNP 2-5, MNP10; industry standard AT commands; async/sync/autosync communications; V.29 and V.27 fax. With indicator lights on front panel, the Safire 288 comes with cable and fax software.

It can send and receive data at 115,200 bps and send and receive faxes at 14,400 bps.

CREDIT 288

The Credit 288 V.34 PCMCIA modem which has V.42 error correction; V.42bis data compression, MNP 2-5, MNP10; industry standard AT commands; async (8/9/10-bit), autosync; auto dialling/answering; built-in 16550 FIFO UART.

It can send and receive data at 115,200 bps and send and receive faxes at 14,400 bps. Includes telephone cable and fax software.



All modems supplied by Powermark plc are BABT APPROVED

"We were wrong to expect a good looking modem to perform badly. The Unique 144 displayed perfect data performance... and its throughput was excellent." Computer Shopper, April 1994

DATAFLEX MODEM FEATURE



**14.4
portable
only £69
Limited offer**

DATAFLEX MODEMS

Model	V32bis	V34	MNP2-4	V42	V42bis	MNP5	MNP10	Voice	V17Fax	Internal	External
FLEXGEM PC SuperGEM	●	●	●	●	●	●	●	●	●	£135	-
FLEXGEM/E Portable SuperGEM	●	●	●	●	●	●	●	●	●	LIMITED OFFER!	£69
FLEXGEM/C Comms Office	●	●	●	●	●	●	●	●	●	£130	£169
FLEXGEM/V PC HyperGEM	●	●	●	●	●	●	●	●	●	£155	POWER CUT!
FLEXGEM/E Portable HyperGEM	●	●	●	●	●	●	●	●	●	POWER CUT!	£169
FLEXGEM/D Desktop HyperGEM	●	●	●	●	●	●	●	●	●	-	£179

SuperGEM Comms Office

Combines voice recording, message taking, automatic touch tone response, fax, modem and comms management in one box. Easy to use Windows software enables your PC to become an answering machine with automatic voice, fax and data detection.

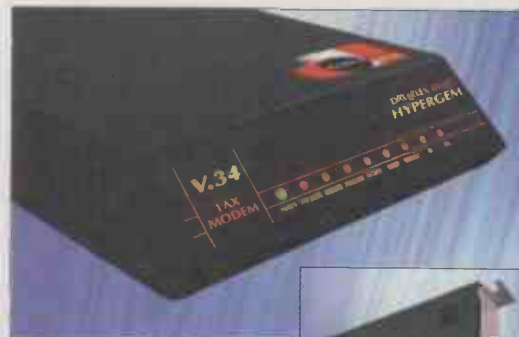
- Touch tone selection
- Voice mail
- Pager notification
- Call screening
- Sound card support
- Fax broadcasting
- Faxback/Faxforward
- Super Voice 2.0 software
- Windows fax and comms software

"Versatile modem combining answering machine with fax and data functionality - exceptional value"

What PC - June 1995



Internal comms office Only £106



HyperGEM

Available as portable, PC card or desktop

- V34 (28,800bps)
- Ideal for Internet
- Windows fax and comms software



DELIVERY CHARGES
See page 9

A great new way to buy...



See page 1

EARLY BIRD Order Bonus
See page 33



Everyone at Powermark passes through our training college

BANK

at **Powermark**

POWERMARK MODEM FEATURE



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 offer enhanced reliability and improved throughput of data giving you complete piece of mind whilst saving you money.

All Powermark modems come complete with:

- 10 year warranty
- Delrina Dosfax Lite
- Winfax Lite (upgradable to Winfax Pro for Windows 95)
- Comit Lite for Windows
- Comprehensive user manual
- Free introductory subscription to Compuserve - your gateway to the Internet
- Telephone cable
- Serial cable and AC adapter (with external models)



MBM288 External

V.34

ONLY **£149**



MBM288 Internal



MBM144 External

ONLY **£83**

POWERMARK MODEMS

Model	V.22bis	V.34	MNP2-5	V.42	V.42bis	Fax	Internal	External
MBM0144	●	●	●	●	●	●	£79	£83
MBM0288	●	●	●	●	●	●	£145	£145

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**

ZOOM MODEM FEATURE

ZOOM

Personal Computer World:
Editor's Choice
Award Dec '93 and
June '93

Windows User:
Best On Test,
February 94



ZOOM 14.4 MODEMS

- Remote configuration and callback security
- High speed 14,400 bps fax and data transmission with V.42bis and MNP 2-5

- Extended status reporting with 15 LED lights (14.4X only)
- 5 year warranty
- Buffered 16550 UART to prevent data overruns (14.41 only)

V.34 FOR
ONLY **£139**

ZOOM MODEMS

Model	V.32	V.32bis	V.34	MNP2-5	V.42	V.42bis	Fax	Internal	External
ZOOM144X	●	●	●	●	●	●	●	POWERCUT!	£95
ZOOM144I	●	●	●	●	●	●	●	POWERCUT!	£89
ZOOM144X/MAC	●	●	●	●	●	●	●	POWERCUT!	£105
ZOOM288X	●	●	●	●	●	●	●	POWERCUT!	£168
ZOOM288I	●	●	●	●	●	●	●	POWERCUT!	£148
ZOOM288X/MAC	●	●	●	●	●	●	●	POWERCUT!	£179

Technical Sales
Order Lines
0181-951 3355
(50 lines)

MODEMS

HUGE STOCKS
Guaranteed same day despatch on virtually all stock items for orders placed even up to 4.00pm.

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
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.

LOW, LOW PRICES
We only supply products from leading manufacturers and at low, low prices too.

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 Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

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UPGRADE DRIVE THRU
While-you-wait installation service available. See page 3 for details.

PERSONAL CALLERS VERY WELCOME
Save delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

Powermark plc
Premier House, 112 Station Rd,
Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com



HMSO

Public Sector customers can purchase through HMSO by calling 01603 694153.



Certificate no. FS 20555

BS7570 registered for the supply of computer, printer and workstation memory, processor and other upgrades.

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Cards are not debited until despatch
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Power



Mark®

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DELIVERY CHARGES

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Next working day
courier
delivery to
your door

SMALL ITEMS

Examples: memory, sound/video cards, CD ROM titles, small software packages

UPTO 3 ITEMS
£6.95 total

4 ITEMS OR MORE
£1.95 for each
additional item

LARGE ITEMS

Examples: CD ROM drives, monitors, multimedia kits, software suites

1ST ITEM
£8.95

EACH ADDITIONAL ITEM
£4.95

Call for rates outside
UK mainland

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FOR MORE**



**FREE
Baseball Cap**
With every order
over £500

When ordering just ask for
your FREE baseball cap as it
is not shipped automatically.

MEMORY

PSION MODEM FEATURE



Comms experts
available for
specialist advice

All modems supplied
by Powermark plc are
BABT APPROVED

PSION DACOM MODEMS

Model	V32bis	V.F.C.	V34	MNP2-4	V42	V42bis	MNP5	Fax	PC Card
PSIONPG32	●	●	●	●	●	●	●	●	POWERCUT! £157
PSIONPG34	●	●	●	●	●	●	●	●	£195

Windows 95
compatible

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

WINFAX PRO FEATURE

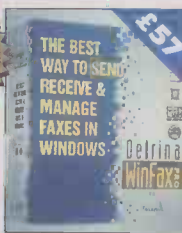


Meet the fastest, easiest, most convenient way ever to handle all your faxing. WinFaxPRO 4.0 the only comms software that combines the advance faxing features you need with astonishing ease and usability.

- Advanced Phonebook
- E-Mail messaging
- Cover Page Designer
- Fax Autoforwarding

- Fax a File
 - OCR feature
 - Custom feature
- All of WinFax PRO's powerful features are so intuitive to use and incredibly accessible that you'll find faxing easier than you ever imagined. Upgrading from WinFax PRO 3 and and LITE is also easy.

DELRIINA WINFAXPRO 4.0 £57



MULTITECH MODEM FEATURE



MULTITECH MODEMS

Model	V32bis	V32terbo	V34	MNP2-4	V42	V42bis	MNP5	Fax	Simultaneous voice & data	External
MULTI28	●	●	●	●	●	●	●	●	●	£335
MULTI19	●	●	●	●	●	●	●	●	●	POWERCUT! £107
MULTI/PCM	●	●	●	●	●	●	●	●	●	£167
MULTI/PCMV34	●	●	●	●	●	●	●	●	●	£215
MULTI14P	●	●	●	●	●	●	●	●	●	POWERCUT! £299
MULTI14	●	●	●	●	●	●	●	●	●	POWERCUT! £271
MULTI28Z	●	●	●	●	●	●	●	●	●	POWERCUT! £152
MULTI28P5I	●	●	●	●	●	●	●	●	●	POWERCUT! £435

Windows 95
compatible



MULTIMODEM II MT2834 ZDX

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
- 5 year warranty
- Available in 28.8bps (V34) and 14.4bps (V32bis)

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)

Comms experts available for specialist advice



MULTIMODEM II MT2834 PCSI

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DELIVERY CHARGES
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A great new way to buy...
See page 1



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Everyone at Powermark passes through our training college

BANK

at
Powermark

U.S. ROBOTICS MODEM FEATURE

USRobotics®

The Intelligent Choice in Data Communications

U.S. ROBOTICS MODEMS

Model	V.32bis	V.32terbo	V.34	MNP2-4	V.42	V.42bis	MNP5	HST Cellular	Fax	Internal	External
USRSPIA/VI Sportster Vi 14.4 + Voice	●	●	●	●	●	●	●	●	●	£99	£99
USRSPT8 Sportster 28,800 V.34 + Fax	●	●	●	●	●	●	●	●	●	POWERCUT!	£159
USRSPT8E/MAC Sportster 28,800 V.34 Mac + Fax	●	●	●	●	●	●	●	●	●	POWERCUT!	£165
USRCDFV71 Courier Dual Standard V.34 + Fax	●	●	●	●	●	●	●	●	●	£245	-
USRCDF71 Courier Dual Standard V.34 + Fax	●	●	●	●	●	●	●	●	●	POWERCUT!	£238
USRW/4 WorldPort Dual Standard Cellular + Fax	●	●	●	●	●	●	●	●	●	POWERCUT!	£125
USRP28/F WorldPort PCMCIA V.34	●	●	●	●	●	●	●	●	●	POWERCUT!	£161

USRSERIAL/7 **PowerPort High Speed Dual Async Serial Card.**
Recommended for terbo and V34 modems to prevent bottleneck of data £49



SPORTSTER VI 14.4 + VOICE

NEW! SPORTSTER Vi 14.4 + VOICE

Desktop 14.4Kbps modem with personal voice mail. Offers fax on demand. Access the Internet via Pipex Dial trial. Cables included.



COURIER V.34

COURIER

Courier Dual Standard V.34 with V.32bis

V.34 for speeds of up to 28,800bps. With the use of data compression a throughput of up to 115,200bps can be achieved, enabling you to

communicate at speeds previously never possible on a dial-up line.



SPORTSTER 28,800 + FAX

SPORTSTER 28,800 + FAX

The world's best selling modem just got better. With speeds of up to 28,800bps, the Sportster 28,800 + Fax offers proven high performance technology, at an unbeatable price.



WORLDPORT DUAL STANDARD CELLULAR

WORLDPORT PCMCIA

WorldPort Dual Standard Cellular PCMCIA 2.0 Fax Modem

Compatible with any portable equipped with a PCMCIA type II slot and powered directly by the computer. The ideal solution for anyone who will regularly need to transfer data from their portable computer.



WORLDPORT PCMCIA



FREE with every Sportster 28.8

- 30 days free trial with PIPEX DIAL TRIAL
- After 30 days, subscribe to PIPEX DIAL - the full version of PIPEX Internet for only £50 which includes a further 2 months free access to the Internet (normally £30)
- 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



All modems supplied by Powermark plc are BABY APPROVED

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(50 lines)

MODEMS

HUGE STOCKS
Guaranteed same day despatch on virtually all stock items for orders placed even up to 4.00pm.

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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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We only supply products from leading manufacturers and at low, low prices too.

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Dedicated after sales technical support teams on line to help with installation.

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Power



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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**

**TURN THE PAGE
FOR MORE**

**NEW! MEMORY
LANE AGAIN**

Do you remember this
Memory Lane from
March 1994...?

Do you remember...
... The teleprinter on
Grandstand
... The Sinclair QL
... Banaceq



MEMORY

RACAL ISDN FEATURE

ISDN

RACAL

ISDN

The UK Market Leader in ISDN

New low cost, Plug and Play ISDN solutions

The future now!

*Superb quality and
reliability with
outstanding value. The
DAP 6200's powerful
features and
astonishing speed bring
significant benefits at
an 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!*

DAP 6200 FEATURES

- Basic rate ISDN access
- High speed V24 data port
- Two analogue ports
- Speeds up to 57600 bps
- Sub-second connection time
- Calling line identification
- Multiple subscriber numbering

The DAP 6200 is ideally suited for PC applications which can greatly benefit from ISDN connectivity. Example applications include Internet access, Microsoft Mail, cc:Mail, Farsite Document Conferencing, Lotus Notes, etc.

The DAP 6200 is designed to simply connect to a PC serial comms port, and plug into the basic rate ISDN service.

DAP6200

£499

ISDN APPLICATIONS

- Internet access
- E-mail access
- On-line teleworking
- Remote network access
- Simultaneous analogue and data
- Video conferencing



**Lower price
£499**

Racal Datacom, market leading manufacturer of ISDN access equipment, has extended its range of ISDN Digital Access Products (DAP) with the release of a new generation of intelligent ISDN terminal adapters, the DAP6000 series.

The first product in the series to be released is the DAP6200. This exciting new product is designed for very simple plug and play integrated ISDN access. Both data and analogue traffic can easily share a single basic rate ISDN line. It provides one high speed data port for connection to a PC serial port, plus two analogue ports for connection to traditional PSTN equipment such as telephones or fax machines. Any two of the three ports can be used simultaneously.

**Data In/Out to COM port from
RACAL DAP 6200 - up to 64
Kbps. Connects in less than
one second!**

**RACAL
DAP 6200**

ISDN In/Out

**At the same time use a
standard telephone or fax
machine on one of the analogue
ports. Does not require ISDN
telephone handset**



**Telephone
or
Fax**

**DELIVERY
CHARGES**
See page 9

*A great
new way
to buy...*



See page 1

**EARLY BIRD
Order Bonus**
See above



Everyone at
Powermark passes
through our
training college

HAYES MODEM FEATURE



ACCURA 288 V.34 + FAX

ACCURA+FAX

Low cost fax modems with all of the quality and ease-of-use that comes with the Hayes name.

OPTIMA+FAX

Offers outstanding performance with the ability to compress data twice as much as other fax modems.



HAYES MODEMS

The industry standard

Windows 95 compatible

Model	V.32bis	V.32terbo	V.34	MINI2-4	V.42	V.42bis	MINI5	FAX	Internal	External	Price
HAQ144	●	●	●	●	●	●	●	●			£103
HAQ288	●	●	●	●	●	●	●	●			£189
HAOP147	●	●	●	●	●	●	●	●			£249
HAOPPCM34	●	●	●	●	●	●	●	●			£199
HAOP28	●	●	●	●	●	●	●	●			£369
HAOP28/DUAL	●	●	●	●	●	●	●	●	●	●	£669
HAULT4	●	●	●	●	●	●	●	●	●	●	£419
HAULTSDN											£599
HAOP15P											1 port £59, 2 port £89

ARTISOFT FEATURE

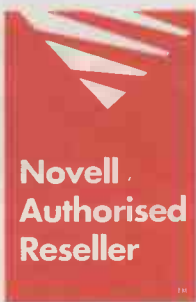


LANTASTIC POWER SUITE NETWORK STARTER KIT

The easy-to-use LANtastic network integrated with Lotus cc:Mail e-mail, Lotus Organiser group scheduling and personal calendar, Cheyenne fax, data-comms and modem sharing software. Plus introductory Compuserve membership.

- LANTASTIC POWERSUITE 2 NODE NETWORK STARTER KIT £199
- LANTASTIC ADD ON ONE NODE KIT £115
- POWERSUITE SOFTWARE ONLY
 - 1 USER £59
 - 5 USER £249
- LANTASTIC 2 NODE NETWORK STARTER KIT (without Powersuite) £194
- LANTASTIC ADD-ON - 1 NODE KIT £99
- LANTASTIC OPERATING SYSTEM
 - 1 USER £66
 - 5 USER £299
 - 10 USER £429
- LANTASTIC UTILITY PACK £249
- ARTICOM £69
- ARTISAVE £132

NOVELL FEATURE



INTRODUCING NOVELL NETWORK 4.1

NetWare 4.1 has all the advantages of previous versions of NetWare, plus gives you new capabilities designed to increase productivity, reduce costs, and simplify installing and maintaining your network.

- Additive licensing - 25 user + 10 user = 35 user licence
- NDS - NetWare Directory Services
- Single network log in for access to all resources
- Improved memory management and protection using both ring 3 and 0
- Enhanced security utilising RSA public/private key cryptography
- Remote management features



- Independent network auditing features
- Automatic file grooming and archiving
- All utilities in GUI format
- Support for over 250 printers per server
- New simplified installation
- Improved ITX WAN behaviour with enhanced routing of IPX, AppleTalk and IP
- Internationalisation via Multilingual language modules

UPGRADES

Upgrades from any version to Netware 4.1

Current	New 5	10	25	50	100	250	500
5	£185	£719	£1179	-	-	-	-
10	-	£355	£834	£1375	-	-	-
25	-	-	£567	£1064	£1886	-	-
50	-	-	-	£765	£1520	£Call	£Call
100	-	-	-	-	£1065	£Call	£Call
250	-	-	-	-	-	£Call	£Call

FREE WITH EVERY COPY OF NETWARE

Lan Workplace 5 buy-one-get-one-free offer. Time Out (1996) full version of Net Connect. Groupwise Quicklook CD (offer ends 22/10/95) Limited offer - please ask for NOV2 when ordering

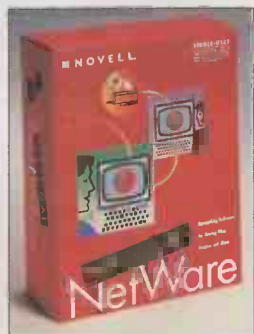
- NOVELL NETWORK 4.1 CD
 - 5 USER £439
 - 10 USER £1029
 - 25 USER £1529
 - 50 USER £1997
 - 100 USER £3279
 - 250 USER £Call

- NOVELL NETWORK 3.12
 - 5 USER £425
 - 10 USER £1009
 - 25 USER £1479
 - 50 USER £1969
 - 250 USER £Call

Call for CD ROM pricing

PERSONAL NETWORK

- Share all your printers, drives (CD ROMs etc), directories and files



- PERSONAL NETWORK 5 PACK £44
- £189

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MODEMS & NETWORKING

Another spin for Webster's Web



Dear Webster,
I have an I.421 connection in my house, and I need a device to attach my computer to it. I already have the sockets next to the desk, but the only items attached are my phone and Group 4 Fax machine. Is such a device easily obtainable or am I barking up the wrong tree?
Yours, Confused in Consett

Dear Confused,
You are referring to a DAP or Terminal Adapter. Standard modems cannot be used over ISDN lines as the connections and principles are different. Powermark currently stock a range of DAPs from Racal, and the 4100 should suit your needs at 64Kb/s. With this speed you will be, jet-skiing, not surfing the net!
Yours, Webster

Send your communications problems to Webster, c/o Powermark plc, Premier House, Station Road, Edgware, Middlesex, HA8 7AQ or fax them to 0181 905 6233. You can also Email Webster on: web@powermark.com

Webster makes every effort to answer your communication problems, but he cannot guarantee to reply to everyone.

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DELIVERY CHARGES

UK MAINLAND
Next working day courier delivery to your door

SMALL ITEMS

Examples: memory, sound/video cards, CD ROM titles, small software packages

UP TO 3 ITEMS
£6.95 total

4 ITEMS OR MORE
£1.95 for each additional item

LARGE ITEMS

Examples: CD ROM drives, monitors, multimedia kits, software suites

1ST ITEM
£8.95

EACH ADDITIONAL ITEM
£4.95

Call for rates outside UK mainland

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FREE Baseball Cap
With every order over £500

When ordering just ask for your FREE baseball cap as it is not shipped automatically.

MEMORY

3COM FEATURE



Compatible with commonly used operating systems, including Novell Netware, Microsoft LAN Manager, DECnet, DOS, PC-NFS, Banyan Vines and 3+Open.

3C503 RANGE

Standard 8-bit or selectable 16-bit card. Shared memory architecture and 8K buffer.

3C529 RANGE

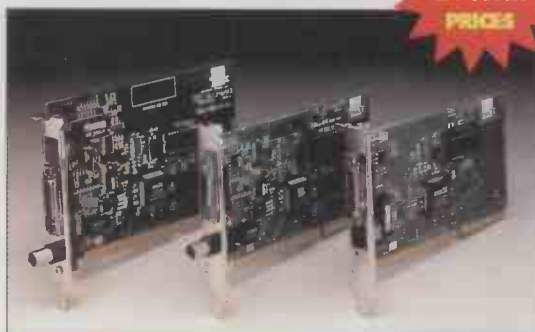
MCA Etherlink III Cards.

3C509 RANGE

16-bit high performance, low component cards.

3C579 RANGE

32-bit EISA interface using Parallel Tasking Architecture. The adapter uses the same drivers as the EtherLink III and is SNMP manageable when used with Linkwatch.



CALL FOR 20 PACK PRICES

3C509 RANGE

	BNC	RJ45	AUI	Unit	5 Pack
3C509	●		●	£66	£321
3C509TP		●		£68	£321
3C509C	●	●	●	£79	£335

3C529 RANGE

• MCA Etherlink III cards

	BNC	RJ45	AUI	Unit	5 Pack
3C529	●		●	£149	£689
3C529TP		●	●	£149	£689
3C529C	●	●	●	£139	£699

3C579 RANGE

• 32-bit EISA interface using Parallel Tasking Architecture

	BNC	RJ45	AUI	Unit	5 Pack
3C579	●		●	£149	£699
3C579TP		●	●	£149	£699

3C589 RANGE

• PCMCIA cards

	BNC	RJ45	AUI	Unit	5 Pack
3C589T POWERCUT!		●		£109	£490
3C589C POWERCUT!	●	●		£139	£634

TOKEN RING PCMCIA

• AutoLink software
• LEDs for installation and trouble shooting

		Unit	5 Pack
3C689	TokenLink III 16/4	£299	£1399

3C590 RANGE

• PCI Bus Master adapters using parallel tasking architecture

	BNC	RJ45	AUI	Unit	5 Pack
3C590TP		●		£97	£419
3C590C	●	●		£106	£478

XIRCOM FEATURE



CREDIT CARD ETHERNET+ MODEM II

Simultaneous Ethernet/803.2 LAN plus 19,200 bps data and 14,400 bps send/receive fax modem operation in one slot

PCMCIA ETHERNET

BNC	£125
TP	£109
COMBO	£145

CEM2-10BT (TP)	£269
CEM2-10B2 (BNC)	£279
CEM2-10BC (COMBO)	£299

CREDIT CARD TOKEN RING ADAPTER II_s

• High-performance, memory-saving SmartRing software
• 16 or 4 Mbps software selectable ring speed



PS-CT2-16CTP (TP) £299

Xircom

POCKET ETHERNET ADAPTER III

• Universal connection for all notebook, laptop and desktop PCs
• Enhanced Parallel Port (EPP) capable
• Requires no internal slots

PE3-10B2 (BNC)	£185
PE3-10BT (TP)	£185
PE3-10BC (COMBO)	£202

SMC NETWORKING FEATURE



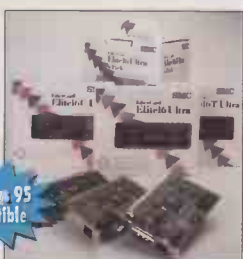
EtherEZ Adapters

Superior plug and play Ethernet adapter approved for Windows 95

• Lifetime Warranty

	Single	5 Pack
EtherEZ Adapter BNC POWERCUT!	£59	£279
TP POWERCUT!	£59	£259
Combo POWERCUT!	£66	£299

24 AND 50 PACKS ALSO AVAILABLE



SMC Fast Ethernet Adapters

The SMC EtherPower 10/100 and Ether 10/100 adapters are 100Base-TX devices, designed for PCI or EISA bus computers.

SMC ETHERCARD ELITE ULTRA

	Single	6 Pack
Elite 16 Ultra BNC	£58	£339
Elite 16 Ultra TP	£58	£339
Elite 16 Ultra Combo	£68	£386

SMC ETHERCARD ELITE 32C ULTRA

	Single	6 Pack
Elite 32C Ultra Combo	£141	£769

SMC ETHERPOWER PCI

	Single	5 Pack
EtherPower PCI TP POWERCUT!	£89	£415
EtherPower PCI Combo	£101	£499
SMC ELITECARD PCMCIA		
EliteCard PCMCIA TP	£85	£399
EliteCard Combo	£114	£553

TIGER HUBS

	Number of Ports				
	TP	BNC	AUI	FL	
CX3	0	3	1	0	£209
TP6	6	0	1	0	£124
TP6B	6	1	0	0	£125
TP12	12	1	1	0	£249
CX6	1	6	1	0	£435
FL6	0	1	1	6	£Call



DELIVERY CHARGES
See above

A great new way to buy...



See page 1

EARLY BIRD
Order Bonus
See page 33



Everyone at Powermark passes through our training college

POWERMARK COMBO NETWORK ADAPTER FEATURE

Power



Mark

Networking

MBNET PCMCIA

- Credit card sized PCMCIA Ethernet card
- Low power consumption. Use of EPA Energy Star components
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- 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



It runs with NetWare



MBNET2000C

- 35% faster than Novell NE2000
- Fully NE2000 compatible
- Jumperless or jumper configuration
- Automatic configuration
- Auto detection for media
- Auto detection for ISA bus
- Supports 8 IRQs and 8 I/Os
- Smart boot ROM support
- 16K on-board buffer

MBNET2000C £26

MBNET2000C/P PLUG AND PLAY

- Improved performance by full-duplex capability (20Mbps) with full downward compatibility
- Incorporates 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

MBNET2000C/P £36

NEW! MBNETHUB/8 HUB

- 8 port hub
- RJ45

MBNETHUB/8 £69

Network experts available for specialist advice

MBNET32PCI PLUG AND PLAY

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- AUI, 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 for Green PCs
- 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

MBNET32PCI £69



MBNET32PCI

PSION SERIES 3a FEATURE



The Series 3a represents a major achievement in its marriage of high quality miniature engineering, software, and design. Psion recognises that an increasing amount of people are spending more and more time working whilst on the move or teleworking. Psion's response has been to follow up with its 3a model. The Psion 3a range has been designed to set a new standard personal organisers, to suit every users needs from business to personal, allowing you to discard bulky filofaxes and diaries.

Features include:

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Ideal for your address and phone book or business card details with customisable menus

Wordprocessor

Fully featured wordprocessor with pull down menus which is compatible with Microsoft Word.

Spreadsheet

Compatible with Lotus 1-2-3, allowing you to transfer spreadsheets between your Organiser and desktop PC.

World

Ideal for the international traveller who needs to know about time zones and distances.

Agenda

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Fully featured calculator with programmable memory.

Series 3a 256K	£209
Series 3a 512K	£239
Series 3a 1MB	£299
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Printer Parallel link	£26
Serial PC cable link	£69
Serial Apple Macintosh link	£69

MEMORY FOR THE PSION 3a

512K Flash RAM	£69
1MB Flash RAM	£85
2MB Flash RAM	£150
512K RAM	£101
1MB RAM	£189

MODEM

Psion 3a modem with 512K buffer £165

PSION 3a SOFTWARE

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Financial Calculator	£35
Chess	£25
Spell Checker & Thesaurus	£39

Call for details of other Psion products

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NETWORKING
& PSION

Aaron's Answers



Dear Aaron,
Help! I work in a Travel Agency along with five other people. We are fighting over printers, modems and scanners. It has been survivable up to now but the customers are beginning to suffer. The amount of data loss and the stacks of floppy disks are now quite unbearable, there must be another option without buying a new system.

Yours,
Networked in Nottingham

Dear Networked,

It's easier than you think. Resource sharing without even leaving your desk is an achievable goal with your current system along with a few add-ons. Powermark network cards, together with Microsoft Windows for Workgroups is the ideal solution. You can use printers, modems and other peripherals even if they are attached to another PC. Give our Technical Sales a call and they will be happy to explain and discuss all the options.

Yours, Aaron

Send your questions to Aaron's Answers, c/o Powermark plc, Premier House, Station Road, Edgware, Middlesex, HA8 7AQ or fax him to 0181 905 6233. You can also Email Aaron on: aaron@powermark.com

Aaron makes every effort to answer your problems, but cannot guarantee to reply to everyone.

Powermark plc
Premier House, 112 Station Rd,
Edgware, Middlesex HA8 7AQ
Tel: 0181-951 3355
(50 lines)
Fax: 0181 905 6233
Email: sales@powermark.com



Cards are not debited until despatch
VAT at 17.5% will be added to all prices



Public Sector customers can purchase through HMSO by calling 01603 694153.



Certificate no. FS 26535

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MEMORY

Dr. SOLOMON'S FEATURE

DR SOLOMON'S

NEW!
Version 7

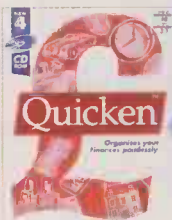


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Quicken™

QUICKEN UK 4.0 FOR
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The fastest, easiest way to organise your home and small business finances
Quicken organises all your finances in one place. It's easy to use, provides insight into your spending habits and helps you to plan for a better financial future.



**NEW
4**

**CD
ROM**

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New Quicken 4 CD for Windows uses multimedia to make it easier than ever to have your PC organise your finances.

On-screen Tutors show you Quicken's key features, talking you through the basics and making sure Quicken starts working for you in next to no time.

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QUICKEN DELUXE
BUSINESS PACK FOR
WINDOWS V4.0 1Q/DLX/BUS £45

QUICKBOOKS UK 3 FOR
WINDOWS 1Q/BOOKS/UK3 £84

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Combat viruses in DOS, OS/2, Windows and Netware

The best answer to the serious problem posed by viruses. Each toolkit is made up of four programs geared to locate, identify and destroy existing viruses and then protect your system.

FINDVIRUS - Detects and identifies viruses in files, partition code and boot sectors using an extensive database of virus recognition information.

GENERIC DECRYPTION ENGINE - An amazing program that can actually detect those viruses that mutate.

VIRUSGUARD - This is the memory resident utility that is installed every time you restart your computer. It checks every

program for viruses before it is opened or copied.
VIVERIFY - ViVerify is a unique program that finds new and undiscovered viruses by monitoring executable code changes.

DR/SOLAV/D ANTI-VIRUS TOOLKIT DOS £59
DR/SOLAV/W ANTI-VIRUS TOOLKIT WINDOWS £69
DR/SOLAV/N ANTI-VIRUS NETWORK £239

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PC Protection for IT Professionals

An easy to use package which gives you back control over who uses your computer

- Boot-up password
- Program authorisation
- Hard disk boot protection

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- Borland • Corel • S&S International • Novell • IBM

Software experts available for specialist advice

TOUCHSTONE FEATURE



TouchStone Software Corporation



WIN'95 ADVISOR

ARE YOU READY FOR WINDOWS 95?

Get the answers you need quickly and easily! Win'95 Advisor is designed to take all of the guesswork out of installing Microsoft Windows 95. Make the right decisions with Win'95 Advisor and install Windows 95 right the first time.

- Prepares your Windows 3.1 system for a fast, safe and easy upgrade
- Makes expert recommendations on hardware and software requirements
- Optimizes Windows 95 installation

WIN'95 ADVISOR WINADVISOR95 £19



FASTMOVE!

THE FAST, EASY WAY TO TRANSFER FILES

- Shows you which files need to be updated
- Scans each file for viruses
- Synchronizes PCs with up-to-date files
- Simple interface for problem-free transfers
- Selects just the files you want
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FASTMOVE! FASTMOVE £33



WINCHECK IT

The all-in-one Windows problem solver!

Includes Uninstall Utility!
Six reasons why you need the new all-in-one Windows problem solver

- **Clean up** - Make room for more programs and data files
- **Fix up** - Recovery that works even when Windows won't
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- **Set up** - Simplify hardware and software installation
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- **Check up** - Be sure you don't have a hardware problem

Includes Pentium Troubleshooter Kit
WINCHECK IT DR/SOLCHK/IT £39

Windows 95 compatible

SET UP ADVISOR II

"If your planning a hardware upgrade, SetUp Advisor is a must have."
Save hours of frustration when installing.....

- Multimedia kits
- CD ROMs
- Fax/modems
- Sound cards
- Floppy drives
- Tape drives
- Scanners
- Network cards
- SCSI host adapters
- Graphic accelerator boards
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SET UP ADVISOR DR/SOLCHK/SET £17

CHECK IT PRO DELUXE

- Advanced Diagnostic Toolkit
TroubleShoot PC Problems!
- Diagnose hardware problems
 - Find setup conflicts and assignments
 - Compare system performance
 - Document configuration details
 - Create/recover system rescue disk
 - Check for virus infections
 - Install and test new equipment

CHECK IT PRO DELUXE CHECKUP/D £89
CHECK IT PRO CHECKUP £59

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FOR MORE**

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A great new way to buy...



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SOFTWARE WARRANTY
Do check compatibility before ordering. Faulty software replaced through Powermark Customer Service. Opened software cannot be returned.



Everyone at Powermark passes through our training college

BANK

at Powermark

ACCENT FEATURE



ACCENT SPECIAL EDITION

Includes all of the features of Accent Express plus advanced support in - English, French, German, Spanish and Italian. Each language offers a spell checker, thesaurus, hyphenation, word-forward translation with the Berlitz Interpreter and keyboard maps. Accent Special Edition contains advanced word processing.

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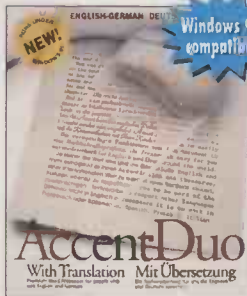
"Accent is the best multilingual word processor we've seen."
PC Magazine, January 1995

ACCENT LANGUAGEWARE

Discover Accent LanguageWare and bridge the language barrier across international borders. Accent offers you the ability to work effortlessly in over 30 languages simultaneously. Write an entire letter or contract in your customer's language.

ACCENT LANGUAGEWARE PRODUCT LINE

	Pro	Special Edition	Express	Duo NEW!
Typing Languages	Over 30	Over 30	Over 30	Over 30
User Interface Languages	19	15	15	15
Interactive Keyboard Maps	Over 50	Over 50	Over 50	Over 50
TrueType Fonts	Over 150	Over 80	30	30
On Line Help Languages	12	8	-	-
Spell Checker Languages	17	9	-	-
Thesaurus Languages	11	8	-	-
Hyphenation Languages	14	8	-	-
Berlitz Interpreter				
Word-for-Word Translation	5	5	-	-
Word Processing Features	Advanced	Advanced	Standard	Advanced



ACCENT EXPRESS

All the features of a traditional word processor plus the capability to create documents in over 30 languages.

ACCENT/EXP ACCENT EXPRESS £37

ACCENT DUO

Combine powerful multilingual word processing with an integrated interactive translation tool. Includes advanced word processing features

ACCENT/DUO ACCENT DUO £65

THE SKIP

Make sure you're
Stocking Up for Christmas
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- Media Pro PC Tuner VMPROT £80
- Media Pro Plus VMPRO £170
- Lotus Smartsuite V3 UG LOTSSUGG £150
- Ultimate Football ULTIMATE/FOOT £15
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- Return to Zork CD DRETURN £20
- Intuit Quickbook Win V2 3.5 IQ/BOOKSUKV2 £70
- PGA Golf DPGAGOLF £20

- Arthur Teachers Trouble CD DATT £15
- Al Unser Racing ALINSR £10
- 1st Act for Windows ACT/1ST £55
- Andest MSL - 1100 phone manager PHONEMGR1100 £50
- Compaq SVGA 14" monitor 143800 542 £185
- Adaptec 1640 MCA controller AHAT1640C £149
- 100 years of Motoring CD D100YEARS £15
- AutoRoute Plus GB Windows 3.5 AUTOR+GBR £255
- CD Storage Tower COST £13
- Berlitz French CD DITF £70
- Hard Days Night (Beatles) CD DHARD £25
- Dbase 5 Dos DBASE5/D £299
- Frontier Elite 2 DFRONTIER £15
- Police Quest 4 CD DPOLICE £15
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- Xtree Gold V4 XTRG4W £55



NO GREY IMPORTS!



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SOFTWARE

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Guaranteed same day despatch on virtually all stock items for orders placed even up to 4.00pm.
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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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Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy balance sheet.
- LOW, LOW PRICES**
We only supply products from leading manufacturers and at low, low prices too.
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Dedicated after sales technical support teams on line to help with installation.
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All products supplied by Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

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- UPGRADE DRIVE THRU**
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Save on delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

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**Training Video
for Microsoft
Windows 95**

£19

or £16 when purchased with Microsoft Windows 95



... and here's what some of our customers have said ...

...the service and help I received from you all over the last few weeks has been nothing short of brilliant.

...Your company has been brilliant and I will certainly use you again and recommend you whole heartedly to my friends in the future, THANK YOU.

Mr & Mrs N Luxford
Herts



**MEMORABLE
GAGS**



**Ha Ha Ha
Punchlines
to old, old,
old favourites**

... 2.30

... £1-a-mile

... the big b-ends gone

If you can't remember the stories to these then contact Quentin Quizzy and he'll be happy to oblige.

MEMORY

WINDOWS® 95 FEATURE

Microsoft®

Unlock the potential of your PC with Microsoft® Windows® 95

Microsoft Windows 95 makes everything you do with your computer faster and easier.

The Microsoft® Windows® 95 operating system will transform everything you do with your PC. Suddenly using a computer can be fast, easy and fun - with limitless possibilities!

**Microsoft® Windows® 95:
Your open door to doing more**

- Save time with an easier-to-use interface; long filenames; and one-click access to all of your programmes and documents with the Start button
- Plug and Play technology automatically configures compatible disk drives, sound cards and more
- 32-bit, pre-emptive multitasking lets you run multiple programmes or perform multiple tasks simultaneously
- Gain built-in access to e-mail and faxes with Microsoft Exchange, and to the Internet with The Microsoft Network
- Full-motion video provides vividly realistic game play with big, fast, on-screen action

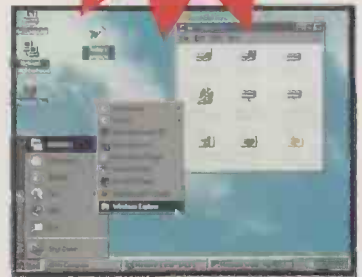
Everything you do is easier and faster

- **Easier.** Navigate your system quickly with easy-to-use tools, including the Start button, taskbar, and Windows Explorer
- **Plug and Play.** Plug and Play frees you from manually setting up Plug and Play-compatible hardware devices such as CD-ROM drives and scanners
- **Long File Names.** More descriptive file names - up to 250 characters long
- **Faster.** Enjoy improved performance in all major areas, including 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, Windows for Workgroups, and MS-DOS are compatible with Windows 95®



£57

when you purchase any other product over £29 (One upgrade at £57 per order. Offer applies to upgrade version only.)



MICROSOFT® PLUS! FOR WINDOWS® 95

To give Windows® 95 even more space and style, add new Microsoft® Plus!

Introducing Microsoft® Plus! - the way to fully exploit the power of 486 and Pentium PCs.

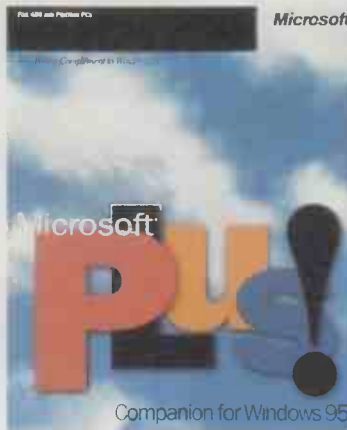
A companion for the Windows® 95 operating system, Microsoft® Plus! adds space and style to your PC. With Microsoft Plus!, your computer is self-maintaining and is customisable with unique new desktop themes. Microsoft Plus! gives you outstanding data compression whether you have a 486 or Pentium computer. As an added bonus, you get fast, easy access to the Internet.

Microsoft® Plus! is packed with features that complement Windows® 95

- An intelligent new System Agent makes your PC self-maintaining
- Microsoft® Plus! has an enhanced version of DriveSpace that allows up to 50% more compression than Windows® 95 and more free disk space without any performance penalty
- Themes - 11 colourful themes, each with new fonts, icons, backgrounds, sounds, screen savers and colours
- For Internet users Microsoft Plus! includes an enhanced Internet Browser
- Pinball - a 3-D game designed for Windows 95 that looks, sounds and plays like the real thing
- Turn your computer into a Dial-Up Networking server that lets your small office or workgroup share data or send and receive mail remotely
- Font smoothing makes fonts easier to read

MICROSOFT PLUS! 3.5" FLOPPY £29

MICROSOFT PLUS! CD ROM £29



A world of new possibilities

- **Multitask.** Work on several tasks at once with fast, new 32-bit programmes that support pre-emptive multitasking and multithreading
- **The Microsoft Network.** Sign on to 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.** Windows 95 is network-ready, providing easy 32-bit access to network resources.
- **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 than ever before for more fun multimedia experiences

MICROSOFT WINDOWS 95

UPGRADE 3.5" FLOPPY £59

MICROSOFT WINDOWS 95

UPGRADE CD ROM £59

39

DELIVERY CHARGES
See page 9

A great new way to buy...



See page 1

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Do check compatibility before ordering. Faulty software replaced through Powermark Customer Service. Opened software cannot be returned.



Everyone at Powermark passes through our training college

BANK

at Powermark

WINDOWS® 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

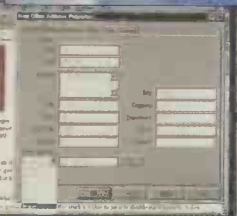
Word for Win 95	£229
Word for Win 95 1 SL	£195
Word for Win 95 UP CCP	£82
Word for Win 95	
UP CCP 1 SL	£70
Word for Win 95 CUP	£107

MICROSOFT® EXCEL FOR WINDOWS® 95

- Enhanced **IntelliSense®** technology, more intuitive help, and integration with Windows® 95 make your everyday spreadsheet tasks easier
- Significant performance improvements help you get your work done faster
- Powerful new analysis tools simplify a variety of complex tasks



Excel for Win 95	£229
Excel for Win 95 1 SL	£195
Excel for Win 95 UP CCP	£82
Excel for Win 95	
UP CCP 1 SL	£70
Excel for Win 95 CUP	£107



MICROSOFT® POWERPOINT FOR WINDOWS® 95

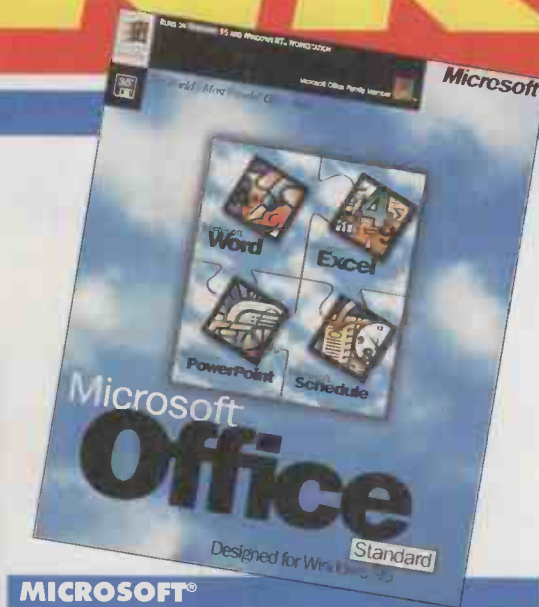
- Type a help request in your own words, and the **Answer Wizard** finds the answer



- 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	£195
Upgrade CCP	£82
Upgrade CCP 1 Site Licence	£70
Competitive Upgrade	£119



MICROSOFT® OFFICE FOR WINDOWS® 95

Microsoft® Office for Windows® 95. Easy access to powerful tools. For powerful accomplishments.

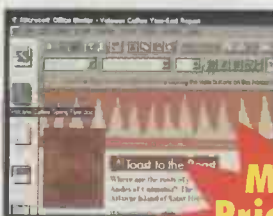
Microsoft® Office for Windows® 95 makes it easier than ever to focus on your job instead of your software.

In Microsoft® Office Standard for Windows® 95, you get: Excel, Word, PowerPoint® and the new Microsoft Schedule+. In Microsoft Office Professional, you get all these plus Microsoft Access.

- IntelliSense technology does routine tasks for you with enhanced AutoCorrect and much more
- Type a help request in your own words and the Answer Wizard gives you the answer you need

Office for Windows 95

3.5" Disk	£334
CD ROM	£334
1 Site Licence	£284
Upgrade CCP	£139
Upgrade CCP CD	£139
Upgrade CCP 1 Site Licence	£118
Competitive Upgrade	£164
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3.5" Disk	£431
CD ROM	£431
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Upgrade CCP	£205
Upgrade CCP CD	£205
Competitive Upgrade	£249
Comp Upgrade CD	£249

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Access for Win 95	£229
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Schedule+ for Win 95	£75
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Create professional documents easily and quickly with the essential tools in Microsoft Works.

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(50 lines)

WINDOWS 95

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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
Powermark plc has been supplying upgrades for over 5 years and has an annual turnover exceeding £18 million with a healthy profit sheet.

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Upgrade now to Office 95 Standard and Professional

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Only products from leading 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 Powermark plc carry manufacturers' warranties and of course full Powermark plc guarantees.

TURN THE PAGE FOR MORE

UPGRADE DRIVE THRU
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Save on delivery charges - there's plenty of parking. 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: Sales from 9.30am to 4.00pm, Technical Support and Customer Service from 10.00am to 2.00pm.

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Education Packs available at very special prices (Proof of status required) Call our Education Sales Team for details



B5750 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.



Cards are not debited until despatch VAT at 17.5% will be added to all prices

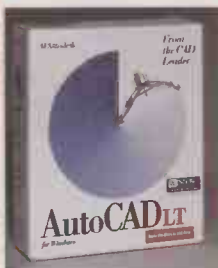


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AutoCAD LT Release 2 for Windows is a full-featured, easy-to-use, 2D design and drafting package with extensive 2D drawing and editing tools, associative hatching and Aerial View.



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MEMORY

SOFTWARE FEATURE

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CORSNM	Corel SCSI Network Manager	£249
CHECKIP	Check It Pro	£59
WDSOLECHK/SET	Check It Set Up Advisor	£17
WDSOLECHKIT	Win Check It	£35
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CPANTIV+SUBS	CP Antivirus WIN	£69
CPANTIV/NET	CP Antivirus For Netware	£469
DESQVIEW/27	Desqview 386 V2.7	£105
DRSOLAV/D	Dr Solomon Antivirus & Quarterly Update DOS	£49
DRSOLAV/W	Dr Solomon Antivirus & Quarterly Update WIN	£69
DRSOLAV/NET	Dr Solomon Antivirus For Netware	£239
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FASTBACK+6D	Fastback Plus V6 DOS	£85
FASTBACK+W	Fastback Plus WIN	£75
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NORU	Norton Utilities V8	£83
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NOREDF2D	Norton Editor 2.2 DOS	£49
NORAV21	Norton Antivirus V3	£95
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QEMM47.5	Qemm V7.5 + Stacker V4.0- Stacker V4 DOS WIN	£55
STACKER4/W	Stacker V4 UP	£36
STACKER4/UG	Stacker V4 UP	£65
SUPERPRINT3.1	Superprint V3.1	£79
SYSTOS+SOS2	Systos Plus for OS/2	£79
UNINSTALLER	Uninstaller V3.0 WIN	£39
UNINSTALL-IT	Uninstall IT	£19
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WINPROBE	WinProbe	£10
XTREE	Xtree Gold V3 DOS	£86
XTREE4W	Xtree Gold V4 WIN	£69
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XTRETOOL	Xtree Tools For Network	£375

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MSW31REL3.11	MS Windows V3.1	£61
MSWGA0	MS Windows For Workgroups Add-On 3.11	£39
MSWGA0/LIC	MS Windows For Workgroups Add-On 3.11 1 SL	£37
MSWGV3.11	MS Windows For Workgroups V3.11	£89
MSWINNT	MS Windows NT Winstation V3.5	£239
MSWINNT/SERV	MS Windows NT Server V3.5 CD	£475
MSDOS6.23	MS DOS V6.22 UP	£38
NDOS7	Novell DOS 7	£49

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CLA/FILE	Claris Filemaker Pro Corel CD Office	£84
CORCD/DF	Companion	£65
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LOTS5P/UP	Lotus Smartsuite 3.5 UP	£158
LOTS5P/UP	Lotus Smartsuite UP CD	£169
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LOT/STMPHN	Lotus Symphony	£375
MSOFFICE	MS Office 4.2 Standard WIN	£325
MSOFF4.2SL	MS Office 4.2 1 SL	£294
MSOFF4.2CUP	MS Office 4.2 UP CCP	£169
MSOFF4.2CUPIG	MS Office 4.2 CUP	£218
MSOFFICEPRO	MS Office 4.3 Professional	£423
MSOFF4.3SL	MS Office 4.3 1 SL	£362
MSOFF4.3CUPCP	MS Office 4.3 UP CCP	£249
MSOFF4PRO/COM	MS Office 4.3 CUP	£279
MSOFF4HWT	MS Office V4.2 for Windows NT CD	£339
MSWORKS3D	MS Works V3 WIN CD	£79
MSWORKS/5W	MS Works V3 1 SL	£74
WPOFFWIN	PerfectOffice Standard	£265
WPOFF	PerfectOffice UP	£119

ACCOUNTS PACKAGES

SAGEFIN07	Sage Financial Controller DOS V7	£329
SAGE/AC4D7	Sage Accountant Plus DOS V7	£249
SAGE/2+2ACLAN	Sage Accountant Plus LAN DOS	£397
SAGE/ACD7	Sage Accountant DOS V7	£165
SAGE/BKD7	Sage Bookkeeper DOS V7	£55
SAGE/3FC	Sage +2 Financial Cont WIN	£354
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SAGE/BOOK3W	Sage V3 +2 Bookkeeper WIN	£84
SAGE/WHWSEZ	Sage Moneywise V2	£35
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SAGE/INASC	Sage Instant Accounting V2.1 WIN	£87
SAGE/PKZDS	Sage Payroll DOS V5	£135
SAGE/PKZLAN	Sage Payroll LAN	£166
SAGE/PKZW	Sage +2 Payroll WIN	£127
TASBOOK/AC	Tas Books Accounting	£79

PROJECT MANAGEMENT

CASUPER	CA Super Project V4 WIN/OS/2	£459
MSPROJ95	MS Project V4.1 for Windows 95	£279
MSPROJ95CUPIG	MS Project V4.1 for Windows 95 CCP UP	£85
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ACCENTPROP	Accent Pro	£189
ACCENT/SE	Accent Special Edition	£89
ACCENT/EXP	Accent Express	£37
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LOTWRITE	Lotus Write WIN v2	£95
LOTAM/W	Lotus Word Pro 96	£95
MSWORDWIN	MS Word WIN V6	£221
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WORDSTAR2W	Wordstar V2 WIN	£29

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AUTOR/EXP/EURW	MS Autoroute Express Europe V4	£29
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AUTOR/MAP	MS Autoroute Mapbase GB	£288

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CASCALC/SLAN	CA Supercalc V5 LAN 3 User	£171
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LOT123/1SL	Lotus 123 V5 WIN 1 SL	£195
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LOT123/R2.4D	Lotus 123 R2.4 DOS	£247
LOT123/R2.4/1SL	Lotus 123 R2.4 1 SL	£212
LOT123/R2.4/LAN	Lotus 123 R2.4 LAN Server	£378
LOT/IMP/PROV	Lotus Improv WIN	£92
HSEXCELS	MS Excel V5 WIN	£221
HSEXCELS/SL	MS Excel V5 WIN 1 SL	£197
HSEXCELS/20	MS Excel V5 WIN 20 SL	£Call
HSEXCEL/COM/UPG	MS Excel V5 WIN UP CCP	£78
HSEXCELS/W/INT	MS Excel V5.0 for Windows NT CD	£242
BORLANDQPRO/SD	Quattro Pro V5.5 DOS	£49
BORLANDQPRO/6W	Quattro Pro V6 WIN 3.5" + CD	£155

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ACT2/DWIN	Act V2 WIN	£146
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ECCO/SHAW	Ecco Simplicity WIN	£45
ECCO/PROW	Ecco Professional WIN	£119
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LOT0/UPG	Lotus Organiser V2 WIN UP	£49
MSCHED+W	MS Schedule+ WIN	£87

KEY

CCP	Compliance	DOS	DOS Version	UP	Upgrade
CD	Checking Product	LAN	Local Area Network	Vxxx	Version
CD ROM	Microsoft Product	MS	Microsoft Product	WIN	Windows Version
CUP	Competitive Upgrade	SL	Site License		

CAD

AUTOSKETCH2D	Autosketch V2 WIN	£99
AUTOCADLTW	AutoCAD LT V2 WIN	£369
AUTOCAD/ITUG	AutoCAD LT V2 WIN UP	£95
AUTOCADLT/AL	AutoCAD LT Int Architectural Library	£110
DESIGNCAD2D/W	DesignCAD 2D WIN	£175
DRAFXCADWP	Drafix Windows CAD V2.1	£45
DRAFXCAD	Drafix Windows CAD Prof	£145

LANDMARK SELL OUT!

UNINSTALL-IT

Increases performance of PC by eliminating unwanted files
Only £9

**Only £5
with any purchase
over £30**

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EUROSS/4/5	Fun School 4 Under 5's	£15
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MSWGA0/LIC	MS Windows For Workgroups Add-On 3.11 1 SL	£37
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MSDOS6.23	MS DOS V6.22 UP	£38
NDOS7	Novell DOS 7	£49

CREATIVITY

EURO/KLIK	Klik & Play	£29
EURO/KLUGP	Klik & Play Gamepack (Four customisable games on one CD)	£5

DELIVERY CHARGES
See page 9

A great new way to buy...



See page 1

SOFTWARE WARRANTY
Do check compatibility before ordering. Faulty software replaced through Powermark Customer Service. Opened software cannot be returned.

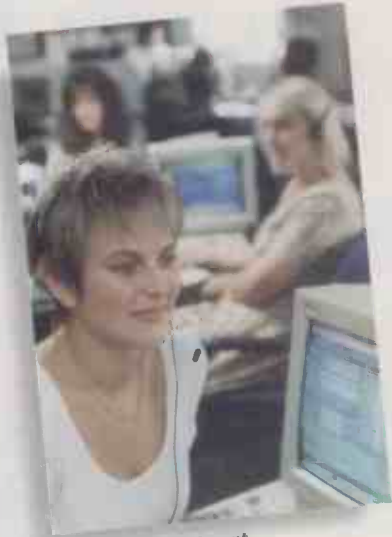


Everyone at Powermark passes through our training college

MILTON KEYNES
BIRMINGHAM
CAMBRIDGE
EVESHAM



A perfect balance



Telesales Department

ESTABLISHED 12 YEARS

Evesham Micros has been established for 12 years and now has four operating locations with a total annual turnover exceeding £45 million. It has risen to a position of strength in the computer market, with sustained growth and a secure financial status.

PCDMA

We are a founder member of the Personal Computer Direct Marketers Association; a collaboration of manufacturers who adhere to a professional code of practice. This assures you of our pledge to provide a high standard of service.



Additionally, the Payment Protection Plan provides peace of mind if you pay by cheque.



READY TO RUN

All systems are fully formatted and pre-installed with DOS and Windows. We also include the original installation disks and manuals, plus our own PC manual and easy-to-follow guide to Windows. A mouse is also included. Any peripherals and upgrades you buy with your PC will, wherever possible, be fully configured and tested.

Our recipe for customer satisfaction

DYNAMIC BURN-IN

A rigorous burn-in procedure repeatedly tests all key components. Only after passing this and a final QC inspection do we ship the goods.

READY TO SHIP

We endeavour to build and despatch all orders as quickly as possible. To this end, we try to maintain a buffer stock of popular configurations which can be either shipped immediately or purchased from one of our showrooms. These models are highlighted in the pricing information. Custom and other configurations are built to customer order and take a little longer, but we aim to despatch as quickly as possible. If you contact us we will give you a realistic estimate of the current delivery situation.

"Ready to ship"

NO CHARGE UNTIL SHIPMENT

If you pay by credit card, payment is not processed until the goods are shipped. Beware of suppliers who charge your credit card weeks before they ship your order!

INSTALLATION/TRAINING

We can now offer a personal installation and training option for your new Vale PC. One of our local installers will deliver the PC to your premises or home, set it up for you and include a period of familiarisation training. This option costs £50.00+vat. More in-depth training can be negotiated directly with the installer.

ON-SITE MAINTENANCE

All PCs (except the Voyager notebooks) based on the UK mainland, plus the Isle of Wight, Northern Ireland and the Republic of Ireland have the benefit of on-site maintenance for the first year, covering both parts and labour. The length of cover can be extended to 2 or 3 years if desired (see the "Options" section of each page for price details).



30 DAY MONEY BACK GUARANTEE

We are so confident that you will be delighted with your Vale PC that should you, for any reason at all, be unhappy with your purchase, we will COLLECT it and refund your money in full. You will NOT pay any carriage or restocking charges (UK mainland only).

LIFETIME WARRANTY

We also offer a lifetime warranty on labour, so if a problem arises at anytime in the future you will only pay for the parts necessary to repair it.

LIFETIME TECHNICAL SUPPORT

As an owner, you will be privileged with access to our exclusive VALE HOTLINE telephone support number. Our award winning staff are both friendly and knowledgeable and have a full individual record of your system. Lines open 9am until 5-30pm Monday to Friday, and 10am until 4pm Saturday. To further improve our support service we have now installed a bulletin board for Vale customers offering latest drivers and technical information.

NO DEPOSIT

PERSONAL FINANCE

Available with all purchases over £1000, subject to status.



Technical Support

COMPUTERWEEKLY

Best "Product knowledge of Sales Staff" - Evesham Micros Corporate Sales. This was the verdict of nearly 2000 users in the Computer Weekly / KEW Associates 'Quality of IT Suppliers 1995' survey.

In the 1993 'PC Direct HITS AWARDS' we won both "Customer Service Excellence" and "Service and Support Excellence" categories as voted by their readers. In 1994 we did it again winning the prestigious "Service Excellence" award. We are especially proud of all these accolades as they were nominated by readers who have actually dealt with our company. They also voted us their favourite supplier for several other products highlighted throughout our pages.

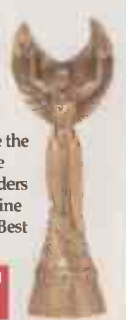


The proof of the pudding!

The readers of 'Personal Computer World' have voted us "Best Hardware Supplier". We were also runner up for "Best After Sales Service" and "Best Telephone Support".



For the last 2 years Evesham Micros have swept the board when it comes to Service Awards. Our efforts to provide the best possible service have once again been rewarded - the readers of 'Computer Shopper' magazine have voted Evesham Micros "Best Customer Liaison" for 1994.



of the best ingredients

Every component of each Vale system is meticulously selected to provide a perfect balance of high specification and value for money.

BUSINESS FINANCE

We also offer lease arrangements on selected systems to limited companies, government and educational establishments.

Designed for



WINDOWS 95

Your Vale PC will have your choice of either Windows 3.11 or Windows 95 installed at no extra cost.

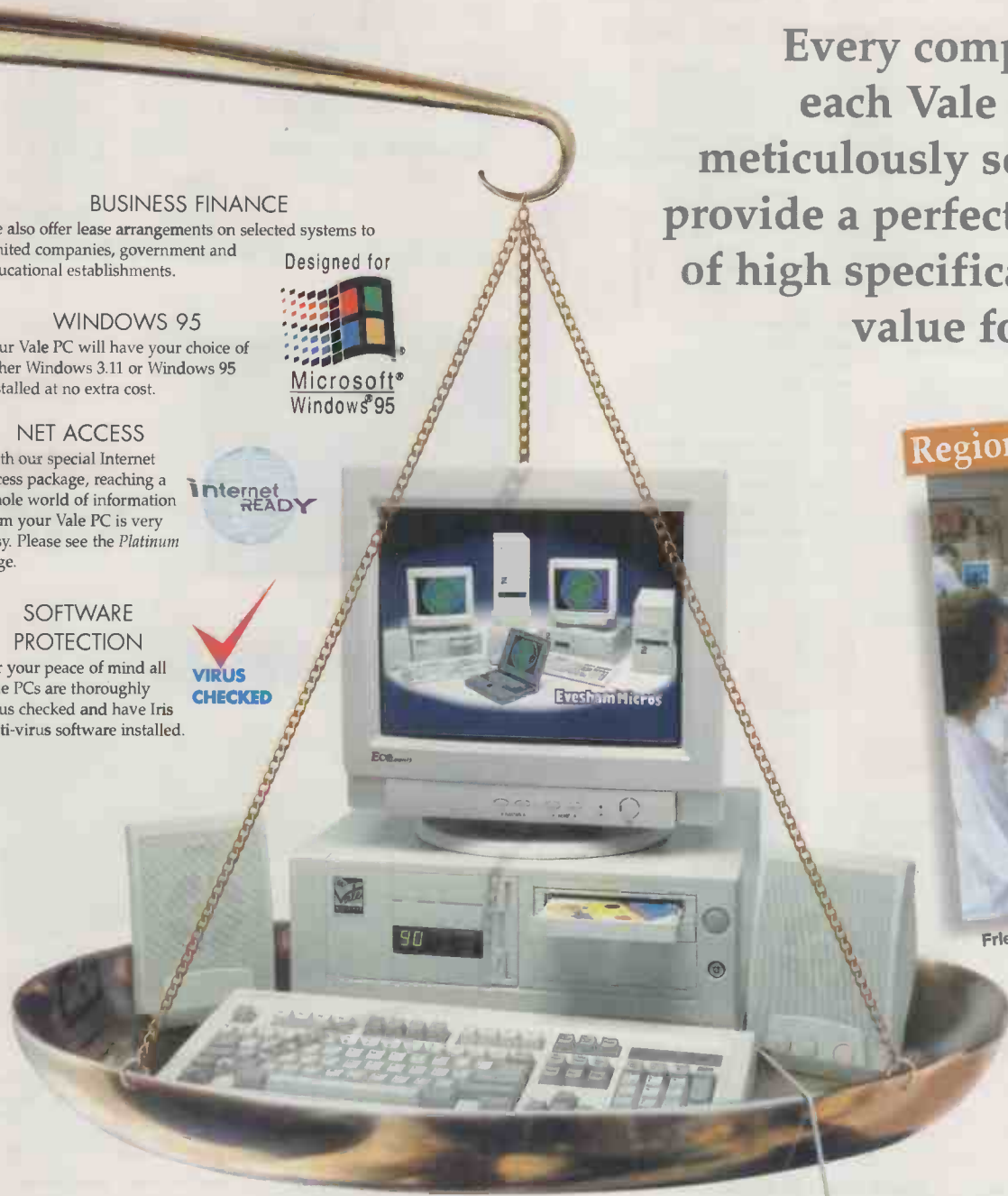
NET ACCESS

With our special Internet access package, reaching a whole world of information from your Vale PC is very easy. Please see the *Platinum* page.



SOFTWARE PROTECTION

For your peace of mind all Vale PCs are thoroughly virus checked and have Iris Anti-virus software installed.



Regional Showrooms



Friendly, informative staff in each of our showrooms at Evesham, Birmingham, Cambridge and Milton Keynes



Certificate No. FS 31710
ISO 9002 (BS5750 part 2)

'95 Reviews

the Best BUSINESS SYSTEMS

PC Direct December 1995
Vale Platinum

Computer RECOMMENDED
March 1995
Vale Premier

PC PRO
November 1995
Vale Platinum Trion

WHAT PC?
1995 PC Awards
"Best Mainstream Business PC"
Vale Prestige

BEST BUY
IN-DEPTH LABS TESTS
February 1995
Vale Platinum

The Vale PC

We offer a range of '486 desktop PCs from the modestly priced *Popular* models to the top of the range *Premier*.

PENTIUM® TECHNOLOGY
Cost effective Pentium computing is now available from the *Prestige* range. In the *Platinum* range we offer a computer optimised specifically to provide state of the art Pentium performance.

NOTEBOOKS
The *Voyager* offers a unique blend of style, performance and practicality, while the *Voyager II* brings a new

dimension to mobile computing with its Pentium processor and built-in multimedia facilities.

CORPORATE SALES, FILESERVERS AND NETWORK INSTALLATION

Evesham Micros has a proven track record of supplying some of the country's leading organisations. In addition to stand-alone PCs we specialise in the installation and support of a wide variety of network installations. Please see our "Corporate and Network Sales" section on page 7 of the advert.

EVESHAM
CAMBRIDGE
BIRMINGHAM
MILTON KEYNES

MILTON KEYNES
BIRMINGHAM
CAMBRIDGE
EVESHAM



Popular PCI

Designed for
 Each system includes your choice of Windows 3.11 or Windows 95 at no extra cost.
 Microsoft®
 Windows®95

The Vale Popular – a quality conscious computer at a budget conscious price.

Don't be fooled by the competitive price, this is NOT a cheap PC. It offers a fully implemented PCI solution with 8Mb RAM (essential for modern applications and Windows 95) and support for Plug and Play. The motherboard is a bang up to date integrated design that incorporates a fast PCI hard disk controller, a ZIF socket for processor upgrades and 256kb cache RAM coupled with the latest energy saving technology. The Vale Viewsonic 14ES monitor is non-interlaced in all modes including 1024x768. More importantly it is able to display SVGA mode (800x600) at 72Hz refresh rate which is flicker free and does so while using the

full screen area (most budget monitors shipped with low cost systems have a huge border which uses up a large percentage of total screen area). It meets the stringent MPR II safety requirements as well as surpassing the EPA Energy Star power saving standard, so you can be assured of a relaxing flicker-free display that is kind to your eyes. The 1Mb Diamond Stealth SE PCI video card bestows the Popular with astonishingly fast video performance for such a moderately priced computer (see the graph on the Platinum page).

now
8Mb
 standard

POPULAR MODELS			
486dx2+66	Standard	Media 96	Lotus Office 96
528Mb	£829+VAT	£979+VAT	£1019+VAT
1Gb	£879+VAT	£1029+VAT	£1069+VAT
486dx4+100	Standard	Media 96	Lotus Office 96
528Mb	£849+VAT	£999+VAT	£1039+VAT
1Gb	£899+VAT	£1049+VAT	£1089+VAT

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch. Multimedia models feature double speed CD-ROM drives (see below).

- ◆ Integrated motherboard with Flash BIOS
- ◆ ZIF socket for processor upgrades, including Pentium OverDrive®
- ◆ On-board fast PCI IDE hard disk controller
- ◆ 8Mb RAM (expandable to 128Mb)
- ◆ 256kb external processor cache
- ◆ 2xPCI, 1xPCI/16-bit & 3x16-bit expansion slots
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 1Mb Diamond Stealth SE PCI video card
- ◆ 14" fully non-interlaced MPR II monitor (0.28mm dot pitch)
- ◆ 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 102-key keyboard

- ◆ Includes Iris Anti-virus software (3 month license), and 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
- ◆ 30 day moneyback guarantee
- ◆ 1 year On-Site Maintenance for parts and labour
- ◆ Lifetime technical support hotline
- ◆ Lifetime labour warranty

256kb cache

POPULAR OPTIONS

- 16Mb RAM instead of standard 8Mb£180.00 +VAT
 - Fully non-interlaced 15" monitor (as Vale Platinum).....£79.00 +VAT
 - Quad speed CD-ROM drive£90.00 +VAT
 - Internal High Density 5.25" 1.2Mb Drive.....£49.00 +VAT
 - Full-tower case£50.00 +VAT
 - Installation/training service£50.00 +VAT
 - Second year on-site maintenance£69.00 +VAT
 - Second and third year on-site maintenance.....£149.00 +VAT
- PLEASE SEE THE PLATINUM PAGE FOR VALE ACCESSORIES

NO DEPOSIT PERSONAL FINANCE

Example: Popular 486DX4+100/528Mb Media 96 PC (Cash price £1173.83 inc VAT).

