reviews

We lead the reviews this month with Apple's latest, the **450MHz G3**. *Personal Computer World* is the first PC magazine to get its hands on the new blue beast and put it through its paces in the lab. Intel also grabs *PCW* pages once again by cranking up the speed of its top processors: the **PIII** is running at **600MHz** and the **CELERON** has hit the **500MHz** mark. We have reviews of three systems, from Carrera, Tiny and Panrix [*pictured, below*], built around these chips. We also turn our attention once again to Adobe. Not content with launching two market-leading products last month, this time around it strikes with **PHOTOSHOP 5.5** [*above*] and the long-awaited PC version of **GOLIVE 4.0**. MetaCreations also wooed the *PCW* office this month with **CANOMA**, its revolutionary 3D modelling software that lets you walk right into your photos and designs, and we've been dropping stats on maps with Microsoft's **MAPPOINT**, software that makes demographic analysis affordable and easy. And if you can't decide whether to go for a regular CRT or a space-saving flat-panel monitor, check out our **HEAD TO HEAD** and see which we'd plump for.

NIK RAWLINSON, REVIEWS EDITOR
nik_rawlinson@vnu.co.uk

VNU European Labs

VNU Labs tests all kinds of hardware and software, from PCs to modems to databases. All our tests simulate real-world use and for the most part are based on industry-standard applications such as Word, Excel, PageMaker and Paradox. Our current PC tests for both Windows 95 and NT are the Sysmark tests from BAPCo. In all our performance graphs, larger bars mean better scores.

Contents

Ratings

★★★★★ **Highly recommended**
★★★★ **Great buy**
★★★ **Good buy**
★★ **Shop around**
★ **Not recommended**

450MHz G3 Power Mac
High-speed Apple

A triumph of design and usability, Apple's new G3 prides itself on its raw processor speed.

Apple's iMac and PowerBook customers have recently benefited from a hike in processor speed, and now it's the turn of the high-end G3 Power Mac desktop. Its top speed has jumped to 450MHz, making this system the fastest Apple has to offer. Aimed at Apple devotees, this Power Mac sells on raw processor speed: the rest of the specification is unchanged from the 400MHz model which came out at the start of the year.

In common with the 400MHz G3, the 450MHz is copper- rather than aluminium-based, which allows it to run cooler and faster than previous PowerPC chips. It shares the performance-boosting 1Mb of Level 2 back-side cache found on the 400MHz chip.

All of Apple's machines can be built to order, and this is the marketing model that the company uses to set the standard configurations of the G3 desktops. Consequently, you'll find a lot of things missing from the basic spec. Apple claims this is because its high-end customers like to choose what goes into their computers, so they can be tailored to their needs. But this argument is valid only until you realise that the cost of any extras is added to the cost of an already expensive system.

The specification of our 450MHz G3, hot off the production line, comprised 128Mb of RAM, a 9Gb 7200rpm Ultra 2 LVD SCSI hard disk, a 16Mb Rage 128 graphics card, 24X CD-ROM drive, 16-bit on-board audio and an Ultra 2 LVD PCI SCSI card. This is far from mean, and we're impressed by the fast Ultra 2 LVD SCSI hard disk — a rare sighting in the PC market.

The ATi Rage 128 graphics card represents a feather in Apple's cap too, as it was the first manufacturer to ship systems using this card — a bonus in its battle for a share of the games market. This time around, users get a SCSI card thrown in, so connecting legacy devices should be easier.

But there are some glaring omissions and odd decisions. First, there is no modem. Once again, Apple is quick to come up with a justification, pointing to the built-in 10/100BaseT Ethernet networking as the way all of its users will gain access to the internet. We're not so sure: many small-business and power users at home may not have the option of an internet connection via a network.

The move towards networking is also the perennial excuse for the demise of the floppy drive, and sure enough, this is missing from the latest G3. While even PC manufacturers are coming round to the idea that the floppy drive's days are limited, this doesn't excuse the decision to leave out any kind of removable storage device.

Bizarrely, our review unit came with a manual for a Zip drive and the brackets in place to fit one in the free bay inside, but no drive. A call to Apple revealed that this was due to a promotion the company is running to encourage customers to shell out for these devices. Basically, your G3 is shipped ready for you to fit a Zip drive, but this will only be supplied if you request and pay for it.

The other component we would have liked is a DVD-ROM drive. Instead, there's the 24X CD-ROM. This is pretty poor for a high-end system, particularly as DVD-ROM drives are becoming standard in the PC market and software titles will surely follow soon. Without the latest drives, Mac users may find themselves missing out once again.

One area in which Apple is, and always has been, streets ahead of its rivals is design, and the G3 Power Mac is a superb example of this. It's finished in

opaque ice-white and glossy blueberry plastic with an embedded G3 Apple logo on the side, setting it apart from the plain-Jane, beige-box PCs. But its beauty isn't just skin deep: the design team has thought hard about usability too.

There are sturdy carry handles on each corner, which make moving the box around easier, but the real benefits can be felt when it comes to upgrading. Instead of wielding your screwdriver and yanking off a recalcitrant case, just flip down the lockable lever and the whole side swings down on its hinges to deliver the motherboard in front of you.

There is plenty of scope for expansion, with only two card slots filled. The graphics card takes up the high-speed 66MHz 32-bit PCI slot, and the SCSI card fills one of the three 64-bit 33MHz PCI slots, leaving the others at your disposal. There is one external drive bay free, ready fitted with brackets for your optional extra Zip drive, and one internal bay in the base of the PC where you can fit a second hard drive. You can add up to a maximum of 1Gb of RAM using the four DIMM slots, although one houses the existing 128Mb.

All the G3 desktops come with the same USB keyboard and mouse you get with an iMac, but if you can't get on with these blue-and-white peripherals, there's an ADB port free for old-style models.

Other ports are two USB and two FireWire, the latter supporting transfer rates of up to 400Mbits/sec. Apple was an early champion of FireWire and this time it appears to have picked a winner. The standard seems to be expanding beyond its original market among digital video cameras, with more standalone devices shipping. FireStorm has 400Mbit ATA hard drives up to 14Gb on the market already.

While you do get a keyboard and mouse supplied, you have no choice but to stick with your existing display. This is often criticised by those who are used to PC bundles where the monitor is seen as a standard component, but Apple's core customers are graphics professionals who often invest in expensive high-end displays which they're reluctant to replace when they buy a new computer.

Our review unit was delivered with one of Apple's 17in Studio Display

monitors, finished in the same colours as the computer. This is a superior display that uses a Mitsubishi Diamondtron tube with a fine 0.25mm stripe pitch. It supports resolutions of up to 1600 x 1200, but only at a refresh rate of 60Hz. For flicker-free results, a more realistic setting is 1280 x 1024 at 75Hz.

This is the cheapest of Apple's monitors, but since it's a high-quality unit, it will still set you back £319 excluding VAT — something to bear in mind if you don't already own a display.

There's no software bundled with the G3, but you do get the latest iteration of the Mac OS — 8.6. This is only a minor upgrade really, and it's available free for download from Apple's web site to any 8.5 users. There are some handy new features, including an enhanced Sherlock search engine that allows you to search you hard drive and the web for files. This search now includes PDF files and works through standard firewalls, a bonus for networked users who previously missed out on its web searching facility.

Another bonus provided by 8.6 is improved USB support. It now includes generic drivers that mean USB mass storage devices are genuinely plug-and-play with no need to load up any extra software. This support is due to be extended to a wider range of add-ons, including games controllers and keyboards, with the release of Sonata, the next upgrade, in the autumn.

The proof of the package is in the performance, and since our usual benchmarking tests are not appropriate for Macs, our Labs came up with some alternatives to put the new G3 through its paces. The first are graphics tests — one using the game Dark Vengeance to measure frame rate in frames per second (fps), while the other measures playback frame rate against an optimum of 24fps using an edited QuickTime movie.

A further two tests measure how fast the G3 can carry out a Find & Replace sequence in Microsoft Word, and the time it takes to carry out a sequence of Photoshop Action.

To give us an idea of how the new G3 stacks up against the previous high-end model, we compared the test results with the scores we got from a 400MHz with

the same spec but running OS 8.5. In the Dark Vengeance test, the 400MHz actually beat its big brother: it achieved 54.56fps, as opposed to the 49.83fps we got from the 450MHz. Both achieved an identical score of 20.67fps in the QuickTime test.

The 450MHz fares a bit better in the Word and Photoshop tests. It completed the Photoshop Action in 28.06 seconds, a few seconds faster than the 400MHz at 33.18 seconds. It finished the Word Find & Replace test in 92.74 seconds, where the 400MHz model took 102.06 seconds.

Overall, our tests show that the 450MHz G3 Power Mac offers very similar performance to the 400MHz version. When we asked Apple why there isn't a more significant performance boost offered by the faster system, it could only suggest that it might be due to the configuration of the two Macs. Perhaps it would be worth buying up the 400MHz G3s before Apple runs out of these chips, as they seem to offer much the same performance for a lower price.

URSULA TOLAINI

> *One area in which Apple is, and always has been, streets ahead of its rivals, is design*

PCW DETAILS

★★★

Price *450MHz G3 Power Mac £1,996.33 (£1699 ex VAT); 17in Studio Display £374.83 (£319 ex VAT)*
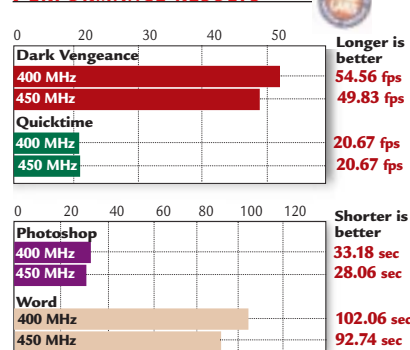
Contact *Apple Computer 0870 600 6010* *www.apple.com/uk*

Good Points *Beautiful, practical design. Fast hard drive. Plenty of upgrade options.*

Bad Points *Serious omissions from the specification, including a modem, backup device and DVD-ROM drive. Poor price/performance.*

Conclusion *Another gorgeous G3 from Apple. We can't fault the design, but we'd question whether it's worth investing the extra cash to buy a 450MHz model while you can still pick up a cheaper 400MHz and get similar performance.*

PERFORMANCE RESULTS

	0	20	30	40	50	Longer is better
Dark Vengeance						
400 MHz						54.56 fps
450 MHz						49.83 fps
Quicktime						
400 MHz						20.67 fps
450 MHz						20.67 fps

	0	20	40	60	80	100	120	Shorter is better
Photoshop								
400 MHz								33.18 sec
450 MHz								28.06 sec
Word								
400 MHz								102.06 sec
450 MHz								92.74 sec

Panrix Fusion 600
600MHz PIII PC

All the PC you ever wanted, this fast, feature-rich machine makes the most of Intel's new chip.

Panrix is no stranger to cutting edge technology, so it comes as no surprise that the first 600MHz Pentium III system we've seen comes courtesy of this Leeds-based system integrator.

Panrix has put together a real showcase machine which should be up to just about any task you set it.
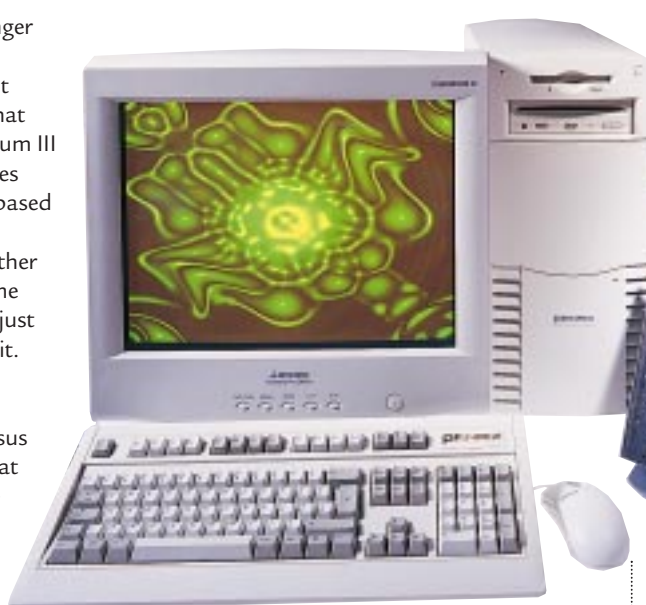
The Pentium III processor sits in an Asus P2B-F motherboard that exhibits the usual high-quality layout and specification that we've come to expect from Asus boards. The CPU is well cooled by both an active heatsink and a large case-mounted fan. Filling one of the four DIMM sockets is a 128Mb SDRAM module, leaving a maximum memory capacity of 896Mb in the current configuration.