£41.95 inc VAT per month. No deposit. 36 monthly payments. APR 18.5%. Total payable £1510.20 inc VAT.

FULL SCREEN DISPLAY IN ALL MODES

DIAMOND
 MULTIMEDIA
Stealth SE
 1Mb video card
 See the Platinum page for details



A Vale Popular Media 96 PC

Premier PCI

Upgrade any Popular model to a top specification 486 with class beating credentials for £150+VAT. These models feature the following enhancements:

- ◆ 15" FST microprocessor controlled non-interlaced 0.28mm dot pitch monitor (as Vale Platinum)
- ◆ 2Mb Diamond Stealth 64DRAM 64-bit PCI video card
- ◆ 102-key tactile keyboard ◆ Logitech Mouse

"ready to ship" models

486dx2+66/528Mb Microsoft Media 96 PC @ £1149+VAT
 486dx2+66/528Mb Lotus Multimedia Office 96 PC @ £1189+VAT

January 1995



In a group test with PCs from Compaq, Elonex & Hewlett Packard. "Without hesitation we recommend the Vale Premier from this group." Vale Premier Media '95 PC

March 1995



"When you take into consideration the price and the one year on-site warranty, the Vale offers excellent value for money." Vale Premier

Microsoft



- ◆ Works 3 (for Windows 3.1) or Works 4 (for Windows95) – your choice
- ◆ Money 3
- ◆ Encarta 95
- ◆ Fine Artist
- ◆ Explorapedia
- ◆ Dinosaurs
- ◆ Golf
- ◆ Scenes
- ◆ Windows Entertainment Pack
- ◆ Fury 3 (trial version)



TWO GREAT MULTIMEDIA OFFERS AVAILABLE WITH ANY VALE PC:

- ◆ Like the Vale PCs they are fitted to, our multimedia kits are quality conscious! We definitely do NOT offer any old CD-ROM drive along with a so called "compatible" sound card, a pair of nasty cheap speakers and some end of line software.
- ◆ Double speed CD-ROM drives by Panasonic
- ◆ Quad speed CD-ROM drives by Panasonic/Toshiba
- ◆ Genuine Creative Labs SoundBlaster 16 sound card for great sound and total compatibility;
- ◆ ZyFi2 amplified stereo speaker system for crystal clear audio
- ◆ Choice of Microsoft Office 96 software or Lotus Multimedia Office 96.





Prestige **PCI**



The Vale Prestige – affordable Pentium® technology

The Vale Prestige is a very close relation of our multi award winning Platinum range, so it has a strong pedigree. The monitor and video card are as used in our Popular model as are the keyboard and mouse, the end result is a perfect entry level Pentium processor system that can be expanded in tune with your needs.

- ◆ Integrated motherboard with Flash BIOS
- ◆ ZIF socket for processor upgrades
- ◆ On-board fast PCI IDE hard disk controller
- ◆ 8Mb RAM (expandable to 128Mb)
- ◆ 256kb external processor cache
- ◆ 2xPCI, 1xPCI/16-bit & 3x16-bit expansion slots
- ◆ 1 EPP parallel port and 2 serial ports with 16550 UART
- ◆ 1Mb Diamond Stealth SE PCI video card
- ◆ 14" MPR II 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 Iris Anti-virus software (3 month license), and your choice of either Windows95, or MS-DOS 6.22 and Windows for Workgroups 3.11. Full manuals and disks supplied

- ◆ Mitsumi Mouse and 102-key Mitsumi keyboard
- ◆ "Introduction to Windows" manual supplied
- ◆ 30 day moneyback guarantee
- ◆ 1 year On-Site Maintenance for parts and labour
- ◆ Lifetime technical support hotline
- ◆ Lifetime labour warranty

Designed for
 Each system includes your choice of Windows 3.11 or Windows 95 at no extra cost.
 Microsoft®
 Windows®95

PRESTIGE MODELS			
PENTIUM 75 528Mb 1Gb	Standard	EDV 196	Lotus Office 96
	£969+VAT	£1179+VAT	£1219+VAT
PENTIUM 90 528Mb 1Gb	Standard	EDV 196	Lotus Office 96
	£1059+VAT	£1269+VAT	£1309+VAT
PENTIUM 120		Add £100+VAT to the price of P90 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 below).			

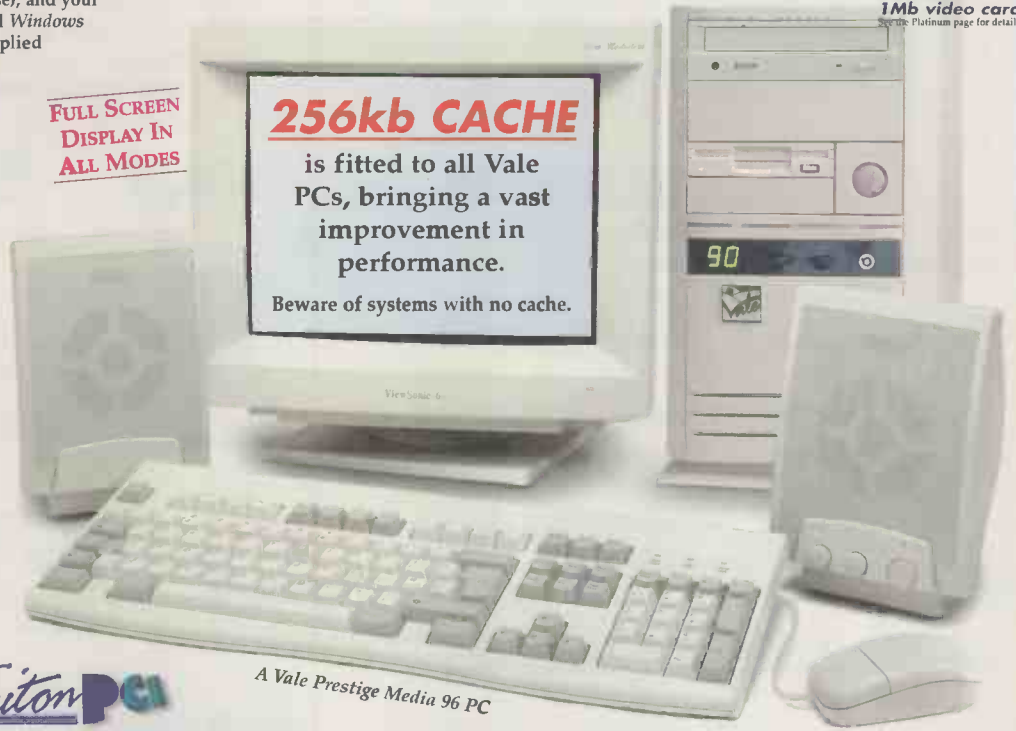
DIAMOND
 MULTIMEDIA
Stealth SE
 1Mb video card
See Platinum page for details

- ### PRESTIGE OPTIONS
- 16Mb RAM instead of standard 8Mb.....£180.00 +VAT
 - 32Mb RAM instead of standard 8Mb.....£600.00 +VAT
 - Fully non-interlaced 15" monitor (as Vale Platinum).....£79.00 +VAT
 - Quad speed CD-ROM drive.....£90.00 +VAT
 - Internal High Density 5.25" 1.2Mb Drive.....£49.00 +VAT
 - Full-tower case.....£50.00 +VAT
 - Installation/training service.....£50.00 +VAT
 - Second year on-site maintenance.....£69.00 +VAT
 - Second and third year on-site maintenance.....£149.00 +VAT
- PLEASE SEE THE PLATINUM PAGE FOR VALE ACCESSORIES

NO DEPOSIT PERSONAL FINANCE

Example: Prestige P75/528Mb Lotus Multimedia Office 96 PC
 (Cash price £1432.33 inc VAT)

£51.19 inc VAT
 per month. No deposit.
 36 monthly payments. APR 18.5%.
 Total payable £1842.84 inc VAT.



FULL SCREEN DISPLAY IN ALL MODES

256kb CACHE
 is fitted to all Vale PCs, bringing a vast improvement in performance.
 Beware of systems with no cache.

Prestige Triton **PCI**

- Just add £100+VAT to any standard Prestige model, or £50+VAT to any Prestige multimedia model.
- Prestige Triton models have all the features of the standard model, with the following enhancements:*
- ◆ Genuine Intel Advanced Endeavour motherboard
 - ◆ Intel socket 7 for processor upgrades
 - ◆ 3x PCI, 1xPCI/16-bit & 2x16-bit expansion slots
 - ◆ Support for Pipeline-Burst cache
 - ◆ Support for Extended-Data-Out (EDO) RAM
 - ◆ Support for Native Signal Processing
 - ◆ Enhanced IDE mode 4 hard disk controller and drive (528Mb mode 3)
 - ◆ Integrated sound using the Creative Labs Vibra 16 chipset



We offer a full range of multimedia packs and products, any of which can be specified with your Vale PC, see page 9 of our advert for full details. Please note that bundled software does not feature full retail packaging. When ordering double speed CD-ROM installations in Vale computers the Panasonic CR-571 enhanced IDE drive may be used.

- ◆ Lotus SmartSuite 4: 1-2-3, WordPro, Approach, Freelance Graphics, Organiser.
- ◆ Quicken 3
- ◆ CorelDraw! 4
- ◆ Sage Moneywise
- ◆ Software Toolworks Grolier Encyclopaedia for 1995 - version 7
- ◆ FIFA International Football, Supervoice, Dragon Lore, MegaRace, Theme Park
- ◆ Professor Windows, Professor Training Suite, Professor Multimedia, Typing Tutor
- ◆ Pilot Multimedia including 'Interlude' and 'Get Organized'

Includes free upgrade to SmartSuite 96 for Windows 95 when available

Lotus **MULTIMEDIA Office 96**



EVESHAM CAMBRIDGE BIRMINGHAM MILTON KEYNES

MILTON KEYNES
BIRMINGHAM
CAMBRIDGE
EVESHAM



Platinum PCI

Vale Platinum... the Editors' Choice - twice!

Six 1995 magazine accolades already - stunning success for a stunning performer.

A true giant killing act, the Vale Platinum range has already received six magazine accolades this year including the highly prestigious PC Magazine "Editors' Choice" on two occasions!! This is no mean feat; both times computers from 30 different manufacturers, including the giants of the industry, were compared and examined in minute detail. The only computer to earn the title "Editors' Choice" was the Vale Platinum. At our attractive prices there is no need to compromise.

- ◆ Pentium® processor, upgradeable via Intel socket 5
- ◆ Integrated motherboard with 2x PCI, 1xPCI/16-bit & 3x16-bit expansion slots
- ◆ Fast PCI enhanced IDE mode 4 hard disk controller and drive (528Mb mode 3)
- ◆ 256kb external CPU write-back cache
- ◆ 8Mb RAM (expandable to 128Mb)
- ◆ Support for EDO RAM ◆ Flash BIOS
- ◆ EPP and ECP capable printer port
- ◆ Two 16550 compatible UART driven high speed serial ports
- ◆ Diamond Stealth 64DRAM 2Mb 64-bit video card
- ◆ 15" FST microprocessor controlled non-interlaced monitor
- ◆ Multimedia models include a quad speed CD-ROM drive
- ◆ Full Microsoft Windows 95 'plug and play' support
- ◆ Latest Windows keyboard
- ◆ Microsoft mouse
- ◆ 3.5" 1.44Mb Floppy Disk Drive
- ◆ TÜV approved Power Supply with low noise fan
- ◆ CPU cooling fan
- ◆ EPA Energy Star compliant
- ◆ Includes *Iris Anti-virus software* (3 month license), and 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
- ◆ Choice of desktop or mini-tower case
- ◆ Full-tower case available at extra cost
- ◆ 1 year On-Site Maintenance (next working day response) for parts and labour
- ◆ Lifetime technical support hotline
- ◆ Lifetime labour warranty
- ◆ 30 day moneyback guarantee

PLATINUM MODELS			
PENTIUM 75	Standard	EDO+96	Lotus Office 96
	528Mb	£1149+VAT	£1359+VAT
	1Gb	£1199+VAT	£1449+VAT
PENTIUM 90	Standard	EDO+96	Lotus Office 96
	1Gb	£1289+VAT	£1499+VAT
	2Gb	£1479+VAT	£1729+VAT
PENTIUM 120	Standard	EDO+96	Lotus Office 96
	1Gb	£1389+VAT	£1599+VAT
	2Gb	£1579+VAT	£1829+VAT

256kb cache

PENTIUM 133 Add £130+VAT to the price of P120 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 pages 3&4).

PLATINUM OPTIONS	
Upgrade to 16Mb RAM (Platinum)	£180.00 +VAT
Upgrade to 32Mb RAM (Platinum)	£600.00 +VAT
Upgrade to 32Mb EDO RAM (Triton)	£440.00 +VAT
Upgrade to 512kb Pipeline-Burst cache (Triton)	£90.00 +VAT
1Gb SCSI hard disk instead of 1Gb IDE	£229.00 +VAT
2Gb SCSI hard disk instead of 2Gb IDE	£430.00 +VAT
Upgrade to Diamond Stealth 64VideoRAM card (2Mb)	£65.00 +VAT
Stealth 64VideoRAM upgrade to 4Mb	£130.00 +VAT
Diamond Motion Video Player accessory for Stealth 64VideoRAM (gives MPEG decoding and includes upgrade to 4Mb)	£249.00 +VAT
Quad speed CD-ROM drive	£90.00 +VAT
Internal high density 5.25" 1.2Mb Drive	£49.00 +VAT
Full-Tower case	£50.00 +VAT
Installation/training service	£50.00 +VAT
Second year on-site maintenance	£69.00 +VAT
Second and third year on-site maintenance	£149.00 +VAT

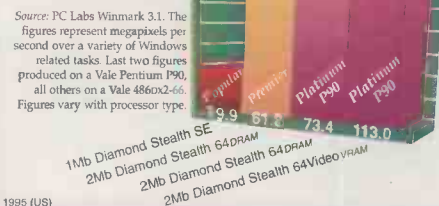
Why Diamond Video Cards ?

The highly acclaimed Stealth range has won many press accolades including the coveted PC Magazine "Editors Choice". Now a new range of stealth cards is available, giving a wide choice of graphics performance. 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. Remember that Diamond are continually striving to optimise the performance and compatibility of their video cards; and you therefore have the assurance that driver support is ongoing.

STEALTH SE (Vale Popular and Prestige). The latest addition to the range continues the tradition of delivering the best price/performance available. It displays 24-bit True Colour at 640x480.

STEALTH 64DRAM (Vale Premier and Platinum). The Stealth 64DRAM is the world's fastest DRAM accelerator. Its S3 Vision864 controller setting a new standard in affordable 64-bit graphics performance. Supplied with full AutoCAD drivers.

STEALTH 64VideoRAM (Vale Platinum Triton P120/133). The new Stealth 64VideoRAM is the ultimate graphics and video accelerator. It is supplied with full AutoCAD drivers and its 2Mb high speed VRAM can be expanded to 4Mb, giving 24-bit colour at 1280x1024! It has driver support for all popular video formats, including MPEG - you can scale video playback up to full screen, or view video clips in full motion (up to 30 fps). The optional Motion Video Player accessory provides hardware MPEG decoding, allowing full-screen full-motion video, as well as accepting video input from camcorder, VCR, laserdisk etc.



To get these...



"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." *January 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" *May 1995 Vale Platinum P90*



"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*

...you need these

A high performance system that is a pleasure to use demands the finest components. We carefully select from the established leaders in their field:



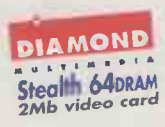
Motherboard

Micro-Star International Motherboard



Monitor

The Vale EcoScan 15 that is supplied with the Premier 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.

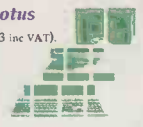


NO DEPOSIT PERSONAL FINANCE

Example: Buy the Platinum P90/1Gb Lotus Multimedia Office 96 PC (Cash price £1808.33 inc VAT).

£64.62 inc VAT per month.

No deposit. 36 monthly payments. APR 18.5%. Total payable £2326.32 inc VAT.



- 15" Idek iiyama SVGA colour (up to 65kHz scan, 1280x1024 max)£50.00 +VAT
- 17" Vale EcoScan17 SVGA colour - illustrated (up to 65kHz scan, 1280x1024 max)£200.00 +VAT
- 17" Idek iiyama Vision Master SVGA colour PC Magazine "Editors Choice" April 1995.....£320.00 +VAT
- 20" Tatung SVGA.....£699.00 +VAT
- 21" Idek iiyama SVGA colour (up to 92kHz scan, 1600x1200 max)£1050.00 +VAT



Platinum Triton PCI

Vale Platinum Triton: The Hyper-performance Pentium® family

Intel's new Triton chipset unleashes the full potential of the Pentium processor family. Their engineers have been able to introduce several new technical advances that other manufacturers are currently unable to offer. In order to capitalise on these benefits and offer the ultimate quality we are using Intel's own Advanced Endeavour motherboard. The performance advantage achieved by fitting the latest high speed EDO-RAM and Pipeline-Burst Cache is very significant, as demonstrated in the accompanying graphs. As with every Vale computer we have paid great attention to detail in component selection, convincing us that Pound for Pound we doubt it is possible to build a better PC.



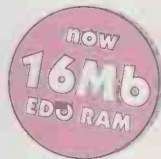
"The Platinum took the top spot in our performance tests. The Diamond Stealth video system had a chance to show its true colours...Not only is the Platinum a top class machine, it's also good value for money." February 1995
Vale Platinum P90



January 1995
Vale Platinum P90 Media 95 PC



"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



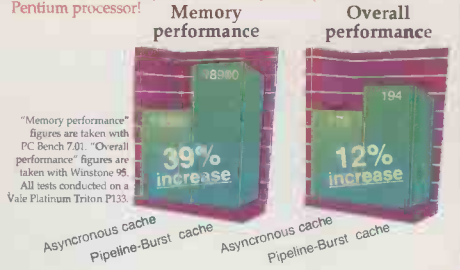
The Platinum Triton offers the following enhancements over the award winning standard model:

- ◆ Genuine Intel Advanced Endeavour motherboard manufactured in Europe
- ◆ Intel socket 7 for processor upgrades
- ◆ 3x PCI, 1xPCI/16-bit & 2x16-bit expansion slots
- ◆ 256k Pipeline-Burst cache
- ◆ 16Mb Extended-Data-Out (EDO) RAM
- ◆ Support for Native Signal Processing
- ◆ Enhanced IDE mode 4 hard disk controller and drive
- ◆ Integrated sound using the Creative Labs Vibra 16 chipset
- ◆ P120 & P133 models are fitted with Diamond Stealth 64VideoRAM 2Mb 64-bit video card



THE CASE FOR PIPELINE-BURST CACHE:

The most significant performance improvement since the Pentium processor!



Designed for



Microsoft Windows 95

Each system includes your choice of Windows 3.11 or Windows 95 at no extra cost.



"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

...and our legendary reputation for **SERVICE & SUPPORT**

BUSINESS FINANCE

Example: Lease the Platinum Triton P120/1Gb Lotus Multimedia Office 95 PC for

£68.64+VAT per month.
3 year term, payable quarterly.



Pentium P90 processor
Intel Triton chipset
16-bit sound
16Mb EDO RAM
1Gb mode 4 IDE hard disk
256kb Pipeline-Burst cache
£1599+VAT

A Vale Platinum Triton PC with optional CD-ROM drive

PLATINUMTRITON MODELS

PENTIUM 90	Standard	Office 95	Lotus Office 95
1Gb	£1599+VAT	£1749+VAT	£1789+VAT
2Gb	£1789+VAT	£1939+VAT	£1979+VAT
PENTIUM 120	Standard	Office 95	Lotus Office 95
1Gb	£1749+VAT	£1899+VAT	£1939+VAT
2Gb	£1939+VAT	£2089+VAT	£2129+VAT

PENTIUM 133 Add £130+VAT to the price of P120 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 pages 3&4).

Vale PC Accessories

INTERNET ACCESS

This package is the affordable way to enhance your PC with communications ability. Send and receive faxes, and access online information services and the Internet. Apart from your PC and a phone socket, everything you need is included:

- Pace FAX/modem: either MobiFax 144 (V32bis: 14400bps) or Linnet 34fx (V34bis: 28800bps modem, 14400bps FAX)
- Software to access Internet facilities
- 21 days free subscription to an internet service provider
- "The Net" guide book
- FAX software

V32bis package£90+VAT
V34bis package£195+VAT



TAPE STREAMER BACKUP

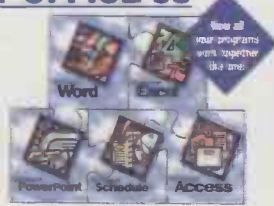
Regular backups are essential to ensure the safety of your data; why not take the advantage of having a tape streamer fitted into your Vale? It is more economical than using multiple floppy disks, as well as being faster and far more convenient. Quoted capacities are with compression software (supplied). All units are supplied with full backup software.

IOmega 800Mb£129+VAT
IOmega 3.2Gb£225+VAT
Tapes for above£29 + VAT



MICROSOFT OFFICE 95

- ◆ MS Word
- ◆ MS Excel
- ◆ MS Schedule+
- ◆ MS Powerpoint
- ◆ MS Access (Office professional only)



Special offer with any Vale PC:
OFFICE 95 STANDARD £179+VAT
OFFICE 95 PROFESSIONAL £249+VAT

EVESHAM CAMBRIDGE BIRMINGHAM MILTON KEYNES

MILTON KEYNES
BIRMINGHAM
CAMBRIDGE
EVESHAM



Voyager



"It's toughness, excellent performance and good display make it a machine that we must honour with the PC Today best buy award."
Vale Voyager 486dx2•66
Dual Scan Colour

The Vale Voyager, with its flexibility, Windows performance and sound capabilities, is one of the most powerful and stylish notebooks on the market.
Its completely modular construction enables it to be tailored to the user's exact needs, now and in the future.

Scan Colour display
Offers TFT at sensib. cost.



A Vale Voyager with the supplied carrying pouch

BUILT-IN AUDIO

The Voyager has a 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. With this audio performance, the addition of a CD-ROM drive makes the Voyager truly 'Multimedia ready'.

3.5" FLOPPY DRIVE

Designed for Each system includes your choice of Windows 3.11 or Windows 95 Microsoft® at no extra cost. Windows®95

VOYAGER

EXPANSION PORTS

All Voyagers have two 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.

QUALITY & STYLE

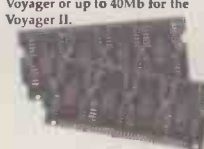
Voyager notebooks measure 286 x 226mm. The Voyager is just 34mm thick and weighs 2.4kg (mono model), while the Voyager II colour models are 49mm and 2.9kg. The quality of fit and finish is amongst the best we have ever seen.

WARRANTY

Voyagers feature 12 months 'return to base' warranty covering parts, with a lifetime warranty on labour.

RAM UPGRADES

Make the most of the power of your notebook by specifying extra RAM - up to 20Mb for the Voyager or up to 40Mb for the Voyager II.



PCMCIA MODEMS

A FAX/modem is the gateway to a world of communications, whether sending and receiving faxes or connecting to the internet information superhighway.



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 video. 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. The motherboard is CPU upgradeable, supporting any 486 up to the DX4-100. 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

A 19mm ergonomically designed trackball is built-in. The surrounding surface makes for a comfortable hand rest whilst typing.

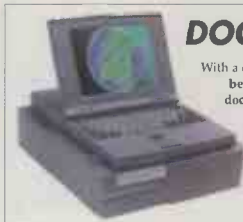
BATTERY

VOYAGER OPTIONS

- Additional primary NiMH battery£89+VAT
- Upgrade from 4Mb to 8Mb RAM£169+VAT
- Upgrade from 4Mb to 12Mb RAM£299+VAT
- Upgrade from 4Mb to 20Mb RAM£499+VAT
- Docking station£349+VAT
- Cigar lighter adaptor£49+VAT
- Additional PSU£49+VAT

DOCKING STATION

With a docking station on your desk the Voyager becomes a true "desktop replacement". The docking station 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.



Monochrome

	250MB	528MB
486dx2•66	£899+VAT	£999+VAT
486dx4•100	£949+VAT	£1049+VAT

Dual Scan Colour

	250MB	528MB
486dx2•66	£1249+VAT	£1349+VAT
486dx4•100	£1299+VAT	£1399+VAT

TFT Colour

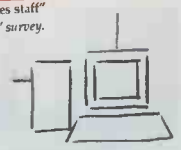
	250MB	528MB
486dx2•66	£1499+VAT	£1599+VAT
486dx4•100	£1549+VAT	£1649+VAT

Corporate and Network Sales



Established for over 12 years, Evesham Micros has gained consistent industry recognition for its quality of product and service and has a proven track record of supplying some of the country's leading organisations - a wide spectrum of businesses, government bodies and educational establishments. Each of our branches have dedicated account managers ready to support all your I.T. needs; indeed they have been awarded best "Product knowledge of Sales Staff" by nearly 2000 users in the Computer Weekly/KEW Associates 'Quality of IT Suppliers 1995' survey. Whether your needs are large or small, they are ready to discuss your requirements and advise on the ideal solution - we can offer PCs for Windows applications or CAD/CAM, right through to complete network solutions. We are able to react quickly to the market, therefore we can offer your company the latest technology at competitive prices.

COMPUTER WEEKLY
Best "Product knowledge of sales staff"
in "Quality of IT Suppliers 1995" survey.



Network Solutions

Whatever your networking requirement, we can provide the complete solution. From a simple two user peer to peer system to a Wide Area Network, we can install and support the entire installation - from initial concept to user training. All our installations are supervised by a Novell Certified Network Engineer, thus assuring our clients of the very best in networking expertise. Why not contact our Corporate Sales staff at your nearest Evesham Micros branch to discuss your requirements.



5 Station Solution



- 1 Fileserver:**
 - ◆ Vale Pentium P90 Fileserver (as right)
- 4 Workstations:**
 - ◆ 4x Vale Popular 486dx2•66
 - ◆ 528Mb hard disk
 - ◆ Ethernet card suitable for 10Base2 or 10BaseT

We fully appreciate that no two network requirements are exactly the same. While the above is an example of one of our solutions, we will be delighted to quote for your individual needs.

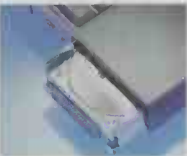


Voyager II PCI

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.



Removable battery.



Upgradeable hard disk.

DISPLAY

The Voyager II has a high quality 10.2" LCD display, with a choice of Dual Scan colour or TFT colour. The display driver is a 32 bit PCI bus Windows accelerator with 1Mb DRAM. A port is provided for connection to an external monitor, with up to 1024 x 768 resolution.

CPU, CACHE & RAM

Designed to use 3.3V Pentium processors 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 40Mb.

HARD DISK

The enhanced IDE hard disk is driven by a PCI local bus controller, and can be removed for upgrading.



A Vale Voyager II with optional CD-ROM drive installed.



Multimedia Ready

BUILT-IN AUDIO

The Voyager II really is multimedia ready. It has a 16 bit stereo sound card built in, together with stereo speakers. This can easily be expanded via the jacks for external speakers and microphones.

3.5" FLOPPY DRIVE

The built in floppy drive slides out to allow fitment of the optional CD-ROM drive.

CD-ROM DRIVE

The optional double speed CD-ROM drive replaces the floppy drive to make the Voyager II a self contained multimedia workstation. An external floppy drive is available for simultaneous use with the CD-ROM drive.

POINTPAD™

The built in Pointpad™, with palm rest, controls the cursor effortlessly and accurately.

FEATURES

KEYBOARD

Voyagers use full function 86-key keyboards. Unlike many notebooks, they have a good solid feel.

BATTERY

Voyagers use NiMH batteries for fast recharging and long life: up to 3-4 hours use with the Voyager 486dx2-66 mono model, and 2 hours with the Voyager II colour models. They 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.

DOS & WINDOWS

Voyagers are supplied with your choice of either Windows95, or MS-DOS 6.22 and Windows 3.11, installed and ready to run.

ACCESSORIES

PCMCIA V34 bis FAX/Modem.....	£199 ^{+VAT}
PCMCIA Ethernet card.....	£139 ^{+VAT}
External keyboard.....	£29 ^{+VAT}
Soundplus speakers/microphone/earphones system.....	£19 ^{+VAT}
ZyFi2 amplified speakers.....	£29 ^{+VAT}
Total care warranty.....	£see panel

Dual Scan Colour

	528MB	1GB
Pentium P75	£1699 ^{+VAT}	£1999 ^{+VAT}
Pentium P90	£1789 ^{+VAT}	£2089 ^{+VAT}

TFT Colour

	528MB	1GB
Pentium P75	£1899 ^{+VAT}	£2199 ^{+VAT}
Pentium P90	£1989 ^{+VAT}	£2289 ^{+VAT}

VOYAGER II OPTIONS

Internal double speed CD-ROM drive.....	£179 ^{+VAT}
External 3.5" floppy drive (parallel port).....	£69 ^{+VAT}
Additional primary NiMH battery.....	£59 ^{+VAT}
Upgrade from 8Mb to 16Mb RAM.....	£299 ^{+VAT}
Upgrade from 8Mb to 24Mb RAM.....	£499 ^{+VAT}
Cigar lighter adaptor.....	£49 ^{+VAT}
Additional PSU.....	£49 ^{+VAT}

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, £112.38^{+VAT} for the 486dx2-66/250Mb mono model.

NOTEBOOK CARRYING CASES

VALE Carry Case £30.00^{+VAT}

A neat, compact padded case with carrying handle and detachable shoulder strap. Ideal for protecting your Voyager "out in the field".



SOLIDEX® PERFORMANCE

SystemTraveler II™ £49.00^{+VAT}

SystemTraveler II™ is the complete luggage carrier for the modern business traveller.

- Thickly padded to protect your equipment
- Luggage compartment (15.5"x11"x4")
- Printer compartment (13"x9"x2.25")
- Notebook compartment (15.5"x11"x2")
- Cellular phone pocket
- Document compartments
- Holders for diskettes, pens, business cards etc.



The Vale Fileserver

This is just an example of the type of fileserver we can supply. We will be happy to quote for your individual requirements.

- ♦ Intel Advanced Endeavour motherboard with Triton chipset
- ♦ 90MHz Pentium® processor
- ♦ 1Gb SCSI hard disk with PCI controller
- ♦ 16Mb EDO RAM
- ♦ 512kb Pipeline-Burst cache
- ♦ 1Mb PCI video
- ♦ 14" SVGA monitor
- ♦ 32-bit PCI ethernet card

With the full-tower case (see first page):

£1949^{+VAT}

With the purpose designed case (illustrated) featuring redundant PSU system:

£2249^{+VAT}

UPGRADES ARE AVAILABLE FOR PROCESSOR, HARD DISK, RAM, DAT INSTALLATION, CD-ROM ETC. PLEASE CALL FOR DETAILS.



A Vale Fileserver with the purpose designed case.



Vale Advanced NT Fileserver

Microsoft NT Advanced Server provides a highly secure environment for networks with workstations running Windows 3.x or Windows 95. The Vale Advanced NT Fileserver is designed to provide a complete solution for those moving to this operating system.

- ♦ Intel Advanced Endeavour motherboard with Triton chipset
- ♦ 133MHz Pentium® processor
- ♦ 2Gb SCSI hard disk with Adaptec 2940 PCI controller
- ♦ 32Mb EDO RAM
- ♦ 512kb Pipeline-Burst cache
- ♦ 1Mb PCI video
- ♦ 14" SVGA monitor
- ♦ 32-bit PCI ethernet card
- ♦ Quad speed CD-ROM drive
- ♦ Microsoft NT Advanced Server software

With the full-tower case:

£3999^{+VAT}

With the dedicated fileserver case:

£4299^{+VAT}

BUSINESS FINANCE

We offer very flexible leasing agreements to limited companies, government and educational establishments. For example: Lease the Vale Fileserver (standard case)

for **£68.99^{+VAT}** per month.

3 year term, payable quarterly. Full written details are available on request.



MILTON KEYNES
BIRMINGHAM
CAMBRIDGE
EVESHAM

TWO GREAT MULTIMEDIA BUNDLES

OFFERED WITH A VARIETY OF PACKS

Microsoft



- ◆ Works 3 (for Windows 3.1) or Works 4 (for Windows 95) - Your choice, please specify which
- ◆ Money 3
- ◆ Encarta 95
- ◆ Fine Artist
- ◆ Explorapedia
- ◆ Dinosaurs
- ◆ Golf
- ◆ Scenes
- ◆ Fury 3 (trial version)
- ◆ Windows Entertainment Pack



Upgrade speakers in any pack to ZyFi 2 PROs for a surcharge of £20+VAT.

Lotus Office 96

Lotus Suite:

- Lotus 1-2-3
- Lotus Word Pro
- Lotus Approach
- Lotus Freelance Graphics
- Lotus Organizer

Productivity Software:

- Quicken 3, CorelDraw! 4, Sage Moneywise

Top Games Titles:

- Supervoice, Dragon Lore, MegaRace, Theme Park, FIFA International Soccer

Grolier Encyclopaedia:

- Software Toolworks Grolier Encyclopaedia for 1995 - version 7

Plus: Professor Windows, Professor Training Suite, Professor Multimedia; Typing Tutor; Pilot Multimedia including 'Interlude' and 'Get Organized'

Includes free upgrade to SmartSuite 96 for Windows 95 when available



See the CD-ROM drives (below and right) for details of the complete packs. When ordering please quote pack number. We recommend a minimum 486sx33 system 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.

PANASONIC DOUBLE SPEED CD-ROM DRIVE



CR-562/563 Double Speed, multi-session drive
limited offer at only
£39.00+VAT

Includes cables and driver software

- Double speed 300kb/sec data transfer rate
- Multi-session mechanism - compatible with Kodak Photo CD Standard
- Motorised loading tray - no need for a caddy
- High speed 320ms access
- White book (CDi) compatible for video CDs
- MPC compatible ○ Mounts in 5.25" drive bay
- Output from audio CDs via headphone socket
- Requires SoundBlaster or compatible card with Panasonic CD interface

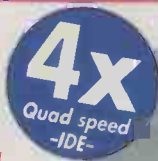
- 1E** £49.00 +VAT CR-562/3 with AT-bus driver card
- 1F** £75.00 +VAT CR-562/3 bundled with Soundplus 16 card
- 1B** £90.00 +VAT CR-562/3 with genuine SoundBlaster 16 card

- 7C** £136.00 +VAT CR-562/3 with Media 96 pack, ZyFi 2 speakers and Soundplus 16 card
- 7A** £150.00 +VAT CR-562/3 with Media 96 pack, ZyFi 2 speakers & genuine SoundBlaster 16

- 9C** £176.00 +VAT CR-562/3 + Lotus Multimedia Office 96, ZyFi 2 speakers and Soundplus 16
- 9A** £190.00 +VAT CR-562/3 + Lotus Multimedia, ZyFi 2 speakers & genuine SoundBlaster 16

TOSHIBA QUAD SPEED IDE CD-ROM DRIVE

TOSHIBA XM-5302B ENHANCED IDE DRIVE



WHY SETTLE FOR LESS!!

With 4x speed and the latest enhanced IDE interface this drive has the performance to cope with the most demanding multimedia applications.



"The Vale Pentium's Toshiba XM-5302B ATAPI CD-ROM drive is among the fastest and most modern you can buy". PC Magazine May 1995

- Enhanced IDE ATAPI interface
- Quad speed 600kb/sec sustained data transfer rate
- Super fast 190ms access
- Output from audio CDs via headphone socket
- Multi-session drive - compatible with Kodak Photo CD
- MPC and White Book (CDi) compatible

- 4A** £145.00 +VAT XM-5302B with genuine SoundBlaster 16 card
- 4B** £210.00 +VAT XM-5302B with genuine SoundBlaster AWE32 value
- 4C** £275.00 +VAT XM-5302B with genuine SoundBlaster AWE32

- 5A** £210.00 +VAT XM-5302B with Media 96 pack, ZyFi 2 speakers and SoundBlaster 16 card
- 5B** £275.00 +VAT XM-5302B with Media 96 pack, ZyFi 2s and SoundBlaster AWE32 value
- 5C** £340.00 +VAT XM-5302B with Media 96 pack, ZyFi 2s and SoundBlaster AWE32

- 6A** £250.00 +VAT XM-5302B with Lotus Multimedia Office 96, ZyFi 2s and S/Blaster 16
- 6B** £315.00 +VAT XM-5302B with Lotus Multimedia Office 96, ZyFi 2s and AWE32 value
- 6C** £380.00 +VAT XM-5302B with Lotus Multimedia Office 96, ZyFi 2s and AWE32

SPECIAL OFFER! - LIMITED STOCKS

"Software Toolworks Grolier Encyclopaedia for 1994 - Version 6" with any of our multimedia packs for only... **£10+VAT**

TEAC SIX SPEED IDE CD-ROM DRIVE

6X speed - for only £169+VAT!

You can now afford the performance you have been dreaming about.

- 8A** £169.00+VAT
CD-56E with AT-Bus driver card
- 8B** £209.00+VAT
CD-56E with genuine SoundBlaster 16 card
- 8C** £274.00+VAT
CD-56E with genuine SoundBlaster AWE32 value
- 8D** £339.00+VAT
CD-56E with genuine SoundBlaster AWE32

Microsoft



- 11A** £270.00+VAT
CD-56E with Media 96 pack, ZyFi2 speakers and genuine SB 16 card
- 11B** £335.00+VAT
CD-56E with Media 96 pack, ZyFi2s and SoundBlaster AWE32 value
- 11C** £400.00+VAT
CD-56E with Media 96 pack, ZyFi2s and SoundBlaster AWE32



December 1995

- Enhanced IDE ATAPI Interface
- Six speed 900kb/sec sustained data transfer rate
- Super fast 139ms access
- Plug and Play compliant
- Output from audio CDs via headphone socket
- Multi-session drive - compatible with Kodak Photo CD
- MPC and White Book (CDi) compatible

Lotus Office 96

- 10A** £310.00+VAT
CD-56E + Lotus Multimedia Office 96, ZyFi2s and genuine S/Blaster 16
- 10B** £375.00+VAT
CD-56E + Lotus Multimedia Office 96, ZyFi2s and S/Blaster AWE32 value
- 10C** £440.00+VAT
CD-56E + Lotus Multimedia Office 96, ZyFi2s and S/Blaster AWE32



Suncom Technologies 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.



SPECIAL OFFER
Includes F15 III on CD

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 on-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 foot 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.



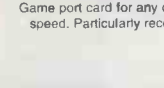
PRO PEDALS £75.00+VAT

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 2000 £12.50+VAT

Game port card for any of these joysticks and yokes. Works with any clock speed. Particularly recommended for 486dx2-66 and Pentium systems.



CREATIVE CREATIVE LABS, INC.

- SoundBlaster 16 Value pack £67.00+VAT
with IDE CD-ROM interface
- SoundBlaster 16 MCD card £99.00+VAT
with Panasonic/Sony/Mitsumi CD-ROM interfaces
- SoundBlaster AWE32 Value card £112.00+VAT
Integrated design combining SB16 with WaveBlaster, bringing the power of Advanced WaveEffects Synthesis. Has IDE CD-ROM interface and 512kb RAM (not upgradeable) for sampling.



- SoundBlaster AWE32 card £169.00+VAT
As above but with Advanced Signal Processing chip, and 512kb RAM (upgradeable to 512Mb with SIMMs).
- MIDI Kit £59.00+VAT
- VideoBlaster SE £189.00+VAT
The ultimate in video versatility for multimedia computing.
- TV Coder £129.00+VAT
VGA to Video encoder. Transfer your PC creations and manipulations back to video.

PC SOUND PACKS

SOUNDPLUS 16 CARD

Incredible value...£39.99+VAT

A 16-bit stereo sound card, compatible with the SoundBlaster and SoundBlaster Pro, as well as the Windows Sound System, MPU-401 and AdLib standards. It provides CD-ROM interfaces for Panasonic, Sony, Mitsumi and IDE CD-ROM drives, has a MIDI interface/joystick port, and also interfaces for microphone, speakers, audio in/out, and wave table synthesizer. The high specification includes 48kHz stereo sampling rate, a 20 voice FM music synthesizer, and a 4 Watt per channel stereo power amplifier.

- 3H** £74.99+VAT
Soundplus 16 with QS-123 joystick, ZyFi2 speakers and Monkey Island 2

Upgrade to ZyFi2 PROs for a supplement of £20+VAT.

ZYFI COMPACT

Experience great audio reproduction from your PC Sound Card with ZY-Fi Compact Speakers - 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
- 3" Full Range Cone
- Magnetically Shielded
- Volume Control
- Bass Booster
- Treble Booster



Only £12.00+VAT



ZYFI 2 SPEAKERS

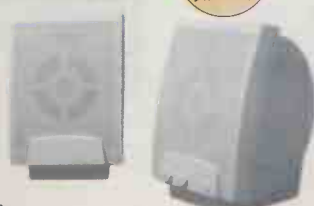
THE NEW ZYFI 2 ACTIVE POWER AMPLIFIED STEREO SPEAKERS OFFER THE VERY BEST IN SOUND REPRODUCTION - IDEAL FOR ALL SOUND CARDS AND MULTIMEDIA SYSTEMS!

Feature built-in power amplifier with separate L/R volume controls and tone control. Magnetically shielded.



March 1995

"Sound quality is splendid and a great improvement over the originals - stereo comes across well and the sound is crisp. You can get a fair amount of bass too... ZyFi2s are definitely a sound investment."



Only £29.00+VAT



ZYFI 2 PRO SPEAKERS

The latest addition to the serious multimedia system must be our ZYFI 2 PRO Active speaker system.

With a PMPO of 60 Watts per channel and an amplifier with a true 18 Watts RMS per channel rating, the PROs deliver a rich dynamic sound. They feature separate volume, bass and treble controls, and are magnetically shielded. Speaker size 14x23x15cm.



March 1995 "If you've invested in a decent sound card, then you've got to get some serious amplification to do it justice, and these are the boys to add a bit of oomph to your PC, especially if you plan to play some audio CDs or are serious about games."

PC Zone, April 1995: Rating 9/10. "Excellent value for money."



Only £49.00+VAT



EVESHAM CAMBRIDGE BIRMINGHAM MILTON KEYNES

MILTON KEYNES
BIRMINGHAM
CAMBRIDGE
EVESHAM

UPGRADES & ACCESSORIES

PROCESSORS



- 486dx2-66£39.00+VAT
- 486dx4-100£89.00+VAT
- Motherboard support for 3.3V required.
- Pentium P75£130.00+VAT
- Pentium P90£210.00+VAT
- Pentium P120£310.00+VAT
- Pentium P133£440.00+VAT
- Heatsink and fan recommended for all above processors.
- CPU Heatsink£3.00+VAT
- 486 fan & heatsink£10.00+VAT
- Pentium fan & h/sink£9.00+VAT

MEMORY SIMMS

- 1Mb 30-pin SIMM (3 chip) 70ns£34.00+VAT
- 4Mb 30-pin SIMM (3 chip) 70ns£135.00+VAT
- 4Mb 72-pin SIMM 70ns 32-bit£105.00+VAT
- 8Mb 72-pin SIMM 70ns 32-bit£205.00+VAT
- 16Mb 72-pin SIMM 70ns 32-bit£360.00+VAT
- EDO RAM: 4Mb 72-pin SIMM 70ns 32-bit£125.00+VAT
- EDO RAM: 8Mb 72-pin SIMM 70ns 32-bit£215.00+VAT
- EDO RAM: 16Mb 72-pin SIMM 70ns 32-bit£440.00+VAT



PCI MOTHERBOARDS



SPECIAL PRICES

Our bulk purchase of motherboards allows us to offer you these special prices...

486 UP TO DX4-100 (TYPE 7)£85.00+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£119.00+VAT

Type 7 board with 486dx4+100 processor£169.00+VAT

NB - all board + CPU offers include heatsink and fan.

Pentium (TYPE 6)£139.00+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 • Accepts 72-pin SIMMs.

Type 6 board with P75 processor£265.00+VAT

Type 6 board with P90 processor£345.00+VAT

Type 6 board with P120 processor£445.00+VAT

NB - all board + CPU offers include heatsink and fan.

Triton FOR PENTIUM CPUs (TYPE 8)£219.00+VAT

- Intel Advanced Endeavour board with Triton chipset • 3xPCI local bus slots • 1xPCI/ISA bus slot • 2xISA slots • ZIF socket
- 256kb Asynchronous 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.

Upgrade to 256k Pipeline-Burst cache£50.00+VAT

Upgrade to 512k Pipeline-Burst cache£140.00+VAT

Type 8 board with P90 processor£425.00+VAT

Type 8 board with P120 processor£525.00+VAT

Type 8 board with P133 processor£655.00+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

EcoScan15 ..£249+VAT EcoScan17 ..£449+VAT

Viewsonic 14ES 14" Colour£180+VAT

0.28mm dot pitch • 1024x768 max non-interlaced • 800x600 @ 72Hz refresh • EPA Energy Star compliant

Idek iiyama 15" Colour£279+VAT

0.26mm dot pitch • 1280x1024 max • Up to 65KHz horiz. scan • 1024x768 @ 75Hz refresh • MPRII and EPA compliant

Idek iiyama 17" Colour£549+VAT

0.28mm dot pitch • 1600x1200 max • Up to 86KHz horiz. scan • 1280x1024 @ 74Hz refresh • MPRII and EPA compliant

Idek iiyama 21" Colour£1279+VAT

1600x1200 max • Up to 92KHz horiz. scan • 1280x1024 @ 72Hz refresh • MPRII and EPA compliant

Tatung 20" Colour£899+VAT

1280x1024 max. res (non-interlaced) • 0.31mm dot pitch • Auto 29-65KHz horiz. scan

Hard Disks

COST EFFECTIVE MASS STORAGE



Optional installation kit (5.25" mounting bracket kit plus cables)£10.00+VAT

SEAGATE DRIVE MECHANISMS:

- 107Mb (IDE)£59.00+VAT
- 130Mb (IDE)£69.00+VAT
- 170Mb (IDE)£79.00+VAT
- 260Mb (IDE)£89.00+VAT
- 450Mb (IDE)£99.00+VAT
- ST3660A (IDE) 528Mb£115.00+VAT
- ST31220A (IDE) 1Gb£169.00+VAT
- ST31230N (SCSI) 1Gb£299.00+VAT
- ST32430N (SCSI) 2Gb£679.00+VAT

HD CONTROLLER CARDS



PROMISE CACHING HARD DISK CONTROLLERS

- DC99M (ISA bus) c/w 512kb RAM (upgradeable to 8.5Mb)£39.00+VAT
- DC4030 (VL bus) c/w 0kb RAM (upgradeable to 16Mb)£69.00+VAT
- DC4030 (VL bus) c/w 2Mb RAM (upgradeable to 16Mb)£119.00+VAT

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 VL Bus (1Mb)£78.00+VAT
- Diamond Stealth SE PCI Bus (1Mb)£74.00+VAT
- Diamond Stealth 64DRAM PCI Bus (2Mb)£125.00+VAT
- Diamond Stealth 64VideoVRAM VL Bus (2Mb)£194.00+VAT
- Diamond Stealth 64VideoVRAM PCI Bus (2Mb)£190.00+VAT
- Upgrade to 4Mb for Stealth 64VideoVRAM£130.00+VAT
- Diamond MVP accessory for Stealth 64Video, gives MPEG decoding and upgrade to 4Mb VRAM£249.00+VAT

TAPE BACKUP MEGA ZIP DISK DRIVE

ditto™ 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 Lanstactic 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
Iomega Tape250 Parallel Port Unit



800Mb Internal unit£129+VAT
Parallel port unit£149+VAT
Tape for ditto 800Mb£29.00 +VAT

3.2Gb Internal unit£225+VAT
Parallel port unit£295+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.

SZIP DISK DRIVE ONLY £149.99+VAT
100Mb Zip disk£16.95 +VAT

NETWORK PRODUCTS



Reliability is the key to network installations – you cannot afford to make compromises. We offer top quality branded products at an affordable price.

We are NOVELL Authorised Resellers. Please contact us regarding your specific networking requirements.

Instant PCMCIA Ethernet

PCMCIA NETWORKING HEADACHES?

Solve all your problems with this revolutionary new adapter.



- Hassle free automatic installation - just plug it in, type NDCGO, and you have instant Ethernet
- 10BaseT and 10Base2 ports
- 10Mbps, 16-bit

ONLY £139.00 +VAT

Cabling.

BNC connectors: T Connector	£3.20 +VAT
Through Connector	£1.80 +VAT
Cable plug	£1.75 +VAT
Ethernet Cable: Loose, per metre	£0.75 +VAT
5m length with BNC plugs at each end	£8.50 +VAT
10m length with BNC plugs at each end	£14.00 +VAT
20m length with BNC plugs at each end	£20.00 +VAT



Novell compatible 16-bit network card. Fully Novell authorised and tested.

- Faster than and compatible with NE2000 cards
- 10BaseT and 10Base2 I/O
- NETBIOS compatible
- 10Mbps



£39.00 +VAT

Kingston card with Novell Network Lite.....£59.00 +VAT



Network hubs.

- 9 port stackable hub...£129.00 +VAT
- 16 port hub.....£219.00 +VAT

Pocket LAN adaptor

10Base2 & 10BaseT (connects to parallel port) ..£110.00 +VAT

PAGE FAX/MODEMS

The Internet

V32bis package.....£90 +VAT

V34bis package...£195 +VAT

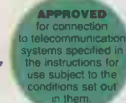


This package is the affordable way to enhance your PC with communications ability. Send and receive faxes, and access online information services and the Internet. Apart from your PC and a phone socket, everything you need is included:

- Pace FAX/modem: either MobiFAX 144 pocket unit (V32bis) or Linnet 34fx desktop (V34bis)
- Software to access Internet facilities
- 21 days free subscription to an internet service provider
- "The Net" guide book ● FAX software

SPECIAL OFFER

All modems include free Pipex Dial Internet connection trial pack, awarded "PC PRO Excellence" November 1995.



LIMITED OFFER!

MICROLIN V34bis fax modems

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Made for us by Mitsumi, this is the 102-key keyboard used in our Vale Popular and Prestige ranges of PCs. A very neat and attractive design, it is superb value for money.

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or with 'parallel port' interface (see below) £139.00+VAT

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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 3.1 or higher, at least 4Mb RAM, Mouse, Hard Drive and 256 colour SVGA graphics or higher.



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Requires '386 CPU or above with Colour Monitor, at least 4Mb RAM, Windows 3.1 or higher, Hard Drive and Mouse.



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The simple, effective 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.

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- Very compact "small footprint" design
- Very simple, fast scanning (only 12 seconds per page)
- Includes "iPhoto Plus" top professional Windows based image scanning and photograph re-touching software, and "TextBridge OCR" software



with internal interface card £149.00+VAT

Requires '386 CPU or above with Colour Monitor, at least 4Mb RAM, Windows 3.1 or higher, 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 for the scanners featured on this page.

Each sample pack contains several images (including the Car and Child) 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). Supplied on 3 1/2" disks.

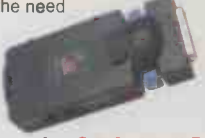


Cost Per Pack £5.00+VAT incl delivery. Refundable on purchase of a scanner.

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. It is 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. Compatible with the Mustek Black & White, Greyscale, & 24-bit Colour hand-held scanners.



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FLATBED A4 COLOUR SCANNERS

- Conventional models: 600dpi unit giving up to 4800dpi via interpolation, or 1200dpi unit giving up to 9600dpi via interpolation
- Very fast single-pass models: 800dpi giving up to 6400dpi via interpolation, or 1200dpi giving up to 9600dpi via interpolation
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- Image scanning and photograph re-touching software, and powerful OCR software

	Paragon 600	Paragon 800SP	Paragon 1200SP
OPTICAL RESOLUTION:	300x600dpi	400x800dpi	600x1200dpi
INTERPOLATED RESOLUTION:	4800dpi	6400dpi	9600dpi
COLOUR BITS:	24-bit	30-bit	30-bit
FREE SOFTWARE:	iPhoto+ Wordlinx OCR	Image Pals GO TextBridge OCR	PhotoShop LE TextBridge OCR
	£269+VAT	£349+VAT	£499+VAT
	Transparency adaptor...£179+VAT	Automatic sheet feeder...£299+VAT	

Requirements: '386 or higher, Windows 3.1 or higher, Mouse, Hard Drive and 256 colour SVGA graphics or higher. 600dpi model needs at least 4Mb RAM, other models need at least 8Mb RAM.

new fast single pass models



"Excellent value for money. The works for only £269." December 1993



Personal Computer World April 1993

"The MFS-1280CX is a quality piece of hardware... Superb results."

"The Mustek MFS-1280CX 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-1280CX should be on your shortlist." October 1994



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Copier/Scanner ■ 50 second per page scanning ■ Copy reduction down to 70% ■ Twain scanner interface ■ Up to 99 unattended copies

General ■ 100 sheet paper capacity ■ 1 year manufacturer's warranty

hp HEWLETT PACKARD

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Inkjet Printer

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ColorSmart

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- HP DeskJet 340£185.00 +VAT
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- Colour kit for 310/320/340/540£30.00 +VAT
- HP DeskJet 660£265.00 +VAT
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- HP DeskJet 1600£899.00 +VAT

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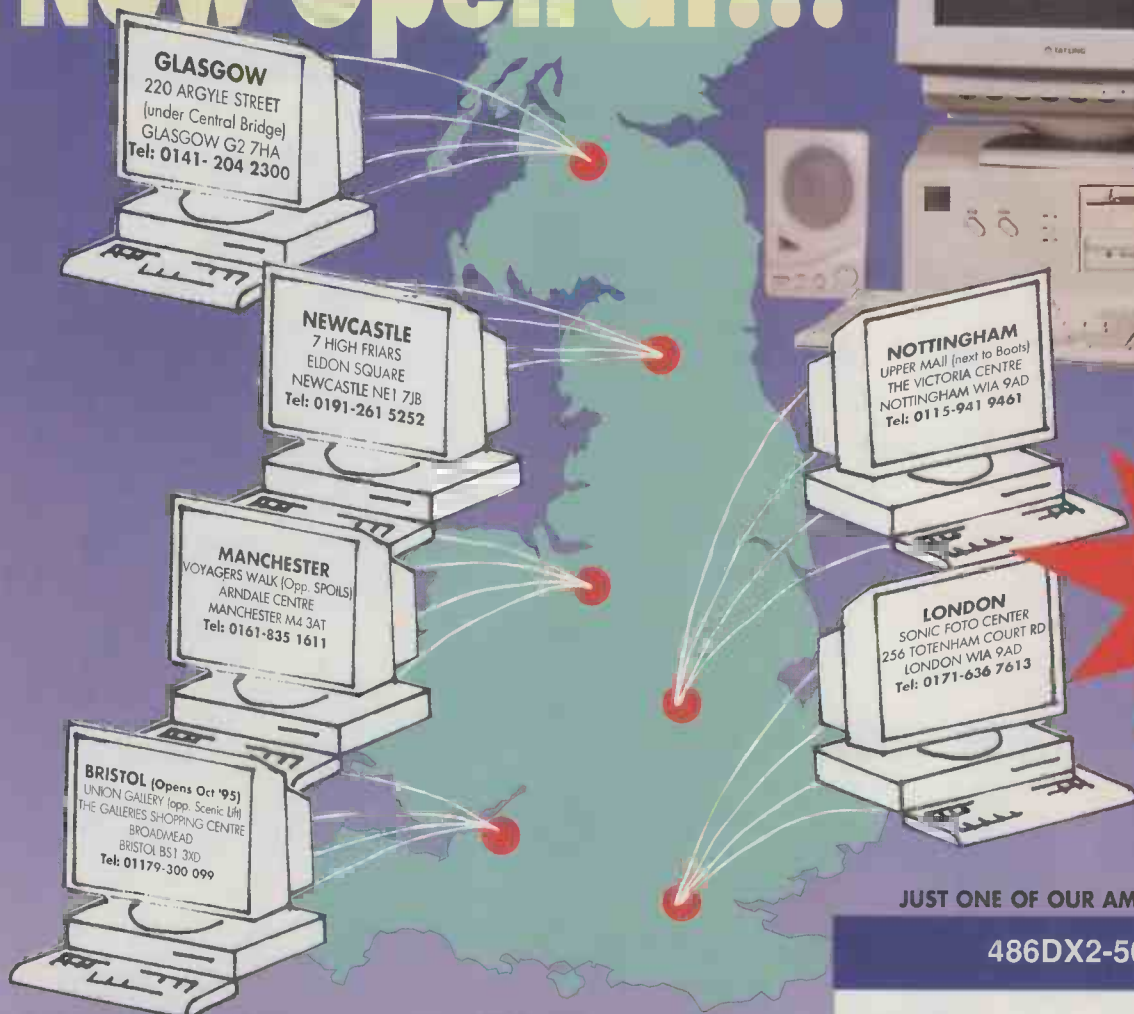
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- ◆ 102 Enhanced keyboard
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- ◆ Software bundle including Lotus SmartSuite worth over £1000 (see below) and 100 Hours Internet access worth over £300 (modem required) available at a small extra cost - FREE with our Best Buy models



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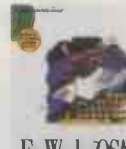
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Personal Information Manager allows you to manage your time more effectively



CompuServe Information Manager and Internet Connection provide graphical interfaces to these services (modem required)

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Sat 9.00am-5.00pm

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Burnley, BB12 7GT

Finance from under

£33*
Per Month

100 Hours
FREE
Internet
access
worth over
£300 with
Best Buy
Systems

Omega



Please Note: Mouse is not included with this range as a choice of different mice is available from as low as £9 + VAT

75MHz Pentium® 540 MT

- ◆ Intel 75MHz Pentium® processor
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 540Mb enhanced IDE (fast ATA) hard disk
- ◆ 3.5" 1.44Mb floppy drive
- ◆ PCI bus with 4 PCI slots
- ◆ Integrated PCI bus graphics with 1Mb video RAM
- ◆ 14" SVGA 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
- ◆ Multimedia models include double or quad speed CD-ROM drive, 16-bit sound card and twin stereo speakers.
- ◆ Software bundle including Lotus SmartSuite worth over £1000 (see below) and 100 Hours FREE Internet access worth over £300 (modem required) available at a small extra cost

75MHz Pentium® 850 MT

- ◆ Intel 90MHz Pentium® processor
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 850Mb or 1.08Gb 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 with 1Mb video RAM
- ◆ 14" SVGA 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
- ◆ Multimedia models include double or quad speed CD-ROM drive, 16-bit sound card and twin stereo speakers.
- ◆ Software bundle including Lotus SmartSuite worth over £1000 (see below) and 100 Hours FREE Internet access worth over £300 (modem required) available at a small extra cost - FREE with our BestBuy models

100MHz Pentium® 850 MT

- ◆ Intel 100MHz Pentium® processor
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 850Mb or 1.08Gb 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 with 1Mb video RAM
- ◆ 14" SVGA 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
- ◆ Multimedia models include double or quad speed CD-ROM drive, 16-bit sound card and twin stereo speakers.
- ◆ Software bundle including Lotus SmartSuite worth over £1000 (see below) and 100 Hours FREE Internet access worth over £300 (modem required) available at a small cost

£699 +VAT

16Mb RAM models +£200
Multimedia models +£99

£729 +VAT

1.08Gb models £779
16Mb RAM models +£200
Multimedia models +£99

£849 +VAT

1.08Gb models £899
16Mb RAM models +£200
Multimedia models +£99

Best Buy - Multimedia Tower C

75MHz Pentium® processor, 850Mb 8Mb system with double speed CD drive, 16-bit soundcard, stereo speakers and Lotus SmartSuite software bundle shown below

£829

Finance from under **£33*** Per Month See example

Finance Example Multimedia Tower A: Cash Purchase: £598 +VAT = £724.98 inc. delivery & VAT. Credit Purchase: 10% (£72.50) deposit and 24 equal monthly payments of £32.63. Total Price £855.62 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

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More Power... ...Lower Prices!

When it comes to providing the latest PC technology and specification at down to earth prices, no-one gives you better value than Time. As the UK's leading direct PC supplier, we have the resources and buying power to offer you truly incredible deals on top quality high specification 486 and Pentium® processor based systems.

These great new systems from Omega feature ergonomic designs and provide excellent expansion potential with a total of seven

drive bays. All systems feature fast large capacity enhanced IDE hard disks and fast processors.

Our Best Buy multimedia models come complete with a superb Windows 95 software suite that includes five top Lotus applications, Quicken personal finance pack and other programs.

These systems are incredible value for money and with our popular finance option are affordable by virtually everyone from an amazing £30 per month*!



486DX2-66 540 DT

- ◆ 486DX2-66 processor
- ◆ 4Mb or 8Mb RAM expandable to 64Mb
- ◆ Pentium® technology upgradeable
- ◆ 540Mb IDE hard disk
- ◆ 3.5" 1.44Mb floppy drive
- ◆ 1Mb local bus graphics with Windows accelerator
- ◆ 14" SVGA colour screen
- ◆ IDE hard and floppy controller
- ◆ Parallel, 2 serial and keyboard ports
- ◆ Expandable desktop case
- ◆ 7 drive bays and 7 expansion slots (2 VESA)
- ◆ 102 Enhanced keyboard
- ◆ Multimedia models include double (or quad speed option) CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software bundle including Lotus software suite available at extra cost with 8Mb models only

£519 +VAT

486DX2-66 850Mb model£549
Multimedia models+£99



486DX4-100 850 DT

- ◆ 486DX4-100 processor
- ◆ Faster than most P60 systems
- ◆ 4Mb RAM expandable to 64Mb
- ◆ Pentium® technology upgradeable
- ◆ 850Mb enhanced IDE hard disk with 256K cache
- ◆ 3.5" 1.44Mb floppy drive
- ◆ 1Mb local bus graphics with Windows accelerator
- ◆ 14" SVGA colour screen (15" optional)
- ◆ IDE hard and floppy controller
- ◆ Parallel, 2 serial and keyboard ports
- ◆ Expandable desktop case
- ◆ 7 drive bays and 7 expansion slots (2 VESA)
- ◆ 102 Enhanced keyboard
- ◆ Multimedia models include double (or quad speed) CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software bundle including Lotus software suite available at extra cost with 8Mb models only

£569 +VAT

Multimedia models+£99



486DX4-100 850 8 DT

- ◆ 486DX4-100 processor
- ◆ Faster than most P60 systems
- ◆ 8Mb RAM expandable to 64Mb
- ◆ Pentium® technology upgradeable
- ◆ 850Mb IDE hard disk with 256K cache
- ◆ 3.5" 1.44Mb floppy drive
- ◆ 1Mb local bus graphics with Windows accelerator
- ◆ 14" SVGA colour screen (15" optional)
- ◆ IDE hard and floppy controller
- ◆ Parallel, 2 serial and keyboard ports
- ◆ Expandable desktop case
- ◆ 4 drive bays and 7 expansion slots (2 VESA)
- ◆ 102 Enhanced keyboard
- ◆ Multimedia models include double (or quad speed) CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software bundle including Lotus software suite available at extra cost

£669 +VAT

Multimedia models+£99

Best Buy - Win 95 Multimedia 2

486DX4-100, 850Mb, 8Mb model with double speed CD-ROM drive, 16-bit sound card, stereo speakers and Windows 95 software bundle including Lotus software suite - mouse included

£839 +VAT

Please Note: Mouse is not included with this range as a choice of different mice is available from as low as £9 + VAT

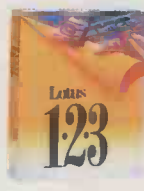
Software Applications

The following Windows 95 based software suite is included with our best buy multimedia models and is also available as an option with all other 8Mb systems.

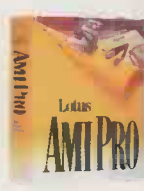
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Microsoft Windows 95 is the latest and best 32-bit operating system



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Lotus Ami Pro word processing package for professional documents and reports



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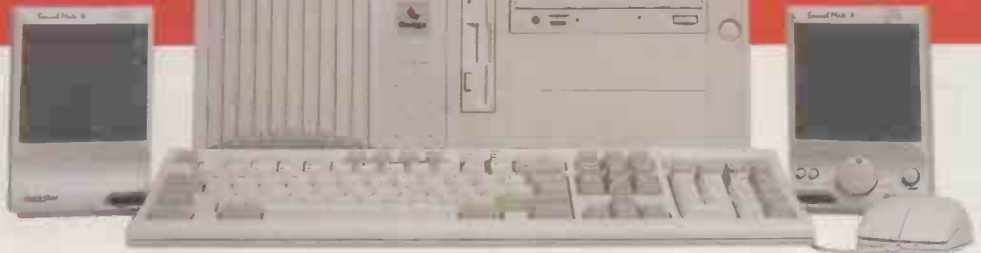
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Finance from under

£29*
Per Month



Omega



75MHz Pentium®

- ◆ Intel 75MHz Pentium® processor
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 850Mb enhanced IDE (fast ATA) hard disk
- ◆ 3.5" 1.44Mb floppy drive
- ◆ Integrated 64-bit PCI bus graphics with 1Mb
- ◆ 14" SVGA colour screen (15" optional)
- ◆ Enhanced PCI IDE hard and floppy controller
- ◆ Parallel, 2 fast serial and keyboard ports
- ◆ Expandable desktop case
- ◆ 7 drive bays and 7 expansion slots (4 PCI)
- ◆ 102 Enhanced keyboard
- ◆ Multimedia models include double or quad speed CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software bundle including Lotus software suite available at extra cost



100MHz Pentium®

- ◆ Intel 100MHz Pentium® processor
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 850Mb enhanced IDE (fast ATA) hard disk
- ◆ 3.5" 1.44Mb floppy drive
- ◆ Integrated 64-bit PCI bus graphics with 1Mb
- ◆ 14" SVGA colour screen (15" optional)
- ◆ Enhanced PCI IDE hard and floppy controller
- ◆ Parallel, 2 fast serial and keyboard ports
- ◆ Expandable desktop case
- ◆ 7 drive bays and 7 expansion slots (4 PCI)
- ◆ 102 Enhanced keyboard
- ◆ Multimedia models include double or quad speed CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software bundle including Lotus software suite available at extra cost



120MHz Pentium®

- ◆ Intel 120MHz Pentium® processor
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 1.08Gb enhanced IDE (fast ATA) hard disk
- ◆ 3.5" 1.44Mb floppy drive
- ◆ Integrated 64-bit PCI bus graphics with 1Mb
- ◆ 14" SVGA colour screen (15" optional)
- ◆ Enhanced PCI IDE hard and floppy controller
- ◆ Parallel, 2 fast serial and keyboard ports
- ◆ Expandable desktop case
- ◆ 7 drive bays and 7 expansion slots (4 PCI)
- ◆ 102 Enhanced keyboard
- ◆ Multimedia models include double or quad speed CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software bundle including Lotus software suite available at extra cost

£739 +VAT

1.08Gb 8Mb model £789
16Mb RAM models +£200
Multimedia models +£99

£859 +VAT

1.08Gb 8Mb model £909
16Mb RAM model +£200
Multimedia model +£99

£959 +VAT

16Mb RAM model +£200
Multimedia model +£99

Best Buy - Win 95 Multimedia 3

Pentium® 75, 850Mb, 8Mb model with double speed CD-ROM drive, 16-bit sound card, stereo speakers and Windows 95 software bundle including Lotus software suite - mouse included

£939 +VAT

Best Buy - Win 95 Multimedia 4

Pentium® 75, 850Mb, 8Mb model with 14.4 BABT fax/data modem, quad speed CD-ROM drive, 16-bit sound card, stereo speakers and Windows 95 software bundle including Lotus software suite - mouse included

£1039 +VAT

Please Note: Mouse is not included with this range as a choice of different mice is available from as low as £9 + VAT



Lotus Organizer allows you to schedule your appointments and manage your workload



Lotus SmartPics provides excellent clipart graphics that can be used in any document



Pacioli 2000 is a full feature accounts package that outperforms many packages costing over £500



Quicken v4 personal finance package is the fastest and easiest way to organize your home finances

Finance from under

£29
Per Month

Finance Example:-
Cash Purchase: £519
+VAT = £632.15 inc. delivery & VAT. Credit Purchase: 10% (£63.22) deposit and 24 equal monthly payments of £28.45. Total price £746.02 inc. delivery & VAT. APR 19.8%

*APR

19.8%

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Ultimate Performance Incredible Value!