The display set comprises a 32Mb Matrox Millennium G400 graphics card and a Mitsubishi Diamond Pro 900u monitor. Both of these components are first rate. The Matrox card is a blisteringly fast graphics adapter in both 2D and 3D applications. It also has the added facility of dual head support, a feature that allows the card to drive two monitors simultaneously. That said, the 19in Mitsubishi 900u should provide enough desktop real estate for most users.

Even the most space-hungry user should be happy with the 22Gb IBM hard disk. The profile of the drive remains low due to its high data density courtesy of the GMR (giant magneto resistive) heads. Strangely, Panrix has created a single partition on the drive, resulting in somewhat inefficient space usage on a disk of this size.

Filling the top 5.25in external drive bay is an AOpen 6X DVD-ROM drive that utilises a slot-loading mechanism rather than the common tray method. This drive will also read CD-ROMs at 32X, although CDs are more than amply taken care of elsewhere. Opening the double-hinged door on the front of the system case reveals a Sony CD-RW drive. As well as being able to read CD-ROMs, you can also transport large files via CD-RW media or archive important data to CD-R discs. A considerate touch is the inclusion of CD audio cables from both drives to the soundcard, so you can listen to music no matter what you're doing.

The soundcard in question is a SoundBlaster Live! Value that produces superb digital and wavetable effects. It also has twin stereo output jacks for surround sound capabilities. Connected to the SoundBlaster is the best-looking set of speakers we've ever seen. The Monsoon MM-1000 speaker set comprises one square subwoofer and two incredibly flat desk speakers that are guaranteed to impress. The sound quality almost matches the design, although the subwoofer is a little bit weak. However, if stylised speakers don't interest you, you can buy the system with standard Yamaha speakers for £100 less.

The third and final expansion card is a 56K PCI modem. A modem can almost be considered an essential item in a PC these days. Many people are investing in a computer purely to access the internet, and even if that isn't your sole reason for purchase, being able to download the latest drivers for your system is a real bonus. The potential for expansion is excellent, with three PCI slots free, as well as two ISA slots to install any legacy cards. There are also two empty external bays, one 3.5in and one 5.25in, as well as one internal 3.5in bay for a second hard disk, should you ever require one. The internal layout is also impressive, with all the major components and upgrade areas unhindered.

Performance certainly didn't disappoint, with a SYSmark score of 241, while 3DMark produced a similarly impressive score of 5145. With results like these, the Fusion should handle any application with ease. With Microsoft Office 2000 Small Business Edition thrown in as well, the Panrix Fusion Ultra 600 leaves you wanting for nothing.

RIYAD EMERAN

PCW DETAILS

★★★★★

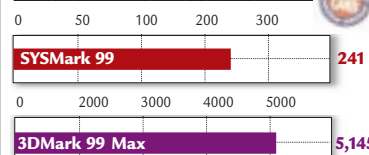**Price** £2,636 (£2,295 ex VAT)
Contact Panrix 0113 244 4958
www.panrix.com
Good Points Very fast and feature rich. Excellent build quality.
Bad Points Single hard disk partition.
Conclusion A superb example of what can be done with Intel's latest chip.

PERFORMANCE RESULTS

	0	50	100	200	300	
SYSMark 99						241

	0	2000	3000	4000	5000	
3DMark 99 Max						5,145

BAPCo Sysmark Windows 95 test scores

RECOMMENDED
PERSONAL COMPUTER WORLD

Carrera Lynx M500
500MHz Celeron

A mid-price PC with high-end performance that makes the most of the Celeron chip.

This is one of the first two 500MHz Celeron PCs we have seen in the *PCW* labs so naturally we were interested to see how it performed. In line with Intel's policy of phasing out the Slot 1 form factor for Celeron chips, this particular sample arrived in the now familiar Socket 370 format hidden discreetly behind the PSU. It was mounted onto a Socket 370 board rather than on a so-called 'Slocket' adapter, which means you're not going to be able to upgrade to a Slot 1 chip at a later date without also changing your motherboard. That said, Intel seems determined to drop the Slot 1 configuration, so striking a PC off your list because it doesn't allow this upgrade option is, these days, rather foolish.

The processor is backed by 128Mb RAM, which is more than ample for most users. It will easily meet all the requirements of Office 2000 and will probably save you opening up your case for another couple of years.

If you do decide to peep inside, though, you'll find an exceptionally tidy interior giving easy access to the two spare memory slots and the expansion slots, of which there are four — two of each type. Around the front you'll find a couple of empty 5.25in drive bays and an empty 3.5in bay, so there's plenty of room for adding another three drives.

Graphics are handled by a Guillemot Xentor Maxi Gamer TNT2 Ultra card with 32Mb RAM on-board. This card incorporates TV out for DVD playback at 30fps and was designed with gamers in mind, making light work of heavy textures. This no doubt helped it to achieve a very respectable 3756 3DMarks in our graphics tests.

Carrera selected a 17in CS788C monitor from LG that, like every LG monitor we have seen recently, performed very well in our DisplayMate tests. It had excellent geometric and corner linearity, no discernible loss of focus at the periphery of the screen, and flawless horizontal and vertical colour registration. Best of all, it also had rock-steady screen regulation. Applying a flashing white block to the screen had absolutely no effect on the image width, as is often the case with less impressive displays. The on-screen menus were extensive, and included moiré reduction, a couple of pre-set colour temperatures and a choice of five languages.

The Rockwell-chipped 56K PCI modem is complemented by a copy of Computer Associates' BitWare software, allowing communication by fax, data, voice and paging.

Storage is capably handled by an IBM Deskstar 22GXP UDMA 66 drive running to a generous 22Mb. This is an impressive workhorse aimed, during its launch, at video editors, engineers and scientists. With a 7200rpm spin rate it will happily handle streamed media and 3D graphics with ease, making this PC not only a very capable business machine but also a sensible option for the gamer and media enthusiast. It houses a 6X Panasonic DVD for watching movies on the desktop.

The Aureal Vortex2-based PCI soundcard has no SPDIF or optical digital-out connections so it's unlikely to be the choice of the serious musician, but it's more than enough for the home gamer. It drives a pair of Altec Lansing speakers. A generous software bundle includes IBM World-Book 99, IBM ViaVoice complete with headset and mike, and for the business user, Lotus SmartSuite Millennium — a worthy competitor to Microsoft Office.

This is a very impressive PC at a highly competitive price. The sub-£1000 price point is a very competitive part of the PC market, and three months ago it would have stretched little further than a 433MHz Celeron with a smaller monitor and half the hard-disk space. After close scrutiny we have been unable to find fault in what is without doubt an excellent early implementation of the 500MHz Celeron. It comes highly recommended.

NIK RAWLINSON

PCW DETAILS

★★★★★

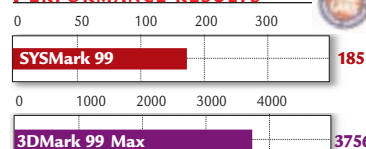**Price** *£1,173.83 (£999 ex VAT)*
Contact *Carrera 0181 307 2800*
www.carrera.co.uk
Good Points *Large hard drive. Loads of memory. Great monitor.*
Bad Points *None.*
Conclusion *Never before have you got so much for so little.*

PERFORMANCE RESULTS

0	50	100	200	300

SYSMark 99	185

0	1000	2000	3000	4000

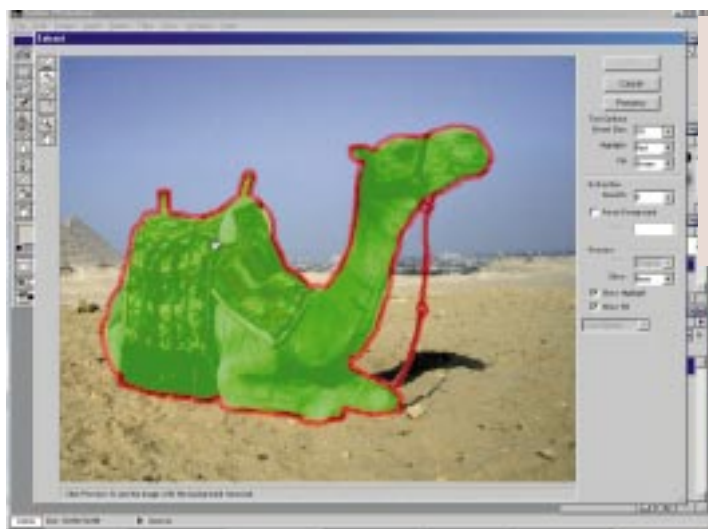| 3DMark 99 Max	3756

Adobe Photoshop 5.5
Image editing software

BETA

Picture this: a major upgrade that is an indispensable tool for web artists and authors.

It's just over a year since Adobe gave us Photoshop 5.0, proving that it's possible to make a great package even better by listening to users and giving them what they want. Now version 5.5 is around the corner and, once again, Adobe has pushed back the frontiers of image editing. This is a major upgrade which brings into the fold features that, until now, Photoshop users have had to look to other software packages to provide.

For the first time, Photoshop can call itself a web artists' application. Adobe has integrated ImageReady 2.0 to provide web features such as image slicing, JavaScript rollover creation, GIF animation and HTML image mapping. A new Save For Web command provides an optimisation suite with live previews to demonstrate the effect of file format, compression and colour palette settings on image quality and size.

Masking images from background detail to create cutouts is a slow and tricky process, but Photoshop 5.5 introduces three new tools to make the task easier. Other additions include the ability to open Acrobat 4's PDF 1.3 format files, and a new Art History brush that allows

you to create painter-style effects.

ImageReady was previously marketed by Adobe as a standalone product for 'advanced' web production tasks. Its integration into Photoshop is belated recognition by Adobe that producing graphics for the web is a mainstream task and not something that should be addressed by an add-on.
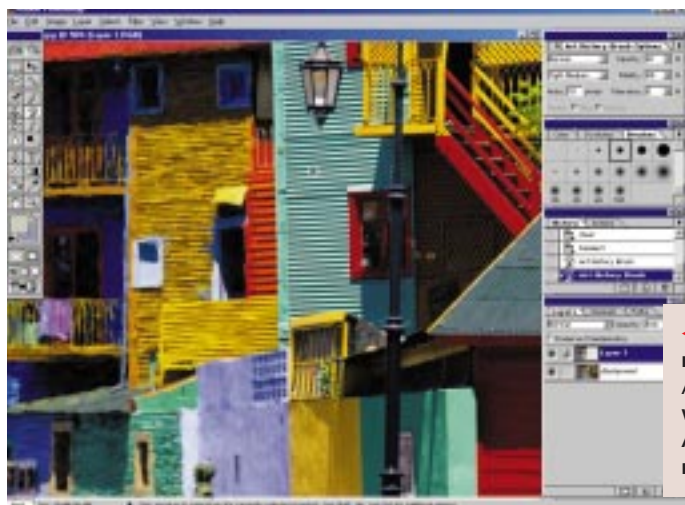
The ImageReady interface has been standardised with more consistent toolbars and history, and Layer and Actions palettes that look and behave similarly. Colour, swatches, brushes and other palettes have also been made consistent. Switching between the two programs works by clicking a jump-to button at the bottom

◄ CREATE IMPRESSIONIST ART EFFECTS WITH THE NEW ART HISTORY BRUSH

of the toolbar. Layers, layer effects, type and other attributes are preserved.

ImageReady incorporates full support for Photoshop 5.5's layer effects and adds a few of its own including solid, pattern and gradient fills. In ImageReady 2.0, layer effects appear in the layers palette. This is situated in a nested layer underneath the layer to which they were applied, and can be adjusted in the layer options palette. You can save edited layer effects as styles by dragging and dropping from the layers palette to the styles palette. These styles can then be applied by dragging and dropping in the opposite direction.

Like all things web-related, the production of web graphics is a growth industry. Given that even shareware image-editing applications have for some time provided web optimisation features, Photoshop has come late to the party. But 5.5's new Save For Web feature makes it unlikely that you'll need to swap to another application to produce the best-quality GIFs, JPEGs and PBGs.

The Save For Web window provides an area in which you can experiment with various file formats and settings in order to achieve the best trade-off between image size and quality. The tabbed preview window can display a large, almost full screen thumbnail of the original image, the optimised version or side-by-side comparison views, either two or four up, depending on how many variations you want to try. Even at four

up, the thumbnails are a good size and you can pan and zoom to view image detail.

Settings, including file format, colour palette, dither and compression are applied from a panel on the right, and a number of presets are available from a pulldown menu. A lower panel toggles between an editable colour table and image-sizing controls. You can load and save new colour tables, and there are commands to convert palette colours to the nearest web-safe equivalents and to delete non web-safe colours.
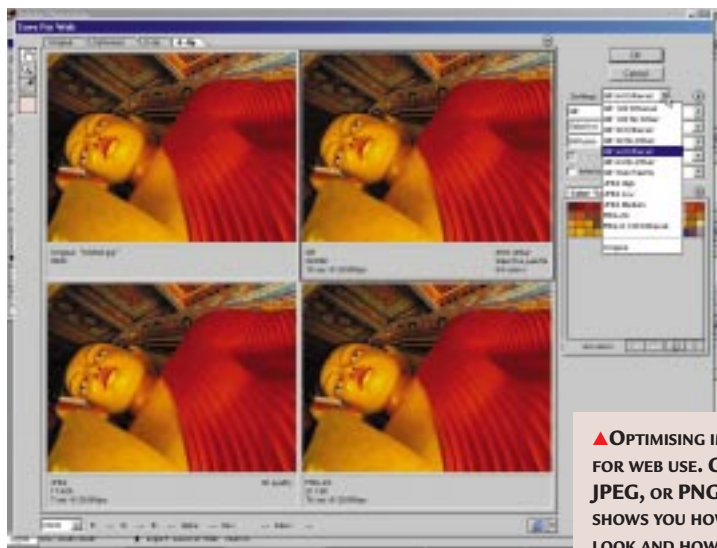
The relevant details — format, size, etc — are displayed beneath each thumbnail preview, along with estimated download times for a given modem speed. For GIF files a slider allows you to set the degree of lossiness (actual data removed from the image, as opposed to algorithmic compression, which doesn't reduce image quality) so you can reduce GIF file sizes yet further and preview the results.

Creating cutouts and masks of difficult, soft-edged subjects has always been a time-consuming task. Fine edge detail, like hair, and indeterminate backgrounds require a skilled hand and provide an almost impossible task for automated software solutions. Professionals have turned to third-party solutions like Extensis Mask Pro, and Photoshop 5.0 introduced the magnetic lasso and pen tools, but the task is still a long way from being straightforward.

Photoshop 5.5's new masking tools and commands will therefore be very welcome. The Magic Eraser deletes pixels and creates transparency with a single click of the mouse. The pixels to be deleted are chosen based on tolerance and contiguous settings in the options panel. This is the same as for magic wand selections and therein lies its shortcoming: if what you want to erase

▲**Optimising images for web use. GIF, JPEG, or PNG? This shows you how it will look and how long it will take to download**

is a good contrast to what you want to keep, it's a quick way to lose unwanted background detail; but in less clear-cut situations, it's of limited use.

The Background Eraser is a more sophisticated tool. As with the Magic Eraser it removes unwanted background detail to semi-automate the process of producing cutouts. However, as the background eraser needs to differentiate between wanted and unwanted pixels, a good result depends upon careful setting of the tool options.

The Background Eraser has three modes — discontiguous, contiguous and find edges. Of these, find edges works best on hard to define edges because it updates the pixel data on which tolerance and contiguousness decisions are made, and it looks for higher pixel saturation and sharper colour contrast. For less demanding circumstances, the other two modes offer an equally capable and faster option.

Of the three available sampling modes, continuous provides the best results, though you can elect to base the sample on a single pixel selection or the background colour. If there is a majority of one colour in the cut-out image, you can set it as the foreground colour and then select the Protect Foreground Colour option.

The last of the new masking features, the Extract Image command, is the most ambitious. It makes use of a large dialog box with a big image window and a small selection of tools — an outliner, fill bucket eraser, eyedropper, magnifier and hand. Using the outliner you draw a line around the object you want to cut out,

ensuring that the edge remains within the highlighted area. You can choose a larger brush to make this easier, but the more pixels you cover, the longer the cutout will take to process.

Having defined the area, you then fill it and click the preview button to see the results. There's obviously a lot of processing involved — a 10Mb image took a couple of minutes, but the results were good, if not perfect.

Anyone who has used MetaCreations' painter will be familiar with the workings of the new Art History brush. With this tool you can create paint-style effects using a background layer as a source. While you don't have an extensive collection of specialist paint effects, the options palette provides sufficient control to create some interesting variations. A pulldown menu offers ten brush styles, and they are given rather unimaginative descriptions — tight, short, tight medium, tight long, loose medium, loose curl, and so on. You can vary the pixel area over which the brush operates, and choose all the usual brush variants from the brushes palette.

If you produce web graphics there's no question that you need this upgrade. Yes, you can do everything it now provides using any number of other packages from Debabelizer to Painter, but not as quickly, or as easily, or as cheaply, given that within the next twelve months you'll have to buy several upgrades rather than one.

KEN MCMAHON

If you produce web graphics, there's no question that you need this upgrade

PCW DETAILS

★★★★★

Price *£499.38 (£425 ex VAT). Upgrade from Photoshop 5 for £88.13 (£75 ex VAT) or from Photoshop LE for £381.88 (£325 ex VAT)*

Contact *Adobe 0181 606 4001*
www.adobe.com

Good Points *Finally, what we asked for! Great web production tools, and improved masking.*

Bad Points *New masking tools don't beat the competition.*

Conclusion *An absolute necessity for web authors.*

System Specification *Pentium processor, Windows 95, 64Mb RAM, 125Mb free hard-disk space.*

MapPoint 2000 GB

Microsoft's powerful, multi-purpose GIS is streets ahead in demographic analysis.

MapPoint 2000 is Microsoft's new entry-level offering in the Geographical Information System (GIS) market. Most commercial activities involve knowledge of geographic and demographic data: for example, a supplier needs to know the spatial locations of its customers, so it can plan an efficient delivery service.

Apart from such day-to-day concerns, businesses develop new lines, expand production and relocate. Forward planners should take account of such variables as population densities, local wages and property costs, the availability of customers/suppliers and transport access. The use of annotated maps can be an effective way of presenting and analysing that information.

MapPoint 2000 opens to a vertically split screen with a map of the British Isles and Western Europe, and a window listing and defining basic cartographic symbols. By default, the mouse pointer is an area selection tool and for zooming.

On zooming into a region, more structure is revealed, in terms of roads, railways, rivers and centres of population. At all magnifications the maps are purposely uncluttered: in particular, no buildings appear.

MapPoint 2000's drawing and text editing tools, possibly augmented with suitable demographic data, enable it to be used to produce enriched maps for internal reports and small-scale distribution. The built-in demographic data, supplied by Claritas UK, consists mainly of postal-code-based population figures according to age, sex, household size, length of residence and income.

Unfortunately, unevenness in the scope of the categories made us feel uneasy from the point of view of statistical balance. There's a small Lifestyle section, containing figures only for the hobbies of cooking, golf and fishing. MapPoint 2000 may be budget software, but we can't help feeling that Microsoft has been somewhat short-changed by the data supplier.

MapPoint 2000 can also be used as a simple route planner by changing the mouse pointer into a measuring tool.
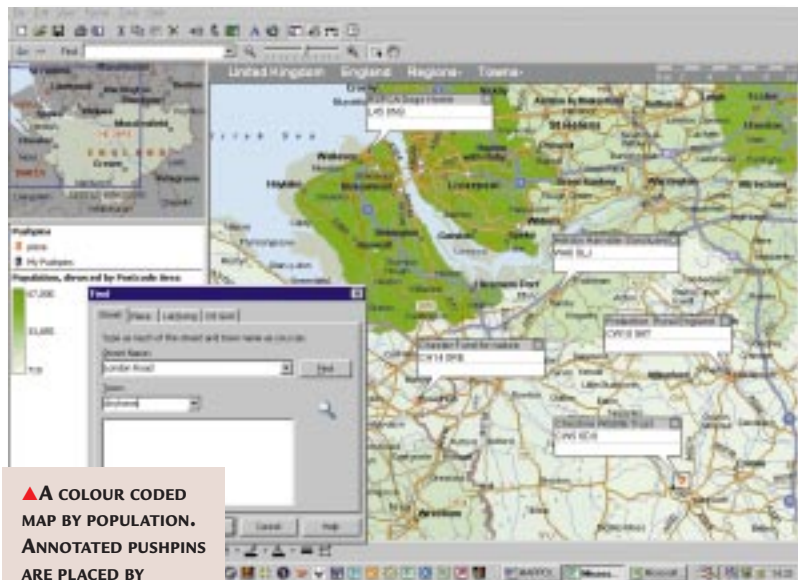
▲**A colour coded map by population. Annotated pushpins are placed by postcode data imported from Excel 2000**

Dragging this tool along a sequence of roads from A to B defines a route and distance, but as there's no eraser or undo button, it's not possible to correct errors.

To locate any particular city/town/road/postal code, enter the details in the box at the head of the Find window. Unless there's an ambiguity, as indicated in the gazetteer, the map changes to one centred on the required place. As far as roads are concerned, the GB in the product name has to be interpreted literally — England, Scotland and Wales, but not Northern Ireland or Eire. Unlike the US version, house numbers are superfluous, but can, if used incorrectly, result in a list of motorway exits!

Beyond these capabilities, MapPoint 2000 really comes into its own when demographic information is married with business data imported from other sources: Excel, Outlook, text files, Access, or other programs which support Microsoft Data Link. If a manufacturer has sales data in Excel files according to customer location, this can be imported and mapped.

MapPoint 2000 is designed to be fully compatible with the members of the Office family. In particular, data contained in selected regions of maps can be tabulated and statistically

processed by means of the Export to Excel feature. Maps can be sent to Word documents or to PowerPoint as editable objects.

Most GISs are complex and pricey. MapInfo and Maptitude, for example, are altogether more sophisticated and hard to learn for occasional users. The cheaper of the two, Maptitude, is about five times the target price of MapPoint 2000. In the US, MapPoint 2000 was released simultaneously with Office 2000 at $109 and bundled with Bookshelf 2000, although the UK market will have to wait until the Autumn.

NIGEL BACKHOUSE

PCW DETAILS

★★★★

Price £99 (£84.23 ex VAT)
Contact Microsoft 0870 60 10 100
www.microsoft.com/uk/
Good Points *Ease of use and productivity.*
Bad Points *Street addressing and data content falls short of its US brother.*
Conclusion *A powerful multi-purpose GIS for regular or occasional use, which will appeal to small businesses already investing in Microsoft Office software.*
System Specification *Pentium 90, 20(36)Mb RAM for Windows 95/98 (Windows NT 4), 135Mb hard-disk space, 4X CD-ROM drive, Office 97 or later, for full productivity.*

MetaCreations Canoma
3D modelling in perspective

A clever package that helps you make a scene — a 3D scene, in fact, from a 2D photo.