These state-of-the-art PCI systems from Colossus provide the ultimate performance and expandability at prices that only Time could achieve with our buying power. Take a closer look at these incredible high specification products from the performance PC manufacturer.

All systems come with a truly expandable midi-tower case with eight drive bays or desktop case with seven drive bays, and have a minimum of 8Mb or 16Mb RAM and minimum hard disk capacity of 850Mb or 1.08Gb. All Pentium systems feature Intel's latest Trinton chipset with fast cache and are upgradeable to the Pentium® Pro processor based overdrive processors. The software bundle shown below (worth over £1000) includes Lotus SmartSuite and is normally £99 extra with these systems but is available FREE with our Best Buy models.

These systems are suitable for the power user who wants high specification and expandability.

Telephone lines open
until 8 p.m.
All offers end
6th January

Software Applications**

The following Windows 95 base software suite is included with our Best Buy multimedia models and is also available as an option with all other 8Mb systems.



486DX4-100

- ◆ 486DX4-100 processor
- ◆ 256K external cache
- ◆ 8Mb RAM expandable to 64Mb
- ◆ Pentium® technology upgradeable
- ◆ Enhanced 850Mb IDE hard disk with 256K cache
- ◆ 3.5" 1.44Mb floppy drive
- ◆ 1Mb 64-bit PCI local bus graphics with Windows accelerator
- ◆ 14" SVGA colour screen
- ◆ PCI enhanced IDE hard and floppy controller
- ◆ Parallel, 2 serial and keyboard ports
- ◆ Desktop case with 7 drive bays and 7 expansion slots (4 PCI) or midi-tower (£10) extra
- ◆ 102 Enhanced keyboard
- ◆ Microsoft compatible mouse
- ◆ Multimedia models include double (or quad speed option) CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software suite option available at extra cost.



75MHz Pentium®

- ◆ Intel 75MHz Pentium® processor
- ◆ Intel's latest Triton chipset
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 850Mb, 1.08Gb or 1.6Gb enhanced IDE (Fast ATA) hard disk with 256 hard disk cache
- ◆ 256 external SRAM cache
- ◆ 3.5" 1.44Mb floppy drive, PCI bus with 4 PCI slots
- ◆ PCI bus graphics with 1Mb video RAM (2Mb optional) and super-fast 64-bit Windows accelerator
- ◆ 14" SVGA colour screen (15" Optional)
- ◆ PCI enhanced IDE hard and floppy controller
- ◆ Parallel, 2 Fast serial and keyboard ports
- ◆ Desktop case with 7 drive bays and 7 expansion slots (4 PCI) or midi-tower (£10) extra
- ◆ 102 Enhanced keyboard and Microsoft compatible mouse
- ◆ Multimedia models include double or quad speed CD-ROM drive 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software suite option available at extra cost.

£749 +VAT

Multimedia models+£99
14.4 Approved Fax/Data modem+£80

£849 +VAT

1.08Gb 8Mb model£899
1.6Gb 8Mb model£999
16Mb RAM models+£200
Multimedia models+£99

Best Buy - Multimedia Model 5

Colossus Desktop with Pentium 100 Processor, 16Mb RAM, 2Mb Video RAM, 1.08Gb Hard Drive, Quad Speed CD, 14.4 BAPT Modem, 16-bit soundcard, Speakers and Windows 95 software suite shown below

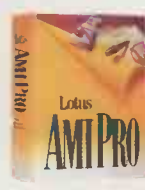
£1459



Microsoft Windows 95 is the latest and best 32-bit operating system



Lotus 1-2-3 for Windows is the world's most popular spread sheet



Lotus Ami-Pro word processing package for professional documents and reports



Lotus Approach database filing system managers your data with ease

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100MHz Pentium®

- ◆ Intel 100MHz Pentium® processor
- ◆ Intel's latest Triton chipset
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 850Mb, 1.08Gb or 1.6Gb enhanced IDE (Fast ATA) hard disk with 256 hard disk cache,
- ◆ 256 external SRAM cache
- ◆ 3.5" 1.44Mb floppy drive
- ◆ PCI bus with 4 PCI slots
- ◆ PCI bus graphics with 1Mb video RAM (2Mb optional) and super-fast 64-bit Windows accelerator
- ◆ 14" SVGA colour screen (15" optional)
- ◆ Enhanced PCI IDE hard and floppy controller
- ◆ Parallel, 2 Fast serial and keyboard ports
- ◆ Midi-tower case with 8 drive bays and 7 expansion slots (4 PCI)
- ◆ 102 enhanced keyboard and Microsoft® compatible mouse
- ◆ Multimedia models include double or quad speed CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software suite option available at extra cost.

120MHz Pentium®

- ◆ Intel 120MHz Pentium® processor
- ◆ Intel's latest Triton chipset
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 850Mb, 1.08Gb or 1.6Gb enhanced IDE (Fast ATA) hard disk with 256 hard disk cache,
- ◆ 256 external SRAM cache
- ◆ 3.5" 1.44Mb floppy drive
- ◆ PCI bus with 4 PCI slots
- ◆ PCI bus graphics with 1Mb video RAM (2Mb optional) and super-fast 64-bit Windows accelerator
- ◆ 14" SVGA colour screen (15" optional)
- ◆ Enhanced PCI IDE hard and floppy controller
- ◆ Parallel, 2 fast serial and keyboard ports
- ◆ Desktop case with 7 drive bays and 7 expansion slots (4 PCI) or midi-tower (£10) extra
- ◆ 102 enhanced keyboard and Microsoft compatible mouse
- ◆ Multimedia models include double or quad speed CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Windows 95 software suite option available at extra cost.

133MHz Pentium®

- ◆ Intel 133MHz Pentium® processor
- ◆ Intel's latest Triton Chipset
- ◆ 8Mb or 16Mb RAM expandable to 128Mb
- ◆ 1.08Gb or 1.6Gb enhanced IDE (Fast ATA) hard disk with 256 hard disk cache
- ◆ 256 external SRAM cache
- ◆ 3.5" 1.44Mb floppy drive
- ◆ PCI bus with 4 PCI slots
- ◆ PCI bus graphics with 1Mb video RAM (2Mb optional) and super-fast 64-bit Windows accelerator
- ◆ 14" SVGA colour screen (15" optional)
- ◆ Enhanced PCI IDE hard and floppy controller
- ◆ Parallel, 2 Fast serial and keyboard ports
- ◆ Midi-tower case with 8 drive bays and 7 expansion slots (4 PCI)
- ◆ 102 enhanced keyboard and Microsoft compatible mouse
- ◆ Multimedia models include double or quad speed CD-ROM drive, 16-bit sound card and twin stereo speakers
- ◆ Software bundle including Lotus SmartSuite
- ◆ 100 Hours FREE Internet access worth over £300 (modem required)

£949 +VAT

1.08Gb 8Mb model	.....	£999
1.6Gb 8Mb model	.....	£1099
16Mb RAM models	.....	+£200
Multimedia models	.....	+£99

£999 +VAT

1.08Gb 8Mb model	.....	£1049
1.6Gb 8Mb model	.....	£1149
16Mb RAM models	.....	+£200
Multimedia models	.....	+£99

£1199 +VAT

1.6Gb 8Mb model	.....	£1299
16Mb RAM models	.....	+£200
Multimedia models	.....	+£99

Best Buy - Multimedia Model 6 **£1659**

Colossus Midi-Tower with Pentium 120 Processor, 16Mb RAM, 2Mb Video RAM, 1.6 Gb Hard Drive, Quad Speed CD, 28.8 BABT Modem, 16-bit soundcard, Speakers and Windows 95 software suite shown below

*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.



Lotus Organizer allows you to schedule your appointments and manage your workload



SmartPics high quality images are easily used in a wide variety of documents



Pacioli 2000 is a full feature accounts package that outperforms many packages costing over £500



Quicken v4 personal finance package is the fastest and easiest way to organize your home finances

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Multimedia '95 Time Machine

The new enhanced Multimedia Time Machine 95 systems now all come with superb 15" and 17" SVGA NI colour screens and our top of the range systems feature fast 28.8 modems, minimum of 16Mb RAM, six speed CD-ROM drives, PC TV with Teletext, massive 1.6Gb drives and the fastest Intel chipsets and Pentium® processors.

These systems are the ideal future-proof purchase for home and small office users looking for powerful Windows® 95 optimised hardware and a plethora of leading software applications.

All are fully multimedia ready with fitted fast CD-ROM drives, 16-bit sound card, PC microphone, PC joystick and an excellent range of educational and leisure titles including WinTutor 95 multimedia tutorial,

Infopedia full feature multimedia encyclopaedia, World Atlas Multimedia Edition, Fun school Educational suite, and much more.

Remember a computer is useless without software and the software included with these systems enables their use for virtually any application. As well as our standard Lotus software suite, we include leading applications such as TurboCAD for home designs and CAD, Pressworks desktop publisher, Designworks drawing pack, PC Paintbrush paint program and more!

All systems are available on Interest Free Credit with a low deposit and payments spread over two years. Add a quality printer pack or scanner pack (available on Interest Free credit) for a complete solution.



System Specification

- ◆ 486 model: 486DX4-100 processor
- ◆ Pentium models: 75, 100, 120 or 133MHz Pentium® processor with PCI local bus and 64-bit PCI graphics
- ◆ 8Mb or 16Mb RAM expandable to 64/128Mb
- ◆ 850Mb, 1.08Gb or 1.6Gb fast Enhanced IDE hard disks with 256K cache
- ◆ Superb 15" or 17" SVGA NI low radiation colour screen
- ◆ 1.44Mb floppy drive.
- ◆ Omega desktop case with 7 drive bays and 7 slots (models B, C & D). Model E features Colossus desktop with 7 drive bays. Model F features Colossus midi-tower case with 8 drive bays. Model G features Colossus full-tower case with 9 drive bays.
- ◆ 102 keyboard and deluxe Microsoft® compatible mouse
- ◆ Microsoft® Windows® 95
- ◆ 12 months warranty extendable to 5 years

Multimedia HardWare

- ◆ Double speed, quad speed or six speed IDE CD-ROM drive
- ◆ 16-bit high quality stereo sound card
- ◆ Twin stereo speaker system
- ◆ PC joystick
- ◆ PC microphone

Fax & Internet Packs -Models D, E, F and G

- ◆ 14.4 or 28.8 BAPT approved fax & data modem
- ◆ Easy to use fax software
- ◆ Communications software
- ◆ Introductory subscription to CompuServe with Internet mailbox.
- ◆ Model G Also features PC-TV with Teletext and 3.2Gb tape backup

APPROVED for communications systems specified in the conditions of use subject to the conditions of use in them

*APR

0%
INTEREST FREE CREDIT

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. See page 11 for Interest Free example.

Novell Perfect Office Plus Models

These systems are available with everything listed plus the following additional Novell/Wordperfect titles at a small extra cost:-

- ◆ Wordperfect for Windows word processor
- ◆ Quattro Pro for Windows spread sheet
- ◆ Presentations Graphics Pack
- ◆ InfoCentral Organizer
- ◆ GroupWise Electronic Mailing System
- ◆ Envoy Document System



Multimedia Time Machine 95/B 486DX4-100

486DX4-100 desktop with 8Mb RAM, 850Mb hard disk, double speed CD-ROM, local bus graphics and 15" sharp 0.28 NI screen

£39 Per Month

£159.15 deposit and 24 monthly payments of £53 OR
£495.15 deposit and 24 monthly payments of £39.
Total price £1199 +VAT = £1431.15 Inc. delivery and VAT. APR 0%

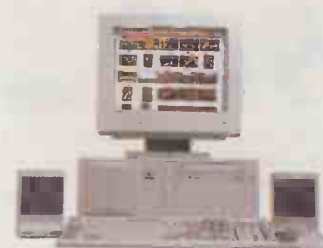


Multimedia Time Machine 95/C 75MHz Pentium®

75MHz Pentium® desktop with 8Mb RAM, 850Mb hard disk, double speed CD-ROM, 64-bit PCI graphics and 15" sharp .28 NI screen.

£49 Per Month

£156.65 deposit and 24 monthly payments of £58 OR
£372.65 deposit and 24 monthly payments of £49.
Total price £1299 +VAT = £1548.65 inc. delivery and VAT. APR 0%



Multimedia Time Machine 95/D 75MHz Pentium®

75MHz Pentium® desktop with 8Mb RAM, 850Mb hard disk, 64-bit PCI graphics, quad speed CD-ROM, 14.4 modem and 15" sharp .28 NI screen

£59 Per Month

£178.15 deposit and 24 monthly payments of £62 OR
£250.15 deposit and 24 monthly payments of £59.
Total price £1399 +VAT = £1666.15 inc. delivery and VAT. APR 0%

100MHz Pentium® +£129

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Pre-Loaded Software

Included with all systems. See software section for details

Business Software

- ◆ Lotus 1-2-3 v5 Spreadsheet
- ◆ Lotus Ami Pro v3.1 Word processor
- ◆ Lotus Approach v3 Database
- ◆ Lotus Organizer v2
- ◆ Lotus SmartPics Graphics
- ◆ Lotus Training for 1-2-3, Ami Pro and Approach
- ◆ GSP Pressworks 2 Desktop Publisher
- ◆ GSP Designworks 3 Graphics Pack
- ◆ TurboCAD for Windows CAD Pack
- ◆ Organize your way organiser

- ◆ CV & Job Search Pro
- ◆ MasterClips SE Clipart
- ◆ Picture This Graphics system
- ◆ Intuit Quicken v4 Personal Finance Pack
- ◆ Pacioli 2000 Business Accounts

Educational/Leisure Software

- ◆ Fun School 4
- ◆ Fun School Maths
- ◆ Fun School 5 in Time
- ◆ Fun School Spelling
- ◆ Fun School Paint & Create
- ◆ EZ Language French, German & Spanish
- ◆ Computerworks, Bodyworks & AutoWorks
- ◆ Flying Fingers keyboard & typing tutorial

- ◆ Dinosaurs for Windows
- ◆ Doom, Blake Stone, Raptor and Pinball Shareware games

CD Multimedia Software

- ◆ Wintutor 95 Multimedia CD
- ◆ Infopedia Multimedia Encyclopaedia CD
- ◆ World Atlas Multimedia CD
- ◆ BodyWorks Multimedia CD
- ◆ Time Almanac CD
- ◆ EZ Language Multimedia CD
- ◆ Play & Learn Educational CD
- ◆ UFO for Windows CD
- ◆ Dinosaur Museum CD
- ◆ Shareware CD



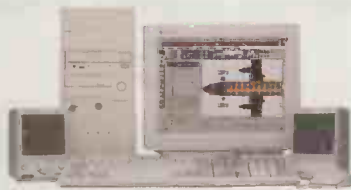
Multimedia Time Machine 95/E 100MHz Pentium®

100MHz Pentium® Colossus desktop with Triton chipset, 256K cache, 16Mb RAM, 1.08Gb hard disk, 64-bit PCI graphics with 2Mb video RAM, quad speed CD-ROM, 14.4 modem and 15" sharp .28 NI screen

£79 Per Month

£259.15 deposit and 24 monthly payments of £88 OR
£475.15 deposit and 24 monthly payments of £79. Total price
£1999 +VAT = £2371.15 inc. delivery and VAT. APR 0%

15" to 17" upgrade +£199



Multimedia Time Machine 95/F 120MHz Pentium®

120MHz Pentium® Colossus midi-tower with Triton chipset, 256K cache, 16Mb RAM, 1.6Gb hard disk, 64-bit PCI graphics with 2Mb video RAM, quad speed CD-ROM, 28.8 modem and 15" sharp .28 NI screen

£89 Per Month

£278.15 deposit and 24 monthly payments of £97 OR
£470.15 deposit and 24 monthly payments of £89. Total price
£2199 +VAT = £2606.15 inc. delivery and VAT. APR 0%

133MHz Pentium® +£199
15" to 17" upgrade +£199



Multimedia Time Machine 95/G 133MHz Pentium®

133MHz Pentium® Colossus full tower with Triton chipset, 256K cache, 16Mb RAM, 1.6Gb hard disk, 64-bit PCI graphics with 2Mb video RAM, six speed CD-ROM, 28.8 modem, 3.2Gb tape backup, PC TV with Teletext and 15" sharp .28 NI screen

£99 Per Month

£356.65 deposit and 24 monthly payments of £128 OR
£1052.65 deposit and 24 monthly payments of £99. Total price
£2899 +VAT = £3428.65 inc. delivery and VAT. APR 0%

15" to 17" upgrade +£199

CALL NOW!

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Sat 9.00am-5.00pm

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Multimedia Tower



System Specification

- ◆ 486DX2-66, 486-DX4-100 processor or 75MHz Pentium® processor
- ◆ 540Mb or 850Mb enhanced IDE hard disk
- ◆ 8Mb RAM (4Mb on 486DX2-66)
- ◆ 1.44Mb 3.5" floppy drive
- ◆ Pentium® technology upgradeable
- ◆ 14" SVGA colour screen
- ◆ Expandable Omega mini-tower case with 5 bays and 7 slots
- ◆ 102 Keyboard
- ◆ 12 Months warranty expandable to 5 years
- ◆ Mouse is optional extra. A choice of mice is available from as low as £9

Multimedia Hardware

- ◆ Double speed IDE CD-ROM drive
- ◆ 16-bit high quality sound card
- ◆ Twin stereo speaker system

Infoware Encyclopaedias

- ◆ Exploring Animals: covers 195 different animals and their behaviour with video footage and photographs
- ◆ Amazing Journeys: 1000 years of exploration, detailed animated journeys and discoveries

- ◆ World of Knowledge: Animated encyclopaedia covering 38 subjects
- ◆ World of Pharaohs: Interactive encyclopaedia of ancient Egypt with animation and maps



Software**

See software section for details

The superb 32-bit multitasking version of Lotus SmartSuite for OS/2 with the following programs:-

- ◆ Lotus 1-2-3 spread sheet
- ◆ Lotus Ami Pro word processor
- ◆ Lotus Freelance presentation graphics
- ◆ Lotus CC:Mail licence
- ◆ Pacioli 2000 Business Accounts suite
- ◆ PC DOS 7 - the latest version
- ◆ IBM OS/2 Warp 32-bit operating system
- ◆ IBM Works easy to use pack
- ◆ IBM Personal information Manager
- ◆ IBM FaxWorks
- ◆ IBM Person-to-Person
- ◆ CompuServe information manager and 100 hours FREE Internet access (modem required) for IBM
- ◆ Doom arcade game
- ◆ Epic Pinball game
- ◆ Blake Stone game

Fun School suite covering all the essential elements of the National Curriculum

- ◆ Fun School 4 Educational Pack
- ◆ Fun School Maths pack
- ◆ Fun School 5 In Time
- ◆ Fun School Paint and Create



Telephone lines open until 8 p.m. All offers end 6th January

The multimedia tower systems from Time feature top quality advanced mini-tower PC systems from Omega, and come fitted with full-feature multimedia and pre-loaded with superb Lotus SmartSuite software and a range of other educational and leisure applications that includes 5 encyclopaedias and

the full suite of educational software from Fun School.

Our best buy models B and C come with 8Mb RAM and massive 850Mb hard drive. At prices of just £598 for a full-feature multimedia PC, there simply is no better value!

Finance from under

£33* Per Month ^{*APR} 19.8%

Finance Example:
Cash Purchase: £598 + VAT = £724.98 inc. delivery & VAT. Credit Purchase: 10% (£72.50) deposit and 24 equal monthly payments of £32.63. Total Price £855.62 inc. delivery & VAT.

Best Buy Multimedia Tower A
486DX2-66
with 540Mb hard disk and 4Mb RAM

£598 +VAT

Finance from under £33* Per Month See example

Best Buy Multimedia Tower B
486DX4-100
with 850Mb hard disk, and 8Mb RAM

£749 +VAT

Finance from under £41* Per Month See example

Best Buy Multimedia Tower C
75MHz Pentium® processor
with 850Mb hard disk, and 8Mb RAM

£829 +VAT

Finance from under £45* Per Month See example

CALL NOW!

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Sat 9.00am-5.00pm

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Buy Now....Pay Later



System Specification

- ◆ 486 Models: 486DX2-66 or 486DX4-100 Processors
- ◆ Pentium Models: 75MHz Pentium® or 100 Mhz Pentium® processor with PCI local Bus and 64-bit PCI graphics
- ◆ 8Mb or 16Mb RAM expandable to 64/128Mb
- ◆ 540Mb, 850Mb or 1.08Gb fast Enhanced IDE hard disks with 256K Cache
- ◆ 1.44Mb floppy drive.
- ◆ 14" or 15" SVGA low radiation colour screen
- ◆ Omega desktop case with 7 drive bays and 7 slots (models B, C & D). Model A features Omega Mini-Tower with 5 drive bays. Model E features Colossus Desktop Case with 7 drive bays.
- ◆ 102 Keyboard and Deluxe Microsoft compatible Mouse
- ◆ Microsoft Windows 95
- ◆ 12 months Warranty extendable to 5 Years

Multimedia HardWare

- ◆ Double speed or quad speed IDE CD-ROM drive
- ◆ 16-bit high quality stereo sound card
- ◆ Twin stereo speaker system
- ◆ PC joystick

Fax & Internet Packs

- Model D & E only
- ◆ 14.4 BABT Approved Fax & Data Modem
- ◆ Easy to use fax software



- ◆ Communications software
- ◆ Introductory subscription to Compuserve with Internet mailbox.



Software**

Included with all systems. See software section for details

- ◆ Lotus 1-2-3 v5 Spreadsheet
- ◆ Lotus Ami Pro v3.1 Wordprocessor
- ◆ Lotus Approach v3 Database
- ◆ Lotus Organizer v2
- ◆ Lotus SmartPics Graphics
- ◆ Lotus Training for 1-2-3, Ami Pro and Approach
- ◆ Intuit Quicken v4 Personal Finance Pack
- ◆ Paciol 2000 Business Accounts

Multimedia Software

- ◆ BodyWorks Multimedia CD
- ◆ InfoPedia Multimedia Encyclopaedia CD
- ◆ Wintutor 95 Multimedia CD
- ◆ Time Almanac CD
- ◆ EZ Language Multimedia CD - Learn French, German, Spanish and more
- ◆ Play & Learn Educational CD
 - ◆ UFO for Windows CD
 - ◆ Dinosaur Museum CD
 - ◆ Shareware CD including Doom, Raptor, Pinball and many other games.

Telephone lines open until 8 p.m.
All offers end 6th January



The new Multimedia Power PC 95 systems from Time feature a range of popular high specification Best Buy configurations from Omega and Colossus which represent the best value in the UK today. These 486 and Pentium® systems have a high specification which has been optimised for Windows 95 and includes a minimum of 8Mb or 16Mb RAM, large hard disks, latest chipsets, fast controllers and plenty of expansion potential.

All are fully multimedia ready with fitted fast CD-ROM drives, 16-bit sound cards, PC Joystick and an excellent range of educational and leisure CD

titles including full feature multimedia encyclopaedia, Wintutor 95 and EZ Language.

Also included is a range of excellent business software from Lotus and others which will handle all your requirements for wordprocessing, filing, number crunching, organizing, graphics and accounts. At these excellent prices with our INTEREST FREE CREDIT Buy Now, Pay Six Months Later (well after christmas) offer, these systems are unbeatable.

APPROVED for credit by the telecommunications systems specified in the following for use subject to the conditions on the items

*APR

0%

INTEREST FREE CREDIT

Example: Multimedia Power PC A/95:- Cash purchase £899 +VAT = £1078.65 inc. delivery & VAT. Credit Purchase:- £107.87 deposit, then pay nothing for 6 months. After six months pay the rest. Total price £899 +VAT = £1078.65 inc. delivery & VAT. 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 95/A 486DX2-66

486DX2-66 Mini tower with 8Mb RAM, 540Mb hard drive, double speed CD and 14" screen

£899

+VAT

Pay just £107.87 deposit

Multimedia Power PC 95/B 486DX4-100

486DX4-100 desktop with 8Mb RAM, 850Mb hard disk, double speed CD-ROM local bus graphics and 14" sharp 0.28 NI screen

£999

+VAT

Pay just £119.62 deposit
14" to 15" upgrade.....+£99

Multimedia Power PC 95/C 75MHz Pentium®

75MHz Pentium® desktop with 8Mb RAM, 850Mb hard disk, double speed CD-ROM, 64-bit PCI graphics and 14" sharp 0.28 NI screen

£1099

+VAT

Pay just £131.37 deposit
14" to 15" upgrade.....+£99

Multimedia Power PC 95/D 75MHz Pentium®

75MHz Pentium® desktop with 8Mb RAM, 850Mb hard disk, quad speed CD-ROM, 14.4 modem, 64-bit PCI graphics and 14" sharp 0.28 NI screen

£1199

+VAT

Pay just £143.12 deposit
14" to 15" upgrade.....+£99

Multimedia Power PC 95/E 100MHz Pentium®

100MHz Pentium® Colossus desktop with 16Mb RAM, 1.08Gb hard disk, 64-bit PCI graphics with 2Mb video RAM, Intel Triton chipset with 265K cache, quad speed CD-ROM, 14.4 modem and 15" screen

£1799

+VAT

Pay just £213.62 deposit

CALL NOW!

Sales Lines Open
Mon-Fri 8.30am-7.00pm
Sat 9.00am-5.00pm

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Multimedia PowerStation '95

The new multimedia PowerStation '95 systems from Time feature a range of popular high specification Best Buy configurations from Colossus and Omega and represent the best value in the UK today. These 486 and Pentium® systems have a high specification which has been optimised for Windows® 95 and includes a minimum of 8Mb or 16Mb RAM, large hard disks upto 1.6Gb, latest chipsets, fast controllers and plenty of expansion potential.

All are fully multimedia ready with fitted fast CD-ROM drives, 16-bit sound cards, PC joystick and an excellent range of educational and leisure CD titles including full feature multimedia encyclopaedia, Bodyworks, EZ Language and games such as Doom. Most models also include fast fax & data modems with Internet pack.

Also included is a range of excellent business software from Lotus and others, which will handle all your requirements for word processing, filing, number crunching, organizing, graphics and accounts. At these special introductory prices, with the finance option from under £44 these systems are a great buy.



System Specification

- ◆ 486 Models: 486DX2-66 or 486DX4-100 processors
- ◆ Pentium® models: 75, 100, 120 or 133MHz Pentium® processor with PCI local bus and 64-bit PCI graphics
- ◆ 8Mb or 16Mb RAM expandable to 64/128Mb
- ◆ 540Mb, 850Mb, 1.08Gb or 1.6Gb fast enhanced IDE hard disks with 256K cache
- ◆ 1.44Mb floppy drive.
- ◆ 14", 15" or 17" SVGA low radiation colour screen
- ◆ Omega desktop case with 7 drive bays and 7 slots (models B, C & D). Model A features Omega mini-tower with 5 drive bays. Model E features Colossus desktop with 7 drive bays. Model F features Colossus midi-tower case with 8 drive bays
- ◆ 102 keyboard and deluxe Microsoft® compatible mouse
- ◆ Microsoft® Windows® 95
- ◆ 12 months warranty extendable to 5 years

Multimedia Hardware

- ◆ Double speed or quad speed IDE CD-ROM drive
- ◆ 16-bit high quality stereo sound card
- ◆ Twin stereo speaker system
- ◆ PC joystick

Fax & Internet Packs -Models D, E & F

- ◆ 14.4 or 28.8 BABT approved fax & data modem
- ◆ Easy to use fax software
- ◆ Communications software
- ◆ Introductory subscription to CompuServe with Internet mailbox.

APPROVED for applications in telecommunication systems specified in the conditions for use subject to the conditions set out in them



Pre-Loaded Software

Included with all systems. See software section for details

- ◆ Lotus 1-2-3 v5 Spreadsheet
- ◆ Lotus Ami Pro v3.1 word processor
- ◆ Lotus Approach v3 database
- ◆ Lotus Organizer v2
- ◆ Lotus SmartPics graphics
- ◆ Lotus Training for 1-2-3, Ami Pro and Approach
- ◆ Intuit Quicken v4 Personal Finance Pack
- ◆ Pacioli 2000 Business Accounts

Multimedia Software

- ◆ BodyWorks multimedia CD
- ◆ Multimedia Encyclopaedia CD
- ◆ Time Almanac CD
- ◆ EZ Language multimedia CD - Learn French, German, Spanish and more
- ◆ Play & Learn Educational CD
- ◆ UFO for Windows CD
- ◆ Dinosaur Museum CD
- ◆ Shareware CD including DOOM, Raptor, Pinball and many other games.

Microsoft Office 95 Plus Models

These systems are only £149 extra and include everything listed plus the following Microsoft titles:-

- ◆ Microsoft Works
- ◆ Microsoft Word 95
- ◆ Microsoft Excel 95
- ◆ Microsoft Schedule 95
- ◆ Microsoft Powerpoint 95



Word 95

Excel 95

PowerPoint 95

Schedule 95



Multimedia PowerStation 95/A 486DX2-66

486DX2-66 mini-tower with 8Mb RAM, 540Mb hard disk, double speed CD-ROM and 14" screen

£799 +VAT



Multimedia PowerStation 95/B 486DX4-100

486DX4-100 desktop with 8Mb RAM, 850Mb hard disk, double speed CD-ROM, local bus graphics and 14" sharp 0.28 NI screen

£899 +VAT
14" to 15" upgrade +£99



Multimedia PowerStation 95/C 75MHz Pentium®

75MHz Pentium® desktop with 8Mb RAM, 850Mb hard disk, double speed CD-ROM, 64-bit PCI graphics and 14" sharp .28 NI screen

£999 +VAT
14" to 15" upgrade +£99

CALL NOW!

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Sat 9.00am-5.00pm

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Finance from under

£44* Per Month

*Finance Example : Cash Purchase: £799 +VAT =£961.15 inc. delivery & VAT.
Credit Purchase: 10% (£96.12) deposit and 24 equal monthly payments of £43.29. Total Price £1134.36 inc. 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%**



CompuServe is only available with fax & Internet packs



Multimedia PowerStation 95/D 75MHz Pentium®

75MHz Pentium® desktop with 8Mb RAM, 850Mb hard disk, 64-bit PCI graphics, quad speed CD-ROM, 14.4 modem and 14" sharp .28 NI screen

£1099 +VAT

100MHz Pentium® upgrade.....+£129
14" to 15" upgrade+£99



Multimedia PowerStation 95/E 100MHz Pentium®

100MHz Pentium® Colossus desktop with Triton chipset, 256K Cache, 16Mb RAM, 1.08Gb hard disk, 64-bit PCI graphics with 2Mb video RAM, quad speed CD-ROM, 14.4 modem and 15" screen

£1599 +VAT

15" to 17" upgrade+£199



Multimedia PowerStation 95/F 120MHz Pentium®

120MHz Pentium® Colossus midi-tower with Triton chipset, 256K cache, 16Mb RAM, 1.6Gb hard disk, 64-bit PCI graphics with 2Mb video RAM, quad speed CD-ROM, 28.8 modem and 15" screen

£1799 +VAT

133MHz Pentium® upgrade.....+£199
15" to 17" upgrade+£199

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Sat 9.00am-5.00pm

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Apple



Apple Computer

The following Apple Macintosh Performa systems offer a complete, ready to run, straight out of the box solution. They include the computer, colour display, keyboard and all the cables necessary to get your system up and running.

Finance from under

£46 * *APR 19.8%
Per Month

Finance Example: Cash Purchase: £849 + VAT = £1019.90 inc. delivery & VAT. Credit Purchase: 10% (£101.99) deposit and 24 equal monthly payments of £45.90 Total Price £1203.59 inc. delivery & VAT

Macintosh Performa 630

PC Specification

- ◆ 66/33 MHz Motorola 68LC040 with 32-bit data bus (66 MHz processor/33 MHz data bus)
- ◆ 4Mb of RAM expandable to 36Mb (8Mb on CD model)
- ◆ 500Mb hard disk
- ◆ 14" Performa Plus display (15" multiple scan display on CD models)
- ◆ 1Mb of DRAM display support
- ◆ 1.4Mb Apple SuperDrive floppy disk drive
- ◆ Keyboard, mouse, 2 serial ports, SCSI interface and video ports
- ◆ Communications expansion slot
- ◆ 8-bit stereo sound
- ◆ One sound-in port, front and rear headphone jacks
- ◆ Apple design keyboard and Apple desktop bus mouse II

630CD Models offer the following advantages:

- ◆ Integrated Apple CD 300i Plus CD-ROM drive
- ◆ 16-bit stereo CD playback

630CD Models with Apple Video/TV system offer the following advantages:

- ◆ Video and TV system
- ◆ Infra-red remote control
- ◆ Avid VideoShop software

Performa 630
with 14" monitor and 4Mb RAM

£759 + VAT

Performa 630CD Plus
with 15" monitor and 8Mb RAM

£969 + VAT

Performa 630CD/TV Plus
with Apple Video/TV System
with 15" monitor and 8Mb RAM

£1189 + VAT

Software**

- ◆ Apple System 7.5 software
- ◆ Claris Works 2.1 (Claris Works 3.0 on 6200 model) integrated software package
- ◆ At Ease 2.0 security package
- ◆ PC Exchange allows you to share and move files between your Macintosh and MS DOS or Windows environment

Performa Plus models also feature:

- ◆ Claris Organizer 3.0 (6200 model only)
- ◆ Mavis Beacon Teaches Typing
- ◆ A selection of clip art
- ◆ Spectre Supreme - 3D arcade game
- ◆ Rosetta Stone Power Pack: an introduction to 4 EC languages
- ◆ Grolier's New Multimedia Encyclopedia CD
- ◆ Microsoft Dinosaurs CD
- ◆ 1994 Guinness Multimedia Disc of Records CD
- ◆ San Diego Zoo presents The Animals CD
- ◆ The Tale of Benjamin Bunny CD
- ◆ Leonardo the Inventor: his drawings brought to life CD
- ◆ MacGallery Clip Art Treasure Pack (6200 model only)

Macintosh Performa 6200

PC Specification

- ◆ PowerPC 603 RISC processor running at 75MHz
- ◆ 256k level 2 cache
- ◆ 8Mb of RAM expandable to 36Mb
- ◆ 4Mb of ROM on 64-bit PowerPC bus
- ◆ 500Mb hard disk
- ◆ Integrated Apple CD 600i quad speed CD-ROM drive
- ◆ 16-bit stereo CD playback
- ◆ 8-bit stereo sound
- ◆ One sound-in port, front and rear headphone jacks
- ◆ 1Mb of DRAM display support
- ◆ 1.4Mb Apple SuperDrive floppy disk drive
- ◆ Keyboard, mouse, 2 serial ports, SCSI interface and video ports
- ◆ Communications expansion slot
- ◆ Apple Design keyboard and Apple desktop bus mouse II

Telephone lines open until 8 p.m.
All offers end 6th January

Performa 6200
with 14" monitor and 8Mb RAM

£1179 + VAT

Performa 6200CD Plus
with 15" monitor, 8Mb RAM
and CD-ROM

£1319 + VAT

Performa 6200CD/TV Plus
with Apple Video/TV System
with 15" monitor, 8Mb RAM and
CD-ROM drive

£1529 + VAT

Options

Modems
Global Village Teleport Gold II £119
Global Village Teleport Platinum £215

Removable Media
Iomega Zip Drive £139
Iomega Zip Disk 100Mb for above £12.50

Scanners
Microtek Scanmaker II £279
Microtek Scanmaker II SP £449

Printers
HP Deskwriter 320 and CSF £189
HP Deskwriter 660C £299
HP Deskjet 850C £339
Epson Stylus Colour £292

Software
Connectix RAM Doubler £45
Connectix SPEED Doubler £45
Connectix QuickCam £90
CE QuickKeys £69
Avid VideoShop 3.0 £259
QuarkXPress Mac £589
QuarkXPress PowerMac £669
Dantz DiskFit Pro £69
Dantz DiskFit Direct £29

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Compaq Presario Multimedia PowerStations

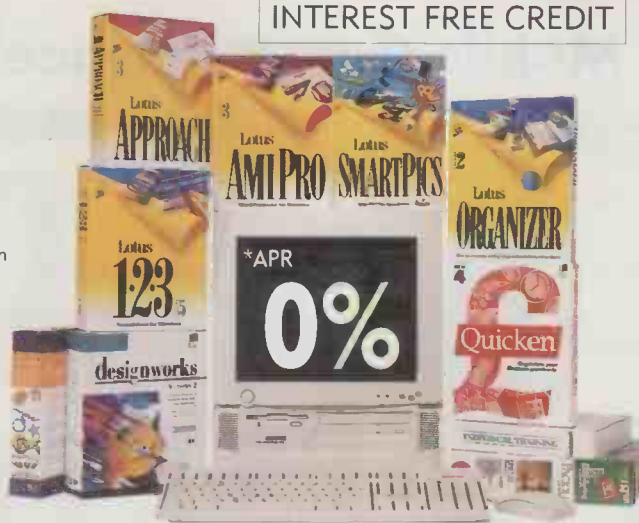
System Specification

- ◆ 486SX2-66 or 486DX4-100 processor
- ◆ 4Mb or 8Mb RAM expandable to 64Mb
- ◆ 420Mb hard disk
- ◆ 3.5" 1.44Mb floppy drive
- ◆ Local Bus SVGA graphics
- ◆ Compact 3 bay case with 2 slots
- ◆ Serial, parallel, joystick, MIDI and mouse ports
- ◆ 14" Low radiation NI SVGA colour screen
- ◆ 16-bit stereo sound card, microphone and speakers
- ◆ Double speed CD-ROM drive
- ◆ Integrated fax/data modem with telephone answering and CompuServe
- ◆ MS DOS 6.2, Windows® 3.1 (free upgrades to Windows 95 from Compaq), Tabworks, Welcome Centre, Control Centre and Learning Centre

Compaq Presario Multimedia PowerStations provide you with famous brand, high quality solutions for home and business use. Only systems from Time come with additional software including the Lotus Business Suite, GSP graphics and DTP packages and New Quicken v4 personal finance pack. Also included are some excellent CD titles including Microsoft® Encarta '95, EZ Language and The Ultimate Human Body.

All systems feature high quality multimedia and also include fax & data modem with answerphone facilities.

INTEREST FREE CREDIT



Software**

See software section for details

- ◆ Lotus 1-2-3 v5 spread sheet
- ◆ Lotus Ami Pro v3.1 word processor
- ◆ Lotus Approach v3 database
- ◆ Lotus Organizer v2
- ◆ Lotus SmartPics graphics
- ◆ Lotus Training for 1-2-3, Ami Pro and Approach
- ◆ New Intuit Quicken v4 personal finance pack
- ◆ GSP Pressworks 2 desktop publishing pack
- ◆ GSP Designworks 2 art & graphics pack
- ◆ Pacioli 2000 Business Accounts
- ◆ Microsoft Works v3 all-in-one package
 - ◆ MS Money finance pack
 - ◆ MS Entertainment pack
 - ◆ Microsoft Encarta® '95 Encyclopaedia
 - ◆ EZ Language French, German, Spanish & more
 - ◆ The Ultimate Human Body



Presario PowerStation A
486SX2-66, 4Mb and modem

£29 Per Month

£382.65 deposit, then 24 monthly payments of £29. Total price £899 +VAT = £1078.65 inc delivery and VAT. *APR 0%.

Presario PowerStation B
486SX2-66, 8Mb and modem

£100 EXTRA +VAT

Presario PowerStation C
486DX4-100, 8Mb and modem

£200 EXTRA +VAT

BUY NOW...

Pay just £156.65 deposit with nothing to pay for 6 months

The new Multimedia Business PCs feature a high specification and all come with superb 15" SVGA NI Colour screens, a plethora of leading software applications including Lotus software suite and a full range of CD multimedia titles. All systems are available on ON INTEREST FREE CREDIT over 30 months!

Telephone lines open until 8 p.m. All offers end 6th January

System Specification

- ◆ 486 model: 486DX4-100 processor
- ◆ Pentium® models: 75 or 100MHz Pentium® processor with PCI local bus and 64-bit PCI graphics
- ◆ 8Mb RAM expandable to 64/128Mb
- ◆ 850Mb fast Enhanced IDE hard disks with 256K cache
- ◆ Superb 15" or 17" SVGA NI low radiation colour screen
- ◆ 1.44Mb floppy drive.
- ◆ Omega desktop case with 7 drive bays and 7 slots.

Software**

See software section for details

Business Software

- ◆ Lotus 1-2-3 v5 Spread sheet
- ◆ Lotus Ami Pro v3.1 word processor
- ◆ Lotus Approach v3 database
- ◆ Lotus Organizer v2
- ◆ Lotus SmartPics graphics
- ◆ Lotus Training for 1-2-3, Ami Pro and Approach
- ◆ GSP Pressworks 2 Desktop Publisher
- ◆ GSP Designworks 3 graphics pack
- ◆ TurboCAD for Windows CAD pack
- ◆ Organize your way organiser
- ◆ CV & Job Search Pro
- ◆ MasterClips SE dlistart
- ◆ Picture This graphics system
- ◆ Intuit Quicken v4 personal finance pack

- ◆ 102 Keyboard and deluxe Microsoft® compatible mouse
 - ◆ Microsoft® Windows® 95
 - ◆ 12 months warranty extendable to 5 years
- Multimedia Hardware**
- ◆ Double speed or quad speed IDE CD-ROM drive
 - ◆ 16-bit high quality stereo sound card
 - ◆ Twin stereo speaker system
 - ◆ PC joystick
 - ◆ PC microphone
 - ◆ Model D includes 14.4 BAPT approved fax & data modem with easy to use fax & comms software and introductory subscription to CompuServe with Internet mailbox.

- ◆ Pacioli 2000 Business Accounts
- ◆ Fun School software suite (5 Packs)
- ◆ EZ Language French, German and Spanish
- ◆ Computerworks, Bodyworks and Autoworks
- ◆ Flying Fingers keyboard and typing tutorial
- ◆ Dinosaurs for Windows

CD Multimedia Software

- ◆ Wintutor 95 multimedia CD
- ◆ Infopedia multimedia encyclopaedia CD
- ◆ World Atlas multimedia CD
- ◆ Bodyworks multimedia CD
- ◆ Time Almanac CD
- ◆ EZ Language multimedia CD
- ◆ Play & Learn educational CD
- ◆ UFO for Windows CD
- ◆ Dinosaur Museum CD
- ◆ Shareware CD
- ◆ 5 Infoware Encyclopaedias CD

Multimedia Business PC 95/B
486DX4-100 desktop with 8Mb RAM, 850Mb hard disk and 15" screen

£58 Per Month

* £156.65 deposit, then nothing to pay for 6 months. After 6 months pay 24 monthly payments of £58. Total price £1299 +VAT = £1548.65 inc. delivery and VAT. APR 0%

Multimedia Business PC 95/C
75MHz Pentium® desktop with 8Mb RAM, 850Mb hard disk and 15" Screen

£64 Per Month

* £188.90 deposit and then pay nothing for 6 months, after 6 months pay 24 monthly payments of £64. Total price £1449 +VAT = £1724.90 inc. delivery and VAT. APR 0%

Multimedia Business PC 95/D
75MHz Pentium® desktop with 8Mb RAM, 850Mb hard disk, quad speed CD-ROM, 14.4 modem and 15" screen

£71 Per Month

* £197.15 deposit and then pay nothing for 6 months, after 6 months pay 24 monthly payments of £71. Total price £1599 +VAT = £1901.15 inc. delivery and VAT. APR 0%

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After 6 months pay just £58 per month for 24 months on Interest Free Credit. APR 0%

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Texas Instruments TFT Colour Notebook

Mobile Comms Office

Time announce incredible deals on the top of the range Texas Instruments TFT and dual scan colour multimedia notebooks. These systems come complete with the best software applications including:- Lotus 1-2-3, Lotus Ami Pro, Lotus Organizer 2, Lotus Approach, Lotus SmartPics, Quicken v4 and AutoRoute Express.

All 486 systems also come with a complete Fax & Internet Pack including a BABT

approved Intel PCMCIA modem with appropriate fax and comms software. Fax your documents to anyone and connect to your PC to your base and many other on-line services with ease. At just £49 per month on Interest Free Credit, these Mobile Comms Office Solutions are going fast. Hurry place your order today!

*APR

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APPROVED for use in communication systems specified in the conditions of use subject to the conditions of use.



Lotus 1-2-3



Lotus Ami Pro



Lotus Approach



Lotus Organizer



Lotus SmartPics



AutoRoute



Quicken



Notebook Specification

Texas Instruments latest 4000M models with built-in multimedia, Intel modem and Pre-loaded software. The Portable CD-ROM dock & Mega Bundle is also available as an option on Interest Free Credit.

- ◆ Intel 486DX2-50, 486DX4-75 or 486DX4-100 processor
- ◆ 4Mb or 8Mb RAM
- ◆ 455Mb or 520Mb IDE hard disk
- ◆ Superb large 10.5" VGA TFT or dual scan colour screen
- ◆ 1Mb VESA video
- ◆ Built-in 16-bit sound card, microphone and speakers
- ◆ Built-in point mouse
- ◆ Adaptec fast SCSI-II port
- ◆ Optional CD-ROM drive clips on
- ◆ 1.44Mb floppy drive
- ◆ PCMCIA II/III and all standard ports
- ◆ MS DOS 6.2 and Windows 3.1 (Free Windows 95 voucher)
- ◆ Intel PCMCIA fax & data modem with software on all 486 models

Portable CD ROM & Mega CD Bundle

This is available on IF credit at extra cost (£26* per month) and includes the following:

- ◆ Double speed CD-ROM drive
- ◆ Larger speaker system with controls for volume, balance and mix
- ◆ Microsoft headphones and external microphone
- ◆ NiMH battery giving option of AC or battery power
- ◆ SCSI II connector and SCSI II bay option
- ◆ Additional Software on Mega CD:- GSP Pressworks 2 and Designworks 2, TurboCAD for Windows, Pacioli 2000 Business Accounts, Computernetworks, Bodyworks and Autoworks plus many more educational and leisure programs



Software**

See software section for details

- ◆ Lotus 1-2-3 v5 Spread sheet
- ◆ Lotus Ami Pro v3.1 Word processor
- ◆ Lotus Approach v3 Database
- ◆ Lotus Organizer v2
- ◆ Lotus SmartPics Graphics
- ◆ Intuit Quicken v4 Personal Finance Pack
- ◆ AutoRoute Express UK v3 for Windows

Telephone lines open until 8 p.m.
All offers end 6th January



TI COMMS OFFICE 4A
486DX2-50 340Mb, 4Mb, dual scan

£49* Per Month

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8Mb model£149+VAT Extra

TI COMMS OFFICE 5
486DX4-75 520Mb, 4Mb, TFT

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8Mb model£149+VAT Extra

TI COMMS OFFICE 6
486DX4-100 520Mb, 8Mb, TFT

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New Pentium® 75 model
TI OFFICE 7

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CD-ROM DOCK BUNDLE with 486 models £147.65 deposit and 24 monthly payments of £26. Total price £599 + VAT = £843.65 inc delivery & VAT. *APR 0%

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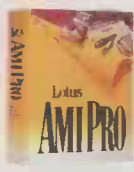
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including Lotus 1-2-3, Lotus Ami Pro, Lotus Organizer 2, Lotus Approach, Lotus SmartPics, Quicken v4 and AutoRoute Express.

They are completely modular and have a full range of docking facilities.



Lotus 1-2-3



Lotus Ami Pro



Lotus Approach



Lotus Organizer



Lotus SmartPics



AutoRoute



Quicken



Notebook Specification

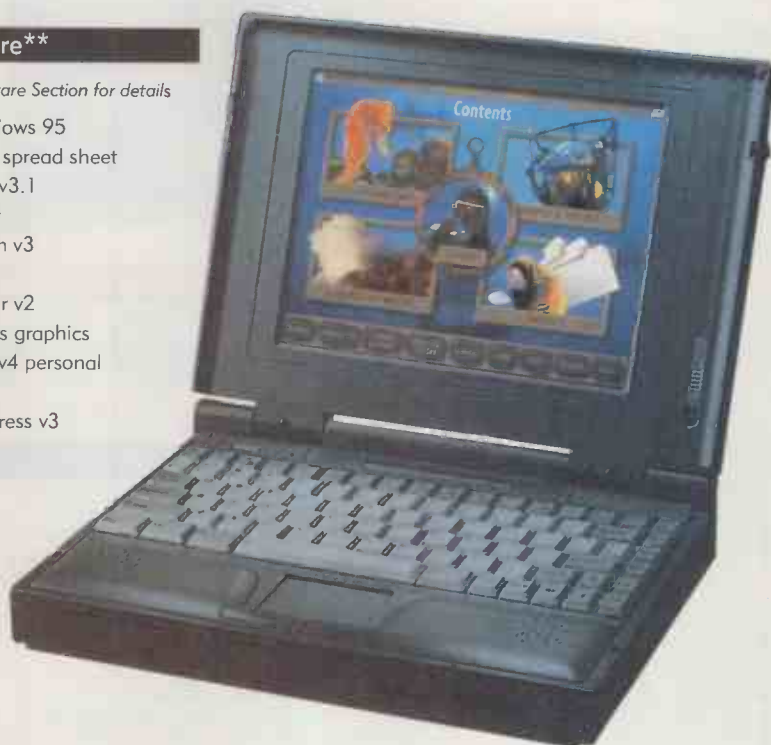
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- ◆ Built-in stereo speakers (optional sound card)
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- ◆ Dim: 287x200x47mm: Weight 6.2lbs
- ◆ 1 Year warranty extendable to 3 years



Software**

See Software Section for details

- ◆ Microsoft Windows 95
- ◆ Lotus 1-2-3 v5 spread sheet
- ◆ Lotus Ami Pro v3.1 word processor
- ◆ Lotus Approach v3 database
- ◆ Lotus Organizer v2
- ◆ Lotus SmartPics graphics
- ◆ Intuit Quicken v4 personal finance pack
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with 340Mb hard disk, and 4Mb RAM

£ **999**

+ VAT

Best Buy 2 Colossus Dual Scan Colour Notebook 486DX4-100

with 540Mb hard disk, and 8Mb RAM

£ **1599**

+ VAT

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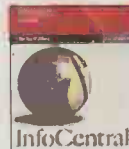
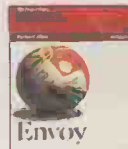
Take a closer look at the specification which includes the fastest Intel® 133MHz Pentium® processors, 1.6Gb enhanced IDE hard disk, a minimum of 16Mb RAM, the fastest 64-bit s3 PCI graphics with 2Mb video RAM, superb 17" screen, super fast 28.8 modem, 3.2Gb tape back-up, advanced PC TV system with Teletext and six speed full-feature multimedia.

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System Specification

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- ◆ 17" SVGA low radiation colour screen
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- ◆ 1.44Mb floppy drive
- ◆ 102 Keyboard and Microsoft® compatible mouse
- ◆ Microsoft Windows 95
- ◆ 12 months warranty extendable to 5 years

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- ◆ Six speed IDE CD-ROM drive
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- ◆ PC microphone

Fax & Internet Pack

- ◆ BAPT approved 28.8 data and fax modem
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- ◆ Communications software
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- ◆ Advanced PC TV system with Teletext
- ◆ 3.2Gb tape back-up system with software

Software**

See software section for details

Business Software

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- ◆ Novell PerfectOffice suite with Word Perfect, Quattro Pro, Presentations, Envoy, GroupWise and InfoCentral
- ◆ GSP Pressworks and Designworks
- ◆ TurboCAD for Windows
- ◆ Organize Your Way
- ◆ CV & Job Search Pro
- ◆ Pacioli 2000 Business Accounts
- ◆ Masterclips SE and Picture This!

Educational Software

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- ◆ Computerworks, Bodyworks and Autoworks
- ◆ EZ Language French, German and Spanish

Leisure Software

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- ◆ Doom, Blake Stone, Pinball and Raptor Games

CD Multimedia Software

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- ◆ WinTutor 95
- ◆ World Atlas CD
- ◆ Bodyworks CD
- ◆ EZ Language Multimedia CD
- ◆ Time Almanac CD
- ◆ UFO for Windows CD
- ◆ Dinosaur Museum CD
- ◆ Play and Learn CD

Ultimate Time Machine 4

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Plus model with Additional MS Office 95 ... +£149

*APR

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Just Look At The Spec !

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|--|---|--|
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| <input checked="" type="checkbox"/> 1.6Gb enhanced IDE hard disk | <input checked="" type="checkbox"/> S3 64-bit Graphics with 2Mb video RAM | <input checked="" type="checkbox"/> 9 bay Colossus tower |
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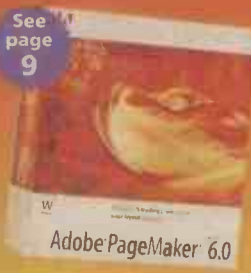
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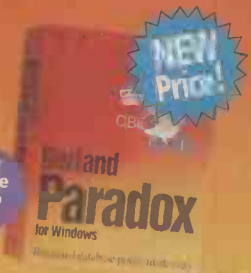


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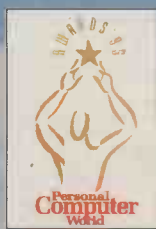
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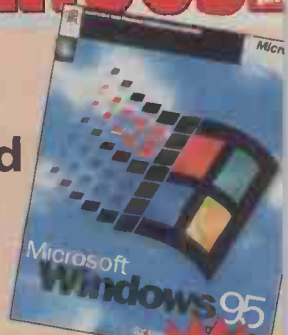
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Lotus cc Mail 10 User Lic	£287
Lotus Notes Win Client 3.3	£289
Lotus cc Mail Desktop	£70
Lotus Notes Express	£133
Lotus Notes Starter Pack	£579
Lotus Notes Desktop Lic.	£139
Lotus Notes Server for NT 3.31	£262
Lotus Notes Client full for Windows	£275
Ms Mail Server/Net V3.5	£299
Ms Mail Pc Serv. 100s V3.5	£299
Ms Mail Gateway	£412
Ms Post Office W/G U/G	£220
PC Anywhere Win V2	£99
PC Anywhere Lan	£389
PC Anywhere Host 2	£57
PC Anywhere Remote	£67
Procom Plus For Windows	£56
Qmodem Pro (Win)	£59
Quardeck Internet Suite (P15)	£69
Reachout Host/View v 5	£79

REACH03	Reachout Host For Modems	£59
REACH04	Reachout Modems Viewer	£57
REACH06	Reachout 10 User Lan Lic	£139
REACH07	Reachout/Network 5 User Lan	£145
REF001	Reflections 4 / V4 Win	£238
REF004	Reflections 1 / V4 (Win)	£249
EMA003	Remote Winmail	£109
SMA001	Smart Term 340Emulator V4	£176
TER001	Termite 3 Async Win/Dos	£169
TER004	Termite 3.0+Net For Win	£239
TER006	Termite 6 Single User	£169
TER007	Termite V3 Async Comp U/G	£99
WEB001	Web Author (3.5)	£1000
DEL022	Win/Pro V4.1 by Delrina Net St Kt U/g	£129
DEL017	Wincomm Pro By Delrina	£56
WIN039	Winfax Pro V4	£55
WIN040	Winfax Pro V4 U/G	£176
WIN049	Winfax Net Start Kit V4.1	£239
WIN090	Winfax Scanner New User	£220
WIN091	Winfax-Winfax Scanner U/G	£97
DEL023	Winfax Pro Server V4.1	£229
WIN066	Winmail Network 5 User	£399
WIN067	Winmail Network 10 User	£1299
WIN068	Winmail Network 50 User	£1299

DATABASE

WINDOWS VERSIONS		
ACT004	Act For Windows V2	£138
ACT007	Act V2 Lan Pack (4 Node)	£379
ACT008	Act V2 10 User License	£129
ACT005	First Act	£65
ALP004	Alpha 5 For Windows New!!	£69
ALP010	Alpha 5 Home & Bus. Edt (P25)	£40
ASK001	Askasm	£93
ASK002	Askasm V1 - V2 Upgrade	£54
BOR023	Borland Reportsmith V2.5	£59
CLA002	Claris Filemaker Pro V2.1 (P27)	£30
CLA005	Claris Filemaker Pro 2.1 5 User	£559
DAT005	Datebase Express (Win)	£199
DAT011	Datebase Developer	£1199
DAT025	Datebase V5	£98
DBA006	Dbase For Windows V5.5 (P27)	£279
DBA007	Dbase For Windows U/G (P27)	£89
MIC038	Fox Pro 2.5 Mip	£214
MIC039	Foxpro 2.5 20Mip	£3699
KEY005	Key Database	£29
KEY008	Key Database Plus	£81
LOT062	Lotus Approach V3	£76
LOT063	Ms Access Dev Tool Kit V2	£225
MIC148	Ms Access V2	£218
MIC174	Ms Access V2 Ccp U/G	£81
MIC258	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. Dev Tools	£149
PAR018	Paradox V5 (P27)	£95
PAR019	Paradox V5 U/G & Comp U/G	£59
Q&A002	Q & A For Windows	£142
Q&A004	Q&A For Nworks 3 User Lic	£259
ADD004	Rapid Address Program	£149
BOR026	Reportsmith Spl	£169
SID004	Sidewick For Win '95 (P16)	£29
SUP002	Superbase 4 V2 Developer	£499
SUP005	Superbase V2.0	£159
SUP007	Superbase V2 Dev Edition	£606
TRA008	Tracker (Stand Alone)	£189
TRA009	Tracker 5 User Network	£599
TRA010	Tracker 10 User Network	£1106
BOR105	Visual Dbase For Win	£209
MIC322	Visual Fox Pro V3.0 Prof	£312
MIC324	Visual Fox Pro V3.0 Stan. (P7)	£139
DOS VERSIONS		
ACT003	Act Server 5User	£598
ACT002	Act! For Dos	£189
REF002	Borland Reflex V2.0	£172
CLI003	Clipper Tools	£289
CLI005	Clipper Release 5.2	£289
DAT024	Datebase V5 For Dos	£76
DBA010	Dbase V5 For Dos (Dos)	£71
FOX016	Fox Pro V2.6 Std. Dos	£279
PAR013	Paradox V4.5 Comp/Ug Dos	£128
PAR014	Paradox Runtime (Dos)	£99
PAR017	Paradox Engine	£99
Q&A001	Q&A V4.0 (Dos)	£215

DTP

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ALD002	Aldus Persuasion V2	£79
ALD007	Aldus Persuasion V2.1	£249
BIT001	Bitstream Make-Up	£57
COR044	Corel Ventura V5 U/G Cd (P20)	£60
COR046	Corel Ventura V5 Cd	£199
COR047	Corel Ventura V5 Floppy	£289
CRE020	Creator	£79
FIR003	First Press For Windows	£19
FON001	Fonts Windows	£9
GST001	GST Publishing Partners	£79
GST002	GST Pressworks 2	£25
HAR024	Harvard Asap	£89
ILL001	Illustrator V3.0	£85
INT016	Internet Publishing Kit Cd	£72
MIC022	Micrografix Designer V4.1	£287
MIC073	Ms Publisher V2	£65
MIC165	Ms Publisher Design Pack	£29
MIC317	Ms Publisher V3.0.5 (P5)	£65
MIC318	Ms Publisher V3.0 Cd	£65
PAG032	Page Plus For '95	£30
PAG021	Page Plus V3 Pub/Suite	£69
PAG023	Page Plus Photo Plus	£29
PAG027	Page Plus 3 Pub Suite Cd	£75
PAG00x	Pagemaker V6 For Windows	£430

PAG005	Pagemaker V5 20Usr Edu Ec	£1654
PAG014	Pagemaker V5 Educational	£199
PAG018	Pagemaker Classic	£55
PAG011	Pageplus Artpack V1	£26
PAG012	Pageplus Font Pack (Win)	£26
QUA014	Quark Express V3.3 (Win)	£559
DOS VERSIONS		
FAN001	Fanatsla	£179
TIM012	Timeworks V3 Dos	£55

GRAPHICS

WINDOWS VERSIONS		
FIR002	151 Design	£23
3DD001	3D Designer	£229
3DF001	3D F/X By Asymetrix	£99
ADD003	Add Depth	£79
ADD002	Add Impact	£69
ADO008	Adobe Illustrator V4	£345
ADO006	Adobe Photoshop V3	£382
ADO014	Adobe Premier V4	£348
CON003	Conversion Artist 2	£59
CON002	Convolver	£99
COR038	Corel Draw 3 On CD (P20)	£42
COR012	Corel Draw 4 CD	£84
COR003	Corel Draw 4.3.5 (P20)	£95
COR018	Corel Draw 5 3.5	£349
COR030	Corel Draw 5 CD	£278
COR033	Corel Draw 5 CD U/G from V4 (P20)	£115
COR032	Corel Draw 5 3.5 U/G from v4	£145
COR019	Corel Draw 5 3.5 U/G from v3	£254
COR031	Corel Draw 5 CD U/G from v3 (P20)	£195
COR122	Corel Draw 6 '95 CD (P20)	£260
COR123	Corel Draw 6 U/G from 3 or 4	£220
COR124	Corel Draw 6 U/G from v5	£142
COR054	Corel Photopaint 5 Plus Cd	£48
XAR001	CorelXARA New!	CALL
COR040	Corel Sampler	£8
DES012	Designer Powerpack C/U Cd	£139
DES014	Designer Powerpack U/G Cd	£345
DES013	Designer Powerpack U/G Cd	£154
DES009	Designworks V2 Win	£59
DES015	Designworks V3.0	£29
DES016	Double Vision	£30
DRA007	DRAW! Visual V2.0 (Cd)	£36
ELA001	Elastic Reality	£249
FV003	Flying Fonts Win Cd	£153
FRA007	Fractal Painter 3.0	£296
IMA001	Imagepals 2	£143
JAG001	Jaggies Are Gone	£69
KAI001	Kai's Power Tools (Hsc950)	£89
LOT069	Lotus SmartKeys Windows	£84
MAC009	Macromedia Director V4	£750
MAC010	Macromedia Freehand (P27)	£399
ME003	Media Studio	£199
PAG029	Monster Cd From Serif	£9
MOR004	Morph For Windows	£89
MR0010	Morph Movies On Cd	£37
PAI003	Paintshop Pro (P22)	£90
PAI004	Paintshop Pro + Kpt 5e (P22)	£70
PAI002	Pc Paintbrush + Paints	£25
PER021	Perform For Windows	£47
PHO002	Photofinish U/G	£25
PHO001	Photofinish V3	£29
RAY001	Ray Dream Designer 3	£189
SIM009	Simply 3D & Corel 3 Bundle	£62
SIM008	Simply 3D 1.0 (P21)	£70
VIS057	Simply 3D Superpack	£43
HAR012	Spotlight	£89
SUI001	Suite Imaging	£204
TOP004	Toplevel Fast Forms	£25
TOP008	FastForms for Win '95 (P26)	£25
TOP019	Toplevel Forms for Win '95	£69
TRU003	Truespace By Caligari (P21)	£149
TRU004	Truespace V2.0	£369
VIS054	Visual Reality V1.5 (P21)	£100
VIS055	Visual Reality V2.0 (P21)	£199
WAL003	Walk Through Pro - Pc	£149

GRAPHICS CHARTING

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ABC001	ABC Flowcharter V4	£215
ABC002	ABC Flowcharter V4 Lic	£189
ABC003	ABC Flowcharter V4.0 CU	£99
ABC007	ABC Flowcharter V4.0 U/G	£99
ABC008	ABC Graphics Suite CU '95 (P19)	£99
ABC005	ABC Graphics Suite Win 95	£239
COR034	Corel Flow v3 for '95 New!	£37.25
NEW028	Corel Flow v3 for '95 New!	CALL
HAR023	Harvard Chart XI V2	£143
VS060	Visio 4 (P19)	£99
VIS028	Visio Biotechnology/Medic	£39
VIS026	Visio Chemistry	£39
VIS035	Visio Express For Lotus	£49
VIS036	Visio Express For Office	£49
VIS030	Visio Flowcharts	£39
VIS025	Visio Insurance Claims	£39
VIS017	Visio Landscaping Lib.	£39
VIS020	Visio Mechanical Eng Lib	£39
VIS015	Visio Network Diagrams	£39
VIS027	Visio Petroleum Engineer	£39
VIS018	Visio Software Diagrams	£39
VIS016	Visio Space Planning Lib.	£39
VIS059	Visio V4 U/G	£59
DOS VERSIONS		
CRI002	Ca Cricket Graph V1.3	£54
HAR020	Harvard Graphics V3 Dos	£275

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FOG2	Ca Super Office	£99
AC04	Frameworks V4	£349
T006	Lotus Works V3	£85
MO02	Lotus Symphony V3	£405
CO61	Ms Works 3.0 For Dos	£84
007	PFS 1st Choice	£29

FOR018	Form Toolgold For Win (P26)	£50
FRAM06	Franklin Ascend	£132
GA0002	Game Runner (V2)	£39
LAB003	Labels Unlimited	£29
LAP007	Laplink For Windows	£88
LOT078	Lotus Organiser V2.1	£88
MAG021	Magnaram	£29
MAG021	Magnaram 95 (P8)	£29
MAP010	Mapvision Gb	£139
MAP011	Mapvision Central London	£139
MIC192	Microsoft Test	£399
PC7003	MS Office Assistant	£45
MIC223	MS Office Assistant	£59
MIC160	MS Schedule + 1.0 Starter	£89
MIC161	MS Schedule+1.0 SPack Win	£189
MIC162	MS Schedule+1.0 20Pack	£597
MIC298	MS Schedule + For Win 95	£69
MIC120	MS Windows Sound System 2	£46
NOR032	Norton Utilities/95 Trade Up	£49
NOR035	Norton Antivirus 95 Trade Up	£28
NOR037	Nor/Navigator 95 Trade Up	£34
NOR018	Norton Backup V3 Win	£89
NOR020	Norton Desktop (Win) V3.0	£88
NOR021	Norton Antivirus V3 Win/D	£94
NOR022	Norton Utilities V8 W/Dos	£85
NOR031	Norton Utilities / Win 95	£84
NOR033	Norton Utilities Win 95Cd (P24)	£94
NOR034	Norton Antivirus Win 95 (P24)	£99
NOR036	Norton Navigator Win 95 (P24)	£99
NOR038	Norton Navigator Win 95Cd	£72
NOR039	Norton Disklock	£64
ONF001	On File	£39
PKZ001	P.K. Zip	£28
PAC001	Pack Rat V5.0	£189
PER012	Personal Calendar	£9
PSF009	PFS CV & Job Search Pro (P13)	£29
SP1001	Power Album	£29
RAM020	Ram Doubler For Windows (P23)	£49
RSJ001	RSI Monitor, (Amp)	£49
SCRO03	Screencam Win V2 (Lotus)	£85
SID004	Sidickick 95 For Win 95 (16)	£29
RMG002	Sofram '95 Memory Doubler (P23)	£49
MIC242	Sourcecase V3.1	£259
SEPO05	Spellwrite	£14
STA013	Stacker V4 Win/Dos	£14
STA018	Stacker V4 Universal U/G	£36
STA022	Stacker V4 + Qemm V7.5	£69
STA026	Stacker/Cleanseweep Bundle	£27
SUP015	Superprint 3.1	£75
SUP016	Superqueue Ver 3.1	£49
SWI001	Swimsuit Calendar	£22
UNIN05	Uninstaller 3 (P25)	£36
VID002	Video Director	£29
VID038	Video Director V2	£79
WIN089	Win'95 Advisor	£70
WIN061	Wincheckit	£39
WIN050	Windolets V2 3.1 & '95 (P25)	£30
WIN019	Windows Printing System	£79
WIN060	Winprobe V3	£49
WIN002	Wired For Sound Pro 3.5	£64
XTR006	Xtree Gold For Windows V4	£24
XTR008	Xtree Tools For Netware	£379