Most 3D graphics packages aim at being all things to all users. MetaCreations' latest products offer a rather different approach. They do one specialist job, but do it extremely well — like plug-ins that were once part of a larger software suite but have gone solo. There's Poser, for creating computer-animated characters, Bryce, for building virtual landscapes, and now perhaps the most intriguing and original of all, Canoma.

Canoma's boast is that it can turn a two-dimensional photograph into a 3D scene. It achieves this apparently magical act of extrapolation using what the company calls 'image-assisted modelling'; what you or I would call perspective. When you look at a photograph, you can work out the three-dimensional arrangement of the elements in the picture by looking at the position of the horizon and the convergence of parallel lines that recede towards it (parallax).

Say you have a picture of a rectangular table. In the picture, it is no longer rectilinear: the two sides which should be parallel, converge; the corners that should be at right angles are not. Assuming the table isn't wonky, you know that the distortions are caused by the positioning of the table as seen from the point of view of the camera, and you (or rather your clever brain, unaided by any conscious thought) uses those distortions to calculate the table's position, dimensions and orientation.

The trick with Canoma is that it too can perform those calculations. Unfortunately, it does not know that tables are rectilinear, or that floors are flat or indeed anything about the world; and it's your job to give it that information. Once you have done so, it works out for itself the 3D geometry of the objects in the photograph and automatically generates a 3D model that conforms to that geometry. It then rather ingeniously

▲**Fig 1** The Canoma interface, with a photograph of Siena's campanile in the project window

▲**Fig 2** The 3D objects created using the photograph, aligned to the main buildings in the scene

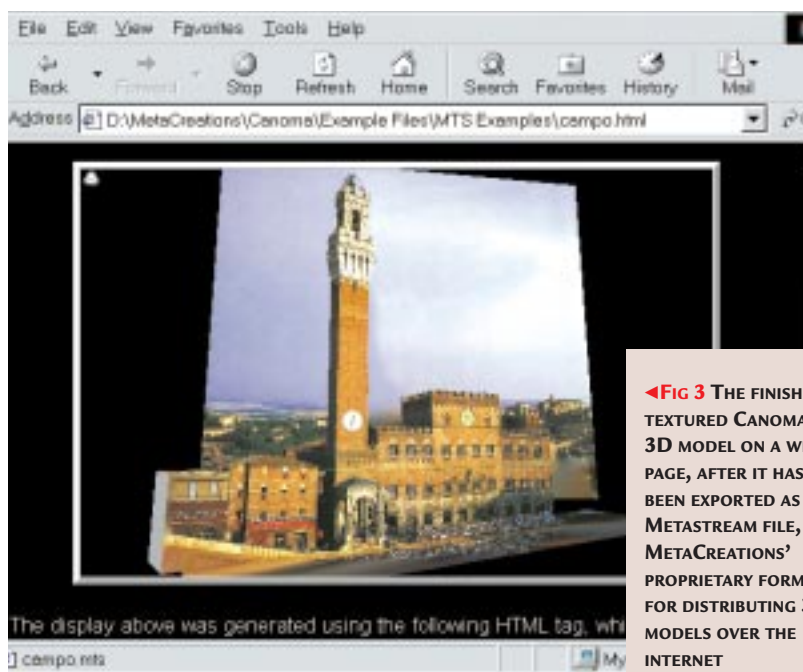textures the model with the appropriate parts of the original photograph.

Also, if you have more than one photograph of the same scene taken from different angles, you can align this model with those other photographs, and add yet more 3D information and textures.

That's the theory. Now for the practice. The distinctive interface used with Poser and Bryce has been adopted by Canoma [Fig 1]. It's very attractive and easy to use, encouraging you not to work so much as play with the software.

You begin a project by importing a bitmap image (in any of the usual formats). This is displayed in the 'project window', which takes up the largest proportion of the screen and shows the current state of your work.

Below the project window is a toolbox containing primitive 3D objects. To start turning the 2D picture into a 3D model, you simply click on a primitive with roughly the same shape as the main object in the picture you are working on. So, if the picture is of a tower block, you press the cube primitive, which causes a

◄**Fig 3** The finished, textured Canoma **3D** model on a web page, after it has been exported as a Metastream file, MetaCreations' proprietary format for distributing **3D** models over the internet

wireframe cube to appear superimposed over the picture. You then use the mouse to 'pin' the corners of the wireframe to the corners of the building, or to align the edges of the cube to the edges of the building [Fig 2].

Now comes the clever bit. If you have another picture of the same building taken from a different angle, you simply hit the plus sign on the 2D image palette in the top left-hand corner of the screen, and import the picture. This takes the place of the original picture in the project window. You then use the camera controls (including a trackball for rotating the objects, and buttons for

You can use the camera controls to move around the building as though it were a 3D scene

changing the field of view or tilting the camera) to align the shapes you created with the first picture, with their associated objects as depicted in the second picture. All being well, you will find that with a few adjustments to the shapes, you can line up the 3D model with the new image.

Once that is done, you render the result by hitting either the quick or quality render button above the project window (represented by a hare and a tortoise — a typical MetaCreations touch). The original pictures disappear,

and you end up with the 3D shapes textured with the 2D images of the objects with which they were aligned. You can then use the camera controls to move around the building as though it were a 3D scene. You can animate these movements using a simple key-frame animation system, or export the model to other 3D programs [Fig 3].

If there are gaps — bits of the building hidden behind other buildings, for example — you can fix them in various ways. You can take more photographs which include the missing bits, import them, realign the model and re-render the scene, adding the new texture information to the models.

Alternatively, you can use the texture tool to click on the surface of the object that needs improvement, whereupon the paint program of your choice starts up and automatically imports the texture for that surface as a 2D image. You can then edit the image, adding texture (perhaps by copying it from elsewhere in the same image), and export it back to Canoma (this importing/exporting process is invisible, making texture editing easy).

If you have an entirely blank surface — the rear of a building of which you only have a photograph of the front, for example — Canoma will 'mirror' the texture from the opposite surface: that is, it textures the back of the building with a mirror image of the front.

Given the right photographs, this is quick and easy to do. But there's the rub. For the process to work that well, you need to have simple objects, photographs of them taken from a variety of angles, and a camera with a pretty standard lens (wide-angle lenses seemed to cause particular problems).

Ideally you want one overhead shot, and a clearly defined (and level) ground plane, and you need to be able to have a substantial proportion of visible edges and corners for each object you want to model. This is because Canoma has to work out the perspective from the alignments of the objects you superimpose on the image, and even the slightest anomaly can cause confusion as the software struggles to fit the objects into a single geometrical space.

Another big problem is the price. Bryce and Poser are aimed at the graphics mainstream (costing around £160 and £140 respectively); Canoma costs a whopping £400 (ex VAT). This is supposedly because it is aimed at the 'professional' market. Since it uses the same interface as Bryce and Poser, and since, like them, it is likely to be used in combination with those two products and/or other 3D software, the logic is hard to follow — even less so given the paltry documentation and online help.

MetaCreations is marketing this product as a tool for creating quick'n'dirty 3D models of products for e-commerce applications. Maybe it is equal to that billing; but whatever market it is aimed at, it isn't quite there yet. However, with improved modelling tools, comprehensive and professional documentation, as well as a lower price, it would be a worthy stablemate for Poser and Bryce.

Benjamin Woolley

PCW DETAILS

★★★
Price *£469.99 (£399.99 ex VAT)*
Contact *Distributors: 0181 358 5857 (Computers Unlimited) or 0171 731 7930 (Gomark)*
www.metacreations.com
Good Points *A neat tool that works well if you don't demand too much of it.*
Bad Points *Overpriced, underdeveloped.*
Conclusion *A great product waiting to happen.*
System Specification
PC: *Windows 95/98/NT, Pentium, 48Mb RAM, 24-bit colour.*
Mac: *OS 8.0, 48Mb RAM, 24-bit colour.*
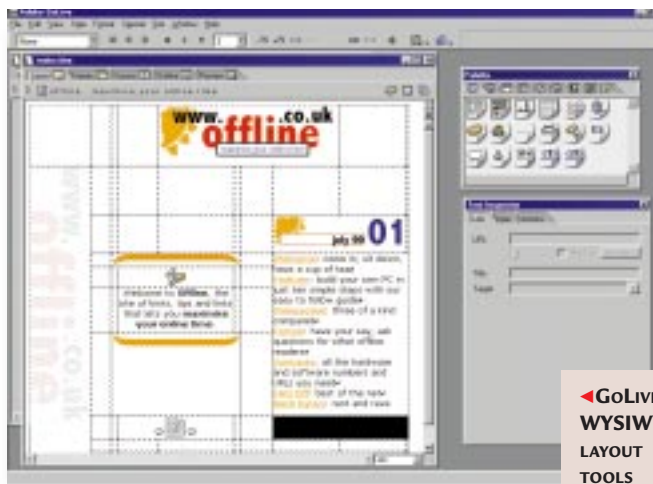
Adobe GoLive 4.0
Web design with flair

A website design package that has great potential but is currently just a little quirky.

If you think you've heard of GoLive before, that could be because it's the first half of the name of the web design package acquired by Adobe in January 1999 — GoLive CyberStudio. The CyberStudio bit has since been dropped and GoLive 4.0 has been ported to the PC: formerly it was a Mac-only product.

If you're not starting your site from scratch, you can import whole sites from either your hard drive or via FTP. This latter option makes it easy to edit a site from multiple physical locations, using the net as your storage media.

The ability to edit QuickTime movies from within GoLive is one feature found in very few competing products. Effects can be added to a filter track, and a Hypertext Reference (HREF) track can be used to specify associated web pages.

Selecting the Autoload function will also cause effects to load into a separate frame within the browser window without user intervention when the movie reaches a particular point. This is useful for online training situations

where text associated with images has to appear at a particular time.

An externally referenced JavaScript library is a neat, time-saving idea. It is no

◄**GoLive's WYSIWYG LAYOUT TOOLS**

longer necessary to open every document within your site to change a particular JavaScript component if, for example, it is stored within the library. Changing the component in the library will ripple the changes down through every instance on every page.

Implementing Head Actions is now a doddle. They can be called at a variety of times rather than only when the page has finished loading, by selecting the initiating event from a dropdown menu. This section of the software also makes writing and reading cookies on the visitor's hard drive a breeze, cutting out any previously complex coding.

Unfortunately, GoLive falls down in a number of sections. Its handling of frames is poor, as it seems to randomly split existing frames whenever new frames are dragged into them. We set up a simple page of three horizontal frames [*top, left*] and dragged an Adobe-defined set of three further horizontal frames into the middle frame. Instead of filling the frame to make five horizontal frames, it split the frame vertically first, giving us two columns. It then applied the new frames to the right-hand column [*top, right*]. The left-hand

◄**GoLive's VERTICALLY SPLIT FRAME**

column cannot then be dragged out of existence: it must be deleted from the Edit menu.

Tables were also somewhat quirky. It is not possible to select an entire row or column at a time — each cell must be selected individually. It is possible to format a whole row at once, but not a whole column. While this would not be a problem if you wanted to turn your top row into a header, if you wanted to have left-aligned products in the first column and right-aligned prices in the second, you would first have to select each cell individually in the second column before aligning right.

What we do like, however, is the drag-and-click file selection method like that found in Macromedia Dreamweaver. Input boxes waiting for URLs or image sources sit next to a curled wire. Clicking on this wire and dragging it across to the file in the Site View window snaps the name of the selected file into the input box — a genuine timesaver.

Overall, though, GoLive did not live up to our expectations. The fact that it has only recently been welcomed into the Adobe fold is evident, and for the moment we're going to stick with our tried-and-tested copies of Adobe PageMill rather than make the switch.

NIK RAWLINSON

PCW DETAILS

★★★

Price *£139.83 (£119 ex VAT) or upgrade from PageMill for £69.33 (£59 ex VAT)*
Contact *Adobe 0181 606 4001*
www.adobe.co.uk
Good Points *Head Action implementation. Easy cookie creation. Drag-and-snap file selection.*
Bad Points *Handling of tables and frames.*
Conclusion *A product with huge potential that doesn't quite hit the mark yet.*

Intuit Quicken 2000
Personal finance software

If you're banking on keeping your cash under control, then Quicken will help you stay quids in.

There are two key products for looking after personal finances: Microsoft Money, and Intuit's Quicken. Despite trying to buy Quicken in 1995, Microsoft has improved Money steadily and it is now arguably a more polished product than Quicken 98. With Quicken 2000, Intuit fights back, and has followed Microsoft's lead with a web-style interface.

Users are presented with a Home Page on loading Quicken, which Intuit claims to be 'innovative'. It isn't. It does, however, make better use of screen space than Money's implementation. The Home Page can be customised to show information about finances the user needs on a regular basis. Apparently, some people found it irksome searching through menus for the features they regularly used, and the web-style Home Page lets them bring these together in one place.

Integration with the internet goes

Quicken eliminates the drudgery of entering in transactions manually

further than just the interface. Quicken has facilities to track the value of a portfolio, but it can be laborious to type in prices manually. The software can use the internet to download quotes from major US and European stock exchanges, including NASDAQ, NYSE, Paris and Frankfurt, as well as UK Unit Trusts and the London Stock Exchange. With a 'one-touch update', the value of a user's portfolio is updated automatically.

Quicken also allows the user to download their bank statement, eliminating the drudgery of typing in transactions manually. However, at the time of writing, only NatWest is supported, compared with Money's support for eight UK banks. Many users may find Money more attractive.

◄ **PRODUCING A CUSTOMER INVOICE IS CHILD'S PLAY**

For entering transactions, Quicken 2000 has retained its very efficient Register. This is Quicken's most commonly used view, in which transactions are entered as a list, like a paper accounts book, but with two main exceptions. First, Quicken does all the totalling-up automatically; and secondly, it helps by remembering previous transactions and tries to complete the remainder of the transaction by itself. For example, if the last time you bought from Sainsbury's you categorised the purchase under 'groceries', the next time you enter a purchase from the same supermarket, the groceries category will automatically be selected for you.

Future-proofing has been ensured in two areas. Quicken 2000 is guaranteed to be Year 2000 compliant. Also, the program will let you hold bank accounts in Euros (along with other international currencies), so it's ready if the UK were to dump sterling. In the register, you can turn on a Euro column and see transactions in both pounds and Euros.

Small-business users would be best opting for the Deluxe version. Along with Quicken's support for tracking VAT and producing invoices, Quicken 2000 Deluxe can chase up invoices with printed statements. It also comes with

Quicktax 99, which takes information from Quicken and helps users fill out their tax return.

Further enhancements of the Deluxe version include multimedia tutors, down-loadable exchange rates, and QuickEntry. Since the Register is the most commonly used view in Quicken, QuickEntry has been added to let users type entries into the register without having to load the full program. But as Quicken is a reasonably quick program to load, the usefulness of this is limited.

Quicken 2000 is a worthwhile upgrade for existing Quicken users, and once you have started to use it, you'll wonder how you ever managed without it. New users (not with NatWest) must ask if the more substantial online banking features offered by Money make that a better choice. Other than that, Quicken won't disappoint.

ALEX SINGLETON

PCW DETAILS

★★★★

Price *Standard version £29.99 (£25.52 ex VAT), Deluxe version £49.99 (£42.54 ex VAT)*
Contact *Intuit 0800 585058*
www.intuit.co.uk
Good Points *Easy to use.*
Bad Points *Expensive telephone support. Limited support for online banking.*
Conclusion *A good option for home users and sole traders.*
System Specification *Windows 95 or 98, Pentium processor, 16Mb RAM, 35Mb free hard-disk space (plus 40Mb for Internet Explorer), 2X CD-ROM.*

Evesham Vale Platinum
TNT Ultra

Evesham excels itself in the construction and capabilities of this superb 550MHz Pentium III PC.

Last month, *PCW* featured a group test of Pentium III 550MHz machines all capably specified to blow our socks off within a tight £1299 budget. For £300 more, this Evesham Vale Platinum TNT Ultra, based on the same Pentium III 550MHz processor, has a little more room to provide the ultimate high-performance workstation.

The Pentium III processor is backed up by 128Mb of system memory. But it really shines with the inclusion of Maxi Gamer's Xentor 32, a 32Mb TNT2 Ultra-based graphics adapter that supports increased core and memory frequencies over the standard version's 90MHz and 110MHz respectively.

We benchmarked the Ultra with the graphics processor core set at 175MHz and the memory at 183MHz, and were treated to one of the highest 3D performances we have so far seen in a consumer system. Surprisingly, the office-application-based SYSmark 98 benchmark result didn't follow suit, but it was still impressive.
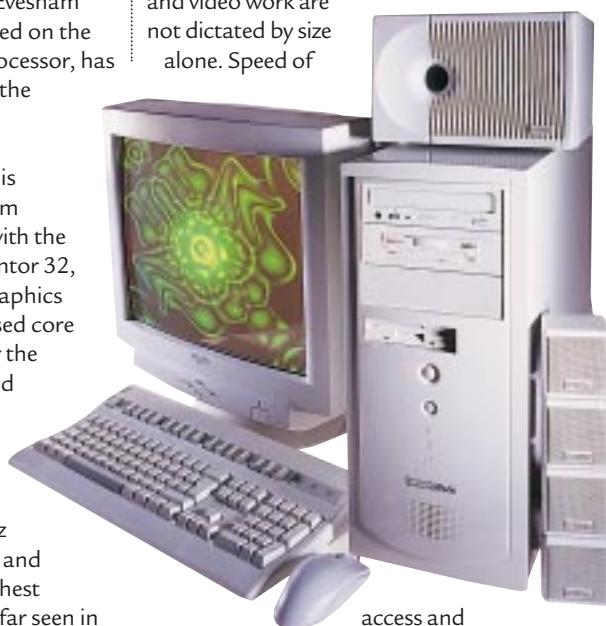
Evesham is fully aware that performance isn't everything if the system is lacking in other areas, and has ensured that the high-end applications that will be run on the Ultra benefit from adequate support.

Recognising that such a powerful system is particularly suited to graphics work, Evesham provides 32-bit colour support up to a maximum 1920 x 1440 resolution, and has opted for Taxan's Ergovision 975 TCO99 19in monitor. Its 18in viewable FST screen means you'll be able to submerge yourself in the solid, vibrant colours that carry through to the edges of the screen.

The comprehensive OSD is very intuitive to ensure optimum viewing comfort. The inclusion of a USB hub, with one upstream and four downstream ports in the base, means you won't be straining to access the back of the system.

Storage requirements for graphical and video work are not dictated by size alone. Speed of access and transfer are also major considerations, especially for work like on-the-fly MPEG encoding.

The Western Digital WD Expert 41800 is an impressive EIDE hard drive with a storage capacity of 18Gb and access speeds for read/writes of between 9ms and 9.5ms. A 7200rpm spindle speed provides up to 33 percent faster transfer rates than those available to 5400rpm models. Unfortunately, the 440BX chipset used by the motherboard doesn't support the UDMA66 standard that the drive compiles to.

A SCSI solution could have improved upon this drive, but at a cost. Evesham spent the saving on a 2.2Gb EIDE removable storage drive. Based on hard-disk technology, Castlewood's ORB uses 3.5in media, although in this system the device is housed in a 5.25in bay.

Entertainment facilities are much in evidence. Creative Labs provides the Value version of its SoundBlaster Live! sound card, which sends its output through Creative's four-point surround-sound speakers.

The Panasonic DVD-ROM drive will of course provide a movie option, but the 6X DVD peripheral access speeds also allow the user to take full advantage of data-based titles.

Internet connectivity is taken care of by Diamond's SupraExpress 56e/i Pro V.90 56Kb/sec PCI modem.

Internal construction is flawless. All likely air-path restrictions have been clipped out of harm's way, and setup is assisted through clear cable connection labelling. With room for two of each peripheral-card format, two internal 3.5in devices and one front-accessed 5.25in device, you'll be able to keep this workstation one step ahead.

IAN ROBSON

An inspired high-end package … internal construction is flawless

HP LaserJet 4050TN

A network-ready printer that can maintain a speed of 16ppm without dropping image quality.

Hewlett-Packard prides itself on making the installation process for any of its printers as pain-free as possible. The documentation and other supplied information is second to none and, needless to say, we had this particular printer up and running in a matter of seconds.

The LaserJet 4050 series replaces the original LaserJet 4000, an office favourite that hasn't exactly been around for ages. Building on the successes of its predecessor, the 4050 series claims to have better performance, enhanced versatility and a low cost of ownership. With two 250-sheet trays, one manual-feed tray and an LCD display, the 4050TN is standard fare.

In terms of performance, however, it is anything but standard. HP's claim of 16ppm was backed up by our tests, with no drop in image quality which was clear and well defined at 1200dpi.

The 4050TN has a 133MHz NEC RISC processor under the bonnet, and 16Mb of memory. It's by no means the most memory we have seen, but again, it doesn't seem to matter. The time it takes for printing to commence after clicking OK is as good as instantaneous, even on a document containing graphical images. If you require more memory, the 16Mb that comes as standard is upgradable to 200Mb.

The 4050TN is network ready, with a built-in HP two-in-one JetDirect 10/100 Base-TX print server card. This particular model also comes with an infra-red receiver, for those people who want to print directly from their notebook or PDA. And in addition to the standard printer drivers, the 4050TN is equipped with JetDirect and Web JetAdmin software, designed for easy network printer management, as well as WebSmart, for optimum internet printing.

JIM HARYOTT

PCW DETAILS
★★★★
Price *£1,162 (£989 ex VAT)*
Contact *Hewlett-Packard 0990 474747*
www.europe.hp.com
**Good Points** *Build-quality, speed, versatility.*
Bad Points *Not the cheapest of printers.*
Conclusion *The LaserJet 4050TN benefits from solid build, speed and ease of use. As a small-to-medium-sized networked office printer, it fits the bill perfectly.*

Kyocera FS-680

The Porsche of the personal printer world is a speedy little number that won't cost the earth to run.

Kyocera's FS-680 monochrome laser printer follows on from the company's well received FS-600, and incorporates the same Porsche design — a considerable selling point that Kyocera has capitalised on. The main difference between the two printers is the increase from 6ppm to 8ppm. Although the FS-680 is aimed at 'small workgroups' as well as individual users, it's no office workhorse, and an Ethernet adaptor will cost you roughly £150 on top of the £350 price tag if you want one. Other upgrades, such as a 250-sheet cassette instead of the supplied 150-sheet cassette, are also extra.
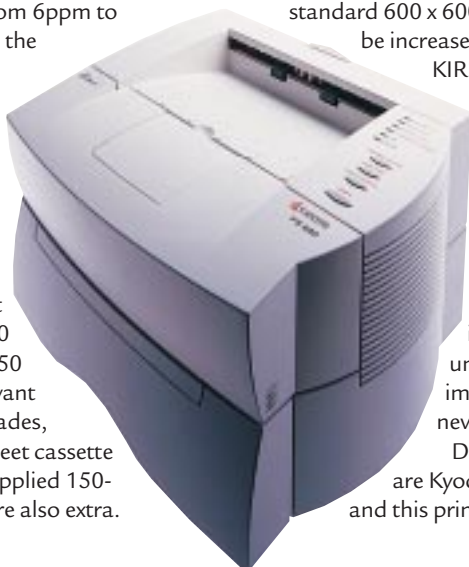
Having said that, it does have a 50MHz Power PC processor and 4Mb of RAM, upgradeable to 36Mb, as standard.