WOR077	Wordstar V2 (P26)	£28
DOS VERSIONS		
DIS001	Displaywrite V5	£252
LET002	Letterperfect	£69
LOC002	Locoscript Pro V2	£62
MIC164	Ms Word V6 Dos	£172
OXF001	Oxford Engl. Dict. Cd/Rom	£349
NOV064	Wordperfect 6.0 C/U VLA	£69
WOR130	Wordperfect 6.0C New!	£189
WOR131	Wordperfect 6.0C U/G	£76
WOR132	Wordperfect 6.0C C/U	£99
WOR025	Wordstar V7.0	£223

WIN062	Ms Plus	
WIN073	Dos To Win	
WIN084	Dos To Todi	
IBM004	IBM PC DOS Ver...	
DO5011	Ms Dos V6.22	
WIN021	FWFG 3.11 Base...	£8
WIN029	FWFG 3.11 Addon(Dos)...	£8
NOV007	Novell Dos V7...	£49
OS2003	Os/2 Warp V3 (Disk)...	£50
OS2004	Os/2 Warp V3 (Cd)...	£2
OS2013	Os 2.2/Warp Connect Upgd	£69
OS2014	Os2.2/Warp Conn Win Ug	£89
OS2008	Os2 For Windows (3.5)	£99
OS2005	Os2 V3 Warp U/G Disk	£49
OS2006	Os2 V3 Warp U/G Cd	£35
OS2007	Os2 With Windows (Cd)	£89
OS2011	Os2 Warp Connect V3 Cd	£89
OS2009	Os2 Warp Conn Winos2 V3Cd	£99
OS2015	Warp Win/Warp Conn Win Ug	£48
MIC166	Nt Advanced Server 3.1	£699
WIN034	Win Nt Ug To Adv Ser Cd	£398
WIN062	Win Nt Serv 3.1 To 3.51Ug	£475
WIN063	Win Nt Serv 3.5 20Usr Lic	£397
WIN075	Win Nt Workstation 3.5 Ed	£98
WIN076	Win Nt Sgl Server 4.21A	£654
WIN078	Win Sna Server 2.10 Cd/3.5	£287
WIN054	Window Nt Ug Work Station	£67
WIN054	Windows Nt Server U/G	£476
WIN055	Windows Nt Server V3.51	Call
MIC224	Windows Nt Server V3.51Cd	£475

TRANSLATION & LANGUAGE LEARNING

WINDOWS VERSIONS		
EZL001	Ez Language - 6 Languages	£31
EZL002	Ez Language French	£27
EZL003	Ez Language German	£27
EZL004	Ez Language Italian	£27
EZL005	Ez Language Spanish	£27
EZL006	Ez Language Russian	£27
EZL007	Ez Language Japanese	£27
FRE004	French Pronunciation V3.0	£39
LAN005	Gamma Universe	£149
GER001	German Pronunciation V3.0	£39
GLO013	Globalink Pt Pro French	£259
GLO014	Globalink Pt Pro German	£259
GLO015	Globalink Pt Pro Spanish	£259
GLO021	Global P/T French Deluxe	£99
GLO020	Global P/T Spanish Deluxe	£99
GLO022	Global P/T German Deluxe	£99
GLO006	Globalink Pt French Win (P10)	£90
GLO007	Globalink Pt German Win (P10)	£90
GLO008	Globalink Pt Spanish Win (P10)	£90
LAN001	Language Ass French Win	£43
LAN002	Language Ass. Spanish	£43
LAN003	Language Ass. German	£43
LAN004	Language Ass. Italian	£43
LEA008	Learn To Speak Spanish V5	£89
LEA009	Learn To Speak French V4	£99
VIC001	Learning French Gcse	£15
VIC002	Learning German Gcse	£15
LIN017	Lingua Talking French	£15
LIN018	Lingua Talking German	£15
LIN019	Lingua Talking Italian	£15
LIN020	Lingua Talking Spanish	£15
LIN021	Lingua Talking Greek	£15
LIN022	Lingua Talking Japanese	£15
LIN023	Lingua Talking Russian	£15
SPA003	Spanish Pronunciation V3	£39
THI001	Think & Talk German	£99
THI002	Think & Talk Italian Mpc	£99
THI003	Think & Talk Spanish	£99
THI004	Think & Tnch	£99

DOS VERSIONS		
GLO009	Globalink Pt Pro French	£285
GLO010	Globalink Pt Pro German	£285
GLO011	Globalink Pt Pro Spanish	£285
GLO012	Globalink Pt Pro Russian	£245
GLO019	Globalink Pt Chinese Dos	£99
GLO003	Globalink-Pt French Dos	£55
GLO004	Globalink Pt German Dos	£55
GLO004	Globalink Pt German Dos	£55
GLO005	Globalink Pt Spanish Dos	£55

FORMS

WINDOWS VERSIONS		
PER003	Form Flow Designer & Fill	£99
KEY003	Key Form Designer	£29
KEY007	Key Organiser Chart	£29
MIC039	Ms Electronic Form Design	£189
PER004	Perform Pro Filler	£74
PER005	Perform Pro Filler 10Pk	£1207
TOP003	Toplevel Forms (P26)	£69

NETWORKING

WINDOWS VERSIONS		
NOV031	Novell 3.12 5 User	£395
NOV032	Novell 3.12 10 User	£962
NOV033	Novell 3.12 25 User	£1143
NOV037	Novell 3.12 50 User	£1940
NOV035	Novell 3.12 100 User	£2540
NOV033	Novell 3.12 250 User	£4575
NOV046	Novell 4.1 5 User	£440
NOV038	Novell 4.1 25 User	£1687
NOV039	Novell 4.1 50 User	£2300
NOV040	Novell 4.1 100 User	£3109
NOV041	Novell 4.1 250 User	£5409
NOV059	Novell 4.1 5 User On Cd	£413
NOV063	Novell 4.1 100 User Cd	£2865
NOV036	Novell Lan Work Place	£189
NOV047	Novell 10 User Lan Workplace	£996
ART003	Lantastic Network Kit X 2	£199
ART005	Lantastic Single User S/W	£65
ART006	Lantastic Xtra User Coax	£145
ART007	Lantastic Xtra User Utp	£149
ART009	Lantastic Add On Kit(Bnc)	£99
ART010	Lantastic Add On Kit(Rj45)	£108
ART011	Lantastic Single User Lic	£65
ART012	Lantastic 5 User License	£213
ART014	Lantastic For Os/2	£76
ART015	Lantastic 5 User Lic Os/2	£265
ART016	Lantastic 50 User Coax Bnc	£265
ART017	Lantastic 5 User Utp Cnd	£265

O/S

DOS VERSIONS		
WIN071	Windows 95 U/G 3.5 (P6)	£59
WIN072	Windows 95 U/G Cd	£59
WIN081	Ms Plus On Cd For Win 95 (P6)	£28

LANGUAGE

WINDOWS VERSIONS		
003	Asymetrix Toolbook V3	£119
002	Asymetrix Multimedia Tool	£489
R101	Borland C++ & D/Base Tool U/G Cd	£187
R098	Borland C++ & Dbase Tool C/U Cd	£187
R016	Borland C++ V4.5 C/U	£222
R020	Borland C++ V4 Assembler	£54
1650	Borland Turbo Assembler	£58
009	Borland C++ 4.5 U/G Cd	£155
006	Delphi By Borland Cd	£155
007	Delphi Client Server	£679
008	Delphi C/U (P19)	£119
009	Delphi Rad Pack	£125
188	M.S. Visual Tools Suite	£175
236	Ms Sgl Server 4.21A Win Nt	£658
232	Ms Visual C++ V2 Cd Rom	£265
225	Ms Visual Control Pack	£69
240	Ms Visual C++ V2 Mips	£465
326	Ms Visual Basic V4 U/G	£38
327	Ms Visual Basic V4 Std (P7)	£69
328	Ms Visual Basic Pro V4 Cd	£298
185	Ms Visual Test 4.0 New!	£440
329	Ms Vis/Basic Pro V4 U/G	£108
330	Ms Vis/Basic Pro V4 U/G Cd	£107
331	Ms Vis/Basic Pro V4 C/U	£199
332	Ms Vis/Basic Pro V4 C/U Cd	£199
333	Ms Vis/Basic Enterprise	£607
334	Ms Vis/Bas Enterprise U/G	£359
1006	Symantec C++ V7	£149
003	Turbo Pascal V1.5	£79
064	Turbo C++ V4.5 For Win	£61
139	Visual Express by CA	£243

SPREADSHEETS

DOS VERSIONS		
104	Informix Smartware liv2.6	£389
146	Macro Assem V6.11 Win/Dos	£95
004	Ms Macro Assembler V6.11	£95
071	Ms Visual Basic 1.0 Std	£79
005	Turbo C++ V3.0	£55
008	Turbo Pascal V7.0	£75

WINDOWS VERSIONS		
002	Crystal Ball For Excel	£220
003	Crystal Ball For Lotus123	£223
010	Key Spreadsheet Plus	£25
017	Lotus Improv	£92
020	Lotus 123 V2.4 Lan Server	£387
030	Lotus123 Adt License	£199
061	Lotus 123 V5	£219
108	Lotus 123 Trade Up	£88
004	Ms Excel V5 Win	£224
141	Ms Excel V5 Upgrade	£85
286	Ms Excel For Windows 95	£225
287	Ms Excel For Win 95 C/U	£107
288	Ms Excel For Win 95 U/G	£82
017	Quattro Pro V6	£149
312	Supercal (Win)	£68
314	Supercal Dos To Win U/G	£49

DOS VERSIONS		
360	Lotus 123 V4	£287
011	Quattro Pro V5.5 (Dos)	£45
04	Supercal For Dos	£68

PROJECT MANAGEMENT

WINDOWS VERSIONS		
003	Business Plan v2 by PlanIt (P17)	£89
002	Ecco Professional	£148
003	Ecco Professional 3 User	£329
004	Ecco V3.0	£99
05	Inspiration	£99
009	Key Project Win	£29
013	Maps And Data 3.0	£339
157	Ms Project 4.0 Win	£279
184	Ms Project V4 Ccp U/G	£85
001	On Target	£69
322	Performance Now I	£129
001	Success. Biz Writer (Win)	£69
009	Superproject Rel 3.0A	£479
003	Symantec Timeline	£319

UTILITIES

WINDOWS VERSIONS		
008	Arcserve For Windows NT	£596
002	Arcserve V5.01 Net.5 User	£165
003	Arcserve V5.01 Net.10 User	£337
005	Arcserve S.01 Net 50User	£643
010	Arcsolv For Windows	£80
002	Asymmetric Media Blitz	£49
003	Bubblehelp	£14
002	Calendar Creator Win	£25
309	Cleansweep	£27
010	Cleansweep 95 (P8)	£27
016	Corel Cd Power Pack	£25
062	Corel Cd Creator	£103
004	Dashboard PS For Win 95 (P16)	£29
010	Dr Solomons Av (1/4Ly)	£70
012	Dr Sols Antivir Monthly (P25)	£135
008	Dr Solomons Audit/Manager	£298
001	FarSide Daily Planner	£49
213	Fastmove	£39
06	First Aid For Windows	£35
07	First Aid 95 For Win 95 (P16)	£35

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WINDOWS VERSIONS		
AFT001	Afterdark	£24
AFT004	Afterdark V3	£24
FR002	Farside Screen Saver	£26
AFT002	More Afterdark	£16
MIC106	Ms Scenes Sierra Club	£6
MIC107	Ms Scenes Impressionists	£15
MIC108	Ms Scenes Outer Space Col	£15
MIC232	Ms Scenes Flight Collect	£15
MIC233	Ms Scenes Sports Extremes	£15
OPU001	Opus And Bill	£24
SIM020	Simpsons Screen Saver	£24

WORD PROCESSING

WINDOWS VERSIONS		
LEG002	120 Legal Letters (P26)	£25
ACC002	Accent Express V2 (P24)	£37
ACC003	Accent Special Edition V2 (P24)	£90
ACC004	Accent Professional V2 (P24)	£187
ADD004	Adobe Type Manager V3.0	£29
ADD005	Adobe Type Manager-Wp	£35
LOT057	Lotus Ami Pro V3.1	£84
LOT113	Lotus Wordp (P18)	£89
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MICROSOFT FOR THE HOME

MS Encarta 96 MS Fury³

A vast universe of knowledge comes to life on your PC. Microsoft Encarta 96 Encyclopedia is a fully revised, adapted and updated version of the world's best-selling multimedia encyclopedia

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The first shoot-em-up action arcade game from Microsoft!

Seated in a fully-armed spacecraft, pilots complete combat and rescue missions while saving 8 planets from destruction during a space age civil war. You can attack key enemy installations on three parallel playing fields: above, below and along each planet's surface. From the sweltering heat of the tropics to a toxic chemical wasteland, you have eight worlds to save. Fury is optimised for Windows 95 and will also run on Windows 3.x systems, True 32-bit gaming technology makes Fury fast and fun to use.

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MIC314 MS Fury³.....

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NEW PRODUCT

MIC349 MS SideWinder 3D Pro.....

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With Microsoft Cinemanania 96 for Windows 95, choosing a video to rent can be almost as much fun as watching it!

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NEW PRODUCT

MIC353 MS Cinemanania 96.....

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Give Windows 95 even more utilities and style with Microsoft Plus!

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At the recent LIVE! show, Software Warehouse had a world exclusive by selling Fury³ 14 days before its launch!

Microsoft

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MICROSOFT FOR THE OFFICE

5 Great Business Products!

Excel 95



The spreadsheet for anyone whose job isn't just by the numbers.

Microsoft Excel for Windows 95® operating system was designed based on your needs. Whether you're working on a simple summary or charting sales trends, Microsoft Excel helps you work the way you want to get your job done.

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MIC298 MS Schedule +.....**£69**

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MIC174 MS Accessfrom **£81**

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MIC327 MS Project V4.1 Upgrade **£85**

MIC328 MS Project V4.1 **£279**



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EVERYTHING FOR YOUR PC - NEXT DAY!

4 hot new titles from Quarterdeck!

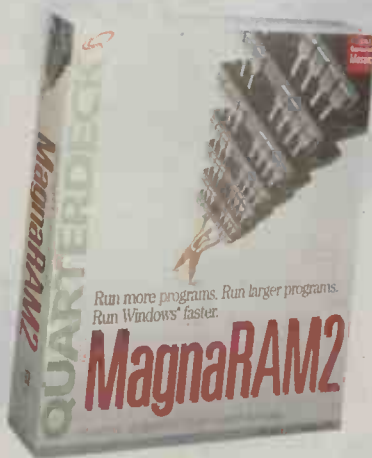


All Quarterdeck products are compatible with Win 3.1 Windows 95

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Save mega-bytes with CleanSweep 95!

Total cleanup for Windows 95. Get more hard disk space and better performance - now!

CleanSweep 95 is the essential 32-bit uninstaller program for Windows 95. There's simply no other way to clean up the remnants of your old Windows desktop and manage your new 32-bit environment properly. Best of all, CleanSweep 95 is simple to use.



Your hard disk is crammed with megabytes of useless files, unused fonts, system files and files that you don't use that often. CleanSweep 95 monitors your system and completely and effectively hunts down and removes any 16 and 32-bit program and files to save disk space. You select your level of interaction: let CleanSweep 95's automated wizards determine which components of a program to remove...or choose to confirm every action yourself. These files can be placed into compact packages which can be deleted completely, backed up to any location in compressed form, archived so they can be brought back with a mouse click, moved to another location on a local drive or the network or transported onto another machine.

It is fully compatible with Windows 95 and uses revolutionary Windows 95 automated wizards to speed through tasks simply and safely. The program leads you through every aspect of cleaning up your hard disk with clear explanations and intelligent actions. CleanSweep 95 is a must have program for Windows 95 users and upgraders and is the most advanced uninstaller for all other versions of Windows. Any user who needs to make room on a disk or remove the clutter, will need and appreciate the simplicity, power and effectiveness of CleanSweep 95.

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CLE010 CleanSweep 95 **£34⁹⁵**

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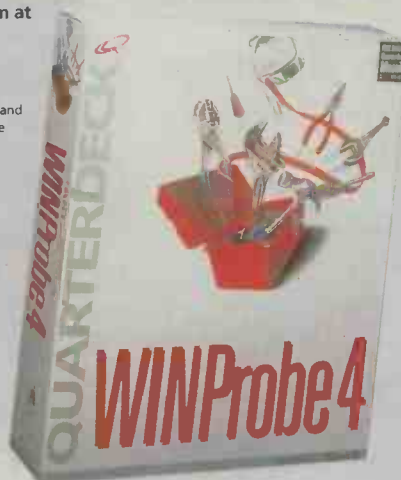
Quarterdeck WINProbe, the troubleshooter toolbox is essential for every Windows and Windows 95 user to diagnose the source of hardware and configuration problems and optimise Windows configuration.

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- 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.



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News



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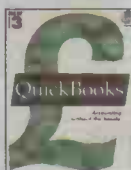
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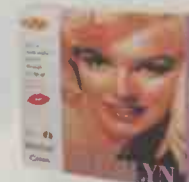
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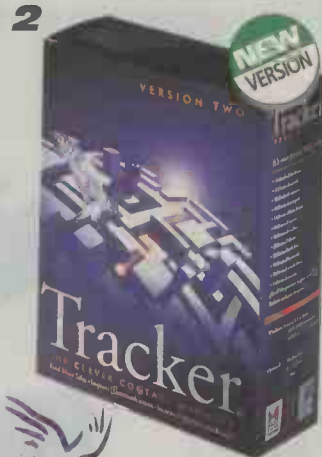
Tracker Version 2 will help you to be more successful in business - which is all about people contacts. It immediately enables you to organise your contacts in the way you want, so you can keep track of what's going on. It's totally integrated and easy-to-use.

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- Mail Management
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- Networkability
- Communications
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All you have to do is specify a single character and a design style and GraphicType Designer automatically selects the other characters needed to build the design; it then calculates the optimum number of repetitions needed and scales the characters to give a precise result.

You paste your design into the host application, and scale it just like a graphic, but, because it still references the font screen redraw and printing are fast. In other words, you get the flexibility of a graphic and the performance of text.

GraphicType Designer is probably the most amazing Windows software you will ever own!

- GRA027 GraphicType Designer **£24⁹⁵**



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See page 32 of advert for details.

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WINcheck It 4.0

The all-in-one Windows problem solver

WINcheck It 4.0 provides optimum performance while keeping problems to a minimum. Here are some reasons why you need the all-in-one Windows problem solver!

Be Sure You Don't Have a Hardware Problem!

When something goes wrong, the first question is: Is it Hardware or Software? If you've 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)

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 - like 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

Recovery That Works Even When Windows Won't!

Not all change is good. Sometimes installing a new

WINcheck It features:

- Improved Uninstaller with program archiving options for safer uninstalls
- New One-of-a-kind CD-ROM diagnostic
- Improved Clean & Zip utility
- New comprehensive Modern Diagnostic
- Windows 3.1 and Windows 95 compatible
- New multimedia benchmarks for thorough system performance testing



TouchStone

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

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!

- Program Item Icon
- Program Executable
- Files in Related Program Directory
- Related INI Files
- Files in Related Working Directory



STOCK CODE: WIN093 **£39⁹⁵**

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Creative Labs Dual Speed CD-ROM Drive

Includes everything you need to upgrade your PC. Fully MPC level 2 compliant CD-ROM drive. 680Mb data capacity. 64K RAM buffer. 300Kb/sec data transfer rate. 320ms access time. 320 Multi-session Photo CD compatible.

102 Dual Speed CD-ROM Drive **£39⁹⁵**

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Includes everything you need to upgrade your PC.

- New quad speed CD ROM drive
- PowerIDE™ software to eliminate conflict with hard disk drive
- Complies with MPC level 3
- 32-bit disk access
- Video-CD and CDi movie
- Includes all accessory parts for quick, trouble free installation
- Optional IDE interface card available

PAN008 Quadro Kit IDE **£119⁹⁵**

Aztech 6X Speed CD-ROM Drive

Aztech's award winning CD-ROM drive technology pumps data to the PC six times faster at a

900KB/sec transfer rate, with average access time of less than 225 mins. It supports all the major CD recording standards including full multi-session Kodak Photo CD, CD-i for MPEG Digital Video and CD-Audio.

AZT001 Aztech 6X CD-ROM Drive **£139⁹⁵**

Panasonic PD System

- Quad speed CD-ROM drive and 650Mb rewritable optical disk drive. Removable 650Mb optical
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- CD-ROM function supports video CD and CDi movie
- Includes all accessory parts for quick trouble-free installation

PAN007 PD System Kit w/out I/F card **£485**
 PAN009 PD System Kit with I/F card **£589**
 PAN010 650Mb Optical disc **£39⁹⁵**

CD Vision Packs



Why buy an MPEG Board? Get one free in every Ultimate MPEG Pack!

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 1003 CD Vision Pack 3 (The Ultimate Entertainment Pack - 16 CDs) **£279⁹⁵**

After Dark for Windows 95



After Dark, the world's No.1-selling screen saver, is now available for Windows 95. After Dark for Windows 95 has 45 fully-animated displays, 50% more than before, including favourites like Bad Dog, Fish Pro, Flying Toasters with Karaoke, Boggins, Boris and more. There's even a bonus display from the new Totally Twisted After Dark Screen Saver. Plus, After Dark adds the following new Windows 95 features: custom icons for each display, use of the right-mouse button to set up and start After Dark, After Dark in the Windows 95 Taskbar, and a special notification icon for the Windows 95 Tray. After Dark for Windows 95 includes password protection, Randomizer, Multimodule, EcoLogic and more. And, for a limited time, After Dark for Windows 95 is half price! This special Windows 95 promotion ends on Nov. 15, 1995. Runs on Windows 95 and Windows 3.1.

1006 After Dark **£27⁹⁵**
 1001 Totally Twisted **£27⁹⁵**

Next-day delivery only £6⁹⁵ E&OE. All prices are plus VAT and delivery and are subject to change and availability.

Timex DataLink

The smart way to organise and transfer data from your PC to your wrist!

Using Timex and Microsoft's personal time manager software (included), store information on your PC and elect what you want to send to your watch. You can also directly link to Microsoft Schedule Plus for Windows. In addition to telling the time and offering a programmable link to your PC, the Timex Data Link watch features day/date, three year battery life, Indiglo™ night light and it is water resistant at up to 100 metres.

No wires, no cables - Just point the watch at your screen!

Downloading information is as easy as pointing your wrist at the screen. The watch sensor reads the flashing bars of light - that's the data. In seconds, the watch loads up to 70 different entries, then update as often as you like.

A little black book on your wrist!

Think of your Timex Data Link watch as a little black book on your wrist. It can hold:

- Your telephone numbers - Need a number, just bring your watch up to the screen
- Appointments - The watch will beep to tell you its time to leave, and even show you who your meeting with and where.
- Never forget another birthday or anniversary again! An icon appears a week before and then on the day.
- To-Do-Lists - A great memo log that prioritises tasks.
- Alarms - Pre-set up to five alarms a day.



Downloads information directly from MS Schedule+ in Office 95

£79⁹⁵ STOCK CODE: TIM014

TIM017 Datalink (Steel bracelet)
 TIM018 Datalink (Leather bracelet)

Screen Magic Stick-Ups



Stick-Ups are the quick and easy way to create reminders, jot down information and ideas, track tasks, and attach comments. You can create notes instantly while working in your other applications. Just click the Floating Note Pad, and then type in your note. It's that simple. With Stick-Ups, you'll never scramble for pen and paper, or misplace important information.

50003 Screen Magic Stick-Ups **£18⁹⁵**

Paradise Pipeline 64

The Paradise Pipeline 64 is an uncompromised, true 64-bit graphics and motion video accelerator card that provides unparalleled performance in business, education and entertainment applications.



The motion video acceleration allows you to view full-screen, full motion video at 30 frames per second in a scalable window using the Western Digital WD9710 integrated graphics and motion video accelerator chip. This state-of-the-art motion video playback is accomplished using hardware interpolation, colour space conversion, and unique video architecture.

WES012 Paradise Pipeline 64 **£149⁹⁵**

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Watch the behaviour of animals in their natural habitat, hear bird calls and understand complex environmental systems as microscopic life, the effects of climate and the prehistoric world. Features over 50 stunning video sequences, 60 original animations, 700 photos and illustrations, and 2 hours of sound clips.



DOR005 DK Encyclopedia of Nature **£32.95**



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Watch a medieval archer loading and firing his longbow, hear the passion in the actual spoken words of Martin Luther King, and share in the joy of German crowds as they tear down the Berlin Wall. Investigate historical stories, facts and artefacts from around the world with a simple mouse click.

DOR007 DK Eyewitness History of World CD **£32.95**

World Reference Atlas

A remarkable geographical reference for on-screen use.

Explore the world as never before with the ease and clarity of computer-generated maps. Zoom in and out from world and continental overviews to close-up views of the regions of individual countries. The gazetteer includes more than 250,000 different place names and links them to the maps.



DOR006 DK World Reference Atlas CD **£44.95**

Cat and Bird

The ultimate multimedia guides to the worlds of cats and birds.

Hear the range of sounds from the cat family, see them in action and find out what makes cats such supreme hunters. You will also find out where every member of the wildcat family lives, what it eats and whether it is threatened by its natural habitat. You will also hear folk stories that surround cats and discover works of art inspired by their mysterious ways.

Enter the extraordinary world of the masters of flight, from the huge Andean condor that soars on its four metre wingspan to the amazing, flightless ostrich that stands more than three metres high. Understand the world of birds and its effect on human culture.

DORXXX DK Cat CD **£29.95**

DORXXX DK Bird CD **£29.95**

Virgin Interactive

Command & Conquer

News



Our Reading shop, which recently opened on August 24th, has already exceeded all expectations. A big thank you to all our Reading customers.



Strategy, tactics, guns, bombs-Kaboom!!

Command and Conquer is the perfect blend of strategic thinking with arcade gameplay-joined together with glorious cinematic sequences. The stark horror of conflict is punctuated with over 60 minutes of vividly rendered presentation comprising news footage, commercials, mission briefings and cut-scene rewards.

VIRXXX Command & Conquer **£27.95**

Star Wars Rebel Assault II

The long awaited sequel to the best seller Rebel Assault

A totally fresh, original fantasy in the Star Wars universe- with significant improvements to the now famed Rebel engine, plus features that make it more like an interactive Star Wars experience than a game. The Empire has developed a new secret weapon, once deployed, this new weapon could eliminate the Rebel Alliance.



VIRXXX Star Wars Rebel Assault II **£28.95**

Tilt

Flipper-tastic 3D Pinball

Tilt is a table tickling, ball banging ride around the most realistic pinball simulation to date. Every bulb and screw is rendered down to the smallest detail with table layouts ranging from the Dungeons & Dragons-inspired Mystic table to all the Fun of the Fair table. In keeping with real pinball tables, Tilt features loops, ramps, kickbacks, revolvers, multiball-combination bonuses, speech and music from rock to jazz. Start slappin'!!

VIRXXX Tilt **£29.95**

The DIG

The epic sci-fi adventure inspired by Steven Spielberg

A team of astronauts is mysteriously transported to an alien world where they uncover artifacts of an ancient, yet advanced civilization. They must sift through the ruins and assemble the necessary technology to take them home. In the process elements of greed and self preservation erupt as they make an important discovery...



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Journey To The Centre Of The Earth



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3D Garden Designer 2



£12.95
EUR004

Gone Fishin'



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3D Interior Designer

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GAM002 GameRunner **£38.95**



Roland Pro Sound Package

Pro Quality Desk Top Music

This unique hardware/software package provides you with the same superb Roland sounds used by professional musicians.

Roland PC200MK 2 Keyboard

The PC200G5 features 49 velocity-sensitive keys as well as a bender/modulation lever for even more expressive music data input. The octave up/down function extends its range to six octaves, enough for any kind of performance.

Roland SC-10 Daughterboard

Snap Roland's SC-10 GM Daughterboard onto your PC's FM sound card to add the superb Roland Articulated-Wave™ sounds used by professional musicians everywhere. The daughterboard includes 128 Instrument and 119 rhythm sounds.



Roland CS-10 Micro Monitor

To complete the set add a Roland CS-10 Micro Monitor. It's small foot print easily fits under your computer monitors display. Two front mounted 5cm speakers for mid and high frequencies. Separate low frequency speaker mounted in bottom of unit. Also includes headphone jack.

- ROL001 Keyboard Controller **£138.95**
- ROL011 Interface & GM Daughterboard **£213.95**
- ROL003 Single Powered Speaker (15W) **£98.95**
- ROL002 Roland Package (keyboard, soundboard, speakers) **£497.95**

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Great Disney moments for your desktop

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DIS004 Lion King Screen Scenes..... **£21⁹⁵**



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More than 16 fantastic print projects to choose from. Favourite characters and scenes from The Lion King, and a collection of specially designed fonts are included. Available on PC diskette.

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Lion King Animated Storybook

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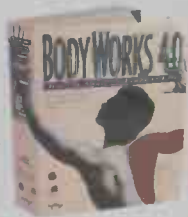
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PFS009 PFS Job Search..... **£28⁹⁵**

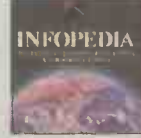


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- UK product quick reference card
- FREE subscription to the monthly CompuServe member magazine



COM012 CompuServe Value Pack **£22⁹⁹**

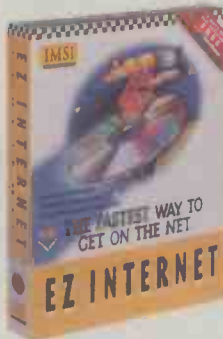
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About the Motorola Online Bundle

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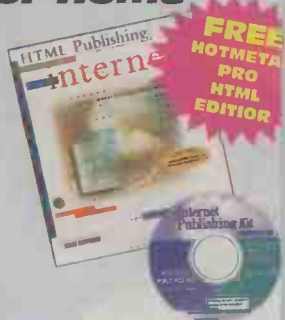
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- Panorama - SGML document reader
- Adobe® Acrobat® Reader - Portable Document Format (PDF) reader
- Common Ground Viewer - for viewing formatted documents
- HTTPD server and MWAC server - turn your PC into an internet server
- Polyform - interactive forms designer
- CGI back end program - Microsoft Access query tool
- giftrans.exe - transparent.gif graphics converter

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 INT019 Internet Phone (2 pack) **£69⁹⁵**



World Wide Web Kit™

Everything You Need to Navigate and Stay Up-to-date on the Web!

The World Wide Web is where the Internet really shines - with graphics, video, sound and live links between remote sites. The kit offers everything users need to navigate and stay up-to-date on the Web's extensive graphical and audio resources, including:

- Special Access Offer - instant access to IBM Internet Connection service provided by IBM Global Network, with local phone numbers and 800 line service.
- Netscape Navigator™ - the cutting edge Web browser that's sweeping the Internet, featuring a versatile new toolbar, superior text flow, built-in sound and video, powerful security modules and much more.

INT015 World Wide Web Kit™ **£38⁹⁵**

Free Interactive book / CD-ROM

Walking the World Wide Web is a richly illustrated, personalized tour of the top Web sites. The CD-ROM includes Ventana's unique WebWalker™ technology, a hyperlinked electronic version of the book featuring live links to Internet sites.



Internet Membership Kit™ V2.0

The No.1 Selling All-in-One Internet Solution!

Ventana Mosaic™ - a fully licensed and commercially supported version of Enhanced Mosaic™ from Spyglass™ Inc, the most widely recognised World Wide Web browser.

Newsreader - enables users to read and post to newsgroups anywhere in the world; software highly acclaimed for ease of use and custom capabilities. complete documentation included.

Easy Graphical E-mail and Browsing - simple point and click software with built-in e-mail, Gopher, FTP, Telnet and more. Includes an elite shareware selection for Macintosh and the popular Chameleon Sampler™ from NetManage™ for Windows.

Online Companion™ - Purchasers can access regular updates to software and listings on Ventana Online - including the full, hyperlinked text of Ventana's Internet Roadside Attractions.

Special Access Offer with easy one button sign-on - Instant access to IBM Internet Connection service provided by IBM Global Network, with local phone numbers as well as 800-line service.

INT014 Internet Membership Kit™ V2.0 **£39⁹⁵**

Internet Roadside Attractions
 Innovative, interactive listings guide featuring full text on CD-ROM and hyper-linked for instant connections on-line.



News



In our September survey, Matt was rated at 98% for Customer Satisfaction by a survey return over 130 customers.

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The first on-line information service designed for your PC. Get the latest news instantly, find phone numbers faster, avoid jams with up to the minute traffic reports. See details on 900,000 companies, choose where to stay, eat or sit anywhere in the UK. Then plan your journey right down to street level. Because it's all on-line, it's all up to date and it saves you time and money. Tel-Me lets your PC do the hard work, so searches take only a few seconds and Tel-Me's "Hardly On-Line" technology keeps your phone bill right down. And Tel-Me gives you FREE Internet E-mail. Being on-line has never been easier or better value!

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- QUA021 Quarterdeck InternetSuite **£79**

PSION Dacom Gold Card Modems

Portable data communications solution.

The Psion Dacom Gold Cards let you add fax 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!



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- 1002 V34 28.8 Gold Card **£194⁹⁵**
- 1003 V34 28.8 Gold Drive PCMCIA Reader **£99⁹⁵**

ZOOM Fax/Modems

An award winning V34 modem for only £147!

Porting advanced features like remote configuration and callback security the ZOOM fax/modem offers unbeatable value for money. No wonder Personal Computer World have awarded ZOOM Editor's Choice 2 years in a row. ZOOM offer either internal or external versions with a choice of either 1,400bps or 28,800bps speeds. Each modem comes with a five year manufacturers warranty, while the external versions' front panel has a 15 digit monitoring display to help you understand the current communication status.



- 10005 ZOOM 28.8 Internal Fax / Modem **£146⁹⁵**
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EVERYTHING FOR YOUR PC - NEXT DAY!

First Aid 95 for Windows 95

Fixes Windows crashes, automatically fixes over 1,000 known problems in Windows 3.11 and Windows 95 and cleans your Windows system to remove clutter and improve performance.

It can take hours to track down even a simple problem in your Windows system. With Technical Support you hold for ages and when you get to speak to someone, it's difficult to explain the problem, let alone implement a solution.

To create First Aid we analysed thousands of Windows problems and then built the exclusive "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, you won't see cryptic messages or lose all work since the last time you saved it. First Aid actually intercepts most crashes and lets you save your work in all open apps!

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!

First Aid uses an extensive knowledge base to diagnose and fix problems. As newer applications are released and more problems and remedies are identified, CyberMedia continually enhances the knowledge base to support these.

Now includes uninstaller!

First Aid now comes complemented by a powerful uninstaller application to keep your system uncluttered.



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

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Daniel Brown, Info World

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Sidekick 95 for Windows 95

It's The Simplest Way to Stay Organised!



Starfish UK

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Sidekick 95 helps simplify your life - not complicate it. With the improved drag-and-drop interface, there's no need to enter information twice or complete complicated import / export procedures. Sharing information between the Calendar, Cardfile, Wordprocessor, Expenses Tracker and Contact Manager is as easy as moving your mouse across the desktop. Sidekick 95 will even dial your phone! Using Windows 95's new "Plug-and-Play" technology, Sidekick automatically looks for and configures any installed modem.

New for Sidekick 95 is an integrated word processor with all the features you need for day-to-day letter writing and document production. What's more it's linked directly to the Cardfile database, so writing properly addressed letters or even mail merging is just a mouse click away. To make life easy, Sidekick automatically prints letters, schedules, notes, names and addresses in over 70 different formats including labels, envelopes and popular paper organiser formats like Filofax™.



SIDEKICK 95
STOCK CODE: SID004
£29⁰⁰ RRP £49.00

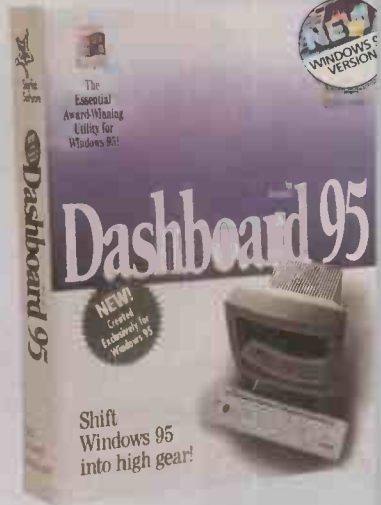
SID002 Sidekick 2.0 for Windows 3.11.....£27

Dashboard 95 for Windows 95

The Simplest Way to Organise Windows 95!

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Microsoft

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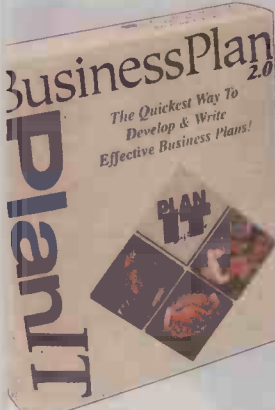


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- On-Line Help & Advice
- Contact Database
- On-Line Business Forum

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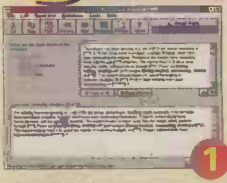
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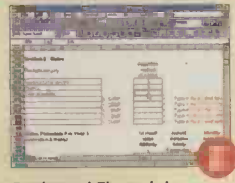
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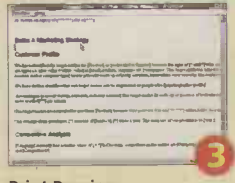
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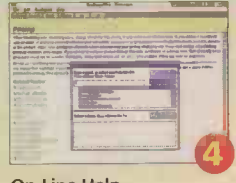
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Provides relevant questions and sample answers from which to create a business plan. Automatically formats your business plan with headlines, subheadings, and company details. Plus, QuickText allows you to insert recurring phrases, names and dates.



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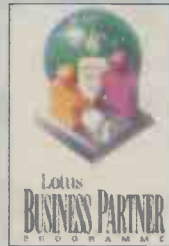


Jes Miller
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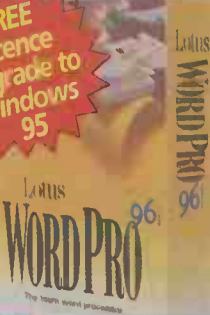
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Lotus SmartSuite 4.0 is now even better value at only £168⁹⁵!

If you own ANY competing software suite, ANY competing spreadsheet, word processor, database, or graphics program, or ANY other Lotus product - Call us now, you qualify for the Lotus SmartSuite upgrade.

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ABC Graphics Suite for Windows 95



The complete graphics package for Windows 95 and Office 95 users.

Micrografx has merged ABC FlowCharter, Designer, Picture Publisher and the revolutionary new ABC Media Manager into the ABC Graphics Suite. It combines superior diagramming, flowcharting, drawing, image editing, painting and clipart whilst using the familiar Microsoft Office for Windows 95 interface. Because ABC Graphics Suite uses the familiarity of an industry-standard interface, you and/or your colleagues can get up and running more easily. ...And because it's a true 32-bit Windows 95 application, its performance is up to four times that of 16-bit applications. ABC Graphics Suite features award-winning diagramming, imaging, and illustration tools to let you work with greater productivity and let your ideas gain shape speedily. The Drag-and-Drop Clipart Manager allows you to easily incorporate clipart into your work.

ABC Graphics Suite includes:

- ABC FlowCharter • Micrografx Designer
- Micrografx Picture Publisher & Media Manager
- Visual Clipart Libraries and Fonts

ABC Graphic Suite Features:

- Superior diagramming, flowcharting, drawing, image editing and more
- True 32-Bit with multithreading
- Over 20,000 pieces of ClipArt
- Over 7,500 photos
- Over 2,000 diagramming symbols
- Over 250 fonts
- Compatible with over 50 file formats including TIFF, BMP, DXF and CorelDraw!
- Comes on two CD-ROMs

ABC006 ABC Graphics Suite	£239⁹⁵
ABC007 Comp. Upgrade	£99⁹⁵

The smart way to create all your business diagrams and more - Visio 4!

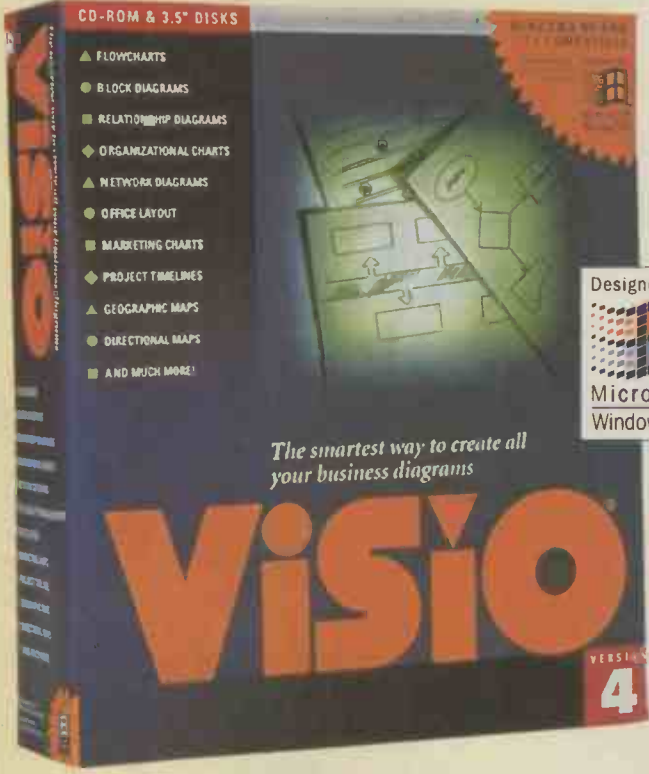
Now more than ever, Visio is the smartest way to create all your business diagrams. Version 4 has been enhanced in almost every area, boasting many new productivity features. With both 16 and 32bit versions in one box Visio 4 is optimised for both Windows 3.1 and Windows 95.

The new optimised 32-bit Visio exploits the advanced capabilities of Windows 95 and will also run on Windows NT 3.51 systems. It offers you significant productivity gains, including these great new features:

- Faster 32bit performance
- Descriptive, long file names make locating files easy
- 'QuickView' lets you preview diagrams before opening them
- Drag work from a diagram to the desktop to create a Scrap file, then easily incorporate it into different documents by simply dragging and dropping
- Stencils float or can be locked to any side of the Visio window
- Work more efficiently with mouse button menus and actions, now including pop-up help
- Use Windows 95's new multitasking to continue working on a diagram while other tasks are being done simultaneously in the background

Visio's new Wizards make creating new diagrams a snap. They set up pages, numbering, headers and any number of document features. An 'Organisational' Wizard automatically generates a chart from your data - either a text file or Excel spreadsheet. You can even generate a project timetable with the 'Timeline' Wizard.

Thanks to new smart data management Visio 4 will automatically connect to Microsoft Office and Lotus Notes. Its compatibility with Office toolbars means that you are already familiar with Visio from the start.



Designed for

Microsoft
Windows 95

only £99⁰⁰

STOCK CODE: VIS060

Extra Visio Shapes & Ideas

In addition to the SmartShapes™ included in Visio, you can select one or more of 15 Add-On SmartShape products for your own particular diagramming tasks or projects. Visio SmartShapes™ are more than static clip art or symbol libraries, because they anticipate how you'll use them and then behave in a useful way. SmartShapes™ resize without distorting, connecting lines stay glued and reroute automatically, and text goes where it should in a format that makes sense. There are more than 3,000 shapes to choose from. Simply add the shapes you need, when you need them!

- Electrical Engineering **£39**
Create electrical and electronic diagrams
- Marketing **£39**
Illustrate business, sales and marketing concepts
- Software Diagrams **£39**
Produce data flows, processes & logic structures
- Space Planning **£39**
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- Chemical Engineering **£39**
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- Home Planning **£39**
Plan your dream home or your next remodel
- Kids **£39**
A wealth of fun illustrations & shapes for kids
- Landscape Planning **£39**
Landscape your garden & create planting charts
- Visio Technical Productivity Packs enable you to produce technical drawings and schematics with the ease of Visio.
- Visio Technical Productivity Pack Upgrade for existing Visio Users... **£99**
- Visio Technical Productivity Pack Bundled with Visio... **£199**

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or ordering information and terms & conditions, see page 32.



EVERYTHING FOR YOUR PC - NEXT DAY!

CorelDRAW! V6 for Windows 95

The World's Premier 32bit Windows 95 Drawing Software!

CorelDRAW 6 is THE essential drawing package for Windows. If you need to illustrate, photo-edit, 3D-render, present or chart absolutely anything then CorelDRAW! 6 for Windows 95 is the software to choose.

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 an amazing 0.1 micron.

To make designing posters or large scale graphics easier, page size support has been increased to over 150 feet by 150 feet! OLE 2.0 support enables in-place editing and OLE automation. There is also OPI (Open Press Interface) support.

CorelDraw! Version 6 includes CorelDRAW! 6, Corel PhotoPaint 6, Corel Presents, CorelDream 3D PLUS 9 Powerful Utilities! And now there's 90 days FREE technical support from Corel - You can't go wrong!

COR122 CorelDraw! 6 - Full Version on CD **£259⁹⁵**

COR124 CorelDraw! 6 - Upgrade from V5 on CD... **£144⁹⁵**

COR123 CorelDraw! 6 - U/G from V3 or 4 on CD... **£224⁹⁵**

Call us!
We will not
be beaten
on Corel!



Illuminatus V3

Illuminatus features 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 CR-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.

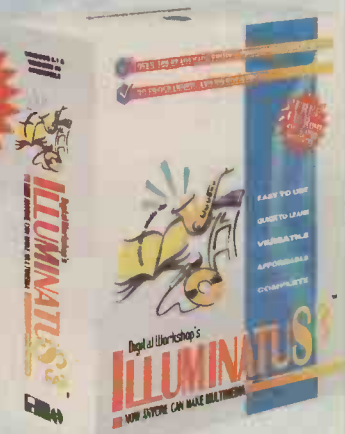
Includes Free CD-ROM!

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.

ILL001 Illuminatus v3

£99⁹⁵

Compatible
with both
Windows 3.1
and
Windows 95



Corel Ventura V5

Power publishing for Windows.

Corel Ventura 5 extends the boundaries of DTP with an intuitive new interface and powerful architecture that supports both structured and free-form documents. With over 650 fonts, 17,000 clip-art images, 100 photos and 75 style sheets and templates, it's ideal for reports, manuals and brochures.

COR044 Corel Ventura CD..... **£59⁸⁵**

Labels Unlimited

Create great labels easily - any size or style.

Whether you're creating labels for addresses, file folders, audio/visual, or inventory stickers, Labels Unlimited has the label format that you need. Choose from over 80 A4 size labels for Avery, TENZA, Stampiton and others - or custom design any format of your own.

LAB003 Labels Unlimited for Win **£26⁹⁵**

LAB001 Labels Unlimited for DOS..... **£26⁹⁵**



Instant 3D for Windows 95

An amazing new way to add stunning 3D, words and clip-art to Microsoft Word, Powerpoint, Excel or any other Windows 95 word processor, graphics or presentation package. With Instant 3D you can turn any text into a 3D object, right on the page.

Instant 3D comes with catalogues of hundreds of objects for everything from business graphics to 3D buttons for your World Wide Web home page - and it all happens in an instant! Instant 3D adds tremendous value to your suite of productivity applications.

Drag and drop simplicity!

Simply drag objects, textures or light settings from a convenient on-screen catalogue into your document. Using an intuitive control you can clip, rotate and scale text and objects in a 3D window, whilst remaining in your original document page. Instant 3D's advanced text editor uses standard Windows TrueType fonts that can be extruded and deformed using a wide selection of pre-defined shapes.

Takes full advantage of Windows 95!

Instant 3D takes full advantage of Windows 95 thanks to OLE 2.0 support. Instant 3D works inside your application adding a user-friendly button bar menu option to your favourite word processor, presentation or spreadsheet package. Alternatively, you can choose to use Instant 3D in a standalone mode and save your images in popular graphic file formats for use at a later date.

vis063 Instant 3D for Windows

£39⁹⁵



CorelDraw! 3

The ideal entry-level package.

This award winning software offers excellent type manipulation and drawing features in addition to CorelChart, Corel PhotoPaint and CorelSHOW all in one value-packed box. Also includes over 14,000 clip-art images / symbols, and 250 fonts.

COR038 CorelDRAW! 3 CD **£42**

CorelDraw! 4 CorelDraw! 5

The ideal Desktop Publishing Tool!

Features comprehensive page layout, type editing and illustration tools as well as CorelMOVE animation software. Also includes 18,000 clip art images and symbols, colour separation, OCR software, Corel PhotoPaint, CorelSHOW, CorelChart and hundreds of other features.

COR012 CorelDRAW! 4 CD **£83⁹⁵**

COR031 CorelDRAW! 5 (3-5)CD..... **£195**



ClarisImpact 2.0

Business graphics for all your charting and diagramming needs.

Create connected diagrams such as organisational charts, flow charts, computer diagrams, brainstorm charts and TQM charts. It also helps with the creation of project time lines, calendars, data charts, freeform graphics and presentations.

CLA010 ClarisImpact

£169⁹⁵



News

Software Warehouse and Microsoft held a joint stand at the Live 95 show. You can see Software Warehouse at the Shopper Show at Olympia in November.

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5 Great Products -



Simply 3D SuperPack!

Features everything you need to explore exciting 3D computer graphics.

The Simply 3D SuperPack consists of three programs and hundreds of megabytes of 3D worlds. Simply 3D is a complete multimedia 3D graphics program for enthusiasts, artists and business presenters. Use 2D drawing from popular drawing applications, make them 3D and use the 120 seamless textures and 100 3D objects to create photo-realistic images and animations.

The Simply 3D SuperPack also includes three volumes of Simply Scenes 3D virtual worlds (Starter Pack, The Northern Castle and Jurassic Adventure) Plus, Double Vision which lets you create 3D images and animations, just like those old Hollywood movies, from scanned photographs and then view them with the 3D glasses (included). WinBlob makes 3D modelling easy and fun, using "meatballs" to create organic shapes which can then be rendered in Simply 3D.



v15057 Simply 3D SuperPack **£69⁵⁰**



Amazing effects with Simply 3D!

Simply 3D enhances Corel Draw! and other 2D draw and paint applications so that you can quickly and easily add 3D effects to your work.

£42⁵⁰

STOCK CODE: SIM008

Double Vision

Create amazing full colour 3D images and 3D animations from photographs.

Designed for ease of use, Double Vision enables hobbyists and professionals to create full colour 3D images - similar to those viewed in Hollywood's "3D Movies" - from scanned photographs or computer generated images. Double Vision images can be viewed three dimensionally on-screen or in print using the included 3D stereo 3D glasses. Double Vision comes with a CD containing sample images and 3D animations.



v15056 Double Vision **£29⁹⁵**

Animate it all with Visual Reality 2.0!

The latest release of the leading 3D graphics and animation package.

Visual Reality 2.0 adds a new Universal Animation System which allows you to animate quite literally anything - cameras, objects, lights, materials and more - all with just a few mouse button clicks. Objects can be twisted, stretched and even morphed in 3D, videos can be played in the background or projected to create animations to broadcast quality and beyond. Visual Models new "munge" facilities allow you to deform any object - including morphing between shapes - and it has an essential unlimited undo feature. Visual Font is the most powerful 3D

text building system yet created! It includes automatic 3D bevels, bending of text along a 3D path, and solid shaded preview. Data from popular drawing and CAD packages can also be imported, rendered and animated. All of this functionality is complemented by over 2Gb of 3D data including 500 3D objects for business use, 1500 textures, 9 3D virtual worlds - including The Northern Castle, Pacific Beaches, Orbit City and Jurassic Adventure, 10 3D scenic UniSpheres™, 100 AVI video clips from a Hollywood film library, and 100 high resolution still background images.

v15055 Visual Reality 2.0 (7 CD set) **£199**



Now With A 30-Day Money Back Guarantee

Features include:

- 2Gb data library • 500 3D objects
- 800 textures
- 700 seamless textures
- 9 3D worlds • 10 unispheres
- 100 time-lapse video clips
- 100 photographic backgrounds

Visual Reality v1.5 - Pro 3D!

The professional 3D graphics software with award-winning rendering and animation.

v15054 Visual Reality **£99⁹⁵**



trueSpace V1 - The reality of affordable 3D!

Caligari trueSpace for Windows is an award-winning, revolutionary package that integrates professional 3D modelling, rendering and broadcast quality animation within an easy-to-use, "natural" interface. You can produce photo-realistic images as used on the front cover of Time magazine, or video animations, professional enough for the evening news.

Until now, 3D modelling, rendering and animation was really 2D, enhanced with orthogonal views. Unlike other programs, trueSpace actually mirrors the real world so that you can manipulate 3D objects directly and interactively in real time.

- **Model, Render and Animate!**
3D design couldn't be easier, painting and drawing expand into 3D modelling. Draw 3D, paint on 3D, shape objects like clay and use real-time preview to direct your 3D characters like actors on a film set. Render final slides or video animation at workstation speed with the touch of a button.
- **Seamless Integration**
Most 3D formats such as DWG, 3D Studio, Wavefront, Lightwave, Image and others are supported. Import BMP, TGA of TIF for texture and bump mapping. Output BMP, TGA or AVI/video for Windows with alpha channel.
- **Welcome to the 3rd Dimension**
trueSpace is the first PC-based animation package that makes adding materials to your objects enjoyable, rather than something to be dreaded! In other programs, painting an object with colours and textures is a stab-in-the-dark process. With trueSpace simply grab a paintbrush, touch the areas you want to colour and watch as they are instantly rendered with the combination of colour, bump and texture mapping you selected.
- **Simply The Best!**
Whether you are a Graphic Artist, Multimedia Designer, Video Professional or simply want to expand into 3D, trueSpace will break barriers to free your expression without breaking your budget. It's the only 3D graphics package with a natural user interface, fully integrated modelling, broadcast-quality animation and photorealistic rendering that also won't blow a hole in your pocket!

STOCK CODE: TRU003 **£148⁹⁵**

Next-day delivery only £6²⁵ E&OE. All prices are plus VAT and delivery and are subject to change and availability.



trueSpace - The award-winning 3D software!

"Excellent, a blueprint for other renderers to follow"
PC Pro, Recommended Award, December 1994

"The most impressive piece of software we have seen in a long, long time. Buy it, use it, enjoy." PC Format

"This is a truly innovative and well-designed piece of software, its speed and impressive array of features should appeal to professional users and its excellent interface and ease of use should attract novices." PC User

"...friendly interface goes a long way towards realising sophisticated yet useable PC-based graphics" PC Magazine

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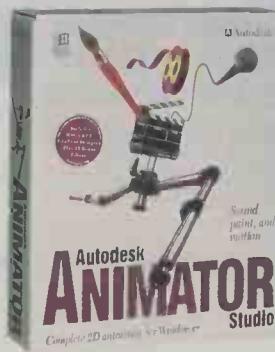
EVERYTHING FOR YOUR PC - NEXT DAY!

Animator Studio from Autodesk

Enter the world of animation with Autodesk Animator Studio.

Animator Studio is the ultimate Windows based creation tool for animated presentation, multimedia content or stand alone multimedia information delivery systems.

By reading, manipulating and creating industry standard multimedia file formats, Animator Studio allows creativity to blossom while making maximum use of existing multimedia files, digital video or computer graphics. Delivery of audio/visual output is in formats which can be used in all multimedia communication tools, giving a wide range of potential uses: business presentations, multimedia content creation, standalone PC-based information systems, digital video editing or integration with computer graphics, games content, CD-ROM content, training applications, and general 2D animations.



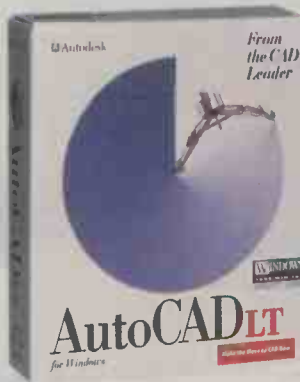
ANI006 Animator Studio **£249**

AutoCAD LT Rel. 2 for Windows

Fully-featured and easy to use, it's ideal for architects, engineers, designers and contractors.

AutoCAD LT Release 2 for Windows is a 2D design and drafting package that offers extensive 2D drawing and editing tools, associative hatching, Aerial View, OLE and Clipboard support.

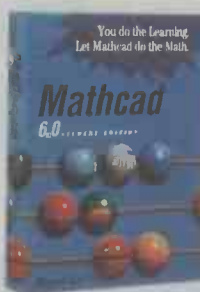
Use 3D CAD tools such as 3D extrusion, hidden line removal and shading to create or view 3D drawings. OLE and Clipboard support lets you copy and paste drawings into other Windows programs for higher quality reports and presentations.



AUT025 AutoCAD LT Release 2 for Win **£352⁹⁵**

MathCAD V6 Student Edition

Probably the most friendly maths program around.



As you probably know, calculators are inflexible and limit you to tiny, hard-to-read screens. Spreadsheets box you in, and programming languages are too complex and hard to learn... MathCAD is different.

With MathCAD V6 Student Edition, you use real maths notation to design and solve problems in a live worksheet environment. The user-friendly environment provides instant feedback, recalculating formulae as you work. Analyse data, create models and test scenarios, create quality reports including text, graphics, equations and formulae, then print them out or share them via e-mail and the Internet.

MathCAD V6 Student Edition is easy-to-use with a standard user interface and Quicksheets that provide quick reference to common maths. If you use maths, you need MathCAD.

MAT007 MathCAD 6.0 Student **£34⁹⁵**
 MAT004 MathCAD 6.0 Standard **£169**
 MAT005 MathCAD 6.0 Prof. **£340**

News



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XCAD 3.0 for Windows

The first and only CAD product for Windows and Windows NT to offer fully integrated advanced 2D and 3D for under £400

The latest version of XCAD features more drawing tools than ever before with several notable additions. 3D Cube allows you to create cubes with one command, Extrude Surface gives you a powerful method for transforming 2D shapes into 3D surfaces, plus Surface Fillet, Chamfer, Offset and more. You can now use XCAD files with a much wider variety of third party products, including renderers, modellers and CAM systems. It supports the major file standards. The XCAD Development System adds a whole new level of flexibility. It allows you to create your own commands, add your commands to the pull-down menus and incorporate your C programs into XCAD.

XCAD allows you to shade and view your 3D objects from any point. Its advanced rendering features allow you to see what your designs will look like in real life with Pan, Zoom and Hidden Line Removal features.



XC001 XCAD V3 **£368⁹⁵**

FastCAD for the home & garden

FloorPlan Plus 3D.

Turn your imagination into reality with FloorPlan Plus 3D. Quickly and easily create 2D plans choosing from vast libraries of drag and drop symbols, including walls, floors, staircases, etc. Even produce your own Bill of Materials list. Also available on floppy disk.

THR008 FloorPlan Plus 3D CD **£44⁹⁵**

3D Landscape

The complete resource for designing your landscape, combining a powerful, yet easy to use design application, with an extensive electronic book that explains landscaping principles and techniques. This is the ideal program for designing your garden and watching it grow. Also available on floppy disk.

FA5016 3D Landscape CD **£39⁹⁵**

Garden Encyclopedia

The fast and easy way to find the perfect selection from any plant group. With more than 1,000 varieties, each with a colourful photograph, create, save and print customised plant lists for shopping at nurseries. Also complete multimedia How-to resource that shows you how to select and care for plants. Also available on floppy disk.

FA5017 Garden Encyclopedia CD **£34⁹⁵**

AutoSketch 2 for Windows

AutoSketch for Windows combines CAD precision, drawing flexibility and Windows simplicity in one!

Produce concept sketches, technical diagrams, architectural layouts, electrical drawings, patterns, illustrations, presentations, and information graphics. Freehand curve tools and line options give you the versatility to meet any need. Easy view features let you choose drawings, symbols and fonts with simple icons, allowing you to create professional illustrations quickly. Other features include: over 600 symbols, TrueType fonts support, DWG Write 4 upward compatibility with AutoCAD and DXF import/export.

AUT027 AutoSketch 2 Win **£89**

AUT019 AutoSketch 3 DOS **£87**

AutoSketch Libraries

AutoDesk have introduced two specific libraries for AutoSketch for Windows to aid designers, architects and electrical engineers to produce high quality drawings and diagrams as quickly and accurately as possible. Both libraries contain industry standard drawings and symbols.

AUT013 AutoSketch Electrical Library **£65**

AUT014 AutoSketch Architectural Library **£65**

Paintshop Pro V3

Fast and fully-featured photo-editing and graphics conversion in one program!

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, IPIG, 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.

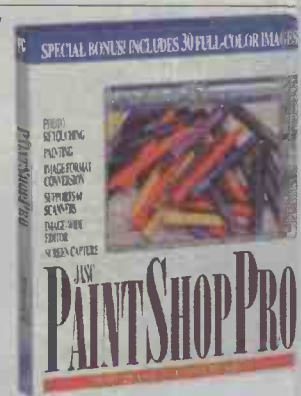
PA1003 Paintshop Pro V3.0 **£49⁹⁵**

Paintshop Pro V3 & Kai's Power Tools SE Bundle

You can now get two great award-winning graphics programs in one amazing value package.

Paintshop Pro is now available with award-winning Kai's Power Tools plug-in filters. Your creativity will soar with these famous graphics effects tools which work within Paintshop Pro to offer fantastic effects for photoimages with amazing flair. Create your own Plug-in filters or use the ready made ones supplied. Ideal for beginners and professionals alike.

Includes KPT Gradient Designer and a useful range of ready-made effects (Pixel Storm, Glass Lens Normal, Find Edges Charcoal, Diffuse More etc.)
 PA1004 Paintshop Pro V3.0 & Kai's Power Tool's Bundle **£70!**



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Warehouse Memory Kits

Low-cost and easy to install memory kits from Britain's favourite software and peripherals supplier.

Upgrading your memory couldn't be simpler, everything you need to upgrade your PC memory is all supplied in one cost-effective package.

Our kits are all original manufacturer memory modules - all are 100% compatible with the PC specified. Each module is covered by a five year manufacturers warranty and has been tested for parity, voltage and speed compatibility with the intended PC.

Each kit includes a 3M anti-static wrist strap, easy-to-follow fitting instructions, a 5 year warranty and full technical support.

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- IBM
- Olivetti
- Packard Bell
- Tandon
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- Vigen
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4MB Kits from £86



For SIMMs prices see P.2

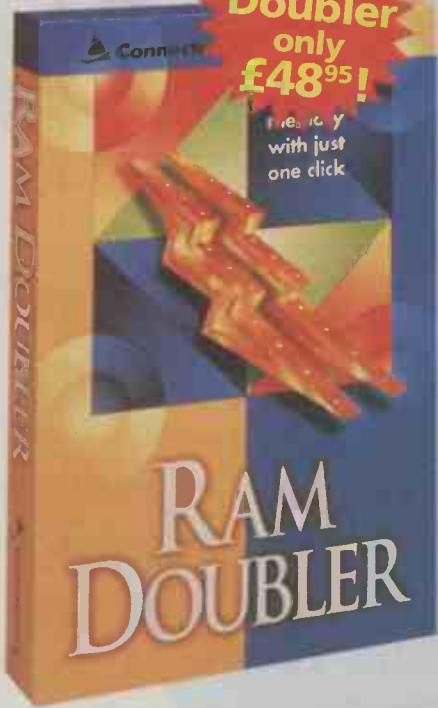
RAM Doubler for Windows

The safe and cost-effective way to increase and optimise your system's RAM.

RAM Doubler uses three primary methods to increase your memory. First, it increases System Resource space so that Windows has plenty of room to track your application's menus, icons, and other visual elements.

Next, RAM Doubler cleans up the under one megabyte space where DOS, network software, and hardware drivers reside and often waste space.

Finally, RAM Doubler takes memory that is in use but not likely to be used again and compresses it to keep Windows from triggering virtual (disk) page swaps that slow your system down. The result of these methods is a tremendous increase in the ability to run multiple applications simultaneously, usually with no appreciable effect on performance.



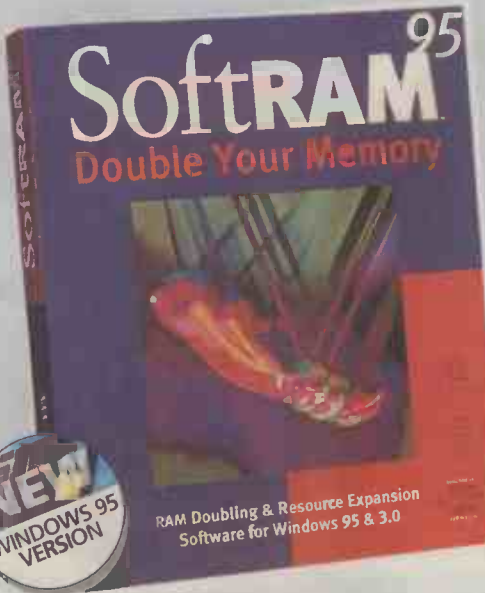
RAM Doubler only £48⁹⁵!

ready with just one click

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RAM020 RAM Doubler for Win

Double your memory with SoftRAM 95!



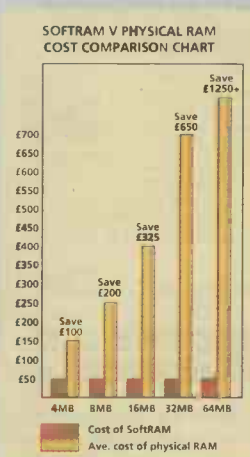
Now you can double your existing memory in software with the fastest and most inexpensive way to add RAM to your Windows 3.x or Windows 95 PC.

SoftRAM is an innovative Windows-Software-Only technology which approximately doubles the amount of RAM available to Windows applications.

And with SoftRAM's one-click, one-time installation you eliminate the hassle and expense of opening your PC to install hard RAM.

SoftRAM's unique RAM Analyst dynamically reviews the memory requirements of all your applications and pre-calculates the most effective compression method for each RAM page of memory. All of this is tracked and continuously updated in a knowledge database to optimise performance on the applications you use.

- One-click, one-time installation
- Use with as little as 4Mb
- Automatic, transparent and user configurable
- Works with Windows 3.0 and higher
- Compatible with all Windows applications
- Ideal for graphics programs and large data files



STOCK CODE: RMG002

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EVERYTHING FOR YOUR PC - NEXT DAY!

Norton Utilities



Automatically protect your data with the most comprehensive Windows 95 utilities

Norton Utilities includes new features specifically designed to prepare your system for the transition to Windows 95. It 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. If a crash occurs, a rescue disk gets you up and running quickly, automatically repairing and restoring damaged resources.