Officially able to rattle off eight pages per minute, when we put it through its paces, it managed to exceed even that, ploughing out a respectable 9ppm. The standard 600 x 600dpi resolution can be increased through Kyocera's KIR2 image refinement. Our tests showed that, when printing text documents, the FS-680's results were particularly good, with no banding at all. Printing colour images was, understandably less impressive, but good nevertheless.

Design and ease of use are Kyocera's strong points, and this printer looks and feels very solid, with minimum fuss and a quick-reference guide for first-time users. Running costs are particularly economical, the only consumable item being the toner cartridge, which should last 3000 pages and costs around £35.

The FS-680 clearly has network potential but is more suited to personal users. It's very fast, but you can get cheaper personal laser printers.

JIM HARYOTT

PCW DETAILS
★★★★
Price *£351.32 (£299 ex VAT)*
Manufacturer *Kyocera 0345 103104*
www.kyocera.de
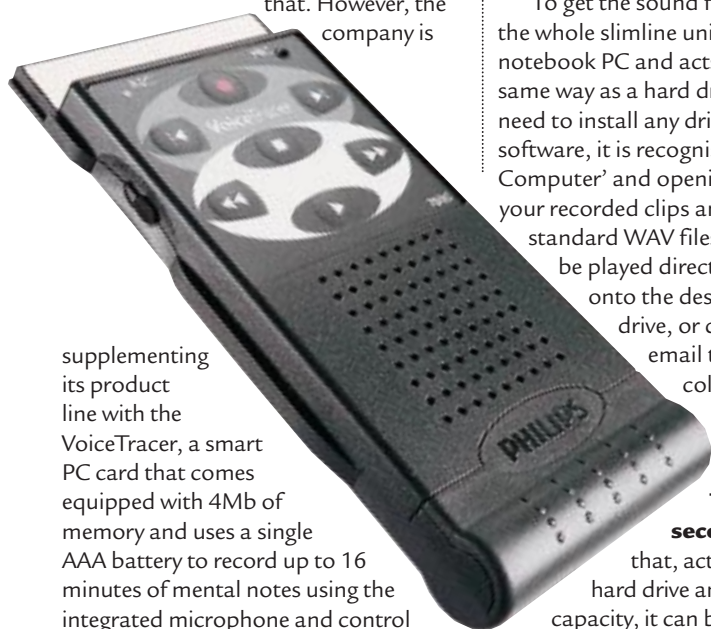**Good Points** *Speed, design, print quality.*
Bad Points *Price. Cost of upgrading to a network printer.*
Conclusion *The FS-680 is an able personal laser printer, but enabling its 'full system potential' will require digging your hands into your pockets. If that's what you're after, go for a network-ready model.*

Philips Digital VoiceTracer

Talking loud and clear: with this smart PC card, you can record notes for inclusion in your emails.

Philips currently commands a sizeable slice of the analogue, tape-based dictation market, and it's not about to do anything to damage that. However, the company is supplementing its product line with the VoiceTracer, a smart PC card that comes equipped with 4Mb of memory and uses a single AAA battery to record up to 16 minutes of mental notes using the integrated microphone and control buttons. Once recorded, they can be attached to emails or played back through the VoiceTracer's built-in speaker.

To get the sound file onto your PC, the whole slimline unit slots into a notebook PC and acts in exactly the same way as a hard drive. Without the need to install any drivers or additional software, it is recognised within 'My Computer' and opening it will reveal your recorded clips and thoughts as standard WAV files. These files can be played directly or dragged off onto the desktop or another drive, or dropped into an email to be sent to colleagues and friends.

The Voice Tracer has a second purpose in that, acting like a standard hard drive and sporting a 4Mb capacity, it can be used to transport files that will not fit onto a floppy disk. Of course, with a maximum capacity of 16 minutes, it was never conceived as a replacement for the standard tape recorder, but as a communications device.

The VoiceTracer is designed to make it easy to add your voice to your emails, giving them greater impact and dramatically reducing the amount of time you spend communicating. Being so easy to use, and looking great, too, we feel Philips is onto a winner.

NIK RAWLINSON

PCW DETAILS

★★★★

Price £84.99 (£72.33 ex VAT)
Contact Philips 01206 755504
www.philips.com
Good Points Easy to use. No fiddly tapes. Looks good.
Bad Points Currently a little expensive.
Conclusion Great for short note-taking on the move or 'emailing' without a keyboard.

Microsoft Tax Saver

An extremely easy to use finance package that explains away the mysteries of the tax return.

This highly professional package provides an entertaining and informative journey through the Inland Revenue tax return, helping to displace the myths and uncertainties of this annual chore.

For newcomers, the Tax Saver's 10-Minute Tour gives a detailed and very clear explanation of exactly what to do, what you can expect to see, and how to access the help and information you may require. It also provides a document list so that you can have all the necessary information to hand before you begin.

It includes a generous bundle of electronic articles from KPMG, whose advice is so well written and easy to understand that we actually found ourselves reading it instead of getting on with the job in hand.

Tax Saver's Expert Assistant is activated by clicking the Advise Me button that pops up whenever a complex section is encountered, and helps you to decide how to answer awkward questions. The navigation pane, common in tax return packages, shows you exactly where you are and how many more areas are still left to cover.

When you have completed your return, Tax Saver will audit your entries to verify that all the information is technically correct: for example, that all mandatory boxes have been completed and no estimated figures have been left. When all corrections have been made and the final checks completed, all that's left is to print the finished document.

All the sheets required to complete the tax return are reproduced and are recognised by the Inland Revenue as acceptable substitutes — there is no need to transfer the data onto the copy sent out by the Revenue. Simply sign the return, pop it in the letterbox and head to the Plan Ahead menu to review KPMG's tax-saving tips for next year.

SHEILA FRANKLIN

PCW DETAILS

RECOMMENDED
PERSONAL COMPUTER WORLD

★★★★★

Price £24.99 (£21.28 ex VAT)
Supplier Microsoft 0345 002000
www.microsoft.com
Good Points Accurate, informative and very easy to use.
Bad Points None that we could find.
Conclusion This software has transformed an otherwise tedious task into an interesting and visually pleasing exercise that left us feeling that 5th April is no longer a date to dread.

Tiny Home Executive 500
500MHz Celeron PC

Sadly, Intel's 500MHz Socket 370 processor is scant compensation for a disappointing machine.

Not content to be the chip inside most of the world's PCs, Intel has expanded its range of budget processors yet again. The latest addition to its product line is the 500MHz Celeron, available in a Socket 370 PPGA format.

We got our hands on one of the first PCs to feature this processor and put it through its paces.

Like all PCs in the Tiny range, this Celeron puts the emphasis less on the grey-box approach and more on sleek curves. But for all its good looks, it is not as practical as the traditional grey box. The size of the case means that there is only enough room for an AGP slot, three PCI slots and a solitary ISA slot.

A SoundBlaster AudioPCI 64V sound card is onboard, which means that one PCI slot is already taken. The small case also means that there is only enough room for one free drive bay.
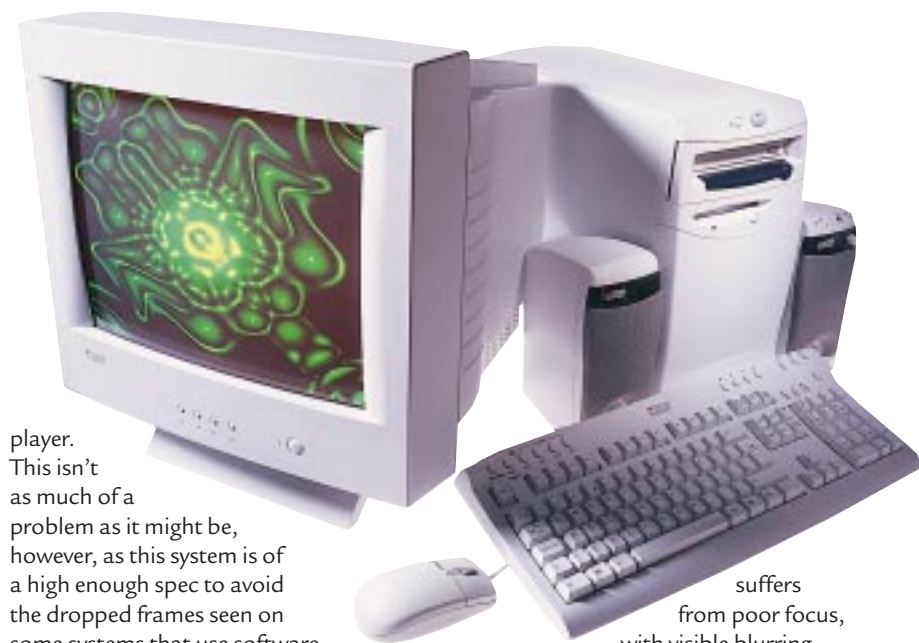
A flap in front of the Matsushita DVD-ROM drive forms part of the case design, and you have to press a button on this fairly hard to open the drive.

In terms of build quality, the cables have been gathered and tied at the top of the case between the system fan and the DVD-ROM drive. This does, on the up-side, offer easy accessibility to the expansion slots and the processor.

However, this benefit is outweighed by the fact that access to the single free memory slot is restricted, and also that it could restrict the airflow as the cables are bundled very near the output vent of the system fan. 64Mb RAM is provided, more than sufficient for everyday use but perhaps a little stingy for a new PC.

The graphics card is a Creative TNT which, although ageing technology in graphics-card terms, is by no means obsolete. This card is still a solid performer considering the price, as the 3DMark 99 Max results show [*right*].

The DVD decoder is software based, using the latest version of ATi's DVD player. This isn't as much of a problem as it might be, however, as this system is of a high enough spec to avoid the dropped frames seen on some systems that use software decoders. Image quality could be better, though, as some blurring does occur. This is especially noticeable when text is displayed.

The Home Executive 500 performed well in our SYSmark tests, scoring only seven points below Tiny's Pentium III 500MHz [*PCW, April 1999*]. This is impressive, considering that the Celeron range of processors runs on a 66MHz bus.

In an attempt to make the keyboard more user friendly, Tiny has included a series of hotkeys that can be set up as shortcuts for various repetitious actions. Further keys offer shortcuts for playing CDs, accessing the Tiny Online website, closing programs, and adjusting the volume.

As befits a Tiny PC, the Home Executive comes with a generous software bundle. Microsoft Works suite, Via Voice and a DVD movie are included as standard, with a further choice of bundles adding to the number of disks in the box.

We were somewhat disappointed with the 17in Tiny-branded monitor. The poor uniformity of the display is evident in dark patches at the base and to the right of the display. Our DisplayMate tests showed that it also suffers from poor focus, with visible blurring on vertical and horizontal lines. Screen regulation is particularly poor, but horizontal and vertical registration is good. On-screen options include those for adjusting moire. Set at its maximum resolution of 1280 x 1024, it runs at a headache-inducing 60Hz, but at 1024 x 768 it maintains a comfortably impressive 85Hz refresh rate.
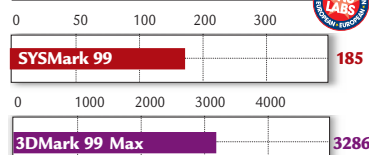
JASON JENKINS

Olympus Camedia C-2000

You'll strike quite a pose with this retro digital camera that features a 3X optical zoom lens.

If you bought an instant film camera during the last decade, chances are it had a zoom lens. This handy little feature makes framing your pictures a doddle, and dramatically increases the likelihood of decent results when you collect them from the developer.

Digital cameras, especially those at a price the non-professional might be able to afford, have been slow to follow suit. With the Camedia

C-2000ZOOM, however, Olympus has managed to squeeze a 3X optical zoom lens into an attractive retro-style casing, which should save you from having to crop your pictures when you download them onto your computer.