Pre-installation tune-up

Norton Utilities provides an easy, systematic way of diagnosing, repairing and fine-tuning your Windows 3.x system to prepare it for the installation of Windows 95 or any new application.

Space Wizard

Locates duplicate, outdated, and unnecessary files, freeing disk space before and after Windows 95 installation.

New! Norton System Doctor

Runs in the background monitoring resources and makes your Windows 95 system self-tune.

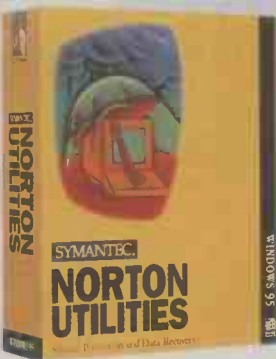
Exclusive! Emergency Rescue Disk

Includes a ready-made bootable disk that will restart and repair your system even when Windows 95 won't load.

Norton Disk Doctor

Provides diagnosis and repair of standard or compressed files.

- NOR031 Norton Utilities for Windows 95 3.5" **£83⁹⁵**
- NOR033 Norton Utilities for Windows 95 CD..... **£83⁹⁵**
- NOR032 Utilities Trade-Up **£48⁹⁵**



Norton AntiVirus



The right cure, right now!

Norton AntiVirus 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 **£58⁹⁵**
- NOR035 AntiVirus Trade-Up **£27⁹⁵**



Norton Navigator

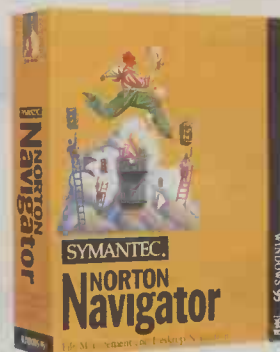


One click to go anywhere!

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 **£66⁹⁵**
- NOR037 Navigator Trade-Up **£33⁹⁵**



Auto Addressing System

The Auto Addressing System is a database that holds 1.6million postcodes, covering all of UK, (including Northern Ireland)

With this unique Windows-based program you simply input a postcode and it will tell you the road name, town, city and county, which can then be directly pasted into most Windows applications, including Word, Excel, WordPerfect etc. In the system are 24 million individual addresses across 1.6million postcodes. You can load the whole of the UK (taking up just 10Mb of hard disk space) or one of ten regions. Additional features are the search facility, where you enter part of an address and find the postcodes.



- ADD004 Auto Addressing System **£149⁹⁵**

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Regarded the best educational software program to learn Microsoft Windows! No other training method can help you learn Windows more effectively. With fully interactive lessons and quizzes. Get the Windows Insider - The Reference Guide for all Windows Users



- IND050 Prof. Win..... **£39⁹⁵**

Family Ties

Trace your ancestors back hundreds of years and generations with Family Ties. Family Ties is a unique genealogical software program that will piece together family documentation of relationships and help you maintain an invaluable source of information your family can refer to for generations to come.

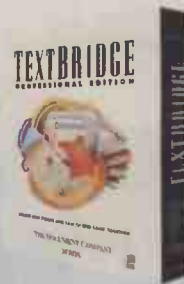


- IND051 Family Ties **£29⁹⁵**

XEROX TextBridge

Windows-based OCR that redefines the industry standard. Buy now and receive a FREE upgrade to the Windows 95!

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 OCR. Requires scanner.



- TEX002 TextBridge **£67⁹⁵**
- TEX003 TextBridge Professional CU & Upgrade..... **£129**

Typing Instructor

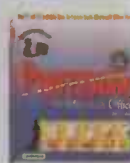
Get out of the classroom and improve your typing skills with Multimedia Typing Instructor! Travel the world and take a typing adventure. Play Virtual Adventures™ - interactive games designed for all ages to build and improve typing skills. So, cut class and discover a new way to learn with Multimedia Typing Instructor.



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Getting the most out of Microsoft Office® is easy with step-by-step Instruction from the Professors™ for Microsoft Office. The Professors will turn your computer into a friendly tutor and show you how to use each Microsoft Office product effectively. Designed to help anyone take full advantage of their investment in Microsoft Office, the Professors can't be beat.



- IND053 Professors **£39⁹⁵**

Accent 2.0- The Award-Winning Multilingual Word Processor

Accent is the advanced multi-lingual word processor for Windows. This new version means that it's even better!

If you need to work in more than one language, then you need Accent. Designed to give you quick access to the special features that are needed for multilingual word processing. Accent makes it easy to use different alphabets and characters in the same document. Select the language you wish to write in and a keyboard template appears in the corner of your screen, to help you find the corresponding key on your UK keyboard. With your mouse, you can even click the template rather than depressing the actual key. Accent is full of all the standard word processing features, including style sheets, word count, auto save, import, export etc. All Accent word processors cover over 30 languages and many more.



- ACC002 Accent Express **£36⁹⁵**
- ACC003 Accent Special Ed **£89⁹⁵**
- ACC004 Accent Pro Ed **£186⁹⁵**



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News



Software Warehouse and Microsoft jointly sponsored three boats in the British Championships and out of 105 boats, they finished 5th, 6th and 18th.

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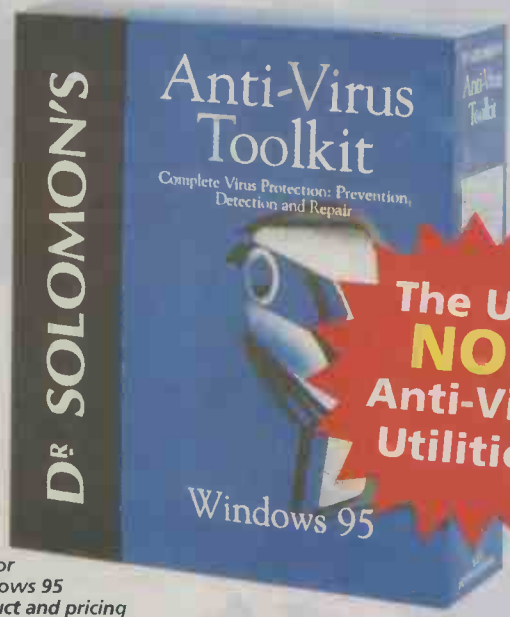
EVERYTHING FOR YOUR PC - NEXT DAY!

Complete Virus Protection With Dr. Solomon's Anti-Virus Toolkits

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.



The UK's NO.1 Anti-Virus Utilities!

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

Call for Windows 95 product and pricing

50L000	Anti-Virus Toolkit for DOS 1/4'ly	£59⁹⁵
50L002	Anti-Virus Toolkit Win & DOS 1/4'ly.....	£69⁹⁵
50L009	Anti-Virus Toolkit Netware	£238⁹⁵
50L008	Dr. Solomon's Audit/Manager	£279⁹⁵

WinDelete V2

No other un-installer is safer or more thorough than WinDelete!

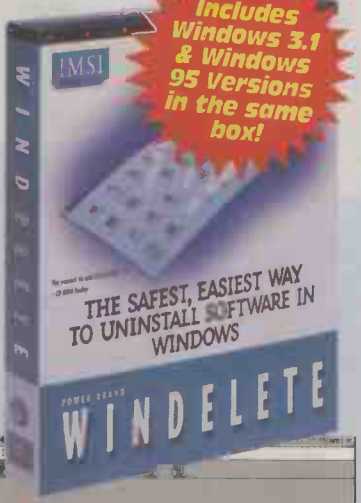
WinDelete Version 2 is the latest version of his award winning Un-Installer program. This release offers new features and enhancements that make it easier and safer to use, with a lot more power. Market research shows that today's users want a product that is safe and simple, without accidentally deleting files it shouldn't. WinDelete stands out in it's ability to meet these needs.

Application Installations are monitored to enable better removal, covering every type of application and system support file. Comprehensive installation logs are maintained to ensure thorough removals. Changes are previewed before being executed, and the new range of tools facilitates better system management.

A Green-Yellow-Red "traffic light" colour coding helps prevent accidental deletion of vital files, but allows all the dross to be removed, with an Undo/Restore option when you change your mind.

Features include:

- Intelligent un-installing of virtually every file type including Windows and DOS applications CD-ROM and display device drivers, unused system support files, fonts, temporary files, backup files, duplicate files, orphan files etc;
- Direct access to INI files with View, Edit, Backup, and Save;
- System Consultant that analyses your system and suggests changes to improve performance;
- System Tuner with hundreds of tips for optimising Windows performance and much more.



Includes Windows 3.1 & Windows 95 Versions in the same box!



WinDelete V2's simple-to-use interface

£29⁹⁵

WIN050 WinDelete Version 2.....

Uninstaller V3

The No.1 selling Windows utility just got better!

Uninstaller is a simple utility that you can trust to clean up your system. Every Windows application places bits of itself hidden throughout your system. This takes up memory and can lead to rather catastrophic if not dealt with effectively. Uninstaller 3 can uncover the hidden files lurking in your system and then remove whenever you want to.

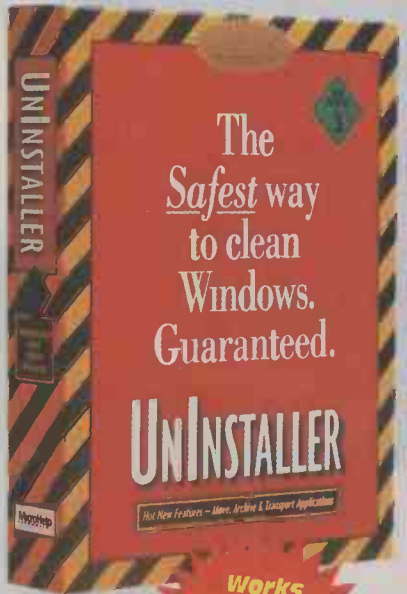
Not only does Uninstaller 3 safely clean Windows, it goes beyond just deleting applications - its unique technology allows you to:

Move applications and supporting data files to other drives while keeping all preferences and Windows settings intact.

Archive seldom-used applications and restore them with a single click.

Transport applications to other PCs with no re-install hassle.

Uninstaller 3 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 that shows which files and applications are eating up disk space. And 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.



The Safest way to clean Windows. Guaranteed.

Works on Windows 3.1 apps under Windows 95

£35⁹⁵

UN005 Uninstaller 3.....

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EVERYTHING FOR YOUR PC - NEXT DAY!

FormTool Gold V2.0

The Easiest Way to Create Forms and Automate Your Business.

FormTool Gold for Windows from IMSI offers the easiest way to create, fill and print any type of form. With over 550,000 users worldwide, FormTool for Windows is now available in the UK for the first time. Version 2 brings an enhanced user interface that is Microsoft Office compatible, with powerful design and editing tools to create sophisticated and professional forms. With built-in database creation and support, users can extract data and merge databases quickly and easily. Forms can be filled automatically on-screen, making workflow quick and easy, and each form is automatically saved to the database for later retrieval - all in one simple process. Includes ODBC support for use with FoxPro, dBASE, Clipper, Paradox and more. Fields can be added to any form which allow for automatic filling, including things such as date, time, calculations etc. Includes floating toolbars, drag-and-drop editing, radio buttons, check boxes, automatic word-wrap, OLE 2.0 support, draggable rulers, definable grids, fountain fills, zoom, preview and much more. New Wizards create reports and mailing labels after a few simple questions.

4 EASY STEPS TO FORMS AUTOMATION...

Step 1: Design and edit any form with ease

Whether you are modifying one of the pre-designed forms or creating one from scratch, FormTool Gold's powerful design and edit tools make it easy for you every step of the way. Import bitmap or vector images, insert text fields, create tables with the command duplicator and much more.



Step 2: Automate your data in one step

At your option, FormTool Gold will create a database associated with your form, which then becomes a "window" to your data. Sort, search, or query the data. Different forms can access the same data, letting you see exactly what you want in the form you want. Every time you complete a form, it is added to the database.



Step 3: Fill your form with speed and accuracy

Once your form is designed, filling it is a snap. You define the filling order most convenient for you. Fill it "on-the-fly" or directly from your database for sequential viewing and printing. Even password protect your confidential forms for complete privacy.



Step 4: Get professional results fast

Your printed forms have never looked so good. And that's not all. FormTool Gold's report and label Tutors give you database reports and industry standard labels at the click of a button. Even fax your form directly from your computer!



FOR018 FormTool Gold **£49.95**

FREE GIFT WITH EVERY ORDER!
SEE PAGE 32 OF THIS ADVERT.

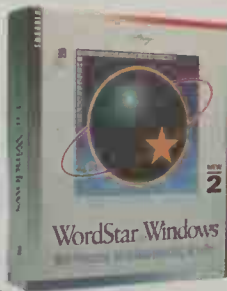
WordStar 2.0

WordStar 2.0 is a full featured word processor, including many DTP features for only £27.99

WordStar 2.0 has recently won more accolades in the computer press than any other word processor. It has been highly praised for its extensive feature set and Incredible value for money.

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WOR077 WordStar 2.0 **£27.99**



"Forms look like being stormed by Toplevel" - PC Direct

Powerful, professional-looking form design and filling with contact database.

Invoices, orders, expenses, B55750, time sheets, quality control... your business needs professional-looking printed forms. Both Toplevel FastForms and Forms save money on printing costs and give you the flexibility to update form layouts as often as you like. Design your own attractive forms using logos, pictures, text, calculated fields, borders and shading. Great looking forms make small businesses look big and give big businesses control of big administration problems. Whether you're printing blank forms, filling out and printing or filling our pre-printed stationery, this software will make sure it all lines up perfectly, and help prevent staff filling it incorrectly. What's the difference? Toplevel Forms contains a database to store addresses and other information ready to fill in forms electronically. It also offers power features like spreadsheet functions in calculations and standard phrase support.

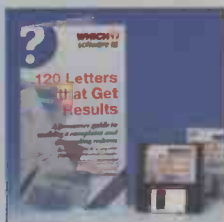
Toplevel is a British company and is an International leader in forms software. The entry-level forms software, FastForms, is the market leader in the USA with a 40% market share, so you can be confident of a world-beating product backed by first class technical support.

TOP003 Toplevel Forms..... **£68.95** TOP009 Forms for Win 95 **£68.95**
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Fully integrated accounting software, ideally suited to the small business.

Pegasus Solo is ideally suited for every small business, incorporating Sales, Purchase and Nominal ledgers along with invoicing and stock control, allowing you to keep track of customer's and supplier's transactions. Produce statements and debtors' reports, as well as handling all of your VAT requirements.

PEG001 Pegasus Solo (DOS)..... **£64.20**



Pegasus Solo Payroll

Fully-integrated accounting software for small businesses, covering all aspects of NIC and PAYE.

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This great, comprehensive package combines ease-of-use with a friendly interface.

PEG002 Pegasus Solo Payroll (DOS)..... **£42.95**



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Max is celebrating the success of Toplevel's British software in the States - and so can you! Just use Forms or FastForms to design a useful, attractive form for Toplevel's forms library.

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250,000 sold in America

Alpha 5 Home & Business Edn.

Fully-featured Windows database.

Alpha 5 goes much further than other Windows databases because it comes with common database functions already pre-built! With Alpha 5 you can create powerful database applications without the need for any programming knowledge.

You can easily create forms, reports, mail labels and even stunning WYSIWYG letters with the ease of Alpha 5's drag and drop control.

ALP010 Alpha 5 Home and Business Edition (Win) **£39.95**



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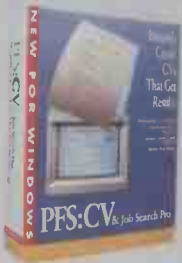
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Successfully organise every step of your job search with PFS CV and Job Search.

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PFS009 PFS Job Search **£29**

FileMaker Pro

The complete database that includes six ready-to-run applications.

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CLA002 Claris FileMaker Pro **£799⁹⁵**

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Relational database for Windows.



Visual dBASE combines leading edge tools with a sophisticated, but easy to use, programming language. From interactive use of local data, to deployment of advanced client-server applications, it's all done in one highly productive environment. This is the best database on the market for business professionals and application developers. By using the unique Two-Way-Tools one can switch back and forth between visual design and programming. This is the best database on the market for business professionals and application developers.

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RADical Windows application development.

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If you've ever put off writing an employee review because you didn't have the time, or you just plain hate writing them, Performance Now! is for you. Evaluating employee is one of the most difficult tasks for a manager or superior, but a sensible employee review process is essential for improving communication and helping your employees become more productive. Features include dozens of performance elements, Intelli-Text to write text for you, Language checker, built-in expert advice, employee log and much more.



PER022 Performance Now! **£108⁹⁵**

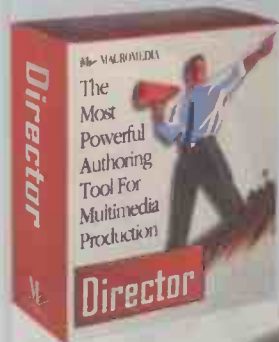
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The most powerful authoring tool for multimedia production.

Director 4 for Windows is the tool of choice for all your multimedia needs. This popular program includes powerful features that let you easily combine text, graphics, animations, sounds, digital video and interactivity to create dynamic multimedia productions. Use Director to create entertainment and education CD-ROMs, simulations, visualisations, digital publications, multimedia corporate presentations, electronic reference materials, software demonstration disks and more!

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MAC009 Director **£749⁹⁵**



Only £749⁹⁵

Macromedia Freehand

For Powerful Design & Illustration

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Freehand 5.0 - More new features make it number one for designers, illustrators and artists.

Freehand is the most powerful and easiest-to-use software for design and illustration. Its comprehensive feature set, customisable work environment, and superior performance make it the tool of choice for graphic designers, creative directors, production artists and illustrators worldwide.

Freehand has everything you need to develop simple illustrations or complex designs with the minimum of hassle. Its open architecture allow you to take advantage of drop-in Interactive tools and palettes in addition to Illustrator plug-ins. With extensive text handling capabilities, including style sheets, spelling checker, search and replace, text on a path, copyfitting, columns, and linked text blocks, Freehand's features surpass those found in any other design and illustration package. No other application has the features or the flexibility.

MAC010 Macromedia Freehand 5.0 **£399⁹⁵**

Freehand 5.0 Features include:

- Calligraphy Pen and Pressure-sensitive Pen let you create natural strokes.
- Draw Starbursts, Polygons and Spirals right on the screen without using dialog boxes!
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- Unique Eyedropper actually pulls colours from placed TIFFs for further use in the work.
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EVERYTHING FOR YOUR PC - NEXT DAY!

Intel Pentium® OverDrive® Processor Upgrades

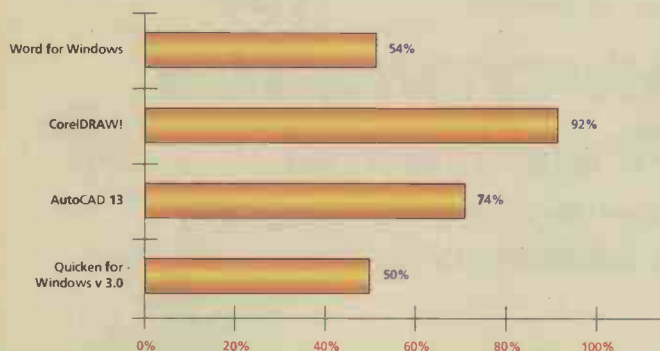
Better Performance For Today's and Tomorrow's Applications!

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).

Software Performance Increase After Upgrading



Upgrade Your PC to run Windows 95 more effectively!

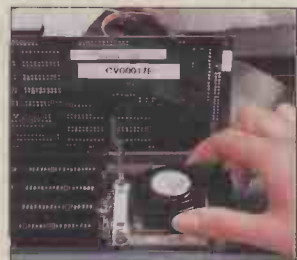
Frequently Asked Questions About the Intel Pentium® OverDrive® Processor

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 above 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).

News



We'll be at the Shopper Show at Olympia again this year. Don't forget to visit the stand for the best show bargains.

From November 30th until December 3rd.

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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 system's 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.

The Pentium OverDrive processor is available in two 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	INT018	£197 ⁹⁵
25-MHz Intel486 - or - 50 MHz IntelSX2™ - or - IntelDX2	63-MHz Pentium OverDrive Processor	INT019	£174 ⁹⁵



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Super Desktop Video Editing!

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The ultimate desktop video editing system for Windows!

The ideal video solution for real-time capture and play back of video sequences comes with Adobe premier or VideoStudio software. Capture digital VHS video to your hard disk and add transitions, titles and special effects, then print to tape in full-size NTSC or PAL, with SVHS and VHS quality, and up to 16.7 million colours. Comes complete with MJPEG hardware compression. There are no jumpers or dip switches to set and you get a two year warranty. DC1 Plus includes Premier 4.0 LE, Photoshop LE & Asymetric 3DFX Complete.



MIR005 DC1 Plus **£299**

Miro Video 20TD Live

Integrated graphics accelerator, video overlay and TV reception - all on one board!



Watch any TV or cable channel on your PC and then capture, store and edit any TV clip or edit video from any external sources. Play back AVI movies or TV images in full-screen size and at full speed. This card is also one of the fastest graphics cards available. There are no jumpers or dip switches to set and you get a two-year warranty.

20TD Live 2Mb VLB or PCI **£314⁹⁵**

Miro Video 12PD

An incredibly low-cost graphics accelerator and AVI movie board!



The Miro Video 12PD is a unique graphics card and the only one of its kind on the market today. With full screen AVI and software MPEG playback, it can display up to 1280 x 1024 resolution and capable of 16.7 million colours, making it the ideal graphics card for CD-ROM users. This plug and play card is compatible with VLB or PCI buses and is the best value all-in-one graphics and multimedia accelerator.

12PD Live 1Mb VLB or PCI **£94⁹⁵**
12PD Live 2Mb VLB or PCI **£134⁹⁵**

miroCONNECT 34 Wave

miroCONNECT is not just a fast Fax/Modem or a high quality DSP sound card but an integrated H/W & S/W solution.



With 100% Word and Excel compatible S/W totally integrated into the miroCONNECT 34 office provides you with seamless communications. At work or at play miroCONNECT 34 Office will play your favourite sounds at high quality. The communications feature brings complete telephone capabilities to your home or office in an easy one-slot solution. With no jumpers to set and a complete suite of communications and audio software, you'll be productive within minutes.

This card is the ultimate in communications solutions for your PC, surf the Net, graze CompuServe, listen to your latest CD whilst it deals with your telephone calls... All in one card!

MIR012 MiroCONNECT 34 Wave **£239**

MIR013 Miro PCM10 Sound Card **£79⁹⁵**

MIR014 Miro PCM1 Pro Sound Card **£129⁹⁵**

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STB Velocity 64V

MPEG playback, AVI acceleration and a massive 1600 x 1200 resolution.



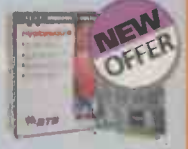
The STB Velocity 64 Video is based around the S3 Vision 968 controller with 2MB or 4MB of ultra-fast EDO VRAM. It features the Xing MPEG Plus Player for CDi and CD Video playback, AVI acceleration, a massive 1600 x 1200 resolution and 24-bit (16.7m colours) at 1280 x 1024 to provide the ultimate in graphics capability and acceleration.

STB012 Velocity 64V 2Mb EDO RAM PCI **£199⁹⁵**
STB013 Velocity 64V 2Mb EDO RAM VLB **£199⁹⁵**
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STB015 Velocity 64V 4Mb EDO RAM VLB **£329⁹⁵**
STB016 Nitro Cirrus 5434 1Mb ISA **£94⁹⁵**
STB017 Nitro Cirrus 5434 2Mb ISA **£138⁹⁵**
STB018 Nitro Cirrus 5434 2Mb PCI **£138⁹⁵**

Powergraph 64/V

The unbeatable 64-bit price/performance accelerator.

The STB Powergraph 64V features the S3 Trio 64 + V controller with 1MB or 2MB fast DRAM for the support of display of resolutions up to 1280 x 1024, colour depths up to 24-bit colour refresh rates up to 160Hz. Full screen AVI acceleration, and software MPEG playback as standard. An optional MPEG hardware decoder module which simply plugs on as a daughter card provides hardware decoding of MPEGi CDi or CD-video files from CD-ROM. Also as an option is a TV tuner for both the Powergraph 64V. Combine these features with STB's unrivalled Windows desktop control and a lifetime warranty and you get unpriced price/performance from a 64bit graphics accelerator.



STB019 Powergraph64 2Mb PCI **£135** STBXXXPowergraph64V 2Mb PCI... **£POA**
STB020 Powergraph64 2Mb VLB **£POA** STBXXXPowergraph64V 2Mb VLB... **£POA**
STBXXX Powergraph64 1Mb PCI..... **£POA** STBXXXPowergraph64V 1Mb PCI... **£POA**
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MOV005 Movie Machine II (includes tuner) **£489⁹⁵**

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MOV007 MPEG Extension Card for MM II **£239⁹⁵**

MOV008 Movie Machine II Power Pack (includes MJPEG & MPEG) **£989⁹⁵**

Fast FP/S 60 **£489⁹⁵**

MOV009 MJPEG Extension Card for MM Pro **£289⁹⁵**

Movie Machine Pro

Editing with Movie Machine Pro is easier than anything you've ever done. Use Movie Studio to choose your video sources, mix or cut and then use the T-Bar to add real-time digital effects: fades, zooms, flips, colour reversals, mosaic, luma and chroma keying, stroboscope, etc. Of course, you can also set the speed and direction of the effects.

Movie Machine Pro
£289⁹⁵
STOCK CODE: MOV01

Introducing the new MGA Millennium from Matrox

If you're working with 256, 65k or 16.7m colours, MGA Millennium delivers consistent Windows performance at all display resolutions.

Integrating Windows, digital video, and 3D acceleration onto a single high speed chip, the Matrox MGA Millennium marks a new milestone in desktop graphics. It teams the award-winning MGA 64-bit graphics processor with Windows 95 and other PC operating systems.

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. PCI2 or 4Mb can be upgraded to 4 or 8Mb of Window RAM.

MGA Millennium Features include:

- Real-time rendering of full-screen, full-motion 3D graphics
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- 32-bit BGA core for fast DOS performance
- Ultra high, 1600 x 1200 @ 24-bit resolution
- Broadcast quality full-screen video at 30fps
- Memory upgradeable to 8Mb



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matrox

MAT008 MGA Millennium/21 2Mb WRAM PCI **£249**

MAT009 MGA Millennium/41 4Mb WRAM PCI **£349**

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Hauppauge!

Hauppauge TV Cards are the easiest way to turn your PC into a TV!

Hauppauge introduces the Win/TV celebrity and Prisma cards, 16 bit multimedia PC cards that run under Windows 3.1X, Windows NT, Windows 95 and DOS 6.X.

They display full motion television in a resizable overlay window on a PC Screen, and can capture 24 bit colour still images. Both cards feature on board teletext, which can be viewed on your desktop PC. The cards do this by digitizing all the information. Once digitized the information will allow data to be manipulated by any other running application such as a spreadsheet, database or a word processor. The professional teletext feature (standard on both Win TV, Celebrity and Prisma Cards) will allow multiple windows to display real time information, enabling all the data to be updated simultaneously, the applications remain permanently on-line to the live information transmitted, allowing automatic re-calculation of a spreadsheet.



FREE "VIDEO CUBE" CD WITH EVERY ORDER!

- HAP002 Hauppauge Prisma £149
- HAP001 Hauppauge Celebrity £269
- HAP009 Hauppauge Celebrity & FX/T £409

Primax Venus Mice

Ergonomical designed pointing device for left or right handed!

The Primax Venus mouse has a triangular shape which provides full support to the hand and as a result puts less pressure on the user's wrist and arm and is suitable for right or left-handed users. A unique rubber-paint finish gives the Venus mouse a distinctive look and a secure grip and is available in an array of colours to complement any office.



NEW PRODUCT

- PRH223 Venus Mouse Grey £18⁹⁵
- PRH224 Venus Mouse Black £18⁹⁵
- PRH225 Venus Mouse Red £18⁹⁵
- PRH226 Venus Mouse Blue £18⁹⁵

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The portable CD ROM drive for AutoRoute Express.

Plan all your trips while on the move using the CyberRomCD and Microsoft AutoRoute Express. There are over 100,000 miles of road and more than 33,000 place names to access on CD-ROM making this the complete portable solution for travelling, using the CyberRomCD.



cy8005 Microsoft AutoRoute Express/CyberRomCD Promotion £299⁹⁵



Portable Sound Plus

A true plug and play Windows 95 sound solution.

The Portable Sound Plus is a parallel port-based 16bit sound card which has its own printer pass through point. It comes with a high fidelity speaker and a built-in microphone with line-in/out jacks for use with CD-ROM drives and external speakers.

cy8010 Portable Sound Plus £109⁹⁵

Quad Speed PC Card CD-ROM

The first quad speed drive available for plug and play under Windows 95!

This plug and play compatible CD-ROM drive gives the ultra-fast speed required for use with large applications, video and animation. With the CyberRomCD Quad you will find no rivals on the road to multimedia.



cy8011 Quad Speed PC Card CD-ROM £399⁹⁵

ZyFi 2 Speakers & Pro Speakers

Ideal for all sound cards and multimedia systems

The new ZyFi 2 Active power amplified stereo speakers offer the best in sound reproduction. They feature a built in power amplifier with separate L/R volume controls and tone control and are magnetically shielded.

The ZyFi 2 Pro Active speaker system has a PMPO of 60 watts per channel and an amplifier with a true 18 watts RMS per channel rating, the PROs deliver a rich dynamic sound. They feature separate volume, bass and treble controls, and are magnetically shielded.

- SPK001 ZyFi 2 Speakers £24⁹⁵
- SPK002 ZyFi 2 Pro Speakers £38⁹⁵

Graphic Artpad WACOM

Professional graphics tablets for designers, illustrators and Graphic Artists.

Wacom electro-magnetic "give-and-take system" is the unique passive technology employed in all Wacom graphics tablets, eliminating the need for magnets and batteries and allowing for a cordless pen and cursor (puck).

It is the realisation of an input device, comfortable to use and sensitive to hand pressure, which can tackle every challenge in painting and drawing. Just as a conventional pen needs paper, Ultra-Pen needs a tablet. The Ultra-Pen is extremely rugged and has a lifetime of at least ten million cycles.

All Tablets come complete with accessories, cables, handbook and software (available in several languages), plus you get are covered by a two-year warranty.



Wacom Artpad from £149⁹⁵!

- WAC001 Wcom ArtPad £149⁹⁵
- WAC005 A5 Tablet + Painter 3 £499
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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!



- WES006 Western Digital 540MB IDE Kit £139
- WES0007 Western Digital 850MB IDE Kit £149
- WES008 Western Digital 1.2 GB IDE Kit £209
- WES010 Western Digital 1.6 GB IDE Kit £299

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 above right are the Western Digital Caviar drives (without top cases!). These high quality drives come with a 3 year manufacturers warranty.

- WES001 IDE Western Digital AC2540A 540Mb £109
- WES002 IDE Western Digital AC2700A 730Mb £119
- WES003 IDE Western Digital AC2850A 850Mb £129
- WES005 IDE Western Digital AC312 1280Mb £195
- WES009 IDE Western Digital 1.6Gb £259

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SICOS Colour Page Scanner

Scanning, faxing and copying

The SICOS 24 bit colour A4 page scanner allows you to scan pictures and it also recognises text so that you can convert documents into text files without retyping. Improve your business presentations and reports with coloured images and start a paperless office by filing, retrieving and faxing images and documents.

Compatible with HP Scanjet II driver (necessary for multiple page scanning) and TWAIN driver.

Software - Photo Plus for image processing, Textbridge V.2 for OCR and Sicos Fax/Copy utility.

Scanning modes: 16.8 million true colours and 256 grey scale, dither (half tone) and line art. Resolution: up to 1200dpi

Scan width: up to 216mm - full A4 page.

Scan speed: 3.5 ppm (line art mode).

Scans in a single pass.

Scanner automatically calibrates colour.

Auto sheet feeder supplied: up to 50 pages.

Interface card supplied: 16 bit ISA with 6 IRQs - 3, 4, 5, 10, 11, 12.

No power cable required - power is supplied through interface card and 25 pin cable is supplied.

3.5" Driver disk supplied with full User's Guide and Test photograph.

Dust cover supplied.

Compact size: 335 x 240 x 95mm (LxWxH). Weight: 4.5K.



New low price!

IC001 SICOS Colour Page Scanner **£199⁹⁵**

ScanMan Colour

Scan every colour the human eye can see.

Ideal for designers who want to scan large colour pages or odd-sized originals. It's the most versatile handscanner ever! Its 24-bit hardware captures 400dpi images in 16.8million colours with 256 greyscales or lineart. It's one of the few colour handheld scanners that require no warming-up time.

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IC007 Logitech ScanMan Colour **£145⁹⁵**

MICROTEK ScanMaker II - The best value A4 flatbed around?

MICROTEK has spent 10 years investing in scanner research and development, resulting in a comprehensive range of high quality scanners for both beginners and professional users.

The economical ScanMaker II is an all-rounder that is probably the best value A4 flatbed scanner on the market today. It reproduces your hard copy in 16.7million colours with a maximum resolution of 1200 x 1200dpi. It can even be specially equipped to meet your specific needs. For instance, if most of your scanning is text-based just add an ADF-600 50-page document feeder; or for film scanning, choose the backlit TMA-II transparency attachment. All MICROTEK scanners include a TWAIN-Module for TWAIN-compliant Windows software plus an additional ASPI driver and a SCSI card.



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IA001 Microtek ScanMaker II **£299**

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Primax are the largest mouse and scanner supplier that you've probably ever heard of.

Primax have chosen Software Warehouse as its first business partner to market the Primax range in the UK. Primax are one of the world's leading manufacturers in mice, game pads, sound cards, speakers, scanners, cables, inter-share devices, and communications hardware. The extensive range of scanners includes handscanners (colour black and white), flatbeds, mobile scanners and pen scanners so whatever your needs may be, Primax will have something for you.

All Primax products are supplied with a two-year warranty and are backed by years of intensive research and development. Software Warehouse will be stocking the leading products from the Primax range in both our retail outlets and through our mail-order operation.

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Primax Scanners

This exciting new range of Primax scanners are ALL supplied with Finishing Touch photo-styling software and ReadIRIS text recognition software (OCR). ALL are TWAIN compatible and come with UK support and warranty.

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 **£44⁹⁵**

PR1102 Primax 256 Greyscale **£54⁹⁵**

Primax Colour Hand Scanners

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**



Primax Colour Mobile Scanners

The mobile version includes all the features as the handscanners, but also includes motorised rollers. This unique feature allows a hand scanner 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 **£139⁹⁵**

PR1120 Primax Colour Office **£169⁹⁵**

PR1127 Primax Flatbed Scanner **£299**



MICROTEK ScanMaker II Specifications

Type: 24-bit colour flatbed scanner
 Maximum resolution: 1200 x 1200dpi (interpolated)
 Scanning area: 21.6 x 35.6cm (approx. A4)
 Optical resolution: 600 x 300dpi
 Scanning modes: 1-bit / 64 greyscales simulated
 8-bit / 256 greyscales; 24-bit / 16.7million cols.
 Scanning method: 3-pass with RGB filter

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PR1105 Primax DataPen **£119⁹⁵**

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Conner	CFP1080S	1,000Mb	11.0ms	256k	3.5" 1"	3 yrs	£0.19/Mb	£187
IBM	84G9001	1,000Mb	10.5ms	448k	3.5" 1"	3 yrs	£0.29/Mb	£289
Quantum	FB1080S	1,080Mb	12.0ms	128k	3.5" 1"	2 yrs	£0.18/Mb	£192
IBM	74G7043	1,080Mb	8.0ms	512k	3.5" 1"	3 yrs	£0.30/Mb	£327
Fujitsu	M1606S	1,090Mb	10.0ms	512k	3.5" 1"	5 yrs	£0.17/Mb	£187
HP	C3724S	1,200Mb	9.5ms	512k	3.5" 1"	5 yrs	£0.25/Mb	£299

1Gb and up

Conner	CFP2105S	2,100Mb	9.5ms	512k	3.5" 1"	5 yrs	£0.22/Mb	£453
Micropolis	MIC4221	2,100Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.22/Mb	£457
Micropolis	MIC4221AV	2,100Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.24/Mb	£499
Fujitsu	M2932S	2,110Mb	10.0ms	512k	3.5" 1"	5 yrs	£0.22/Mb	£459
Conner	CFP2107S	2,110Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.23/Mb	£488
Fujitsu	M2932Q	2,110Mb	10.0ms	512k	3.5" 1"	5 yrs	£0.25/Mb	£531
Quantum	XP3210	2,150Mb	8.0ms	1,024k	3.5" 1"	5 yrs	£0.26/Mb	£558
IBM	74G7044	2,160Mb	8.0ms	512k	3.5" 1"	5 yrs	£0.33/Mb	£707

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IBM	86F0102	2,000Mb	9.2ms	512k	3.5" 1"	5 yrs	£0.35/Mb	£699
Quantum	2100S	2,100Mb	9.5ms	512k	3.5" 1"	5 yrs	£0.21/Mb	£450
HP	C3725S	2,100Mb	9.5ms	512k	3.5" 1"	5 yrs	£0.22/Mb	£453
Conner	CFP2105S	2,100Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.22/Mb	£457
Micropolis	MIC4221	2,100Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.24/Mb	£499
Micropolis	MIC4221AV	2,100Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.27/Mb	£565
Fujitsu	M2932S	2,110Mb	10.0ms	512k	3.5" 1"	5 yrs	£0.22/Mb	£459
Conner	CFP2107S	2,110Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.23/Mb	£488
Fujitsu	M2932Q	2,110Mb	10.0ms	512k	3.5" 1"	5 yrs	£0.25/Mb	£531
Quantum	XP3210	2,150Mb	8.0ms	1,024k	3.5" 1"	5 yrs	£0.26/Mb	£558
IBM	74G7044	2,160Mb	8.0ms	512k	3.5" 1"	5 yrs	£0.33/Mb	£707

4Gb and up

Conner	CFP4207S	4,220Mb	9.0ms	512k	3.5" 1"	5 yrs	£0.18/Mb	£762
Quantum	GP4280S	4,280Mb	8.6ms	512k	3.5" 1"	5 yrs	£0.17/Mb	£728
Micropolis	MIC3243	4,300Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.17/Mb	£737
Micropolis	MIC3243AV	4,300Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.18/Mb	£789
Quantum	XP34300	4,300Mb	8.0ms	1,024k	3.5" 1"	5 yrs	£0.20/Mb	£851
IBM	74C7045	4,320Mb	8.6ms	512k	3.5" 1"	5 yrs	£0.24/Mb	£1,056
Fujitsu	M2934S	4,350Mb	10.0ms	512k	3.5" 1"	5 yrs	£0.16/Mb	£688
Fujitsu	M2934Q	4,350Mb	10.0ms	512k	3.5" 1"	5 yrs	£0.17/Mb	£749

9Gb and up

Micropolis	MIC1991	9,100Mb	12.0ms	512k	5.25" FH	5 yrs	£0.15/Mb	£1,399
Micropolis	MIC1991AV	9,100Mb	12.0ms	512k	5.25" FH	5 yrs	£0.16/Mb	£1,468

SCSI HARD DRIVES

IDE is the industry standard and is fast and easy to install. All drives listed below are mode 3 or higher and capable of giving data transfer rates in bursts of up to 13.5 Mb/s.

These Drives come with free software to overcome the 528Mb BIOS barrier (except Quantum - add £33 for software if required)

600Mb and up

Make	Model	Capacity	Access	Cache	Size	Wrnty	Price/Mb	Price
West. Digit.	WD2635	635Mb	11.0ms	64k	3.5" 1"	2 yrs	£0.18/Mb	£113
Conner	CF5635A	635Mb	14.0ms	64k	3.5" 1"	2 yrs	£0.19/Mb	£118
Quantum	TB850AT	850Mb	14.0ms	128k	3.5" 1"	2 yrs	£0.15/Mb	£124
Conner	CF5850A	850Mb	14.0ms	128k	3.5" 1"	2 yrs	£0.15/Mb	£130
West. Digit.	WD2850	851Mb	10.0ms	64k	3.5" 1"	3 yrs	£0.16/Mb	£136
Maxtor	7850AV	853Mb	12.0ms	64k	3.5" 1"	2 yrs	£0.15/Mb	£125

1Gb and up

West. Digit.	WD21000	1,000Mb	10.5ms	128k	3.5" 1"	3 yrs	£0.16/Mb	£161
Maxtor	71050A	1,000Mb	12.0ms	256k	3.5" 1"	2 yrs	£0.17/Mb	£173
IBM	84G8998	1,000Mb	10.5ms	448k	3.5" 1"	3 yrs	£0.23/Mb	£229
Quantum	FB1080AT	1,080Mb	12.0ms	128k	3.5" 1"	2 yrs	£0.16/Mb	£172
Fujitsu	M1614AT	1,089Mb	11.0ms	64k	3.5" 1"	3 yrs	£0.14/Mb	£155
Fujitsu	M1606AT	1,090Mb	10.0ms	512k	3.5" 1"	3 yrs	£0.14/Mb	£155
IBM	36G6850	1,200Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.21/Mb	£247
Maxtor	71260A	1,260Mb	12.0ms	256k	3.5" 1"	2 yrs	£0.13/Mb	£163
Conner	CF51275A	1,275Mb	14.0ms	64k	3.5" 1"	2 yrs	£0.13/Mb	£166
Conner	CFA1275A	1,275Mb	12.0ms	256k	3.5" 1"	2 yrs	£0.14/Mb	£177
West. Digit.	WD31200	1,282Mb	10.0ms	64k	3.5" 1"	3 yrs	£0.14/Mb	£182
West. Digit.	WD31600	1,600Mb	10.0ms	128k	3.5" 1"	3 yrs	£0.16/Mb	£250
Maxtor	71626AP	1,620Mb	12.0ms	256k	3.5" 1"	2 yrs	£0.15/Mb	£247

Wide SCSI Drives

2Gb and up	IBM	86F0106	2,000Mb	9.2ms	512k	3.5" 1"	5 yrs	£0.35/Mb	£699
Conner	CFP2105W	2,100Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.25/Mb	£532	
Micropolis	MIC4221W	2,100Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.29/Mb	£599	
Conner	CFP2107W	2,110Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.27/Mb	£577	
IBM	74G7004	2,160Mb	8.0ms	512k	3.5" 1"	5 yrs	£0.34/Mb	£739	

4Gb and up

Conner	CFP4207W	4,220Mb	9.0ms	512k	3.5" 1"	5 yrs	£0.20/Mb	£843
Micropolis	MIC3243W	4,300Mb	8.5ms	512k	3.5" 1"	5 yrs	£0.19/Mb	£817
IBM	74G7005	4,320Mb	8.6ms	512k	3.5" 1"	5 yrs	£0.25/Mb	£1,080

9Gb and up

Micropolis	MIC1991W	9,100Mb	12.0ms	512k	5.25" FH	5 yrs	£0.17/Mb	£1,540
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Please call for External SCSI

ADAPTEC CONTROLLERS

SCSI Model	Name	Max Xfer Rate	Flyp	Drives	External Connector	Type	Price
ISA Bus							
AHA1505 kit	Total CD	5Mb/s	no	1	25 pin apple		£69
AHA1522 kit	SCSI Direction	10Mb/s	yes	1 2 3 4 5	50 pin centronics		£100
AHA1542 kit	SCSI Master	10Mb/s	yes	1 2 3 4 5	50 pin centronics		£164
EISA Bus							
AHA2742 kit	EISA SCSI Master	10Mb/s	yes	1 2 3 4 5	50 pin micro D		£238
AHA2742W kit	EISA Wide SCSI Int	20Mb/s	yes	1 2 3 4 5	68 pin wide		£357
MCA Bus							
AHA1640 kit	SCSI Channel	5Mb/s	no	1 2 3	50 pin micro D		£190
VL Bus							
AHA2842VL kit	SCSI Master II	10Mb/s	yes	1 2 3 4 5	50 pin micro D		£154
PCI Bus							
AHA2940 kit	PCI SCSI Master	10Mb/s	no	1 2 3 4 5	50 pin micro D		£192
AHA29040W kit	PCI Wide SCSI Int	20Mb/s	no	1	68 pin wide		£192

WESTERN DIGITAL CONTROLLERS

<ul style="list-style-type: none"> - GUARANTEED COMPATIBILITY - Call within 30 days and Western Digital will fix it or return your money. - Selectable boot drive - Corel SCSI V2 full version bundled free! - 5 year warranty - FLEXware for fine tuning your PCI interface - Up to 24% faster than some other leading brands - Flash RAM BIOS - Get upgrades direct from Western Digital's bulletin board 							
Model	Max Xfer Rate	Flyp	Drives	External connector type	Price		
PCIBus							
WD7193	10Mb/s	1 2 3 4 5	50 pin micro D		£156		
WD7197	20Mb/s	1 2 3 4 5	68 pin wide		£187		
WD7296	20Mb/s	1 2 3 4 5	68 pin wide		POA		
Key to Drivers							
1 - Dos/Win	2 - Netware	3 - OS/2	4 - NT	5 - Unix			

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(Awkward sentence - frightening thought?)

SCSI DAT - DDS1

Make	Model	Capacity	From	To	Int/Ext	Price
HP	C1520F	2Gb	—	—	ext	£680
HP	C1525F	2Gb	—	—	ext	£573
HP	HP35470	2Gb	—	—	ext	£538
HP	HP35470 ext	2Gb	—	—	ext	£636
HP	C1521F	4Gb	—	—	ext	£766
HP	C1526F	4Gb	—	—	ext	£650
HP	HP35480	4Gb	—	—	ext	£628
HP	HP35480 ext	4Gb	—	—	ext	£721

SCSI DAT - DDS2

Make	Model	Capacity	From	To	Int/Ext	Price
Sony	SDT5200	4Gb	—	—	int	£558
Sony	SDT5200 ext	4Gb	—	—	ext	£626
HP	C1528F	4Gb	—	—	ext	£789
HP	C1529F	4Gb	—	—	ext	£913
HP	HPC1533	4Gb	—	—	ext	£722
HP	HPC1533 ext	4Gb	—	—	ext	£799
Sony	SDT5000	4Gb	—	—	int	£616
Sony	SDT5000 ext	4Gb	—	—	ext	£672
HP	HPC1553	24Gb	—	—	int	£1,557
HP	HPC1553 ext	24Gb	—	—	ext	£1,699

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See Page 2 **Enhanced - IDE** For NEW PRODUCTS

CFS850A	850Mb	128K	12ms	£139
CFA1275A	1.2Gb	256K	10ms	£183

FAST SCSI - 2

CFP1080S	1.08Gb	512K	9ms	£249
CFP2107S	2.1Gb	512K	9ms	£499
CFP4207S	4.2Gb	512K	9ms	£749

MICROPOLIS

FAST SCSI - 2

MIC4221	2.1Gb	512K	8.5ms	£549
MIC3243	4.3Gb	512K	8ms	£699
MIC1991	9.0Gb	512K	11ms	£1399

AUDIO VISUAL DRIVES

MIC4221AV	2.1Gb	512K	8.5ms	£589
MIC3243AV	4.3Gb	512K	8.5ms	£769
MIC1991AV	9.0Gb	1.0Mb	11ms	£1399

WESTERN DIGITAL

Enhanced-IDE

AC2850	850Mb	128K	10ms	£135
AC31200	1.2Gb	256K	10ms	£189
AC31600	1.6Gb	2Mb	8ms	£279

*ALL DRIVES SUPPLIED WITH DISK MANAGER & DISK ROCKET

NEW!! 1.6Gb WD £279

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ST5850A	855Mb	256K	11ms	£139
ST31220A	1.2Gb	256K	12ms	£179

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MicroD Terminator	£29

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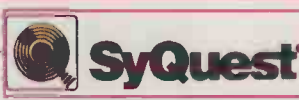
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SyQuest 5.25"	SCSI	88Mb	£169	£269	£35	£169
SyQuest 5.25"	SCSI	200Mb	£259	£359	£52	£259
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TRAVAN 3.2Gb External	£329
IOMEGA Tape Accelerator Card	£ 47
Media	£ 17

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ATLAS	2.0Gb	256K	11ms	£249
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PEGASUS	1.05Gb	512K	9ms	£199
ULTRASTAR	2.0Gb	512K	8ms	£249
ULTRASTAR	4.0Gb	512K	9ms	£399

Maxtor

AUDIO VISUAL DRIVES

7850AV	850Mb	256K	10ms	£139
71260A	1.08Gb	256K	10ms	£189
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* See example of calculations
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- MS Encarta 1995
- MS MultiMedia Works
- MS Dangerous Creatures
- MS Money ● MS Golf
- MS Scenes (3.5" disks)

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.

Credit Card/Sales Order Line: 01582 745555 • Technical Support: 01582 745500 • Switchboard: 01582 487777

Aries Universa^{MKII} LCF Systems

Ultra Low Cost Finance

APR 9.9%

LIMITED PERIOD ONLY

Aries Universa^{MKII}
486DX4-100
540Mb Hard Disk
Bundled Software
£32 per month



Shown above with MultiMedia kit, 15" monitor and 80 watt speakers (optional). Monitor/Case may be cosmetically different to that shown. Software boxes shown for illustrative purposes only.

ALL UNIVERSA LCF SYSTEMS ARE BUNDLED WITH THE FOLLOWING SOFTWARE

APPLICATIONS & OPERATING SYSTEM



LIFESTYLE, REFERENCE & UTILITIES



ENTERTAINMENT



EDUCATION, BOOKSHELF & LANGUAGES



All software is pre-loaded for your convenience!

Universa 486DX SYSTEMS

- 4Mb RAM expandable to 64Mb
- 540Mb Hard Disk
- 128K External Cache RAM
- Processor Upgradable to Pentium® Overdrive P24T
- Windows Accelerator SuperVGA Graphics Controller Card
- IDE Hard Disk & Floppy Drive Controller
- 3 x VESA & 4 x ISA expansion slots
- Dual Serial & Parallel Port

- ◆ Expandable Desktop Case
- ◆ 102 Key Enhanced Keyboard
- ◆ 14" Super VGA Non-Interlace Colour Monitor
- ◆ 3.5" 1.44Mb Floppy Drive
- ◆ 102 key enhanced keyboard
- ◆ Microsoft compatible mouse
- ◆ MS DOS v6.22 & MS Windows v3.11
- ◆ 12 Months Parts & Labour Warranty
- ◆ Technical Support Hotline

Universa PENTIUM®-based SYSTEMS

- ◆ 8Mb RAM expandable to 128Mb
- ◆ 540Mb Hard Disk
- ◆ 256K External Cache RAM
- ◆ Advanced Pentium® upgradable motherboard using Type 5 ZIF socket
- ◆ EPA EnergyStar Compliant
- ◆ 64 bit SuperVGA Graphics Controller Card with 1Mb Video Memory
- ◆ Enhanced IDE I/F supporting 4 drives
- ◆ 3 x PCI/4 x 16 bit exp. slots (1 shared)

- ◆ Enhanced Parallel Port (EPP/ECP)
- ◆ Two Enhanced Serial Ports - 16550 UART
- ◆ 102 Key Enhanced Keyboard
- ◆ 14" SVGA Non-Interlace Colour Monitor
- ◆ 3.5" 1.44Mb Floppy Drive
- ◆ 102 key enhanced keyboard
- ◆ Microsoft compatible mouse
- ◆ MS DOS v6.22 & MS Windows v3.11
- ◆ 12 Months Parts & Labour Warranty
- ◆ Technical Support Hotline

Description	Price	Finance per month
86DX2 66MHz	£679	£32*
86DX4 100MHz	£699	£33*
486DX2 66MHz	£899	£42*
486DX4 100MHz	£919	£43*



OPTIONS FOR UNIVERSA SYSTEMS:

4Mb to 8Mb RAM upgrade	£110
540Mb to 1Gb Hard Disk Upgrade	£68
Upgrade to 15" Super VGA Colour	£99
1024 x 768 Non Interlace Monitor	£99
12 Months On-Site Maintenance	£35
3 years On-Site Maintenance	£118

* See example of calculations
† All software supplied pre-loaded for your convenience with built-in tutorial, and may change from those shown without notice. Disks and manuals available as an optional extra.

Description	Price	Finance per month
Pentium 75MHz	£949	£44*
Pentium 90MHz	£999	£46*
Pentium 75MHz	£1138	£53*
Pentium 90MHz	£1198	£55*



OPTIONS FOR UNIVERSA SYSTEMS:

8Mb to 16Mb RAM Upgrade	£185
540Mb to 1Gb Hard Disk Upgrade	£68
Upgrade to 15" Super VGA Colour	£99
1024 x 768 Non Interlace Monitor	£99
12 Months On-Site Maintenance	£35
3 years On-Site Maintenance	£118

* See example of calculations
† All software supplied pre-loaded for your convenience with built-in tutorial, and may change from those shown without notice. Disks and manuals available as an optional extra.

APR 9.9% Finance calculation example: Cash Price: £679 + VAT = £797.83 Deposit: 10% £119.67 and 24 equal payments of £31.12 Total Price: £866.56 Finance is available subject to status. Be sure you can afford the payments prior to entering into an agreement. Price excludes carriage

prices, specifications and offers subject to change without notice. Please ensure suitability with manufacturer before ordering. All returns subject to handling charge. Goods not sold on a trial basis. Sales subject to our Terms & Conditions available on request. E & OE.

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All Prices exclude Carriage & VAT @ 17.5%

Credit Card/Sales Order Line: 01582 745555 • Technical Support: 01582 745500 • Switchboard: 01582 487777

Aries *The Sign of Quality*

The New Aries Perfecta PCI range is even by Watford's own high standards a breathtaking upgrade on the previous ranges. Designed without compromise for today's PC professional. Perfecta PCI Systems feature the hottest new local bus technology from Intel, PCI. Jointly developed by Intel and other industry leaders, PCI picks up where other bus architectures leave off,

providing greater system performance via a wider data path and increased expandability.

Incorporating a host of advanced features for improved performance, future-proof upgradability, a peace-of-mind **6 year warranty** and prices you've come to expect from Watford - you could say the new range is quite simply perfect!

ASK FOR THE NO COST OPTION

Microsoft WINDOWS95
Installed on your Perfecta PC at no extra charge

INTERNET READY

with the Aries range of Modem

Perfecta® PCI

Genuine PCI performance at exceptional prices. These new Perfecta PCI systems incorporate a host of advanced features for improved performance including 9FX graphics cards to unleash the full power of Windows. Choose from the popular priced standard systems or include the industry-standard Microsoft Office software package. Whichever you choose you are assured of incredible value.

- ◆ 540Mb Fast IDE Hard Disk
- ◆ 4Mb RAM expandable to 128Mb
- ◆ 256K External Cache RAM exp. to 512K
- ◆ Write back & Write through Cache supported
- ◆ Advanced Integrated upgradable motherboard
- ◆ Processor upgradable to Pentium Overdrive (Type 3 ZIF Socket on board)
- ◆ EPA Energy Star Compliant
- ◆ GrafixStar 300 64 bit Graphics Card with 1Mb Video Memory
- ◆ 3.5" 1.44Mb Floppy Drive
- ◆ Enhanced Parallel Port (EPP/ECP)
- ◆ Two enhanced Serial Ports using 16550 UART
- ◆ Enhanced IDE Interface supporting four drives
- ◆ 3 x PCI & 4 x 16 bit expansion slots (1x PCI/16 bit shared slot)
- ◆ 102 key Enhanced keyboard
- ◆ 14" Super VGA Low Radiation MPRII Non-Interlace Colour Monitor (0.28mm dot pitch)
- ◆ MS DOS v6.22 & MS Windows v3.11 OR MS Windows 95
- ◆ SIX Year Warranty consisting of: 12 months On-Site Parts & Labour Warranty Five Years (return to base) Labour Only Warranty
- ◆ Technical Support Hotline

Aries Perfecta PCI Systems		
Description	Price	Finance per month from
486DX2-66MHz	£699	£38
486DX4-100MHz	£729	£39
Above system with 8Mb RAM and Microsoft Office v4.2		
486DX2-66MHz	£915	£49
486DX4-100MHz	£945	£50

Perfecta PCI Upgrade Option

Part No.	Description	Price
PCI-01	4Mb to 8Mb RAM Upgrade	£115
PCI-02	4Mb to 16Mb RAM Upgrade	£345
PCI-05	Upgrade to GrafixStar 300 2Mb 64 bit Video Graphics Card	£59
PCI-10	1Gb IDE Hard Disk Drive instead of 540Mb IDE Drive	£68
PCI-20	Upgrade to 15" Aries 6000 Digital Control, Non-Interlaced (1280x1024) Low Radiation MPRII Monitor	£79
P5-30	MS Office - Manuals & Disks	£49

6 YEAR WARRANTY

ENHANCED HIGH SPEED SERIAL PORTS 16550

VideoLogic 1Mb GRAPHICS CARD



Shown with optional MultiMedia Kit

DUAL SPEED MULTIMEDIA KIT
£129
See MultiMedia Panel

QUAD SPEED MULTIMEDIA KIT
£189
See MultiMedia Panel



Shown with MultiMedia Kit with Aries HiFi Plus 15 Watt Speakers and 15" Aries 6000 monitor (optional)

Perfecta® P5

Perfecta P5 systems make no compromises on quality or performance while continuing Aries reputation for superb value. With Pentium processors ensuring stunning speeds and a full range of options and low-cost multimedia kits you can personally customise your PC for your own needs.

- ◆ 540Mb Fast IDE Hard Disk
- ◆ 8Mb RAM expandable to 128Mb
- ◆ 256K External Cache RAM upg. to 512K
- ◆ Advanced Integrated Pentium upgradable motherboard using Type 5 ZIF Socket
- ◆ EPA Energy Star Compliant
- ◆ GrafixStar 300 64 bit Graphics Card with 1Mb Video Memory
- ◆ 3.5" 1.44Mb Floppy Drive
- ◆ Enhanced Parallel Port (EPP/ECP)
- ◆ 2 enhanced Serial Ports using 16550 UART
- ◆ Enhanced IDE Interface supporting four drives
- ◆ 3 x PCI & 4 x 16 bit expansion slots (1x PCI/16 bit shared slot)
- ◆ 102 key Enhanced keyboard
- ◆ 14" Super VGA Low Radiation MPRII Non-Interlace Colour Monitor (0.28mm)
- ◆ MS DOS v6.22 & MS Windows v3.11 OR MS Windows 95
- ◆ SIX year Warranty consisting of: 12 months On-Site Parts & Labour Warranty Five Years (return to base) Labour Only Warranty
- ◆ Technical Support Hotline

Aries Perfecta P5 Systems		
Description	Price	Finance per month from
Pentium P75	£925	£49
Pentium P90	£995	£53
Above system with 1Gb HD and Microsoft Office v4.2		
Pentium P75	£1110	£59
Pentium P90	£1180	£63

Perfecta P5 Upgrade Options

Part No.	Description	Price
P5-01	8Mb to 16Mb RAM Upgrade	£230
P5-02	8Mb to 32Mb RAM Upgrade	£690
P5-05	Upgrade to 512K External Cache RAM	£69
P5-06	Upgrade to GrafixStar 300 2Mb DRAM 64 bit Video Graphics Card	£59
P5-07	Upgrade to GrafixStar 700 2Mb VRAM 64 bit Graphics Card	£99
P5-10	1Gb IDE HDD Instead of 540Mb IDE	£68
P5-11	2Gb IDE Hard Disk Drive instead of 540Mb IDE Drive	£258
P5-15	Upgrade to Full Tower Case	£45
P5-20	Upgrade to 15" Aries 6000 Digital Controlled Non-Interlaced (1280x1024) Low Radiation MPRII Monitor	£79
P5-21	Upgrade to 17" Panasonic PanaSync TX-D1733 Monitor (0.27mm DP)	£345
P5-22	Upgrade to 17" Panasonic PanaSync 17MM TX-D1733F with Built-in TopDome Sound & Microphone	£395
P5-30	MS Office - Manuals & Disks	£49

DUAL SPEED MULTIMEDIA KIT
£129
See MultiMedia Panel

QUAD SPEED MULTIMEDIA KIT
£189
See MultiMedia Panel

intel inside pentium®

LOW COST CREDIT APR 18.5%
Available on all Perfecta PC's. See example on previous pages

Case design may vary from that shown

Aries *The Sign of Quality*

Perfecta® P5 Triton

The Ultimate Performers

Looking for the fastest PC's around? The search is over. The Perfecta P5 Triton Ultimate Performers 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. The P5 Triton systems feature the latest Intel Triton chipset designed to get the ultimate performance from the Pentium processor. Combine this with high speed EDO-RAM and a Pipeline Burst Cache upgrade and you have a system that is probably the finest example of Power Computing available anywhere.

- ◆ 8Mb EDO RAM expandable to 128Mb
- ◆ 1Gb Fast IDE Hard Disk
- ◆ 256K External Cache RAM expandable to 512K
- ◆ Pipelined Burst Cache Module supported
- ◆ 100MB/sec PCI Data Streaming
- ◆ Plug & Play (ISA) support for MS Windows 95
- ◆ Advanced integrated upgradable motherboard with Intel Triton Chipset
- ◆ Processor upgradable to Pentium 200MHz using Type 7 ZIF Socket
- ◆ EPA Energy Star Compliant
- ◆ GrafixStar 300 64 bit Graphics Card with 2Mb Video Memory
- ◆ 3.5" 1.44Mb Floppy Drive
- ◆ Enhanced Parallel Port (EPP/ECP)
- ◆ Two enhanced Serial Ports using 16550 UART
- ◆ Enhanced IDE Interface supporting four drives
- ◆ 3 x PCI & 4 x 16 bit expansion slots (1x PCI/16 bit shared slot)
- ◆ 102 key Enhanced keyboard
- ◆ 15" Digital Controlled, Non-Interlaced (1280x1024) Low Radiation MPRII Colour Monitor (0.28mm dp)
- ◆ MS DOS v6.22 & MS Windows v3.11 OR MS Windows 95
- ◆ SIX year Warranty consisting of: 12 months On-Site Parts & Labour Warranty Five Years (return to base) Labour Only Warranty
- ◆ Technical Support Hotline



Shown with MultiMedia Kit and 80 Watt Speakers



Aries Perfecta P5 Triton Systems

Description	Price	Finance per month from
Pentium P90	£1249	£67
Pentium P120	£1449	£77
Pentium P133	£1539	£82

CALL for SPECIAL PRICES for MICROSOFT OFFICE v4.2
when purchasing the above range of PC's

Perfecta P5 Triton Upgrade Options

Part No.	Description	Price
P5-Tr01	8Mb to 16Mb EDO RAM Upgrade	£256
P5-Tr02	8Mb to 32Mb EDO RAM Upgrade	£768
P5-Tr03	8Mb to 64Mb EDO RAM Upgrade	£904
P5-Tr04	Upgrade to 256K Pipeline-Burst Cache Module	£50
P5-Tr05	Upgrade to 512K Pipeline-Burst Cache Module	£100
P5-Tr06	Upgrade to GrafixStar 700 2Mb VRAM 64 bit Graphics Card	£78
P5-Tr10	2Gb IDE Hard Disk Drive instead of 1Gb IDE Drive	£195
P5-Tr11	2Gb SCSI Hard Disk Drive instead of 1Gb IDE Drive	£448
P5-Tr15	Upgrade to Full Tower Case	£45
P5-Tr20	Upgrade to 17" Panasonic PanaSync TX-D1733 Monitor (0.27mm DP)	£275
P5-Tr21	Upgrade to 17" Panasonic PanaSync 17MM TX-D1733F with Built-in TopDome Sound & Microphone	£325
P5-Tr22	Upgrade to 20" Panasonic PanaSync TX-D2051 Monitor	£840
P5-Tr23	Upgrade to 21" Panasonic PanaSync TX-D2131 Monitor	£1180
P5-Tr30	MS Office - Manuals & Disks	£49

Case design may vary from that shown

LOW COST CREDIT APR 18.5%
Available on all Perfecta PC's. See example on previous pages

DUAL SPEED MULTIMEDIA KIT £129
See MultiMedia Panel

QUAD SPEED MULTIMEDIA KIT £189
See MultiMedia Panel



UPGRADE ANY Perfecta PC TO A COMPLETE MULTIMEDIA SYSTEM

Perfecta MultiMedia Kits MM2 & MM4

- Dual Speed (MM2 Kit) or Quad Speed (MM4 kit) CD ROM Drive
- Creative Sound Blaster 16 Sound Card
- Aries HiFi Speaker Set (10W per channel)
- Microsoft CD Bundle Pack (see panel)
- Dual Speed Kit MM2 **£129**
- Quad Speed Kit MM4 **£189**



Complete Bundle Software Pack Included

- MS Encarta 1995
- MS MultiMedia Works
- MS Dangerous Creatures
- MS Money
- MS Golf
- MS Scenes (3.5" disks)



Microsoft Office 4.2 includes:

- ◆ MS Office Manager
- ◆ MS Word for Windows v6
- ◆ MS Excel for Windows v5
- ◆ MS Powerpoint for Windows v4
- ◆ MS Mail (Licence)

Supplied when you purchase disks & manuals
Office Software supplied pre-loaded for your convenience with built-in tutorial. Disks & manuals available as an optional extra.

Prices, specifications and offers subject to change without notice. Please ensure suitability with manufacturer before ordering. All returns subject to handling charge. Goods not sold on a trial basis. Sales subject to our Terms & Conditions available on request. E & OE.

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All Prices exclude Carriage & VAT @ 17.5%

Aries Perfecta® 7000 Series

More features than most desktop PCs

Introducing a new range of beautifully designed notebooks that genuinely give you the power and facilities you expect from your desktop PC. The Aries Perfecta 7000 is packed with intelligent energy-saving features that ensure you get longer life and safer data. PCMCIA flexibility gives fax/modem communications on the move and Ethernet in the office (with optional cards).

With a choice of processors up to DX4 100MHz and RAM expandable to a mammoth 32Mb, the 7000 packs the power to run your Windows applications, and an ergonomic design to make them easier to use.



SUPERB PERFORMANCE

CPU Upgrade up to Intel DX4-100. External connectivity enhanced by use of 16C550 Serial Port and Parallel Port with support for EPP/ECP.

ADVANCED POWER MANAGEMENT

Complete with a comprehensive set of 16 features that will allow you to customise the operation of the machine to your benefit. Suspend to memory or suspend to disk ensures data is never lost when you leave the notebook.

FLEXIBLE PCMCIA

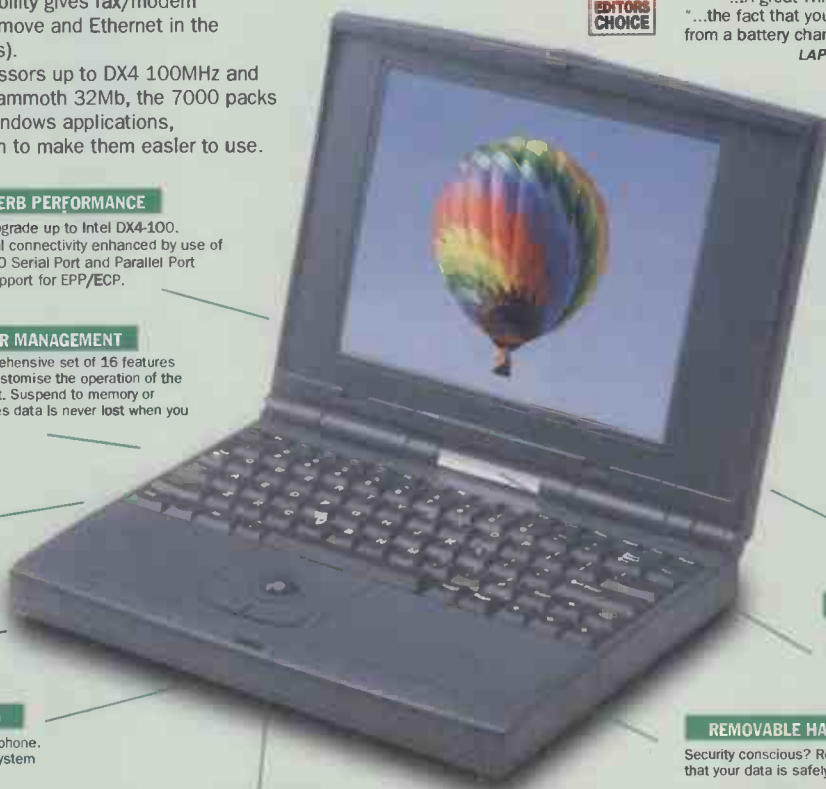
Compartment for two type I/II or one type III PCMCIA slot with removable cover.