No corners have been cut in photo quality, either. With a maximum picture resolution of 1600 x 1200 pixels, the C-2000 is firmly in the two-megapixel market, with over two million pixels making up each picture. At this resolution, the camera's output is sharp and clear, with excellent colour representation.

Olympus supplies 8Mb of removable SmartMedia memory. When this is full, you can either insert a different card, much like you might load a new film, or you can download the images to your computer via the supplied cabling. A tidier option is to purchase an Olympus SmartMedia adaptor: simply slot the memory card into the floppy-

disk-sized case, pop the whole lot into a standard floppy-disk drive, and it works just like a regular disk.

Price-wise, the Camedia is a little over the odds for a two-megapixel camera, but the addition of that zoom lens makes it just about worthwhile. Those looking for a replacement for their automatic camera will be impressed with its familiar look-and-feel, as well as its ability to take a good-quality snap.

ANDY SHAW

PCW DETAILS

★★★★

Price *£749.99 (£638.29 ex VAT)*
Contact *Olympus 0800 072 0070*
www.olympus-europa.com
Good Points *Zoom lens. Good-quality pictures.*
Bad Points *Expensive.*
Conclusion *A great zoom lens and a super little picture taker, though not quite as competitively priced as some of its rivals.*

Sony Vaio PCG-505E

A faster version of Sony's super-slim notebook retains its looks and gains more admiring glances.

Sony's super-slim Vaio 505 is back with a letter E, and boasting a souped-up spec. The MMX Pentium now runs at 300MHz, the memory is doubled to 64Mb, and the disk has grown to 6.4Gb. The display is still a clear 10.4in TFT running Windows 98 at 800 x 600 pixels.

Vital statistics remain an impressive 258 x 208 x 22mm and 1.22kg with standard three-hour battery. Ports include USB, Fast IrDA, Type-II (ZV/CardBus), audio, and the so-far uniquely Sony inclusion of 200Mbit IEEE 1394, which it calls i-Link and Apple nicknames FireWire. A small plastic pen pops out of the left side of the screen, but don't mistake the display as touch-sensitive — this is only for knocking out quick signatures on the touchpad.

Slimness forces the serial, parallel, VGA and PS/2 ports onto an external replicator. This and a floppy drive are supplied as standard with the LT model for around £1400. The full £1789 package includes an external CD-ROM drive and COM1 56K modem, both supplied on separate PC Cards; the latter can be upgraded to support ISDN, Ethernet and GSM mobiles.

The 505E is essentially the same notebook as earlier 505s. It's a shame not to see significant evolution such as

incorporating the port replicator into the floppy drive — innovation which tipped the Editor's Choice balance from the 505G to Sharp's PC-A150 in our last notebook group test [*PCW, March 1999*]. But the 505E performs well, has decent utilities and still draws admiring looks.

GORDON LAING

PCW DETAILS

★★★★

Price *£2102.08 (£1789 ex VAT)*
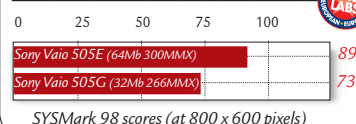**Contact** *Sony 0990 424424*
www.vaio.sony-europe.com
Good Points *Slim, sexy and faster.*
Bad Points *No further innovation.*
Conclusion *Still my favourite ultra-slim.*

PERFORMANCE RESULTS

0	25	50	75	100

Sony Vaio 505E (64Mb 300MMX) — **89**
Sony Vaio 505G (32Mb 266MMX) — **73**

SYSMark 98 scores (at 800 x 600 pixels)

Onstream SC30

The new kid on the personal backup block swaggers with a massive 30Gb compressed capacity.

The largest personal backup solutions currently available can back up 10Gb compressed, but today that's painfully inadequate: you want something that can back up overnight onto a single cartridge. A new kid on the tape block is the Onstream SC30. It's available in several flavours — internal ATAPI (DI) and SCSI (SC) versions, plus an external parallel port (DP) drive. It's also available in a 50Gb version, the SC50. Not only is this drive affordable, at £349 plus VAT (a mere £199 plus VAT for the ATAPI model), but its capacity is a huge 30Gb compressed.

I installed my drive in a Windows NT 4.0 Server, attached to an Adaptec AHA-2940UW SCSI host adaptor. Its speed isn't bad for the price: using Backup Exec, we achieved over 70Mb/min, although using the more user-friendly Echo software, this dropped to about 25Mb/min. Sadly, the SC30 uses yet another new tape format loosely based, like the Travan, on the QIC-80 casing, though much larger.

Echo provides the SC30 with drive-letter access (it becomes Drive T) so you can treat it like a hard drive and drag-and-drop at will. Echo also catalogues the location of each file you store on tape and other removable media, and you can then search for a particular file. To restore your file, simply drag it back to your hard drive, or for direct access off the tape, double-click on the file to open it. Since tape is linear, access time varies according to the file's location on the tape.

ROGER GANN

PCW DETAILS

★★★★★

RECOMMENDED
PERSONAL
COMPUTER
WORLD

Price £410.07 (349.00 ex VAT). Tapes £28 ex VAT
Contact OnStream 0800 328 1204 www.onstream.com
Good Points Large capacity. Relatively fast. Cheap. Easy to use.
Bad Points Treating the tape as a disk drive can affect defragging and anti-virus software.
Conclusion Backing up large hard disks is essential, and the SC30 makes it easy and affordable.
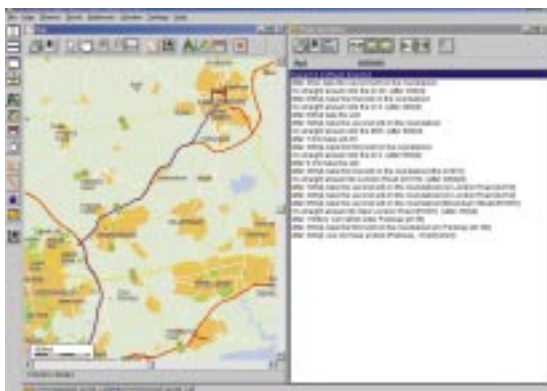

TNT TravelManager Office

On the road with this comprehensive route-planner that offers true street-level mapping.

TNT is best known for making deliveries, so you'd expect it to know the UK road network fairly well. It's hardly surprising, therefore, that the company has brought out its own route-planning software, even if the information on which it is based is produced by a Dutch company, Navigation Technologies.

TravelManager is an impressively comprehensive product. Many route-planning products claim to offer street-level planning, but few do it as well as this. AutoRoute, for example, had trouble planning a route either to or from this reviewer's home road. TravelManager managed with ease. In this Office version, up to 14 intermediate stops can be visited between the starting and destination points. And unless the user locks the order in which they are selected to the order in which they are visited, the software will first rearrange them to give the shortest possible journey before working out the optimal route.

Search options allow the user to specify a street, postcode, address, or entry from one of the many databases that cover such areas as tourist attractions, car rental agencies and shopping malls. Unfortunately, it does not include Europe's largest mall, the new Bluewater complex in Kent.

Directions are well written and easy to follow, and clicking on any part of the map will bring up comprehensive details for the closest road, including whether it's a one-way street, the class of road, and whether or not it's a residential area.

NIK RAWLINSON

PCW DETAILS

★★★★

Price £49.99 (£42.54 ex VAT)
Contact TNT 0906 686 4357
www.travelmanager.co.uk
Good Points Easy to use. Extensive 'intermediate' stops possible. True street-level mapping.
Bad Points What, no Bluewater?
Conclusion Route planning for the professional.

Pagis *vs* PageKeeper
Management software

Document and graphics management kept in check with new products from Xerox and Caere.

Inputting, managing and outputting documents and graphics are the key tasks most of us perform every day on our computers. It's no surprise, then, that software manufacturers have been busy developing products to help us handle these onerous chores.

Two of the main players in this market, Xerox and Caere, have updated their product line. Hot on the heels of the latest version of its OCR package, Textbridge 9.0, Xerox has released Pagis Pro 3.0 – Scanning Suite. This is a five-in-one package that includes the latest Textbridge offering alongside forms and copier software, the Pagis Inbox document manager and Adobe Photo Deluxe Business Edition.

Textbridge 9.0 has overtaken Textbridge 98 as the OCR tool, and has improved accuracy and the ability to recognise both colour and black-and-white documents. It also has a handy 'send to web' feature that allows you to convert documents into web pages. This package's £69 standalone cost makes Pagis Pro 3.0 a great deal.

The other major improvement is the replacement of MGI PhotoSuite with Adobe's Photo Deluxe Business Edition. This offers all the tools you'll need for basic image editing, as well as a range of business projects.

Also included in the suite are a forms package for converting printed forms into editable electronic versions, and copier software that allows you to combine your scanner, PC and printer to create your own photocopier.

The part that pulls it all together is

◄ **THE PAGIS INBOX IS THE HEART OF THE SUITE. FROM HERE, YOU CAN ACCESS ALL YOUR SCANNED DOCUMENTS AND GRAPHICS**

◄**YOU CAN VIEW A SINGLE WEB PAGE OFFLINE USING THE PAGEKEEPER VIEWER**

the Pagis Inbox, and it's from here that you manage all your documents, from scanned images to OCR'd pages. Version 3.0 gives the Inbox extra features including the ability to import single web pages to view offline, and improved search facilities.

Caere's PageKeeper Pro 3.0 has more in common with the Pagis Inbox part of the Pagis Pro suite; indeed, it makes no claims to offer the range of tools provided by Pagis, and its lower price reflects this. PageKeeper is a document manager pure and simple — well, perhaps not that simple. It's easy enough to use, but it's a powerful tool that will have the contents of your hard drive under control in no time.

The real advantage of PageKeeper is that it does most of the hard work for you. Unlike many management packages, which defeat their purpose by relying on your organisational skills, setting up a few features when you first install the software ensures that it files away documents where you want them.

It uses a system of Smart Folders that will automatically grab specific documents and file them away for you. You can even define what sort of documents you want to put in which folder: you can ask it to single out mono and colour graphics while ignoring text documents, for example.

You can also ask it to file new documents when they're loaded on to your PC, by setting up the Folder Watch feature. You can set the software to scan certain directories, such as your hard drive or removable media, and automatically store any new files it detects. You can add exclusions to this process, such as files of a certain size, tailoring it as you wish.

Despite all this organisation, it's always possible to lose track of a file, but PageKeeper has the solution in the shape of sophisticated search facilities.

URSULA TOLAINI

PCW DETAILS

Displays - LCD *vs* CRT

If you're in the market for a new monitor, you'll quickly realise there are two very different ways to part with your money: do you stick with tried and trusted cathode ray tubes (CRT), or take the plunge with a liquid crystal display (LCD)?

Only a couple of years ago, a 14in thin film transistor (TFT) monitor cost as much as £2000, approximately five times the price of an equivalent CRT. Now, though, and despite TFT prices currently fluctuating as much as memory, you can still buy a good-looking 15in flat panel display (FPD) for as little as £600 ex VAT. That's actually comparable in size to a 17in CRT monitor, since the latter hides the edges of its tube behind the case bezel.

With TFT prices continuing to fall and CRT displays getting flatter, we thought we would pitch the two technologies head to head. For this article, we will be comparing the traits of each of the display technologies; and unless otherwise stated, all references to FPDs will be to those employing TFT LCD technology.

☛ **Case**

Average FPDs and CRTs may have similarly sized bezels surrounding their active image, but when it comes to depth, FPDs win hands down. Almost regardless of image size, FPDs rarely measure more than two inches thick and are sometimes slimmer still. Despite recent innovations with shorter-neck CRTs, tube-based displays are well over a foot deep and simply cannot compete on the sylph stakes. First point to FPDs.

Looks are always subjective, but we'll put this one down to experience. Believe

us when we say that FPDs are the only monitors anyone stops and favourably comments on when passing through the *PCW* office. Many companies would agree, frequently placing FPDs at their front of house.

When it comes to weight, FPDs win hands down. You may be surprised to discover that they're heavier than you'd expect, but you're still looking at typically 6kg for a 15in FPD, compared to 20kg for a 17in CRT.