LOW POWER 3.3V

All the components in the notebook run at 3.3V, giving up to three times longer life.

BUILT-IN-SOUND

Built-in Speaker/Microphone. Stereo 16 bit Sound System



"With plenty of processing power, (and) enough battery life to handle a transcontinental flight easily, ... a value Inner." **PC MAGAZINE, Cover Story: Notebooks**

"...A great Windows PC, and an excellent value." "...the fact that you get the amount of performance we did from a battery charge speaks highly of the engineering." **LAPTOP BUYERS GUIDE & HANDBOOK, First Look**

LAPTOP BUYERS GUIDE & HANDBOOK, First Look

"Ranks above many famous-name notebooks. And in terms of pointing devices, it's definitely got them out-numbered." "...deserves a spot on your short list." **COMPUTER SHOPPER, PC Reviews**

COMPUTER SHOPPER, PC Reviews

"Represents the best kind of innovation in the rapidly changing field of notebook computers. It keeps the best of proven technologies, such as a sharp display, and complements them with new technologies, such as those employed to stretch battery life." **WINDOWS MAGAZINE, WinLab First Impressions**

WINDOWS MAGAZINE, WinLab First Impressions
Reviews done on identical Notebook in the USA

EXTERNAL STATUS INDICATOR

"At a glance" multi colour indicator on the top cover shows if machine is charging, charged, suspended with battery charging or charged.

INTERNAL STATUS INDICATOR PANEL

12 distinct icons will display, flash or change appearance to give you a complete report on the state of the machine including a 5 step graduated remaining charge gauge.

REMOVABLE HARD DISK DRIVE

Security conscious? Remove the Hard Disk easily and be sure that your data is safely out of reach of unauthorised users.

* Pre-loaded for your convenience, Manual/Disk available as an option.

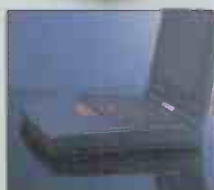
ARIES MEDIABOOK

NOW AVAILABLE

The Ultimate Multimedia Pentium Colour Notebook from **£1599**



Notebook shown here with 19mm Trackball with 2 buttons supplied as standard. Optional TrackPoint Control Stick available (as above).



Ergonomical designed sloping palm rests

DOCKING STATION WITH 4x CD-ROM

- Includes quad-speed CD-ROM drive
- Two expansion slots and drive bays (One Expansion slot and drive bay remaining with CD-Rom installed)
- Built-in Parallel, Serial, PS/2 Mouse, keyboard and VGA ports.

£399

Aries Perfecta 7000 Series Notebooks

- ◆ Intel Low Powered Enhanced CPU
- ◆ 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 GUI accelerator
- ◆ Advance PMU Function
- ◆ Mono/Stereo 16 bit Sound System (Optional)
- ◆ Audio Line (In/Out) with volume control
- ◆ Built-in Speaker/Microphone (requires sound system)
- ◆ 1.44Mb 3.5" Floppy Drive
- ◆ 82 key QWERTY Keyboard
- ◆ 19mm Trackball (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

All prices are for standard 340Mb Hard Disk, Supplied with FREE Carrying Case

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 i486SX™-33	£969	£37	£1299	£49	£1799	£68
SL i486DX4™-75	£999	£38	£1349	£51	£1825	£69
SL i486DX4™-100	£1099	£42	£1399	£53	£1899	£72

APR **18.5%**

Finance calculation example: Cash Price: £969 + Carriage and VAT = £1152.68 Deposit 10% £115.27 and 36 equal monthly payments of £37.07 Total Price £1334.52. Finance is available subject to status. Be sure you can afford the payments prior to entering into an agreement

OFFICE COMMS UPGRADE

Turn your Aries 7000 notebook into a complete voice mail system with the Aries Office Communications Workstation Kit. Suitable for home or business, supporting multiple mail boxes, Fax on Demand, and data communications. The Aries Office

FREE INTERNET CONNECTION 30 DAY TRIAL

Communications Workstation Kit contains high speed V32bis (14400 baud) Voice/Fax Modem and software package, providing users with remote access to voice, fax and data messages.

SPECIAL OFFER £125

ADDITIONAL OPTIONS

4 to 8Mb RAM Upgrade*	£159	PCMCIA Ethernet Card	£99
4 to 16Mb RAM Upgrade*	£525	Spare NiMH Battery Pack	£69
4 to 32Mb RAM Upgrade*	£1089	Spare AC Mains Adaptor	£49
Track-point device	£25	Car Lighter Adaptor	£29
16 bit Internal Sound Card	£49	External Keyboard	£25
Aries HiFi Speakers	£29	Internal V32bis 14.4K Fax/Modem (non-approved) with software	£125
PCMCIA Game Card	£45	*Requires module exchange	
PCMCIA 9600 Fax/Modem	£59		
PCMCIA US Robotics Worldport 14400 Fax/Modem	£165		

7000 Notebook Hard Disk Upgrades (Prices valid when purchasing Notebooks only)

UGA0530/A	340Mb to 540Mb HDD	£125
UGA0540/A	340Mb to 800Mb HDD	£249

All prices, specifications and offers subject to change without notice. Please ensure suitability with manufacturer before ordering. All returns subject to handling charge. Goods not sold on a trial basis. Sales subject to our Terms & Conditions available on request. E & OE.

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FAX: 01582 488588

1 YEAR SUPPORT
All Perfecta Notebooks are covered by a FREE 12 Months Warranty in mainland UK.

VISA
MasterCard
All Prices exclude Carriage & VAT @ 17.5%

Credit Card/Sales Order Line: 01582 745555 • Technical Support: 01582 745500 • Switchboard: 01582 487777

HIGHSPEED FAX-MODEMS

Enter the realm of high speed communications with Aries's new XLink range of fax-modems. Available in both internal PC card and external versions, the XLink range will open up a whole host of national and international possibilities. Error correction and data compression are standard on all models. Fax your friends in Florida, transmit TIFFs to Turkey, enter the Internet and discover the growing world of comms with an Aries XLink Fax-Modem.

Surf the Net
with Aries XLink Modems you can connect globally using the InterNet via CompuServe or other Internet Providers like Demon. Includes **FREE** Introductory Subscription to **CompuServe**

FREE
28 Day Access
to the **InterNET**

ARIES XLink V.34 RANGE:

All models feature:

- ◆ 28,800 (V.34) bps top data transmission speed
 - ◆ V.32, V.32bis, V.23, V.22, V.22bis & V.21
 - ◆ Error Correction to MNP2-5 and V.42 standards
 - ◆ Data compression to MNP5 and V.42bis standards
 - ◆ Call back security
 - ◆ Sync & Async Operation
 - ◆ Group 3, Class I & II Fax at up to 14400bps V.17
 - ◆ Group 1 and 2 fax compatible (V.27ter and V.29)
 - ◆ 16550 UART Buffer (Internal model only)
 - ◆ Fully Hayes compatible
 - ◆ 3 years warranty
 - ◆ BAPT Approved plus additional Six European Approvals
 - ◆ Supplied complete with Delrina Winfax Lite, DOS Fax Lite plus CoMit Lite for DOS and Windows
- Option: High Speed Serial Card (16550 UART) £29



Internal Modem Card



NEW LOW PRICES

3 YEAR WARRANTY

Case may be cosmetically different to that shown

28,800 BPS
V.34 CLASS

IMPORTANT NOTE In keeping with Watford's commitment to offer the latest technology and to save you time and money on phone bills we are standardising on the fastest 28.8k Fax/Modems.

External Modem **£139**
XL-V34-288E

Internal Modem **£129**
XL-V34-288i

Aries Award-Winning Scanners



Optional Automatic Sheet Feeder available with all Aries Relisys Scanners

Colour Transparency reader

The Relisys Scanner has been voted the 'BEST SCANNER OF THE YEAR' by the readers of PC Direct "better all round, and therefore a Best Buy, is Watford's Relisys...which combines value for money and good software support with quality output"

UNBEATABLE LOW PRICES

ISO-9001
Manufactured to BS1 Quality Standard Certificate

SPECIAL OFFER
from only **£199**

With the Aries Relisys you'll open up a whole new world of possibilities. Imagine being able to scan pictures, diagrams, photographs in perfectly matched colour. To use unlimited zoom to create precisely the size you need. And then to combine them with other files to produce truly professional documents.

Aries Relisys Scanners are the perfect answer for Desk Top Publishing (DTP) and Optical Character Recognition (OCR) applications in the PC environment. With Firmware Interpolated, they have outstanding Scanning Resolution in addition to stunning colours (16.7 million) and mono (256 greyscales) definition. Now industry standard TWAIN compliant, Aries Relisys Scanners can be used directly with Windows software.

With the new Hi-speed scanners you can scan an A4 image in colour in just minutes. And in a breathtaking 15 seconds deliver an A4 mono. It's simplicity itself to set up and use, and the new comprehensive range offers a model for every need.

All Aries Relisys models will scan full A4 legal size

FREE Software

The Relisys comes bundled with these **FREE** packages (requires Windows 3.1)

- ◆ Micrografix Picture Publisher v4 LE- Graphics Image Scanning/Editing
- ◆ Calera Wordscan or Xerox Textbridge OCR (optical character recognition)

Auto Document Feeders

- ◆ Capacity: 50 pages **ADF-30 £259**
- ◆ Paper size - Max: 8.5"x14" - Min: 5.0" x 7.2" **ADF-40 £295**
- ◆ Paper Thickness .05 to .15mm sheet **ADF-60 £345**

Aries Relisys Hi-Speed SCSI II COLOUR and Mono Flatbed Scanners

Aries	VM3420 1200dpi	VM3420 1200dpi	RELI 2412 2400dpi	RELI 4816 4800dpi	RELI 9624 9600dpi
Flat Bed Scanner type	256 Grey Scale	Colour	Colour	Colour	Colour
Scanning Process	N/A	Three Pass	Single Pass	Single Pass	Single Pass
Image Data Colour - 24 bit	N/A	167.7 million	16.7 million	16.7 million	16.7 million
Image Data mono - 8 bit	256 Greyscale	256 Greyscale	256 Greyscale	256 Greyscale	256 Greyscale
Effective Scanning Area	216 x 356mm	216 x 356mm	216 x 356mm	216 x 356mm	216 x 356mm
Zoom Out Feature	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Resolution - Optical Interpolated	300 x 600dpi 1200	300 x 600dpi 1200	300 x 1200dpi 2400	400 x 1600dpi 4800	600 x 2400dpi 9600
Brightness/Contrast Settings	256/256	256/256	256/256	256/256	256/256
Interface	SCSI II	SCSI II	SCSI II	SCSI II	SCSI II
Auto Document Option	ADF-30	ADF-30	ADF-30	ADF-40	ADF-60
Transparency Adaptor	VMT-68S	N/A	VMT-68S optional £295	VMT-68S optional £295	Included - Worth £500
New Low Prices	£199	£299	£399	£599	£1225

* Resolution quoted is the maximum achievable using interpolation. 8Mb recommended on your PC.

All prices, specifications and offers subject to change without notice. Please ensure suitability with manufacturer before ordering. All returns subject to handling charge. Goods not sold on a trial basis. Sales subject to our Terms & Conditions available on request. E & OE.

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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: £27 5 pack: £125



£27

Personal NetWare & GE2000 Card
Genius GE2000 II Ethernet card
and Novell Personal NetWare software*
SPECIAL OFFER PRICE £45



£57

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: £57 5 pack: £279

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

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: £65 5 pack: £299



£65



£89

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: £89 GH4160: £149

GE2000 PnP Ethernet Adapter

The GE2000 PnP 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: £35 5 pack: £169



£35

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	£8	£10	£15	£21	£29	£35	£115
UTP	£2	£4	£6	£9	£13	£16	£22	£30	£35	£109

UPS SYSTEMS

American Power Conversion	
BK250i - 250VA Backup UPS	£74
BK600i - 600VA Backup UPS	£139
SU250i - 250VA Smart UPS	£134
SU700i - 700VA Smart UPS	£227
SU900i - 900VA Smart UPS	£339
SU1200i - 1.2kVA Smart UPS	£492
SU2000i - 2kVA Smart UPS	£979
LineR600 600VA Conditioner	£119
LineR1250 1.2kVA Conditioner	£139
Matrix 3kVA UPS	£1839
Matrix 5kVA UPS	£2699
PowerChute Plus shutdown software	£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	£17	
Safertap 2.5m drop lead	£18	
Safertap Outlet & 2.5m drop lead	£33	
AMP Thinnest Tap Outlet	£17	
AMP Thinnest 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 NETWORK

No of Users	5	10	25	50	100	250	Manuals
NetWare 3.12	£385	£905	£1351	£1940	£2540	£4575	£155
NetWare 4.1 CD	£413	£944	£1436	£2035	£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 £66	CNA1900 £319
3Com Etherlink III - 3C509B-Combo	BNC/UTP/AUI	CNA0630 £73	CNA1920 £355
Aries NE2000 II	BNC/UTP	CNA0040 £24	CNA1710 £115
D-Link DE-220CT	BNC/UTP	CNA1570 £65	CNA1730 £379
Genius GE2000 II	BNC/UTP	CNA1130 £27	CNA0940 £125
Genius GE2000 Plug & Play	BNC/UTP	CNA2130 £35	CNA2140 £169
Intel EtherExpress Pro 10	BNC/UTP	CNA1260 £62	CNA1270 £289
Intel EtherExpress Pro 10 Flash	BNC/UTP	CNA1280 £69	CNA1280 £319
Novell NE2000+	BNC	CNA1510 £48	CNA2070 £215
Novell NE2000T+	UTP	CNA1250 £48	CNA2080 £215
SMC Elite 16C Ultra	BNC/UTP/AUI	CNA0890 £62	CNA1210 £344
SMC EtherEZ	BNC/UTP	CNA2620 £66	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 £169	CNA0980 £830
Intel EtherExpress 32C Flash	BNC/UTP	CNA1420 £155	
SMC Elite 32C Ultra	BNC/UTP	CNA1780 £139	CNA1740 £829
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 £159	CNA0960 £779
32-bit PCI Ethernet Adapters			
3Com Etherlink III - 3C590B-Combo	BNC/UTP	CNA0430 £124	CNA0440 £475
D-Link DE-530CT	BNC/UTP	CNA2710 £95	
Genius GE2500	BNC/UTP	CNA2110 £65	CNA2120 £299
SMC EtherPower	BNC/UTP	CNA1240 £89	CNA2700 £459
Parallel Port Ethernet Adapters			
D-Link DE-620CT	BNC/UTP	CNA1660 £105	
Genius E3000 II	BNC/UTP	CNA1145 £57	CNA1230 £279
SMC EliteNote	BNC/UTP	CNA1630 £149	
PCMCIA Ethernet Adapters			
3Com Etherlink III - 3C589B-Combo	BNC/UTP	CNA1490 £124	
D-Link DE-6500CT	BNC/UTP	CNA2720 £135	
Genius ME3000 II	BNC/UTP	CNA1620 £75	CNA1770 £363
SMC EliteCard	BNC/UTP	CNA2630 £144	

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	-	£459
Genius					
GH4080 Palmtop	8	1	-	-	£89
GH4160 19" rack	16	1	-	-	£149
GH1000 19" rack	12	1	1	opt	£249
GR5050 Palmtop	-	3	1	-	£122
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	£369
AdvanceStack 24U	24	-	1	-	£599
SMC					
Elite 3812TP	12	1	1	opt	£399
Tiger TP6	6	-	1	-	£145
TP12	12	-	1	-	£259
Tiger CX3	-	3	1	-	£219

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.

NetWare Kit 1 - 2 User Kit	£89
NetWare Kit 2 - 5 User Kit	£210
NetWare Kit 3 - Additional User Kit	£49
NetWare Kit 4 - 1 User Notebook Kit	£109

All kits include Ethernet card, software*, 5m cables and connectors

ETHERNET TRANSCEIVERS

Excel		
10base2 BNC Transceiver	£25	
10base2 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 Print Server
The GPS300 Pocket Print Server is the ideal solution to your NetWare printing requirements. It is a compact pocket sized unit which plugs directly into the Centronics port on your printer and connects directly to your network via BNC or RJ45 UTP connections.
Special Offer Introductory Price: £99

Hewlett Packard	
JetDirect - Internal for LJ4/4SI	£269
JetDirect - External	£229
D-Link	
DE950 External	£285
Intel	
NetPort Express EL	£245
NetPort Express XL	£285

Note: above are for use with Novell NetWare only

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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800dpi **£93**

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EasyScan 256

800 dpi



- ◆ **Powerful image software** - PhotoFinish 3.0 software has image auto enhancement functions and 87 tools to satisfy your creativity.
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- ◆ **TWAIN Compliant** - Lets you use the scanner with all TWAIN compatible programs
- ◆ **Includes:** Interface card, PhotoFinish 3.0, Media Mate presentation software, Smart Page Direct OCR software, TWAIN compliant software, User's manuals.

INTRODUCTORY PRICE £59

MOUSE 3+ £20 - with 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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COMPUTER SHOPPER

COMPUTER SHOPPER
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- ◆ **High resolution** - up to 800 dpi gives you superb image quality
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- ◆ **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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ScanMate Colour Pro

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- New Sketch 1812D **£209**

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- HiMouse - Serial **£19**
- HiMouse- Serial & PS/2 **£21**

EasyScroll

- 3 button serial mouse with built-in scroll feature **£29**

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- Serial Trackerball **£29**

HiTrak

- Stationary Trackball Serial & PS/2 **£22**

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Amazing value graphics tablet gives you the chance to exercise your creativity. Includes PC Paintbrush for Windows that provides dozens of natural paint tools, complete Utilities Disk, Stylus Pen and keyboard power adaptor.



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 MLP = Microsoft Licence Pack
 Comp = Competitive (or U/G sidegrade) upgrade
 U/G = Upgrade
 DOS = Program designed to work in DOS environment
 WIN = Program designed for MS Windows 3.1 or later

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Best M.Y.O.B. v5 Small Business Accounting	£135
GST Motoring Expenses	£9
GST Purchasing Manager	£20
Intuit Quick Books v3.0 for Windows	£86
Intuit Quick Tax Return 1995	£25
Intuit Quicken DOS v6.0	£29
Intuit Quicken for Windows v4.0	£25
Intuit Quicken for Windows v4.0 CD	£25
Intuit Quicken UK Deluxe Business Pack v4.0	£45
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Megatech TAS Books Multi User LAN	£170
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Pegasus Solo Accounts	£63
Pegasus Solo Payroll	£41
RMG Plan-It Business-Plan Builder v2	£86
Sage Instant Accounting WIN	£129
Sage Instant Business Pack	£68
Sage Instant Payroll WIN	£33
Sage Moneywise for Windows v2	£270
Sage Sterling +2 Accountant Plus WIN v3	£189
Sage Sterling +2 Accountant WIN v3	£82
Sage Sterling +2 Bookkeeper WIN v3	£349
Sage Sterling A/C Plus WIN LAN	£463
Sage Sterling Accountant DOS v7	£189
Sage Sterling Accountant Plus DOS v7	£270
Sage Sterling Bookkeeper DOS v7	£82
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Sage Sterling Job Costing LAN	£175
Sage Sterling Payroll for Windows	£129
Sage Sterling Payroll II DOS LAN	£165
Sage Sterling Payroll II DOS v5.0	£129
Stanford Epsilon DOS Plus v1.3 Single User	£249
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RMG Performance Now!	£99
RMG Sidekick 95 for WIN 95	£28
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Sareen OfficeTalk	£85
Softkey Calendar Plus WIN	£29
Softkey KeyForm Designer Win	£26
Spinnaker Address Book Plus DOS	£19
Spinnaker Calendar Creator v2 WIN	£22
Spinnaker Labels Unlimited DOS	£25
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Symantec ACT! WIN v2.0	£125
Symantec ACT! LAN Pack v2.0	£379
WP MainStreet InfoCentral win v1.1	£45

CLIP ART IMAGES & SOUND CLIPS

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Corel Artshow 3 Book & CD	£15
Corel Artshow 4 Book & CD	£19
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Lotus MasterClips 6000 CD	£59
Lotus SmartPics Clip Art WIN	£82
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Dataseq ProComm Plus Plus	£55
DCA Crosstalk Mk IV DOS v2.1	£163
DCA Crosstalk WIN v2.2	£105
Delrina Communications suite	£69
Delrina DosFax Pro v2	£35
Delrina WinComm Pro	£53
Delrina WinFax Pro Ntwk Starter Pk (1 server 2 Users)	£176
Delrina WinFax Pro v4	£54
Delrina WinFax Pro v4 Upgrade	£32
Hayes Smartcom WIN	£46
Internet In A Box v2	£92
Lantastic Winport v5 for Win95	£99
Lantastic Winport v5 for 1 Modem	£135
Lantastic Winport v5 for 2 Modem	£210
Lantastic Winport v5 for 4 Modem	£335
Lotus cc:Mail Desktop WIN	£70
Lotus cc:Mail Mobile WIN	£115
Microcom Carbon Copy Plus v6.2 DOS	£72
Microcom Carbon Copy v3.0 WIN	£73
MS Mail PC 3.2 Post Office Uppg WIN for Wkgrps	£220
MS Mail Server / Net v3.5	£299
Novell Groupwise Client 5 Admin Pack WIN	£340
Person Smartcom 320 DOS v3.0	£89
Person Smartcom 340 WIN v3	£155
Stac Reconnect v5 Modem Host/View WIN	£79
Stac Reconnect Modem Host WIN	£57
Stac Reconnect 5 User LAN	£138
Sorkline Mirror III DOS	£110
Symantec PC Anywhere DOS v5.0	£91
Symantec PC Anywhere DOS v5.0 Host	£58
Symantec PC Anywhere DOS v5.0 Remote	£65
Symantec PC Anywhere WIN Host v2	£57
Symantec PC Anywhere WIN Remote v2	£65
Symantec PC Anywhere WIN v3	£92
Telesystems QmodemPro WIN 95	£72
Travelling Software Commworks WIN	£95
Travelling Software Laplink V DOS	£58
Travelling Software Laplink WIN v6.0b	£84
Travelling Software Laplink Host WIN	£49
WP MainStreet ExpressFax+ WIN	£29

DATABASES

Alpha 5 WIN	£69
Alpha 5 Home & Business Edition	£38
Borland dBase 5.0 DOS	£299
Borland dBase 5.0 Uppg DOS to WIN	£109
Borland dBase 5.0 WIN 1 User Licence	£199
Borland Paradox v5.0 WIN	£89
Borland Paradox v5.0 Upgrade WIN	£169
Borland Reflex DOS v2.0	£72
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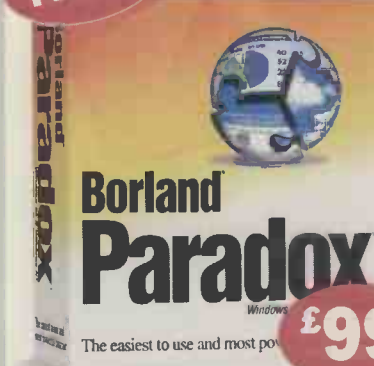
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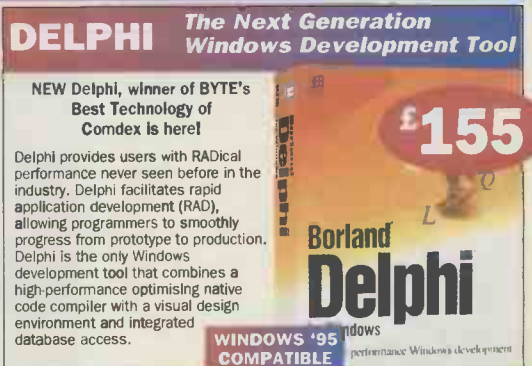
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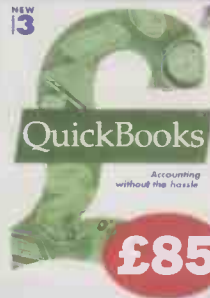
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MS Sidewinder 3D Pro + Fury	£39
MS Strauss: Three Tone Poems CD	£42
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MS How The Leopard Got His Spots CD	£19
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Asymetrix Multimedia Toolkit v3.0 CD	£499
Corel CD Power Pak	£24
Corel CD Creator	£124
Kodak Photo CD Access	£14
Macromedia Director v4.0 CD	£695
MS Multimedia Publishing Toolkit v2.0 CD	£235

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Novell Network v3.12 5-User 3.5"	£385
Novell Network v3.12 10-User 3.5"	£909
Novell Network v3.12 25-User 3.5"	£1,351
Novell Network v3.12 50-User 3.5"	£1,940
Novell Network v3.12 100-User 3.5"	£2,540
Novell Network v3.12 250-User 3.5"	£4,575
Novell Network v4.1 5-User CD	£413
Novell Network v4.1 10-User CD	£944
Novell Network v4.1 25-User CD	£1,436
Novell Network v4.1 50-User CD	£2,033
Novell Network v4.1 100-User CD	£2,865

Novell Network v4.1 250-User CD	£5,950
Novell Personal Expansion Kit (Extra User)	£59
Novell Personal Network 2 User Pack	£89
Novell Personal Network 5 User Pack	£195
Novell Personal Network 1.0	£44
Novell Personal Network 10 User Pack	£519
Novell Personal Network Add Notebook Pack	£119
Novell Personal Network Add PCMCIA Pack	£199
Sage Main/Lan v4 Software Only	£49
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XTree Tools Server Extension	£149

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Caere OmniPage Direct WIN v2	£72
Caere OmniPage Pro WIN v6	£325
Caere OmniPage v5WIN	£319
Caere OmniPage or Wordscan (any ver.) to OmniPage Pro	£129
Caere OmniPage Pro Competitive Upgrade	£149
Caere Personal PageKeeper WIN	£120
Caere Wordscan Plus WIN v4	£359
Caere OmniPage or Wordscan (any ver.) to WordScan + v4.0	£129
Caere WordScan + v4 Competitive Upgrade	£149
Globalink Scanmaster OCR	£125
Xerox TextBridge V3R	£65
Xerox TextBridge Professional	£269
Xerox TextBridge Professional Comp. Upg	£129

OPERATING SYSTEMS

IBM PC DOS 7	£59
IBM PC DOS 7 Trade Upgrade	£35
Lotus Notes Starter Pack	£665
Lotus Notes Client WIN v3.3	£453
Lotus Notes Express	£133
MS Plus! for Windows 95 CD	£27
MS Plus! for Windows 95 3.5"	£27
MS Plus! for Windows 95 MLP	£26
MS-DOS to WIN 95 Upgrade 3.5"	£111
MS-DOS to WIN 95 Upgrade 3.5" MLP	£109
WIN to WIN 95 Version Upgrade CD	£59
WIN to WIN 95 Version Upgrade 3.5"	£59
WIN to WIN 95 Version Upgrade MLP	£55
MS DOS v6.22 Upgrade 1-MLP	£35
MS DOS v6.22 Upgrade 3.5"	£39
MS WFWG v3.11	£87
MS WFWG v3.11 1-MLP	£80
MS WFWG v3.11 Add-on/DOS	£41
MS WFWG v3.11 Add-on/DOS 1-MLP	£39
MS WFWG v3.11 Add-on/WIN	£41
MS Windows NT 1-MLP (3.5" & CD)	£465
MS Windows NT Stand Alone (3.5" & CD)	£215
MS Windows v3.11 Upgrade CCP	£39
MS Windows v3.11 1-MLP	£52
MS Windows v3.11 3.5"	£64
Novell DR DOS v7	£49

OS/2

Borland C++ OS/2	£295
IBM OS/2 Warp CD	£39
IBM OS/2 Warp 3.5"	£49
IBM OS/2 Warp Connect	£115
IBM OS/2 Warp Connect + Windows	£159
IBM Works for DS/2	£71
S&S Dr. Solomons AV Toolkit OS/2 Monthly Stack Stacker OS/2	£255
	£119

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CA SuperProject DOS v2.1	£455
CA SuperProject WIN v3	£479
ComputerEazy Estimator Plus DOS	£44
MS Project DOS v4 Dual Media	£230
MS Project WIN v4.0	£279

MS Project WIN v4.0 1-MLP	£244
MS Project WIN v4.0 CCP Upgrade	£85
MS Project Competitive Upg	£119
MS Project v4.1 WIN95	£292
MS Project v4.1 CCP Upg WIN 95	£84
Softkey Project Manager WIN	£39
Symantec On Target WIN v1.0	£65
Symantec Personal DOS v6.1	£315
Symantec Timeline LITE WIN v1	£55
Symantec Timeline WIN v6.0	£319
WP PlanPerfect DOS v5.1	£249

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MS A'Route Express Europe v4 WIN 3.5"	£32
MS A'Route Express Europe v4 WIN CD	£40
MS A'Route Express WIN v4 (UK & Eire) 3.5"	£31
MS A'Route Express WIN v4 (UK & Eire) CD	£41
MS A'Route+ (UK & Ireland) DOS	£269
MS A'Route+ (UK & Ireland) CD	£269
Nextbase A'Route+ 5-User Pack	£348
Nextbase A'Route+ Europe DOS v6.0	£214
Nextbase MapVision WIN London CD	£125
Nextbase MapVision WIN UK CD	£125

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CA SuperCalc v5.5 3-User LAN	£169
CA SuperCalc v5.5 DOS	£67
CA SuperCalc WIN	£60
Lotus 1-2-3 DOS R4	£287
Lotus 1-2-3 R3.4 1-MLP	£246
Lotus 1-2-3 WIN R5.0	£219
Lotus 1-2-3 WIN R5.0 Competitive Upgrade	£87
Lotus 1-2-3 WIN R5.1 1-MLP	£193
Lotus Improv WIN R2.1	£92
MS Excel for Windows 95	£225
MS Excel WIN 95 Competitive Upgrade	£207
MS Excel WIN 95 CCP Upgrade	£82
MS Excel Windows 95 1-MLP	£195
MS Excel WIN v5.0	£223
MS Excel v5.0 CCP Upgrade	£85
MS Excel Competitive Upg	£119
MS Excel WIN v5.0 1-MLP	£196
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AlphaBox OfficeBox 95	£69
Central Point PC Tools Pro v9 DOS	£74
Central Point PC Tools v2 WIN	£75
Central Point More PC Tools WIN	£45
Central Point XTree Gold for Windows v4	£61
Central Point XTree Gold v3 DOS	£82

Corel Raid	£449
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Future Lock WIN	£22
IMSI WinDelete v2	£29
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Longman Monty Pythons Complete Waste of Time	£35
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Quartermaster Clean Sweep 95	£27
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Quartermaster InternetSuite	£69
Quartermaster Sidebar v1 WIN	£29
Quartermaster WebPhone	£46
RMG First Aid for Windows	£35
RMG First Aid for WIN 95	£35
RMG Dashboard WIN v2	£28
RMG Dashboard WIN 95	£29
S&S Dr. Solomons PC Security Toolkit DOS	£139
S&S PC Armour	£49
S&S OnFile	£35
Stac Stacker v4.1 DOS/WIN	£55
Stac Strategy	£15
Stac Stacker v4.1 Upg DOS/WIN	£36
Symantec Direct Access DOS v5.1	£49
Symantec Direct Access WIN v1.0	£69
Symantec Fastback Plus WIN	£99
Symantec Navigator WIN 95	£69
Symantec Navigator WIN 95 CD	£72
Symantec Navigator WIN 95 CCP Upgrade	£34
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Symantec Norton Backup WIN v3.0	£89
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Symantec Norton Utilities for WIN 95	£84
Symantec Norton Utilities for WIN 95 CD	£84
Symantec Norton Utilities for WIN 95 CCP Upg	£48
Touchstone CheckIt Pro	£90
Touchstone CheckIt Pro Deluxe	£90
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Touchstone Win '95 Adviser	£20
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Xtree WIN v4	£59

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Connectix Ram Doubler for Win	£49
Qualitas 386 Max v7	£45
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Quartermaster Desquiv 386 v2.7	£15
Quartermaster MagnaRAM2	£33
Quartermaster Qem: 386 v7.5	£44
Quartermaster Qem: 386 WIN 95	£45
Quartermaster QRAM 286 v2.0	£37
RMG SoftRam WIN 95	£49

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McAfee Virus Scann DOS WIN WIN95	£49
S&S Dr. Solomons Audit	£299
S&S Dr. Solomons AV Toolkit DOS Monthly Ubg	£135
S&S Dr. Solomons AV Toolkit DOS Quarterly Ubg	£59
S&S Dr. Solomons AV Toolkit WIN Monthly Ubg	£145
S&S Dr. Solomons AV Toolkit WIN Quarterly Ubg	£70
Symantec Norton Anti-Virus DOS/WIN v3	£89
Symantec Norton Anti-Virus for WIN 95	£53
Symantec Norton Anti-Virus for WIN 95 CCP Ubg	£28
Symantec Norton Anti-Virus for Netware	£458

Portcullis F-Port Professional Anti-Virus Toolkit Qly Upgrade	£71
Portcullis F-Port Professional Anti-Virus Toolkit Monthly Upgrade	£120
Portcullis Total Security	£145

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Berkley Systems Complete After Dark CD	£39
Berkley Systems After Dark WIN v3	£19
Berkley Systems Star Trek Screen Saver win	£21
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Claris Imaginaria WIN	£25
Delrina Opus 'N Bill On The Road Again	£23
Delrina Opus 'N Bill Screensaver	£18
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MS Scenes Brain Twister	£15
MS Scenes Flight	£15
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MS Windows Sound System v2.0 inc soundcard £130	
MS Windows Sound System v2.0 s'ware only £39	
Super Print v3.1 WIN	£69
Superqueve v3.1	£49

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Accent Pro	£187
Accent Express	£37
Borland Multimate v4.0 DOS	£270
IBM Displaywrite v5	£252
Lotus Word Pro 96	£84
Lotus Ami Pro R3.1 1-MLP	£84
Lotus Write WIN R2.0	£92
MS Word for DOS v6.0	£169
MS Word for DOS v6.0 1-MLP	£162
MS Word for Windows 95	£225
MS Word for WIN 95 CCP Upgrade	£82
MS Word for WIN 95 Competitive Upgrade	£107
MS Word for WIN 95 1-MLP	£195
MS Word for WIN v6.0	£224
MS Word for WIN v6.0 1-MLP	£195
MS Word for WIN v6.0 CCP Upgrade	£182
MS Word Competitive Upg	£119
Wordstar for Windows v2 3.5" or CD	£27
Wordstar v7 DOS	£223
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WP WordPerfect DOS v6.1 1-User	£165
WP WordPerfect DOS v6.1 5-User	£799
WP WordPerfect DOS v6 Competitive Ubg	£89
WP WordPerfect DOS v6 Upgrade	£73
WP WordPerfect DOS v6.0	£189
WP WordPerfect WIN 5.2+	£189
WP WordPerfect WIN v5.1 Trade Ubg	£75
WP WordPerfect WIN v5.1 Version Ubg	£62
WP WordPerfect WIN v6.1	£163
WP WordPerfect WIN v6.1 1 User	£129
WP WordPerfect WIN v6.1 5 User	£589

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WP MainStreet Grammarik WIN	£28

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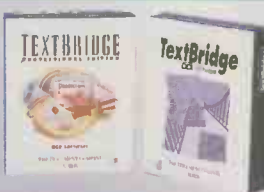
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Brother HL660	6ppm	£455
Brother HL631	6ppm	£344
Brother HL 1260*	12ppm	£884
Canon LBP430W	4ppm	£354
Canon LBP460	4ppm	£275
Canon LBP1260	12ppm	£885
Epson EPL3000*	4ppm	£335
Epson EPL5500*	5ppm	£360
Epson EPL9000	8ppm	£1179
Epson EPL9000PS	8ppm	£1355
HP LaserJet 4MV	16ppm	£1959
HP LaserJet 4V	16ppm	£1360
HP LaserJet 4+	12ppm	£965
HP LaserJet 4M+	12ppm	£1284
HP LaserJet 5L	4ppm	£344
HP LaserJet 5P	6ppm	£568
HP LaserJet 5MP	6ppm	£719
HP LaserJet 5Si	24ppm	£2075
HP LaserJet 5Si MX	24ppm	£2989
HP LaserJet Colour	8ppm	£4175
Kyocera FS400 S/Bin	4ppm	£350
Kyocera FS400 D/Bin	4ppm	£489
Kyocera FS1550		£855
Kyocera FS1600		£1045
NEC SuperScript 610+*	6ppm	£260
NEC SuperScript 6601*	6ppm	£555
NEC SuperScript Colour 3000*		£655
OKI OL400ex*	4ppm	£278
OKI OL410ex*	4ppm	£380
OKI OL810ex*	8ppm	£649
OKI OL850 PS*	8ppm	£1199
OKI OL1200ex*	12ppm	£966
Panasonic KX-P4430**	5ppm	£450
Panasonic KX-P4440**	10ppm	£685
Panasonic KX-P6100	5ppm	£260
Panasonic KX-P6150	6ppm	£299
Star Win Type 4000	4ppm	£286
On-site warranty: * = 1 Year ** = 2 Years		

LASER RAM UPGRADES

Type	1M	2M	4M	8M
Brother HL630	£85	-	-	-
Brother HL631	£70	-	-	-
Canon LBP4i	£115	-	£279	-
Canon LBP8 IV	£115	-	£299	-
EPL4100/4300	£69	£120	£225	-
EPL5200/5600	£49	£115	£199	-
HP III/III/III	£65	£112	£145	-
HP II/II	£70	£115	£175	-
HP III/III	£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	£85	£109	£165	-
KX-P4400/5400	£75	£110	£165	-
OKI OL400e	£108	£118	-	-
Star LP8	£138	£225	-	-
Star LS5	£75	-	-	-

LASER CONSUMABLES

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	£85	£110	-
EPL5200	£92	-	-
EPL7100/7500/8100	£128	-	-
Fujitsu VM600	£85	-	-
Fujitsu VM800	£115	-	-
Fujitsu VM4	£29	£149	£89
HP II/III/III	£47	-	-
HP IIP/III	£51	-	-
HP III/III/4Si/MX	£75	-	-
HP 4+/4+	£65	-	-
HP 4L/4ML/4P/4MP	£45	-	-
HP 4V/MV	£109	-	-
HP 5L	£39	-	-
HP 5P/5MP	£54	-	-
Kyocera FS400	£16	-	-
NEC 610	£69	-	-
NEC S60/60P/62P/90/95	£105	-	-
OKI OL400/800	£19	£189	-
OKI OL400e	£17	£129	-
KX-P4410/30	£27	£80	£90
KX-P4440	£32	£108	£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	£83	-	-
Star Wintype	£68	-	-

LASER ACCESSORIES

Postscript Upgrade for LaserJet 4	£270
Postscript Upgrade for LaserJet 4P	£225
LaserJet 4 Lower Paper Cassette	£205
LaserJet 4 JetDirect Ethernet Card	£339
Ozone filter for KX-P4420	£9
Ozone filter for KX-P4450/4455	£20
Envelope Feeder for LaserJet 4	£199
LaserJet III FX/IBM Emulation Cart	£79
Lower Paper Tray for Canon LBP-4	£98
A5 Paper Feeder for LaserJet 4P	£85

9PIN MATRIX PRINTERS

Citizen 1200+Parallel	80col	£99
Citizen 120D+Serial	80col	£109
Epson LX3000	80col	£94
Epson LX1050+	132col	£181
Epson FX870	80col	£237
Epson FX2170	132col	£369
Epson DFX5000+	132col	£1145
Panasonic KX-P1150	80col	£87
Panasonic KX-P3696	80col	£259
Star LC15	132col	£194
Star LC100C	80col	£89
Star LC90	80col	£78
Star ZA200	80col	£268
Star ZA250	132col	£315

24PIN MATRIX PRINTERS

Citizen ABC Mono	80col	£101
Citizen ABC Colour	80col	£123
Citizen Swift 200 Mono	80col	£138
Citizen Swift 200 Colour	80col	£146
Citizen Swift 330X	132col	£309
Epson LQ300	80col	£123
Epson LQ570+	80col	£209
Epson LQ870	80col	£370
Epson LQ1070+	132col	£291
Epson LQ1170	132col	£425
Epson LQ2170	132col	£90A
Epson DLQ3000	132col	£779
NEC P2Q	80col	£98
NEC P3Q	132col	£188
NEC P62	80col	£315
NEC P72	132col	£385
Panasonic KX-P2023	80col	£230
Panasonic KX-P2124	80col	£191
Panasonic KX-P2135 Colour	80col	£124
Panasonic KX-P3626	132col	£252
Star LC24-15 II	132col	£230
Star LC240 Mono	80col	£80
Star LC240 Colour	80col	£108
Star XB24-200 Colour	80col	£332
Star XB24-250 Colour	132col	£399

RIBBONS/INK CARTRIDGES

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	-
Epson LX400/LX850/FX870	£3	-
Epson LX1050/FX1170	£5	-
Epson LQ100	£4	-
Epson LQ150	£4	£12
Epson LQ570/870	£3	-
Epson LQ1070/1170	£4	-
Epson LQ2550	£8	£16
Epson SQ870/SQ1170	£23	-
Epson Stylus Colour	£12	£27
Epson Stylus Colour II/III	£15	£19
Epson Stylus 800/1000	£10	-
Epson Stylus 820	£15	-
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

INKJET PRINTERS

Canon BJ200ex	80col	£153
Canon BJ30	80col	£139
Canon BJ230	132col	£235
Canon BJ300	80col	£349
Canon BJ330	132col	£388
Canon BJC70	80col	£217
Canon BJC600e	80col	£310
Canon BJC800	32col	£975
Canon BJC200	32col	£1195
Canon BJC4000	80col	£217
Citizen ProJet IIC	80col	£205
Epson BJ330	80col	£175
Epson Stylus Colour Pro A4	80col	£639
Epson Stylus Colour Pro XL	132col	£1449
Epson SQ1500	132col	£90A
Epson Stylus 1500	132col	£553
Epson Stylus Colour IIs	80col	£199
Epson Stylus Colour II	80col	£251
HP DeskJet 340 Mono	80col	£169
HP DeskJet 600 Mono	80col	£184
HP DeskJet 660C	80col	£243
HP DeskJet 850C	80col	£331
HP DeskJet 1200C	80col	£628
HP DeskJet 1200C PS	80col	£984
HP DeskJet 1600	80col	£830
HP OfficeJet LX	80col	£493
Lexmark ExecJet IIC	80col	£199
Lexmark WinWriter 100	80col	£269
Ok! OJ300 Colour	80col	£235
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
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Panasonic 1824/2824	£128
Panasonic KX-P2135	£30
Star LC100	£69
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◆ HP DeskJet Std capacity black Cart +3 Std capacity refills	£30
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ACCESSORIES

Citizen Swift 200/240/ABC Colour Kit	£32
Canon BJ10sx Battery Pack	£32
Epson OK Serial Interface	£29
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Epson LX300 Colour Kit	£29
Epson Stylus 820 Colour Kit	£75
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HP DeskJet IBM Emulation Cartridge	£57
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HP DeskJet 320 Carry Case	£49
HP DeskJet 320/540 Colour Kit	£28
HP DeskJet 320 Parallel Cable	£12
HP DeskJet 600 Colour Kit	£29
HP DeskJet Prestige Elite Fonts	£55
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Panasonic 32K Buffer	£16
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Tel: 01923 237774

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LaserJet 4+/4M+	£135	£160
LaserJet 4V/4MV	-	£200
LaserJet 5P/5MP	-	£130

PRINTER SHARER/BUFFER

Manual Printer Sharers

Type	Serial	Parallel
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

256K	1Mb	2Mb	
RAM Module	£59	£78	£124

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256K	1Mb	2Mb	
Parallel Flash Buffer	£65	£98	£119
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Video Blaster RT300	£215
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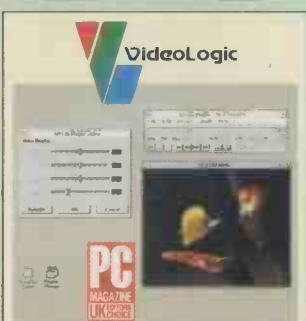
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Aries Stereo Headphones	£4.50
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Quoted power ratings are PMP0 values

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RELI 2412 2400dpi 24-bit Colour	£399
RELI 4816 4800dpi 24-bit Colour	£599
RELI 9624 9600dpi 24-bit Colour	£1225
Canon	
Canon IX4015 Colour Scanner with AT-SCSI Interface & OFOTO Software	£529
Epson	
Epson A4, 24 bit colour Flatbed Scanner: Supplied complete with Plc. Publisher LE, Omni Direct OCR, Interface Card & Cables	
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GTX8500 Parallel	£485
GTX8500 SCSI	£564
GTX9000 Parallel	£670
GTX9000 SCSI	£663
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Genius	
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Hewlett-Packard	
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MouseMan - Bus	£38
MouseMan Cordless - Serial & PS/2	£49
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All Keyboards have 102 Keys	

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CIA World Fact Book £6	Dr Graphics £6	Learn to Draw £15	Railroad Tycoon (Microprose) £9	Disc Caddies (10 pack) £38	
Classic Cartoons £6	Dr Music Lab 1 £6	Learn to Draw £15	Rainbow Childrens Pack £9	Some of the above titles are OEM and may be marked accordingly	
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Complete Bookshop £15	Dr Reference £6	Learn to Draw £15	Road Warrior Quarantine II £29		
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Corel Photo CD Ireland £18	Fun School 4 (under 5's) £19	Learn to Draw £15	Software Vault Collection 2 £6		
		Learn to Draw £15	Software Vault Collection WIN £8		
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Christmas Multimedia Offers



The 7 kits below include the following:

- CD-ROM Drive (Including data and audio cables)
- Sound Blaster 16 compatible 16-bit sound card
- Aries Stereo Speakers
- Microsoft Family CD Bundle Encarta 1995, Money, Multimedia Works, Golf, MSDinosaurs, Dangerous Creatures, Scenes (3.5")

Xmas Creative Kits Limited Offer



- ◆ Creative Dual or Quad Speed Drive
 - ◆ Creative Sound Blaster 16 Sound Card
 - ◆ Stereo Speakers (upgrade to Hi-Fi **£15**)
 - ◆ **FREE** Bundled software while stocks last
 - ◆ Grolier's Encyclopedia
 - ◆ MegaRace
 - ◆ Space adventure
 - ◆ Speed
 - ◆ Knowledge Adventure
 - ◆ Undersea
- Dual Speed.....£98**
Quad Speed.....£158
- Box Shot shown for illustration only

Creative Dual Speed kit

CD220A 2x IDE CD-ROM Drive
 300ms access, 300kb/s transfer

OFFER PRICE £139

Creative Quad Speed kit

CR581 4x IDE CD-ROM Drive
 250ms access, 600kb/s transfer

OFFER PRICE £185

Aztec Quad Speed kit

CDA486 4x IDE CD-ROM Drive
 210ms access, 600kb/s transfer

OFFER PRICE £192

Mitsumi Quad Speed kit

FX400 4x IDE CD-ROM Drive
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Toshiba Quad Speed Kit

XM5302B 4x IDE CD-ROM Drive
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- ◆ D/Generation
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- ◆ F29
- ◆ Might & Magic II
- ◆ Contraption Jack
- ◆ Megarace
- ◆ Epic
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- ◆ Shadowlands
- ◆ Spectre VR
- ◆ The Psychotron
- ◆ Jutland
- ◆ The Cyberplasm Formula
- ◆ Microcosm

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 ◆ Nearly 400 musical instruments

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Aztech CDR1411	Six	190	900	Tray	IDE	£135	-
BackPack 4S	Quad	250	600	Tray	Parallel	-	£245
Creative CD220E	Dual	300	300	Tray	IDE	£49	-
Creative CR581	Quad	250	600	Tray	IDE	£94	-
Goldstar GCDR540B	Quad	250	600	Tray	IDE	£98	-
Mitsumi FX400	Quad	230	600	Tray	IDE	£104	-
Nakamichi MBR-7 7CD Juke Box	Dual	380	330	Cart	SCSI	-	£245
NEC 4X-IDE	Quad	190	600	Tray	IDE	£105	-
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Panasonic Travelspin	Dual	350	300	n/a	PCMCIA	-	£269
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Plextor 6Plex	Six	150	900	Caddy	SCSI	£289	-
Teac CD56e	Six	190	900	Tray	IDE	£179	-
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HP SureStore 4020i	Quad	400	600	-	SI	£789	-
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Sound Cards

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◆ Kit includes - Sound Blaster AWE32 Quad speed CD ROM Drive, Speakers, High performance joystick - ideal for the game player **£287**

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2Mb Stealth 64 Video DRAM			£129
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Please specify PCI or VL Bus when ordering

matrox



MGA Millennium features include:

- ◆ Real-time rendering of 3D graphics
 - ◆ 32-bit BGA core for fast DOS performance
 - ◆ 1600 x 1200 @ 24-bit resolution
 - ◆ Memory upgradable to 8Mb
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1Mb Video 12PD	VL/PCI		£86
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Video 20TD Live	VL/PCI		£296

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2Mb 9FX Motion 531 DRAM			£156
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4Mb Imagine 128 1600 VRAM			£605
8Mb Imagine 128 1600 VRAM			£1029

Orchid			
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1Mb Kelvin 64	PCI		£86
2Mb Kelvin 64	ISA		£119
2Mb Kelvin 64	PCI		£113
1Mb Fahrenheit 64	PCI or VLB		£94
2Mb Fahrenheit 64	PCI		£130
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Please specify VL or PCI bus when ordering

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4Mb WinTurbo Plus			£338

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Videologic



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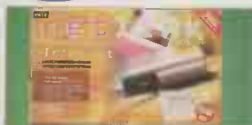
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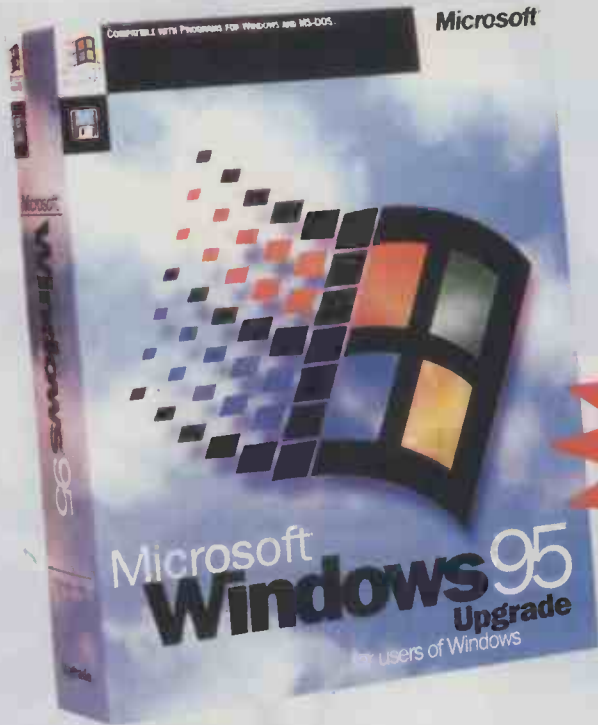
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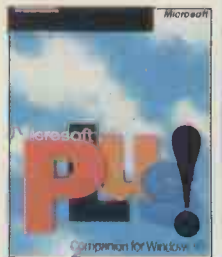
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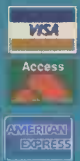
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Whether you're presenting to a small team or to a large audience, Microsoft PowerPoint makes it easy to communicate your ideas easily to get the results you want in any situation. You can create great-looking output for any situation, from 35mm slides and colour overheads to black-and-white paper output. AutoClip Art automatically adds great visuals to your presentations, and Presentation Conferencing lets you review presentations with your team via your network.

Full Version £225 Competitive Upgrade £107
 Upgrade £82 1-Licence £195



MICROSOFT SCHEDULE+ FOR WINDOWS 95

Microsoft Schedule+ for Windows 95 is the easy, flexible way for individuals and networked groups to manage and share calendars, tasks, and contacts for better personal and team productivity. Schedule and view appointments quickly, stay current with associates, and keep on top of tasks all the time. Attach documents to meeting requests, and reschedule appointments easily by dragging and dropping them to other slots. Schedule+ provides all of the above and so much more!

Full Version £79
 1-Licence £69



8 GREAT REASONS TO UPGRADE

- New Interface Consistent with Windows 95**
Take full advantage of drag-and-drop capability, even between applications, documents, and files. Seamless networking between users and all the Microsoft Office 95 components.
- Long Filenames!**
Break free of the Dos filenames restrictions! Now use file names up to 250 characters to quickly recall a file's contents.
- Now includes Microsoft Schedule+!**
Perform scheduling and appointment functions by using simple drag-and-drop methods. Attach documents to meeting requests with a click! Manage group meetings easier.
- Completely 32-bit!**
All of the programs in Office take full advantage of Windows 95 32-bit technology. You'll work faster and easier!
- Enhanced IntelliSense Technology!**
IntelliSense completes routine tasks for you and make complex jobs simple. It learns your style as you work!
- Full OLE 2.0 Support Throughout Office!**
Object Linking and Embedding (OLE 2.0) automatically updates all related files which are affected by your change.
- New Office Binder Organises Files From Different Applications!**
Make the most of your data by filing it automatically in one single file name. Office Binder keeps track and does all the work for you!
- Improved OfficeLinks Speeds You Through Your Project!**
Make the most of your data by just dragging text, numbers and graphics from program to program. OfficeLinks makes all of the Microsoft Office for Windows 95 components work as one file.

MICROSOFT OFFICE FOR WINDOWS 95

INTRODUCTORY LOW PRICES ON UPGRADES	UPGRADE	COMPETITIVE UPGRADE	FULL VERSION	IMPL
Office 95 Standard	£139	£163	£332	£289
Office 95 Professional	£204	£245	£429	£370
Office 4.2 Standard	£161	£218	£325	£285
Office 4.3 Professional	£245	£285	£429	£361

CALL FOR GREAT VALUE LICENCE OPTIONS

*All upgrades are at introductory prices. Offer ends 31/12/95. After this date prices are subject to change.

OFFICE PROFESSIONAL INCLUDES ALL SOFTWARE IN STANDARD VERSION PLUS ACCESS DATABASE

MICROSOFT ACCESS FOR WINDOWS 95

Choose or create one relational database for all levels of users. Wizards guide beginners through complex tasks, and enhanced OLE allows more advanced users to easily integrate and share information. Access provides the user with the luxury of pulling data from any of the Microsoft Office products. A resourceful and wonderful tool in business situations.

Full Version £225 Competitive Upgrade £107
 Upgrade £82 1-Licence £195



To run Office 95 (Standard or Professional) you need: MS Windows 95 or Windows NT 3.51, 386DX or Higher PC, 8MB memory for Windows 95, 16MB memory for Windows NT. (12MB for Access). Call us for memory upgrades.



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PRINTERS

HEWLETT-PACKARD - THE FINEST PRINTERS

HP DESKJET 850C - Showered with Awards!



PC Magazine Editors Choice

"This printer produces spectacular output"
 Awarded Editors Choice, PC Magazine, October 1995

"Hewlett-Packard's DeskJet 850C wins our Quality award for outstanding performance and output quality"
 Award for Quality & Distinction, PC Pro, October 1995

"The DeskJet 850C looks like being the first printer to offer the quality of a laser with the flexibility to print colour images as well"
 Awarded 5/5, What PC?, June 1995

"The 850C's output is excellent ... even on poor quality paper. The ink-saving Economode is exceptional"
 5-Star Award, What Personal Computer, June 1995

"Taking into account its price, ease of use, speed, excellent software and good print quality, the DeskJet 850C fully deserves a PC User Gold Award"
 Gold Award, PC User, April/May 1995

- ★ Excellent Quality Colour
- ★ 600 dpi² Black & 300 dpi² Colour
- ★ 6ppm Black & 2ppm (Colour)
- ★ PC & Mac i/f std
- ★ HP REt & HP C-REt
- ★ New inks - sharper, denser print

only £329

3Yr OSM £65 Cartridges: Blk £20 Col £19

HP DESKJET 600



£185

- ★ 600 dpi² plus HP REt
- ★ NEW Colour Option
- ★ 3 year RT-HP warranty
- ★ NEW INKS - Sharper, denser print

Colour Option Kit £35 Cartridges: Blk £20 Col £22
 3 Yr OSM £40

HP DESKJET 660C



£243

- ★ Laser-quality resolution black
- ★ Superb new colour inks
- ★ Up to 4ppm
- ★ Up to 600x600dpi

3 Yr OSM £65 Cartridges: Blk £13 Col £18

HP DESKJET 340

£169
 Professional Portable Printer: 600x300 dpi² plus HP REt, 300x300 dpi colour (opt), Very portable shape, 2kg, Battery, case & Recharger options. Integrated 30 sheet feeder.
 Colour Option Kit £31 Cartridges: Blk £13 Col £18
 Mac Adapter Cable £19 3 Yr OSM £40

HP DESKJET 1200C

£629
 Professional Colour Printer - PostScript 2, PCL5e, Pantone support, individual cartridges.
 3 Yr OSM £105 Cartridges: Blk £19 Col £22
 HP DeskJet 1200/PS (Mac) £995

HP DESKJET 1600C

£829
 Fast Colour Network Capable - Black (8ppm), Colour (4ppm), Network connecting options.
 3 Yr OSM £105 Cartridges: Blk £20 Col £22
 HP DeskJet 1600CM (NW,Mac) £1219

HP OFFICEJET LX



£469

Best selling all-in-one solution for the small business and the home.
 ♦ High quality printer
 ♦ Group 3, Paper + PC Fax
 ♦ Complete with Fax s/w
 ♦ Convenience copier

3 Yr OSM £102 Cartridges: BLK £17.50

HP LASERJET 5L



£352

- ★ 600x600 dpi² plus HP REt
- ★ 4ppm, fast first page (20 sec)
- ★ 1MB RAM with HP MEt
- ★ NEW space saving design

Toner £57 3 Yr OSM £112

HP LASERJET 5P



£574

- ★ 6ppm; 600 dpi² plus HP REt
- ★ 2MB RAM
- ★ EconoMode to reduce the cost of printing
- ★ Infrared port

Toner £54 3 Yr OSM £142
 HP LaserJet 5MP (Mac/PC) £719

HP JETDIRECT CARDS

HP JetDirect EX Cards - external
 Connects to any parallel port printer/plotter Ethernet £24
 HP JetDirect MIO Cards - Internal cards for HP printers and plotters Ethernet/Local Talk from £289
 HP JetDirect EX Plus 3 - External
 Connects 3 Parallel port printers to Ethernet network £299

MEDIA/ACCS

Adobe PostScript Level 2	
PostScript Level 2 for HP LJ4P	£190
PostScript Level 2 for HP LJ4Plus	£229
PostScript Level 2 for HP LJ4V	£325
PostScript Level 2 for HP LJ4Si	£425
PostScript Level 2 + 1MB RAM for HP LJ5P	£225
PostScript Upgrade kit for HP DJ1600C	£399
Flash SIMM Kit	
1MB for HP LJ4/LJ4Plus/LJ4Si	£250
2MB for HP LJ4/LJ4Plus/LJ4Si	£325
High Quality Media	
HP Premium InkJet Paper - A4, 200 shts 51634Z	£16
HP Premium Glossy Paper - A4, 50 shts C3837A	£43
HP Premium Transparency - A4, 50 shts C3835A	£40
HP JetSeries CX coated - A4, 200 shts 51630Z	£16
HP LaserJet Labels - various from	£13
HP DeskJet Labels - various from	£23

HP LASERJET 4PLUS



£979

- ★ 12ppm, 600 dpi² plus HP REt
- ★ 2MB RAM, two trays
- ★ PCL5e, M version has PostScript, N/W and Mac capability

Toner £66 3 Yr OSM £180
 Duplex Unit £345 (requires extra memory)
 1000 Sheet Output Stacker £219
 HP LaserJet 4MPLUS (PC,Mac,NW) £1295

HP LASERJET 4V £1365



16ppm, 600dpi² plus HP REt, 2 trays, PCL5e, A3 capable
 Toner £109
 3 Yr OSM £235
 HP LaserJet 4MV (PC,Mac,NW) £1975

NEW HP LASERJET 5Si £2079



24ppm, 600dpi² plus HP Ret, 4MB RAM, A3 capable, copier-like paper handling options
 Toner £139 3 Yr OSM £530
 HP LaserJet 5SiMx (PC,NW) £2965

SEE PAGE 14 FOR COMPREHENSIVE LIST OF ORIGINAL HP MEMORIES

No 1 for HP

HEWLETT
PACKARD
Premier Reseller
Personal Computer
Products



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Canon PRINTERS FOR ALL OCCASIONS...

PRINTERS

NEW LBP-460



£279

The Personal Laser Printer

The LBP 460 includes the latest generation of Microsoft® Windows® Printing system software - the fastest, easiest way to get top quality output from Windows applications! Also includes 1 year on-site maintenance.

- 4 pages per minute printing
- Super fast return to software application
- Effective 600 dpi text and graphics with Auto Image Refinement
- A personal workhorse for home and office

BJ-200EX MONO



£158!

The Professional Monochrome Printer

- 720 x 360 dpi resolution
- Three pages per minute
- Laser-quality text and graphics
- Auto feeds 100 sheets, 50 transparencies or 10 envelopes
- One year warranty
- 20 TrueType fonts included
- Compact design
- 50 transparencies or 10 envelopes

BJC-70/BJ-30

Colour BJC-70
£218



BJ-30 FREE*
Sidekick 2.0
RRP £39
(While stocks last)

Mono BJ-30
£139

The Portable Printers

The next generation of the world's best-selling portable printers • Built-in sheet feeder • High quality 360 x 360 dpi resolution • 1 year warranty.



BJC-600e Professional Colour Printer

- Prints on plain paper
- 360dpi colour
- 4 colour cartridge system for lower running costs

£319



BJC-4000

Home Colour Printer

- 360dpi colour
- 100 sheet feeder
- 1 year warranty

£217

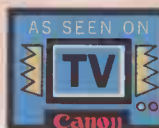
A3 CANON BUBBLE JET PRINTERS

BJ-230 A3 Monochrome Bubble Jet Printer	£236
BJ-330 A3 Monochrome Bubble Jet Printer	£389
BJC-800 A3 Colour Bubble Jet Printer	£975

DON'T FORGET SPARE CARTRIDGES

Canon	BJ-30	BJC-70	BJ-200ex	BJ-300	BJC-600e	BJC-4000	BJC-800
Black	£10	£9	£16	£11	£10	£7	£14
Colour	-	£14	-	-	£7*	£14	£18*

*specify C/M/Y Cartridges



EPSON GREAT PRINTERS AT LOW PRICES!

NEW 6ppm Laser
EPL-5500



£363

Compact Business Laser

- ◆ Fast 6ppm
- ◆ 1MB (Memory Improvement Technology)
- ◆ 600dpi resolution
- ◆ 150 sheet tray
- ◆ LJ4 emulation (PCL5e)
- ◆ Compact design with small footprint
- ◆ Low noise (silent standby operation)
- ◆ Paper up to 157gsm manual
- ◆ Windows 3.11 and Windows 95 drivers.

Epson EPL-5500 2MB (2MB of memory)

£408

Epson EPL-5500 PS

£695

(EpsonScript, LocalTalk module, 5MB)

STYLUS COLOR II_s



£205

Affordable Colour Inkjet

Dense black for high quality plain paper word-processing and photo-real colour for professional image reproduction. ◆ Interchangeable three colour/black print heads ◆ 1ppm colour, 2.5ppm black ◆ Windows driver

STYLUS 820 - Mono Inkjet

£179

Professional dense black for high quality plain paper word processing. ◆ 2.5ppm black ◆ High density, low dispersal black ink ◆ Windows driver ◆ Optional colour kit only £59

STYLUS COLOR II



£257

Business Colour Inkjet

Four colour (CMYK) printer for those requiring frequent use of professional photo-real output. ◆ Fixed colour and black print heads ◆ 2ppm colour, 4ppm black ◆ Windows & Mac drivers ◆ 720dpi on Epson paper

STYLUS PRO XL - A3 Colour

For design professionals. ◆ A4 to A3 ◆ 720x720dpi with Epson Micro Dot ◆ 1.5ppm colour, 3ppm black

£1379

Photo-Real 720dpi capable

100 Sheet Feeder

Small Footprint

3 year warranty

CARTRIDGES

	820/II/II _s	Pro XL
Blk	£15	£12
Col	£20	£23

OUTSTANDING INKJET CHARACTERISTICS



TECHNOMATIC

Techno House, 468 Church Lane, London NW9 8UF

PRICES EXCLUDE VAT @ 17.5%

Telesales Hours

Mon-Fri: 8am to 7pm
Sat: 9am to 5pm
Callers welcome - check availability for collection
Prices valid from 4/12/95

MONITORS

TAXAN PERFECTING THE IMAGE

ERGOVISION 580+LR



£285

- ◆ 15" FST Multiscanning Monitor
- ◆ Up to 1280 x 1024 Non-interlaced
- ◆ Horizontal Freq 30-65KHz
- ◆ 0.28mm Dot Pitch

ERGOVISION 880LR



£515

- ◆ 17" FST Multiscanning Monitor
- ◆ Up to 1280 x 1024 Non-interlaced
- ◆ Horizontal Freq 30-64KHz
- ◆ 0.28mm Dot Pitch

ERGOVISION 885LR



£589

- ◆ 17" FST Multiscanning Monitor
- ◆ Up to 1600 x 1200 Non-interlaced
- ◆ Horizontal Freq 30-82KHz
- ◆ 0.28mm Dot Pitch

ERGOVISION 1080LR



£879

- ◆ 20" Auto-scanning, low radiation, ultra high resolution
- ◆ Up to 1600 x 1200 Non-interlaced
- ◆ Horizontal Freq 30-82KHz
- ◆ 0.28mm Dot Pitch

COMMON FEATURES FOR ABOVE MONITORS

- ◆ Microprocessor Control
- ◆ Low Radiation & Anti-Static CRT (MPR2)
- ◆ Flicker Free Operation
- ◆ 2 year RTB warranty
- ◆ Windows 95 compatible
- ◆ EPA ENERGY STAR Compliant
- ◆ VESA DPMS Compatible

GTS WINTURBO (a)

GTS WINTURBO POWERED BY



- ◆ Super Fast 64 Bit Windows Accelerator
- ◆ Powered by ATi Mach 64 Processor
- ◆ VESA DPMS Compatible
- ◆ 2MB & 4MB VRAM Versions Available
- ◆ Up to 1280 x 1024 Resolution
- ◆ Up to 100Hz Refresh Rate
- ◆ On-Screen Colour Calibration

2MB ISA	£194	VLB	£195	PCI	£196
GTS WinTurbo Plus					
4MB ISA	£338	VLB	£339	PCI	£340

A CULTURE OF SERVICE

NOKIA quality from only £475 (a)



- ◆ 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



Techno Vision Monitors

Common Features include:

- ◆ 0.28mm Dot pitch
- ◆ Power management
- ◆ MPR II standard
- ◆ Low radiation



	14"	15"
Max Res (Ni):	1024x768	1280x1024
Horiz Freq Khz:	up to 48	30-60
Vert Freq Hz:	50-90	50-90
	£149	£219

We wish all our Readers a Prosperous and Joyful New Year



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FAX 0181-205 0190



ADMIN 0181-358 8100

PRICES EXCLUDE VAT @ 17.5%



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.