It's worth considering mounting options, since a monitor doesn't have to just sit on its base. Some FPDs feature standard brackets, so you could employ some kind of telescopic arm mounting, or attach the FPD directly to a wall for a zero footprint; try doing that with a CRT.

CRT snatches a point back for connectivity, though. Most FPDs feature a single analogue VGA input, whereas many CRTs are now featuring two. That's not worth a point on its own, but new CRT monitors are also more likely to include a USB hub of some description.

Also, bear in mind that analogue is a CRT's native input. An FPD must convert it into digital for display, so there's a risk of image degradation. In the coming months we'll see more graphics cards with digital outputs, and FPDs to connect them to, but for now in the physical stakes it's four-one to FPDs.

☛ Screen
First up, what sizes are available? FPDs for desktop monitors usually come in 13.3in, 14.1in and 15in flavours. Some 18in TFT panels are becoming available, but they carry a high price tag of around £2500. NEC produces a 21.3in FPD, but it's likely to cost between £4000 and £5000. Consequently, affordable FPDs tend to be a bit on the small side.

CRT monitors are readily available and affordable at all sizes up to 21in — a decent 17in monitor will set you back about £400 — so one point there.

The whole point of flat displays is that they benefit from less glare or distortion. While old goldfish-bowl CRTs did suffer in this way, modern tubes are usually flat enough. So, public perception of flat being good has resulted in considerable CRT development, and you can now buy perfectly flat tube monitors. Sometimes, however, these employ sneaky tricks such as lenses to give this perception. Not all manufacturers are guilty, but as all FPDs are honestly flat, they win this point.

Shadow and slotted mask CRT monitors are pretty resilient technologies, but tap any aperture grille display on the side and watch the image shimmer for a few seconds. FPDs are fairly resistant to knocks from the side, and while most displays dislike vibration, an FPD, simply by its manageable dimensions, is more likely to be found in mechanically demanding environments such as vehicles.

But how long does a display actually last? The phosphor on CRTs fades quite measurably over time, and this process is irreversible. The only components likely to fail on an FPD are the backlights. Older models gave up approaching 10,000 hours, but modern backlights should last between 30,000 and 50,000 hours. We haven't heard of anyone replacing a backlight, but in theory it's possible. So, a bonus point to FPDs, which lead three-one in this section.

FDPs are the only monitors anyone stops and favourably comments on when passing through the PCW office

☛ Specifications
Graphical user interfaces have driven the desire for higher-resolution displays, with most new PCs set up to run at 1024 x 768 pixels. Sometimes you want higher still, and this is where CRTs lead the field. An average 17in CRT monitor will have a stab at 1280 x 1024 resolution at an acceptable refresh rate; better ones easily do it flicker free. Most 15in FPDs operate at 1024 x 768: anything higher on a panel will begin to cost you.

NEC recently announced a premium dual-input 15.4in FPD running at 1280 x 1024, but it costs £1300. Most FPDs offering 1280 x 1024 resolution are pricey 18in models, and beyond that you're looking at serious money. A 19in CRT should handle 1600 x 1200 as easily as a 17in display's 1280 x 1024. So in terms of high resolution, a point to CRT.

Both CRTs and FPDs build their image one line at a time, and don't start the next frame until the entire screen is drawn. The number of complete frames drawn per second is the refresh rate, measured in hertz (Hz). On a CRT, refresh rates below 70Hz are perceived by the human eye as flickery, and this is the cause of much fatigue. Flicker is more perceptible on larger CRTs, forcing sensitive users to drive them above 80Hz.

Slowly-discharging capacitors fitted to the electrodes of each LCD cell on an FPD monitor allow the image to remain steady even at low refresh rates of below 60Hz. So in terms of low flicker, we'll call it a draw.

It's also fairly even when it comes to viewing angle and the number of possible colours. Modern FPD and CRT monitors should boast around 160° viewing angle horizontally and vertically, although it's worth noting that a CRT retains that angle diagonally, whereas an FPD darkens. Older FPDs could only muster 18-bit colour, but modern panels handle full 24-bit. There are colour issues we'll mention later, but in this round we have three draws and one point to CRT.
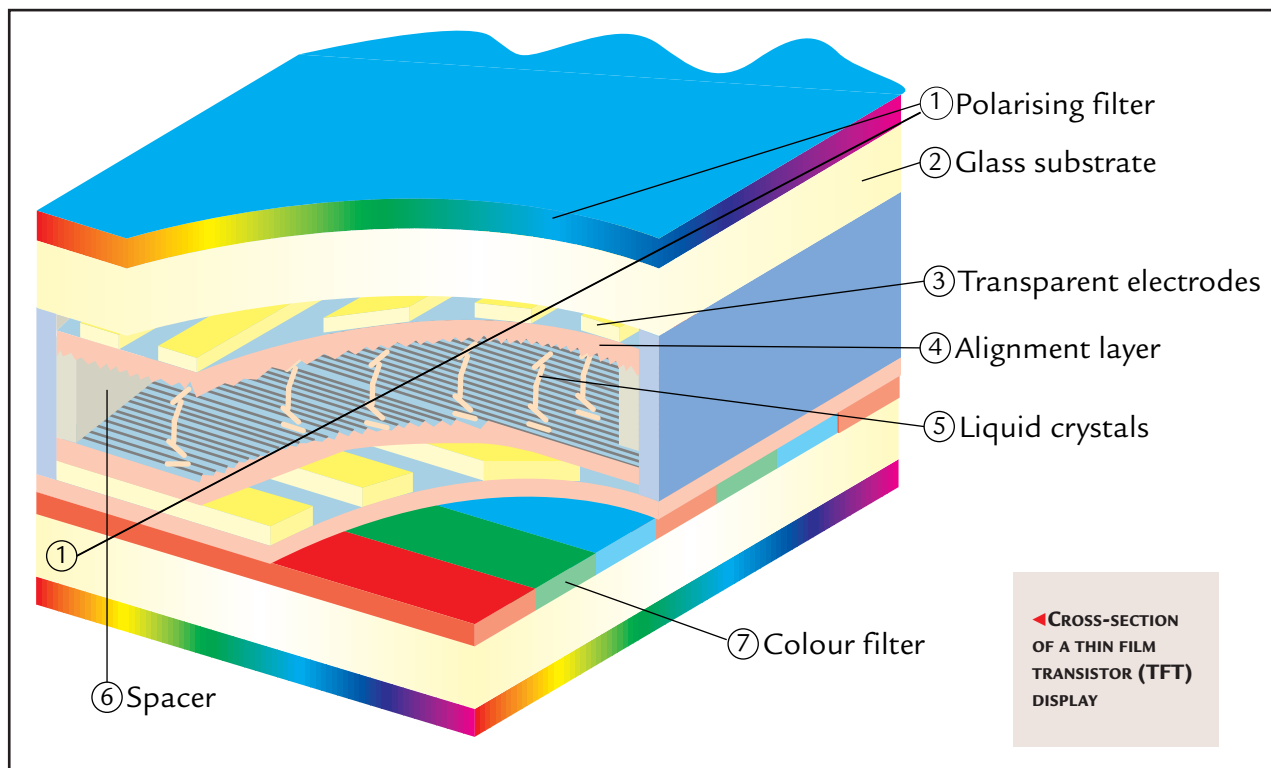
☛ Ergonomics
Now for the political hot potato. Since we spend so much time boggling at displays, the issue of safety often rears its head. Several years ago the Swedish testing authority's MPR-II and various TCO standards came into play to reduce unwanted emissions from CRTs. Although an FPD does not feature a high-voltage electron gun, it remains an electrical appliance with fields. In reality, the modern office with TCO-compliant displays probably suffers more unwanted field emissions from air-conditioning motors and other common appliances. With current display standards, we should be more concerned about using mobile phones.

Power consumption is a different matter. Typical CRTs may consume 100 to 150 Watts, compared to between 25 and 50 Watts for a TFT FPD. There's a saving there immediately, and when you consider the lower heat generation of an FPD resulting in reduced air-conditioning, there's a compelling reason for some environments to justify switching to TFT monitors. However, there would be considerable savings straight away if the standard power-saving modes were activated on any monitor. One-nil to FPDs.

☛ Image quality
When it comes to image geometry, modern CRTs may have much improved but they cannot compete with FPDs. A pixel in the middle of an LCD panel is identical to one in the furthest corner, and they're arranged in a perfect grid. The result is perfect geometry, and

1. Polarising filter
2. Glass substrate
3. Transparent electrodes
4. Alignment layer
5. Liquid crystals
7. Colour filter
6. Spacer

◄ CROSS-SECTION OF A THIN FILM TRANSISTOR **(TFT)** DISPLAY

consistent focus without convergence or colour purity problems. That's easily two points to FPD.

But no display is ever artefact-free. The TFT manufacturing process suffers from high failure rates, but panels considered acceptable may include several 'dead' pixels. These pixels may never illuminate or, more annoyingly, remain locked on one colour. Worse, additional pixels could die at any time. While rare, and relatively easy to overlook, dead pixels remain the bane of FPD owners.

Users of aperture grille CRTs (Sony Trinitron/Mitsubishi DiamondTron) sometimes complain of the two fine, visible, damping wires running horizontally across the image for mechanical stability. But you get used to these too, and reap the benefits of a vibrant display, so CRT wins the tolerable artefact issue.

Light output is an interesting point. CRTs win easily on peak brightness of a small area, but modern TFTs win in terms of overall brightness across the entire display. That makes CRTs great for moving video, but FPDs superior for the typical Windows desktop.

If you measure the brightness across the display, you'll notice it reducing as you reach the corners of a CRT. With side backlights, a poor TFT panel may dim towards the centre, but modern panels are more even than a typical CRT. Three-one to FPD.

☛ Performance

Judging the image quality of actual applications may result in a few surprises. FPDs, with their regular grid array of pixels, easily win on the geometric front; for spreadsheets and certain aspects of CAD and DTP, this accuracy and consistent focus is a boon.

That's about it, though. The colour and contrast performance of TFT FPDs will shock users of photo-retouching and video-editing software. It's not that they're wrong, but that their S-shaped gamma curve is very different to CRTs.

TFTs suffer from poor detail in bright highlights and dark shadows, which means FPDs are at best unfamiliar, and at worst, totally unsuitable for colour-critical applications. And due to the slower response times of older LCDs, moving video can also look a little strange on some TFT FPDs.

Then there are games, which typically run at different resolutions to your Windows desktop. Switching resolutions and scaling them to fill the screen is no problem for a multisync CRT monitor, but it's a challenge for an FPD. An LCD has a set number of pixels in its array, and whatever anyone tells you, this is the resolution you should drive it at. FPDs can scale lower resolutions with varying success, but strange artefacts quickly crop up. A 1024 x 768 FPD should be run at that resolution, or you may be disappointed. Two-one to CRT.

☛ Conclusion

It's a landslide victory for FPD monitors, winning 12-6 against CRT. But does this mean you should throw away your CRT and go FPD? Once again, it's all to do with your application. If space is tight or looks are important, then an FPD is the only choice; they're especially welcome in the small office.

You shouldn't be too concerned about overall power savings, though, unless you're buying several hundred displays and could also benefit from the other positive characteristics of FPDs. City trading floors prefer FPDs because they can squeeze more of them into a fixed area, and power consumption can be a big issue.

If you're into photo retouching or video editing, then a CRT monitor is a must. Gamers also prefer the colour and response of CRTs, and their superior handling of multiple resolutions. Designers may envy the excellent geometry of FPDs, but often demand the ultra-high resolutions and large images only a CRT can economically deliver.

And that will always be CRT's trump card: TFTs may be getting cheaper, but CRTs will always cost much less. In fact, with a worldwide shortage of TFTs forecast to last well into 2000, prices of FPDs are set to increase again. If money's too tight to mention, you'll be staring at the tube for some time to come.

GORDON LAING