£1695*

HP Scanjet 4Si

- ★ Fast 15ppm, 300dpi, 256 gray-scales
- ★ Auto OCR & file compression
- ★ High reliability 20 sheet ADF built-in
- ★ Network iff & 20 user licence for software

*Ethernet version

★ Easy to use - NetWare 3.1 and 4.0 support

3YR OSM £140

£629

HP Scanjet 4C

- ★ Hi-performance colour A4 flat-bed
- ★ Improved integration with office apps
- ★ Strong software suite

3YR OSM £140

Auto Doc Feeder £299

Transparency Unit £449

£245

HP Scanjet 4s

- ★ Easy to move around/uses serial port
- ★ Very compact yet A4 capable
- ★ Excellent software capabilities

3YR OSM £66

HP PLOTTERS



Model		A1	A0
HP Designjet 230	Mono - Single feed	£1485(a)	£1999(a)
HP Designjet 250c	Colour - Single feed	£1845(a)	£2489(a)
HP Designjet 750c	Colour - Roll feed	£3669(a)	£4395(a)
HP Designjet 755cm	Colour - Roll feed - Printer		£6650(a)

Brilliant, near photographic large format printer. In-house production made easy. Less £10/print on coated media. Postscript Level 2, 68MB RAM, sample roll, light-fast inks.

FANTASTIC NEW MODELS AT LOWER PRICES

- No Pens
- No Mess
- No Fuss

Sharper, faster every time

HP NETWORKING POWER & SPEEDS

Instrumental in establishing the 10Base-T ethernet standard, HP has now paved the way for the next standard, using 100VG-AnyLAN - offering a 10-fold increase in bandwidth using existing 10Base-T twisted pair cabling.



PC Adapter Cards

PC LAN Adapter NC/16 TP (ISA)	£59
HP 10/100VG Adapter (EISA)	£147
HP 10/100VG Adapter (PCI)	£130

Intelligent Hubs

HP AdvanceStack Hub 8U (RJ45)	£129
HP AdvanceStack Hub 16U (RJ45)	£249
HP AdvanceStack Hub 24	£780
HP AdvanceStack 100VG Hub15	£1750

SCANNERS, PLOTTERS, NETWORKING



JetDirect Print Servers

SUPPORTS MIXED ENVIRONMENTS

CONNECTING PRINTERS TO YOUR NETWORK HAS NEVER BEEN EASIER.

HP Jet Direct EX Plus 3



Simple automatic network/protocol switching for simplified printing in mixed environments. Support for up to 8 Novell NetWare file servers and 32 print queues, and locally administered addresses for Token Ring networks supporting IBM LAN Server and Novell NetWare. Fast data transfer rate of up to 230 KBytes per second through HP Bi-Tronics high speed parallel interface.

- Support for all major network operating systems
- SNMP agents for support of industry-standard network management applications
- Powerful software utilities (HP JetAdmin, HP JetPrint)
- Better overall printing performance than PC print servers

HP offers a complete network printing solutions and automatic network/protocol switching for simplified printing in mixed environments. Support for up to 16 Novell NetWare file servers and 64 print queues, and locally administered addresses for Token Ring networks supporting IBM LAN Server and Novell NetWare.

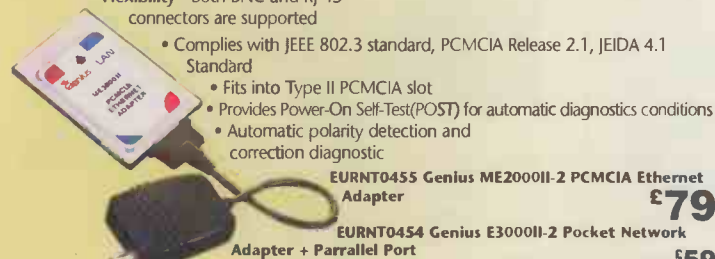


DEP1114: JetDirect Ethernet (Thin / 10Base-T/Local Talk) J2552A	£299
DEP1125: JetDirect EX Ethernet (Thin/10Base-T) J2382B	£239
DEP1152: JetDirect EX Plus 3 Ethernet (Thin/10Base-T)	£329



PCMCIA Ethernet Adapter ME3000II Series

Size - Ultra-size Ethernet connectivity
Weight - Light, no power supply required
Convenience- Supports socket service, card service direct PCMCIA slot enables and "Hot Card" insertion and removal transmission
Flexibility - Both BNC and RJ-45 connectors are supported



- Complies with IEEE 802.3 standard, PCMCIA Release 2.1, JEIDA 4.1 Standard
- Fits into Type II PCMCIA slot
- Provides Power-On Self-Test (POST) for automatic diagnostics conditions
- Automatic polarity detection and correction diagnostic

EURNT0455 Genius ME2000II-2 PCMCIA Ethernet Adapter **£79**

EURNT0454 Genius E3000II-2 Pocket Network Adapter + Parallel Port **£59**

Ethernet Combo Adapter GE2000D

- Fully Novell NE2000 compatible
- Drivers for: IPX & ODI for Netware Windows for Workgroups NDIS for Lan Manager Packet for TCP/IP
- BNC & RJ45 connectors
- Jumper & Jumperless
- Auto-Setup hardware using software
- Auto-Detect media type
- Auto-Detect 8 bit or 16 bit Bus
- Includes diagnostic software
- Up to 35% performance improvement

Only £27



Genius GE2000D Combo Network Card EURNT0455 **£27**

5 PACK **£119**

GENIUS GE2000 PNP **£35**



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A Hewlett-Packard Company

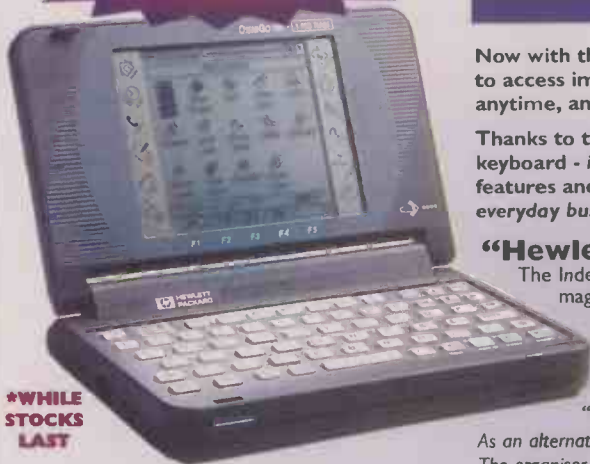
PRICES EXCLUDE VAT @ 17.5%

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Mon-Fri: 8am to 7pm
Sat: 9am to 5pm
Callers welcome - check availability for collection
Prices valid from 4/12/95

PCS

Special Introductory offer **£199**



*WHILE STOCKS LAST

BENEFITS TO YOU:-

- **Personal Information management**
Appointment book; Phone book; Notepad; Database; Worldtime
- **Financial analysis**
HP Calculator; Finance tools (I2C, TVM, Cash Flows, statistics, conversions etc); Spreadsheet
- **Pen input** (in addition to the keyboard)
Pen "navigation"; "Digital Ink" across applications; Graffiti handwriting character recognition; Jotter ("Capture first, organise later"); GEOS Pen-OS

NEW! HP OMNIGO 100

YOUR BEST PERSONAL ORGANISER!

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.

"Hewlett-Packard OmniGo - the winner"

The Independent on Sunday (1 October 1995) asked expert Adam Banks, editor of Computer Buyer magazine, to test a range of Personal Organisers taking into account how convenient they are to use, their range of functions, and value for money. The winner was the HP OmniGo and was awarded '5 Star' rating. Below is an extract of the evaluation:

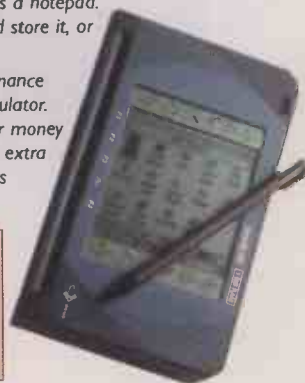
"This brand-new computer ... was Adam Bank's top choice. He found it incredibly easy to use because, as well as a keyboard, it has a touch pen which is pointed at items to operate functions. "It makes a big difference just being able to point at the screen."

As an alternative to the keyboard, the screen can be folded back so it becomes a notepad. The organiser can convert this handwritten information into computer text and store it, or store it as an actual facsimile of your handwriting.

The Hewlett Packard has all the usual functions, including a quite advanced finance module, allowing you, for example, to work out the loan rate, and a good calculator. Another bonus was the anti-reflective screen ... He said this was good value for money - cheaper and better value than the Psion (unless you were going to use all its extra software). Best of all, this model is fun to play with - and unless an organiser is enjoyable, it won't be used."

Technical Specifications

- Includes: Two AA and one CR2032 backup batteries
- Dimensions: 15.3 x 9.5 x 2.6cm
- CPU 80186 16MHz
- Memory 1MB SRDRAM, 3MB ROM; PCMCIA version 2.0 Type II Card Slot
- Display 360 hinge, "rotatable" display, "portrait" and landscape modes; 240 x 240 FSTN LCD



HP PENTIUM™ PCS!

Pentium as low as **£865**



- ★ Intel Pentium™ Processor : 75, 90, 100 or 120MHz
- ★ PCI architecture with local bus IDE & video, min. 8MB RAM
- ★ MS Windows for WorkGroups 3.11

VE : 270MB or 540MB HD, ISA slots, fast IDE on LB

VL : 420MB or 840MB HD, PCI/ISA slots, Enh. IDE on LB



Premier Reseller Personal Computer Products

3YR OSM ONLY **£125**

RAM		8MB			16MB
HD		270MB	420MB	540MB	840MB
VE 4/66	-	£765	-	£859	£1059
VE 4/100	-	£789	-	£879	-
VE 5/75	£865	-	£895	-	-
VL 5/75	-	£1049	-	£1089	£1299
VL 5/90	-	£1139	-	£1225	£1445
VL 5/100	-	£1289	-	£1369	£1519
VL 5/120	-	£1479	-	£1569	£1769

Prices exclude monitors:-

HP 14" SVGA £215 HP 15" Ergo UVGA £342 HP 17" Ergo UVGA £655

HP OMNIBOOK 600



- ★ Lightest - 3.3-3.8lbs
- ★ Full size keyboard
- ★ 8.5" DSTN or 9.5" TFT screen
- ★ 486DX2-50 or 486DX4-75 CPU

HP have a mobile PC to suit every need; through the world's lightest colour notebook, the HP Omnibook 600, to the class leading HP Omnibook 5000.

Model	Price
HP Omnibook 600 range starts from just	£1249(a)
HP Omnibook 4000 range starts from just	£1425(a)
HP Omnibook 5000 range starts from just	£2229(a)

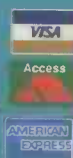
HP NETSERVERS



All HP Netserver carry a 3 year OS-next day warranty which can be upgraded to same day 4 hour response. Additionally, all HP Servers come with manageability tools and the option to have remote diagnostic tools.

	CPU	RAM	HD	Price
HP Netserver LF 4-66	4-66	8	1GB,CD	£2049(2a)
HP Netserver LH 5-75	5-75	16	1GB,CD	£3899(2a)
HP Netserver LH 5-100	5-100	32	Chassis,CD	£4399(2a)
HP Netserver LS 5-100	5-100	32	2GB,CD	£6800(2a)
HP Netserver LS 5-100*2	5-100*2	64MB	Chassis,CD	£11,000(3a)

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COMPAQ, IBM & TOSHIBA**



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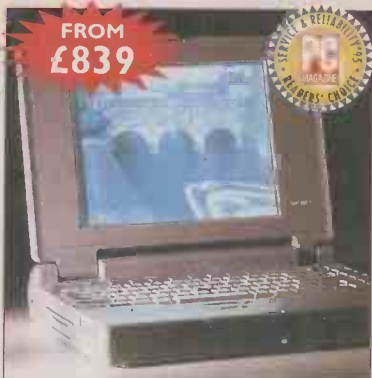
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PRICES EXCLUDE VAT @ 17.5%



TOSHIBA - No 1 in Notebooks



**FROM
£839**



Satellite T2110

- 486DX4-75 CPU
- 4MB RAM, 350MB HD
- 9.5" Mono Screen

£839

Satellite T2130CT

- SL Enhanced Intel DX4/75CPU
- 8MB RAM, 520MB HD
- 10.4" TFT Colour Screen

£1949

Satellite Pro 400CDT

- Powerful Intel Pentium 75MHz CPU
- 8MB ED0 RAM, 810MB HD
- 10.4" TFT Colour Screen
- Internal x4 CD-ROM drive

£3130

Model	Screen	CPU	RAM (MB)	HD (MB)	Price	3yr OSM
T2110	Mono 9.5"	4/75	4	350	£839	£200
T2110CS	DSTN Col 10.4"/4/75	4	350	350	£1359	£250
T2130CS	DSTN Col 10.4"/4/75	8	520	520	£1629	£250
T2150CDS*	DSTN Col 10.4"/4/75	4	520	520	£1699	£450
Sat Pro400CS	DSTN Col 10.4"/5/75	8EDO	810	810	£2399	£450
T2130CT	TFT Col 10.4"	4/75	8	520	£1949	£300
T2150CDT*	TFT Col 10.5"	4/75	8	520	£2549	£650
Sat Pro400CDT*	TFT Col 10.4"	5/75	8EDO	810	£3130	£450
Sat Pro410CDT*	TFT Col 11.3"	5/90	8EDO	810	£3389	Call
Portege 610CT	TFT Col 9.5"	5/90	8EDO	720	£2999	£450
Tecra 700CT	TFT Col 11.3"	5/120	16	1215	£4275	Call

*CD-ROM Drive included

Targus Carry Cases from only £26.95

SMARTEST THINKPADS



**THINKPAD 345
BUDGET QUALITY
THINKPAD 760C
SIMPLY THE BEST**



APTIVA

Complete system computer, monitor, software, keyboard, mouse and support.

- PC-DOS, Windows 3.11, MS Works 3.0
- Lotus SmartSuite 4 on 914 & higher models
- Multi-media models:- Quad CD-ROM, 16-bit Sound card, Speakers, 8 s/w titles



Model	CPU	RAM	Screen	HD	Price
TP345C	4/75	4	10.4" Dsc	540	£1375(a)
TP345C	4/75	4	10.4" TFT	540	£1750(a)
TP755CX	5/75	8	10.4" TFT	540	£2889(2a)
TP755CX	5/75	8	10.4" SVGA	1.2GB	£3949(2a)
TP755CD	5/75	8	10.4" TFT	810,CD	£3699(2a)
TP755CD	5/75	8	10.4" TFT	1.2GB,CD	£4049(2a)
TP755CDV	5/75	8	10.4" OHP	810,CD	£4999(2a)
TP760-COI	5/90	8	10.4" SVGA	720	£3999(2a)
TP760-CDI	5/90	8	12.1" SVGA	1.2GB,CD	£5289(2a)

MODEL	DESCRIPTION	PRICE
910	Standard 4/66, 540, 14"	Desktop £769
911	Multi-media 4/66, 540, 14"	Desktop £849
914	Multi-media 4/66, 540, 14"	Desktop £929
921	Multi-media 4/100, 540, 14"	Desktop £999
930	Standard P/75, 540, 14"	Desktop £1059
931	Multi-media P/75, 540, 14"	Tower £1229
941	Multi-media P/100, 850, 15"	Desktop £1629

**FROM
£1375**

All IBM Notebooks have PCMCIA slots to allow convenient connection of peripherals

COMPAQ - WORLD'S TOP PC MANUFACTURER

CONTURA NOTEBOOKS



**FROM
ONLY
£735**

The Compaq Contura range of notebooks offer excellent pricing, high level of specification (inc. DOS, Windows & Lotus Organizer) and 3 year warranty. Contura Aero offers sub-notebook portability, ext. 3.5" FDD and PCMCIA slot; Contura 420/430 offer 486DX4 power, larger colour screens, comfortable ergonomics with built-in trackball and PCMCIA slots.

Model	CPU	RAM	HD	Screen	Price	Model	CPU	RAM	HD	Screen	Price
Aero 4/25	4	250	8" Mono		£735(a)	420CX4/75	8	420	10.4" TFTcol	£1995(a)	
Aero 4/33	4	250	7.8" STNcol		£1039(a)	430C 4/100	8	720	10.4" DScol	£1999(a)	
420C 4/75	4	350	10.4" DScol		£1479(a)	430CX4/100	8	720	10.4" TFTcol	£2395(a)	
420C 4/75	8	420	10.4" DScol		£1649(a)						

PROLINEA PCS



**FROM
ONLY
£779**

The Prolinea is Compaq's best-selling desktop computer. It offers value for money and a broad range of specifications:- Intel processors, PCI architecture with LB for Video and dual IDE disk interface, 8MB or 16MB RAM as standard, a choice of case sizes to allow for future expansion capacity and a three year warranty. This position of leadership has been further enhanced by the introduction of the highly affordable entry level Pentium Prolinea 'e' family (optional 256k secondary cache £95).

CPU-HDD	RAM	Case	Price*	CPU-HDD	RAM	Case	Price*
4/66-270	8	3x3	£779(a)	5/90-630	8	3x3	£1199(a)
4/100-270	8	3x3	£889(a)	5/90-720	16	4x4	£1499(a)
4/100-420	8	3x3	£929(a)	5/120-1GB	16	4x4	£1899(a)
5/75-270	8	3x3	£1039(a)	5/75e-630	8	3x3	£925(a)
5/75-420	8	4x4	£1099(a)	5/100e-630	8	3x3	£1145(a)

*MONITORS NOT INCLUDED

MEMORY UPGRADES	4MB	8MB	16MB
Contura Aero	£140	£280	-
Contura 410/420/430	£190	£570	£830
LTE Elite	£220	£440	£880
Prolinea (new) 486	£185	£355	£655
DeskPro (new) 486	£185	£355	£655
ProSignia 300/50C	£360	£710	£1465
ProLinea/DeskPro (586)	£370	£710	-
Proliant	-	£360	£710



FREE

Microsoft Windows 95 Upgrade Voucher*

*With all Compaq Prolineas, Contura 420s and DeskPros

MONITORS

14" SVGA	£209(a)
14" 1024	£250(a)
15" 151FS	£349(a)
17" 171FS	£569(a)
17" QV172	£850(a)
20" QV200	£1570(2a)

ON-SITE WARRANTY

3yr OSM	486 Desktops	£200
3yr OSM	Pentium Desktops	£300
3yr OSM	Mono Notebooks	£200
3yr OSM	Colour Notebooks	£300

Call for full range of Notebooks, Desktops and Servers



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Prices valid from 4/12/95

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Seagate Hard Drives

Fast ATA Interface

Medalist™ Family



- Transfer rates up to 16.6MB/sec
- Master/Slave Capability
- Backward compatible with standard IDE

3 Year Warranty

High Performance Drivers for Servers

Hawk™ Family



- Fast SCSI-2 Interface
- 5,400 RPM Spindle Speed Performance
- Average Seek Time of 9.75MS
- External Transfer Rate of 10MB/Sec.

5 Year Warranty



Item #	Capacity (MB)	Cache/Buffer (KB)	Avg. Seek Time (M/S)	MTBF (HRS)	Price
ST3660A	545	120	14	300K	£115
ST5180A	1080	256	10.5	300K	£165
ST31270A	1282	256	12	300K	£189

Item #	Capacity/MB	Form	Cache	MTBF	Price
ST31230N	1,050	LP	512	800K	£275
ST32430N	2,147	LP	512	800K	£575
ST15230N	4,294	HH	512	800K	£979

CONNOR TAPE•STORE

The Storage Answer DATA PROTECTION SYSTEMS

TAPE•STOR 800 TRAVAN

- Simple & fast way to protect your data
- Up to 800MB (with compression)
- Up to 9.5Mb/minute backup rate
- Full QIC-80, Accutrac, Travan TR-1 QIC wide compatible
- Includes one Travan tape

Tape•Store 800 Internal £129
Tape•Store 800 Parallel £209



TAPE•STOR 4000 Up to 4Gb on one tape

- 2Gb native capacity, up to 4Gb with compression
- Up to 54Mb/minute backup rate with compression
- Transfer rate optimised with fast sense • IDE & SCSI options
- Optional backup s/w for Netware available • QIC 3080 compatible

4000 Internal IDE £379 4000 Internal SCSI £399 4000 External SCSI £469

TAPE•STOR 420 Price Performance solution

- QIC-wide, QIC-80 & Irwin Acctrac 250 compatible
- Up to 420MB capacity with compression • One-inch high design
- Up to 9.5MB/minute effective backup rate
- Floppy interface or parallel port

Tape•Stor 420 Internal £95
Tape•Stor 420 Parallel £225

CONNOR
The Storage Answer

COLORADO MEMORY SYSTEMS INC.

NEW TECHNOLOGY-PERSONAL BACKUP SOLUTIONS



HP Colorado T1000i
2 year limited warranty

FROM £108

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	
Parallel	Internal	Parallel	Internal	Internal	
Max Cap (Comp)	800MB	800MB	340MB	1.3GB	340MB
Warranty	2yr	2yr	1yr	2yr	1yr
Tape	C	C	A E	D F	A E
Price	£129	£108	£142	£195	£72
Tapes		3M Unformatted		1-PK	5-PK
Colorado Formatted 3PK					
A DT-350	£52	B DT-740	£66	E DC2120XL	£14
C DT-1000	£85	D DT-1400	£70	F MC3000XL	£21
					£100

FREE TAPE WITH T1000 DRIVES



HIGH CAPACITY BACKUP FROM THE WORLD LEADER SURESTORE DAT SOLUTIONS

Protect your most valuable component - your data

- ★ High Performance
- ★ Reliability
- ★ High Capacity
- ★ Wide System Connectivity
- ★ Compatibility
- ★ Low Cost Media

Conservative estimates state that: "After 1 year of use the data on your hard disk is worth 10 times the computer"

Model	Ext	Int
HP SureStore 2000 2GB (DDS)	£629	£549
HP SureStore 5000 4GB (DDS)	£715	£639
HP SureStore 6000 8GB (DDS-2)	£895	£785
HP SureStore 12000e Autoloader 48GB		£1999

hp HEWLETT PACKARD

WHY TAKE A CHANCE?

BACK IT UP

ESSENTIAL FOR MODEM USERS

High speed serial card 2 x 16550 serial ports,
1 x enhanced parallel port, 1 x game port

£29^(b)



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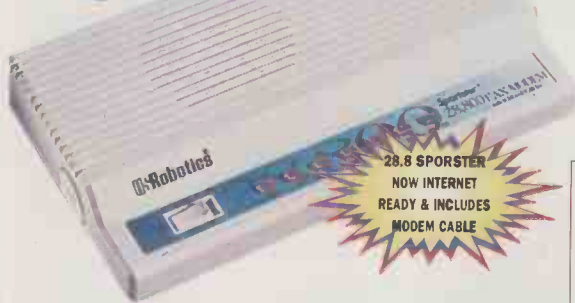
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Robotics: Number 1 FOR HIGH SPEED MODEMS (Dataquest 94)

Sportster



28.8 SPORTSTER
NOW INTERNET
READY & INCLUDES
MODEM CABLE

Vi 14.4 Voice/Fax/Data Desktop

£99

AMAZING
VALUE

28.8 + FAX DESKTOP

£154.95



NEW

Robotics
AUTHORISED RESELLER

5 year
WARRANTY

MODEL	SPEED						ERROR CORR.	DATA COMP.	FAX	ASYNCHRONOUS	DIAL UP	LEASE LINE	FORMAT							
	VOICE	28800 (V14)	19200 (V32 turbo)	14400 (V32bis)	9600 (V32)	2400 (V22bis)							1200 (V22)	1200/75 (V23)	300 (V21)	V42	MNP 2-4	V42bis	MNP 5	9600	14400 (V17)	DESKTOP (EXT)	PC CARD (INT)	POCKET	PCMCIA
SPORTSTER 28.8 + FAX																				
SPORTSTER 14.4 + FAX																				
SPORTSTER Vi 14.4																				
COURIER V34																				
WORLDPORT 28.8																				

Sportster Range (a)

- 28.8 + Fax Desktop (Ext) **£154.95**
- 28.8 + Fax PC Card (Int) **£156**
- Vi 14.4 Voice/Fax/Data (Ext) **£99**
- 14.4 + Fax PC Card (Int) **£106**
- 28.8 + Fax Mac & Fax **£165**
- 14.4 + Fax Mac & Fax **£109**
- PC/AT Modem Cable 9/25 **£8**

WORLDPORT



PCMCIA Dual Standard
(28.8 + HST + Fax) **£159**

USR HIGH SPEED DUAL SERIAL PORT
Essential for all windows users
faster than 9,600. 2 yr warranty **£49^{(a)*}**

*While stocks last.

Courier

LIMITED
OFFER SPECIAL
COMMS
BUNDLE



FROM
£238

- COURIER PROFESSIONAL RANGE(a)
- V34 + Fax Desktop Bundle (USR/MD/E250) **£265***
 - inc FREE USR High speed Dual Serial Port
 - FREE 25/9 Modem Cable
 - FREE Datatalk 4 DOS (Full Version) DS Fax (Win)
 - FREE QuickLink II Fax & Coms s/w
 - V34 + Fax Desktop Modem only **£238**
 - V34 + Fax PC Card modem **£239**

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IN INFORMATION ACCESS

FREE
DIRECT
TECHNICAL
SUPPORT
5 YEAR
WARRANTY

APPROVED for Connection to
telecommunication systems specified in
the instruction for use subject to the
Conditions set out in them.



V34 + FAX
£195

Benefits of 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(a)

- ◆ 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 £157(a)

- ◆ 14.4Kbps - Europe's leading PCMCIA Data + Fax modem, ideal for medium usage communications, BBS access and fax applications



"If you want a top of the line portable data communications solution, this product is the best you can get" - PC Magazine (January 1995)

MODEMS



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Prices valid from 4/12/95

MODEMS

28.8K ONLY £149

The incredible Multi-Tech Modem For The Home Office And Small Business

Announcing the amazing value packed Multimodem 2834ZDX from Multi-Tech Systems.

Superior Performance. With blazing V34 data rates up to 28,800bps and fax speeds of 14,400bps, and with V42bis data compression data transfer rates of up to 115,200bps are achievable. Multi-Tech also gives you full backward compatibility to all ITU standards including V32bis (14,400bps) and the V32 terbo (19,200bps) standard.

Fully Featured. 10 LED indicators to monitor every aspect of your connection. Plus help screens, non-volatile memory and windows communications and fax software you need.

Unmatched Warranty. A 10-year warranty direct from Multi-Tech eliminates worry and makes the MultiModemZDX ideal for the home or small business.



BABT Approved - And it's a Multi-Tech!

MULTI-TECH HIGH SPEED SERIAL PORT £49(b)
PC/AT MODEM CABLE 9/25 £8
ZDX2834 (V34) £149
ZDX1932 (V32terbo) £105

FOR THE PROFESSIONAL COMMS USERS

MT2834 BLK DESKTOP £345(a)
- FREE HIGH SPEED SERIAL PORT
MT1432 BLK DESKTOP £269(a)
MT1432 MK POCKET £345(a)
MT2834 LTI PCMCIA £215(a)
MT1432 LTI PCMCIA £175(a)



APPROVED for Connection to telecommunication systems specified in the instructions for use subject to the Conditions set out in them.

The Future NOW!!

New Low Cost, Plug and Play ISDN Solutions from

RACAL

The UK Market Leader in ISDN

Superb quality and reliability with outstanding value. The DAP 6200's powerful features and astonishing speed bring significant benefits at an 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!

ISDN Applications

- Internet Access ✓
- E-Mail Access ✓
- On-Line Teleworking ✓
- Remote Network Access ✓
- Simultaneous Analogue and data ✓
- Video Conferencing ✓

Data Port for connection to a PC serial port, plus two analogue ports for connection to traditional PSTN equipment such as telephones or fax machines. Any two of the three ports can be used simultaneously.

The DAP 6200 is ideally suited for PC Applications which can greatly benefit from ISDN connectivity. Example applications include INTERNET access, Microsoft Mail, cc:Mail, Farsite Document Conferencing, Lotus Notes etc.

The DAP 6200 is designed to simply connect to a PC serial com port, and plug into the Basic Rate ISDN service.

Racal Datacom, market leading manufacturer of ISDN access equipment, has extended its range of ISDN Digital Access Products (DAP) with the release of a new generation of intelligent ISDN terminal adapters, the DAP6000 series.

The first product in the series to be released is the DAP6200. This exciting new product is designed for very simple plug and play integrated ISDN access. Both dat and analogue traffic can easily share a single Basic Rate ISDN line. It provides one high speed and one analogue port for connection to traditional PSTN

DAP 6200 Features

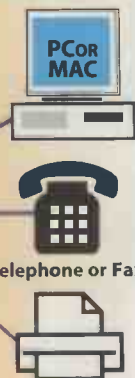
- Basic Rate ISDN Access ✓
- High Speed V24 Data Port ✓
- Two Analogue Ports ✓
- Speeds up to 57,600 bps ✓
- Sub-second Connection time ✓
- Calling Line Identification ✓
- Multiple Subscriber Numbering ✓

DAP 6200

Data in/out to Com port from RACAL DAP 6200 - up to 64K bps connects in less than one second

At the same time use a standard telephone or fax machine on one of the analogue ports. Does not require ISDN telephone

ISDN In/Out

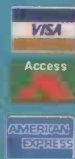


RACAL DAP 6200

Telephone or Fax

ESSENTIAL FOR MODEM USERS

High speed serial card 2 x 16550 serial ports, 1 x enhanced parallel port, 1 x game port **£29^(b)**



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MOTOROLA

THE 28.8 INTERNET SOLUTION

MODEMS

3400 PRO DESKTOP MODEM

- ◆ 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
- ◆ 2 Year Motorola warranty



NEW LOW PRICE £165

3400 ONLINE INTERNET SOLUTION

- ◆ 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

3400 PRO DESKTOP MODEM

£155

EVERYTHING YOU NEED TO CONNECT TO THE INTERNET

3400 ONLINE INTERNET SOLUTION £165



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EASY INSTALL
INCLUDES ANIMATED INSTRUCTION DISC

Hayes
Authorised Dealer

NEW VOICE MODELS

FROM £99

Optima 144 Business Modem Voice/Data/FAX



FASTER THAN YOU THINK!
Get data throughput up to 115,200 bit/s and 8:1 data compression! Sending and receiving a fax is so quick and easy! You get three types of communication on a single phone line with Optima's voice, data, and fax capabilities. And there's no need for additional hardware adaptors - thanks to Asynchronous, Synchronous, and Hayes AutoSync data transfer modes. Fax back to client quickly with the new FAX-On-Demand feature. Use Caller ID to identify callers before you answer the phone. Now Hayes makes business communications even safer and easier!
Optima 144 Business Modem Voice/Data/FAX NEW £275
Optima 144 + Fax EXT Fax/Modem MM2190 £240

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, communicates 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.
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Optima 288 V.34 + Fax EXT Fax/Modem DMD1367 £325
Optima 288 + ESP II 2-Modem Bundle EURMM0470 £645
Optima 288 PCMCIA Fax/Modem EURMM0644 £199

Accura 288 Business Modem Voice/Data/FAX



TALK & LISTEN TO THE WORLD!
Send and receive faxes at a 4:1 compression data throughput rate - up to 115,200 bit/s! Asynchronous data transfer support provides compatibility with PC, Macintosh, or UNIX systems. New features allow you to create and change multiple voice mailboxes, and communicate by voice, data, or fax. In conjunction with modem tone (DTMF) recognition, Hayes Smartcom Voice/Data/FAX software provides fast and automatic FAXes-On-Demand. And you can identify the number of an incoming call with Caller ID support. The Accura 288 Business Modem also comes with a serial cable.
Accura 288 Business Modem Voice/Data/FAX NEW £199
Accura 144 + Fax EXT Fax/Modem MM2840 £99
Accura 288 + Fax EXT Fax/Modem MM4783 £173
ESP II at Single Port Serial I/F EUREX0212 £59
ESP II at Dual Port Serial I/F EUREX0213 £89



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Callers welcome - check availability for collection
Prices valid from 4/12/95

UPGRADES

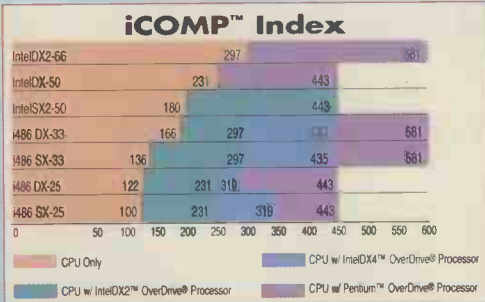
UPGRADE YOUR 486 TO PENTIUM® TECHNOLOGY



Intel Pentium® OverDrive Processor

The Intel Pentium® OverDrive processor, with advanced microprocessor technologies, will make your software run faster than ever before. It's our most powerful CPU upgrade for boosting the performance of your existing Intel 486SX or DX and IntelSX2 or IntelDX2 processor-based PCs. With superior upgrade option features, you'll experience a significant performance gain across a wide variety of software applications. Just install an OverDrive processor in place of your current i486 CPU, or plug it into an upgrade socket, depending upon your system design.

ITEM NO	DESCRIPTION	SOCKET NEEDED	PRICE
EUREX2474	INTEL PENTIUM® OVERDRIVE 83MHZ	N/A	£199
EUREX1248	INTEL PENTIUM® OVERDRIVE 63 MHz	N/A	£175
EUREX0003	INTEL DX2 OVERDRIVE 25-50 MHz	Yes	£79
EUREX0004	INTEL DX2 OVERDRIVE 25-50 MHz	No	£79
EUREX0006	INTEL DX2 OVERDRIVE 33-66 MHz	Yes	£99
EUREX0005	INTEL DX2 OVERDRIVE 33-66 MHz	No	£99
EX6330	INTEL DX4 OVERDRIVE 25-75 MHz	Yes	£105
EX6332	INTEL DX4 OVERDRIVE 25-75 MHz	No	£105
EX6339	INTEL DX4 OVERDRIVE 33-100 MHz	Yes	£135
EX6331	INTEL DX4 OVERDRIVE 33-100 MHz	No	£135



Pentium is trademark of Intel Corporation

Performance for a 33-MHz Intel486 DV CPU-based system before and after installing a Pentium OverDrive processor.



UPGRADE YOUR OLD 386 - MAKE IT 486

Quick and Easy 386 to 486 upgrade!

Now it's easier and more affordable than ever to convert your 386 to a full-powered 486. Gain faster speed, dramatically enhance memory management increases Windows performance, and more. Just replace the old chip with the new Make-it-486, it could not be easier. Your system is instantly recognised as a 486 by all the latest software you have been wanting to try. The Make-it 486 will clock double the current CPU speed for 16, 20 & 25MHz and increase performance for 33 & 40MHz (non-doubling) adding a full 8K internal cache instead of the limited 1K offered by other upgrade chips and will support a 387 math coprocessor.

Make-it 386 SX 16/20/25 MHz to 486 32/40/50 MHz: EUREX0901 £99

Make-it 386 DX 16/20/25 MHz to 486 32/40/50 MHz: EUREX0900 £99

286 UPGRADES ALSO AVAILABLE

Upgrade your 286 to a 486 for a new lease of life for the increased performance of your 286 that currently runs too slow or not at all with some software packages. Clock doubling technology with optional math coprocessor. This easy to install chip may require an additional adapter if your current CPU has a retaining clip*.

286 to 486 clock doubling with math coproc: EX6197 £145

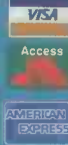
286 to 486 clock doubling: EX6196 £99

*286 LCC adapter EX6223 £45





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Original Memory					
LASERJET 4L	£73				
LASERJET 5L NEW!	£95	£149		£215	
L/JET 4/4M/4S1/4SIMX,IIIS1,					
D/JET 1200C	£139		£225	£415	
L/JET 4P/4MP/4+/4M+/4V/4MV/					
5P/5MP/COLOR,DJ1 600C/CM	£139		£205	£385	

HEWLETT PACKARD		3rd party memory			
LASERJET 5L NEW!	£65	£99			£165
LASERJET IIP/IIP+/I11/IIID/I1IP	£59	£89			£155
LASERJET I11/ID	£65	£95			£159
DESIGNJET 200/600/650C					£129 £259
PAINTJET XL300 (NEED					
EXPBOARD 669.00)	£49	£85			£129 £259
L/JET 4/4M/4S1/4SIMX,IIIS1,D/JET					
1200C	£49	£85			£129 £259
LASERJET 4L	£59				
L/JET 4P/4MP/4+/4M+/4V/4MV/					
5P/5MP/COLOR,DJ1 600C/CM	£45	£85			£129 £255

BROTHER		3rd party memory			
HL4/PS/VVE	£79	£125			£185
HL6 SERIES					£195
HL8-D/EV	£79	£115			£179
HL10-V/DV/PS/DPS					£102 £179
HL10-H	£49	£89			£129 £259

CANON		3rd party memory			
LBP-4, LBP-4+, LBP-4Lite	£89	£125			
LBP-8II, 8IIR, 8IIT	£65	£95			£159
LBP-8I11I11+/I1IR	£99	£129			£169
LBP-8I1V/LBP-4U,LBP-4I	£49				£119

EPSON		3rd party memory			
EPL-4000/4100/4300,ACTION					
LASER II	£62	£109	£159	£229	
EPL-5000/5200	£55	£89		£210	
EPL5200+					£85
EPL 5600 (2 SOCKETS),1600	£45	£85		£119	£249
EPL7500					£249
EPL8000/EPL8100	£70	£111	£155	£205	

KYOCERA		3rd party memory			
F-800/A/T	£75	£109			£179
F820/850/1800/A/5000/1500	£65				£129
F1000A	£79				£119
F1200S/2000S/2200S/3000A/3300	£79	£115			
FS1500A (ECOSYS)	£79				

PANASONIC		3rd party memory			
KXP-4410/4430	£89	£129			£199
KXP-4420/4450/4451	£69	£109			£179
KXP-4455					£119
KXP-4450	£69				
KXP-4440/5410 EXP+MEMORY	£72	£109			£193
KXP-4440/5410 ADD ON					
MEMORY	£47	£84			
KXP-4400,(KXP-5400 2MB ONLY)	£65	£95			£175

STAR		3rd party memory			
LP4	£79	£119			£199
LP8	£79	£115			£195
LS-5/5EX/STT EXPBOARD+ MEMORY	£76	£131			
LS-5/5EX/STT ADD ON MEMORY	£55	£95			

SHARP		3rd party memory			
JX-9500PS	£59				
JX-9500/EH/9700					£195
JX-9400,9460,9600,9600PS,					
JX-9660,9700E	£65	£95			£179

OKI		3rd party memory			
OL400	£69	£99			
OL400/EX,410E/EX	£69	£109			£179
OL410,OL810	£75	£115			£185
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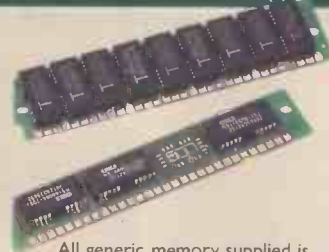
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1x36	4Mb	£119
2x32	8Mb	£219
2x32 (EDO)	8Mb	£229
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THINKPAD 755 DIMM		£225	£655	£1145
PS1/VP2		£190	£375	
PS/2 95X/PIAM/AMT		£295		
THINKPAD 750/755 DRAM				£1145
THINKPAD 340/360		£199	£399	£999
PS/NOTE	£95	£380		
APTIVA PC300		£180	£360	£720
Perf/PC700		£190	£375	£750
PS/2 SERVERS ONLY (ECC MEMORY)		£205	£415	£835

	2MB	4MB	8MB	16MB
IBM 3rd party memory				
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T/PAD 330/340/355/360/730C/370	£159	£285	£489	
T/PAD 701 SERIES	£149	£275	£479	
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PS/1 2133-G,S,W43/174/154/2155-G,S,W44	£136	£499		
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PROLINEA NET 1-25S/E/TR	£85	£129	£259	
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DESKPRO XL 450,466				£258

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COMPAQ 3rd party memory				
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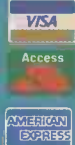
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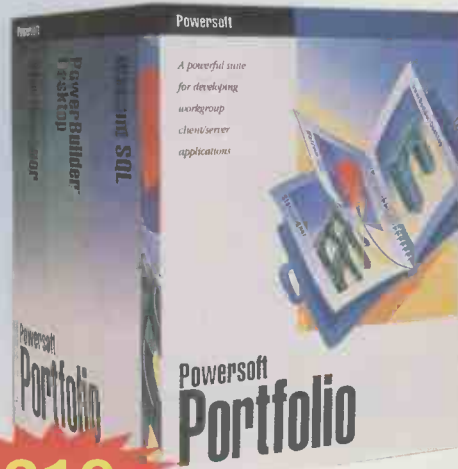
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VirusScan provides quick, easy, and reliable virus protection for Windows 95, Windows and DOS

Superior Virus Detection

VirusScan incorporates award-winning, world-proven virus scanning and removal technology. This technology, called Code Matrix Scanning and Code Trace Scanning, enables Virus Scan to accurately detect over 5,100 viruses. VirusScan detects known and unknown new viruses, including boot viruses; file viruses; multi-partite viruses; stealth viruses; encrypted viruses; and polymorphic viruses.

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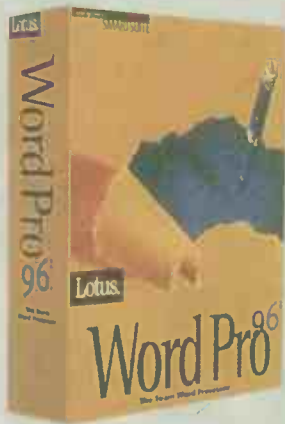
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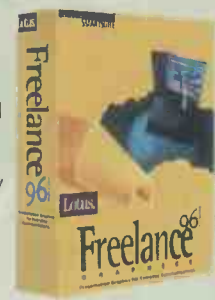
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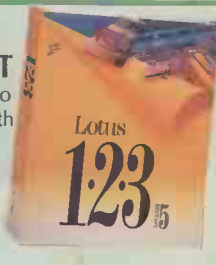
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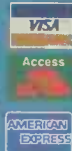
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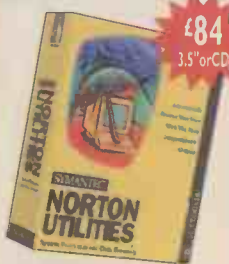
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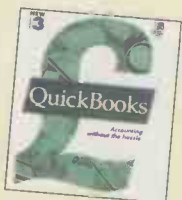
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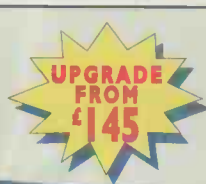
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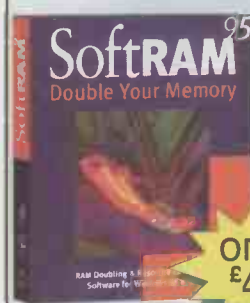
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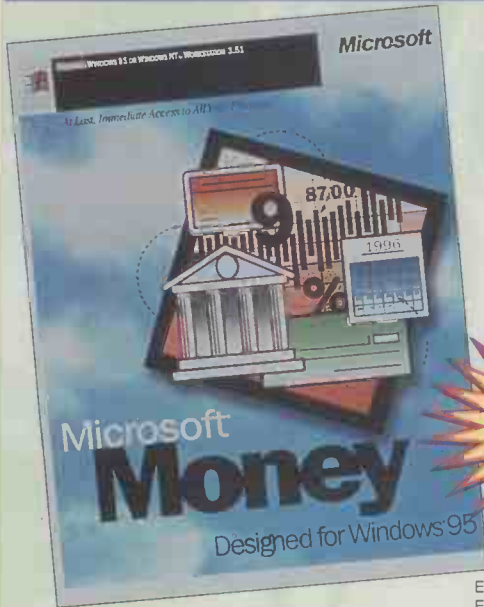
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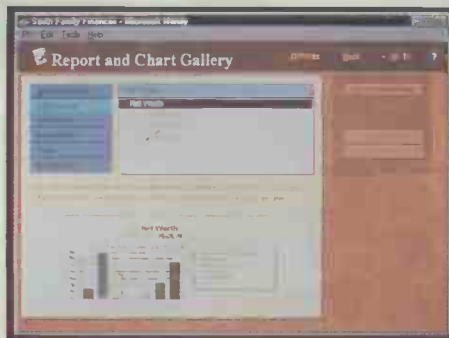
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Personal finance made easy

The Top Ten Ways Microsoft Money makes life easier

1

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2

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3

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4

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5

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6

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7

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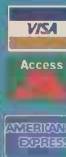
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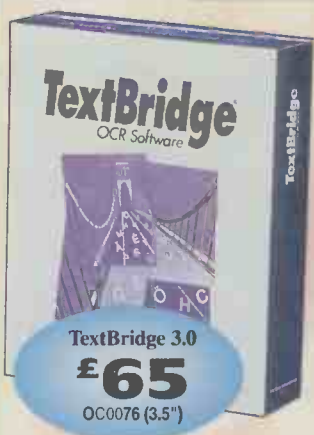
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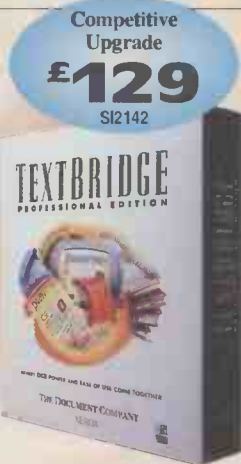
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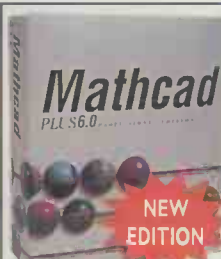
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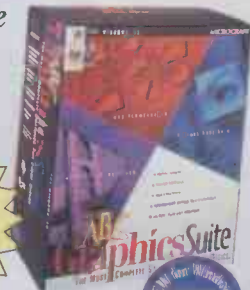
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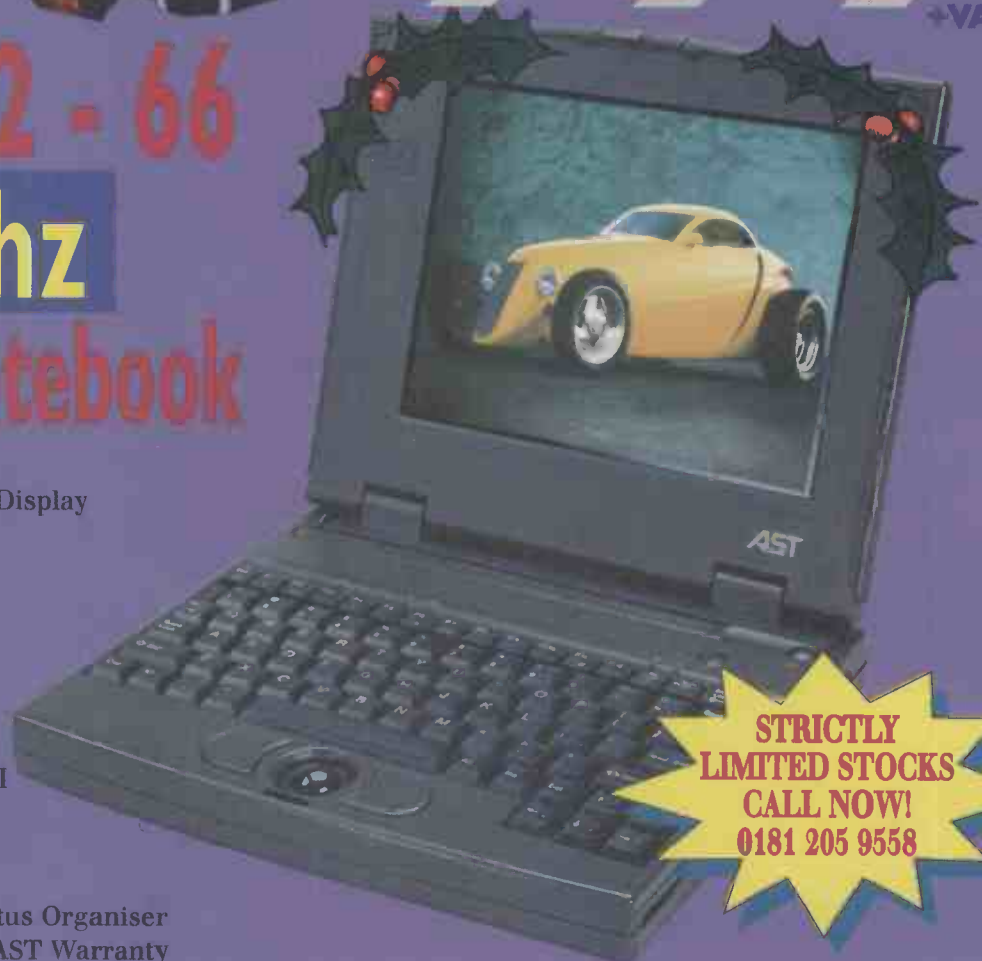
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SEE PAGE 14

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FOR BACKUP SOFTWARE SEE SOFTWARE UTILITIES.

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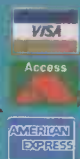
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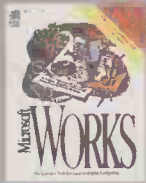
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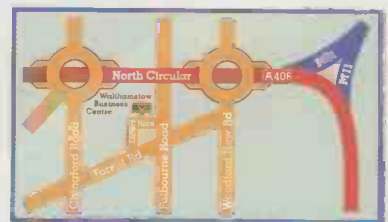
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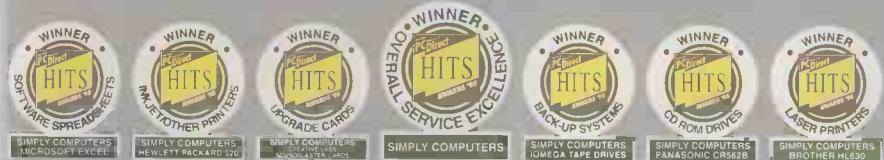
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Gravis Game Card (50Mhz Max).....	£25
CH Gamecard III Auto up to 80Mhz.....	£28
CH Gamecard III MCA 50Mhz.....	£32
JCD Gamecard 11 PCMCIA Dual Joystick Interface.....	£45
IBM Game Card & Joystick 50Mhz.....	£19

Professional Input Devices

INNOVA PC GOLF

Virtual Golf Club £119

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DESKTOP MEMORY

AST	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb
Premmia LXP/60, Bravo LC486, NewBravo 486				£244	£454		
Bravo 386SX/20, Bravo 286/16 & Advantage Plus.				£249			
COMPAQ							
Deskpro386/20e/25E/S (Expansion Board) (Module)			£205				
Deskpro286/386N, S20/20N, M & I Series			£145	£285			
Proliant 1000 5/60, 2000 & 4000 Deskpro XE, Systempro XL					£556	£1,150	
Prolinea 3/25S & Z				£259			
Prolinea 4 Series			£129	£259			
Deskpro XL, 450, 466, 560, 566, 590, Prosignia 300, 500, 5/90, Proliant 1500, 1500R			£169	£289	£569	£1,099	£2,149
Presario 520, CDTV 520							
CDS720, 724, 860			£129	£249	£489	£949	
Prolinea 575, 590, 4100			£129	£249	£489	£949	
DELL							
316SX, 320SX, 325SX		£63					
P&D				£137	£539		
L, M, T Series				£119	£529		
TE, DE, DE/2, SE, DSA				£165	£279		
Latitude				£135			
Dimension XPS, 450V, 466V, 4100				£129	£489		
Dimension XPS P60, P60FS, P60MDT, P90, P90MDT				£259	£499	£969	£1,949
Poweredge XE466, XE450, XE433, XE433S				£259	£499	£969	£1,949
Omniplex 4100/ME, 466/ME, 450/ME, 4/33ME				£259	£499	£969	£1,949
ELONEX							
PC386SX, SXB, 386/16, B/33. (KITS)	£64		£129	£249			
PC386 V/E, 486 V/E (KITS)			£139	£279	£464		
WS Range (KITS)			£139	£269	£489		
PC433M, 450M, 466M (KITS)			£122	£279	£469		
LT386SX/P (KITS)							
PC500 Series (Module)	£64		£135				
Elonex 560F EISA (KITS)				£279	£469		
				£329	£499		
HEWLETT PACKARD							
Vectra 386/25PC, 486PC, 486S/20 (KITS)			£149	£259			
HP ValueLine 486 Netserver Series (Module)				£279			
					£489		
IBM							
50,660,50Z, 55SX, 65, 56SX, SLC (Expansion Board) (Module)				£249	£135		
PS/Valuepoint 425SX Model 6382-F00, F30, F50, F51, F70, FZ0,FZ1	£85		£149		£549		
PS/Valuepoint 425SX/Si Model 6381-F00, F30, F50			£149		£549		
Model 70, 80 (Expansion Board) (Module)				£259			
Ambra, Hurdla, Sprinter & Enterprise				£139			
PSI Pro, Willow Series, Valuepoint	£65			£138			
Apriva 310, 330, 350, 510, 530, 730T				£129	£249	£489	£949
PC-700 Series 6875-xxx, 6885-xxx, 6876-xxx, 6886-xxx, Power 830, 850 Series			£145	£289	£559	£1,099	
GATEWAY							
PC 45X-33 (Module)			£129		£469		
PC 4DX-33V, PC 4DX-66V (Module)			£129		£475	£889	
PC P5-60, PC P5-66 (KIT)							£2,295
PC 4D-66, PC 4D-100 (KITS)				£249		£950	
PACKARD BELL							
Legend 200/316SX (KITS)		£69	£144				
Legend 600, 900 (KITS)			£129	£279			
486 Local Bus (Module)		£85	£149				
Force Range XL410/416/486 16Mb (KIT)					£459		



NOTEBOOK MEMORY

AMSTRAD	2Mb	4Mb	8Mb	16Mb
ANB 386SX		£169		
AST				
Power Exec EL, 4/33SL, SLC		£159	£319	
Ascentia 800N, 810N		£149	£319	£529
COMPAQ				
Contura 3/20, 3/25, 4/25, 4/25C, 4/25CX		£155	£326	
LTE Lite 4/33C, 4/25C, 4/25, 4/25E, 386/20, 2525C, 25E			£139	
Concerto		£149	£289	£589
DEC				
HiNote 433, CS433, CS450, CT450, CT475		£139	£259	£499
HiNote Ultra 433, CS433, CS450, CT450, CT475		£140	£275	£499
IBM				
Ambra Trekka				
L40SX,N33SX	£82	£159		
Thinkpad 300/350/355/500/700/710/720/750/755C		£159	£325	
NEC				
Ultralite 111	£155		£299	
Ultralite Versa 20, 20C, 25, 25P, 25C		£189	£345	
TOSHIBA				
T2000/SX/SXC/2200SX, 1800, 1850		£155	£289	
T1950, CS, CT, 4600, 4600C		£159	£319	
T4400C & SX, SXC 64, SXC, DXC		£165	£329	
CTX (FROM CTX) Upgrade to:				
(Comes with 8Mb standard Memory)	£279	£419	£559	£849



GENERIC MEMORY

30 Pin Memory	
256K Simms 70ns.....	£10
1Mb x 9 Sipps 70ns 9 or 3 Chip.....	£39
1Mb x 9 Simms 70ns 3 Chip.....	£28
1Mb x 9 Simms 70ns 9 Chip.....	£30
4Mb x 9 Simms 70ns 3 Chip.....	£96
4Mb x 9 Simms 70ns 9 Chip.....	£109
72 Pin Memory	
1Mb x 32 Simms (4Mb) 70ns.....	£92
2Mb x 32 Simms (8Mb) 70ns.....	£184
4Mb x 32 Simms (16Mb) 70ns.....	£348
1Mb x 36 Simms (4Mb) 70ns.....	£104
2Mb x 36 Simms (8Mb) 70ns.....	£206
4Mb x 36 Simms (16Mb) 70ns.....	£398
EDO RAM	
4Mb EDO Simms 70ns.....	£118
8Mb EDO Simms 70ns.....	£222
16Mb EDO Simms 70ns.....	£484



MEMORY KITS

For most of the following manufacturers PC's:
AMSTRAD, COMMODORE, DAN TECHNOLOGY, DEC, ICL, KAMCO, MITAC, MBC, MJN, OLIVETTI, OLYMPIC, TANDON, TIKO, TIME, VALE, VIGLEN, WATFORD.

486 Memory Kits	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb
30 Pin Parity Memory	£62	£120	£239			
72 Pin Non-Parity Memory		£95	£185	£339	£578	£1356
72 Pin Parity Memory		£115	£219	£379	£758	£1516
Pentium Memory Kits						
72 Pin Non-Parity Memory			£190	£370	£678	£1516
72 Pin Parity Memory			£230	£438	£758	£3032
EDO Memory		£129	£249			

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 telephone to see whether your machine is compatible.

SIMM SAVERS



Instruction Manual
Lifetime Warranty
Hot Line Support
Guaranteed Compatibility
Suitable for most PCs

Allows 8 x 30 Pin SIMMS to be utilised in 1 72 Pin Socket.....£55
Allows 4 x 30 Pin SIMMS to be utilised in 1 72 Pin Socket.....£39



PRINTER MEMORY

CANON	2Mb	4Mb	8Mb
LBP4 Expansion board	£78		
Module	£135		
LBP-811	£109	£179	
Notebook	£139	£179	

HEWLETT PACKARD			
Laserjet 4, M, Si, SiMX, Deskjet 1200C, 12000C/PSDesignjet 600		£149	£259
Laserjet 11P, Laserjet 11i, Laserjet 111P			
Laserjet 111D, Laserjet 11D, Laserjet 11		£175	

If you do not see your computer, laptop, notebook or printer please call for details. All prices subject to market fluctuations.

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SOUND CARDS

CREATIVE

Sound Blaster	
Sound Blaster 16 Value IDE.....	£59
Sound Blaster 16 Pro IDE & PAN.....	£65
Sound Blaster 16 Pro AdSP IDE & PAN.....	£69
Sound Blaster AWE 32 Value Edition IDE.....	£96
Sound Blaster AWE 32 Full Edition IDE & PA.....	£149
Wave Blaster II.....	£89
Creative BlasterKeys.....	£105
Creative BlasterKeysKit.....	£275

(Sound Blaster AWE 32, 49 Key (full size) keyboard, Software - Midi Orchestrator Plus, Melody Maestro Jr & E-mu Soundfont Libraries)

NEW LOWER PRICES

Orchid	
Orchid Wavebooster 2Mb + CueBase Lite.....	£65
Orchid Wavebooster 4Mb + CueBase Lite.....	£89
Orchid Wavebooster 4Mb + FX + Midisoft.....	£99
Orchid NuSound PnP.....	£115

Gravis	
Gravis Ultrasound Max Card.....	£130
Gravis Ultrasound Midi Kit.....	£26
Gravis Ultrasound ACE Wavetable Add-in Card.....	£75

Aztech	
Sound Galaxy Nova 16 Extra.....	£68
Sound Galaxy Pro 16 - 2.....	£58
Sound Waverider 32+.....	£88
Sound Waverider 32+ Kit.....	£275

Miro	
MiroSOUND FM10.....	£62
MiroSOUND PCM10.....	£81
MiroSOUND PCM1 PRO.....	£128
MiroSOUND PCM12.....	£138
MiroSOUND PCM20 Radio.....	£190

Others	
Portable Sound Plus.....	£129

(Sound Blaster compatible connects to Parallel Port)

SPEAKERS	
Small Speakers.....	£5
Screen Beat 4 Speakers.....	£9
Screen Beat 5 Speakers.....	£10
Screen Beat 3 Speakers.....	£12
Screen Beat Pro 50.....	£29

Creative

CREATIVE

Creative 300 10W Speakers

£69

Creative 20W Speakers

£75

Labtec CS-600 Speakers.....	£19
Small Mains Powered Amp Speakers.....	£19

LARGE 80w Mains Powered

£49



AMP SPEAKERS

Pro Digital Speakers.....	£29
Soundisk SD-100 Speakers for 5.25".....	£15
Sony Multimedia PC Speakers SRS-PC30.....	£45
Sony Multimedia PC Speakers SRS-PC50.....	£65
Yamaha Multimedia Speakers YST-M5.....	£36
Yamaha Multimedia Speakers YST-M10.....	£43
Yamaha Multimedia Sub Woofer.....	£75
ZIFI 2 Speakers.....	£24
ZIFI Pro 2 Speakers.....	£38

ACCESSORIES	
Headphones.....	£5
Microphone.....	£9
Creative Microphone.....	£17



MODEMS

US Robotics SPORTSTER



US Robotics Sportster Vi EXT.....	£95
US Robotics Sportster 14.4 INT.....	£104
US Robotics Sportster 28.8 V34 Fax EXT.....	£155
US Robotics Sportster 28.8 V34 Fax INT.....	£155
<i>(Now With Free Internet Access Software)</i>	
US Robotics Courier V34 Int.....	£235
US Robotics Courier V34 Ext.....	£235
US Robotics Worldport Dual Standard Cellular.....	£121
US Robotics Worldport - Dual Standard Cellular V34 PCMCIA.....	£159

Simply

SiMPLY Modems

Simply 14400 PCMCIA Fax Modem.....	£219
Simply V34 External Fax Modem.....	£149
Simply V34 Internal Fax Modem.....	£149
Simply 14400 Internal Fax Modem.....	£69
Simply 14400 External Fax Modem.....	£99

Simply Modems are ABAT approved and come with Windows software.

Hayes	
Hayes Optima 28.8 V.F.C. & Fax.....	£385
Hayes Optima 28.8 V.F.C. & Fax Value Pack.....	£689
<i>2 Hayes Optima 28.8 +2 Enhanced serial Ports (Free upgrade to V34)</i>	
Hayes Optima 14.4 + Fax144.....	£249
Hayes Optima 14.4 + Fax144 PCMCIA.....	£199
Hayes Accura 28.8 + Fax VFC V32bis V34.....	£175
Hayes Accura 14.4 + Fax V32bis.....	£99

Motorola



MOTOROLA

3400 Online Internet Solution with Data/Fax Modem.....	£165
V34, 28,800 bps 1 month free access to CompuServe	
3400 Pro 28.8 Data/Fax Modem.....	£155

Pace

pace



Netlink Gold V34	
Complete internet Access Pack containing Pace MobilFax144, FREE 21 Days direct connection time Plus all Software needed.	

£99

Netlink V32	
Complete internet Access Pack containing Pace MobilFax144, FREE 21 Days direct connection time Plus all Software needed.	

£185

Pace Linnet 34 fx - Desktop V34 Fax Modem.....	£158
Pace MICROLIN fx 34 - Pocket V34 Fax Modem.....	£158
Pace MICROLIN fx 34 Internal - Internal V34 Fax Modem.....	£158
Pace MICROLIN NB 34 - PCMCIA V34 Fax Modem.....	£178
Pace Linnet 32Plus fx - Desktop V32bis Fax Modem.....	£159
Pace MICROLIN fx 32Plus - Pocket V32bis Fax Modem.....	£149
Pace MICROLIN fx 32 Internal - Internal V32bis Fax Modem.....	£145
Pace MICROLIN NB 32Plus - PCMCIA V32bis Fax Modem.....	£185
Message Desk - Desktop V32bis Voice, fax and data modem.....	£168
Message Desk Int - Int V32bis Voice, fax and data modem.....	£168

Pision Dacom



GOLD CARD

Gold Card V34 + Fax PCMCIA Modem.....	£199
Gold Card V32bis + Fax PCMCIA Modem.....	£159

Apex Data



PCMCIA Modems

- ▶ Internal Line Interface (No Cable Lump)
- ▶ Windows 95 Compatible
- ▶ Includes Computer/Internet Software

ClipperCom V32 PCMCIA Modem.....	£149
ClipperCom V34 PCMCIA Modem.....	£199

Cables	
9 to 25 Pin Modem Cable.....	£9
25 to 25 Pin Modem Cable.....	£9

AUTOMATIC FAX MACHINES

Avro Pacific Fax Friend	
Automatic Fax & Data Switch.....	£49



MULTI-MEDIA CARDS

CREATIVE

NEW LOWER PRICES

Creative MP400 (MPEG Player).....	£119
Creative TV-Coder External.....	£109
Creative Video Blaster RT300.....	£215

Aztech	
Video Galaxy Gamma.....	£155
Video Galaxy Gamma MPEG Upgrade.....	£119
Video Galaxy Teletext Upgrade Module.....	£38
Video Galaxy Oscar (MPEG Playback board).....	£189

Diamond	
1Mb Diamond Edge DRAM PCI.....	£219
<i>(All Diamond Edge cards offer 2D & 3D graphics, Full motion Digital Video, Hardware Wavetable, Digital Gameport & Plug & Play for Win 95)</i>	
2Mb Diamond Edge DRAM PCI.....	£259
2Mb Diamond Edge VRAM PCI.....	£319
4Mb Diamond Edge DRAM PCI.....	£439

Fast Electronic	
Fast Aviator MN502010.....	£182
Fast Movie Machine Pro.....	£275
Fast Movie Machine Pro MJPEG.....	£275
Fast Movie Machine 2.....	£465
Fast Movie Machine 2 MJPEG Upgrade.....	£275
Fast Movie Machine 2 MPEG Upgrade.....	£225
Fast FPS 60 Card with MJPEG.....	£485
Fast FPS 60 Card MPEG Upgradable.....	£225
Screen Machine 11.....	£655
Screen Machine 11MPEG.....	£10A

Hauppauge!

WIN/TV CELEBRITY



- Frame Grabbing on the fly
- NTSC/PAL Compatible
- Scalable viewing window from icon to full screen ■ Teletext

£255

Hauppauge Win/TV Cinema 95.....	£179
Hauppauge Win/TV Prisma.....	£149

Kodak

KODAK

Kodak Digital Camera 40.....	£815
Kodak Camera AC Power Adaptor.....	£69
<i>(Automatic exposure & built in flash, 756x504 image resolution (4 x Apple Quicktake 100 resolution), includes batteries, AC adaptor optional)</i>	

Miro	
Mirovideo 2Mb 20TD Live PCI or VLB.....	£295
Mirovideo Mouse.....	£285
Mirovideo DC1 (With Adobe Premiere, Photoshop 1E, Asymmetrix 3D).....	£299
1Mb MiroVIDEO 12PD PCI or VLB.....	£89
2Mb MiroVIDEO 12PD PCI or VLB.....	£129
MiroMPEG Maker.....	£185

Orchid	
Orchid 1Mb Kelvin MPEG VLB.....	£249
Orchid 2Mb Kelvin MPEG VLB.....	£295
Orchid Vidliola.....	£249

Sigma Design	
Reemagic Full Version.....	£325
Reemagic Lite.....	£199

Quantum Leap Software	
Media Pro Plus Hi-Res.....	£209
Media Pro Plus.....	£189
PC Tuner.....	£65
TV Buster External.....	£45
TV Buster Internal.....	£45
TV Tuner & Teletext.....	£99

Videologic

VIDEOLOGIC

Videologic 1Mb 928 Movie with MPEG Player ISA.....	£355
Videologic 1Mb 928 Movie with MPEG Player VLB.....	£355
Videologic 1Mb 928 VRAM Upgrade Kit.....	£69
Videologic Captivator Pro.....	£165
Videologic Captivator Pro & TV.....	£209
Videologic MPEG Player for VMC.....	£209
Videologic Mediator XLC PC to TV Converter.....	£165

Videolabs	
Flexcam Desk Top TV Camera.....	£499
<i>Flexcam is a high resolution, integrated colour camera and microphone.</i>	

FLEXCAM™

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Flexcam is a high resolution, integrated colour camera and microphone. **£499**

Others	
Compro LaserWave Movie Studio - MPEG Video Board.....	£239
Intel Smart Recorder Pro.....	£285
Spea Showtime (MPEG Player).....	£299

VIDEO CONFERENCING	
Creative Labs ShareVision PC 3000.....	£995

Intel	
Intel ProShare Premiere Edition SFW.....	£199
Intel ProShare Video System 200.....	£1,849

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VGA CARDS

Generic	ISA	VLB	PCI
256K VGA 800 x 600 16C		£18	
512K VGA 1024 x 768 156C		£24	
1Mb Trident 8900D 1024 x 768 256C		£39	
1Mb Cirrus Logic 16.7 Win Accelerator		£42	
1Mb Tseng ET4000 16.7m Colours		£65	
1Mb Cirrus Logic 5429 Win ACC			£48
1Mb Cirrus Logic 5434			£58
1Mb Tseng ET4000/W32		£79	£75
2Mb Tseng ET4000/W32P		£109	£108
1Mb Advanced Logic AL2301			£98
2Mb Cirrus Logic 5434			£98

Diamond	ISA	VLB	PCI
1Mb Diamond Stealth 64 Dram 2000			£82
1Mb Diamond Stealth 64 Dram 2001			£82
1Mb Diamond Stealth 64 Video Dram 20001 MPEG			£115
2Mb Diamond Stealth 64 Dram 2000			£125
2Mb Diamond Stealth 64 Video Dram 20001 MPEG			£136
2Mb Diamond Stealth 64 Video Vram 3200			£179
2Mb Diamond Stealth 64 Video Vram 3000			£195
4Mb Diamond Stealth 64 Video Vram 3000			£319

Hercules	ISA	VLB	PCI
1Mb Hercules Dynamite Pro		£135	
2Mb Hercules Dynamite Power		£145	£195
2Mb Hercules Graphite Terminator 64		£235	£265
4Mb Hercules Graphite Terminator 64		£345	£379
1Mb Hercules Stingray			£98
1Mb Hercules Stingray Pro Video			£78
1Mb Hercules Stingray 64 Video			£95
2Mb Hercules Stingray 64 Video			£145

Matrox	ISA	VLB	PCI
2Mb Matrox Millennium WRAM			£215
4Mb Matrox Millennium WRAM			£320

Windows 95 compatible Plug & Play

MATROX

Orchid	ISA	VLB	PCI
1Mb Orchid Fahrenheit 64		£89	
4Mb Orchid Fahrenheit Pro 64		£295	
2Mb Orchid Fahrenheit ProVideo 64		£205	£185
4Mb Orchid Fahrenheit ProVideo 64		£309	£295

Taxan	ISA	VLB	PCI
1Mb Taxan GTS WinBoost		£114	£119
2Mb Taxan GTS WinBoost		£145	£145
2Mb Taxan WinTurbo 64		£194	£245
4Mb Taxan WinTurbo 64		£338	£395

Number Nine	ISA	VLB	PCI
1Mb 9FX Vision 330		£95	£83
2Mb 9FX Vision 330		£139	£124
1Mb 9FX Motion 531		£135	£118
2Mb 9FX Motion 531		£179	£155
2Mb 9FX Motion 771		£225	£218
4Mb 9FX Motion 771		£339	£318
4Mb Imagine 128 1280		£475	£485
4Mb Imagine 128 1600		£610	£685
8Mb Imagine 128		£1,039	£949

Spea	ISA	VLB	PCI
2Mb Spea V7 Mercury P64 VLB		£208	

STB	ISA	VLB	PCI
1Mb STB Powergraph 64		EPOA	
2Mb STB Powergraph 64		EPOA	£149
2Mb STB Velocity 64V MPEG			£219
4Mb STB Velocity 64V MPEG			£319
2Mb STB Nitro 64			£145

Videologic	ISA	VLB	PCI
1Mb GraftixStar 300		£83	£79
2Mb GraftixStar 300		£125	£115
2Mb GraftixStar 700 inc AVI scaling		£235	£229
4Mb GraftixStar 700 inc AVI scaling		£375	£375

Monitors	ISA	VLB	PCI
14" Mono VGA Monitor			£69
14" Crystal Colour SVGA Interlaced			£159
15" Crystal Colour Monitor N-I MPRII			£228
17" Crystal 17HQ 1280 x 1024 N-I			£498

CTX	ISA	VLB	PCI
14" CTX 1451CLR N-I MPRII			£165
15" CTX 1565CD SVGA MPRII			£235
17" CTX 1765CD SVGA MPRII 28 1024 x 768			£438
17" CTX 1785GM SVGA MPRII 26 1280 x 1024			£488
LMT 1000 16 Grey Scale LCD VGA Screen 9.4"			£485
LMT 5020 4096 Colour LCD VGA Screen 9.4"			£1,965

Iiyama (IDEK)	ISA	VLB	PCI
15" Iiyama Vision Master FST MF-8115			£279



MONITORS Cont.

17" IIYAMA VISION MASTER FST MF-8617E
£520

17" Iiyama Vision Master FST Pro MT9017E	£585
21" Iiyama Vision Master FST MF8221E	£1,165
21" Iiyama Vision Master FST MT9021E	£1,250

(All 21" Monitors Bundled with Colorific Kodak SFW)

NEC	ISA	VLB	PCI
NEC Multisync XV14 14" 1024 x 768 N-I			£215
NEC Multisync XV15 15" 1280 x 1024 80Hz			£274
NEC Multisync XV17 17" 1280 x 1024 80Hz			£569
NEC Multisync XE15 15" 1280 x 1024 80Hz			£405
NEC Multisync XE17 17" 1280 x 1024 80Hz			£719
NEC Multisync XE21 21" 1280 x 1024 75Hz			£1,335
NEC Multisync XP17 17" 1280 x 1024 76Hz			£925
NEC Multisync XP21 21" 1600 x 1200 70Hz			£1,698

Nokia	ISA	VLB	PCI
Valuegraph 449E090P 15" SVGA FST			£299
Multigraph 449M092P 15" FST TCO Trinitron			£355
Valuegraph 447V090 17" SVGA FST			£469

Panasonic	ISA	VLB	PCI
15" Panasync (TX-T1562) 1024 x 768 NI			£279
17" Panasync (TX-D1733) 1280 x 1024 NI			£495
17" Panasync (TX-D1733FU) 1280 x 1024 NI			£555

Philips	ISA	VLB	PCI
14" Philips Mono Monitor 14M			£89
14" Philips Enhanced VGA Color Monitor 14C			£179
15" Philips Brilliance Autocscan Colour Monitor 15B			£254
15" Philips Brilliance Autocscan N-I Colour Monitor 15A			£275

RADIUS 17" PRECISION VIEW 1280 X 1024 (RAD092)
£659

17" PrecisionColour 1360 x 1200	£815
20" IntelliColor Display/20c 1360 x 1024 (RAD081)	£1,399
21" PrecisionView 1600 x 1200	£1,599

SAMSUNG	ISA	VLB	PCI
14" Syncmaster 3NI 800x600 CVM			£165
14" Syncmaster 3NE 1024x768 CVP			£179
15" Syncmaster 15GLE 1024x768			£255
15" Syncmaster 15GLI 1280x1024 Plug & Play			£299
17" Syncmaster 17GLI NI 1280x1024			£499
17" Syncmaster 17GLSI NI 1280x1024 76Hz			£599

Sony	ISA	VLB	PCI
Sony 15" CPDSF1 1024 x 768 NI 25			£305
Sony 17" GDM-17SE1 SVGA N-I			£809
Sony 20" GDM20 SEV 1280 x 1024 N-I			£1,315
Sony 20" GDM20 SE1 1280 x 1024 N-I			£1,395
Sony CSS-B100 Computer Speaker System			£75

Taxan	ISA	VLB	PCI
14" Taxan Ergovision 400LR Interlaced			£185
14" Taxan Ergovision 410LR N-I			£195
14" Taxan Ergovision 420LR N-I			£235
15" Taxan Ergovision 580 + LR 1280x1024 N-I			£285
17" Taxan Ergovision 880 LR 1280x1024 N-I			£505
17" Taxan Ergovision 885 LR 1600x1200 N-I			£625
17" Taxan Ergovision 895 LR 1600x1200 N-I			£819
20" Taxan Ergovision 1080 LR 1600 x 1200 N-I			£910
21" Taxan Ergovision 2100 LR 1600 x 1200 N-I			£1,530

Viewsonic	ISA	VLB	PCI
14" Viewsonic 14ES 1024 x 768 N-I			£178
15" Viewsonic 15ES 1280 x 1024 NI			£235
17" Viewsonic 17-2 1280 x 1024 NI			£625
20" Viewsonic 20G 1600 x 1200 N-I			£935
21" Viewsonic 21PS 1600 x 1200 N-I			£1,329

Accessories	ISA	VLB	PCI
Universal Monitor Drawstring Dust Cover			£11
14" Anti Glare Screen Filter			£29



SCANNERS

Andest FaxScanner (Win)	£59
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(Converts your fax machine into an A4 scanner)
Avro Pacific

SCANAFAX
Turns Your Fax Machine into a Scanner
*BAPT APPROVED
£29

Scanafax & Delrina Lite	£39
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(makes your fax machine into a scanner)

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Epson LapCAT GT3000			£290
Epson GTX5000 Parallel			£339
(Corel Photopaint 5, DRAW! 4, Xerox Colour Mgmt Suite)			
Epson GTX5000 SCSI			£395
(Corel Photopaint 5, DRAW! 4, Xerox Colour Mgmt Suite)			
Epson GTX8500 Parallel			£489
(Photoshop LE, OmniPage Direct)			
Epson GTX8500 SCSI			£565
(Photoshop LE, OmniPage Direct)			
Epson GTX9000 SCSI			£665
(Photoshop LE, OmniPage Direct)			
Epson GT18500 SCSI (Adobe Photoshop V3)			£765
Epson GT19000 SCSI (Adobe Photoshop V3)			£848
Epson GTX9000 Parallel			£613

Epson Bi-Directional Parallel Port	£35
Genius Scanmate/256	£65
Scanmate Colour	£125

HEWLETT PACKARD
HP 4c Colour Scanner £614
HP 4s Colour Scanner £227
HP 4si Colour Scanner £1,602

Logitech	ISA	VLB	PCI
Logitech Scanman 32 WIN			£55
Logitech 256 Scanner			£69
Logitech Easy Touch Scanner			£99
Logitech Scanman Colour			£139
Logitech PageScan			£285
Logitech Scan Pad			£12

Nikon	ISA	VLB	PCI
Nikon Scantouch LE			£915
Nikon Coolscan			£985

Sicos	ISA	VLB	PCI
Sicos Colour Page Scanner			£225

Trust	ISA	VLB	PCI
Trust 1200dpi Flatbed Scanner			£285
Trust 2400dpi Flatbed Scanner			£385

Other ScanFX - Scanner, Fax, Copier	£379
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(Colour/BW 1200 x 1200dpi Scanner with Fax & Copying. Comes with Wordscan OCR & Picture Publisher LE)

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£299
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Simply NE2000 Compatible 16 Bit BNC.....	£19
Simply NE2000 Compatible 16 Bit RJ45.....	£19
Simply NE2000 Compatible 16 Bit Combo Card ISA.....	£25
Simply NE2000 Compatible 32 Bit Combo Card VLB.....	£79
Simply NE2000 Compatible 32 Bit Combo Card PCI.....	£89
Simply NE3210 Compatible EISA 32 Bit Combo Card.....	£159
Simply NE2000 Boot Rom.....	£5

All the Above Cards are Novell Approved

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Novell NE1000 8 bit ISA.....	£74
Novell NE2000 Plus 16 Bit BNC.....	£48
Novell NE2000T Plus 16 bit RJ45.....	£48
Novell NE2000 Plus 3 16 bit Combo Card.....	£59
Novell NE2000 Plus 5 Pack 16 bit either RJ45 or BNC.....	£260

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3COM Etherlink III 3C509B ISA RJ45 / BNC Combo.....	£73
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3COM Etherlink III 3C589 PCMCIA RJ45 & BNC.....	£129
3COM Etherlink III 3C590 PCI COMBO Card.....	£99

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SMC Elite Ultra ISA RJ45.....	£59
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SMC EtherEZ ISA Combo RJ45 & BNC 5 Pack.....	£335

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Simply 24 Port TP Hub (24 x RJ45, 1 x BNC, 1 x AUI).....	£354

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3C16670 12 port FMS II Hub (12 x RJ45, 1 x AUI).....	£389
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D Link DE-1600
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SMC Tiger Hub TP6 Port.....	£165
SMC 3812 14 Port Hub.....	£495

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SMC TigerSwitches

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Novell Network 3.12 5 User on CD.....	£411
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Canon BJ600e Colour Inkjet.....	£320
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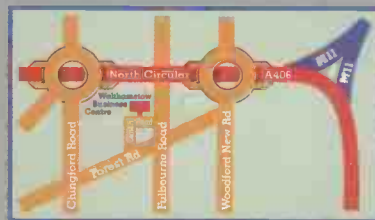
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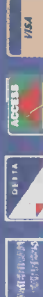
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SIMON THE SORCEROR	£10.00
SIMON THE SORCEROR 2	£22.00
STAR TREK 25TH ANNIV.	£10.00
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UMAX

- Umax are the second largest manufacturer in the world
- Tech Direct are the largest UK reseller for Umax scanners
- Our scanner experts will gladly discuss your requirements
- Demo available for the Powerlook Pro model
- We will match or beat any delivered price in this magazine



UMAX T630

- Personal Computer World Editors Choice!
- Inc SCSI card and software
- 600 x 300 dpi optical
- 4800 dpi with interpolation
- Adobe Photoshop V3.0 LE
- Umax Vistascan software
- One year on-site warranty
- T630 PRO £725
- Three pass
- Lowest price **£295**



UMAX VISTA S8

- Low cost bundle
- Ultra View Technology
- 400 x 800 dpi optical
- 6400 dpi with interpolation
- Adobe Photoshop V3.0 LE
- Umax Vistascan software
- One year on-site warranty
- Single pass scanner
- S8 PRO £944
- S8 PLUS £679
- Excellent value **£539**



UMAX UC1260

- 600 x 1200 dpi optical
- Excellent for lineart
- 9600 dpi with interpolation
- Adobe Photoshop V3.0 LE
- Umax Vistascan software
- One year on-site warranty
- UC1260 PLUS £739
- UC1260 PRO £999
- Three pass scanner
- Optional OCR
- Great value **£599**



UPGRADED MODEL NOW IN STOCK!!

POWERLOOK II

- Brand new 36bit model
- 5000 pixel CCD
- Inc. SCSI card & software
- 600 x 1200 dpi optical
- 9600 dpi with interpolation
- Adobe Photoshop V3.04
- Umax Magicscan software
- Inc. transparency adaptor
- Thermocompensation
- Max 3.3D **£2299**



UMAX GEMINI

- 30 bit scanner
- Single Pass colour
- 800 x 1600 dpi optical
- 3200 dpi with interpolation
- Adobe Photoshop V3.0 LE
- Dual lens system
- One year on-site warranty
- The photographers choice!
- Gemini PRO £1199
- Gemini PLUS £939
- New Model **£799**



MIRAGE A3

- Scans x-ray film, satellite photos and negatives
- 800 x 1600 dpi optical
- 9600 dpi with interpolation
- High dynamic range
- Adjustable light intensity
- Call for full spec sheets!
- Multiple & batch scanning
- Inc. transparency adaptor
- Professional choice
- Dual lens **£5999**

* PRO versions include a transparency adaptor and a full version of Adobe Photoshop V3.04 (Windows 95 ready)
 * PLUS versions include a full version of Adobe Photoshop V3.04 (Windows 95 ready) Page Office **£239**
 *****FREE PRESTO FILE MANAGEMENT & OCR SOFTWARE ON ALL UMAX SCANNERS UNTIL 31/12/95*****

Genius

- Market leader in handhelds
- New models now available
- Scanner experts on hand
- Winner of several awards
- The ultimate handheld scanner

hp HEWLETT PACKARD

SCANMATE COLOR PRO

- Now improved with higher resolution!
- Stunning 1600 dpi, 16Million colours
- The ultimate 24 bit hand scanner
- Photo Finish 3.0 image software
- Smart Page Direct OCR software
- Fully TWAIN compliant
- MorphEditor software **£129**

HP SCANJET 4C

- Upgraded version of popular HP 3C
- The latest model from HP
- Please call for full specifications
- New software bundle now included
- HP 4S mono model £225
- 4si (token ring) £1799
- 4si (ethernet) £1599 **£599**

EPSON

- GT5000 PARALLEL £311
- GT5000 SCSI £364
- GTX8500 PARALLEL £488
- GTX8500 SCSI £564
- GTX9000 PARALLEL £593
- GTX9000 SCSI £663
- GT18500 SCSI £737
- GT19000 SCSI £846

Please call for software bundles included with the above scanners

AGFA

- Agfa Studioscan 300 x 600 optical resolution Available now @ £466
- Agfa Studioscan IISi 400 x 800 optical resolution Available now @ £589
- Agfa Studioscan Arcus II 600 x 1200 optical resolution Available now @ £2105

LOGITECH

- Innovative new portable scanners
- Well established scanner manufacturer
- Includes one year Logitech guarantee
- Scanman Colour Hand Scanner £138

LOGITECH PAGESCAN

- Portable 24-bit colour scanner
- Versatile sheetfed convenience
- Ideal solution for portable computers
- Xerox Textbridge OCR software
- Full document management software
- Connects to the parallel port
- User friendly software **£287**

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Our purchasing power means low low prices for you! our commitment to providing our customers with the best deals is there for you to see

THE LATEST PRODUCTS

NO GREY IMPORTS. All our products are UK sourced and supplied with the manufacturers full warranty (minimum 12 months)

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No credit card surcharges (except Amex @ 1.5% - sorry) Your credit card will only be debited on despatch of your order

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Order from us and if we have the goods in stock we will deliver tomorrow

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To offer you the lowest prices we operate on a payment to accompany order basis. Add £9.95 delivery and VAT at 17.5% to all prices. Please allow five working days for cheque clearance. We are delighted to fax or send Pro-forma invoices.

CONDITIONS OF SALE

Prices and specifications are unfortunately subject to change. Please check suitability with manufacturers before purchase. Goods are not supplied on a trial basis and are subject to our standard conditions of sale. A re-stocking fee of 15% will apply to non-defective returns. Errors and omissions excepted.

VISA Access SWITCH



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THE LOWEST UK PRICES - CALL NOW!



- Kyocera lead the way in economic printing
- Drums are guaranteed for the printer life
- The latest cost saving technology
- Three year on-site support options
- New A3 laser just launched!



KYOCERA FS400

- 4 pages per minute printing
- Enhanced 300 x 1200 dpi
- Energy Star compliance
- 100,000 page drum guarantee
- 79 bitmap, 13 scalable fonts
- Optional Postscript emulation
- Low cost per page output
- Cartridge free design
- 12 month warranty **£359**

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 £15.50 whilst the FS400 is still equipped with a wealth of features and network/paper options. Be kind to the planet and your wallet with a Kyocera FS400 printer.



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
- Optional paper bins
- Low running costs **£853**

For speed and economy the FS-1550 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. There is also an excellent selection of options for an expanding office, allowing the FS-1550 to actually grow with your business!

KYOCERA LASERS

FS-400 Twin Bin	£474
FS-1600	£1044
FS-3400	£1337
FS-3600	£1748
FS-5500	£3329
FS-6500 A3 New!	£1549

We can also supply the above units network ready. Please call Tech Direct for the best prices.

KYOCERA TONER KITS

FS-400	£15.50
FS-1550/1600	£44
FS-1500	£31
FS-5500	£38
FS-6500	£44

KYOCERA MEMORY

1 MEG	£60
2 MEG	£99
4 MEG	£159

KYOCERA ON-SITE WARRANTIES

	1 YEAR	2 YEAR	3 YEAR
FS-400	£49	£79	£99
FS-1550/1600	£99	£166	£199
FS-5500	£260	£416	£499
FS-6500	£199	£333	£399

KYOCERA OPTIONS

	DUPLEX UNIT	500 TRAY	POSTSCRIPT
FS-1550/1600	£550	£279	£Call
FS-6500	N/A	£425	£Call



- Highest specification inkjets
- Improved new machines
- Excellent selection of models
- Professional DTP versions

STYLUS COLOUR 2s	£198
STYLUS 820	£174
STYLUS 1000	£328
STYLUS PRO A4	£388
STYLUS PRO XL A3	£1373
EPL5500	£Call
EPL9000	£1122



- PCW Editors Choice winner
- Computer Shopper Best Buy
- 6100 model for Windows
- 6150 model for Dos & Win
- Compact desktop designs

KX-P6100	£263
KX-P6150	£299
KX-P6100 TONER	£12
KX-P6150 TONER	£12
KX-P2023	£107
KX-P2135 C	£124
KX-P3626	£249



£251

Epson have just released the latest Stylus Colour 2 inkjet. Building on the success of the previous version this printer offers true 720 x 720 dpi printing in black and colour. Whilst the printer will handle a variety of papers, to achieve the highest resolution we can also supply the 720 dpi paper from Epson. Within weeks of its launch this printer is already our top selling inkjet!



£263

Panasonic have managed to produce a compact laser printer at an inkjet price! The 6100 and 6150 lasers are designed to fit into the smallest desk space whilst still offering an incredible 6 pages per minute print speed. Having recently won the Personal Computer World Editors choice and the Computer Shopper Best Buy award need we say more?



- Specialist in lasers
- Popular well-tested range
- Straight through paper paths
- Windows and DOS models

BROTHER HL630	£314
BROTHER HL631	£338
BROTHER HL660	£449
BROTHER HL1260	£885
RS232 INTERFACE	£85
HL660 POSTSCRIPT	£105
ETHERNET CARD	£225



£314

The HL630 printer shown on the left is the top selling entry level laser from Brother. Running at 6 pages per minute and 300 dpi this printer has won several prestigious awards from Computer magazines. The printer includes 0.5Mb of memory and PCL4 for direct DOS printing. A straight through paper path allows a wide variety of paper thickness without jamming.



- New range from Tech Direct!
- Special opening offer prices!
- Fully Windows 95 compatible!
- SLEEK Windows print system
- Smallest laser in the world!

JX-9200 300 dpi	£244
JX-9210 600 dpi	£314
JX-9200/9210 Toner	£Call
JX-9460 6 p.p.m.	£579
JX-9460 Postscript	£689
JX-9660 8 p.p.m.	£739
JX-9680 12 p.p.m	£859



£244

Tech Direct are pleased to offer the latest JX-9200 laser from Sharp. As can be expected from this top name in business machines Sharp have produced a quality Windows 95 only laser whilst bearing in mind the needs of the personal user. New "SLEEK" printer software has been developed in conjunction with Microsoft as an improvement over the GDI method!

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Personal Computer
Products

HP INKJET PRINTERS



HP DESKJET 600

- 600 x 300 dpi Ret enhanced
- 3 ppm print speed in black
- Optional colour kit for just £29
- £219 including supportpack
- Built in sheetfeeder
- 3 year warranty

£179

This latest addition to the Hewlett Packard inkjet range is the ideal entry level printer for the home or small business. Although only a mono printer as standard the colour upgrade option is just £29 extra, and a worthwhile purchase at the same time as the printer.



HP DESKJET 660C

- 4 ppm print speed in black
- Improved 600 x 300 dpi colour
- New 2 Button control panel
- £304 including supportpack
- Built in sheetfeeder
- Excellent value

£239

Another new printer from Hewlett Packard! The 660C comes equipped for colour and mono printing with the advantage over the Deskjet 600 that you can print true black and colour on the same page. Now offered at an even lower price from Tech Direct!



HP DESKJET 850C

- 6 ppm print speed in black
- Faster 600 x 300 dpi in colour
- New Model - 2 Button control
- £390 including supportpack
- Built in sheetfeeder
- Accepts envelopes

£325

The higher specification 850C is the ideal choice for faster printing in colour or in black and white. Offering a class leading print speed of up to 6 pages per minute in mono and improved colour production from new ink technology. This inkjet is the professional choice!

HP DESKJET 340

£167

HP DESKJET 320 SHEETFEED

£49

HP DESKJET 340 COLOUR KIT

£29

HP DESKJET 1600C

£816

HP DESKJET 1600C PS

£1217

HP LASER PRINTERS



HP LASERJET 5L

- 4 ppm print speed
- 600 dpi with enhancement
- £444 with supportpack
- 100 sheet paper input tray
- 1Mb standard memory
- 26 scalable fonts

£339

Just launched the new Hewlett Packard 5L sets an incredible pace to follow! Despite being the entry level laser in the range this unit delivers an incredible 600 dots per inch resolution at a rapid 4 page per minute sprint speed! Quite simply excellent value for money.



HP LASERJET 5P

- Rapid 6 ppm print speed
- 600 dpi with enhancement
- Infrared Port for Windows 95
- £703 including supportpack
- 2 Mb standard memory
- £718 5MP model

£568

For those requiring more speed take the Hewlett Packard 5P for a quick spin round the block! 6 pages per minute and 600 dpi make this the obvious choice for general office work. With 2Mb Ram as standard this unit is built to cruise through your paperwork!



HP LASERJET 4PLUS

- 12 pages per minute
- 600 dpi with enhancement
- Network options available
- £1134 including supportpack
- 2Mb standard memory
- £1288 4MPlus model

£964

Designed specifically to handle serious workloads the 4Plus delivers rocket ship performance at 600 dots per inch. If you want your business to really take off buy a Hewlett Packard 4Plus and blast past the opposition. If you're not starstruck yet just look at our pricing!

HP LASERJET 5SI

£1999

HP LASERJET 5SIMX

£2899

HP LASERJET 4V

£1359

HP LASERJET 4MV

£1959

HP COLOR LASERJET

£4190

HP INK CARTRIDGES

HP DESKJETS

HP310/320 BLACK	£16
HP500,510,520 BLACK	£19
HP540,560 BLACK	£19
HP500/320 COLOUR	£21
HP600C,660C BLACK	£22
HP600C,660C COLOR	£24
HP850C BLACK	£24
HP850C COLOUR	£22
HP 1200C BLACK	£21
HP 1200C COLOURS	£25
HP 1600C BLACK	£24
HP 1600C COLOURS	£25

HP LASER TONERS

HP LASERS

HP IIP,IIIP	£59
HP II,II,IIID	£49
HP 4L,4ML,4P,4MP	£45
HP 5P,5MP	£59
HP 4PLUS,4MPLUS	£68
HP 4V,4MV	£109
HP IIISI,4SI,4SIMX	£89

LASER MEMORY

2MB UPGRADE	£99
4MB UPGRADE	£148

HP OFFICEJET LX



- Printer * Fax * Copier
- PC Faxing directly from Windows
- Saves space and money
- 24 page memory
- Automatic switching
- £589 Fax 950

£459

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PCW1

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Access



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THE LOWEST UK PRICES - CALL NOW!

LEXMARK™

- Lexmark have recently scooped several printer awards
- The latest technology is available now from Tech Direct
- Lexmark currently lead the market with innovative new products
- Tech Direct are the largest UK mailorder reseller for Lexmark
- We will not be beaten on price! If you see it cheaper call us!



LEXMARK 150C

- Personal Computer (Win 95) Editors Choice!
- Computer Shopper Best Buy winner!
- 600 x 300 dpi colour and true black printing
- Free CorelDraw 4.0 software worth £99 (on CD)
- Ready for Windows 95 (includes drivers)
- 3 Year Warranty included as standard
- Fast printing through Windows

£254



LEXMARK 1020

- Our cheapest colour printer - no colour kit required!
- The new multimedia printer with spoken messages!
- Free CorelDraw version 3.0 software worth £50
- 600 x 300 dpi printing in black or colour
- The colour solution for the home or office
- Three year warranty as standard
- Ready for Windows 95

£179



LEXMARK OPTRA R+

- Brand new class leading model!
- The only true 1200 x 1200 dpi laser (8 ppm)
- Blistering 16 pages per minute @ 600 dpi
- Fully networkable - the ultimate office printer
- One year on-site warranty included as standard
- Simply the best laser printer available
- High speed 32 bit RISC processor

£999

LEXMARK OPTRA R+ - 16 p.p.m., 2Mb Ram	£999
LEXMARK OPTRA RT+ - 16 p.p.m, 2Mb Ram, Postscript	£1199
LEXMARK OPTRA LX+ - 16 p.p.m, 8Mb, Multi networking, Postscript	£1699
LEXMARK OPTRA LXi+ - 16 p.p.m, 8Mb, advanced networking, Postscript	£2249
LEXMARK OPTRA C - 600 dpi colour laser, 8 Mb Ram (3 p.p.m colour)	£4999
LEXMARK OPTRA C pro - as above with 32Mb Ram and Ethernet card	£6495
EXTRA MEMORY FOR 1200 DPI	£Call
OPTRA ON-SITE WARRANTIES	£Call

PLEASE CALL FOR ALL LEXMARK TONERS AND CARTRIDGES

OKI

- Several brand new laser and inkjet printers just launched!
- These affordable printing solutions from OKI are available today
- The highest specifications and fastest speeds for the money!
- OKI has an excellent reputation for outstanding value
- Tech Direct are *the* authorised OKI reseller!



OKI 2010

- Brand new colour inkjet printer from OKI
- Fast high quality text and graphics output
- On screen software control from within Windows
- 600 x 300 dpi output with resolution enhancement
- Will print to DOS via Windows DOS box
- Dual head ready for black and colour
- Straight paper path to prevent jams

£249



OKI 600EX

- Presenting *the* best selling laser 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) £379
- 5 year laser head warranty as standard
- The alternative 600 dpi solution!

£298



OKI 400W

- New GDI laser for Windows users!
- 300 x 300 dpi resolution (upgradeable to 600dpi)
- Separate toner & drum units for lower running costs
- The cheapest laser printer on the market today
- PCL4.5 emulation allows DOS printing
- 4 pages per minute print speed
- 5 year warranty on laser head

£259

OKI 810ex - 600 x 600 dpi, 8 pages per minute, PCL5e, 2Mb Ram	£629
OKI 1200ex - 600 x 600 dpi, 12 pages per minute, PCL5e, 2Mb Ram	£975
OKI MICROLINE 380 80 Column, 24 pin dot matrix printer	£249
OKI MICROLINE 386 136 Column, 24 pin dot matrix printer	£399
OKI MICROLINE 520 80 Column, 9 pin dot matrix printer	£399
OKI MICROLINE 521 136 Column, 9 pin dot matrix printer	£449
OKI MICROLINE 590 80 Column, 24 pin dot matrix printer	£499
OKI MICROLINE 591 136 Column, 24 pin dot matrix printer	£599
OKI MICROLINE 3410 136 Column, 9 pin dot matrix printer	£999

Canon

- Fantastic choice of colour and mono printers at affordable prices
- Canon are one of the worlds largest printer manufacturers
- From portable compact A4 models up to desktop A3 sizes
- Pioneers in low cost inkjet printing - refillable cartridge designs
- Call Tech Direct for the best Canon prices available!



CANON BJC-70

- Affordable colour portable printing!
- 360 x 360 dots per inch colour
- True black printing from separate cartridge
- Built in 30 sheet feeder as standard
- Portable kit available - please call
- Universal worldwide adaptor available
- New faster drying inks for better results

£216



CANON BJC-4000

- Colour desktop printing in compact design!
- True black and colour cartridges together
- 360 x 360 dot per inch colour printing
- 720 x 360 dpi black printing with BC20 cassette
- Includes built in 100 sheet feeder as standard
- Optional high capacity black tank (BC20)
- Refillable ink tanks for black and colour

£216



CANON LBP-460

- 300 x 300 dpi with image refinement technology
- Compact and attractive desktop design
- Windows 3.1, 3.11 and Windows 95 compatible
- Software jointly developed with Microsoft
- Prints to transparencies, envelopes and labels
- One year on-site warranty as standard
- Fast return to application time

£269

CANON BJ30 portable A4 mono printer	£137
CANON BJ200ex desktop A4 mono printer	£159
CANON BJ230 compact wide carriage printer	£234
CANON BJ600e dedicated A4 colour printer	£314
CANON BJ300 A4 mono tractor fed printer	£349
CANON BJ330 A3 mono tractor fed printer	£386
CANON BJC820 colour Macintosh printer	£1219
CANON LBP 460 Windows laser printer - <i>NEW!</i>	£269
CANON LBP1260 laser printer	£887

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IBM

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- IBM continues to lead the market in the field of notebook innovations and design
- Now offered at even better value for money and the lowest prices from Tech Direct
- IBM is the brand name you can trust for optimum quality and performance every time
- Please call us for a full range of IBM notebook accessories and connection options

IBM THINKPAD MODELS 340/345/370

These lightweight portable machines offer the legendary IBM build quality, and are ideal as an alternative to a desktop PC for home use, or for on the road staff. The dual scan colour displays includes brightness and contrast controls, whilst the unique IBM trackpoint device means these units are genuinely ready for the road! Includes IBM Dos 6.3 and Windows 3.11 preloaded.

340 486/50MHz, DUAL SCAN, 200HDD, 4 Mb RAM	£899
340 486/66MHz, DUAL SCAN, 360 HDD, 4 Mb RAM	£1095
345 486/75MHz, DUAL SCAN, 540HDD, 4 Mb RAM	£1399
345 486/75MHz, TFT SCREEN, 540 HDD, 4 Mb RAM	£1799
370 486/75MHz, TFT SCREEN, 340HDD, 4 Mb RAM	£2299
370 486/75MHz, TFT SCREEN, 540 HDD, 4 Mb RAM	£2499



IBM THINKPAD MODEL 701

As seen on T.V. these are the notebooks everybody is talking about! Offering incredibly high specifications whilst providing a full sized expanding keyboard for serious work - these are the professionals choice when it comes to portability. Expansion ports and docking stations are available for when you return to the office. If your work is important then you need the best - don't consider anything less than an IBM notebook. Tech Direct are delighted to offer the full range of these incredible machines complete with every upgrade or accessory you might need!

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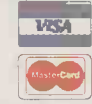
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2886UDN	LO 5000	4.49	4.29	4.09	3.99
2746UJS	PCW 9512	2.09	1.89	1.69	1.59
CITIZEN					
2939UDN	120D/SWIFT80 COL	2.19	1.99	1.79	1.69
2965UDN	SWIFT 132COL	3.99	3.79	3.59	3.49
EPSON					
2273UFN	LX/FX800/850/40/80/85	2.39	2.19	1.99	1.89
2273UFN	COLOURED	4.39	4.19	3.99	3.89
2454UFN	LX/LG80/86	1.99	1.79	1.59	1.49
2320UFN	MX/FX/RX1000/5/1000/50	2.69	2.49	2.29	2.19
2320UFN	COLOURED	2.79	2.59	2.39	2.29
2409UFN	LQ/LP 1500/1550	2.79	2.59	2.39	2.29
2471UDN/LQ500/5070/200/800/60/70		2.59	2.39	2.19	2.09
2273UFN	COLOURED	4.39	4.19	3.99	3.89
2478UDN/LQ1000/1050/70/70/100		2.79	2.59	2.39	2.29
2320UFN	COLOURED	6.89	6.69	6.49	6.39
1066UFN	TX80	1.39	1.19	0.99	0.89
2877UDN	LQ2500/50EX/8000/1000	2.69	2.49	2.29	2.19
2884UDN	DFX5000/8000	9.99	9.79	9.59	9.49
2988UDN	LQ100	2.99	2.79	2.59	2.49
2274UFN	ERC 03	2.29	2.09	1.89	1.79
2785UFN	ERC 18	2.69	2.49	2.29	2.19
2999UFN	LX100	2.99	2.79	2.59	2.49
2847UFN	PROPRINT 132 COL	3.49	3.29	3.09	2.99
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MTALLY					
2698UFN	MT80	3.99	3.79	3.59	3.49
2739UFN	MT85/87	3.09	2.89	2.69	2.59
2740UFN	MT86/88	4.19	3.99	3.79	3.69
2358UFN	MT110/280/290	4.09	3.89	3.69	3.59
NEC					
2254UFN	P1/P2/P6	2.99	2.79	2.59	2.49
2260UDN	P3/P7	3.99	3.79	3.59	3.49
2460UFN	PS	3.39	3.19	2.99	2.89
2870UFN	P6+P7+P8/60/70/9	3.19	2.99	2.79	2.69
2330UFN	PC8023	2.09	1.89	1.69	1.59
2844UFN	P2200/P2+	2.49	2.29	2.09	1.89

STOCK CODE	MACHINE	1	5	10	20
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2687UDN	3500/2000	3.29	3.09	2.89	2.79
2911UDN	P20/30	3.59	3.39	3.19	3.09
1066JFN					
2455JFN	80/82/92/93	1.39	1.19	0.99	0.89
2755JFN	182/180/193/320	2.69	2.49	2.29	2.19
2765JFN	292	4.89	4.69	4.49	4.39
2835UDN	293/4	5.59	5.39	5.19	5.09
2835UDN	393/395	9.79	9.59	9.39	9.29
PANASONIC					
2953JFN	KXP1540/1524/64/2624	3.29	3.09	2.89	2.79
2904UDN	KOP1123/24/145	2.89	2.69	2.49	2.39
2984UDN	2123/4/2180	0.89	0.69	0.49	0.39
2737JUC	KXP190/191	1.99	1.79	1.59	1.49
STAR					
2781UDN	NL10/N10/NR10	3.19	2.99	2.79	2.69
2861UDN	LC10/LC20	1.89	1.69	1.49	1.39
2861UDN	COLOURED	5.69	5.49	5.29	5.19
2985UDN	LC15/F10/FR15	2.29	2.09	1.89	1.79
2410JFN	RAD10/15/18	3.59	3.39	3.19	3.09
2415JFN	RAD15/15/18	4.49	4.29	4.09	3.99
2760UDN	NB24-15/NB15	4.19	3.99	3.79	3.69
2830JFN	NK15/NR15/ND15/NL15	3.59	3.39	3.19	3.09
2781UDN	NB24-10/NB10	3.19	2.99	2.79	2.69
2988UDN	LCXB24-10/15/25/30/20	2.29	2.09	1.89	1.79
2988UDN	COLOURED	5.99	5.79	5.59	5.49
2465JFN	DELTA/SD10	3.99	3.79	3.59	3.49
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R3878JUC	LQ2500/25	7.99	7.79	7.59	7.49
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STAR					
R8989JUC	LC10/NX1000	4.99	4.79	4.59	4.49
R9895JUC	LCXB 24-10/15	7.99	7.79	7.59	7.49
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CP3MMP	3 MTR	8.99	8.59	7.99
CP5MMP	5 MTR	9.99	9.59	8.99
CP7MMP	7 MTR	15.99	15.59	14.99
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Centronic 36 male to Centronic 36 male				
CC1MM	1 MTR	4.99	4.59	3.99
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CC3MM	3 MTR	6.99	6.59	5.99
CC5MM	5 MTR	7.99	7.59	6.99
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CSX2MF	2 MTR	5.95	5.59	4.59
D shaped 9 Female to D shaped 25 Male				
CSXZAT	2 MTR	6.95	6.59	5.59
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PARALLEL - D25M/D25M				
CDP3	3 MTR	3.99	3.99	7.99
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CSXLLS	2.5 MTR	15.99	13.99	11.99

CODE	PRODUCT	1	5	10
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CS3MM	3 MTR	5.99	5.59	4.99
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CS7MM	10 MTR	9.99	9.59	8.99
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CS2MF	2 MTR	4.99	4.59	3.99
CS3MF	3 MTR	5.99	5.59	4.99
CS5MF	5 MTR	7.99	7.59	6.99
CS7MF	10 MTR	9.99	9.59	8.99
D shaped 25 male to D shaped 9 female				
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CS3AT	3 MTR	5.99	5.59	4.99
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CEKXT3	5 MTR	6.99	6.59	5.99
MINI 6 PIN				
CEKPS	2 MTR	5.99	5.59	4.99
MOUSE				
D Shaped 9 pin				
CEKXT2	2 MTR	6.99	6.59	5.99
CEKXT5	2 MTR	8.99	8.59	7.99
Round 6pin Mini				
CEKPS	2 MTR	5.99	5.59	4.99
MONITOR				
15 Pin High Density				
CENPS2	2 MTR	7.99	7.59	6.99
CENPS5	5 MTR	10.99	10.59	9.99
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CENXT2	2 MTR	6.99	6.59	5.99
CENXT5	5 MTR	8.99	8.59	7.99
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Mid : Salmon, Mauve, Emerald				
Strong : Canary or Sun Yellow, Aqua or Deep Blue, Deep Green				
ODCCT	Pastel	5.99	5.59	4.99
ODCCT	Mid	6.59	5.99	5.59
ODCCT	Strong	7.99	7.59	6.99
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CODE	PRODUCT	1	5	10
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- MEDIUM TOWER CASE
- 8MB RAM, 850MB HARD DISC
- QUAD SPEED CD ROM
- S3 64-TRIO PCI VIDEO WITH MPEG
- SUPERB 15" ADI MONITOR
- WINDOWS 95

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We provide an efficient backup service to all our customers in the form of CD ROM. We can put as much as 600 megabytes of your DOS or WINDOWS hard disc onto a single CD in less than an hour! We also sell CD Recorders (Double Speeds from £1,100, Quad Speeds from £1,800) and blank media (£6 each).

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 800x600 hires screen
 Dual scan or beautiful TFT,
 Play MPEG CD, 16-bit audio,
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 ELITE 9GB SCSI F/Wide £1861/£1907

SCSI CONTROLLERS
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 TMC3260 PCI £99
 AHA1505 16-bit £37
 AHA1510 16-bit £43
 AHA2940 PCI F/Wide £185/£229
 AHA3940 PCI F/Wide £319/£350

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72-PIN EDO RAM MODULES: PRICE:
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 8MB -70ns (no parity) £269

30-PIN RAM MODULES: PRICE:
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 4MB -70ns with parity £116

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 Sanyo 4x IDE £369/£412
 MITSUMI 4x IDE £850
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 PANA CDR504 4x SCSI
 TOSH 5301B 4x SCSI
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 NAKA, 7 CDs 4x changer
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 CD Recorder 4x SCSI
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 £100 INTEL EtherExpress £70
 £117 INTEL PRO10 PCI £122
 from £199 INTEL PRO 10/100 PCI £162
 £150 SMC Ultra Combo 16-bit ISA £49
 £145 SMC Etherpower PCI £106
 £349 SMC Etherpower 10/100 PCI £169
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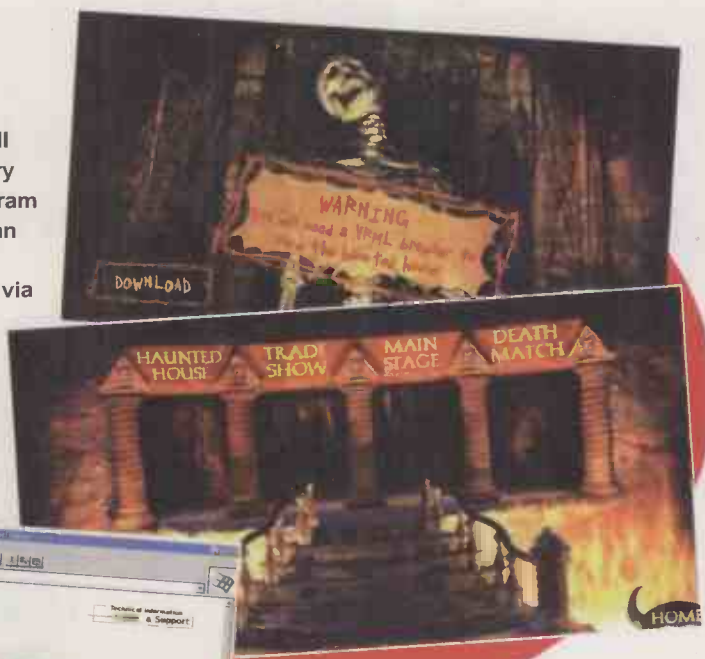
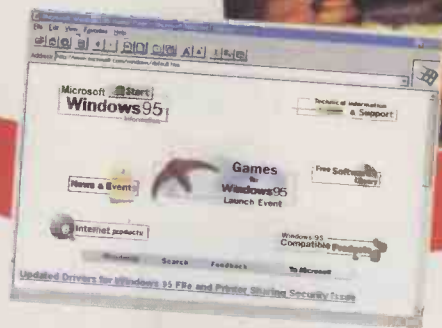
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Following reports in an earlier *ChipChat* that the sum of the ASCII characters in the name "William Henry Gates III" totals 666 and that an anagram of the same name is "Willy G I'm Satan Here", Microsoft this month finally revealed its true colours to the world via the internet.

The Microsoft Windows 95 home page may appear squeaky clean on the surface, but digging deeper reveals the true nature of the world's most successful software company...



Snail's pace

Those French are a funny bunch. Not only do they carry out dubious nuclear tests and bake their bread in a funny shape, they refer to the @ symbol in email addresses as "petit escargot". They must have terribly slow internet access...



Selling yourself

Targeted junk mail is something we all have to put up with, but sometimes it's just a little too accurate. *PCW* Associate Editor, Simon Rockman, was sent a special offer by Tektronix to try to persuade him to buy a Phaser 340. Included in the bumf was a "What the press say" quote, using a paragraph from the *PCW* review. And who originally wrote the review? None other than our Simon.

Non PC

A book called *The Computer Contradiction* landed in *PCW*'s office this month. It looked amusing at first glance — until we read the following entry: "macaroon n. A half-caste employed by Apple Computer Inc". And this from the MIT Press, of all people... Don't buy it.

...and hold the gherkin

You didn't ask for it but You Got It Anyway. Now you never need be more than a few centimetres away from a delicious cheeseburger, complete with ketchup and extra relish. But take care not to mistake this wacky McMicrosoft-compatible mouse for a real burger.



The three buttons are configurable, and the simulated sesame seeds don't fall off; and they've been ergonomically designed to make your fingers feel nice and tingly.

If you really want one of these cheesy devices, call Multimedia on 0171 833 9111. After all, it's only £27. McBargain...

Red face corner

● The *PCW* gremlins have been hard at work once-more, producing the odd error in some of the phone numbers we printed in our December issue. Just to straighten things out, here is the correct info:

The phone number for Reflex Magnetics featured in *Newsprint*, page 18, is 0171 372 6666.

And we missed a digit in Kudos Thame's phone number given on page 21; the correct number is 01734 351010.

The phone number for J&S Software, which produces the Guinness Encyclopedia, is 01225 760743.

● The number gnomes also had a go at the price of Eurotalk's *Apprendre Le Francais-avec Le Fils d'Asferix* CD-ROM. It's only £42, not £242 as printed.

● Contrary to the review in our September issue (page 202), all Mesh Pentium systems are supplied with Triton motherboards, pipeline burst-mode cache and EDO-RAM as standard. The correct phone number for Mesh is 0181 452 1111.



While compiling our Accounting Software group test this month, we found that without the right software, some accountants just go to pot

A value range of PCs giving you leading edge technology.

SPECIFICATION

Contender® PCI:

- Choice of processor, memory and enhanced IDE drives.
- 16K Cache RAM built into CPU plus 256K second level external cache.
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- Choice of case styles, **Executive** (slimline) or **Professional** for desktop use or **Medium Tower** for desktop or floor standing use.
- **Executive:** Dimensions (mm): 350W x 110H x 385D
One free 5.25" drive bay.
- **Professional:** Dimensions (mm): 380W x 150H x 415D
Two free 5.25" drive bays
- **Medium Tower:** Dimensions (mm): 170W x 380H x 420D
Three free 5.25" drive bays and two free (one internal) 3.5" drive bays.
- High Performance PCI bus Windows accelerated Super VGA card with 1MB (upgradeable to 2MB) video DRAM option for even faster performance.
- Viglen ENVY 14PE, 14" Super VGA Colour Monitor.
- 102 Key compact ergonomic keyboard.
- Genuine Microsoft Mouse.
- Microsoft® Windows® 95 supplied as standard - option for Windows 3.11 and MS-DOS® 6.22 (please specify).
- Microsoft® Works for Windows® 95 pre-installed and ready-to-run.
- User friendly manuals.
- 12 months **parts and labour** collect and return warranty. Low cost on-site option up to **5 years** available.
- **Free lifetime hotline technical support.**
- Extensive range of application software.



The Contender® PCI is a value range of personal computers providing the performance edge and future proofing of PCI local bus technology as well as the ease of use of Plug and Play software. It is one of

the lowest cost PC investments you can make without compromising quality, reliability or support. And you won't be disappointed when it comes to performance either.

The Contender® PCI is available in a choice of three case styles (Executive, Professional and Medium Tower) and in a 486 and Pentium® processor range. It offers amazing value for money and is ideal for most home and office applications such as word processing, accounts and spreadsheets.

With a host of options including multimedia, the Contender® PCI makes the perfect PC for everyday use.



OPTIONS

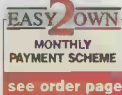
For a list of some of the options available with all Viglen PCs, refer to the 'Viglen Upgrades and Options' Page or for a free copy of the Direct Guide please call our Sales Department. The following are some of the options you can choose specific to the Contender PCI:

PDDXPST2 High Performance Diamond Stealth 64 DRAM SVGA card
(1MB upgradeable to 2MB as used in the Genie range) instead of the standard Contender SVGA card **£29**

PDDXPAT4 High Performance ATI Mach 64 SVGA card with 2MB of VRAM instead of the standard Contender SVGA card **£149**

PDDXPST5 Highest Performance Diamond Stealth 64 Video SVGA card with 2MB of VRAM instead of the standard Contender SVGA card. This card allows the fitting of an optional high performance MPEG module for full motion video applications **£179**

For the optional MPEG module providing CD-i and Video CD compatibility (when a CD ROM is fitted) please add a further **£229**



COLOUR SUPER VGA		THE PRICE YOU PAY			
HARD DISK	RAM	P5/75 Pentium® processor 75MHz	P5/90 Pentium® processor 90MHz	P5/100 Pentium® processor 100MHz	P5/120 Pentium® processor 120MHz
540MB	8MB	£1099	£1199	£1239	£1289
1GB	16MB	£1369	£1449	£1489	£1539
1.6GB	32MB	£1999	£2089	£2139	£2179

The prices above are for complete Contender PCI Executive, Professional and Medium Tower systems ready to run with Microsoft® Windows® 95. To order please quote the relevant model along with the hard disk and RAM capacity required and PLEASE DO NOT FORGET to specify the case style required. **ALL PRICES EXCLUDE VAT AT 17.5%**

For 486 Processor Models - Please Call



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Designed for



SPECIFICATION

Genie PCI:

- Choice of processor, memory and hard disk capacity.
- 3 PCI, 2 ISA and for Professional and Medium Tower models an additional PCI/ISA shared slot.
- 256K Pipeline Burst Cache.
- One 1.44MB floppy drive.
- Triton Chipset.
- Capable of Mode 4 Enhanced IDE.
- EDO DRAM as standard.
- Socket 7 as standard with upgradeability to Pentium Processors up to 133MHz and above.
- On board sound system.
- 2 serial, 1 parallel printer port (EPP).
- Choice of case styles, **Executive, Professional or Medium Tower.**
- **Executive:** Dimensions (mm): 350W x 110D x 385H One free 5.25" drive bay.
- **Professional:** Dimensions (mm): 390W x 145D x 410H Two free 5.25" drive bays.
- **Medium Tower:** Dimensions (mm): 170W x 380D x 420H Three free 5.25" drive bays and two free (one internal) 3.5" drive bays.
- CPU upgradeable to future **Intel Pentium[®] Overdrive processors.**
- High Performance PCI bus Windows accelerated Super VGA card with 1MB (upgradeable to 2MB) video DRAM option for even faster performance.
- Viglen ENVY 15P Super VGA 15" FST colour monitor.
- 102 key compact ergonomical keyboard.
- Microsoft mouse with Microsoft Mouse Manager software utilities.
- Microsoft[®] Windows[®] 95 supplied as standard - option for Windows 3.11 and MS-DOS[®] 6.22 (please specify).
- Microsoft[®] Works for Windows[®] 95 pre-installed and ready-to-run.
- User friendly manuals.
- 12 months **parts and labour** warranty with option for low cost parts and labour maintenance for up to **5 years.**
- **Free lifetime hotline technical support.**
- Extensive range of application software

OPTIONS

For a list of some of the options available with all Viglen PCs, refer to the 'Viglen Upgrades and Options' page or for a free copy of the Direct Guide please call our Sales Department. For the Genie range may we suggest a larger 17" monitor, a multimedia upgrade and perhaps a Microsoft[®] Office for Windows[®] 95 application suite as an ideal option. The following are some of the options you can choose specific to the Genie PCI Pentium[®] processor based range:

PDDXPAT4 High Performance ATI Mach 64 SVGA card with 2MB of VRAM instead of the standard Genie SVGA card **£139**

PDDXPST5 Highest Performance Diamond Stealth 64 Video SVGA card. This card allows the fitting of an optional high performance MPEG module for full motion video applications **£169**

For the optional **MPEG module** providing CD-i and Video CD compatibility (when a CD ROM is fitted) please add a further **£229**

PAMMSP03 Stereo amplified speakers to connect to Genie PCI (includes mains adaptor) **£15**

THE PRICE YOU PAY

THE GENIE PCI PENTIUM[®] PROCESSOR BASED RANGE

COLOUR SUPER VGA HARD DISK	RAM (EDO)	P5/75 75MHz	P5/90 90MHz	P5/100 100MHz	P5/120 120MHz	P5/133 133MHz
540MB IDE	8MB	£1279	£1359	£1399	£1449	£1579
1GB IDE	16MB	£1559	£1639	£1669	£1719	£1849
1.6GB IDE	32MB	£2239	£2299	£2359	£2399	£2539
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Includes Pipeline Burst Cache and EDO RAM as standard

The prices above are for complete Genie PCI Executive, Professional and Medium Tower systems ready to run with Microsoft[®] Windows 95. To order please quote the relevant model along with the Hard Disk and RAM capacity required and PLEASE DO NOT FORGET to specify the case style required. **ALL PRICES EXCLUDE VAT AT 17.5%**

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Viglen Genie Pentium PCI 120MHz

WHAT PC?

October 1995
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Viglen Genie PCI P5/75

PC Direct

August 1995
Viglen Genie PCI 120

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15" MONITOR
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February 1995
PC Today

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Genie PCI P5/60

CPU UPGRADEABLE

WORKS FOR WINDOWS
SOFTWARE BONUS

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PLAY

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NetWare Tested and Approved

PCI LOCAL BUS

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Take advantage of the ability to use all the new software that is being supplied on CD ROM format and add an IDE CD ROM double speed photo CD compatible drive to your system for only **£39+VAT** Please quote **order code DCDDNP01** when ordering.

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you with 14,400 baud fax and data facility with **Internet, CompuServe, and MSN** (if using Windows® 95) access software as well as a free starter pack. All this and the ability to receive and send faxes as well as operating an answerphone. Two versions are available: **Order code UMMAFM01** VFM14 Voice/Fax/Modem with answerphone facility for Viglen Multimedia PCs **£89+VAT. Order code CMDNVCF** VFM14 Voice/Fax/Modem with answerphone facility (with speakers and mic) for standard Viglen PCs **£109+VAT.**

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Contender Range
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Unlike many PC manufacturers, Viglen puts equal emphasis on its after-sales service - that means not only a comprehensive standard warranty on every product but a choice of service packages that offer total cover for up to five years.



All Viglen PCs are supplied with a 12 months collect and return warranty (UK only). This covers your Viglen PC and any other options that are factory fitted, covering parts and labour.

In addition to these standard warranty terms, we provide a better and quicker response than some of our competitors, Viglen offer a choice of additional low-cost on-site options to meet specific user requirements - See to the right.

Do not forget, when you compare our services with our competitors, please read their small print. With Viglen, you have a choice and your choice is clear.

Additional On-site Options

For complete peace of mind choose one of the additional low-cost on-site warranty options.



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This option converts the standard Viglen warranty into a 4 hour on-site response for 12 months covering parts and labour. Please call for details of this individually tailored package.

MULTIMEDIA OPTION

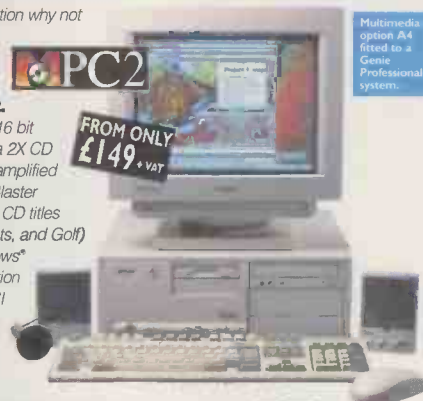
For a complete multimedia solution why not add one of our multimedia options to your system.

For a Contender PCI system choose Option 1/2.

Option 1/2 includes a genuine 16 bit SoundBlaster card, along with a 2X CD ROM drive as well as a pair of amplified speakers, microphone, SoundBlaster Ensemble software, 3 Microsoft CD titles (Encarta '95, Musical Instruments, and Golf) and Microsoft® Works for Windows® 95 and Money. To order this option fully fitted to your Contender PCI system **quote order code UMMCDN12 and add £149+VAT** to your order.

For a Genie PCI Pentium® Processor Based system choose Option A4.

Option A4 is only for the Genie PCI Pentium® processor based system as it does not include a sound card (Genie PCI Pentium® processor based systems now have sound as standard on the motherboard). This option is supplied with a 4X CD ROM drive, a pair of amplified speakers, microphone, Vovetra Audiostation software, 3 Microsoft CD titles (Encarta '95, Musical Instruments, and Golf) and Microsoft® Works for Windows® 95 and Money. To order this option fully fitted to your Genie PCI Pentium® processor based system **quote order code UMMCDNA4 and add £169+VAT** to your order.



Multimedia option A4 fitted to a Genie Professional system.

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A comprehensive interactive tutorial guide to learn Windows 95.



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- 3.5" Floppy Drive
- Ergonomic Compact Keyboard
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- Microsoft® Money
- Multimedia CD Titles from Microsoft® Encarta® 95, Musical Instruments and Golf
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Quad speed CD ROM Drive**

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- 2 serial, 1 parallel, 1 games port
- 3.5" Floppy Drive
- Ergonomic Compact Keyboard
- Genuine Microsoft® Ergonomic Mouse
- Microsoft® Windows 95 Ready To Run Plus



- Genuine 16 Bit SoundBlaster Card
- 4W Stereo Amplified Speakers
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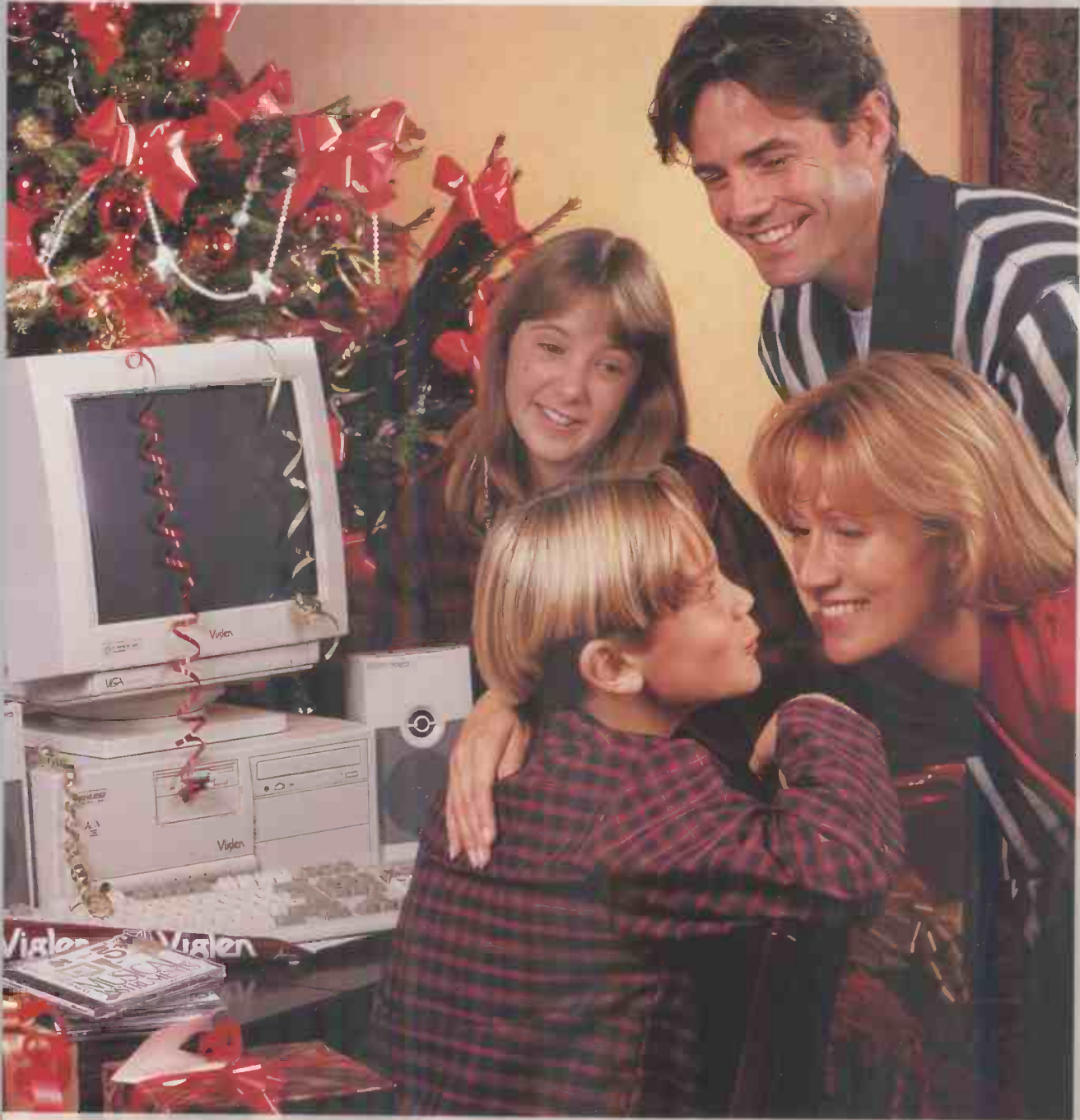
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Software packages

The Viglen Special Configurations are each supplied with a different variety of software packages which are pre-loaded, include full user manuals and disks and are ready to use. Here, we have briefly outlined each package to help you decide which Special Configuration is right for you.



Microsoft® Works for Windows® 95
Five essential tools for easier everyday computing. Word processing, spreadsheet, database, graphics and communications tools.




Microsoft® Money
A complete set of financial management and planning tools to manage your investments and expenditure.




Microsoft® Publisher
This desktop publishing software is the key to producing professional quality output, layouts and clip art.


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Features 200 instruments - many rare and exotic - from around the world. Hear and play 1,500 authentic sound samples of instruments and jazz, classical and rock ensembles.



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SOFTWARE BONUS UPGRADES

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Please note some software may be supplied in Viglen OEM packaging

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Price to add: £90+VAT

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Price to add: £320+VAT

5 Ultimate 133

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This configuration is 'the hottest PC money can buy' according to PC magazine which after reviewing 24 other top of the range systems awarded the Genie its Editors' Choice for the Ultimate PC. We have configured this system to be similar to the reviewed PC except that we have added a fast modem, and reduced the price. You will also need to add a 17" monitor option (see '17" monitor upgrades' above) to obtain the reviewed specification.

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- Stealth 64 Video VRAM with 2MB
- Six speed CD ROM Drive
- 14400/14400 Voice Fax Modem
- Internet Access Software
- 256K Pipeline Burst Cache

PENTIUM® PROCESSOR 120MHZ

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- 3.5" Floppy Drive
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PC MAGAZINE UK CHOICE

June 1995
Viglen Genie Pentium PCI 120MHz

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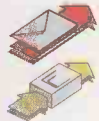
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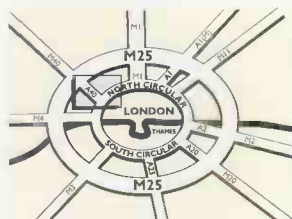
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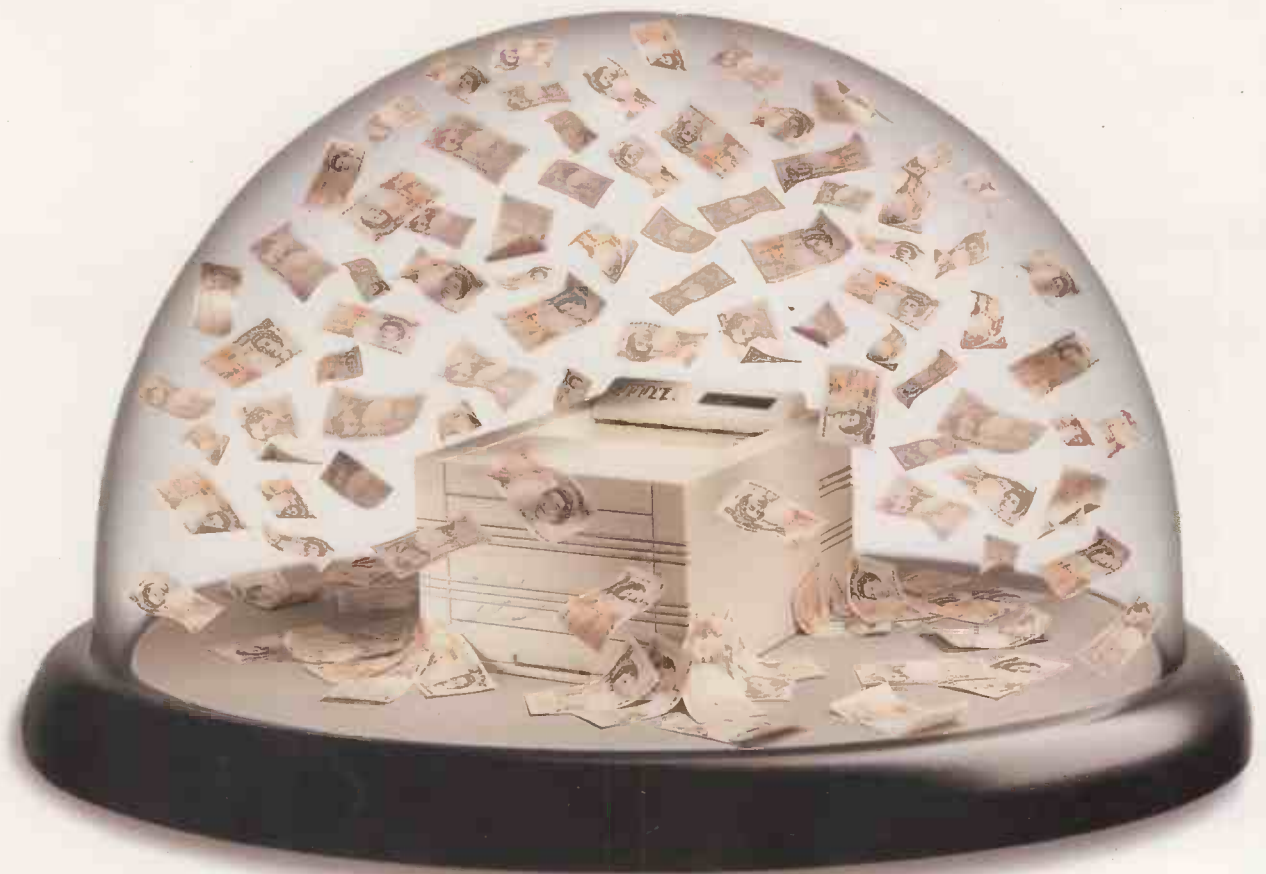


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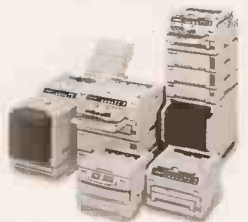
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