Picturing the future

AT THE DAWNING OF THE NEW DIGITAL AGE, ADELE DYER, NIK RAWLINSON AND PAUL TRUEMAN FOCUS ON SOME OF THE MOST ADVANCED CAMERAS THAT ARE POISED TO MAKE FILM A THING OF THE PAST.

Illustration by Paul Shorrock

Film is dead. Long live digital. Well, perhaps we're getting squiffy on the funeral sherry before the corpse is cold, but we're a lot closer to that day than we were a year ago. Then, most digital cameras had a maximum resolution of just 640x480 pixels: fine for photographs on web sites, but too small to give satisfactory results on paper. The cameras we looked at this time all had a resolution of at least 1024x768, with many of them being megapixel cameras. The colours they produce have improved, as have their functionality, but they do not cost any more than they did this time last year.

The increase in quality along with a drop in price is partly a result of digital cameras being this year's must-have gadget. If you don't have one, you're just not a sorted consumer.

This year we've rounded up the cream of the digital cameras. We were going to stick to megapixel cameras, but decided to drop our criteria to include those cameras with resolutions of 1024x768. So, we have 15 cameras costing from as little as £300, with something to suit every taste — and every idea of a snappy little snapshot.

Agfa ePhoto 780

Small, and about the same weight as a conventional camera, this Agfa has a maximum interpolated resolution of 1024x768 pixels. At this resolution, the standard 2Mb SmartMedia card supplied will hold 12 images, but three lower-resolution modes, down to a minimum 320x240 resolution, will take the capacity up to 96 pictures with JPEG compression.
Aimed at the first-time digital camera user, it is a simple point-and-click model, with two unlabelled buttons on the top to operate the controls for flash and image quality and a single button to activate the shutter.
The bundled PhotoWise image management software was a breeze both to install and use. Double-clicking the icon allowed us to open the images on the camera and perform very basic editing, such as rotation and resizing.
The snap-shut cover on the front is a welcome addition, keeping the lens, equivalent to a 33mm lens on a 35mm camera, clean and protected from scratches. It also turns the camera on and off. The on-screen display is basic but gives access to the self timer, as well as providing the ability to delete photographs. The LCD is "off" by default, to save on battery power, but can be activated with a single button. There is no zoom, although a macro feature allows the camera to take close-ups.

PCW DETAILS

★★★

Price *£351.33 (£299 ex VAT)*
Contact *Agfa 0181 231 4906*
www.agfa.co.uk
Good Points *Small, light, easy to use.*
Bad Points *No zoom, disappointing picture quality.*
Conclusion *A good introduction to digital cameras.*

Agfa ePhoto 1280

The 1280 was released at the start of the year, since when it has garnered praise from technical reviewers. At first glance it is hard to see why, but after just five minutes with the 1280, it wins you over. An undoubtedly ugly, plastic, brown lump of a camera, it resembles the kind of product you would imagine designers coming up with if they were targeting the pre-teenagers.
Part of the reason for its dreadful aesthetics is that there are hardly any buttons to worry about, other than the shutter button, the rec/play dial and menu dial. With five different-quality options available, from 640x480 to 1280x960 interpolated (both offered with two levels of JPEG compression), an optical zoom that gives the Agfa 1280 the equivalent of a 38-114mm lens on a 35mm camera, and aperture sizes from f2.8-9.1, this camera is deceptively and brilliantly complex in terms of functionality, yet simple in design. The menu offers the user the ability to set everything from a self timer to exposure and focus, or simply leave everything to the camera.
The LCD was one of the best we saw, offering a sharp, colourful and fluid picture across its 2in TFT screen. The 1280 comes with a 4Mb CompactFlash that can store about six shots at the best image-quality setting, but 60 if you set it to 640x480 at a standard level of compression.

PCW DETAILS

★★★★

Price *£762.57 (£649 ex VAT)*
Contact *Agfa 0181 2314906*
www.agfa.co.uk
Good Points *Excellent functionality combined with user-friendly design.*
Bad Points *Ugly. Colours not well resolved.*
Conclusion *You'll learn to love it.*

Casio QV-5000SX

Casio was one of the first companies to produce a digital camera for the masses and its cameras are now well known. The QV-5000SX is something of a departure for Casio in that it is the company's first mega-pixel digital camera, with a maximum resolution of 1280x960 pixels.
The camera has 8Mb of memory, which sounds generous. However, this is internal memory only, so unlike all the other cameras in the test it cannot be expanded with the use of removable memory cards. You are therefore limited in the number of high-resolution images you can take at one time — up to 17 — before you need to go back to your PC. The other annoying consequence is that you cannot then use something like a FlashPath drive for quick and easy downloading. Instead, you have to use the download software and serial cable.
The lens is equivalent to a 35mm lens on a 35mm camera. There is X2 and X4 zoom, but this is digital only and drops the resolution down to 640x480, which results in poor-resolution, ill-focused images. Finally, the software is skimpy, with panorama stitching software and only basic image editing.
There are some good points, such as the movie play, which records shots at the rate of 10 frames a second — but again, at a low resolution. These shots can be played back as (rather jerky) QuickTime movies.

PCW DETAILS

★★

Price *£499.99 (£425.52 ex VAT)*
Contact *Casio 0181 450 9131*
www.casio.co.uk
Good Points *High-resolution images. Movie play feature.*
Bad Points *No external memory. No optical zoom.*
Conclusion *Poorly-featured for the price.*

Canon PowerShot A5

With the PowerShot A5, Canon has produced a digital camera that is much closer in look and feel to a traditional point-and-shoot film camera. It's small and neat and bears a striking resemblance to Canon's IXUS ASP camera. A dial on the top and a short menu on the LCD lets you select your options quickly.The PowerShot A5's functionality is limited to date- and time-stamping your photographs and choosing the resolution — either 1024x768 or 512x384.

At the lower resolution and the highest of three levels of compression you can fit an amazing 236 shots onto the 8Mb CompactFlash card supplied. At the higher resolution you can print photographs to A5 size on an inkjet printer, hence the name.

The lens is fixed at the equivalent to a 35mm lens on a 35mm camera. Auto-focus and auto-exposure make it even easier to use. If you half press the shutter button to focus on one object, you can then move the camera, allowing you to focus on an object even if it's not in the centre of the frame. Some peoplemay find the level of nannying annoying, but this camera is aimed squarely at the home snapper, not at business users or photography enthusiasts.

The A5 uses a Lithium battery rather than AA batteries, which lasts longer than conventional batteries but needs a recharger, which comes in the box.

PCW DETAILS

★★★

Price *£645.08 (£549 ex VAT)*
Contact *Canon 0121 680 8062*
www.canon.co.uk
Good Points *Small, neat, easy to use.*
Bad Points *Not much more than a point-and-shoot.*
Conclusion *Fun, but picture quality isn't great.*

Epson PhotoPC 700

Epson is not a company you might associate with photography, but it is keen to embrace the idea of digital imaging. Not surprisingly, the PhotoPC 700 will print directly to all of Epson's photo printers, and some of its small business printers, without the need to boot up your PC. Not only can you print directly in the 4x6in format, but also 5x7in, contact sheets and photo stickers.

Following on from last year's PhotoPC 600, the 700 represents a number of improvements rather than a complete overhaul. The resolution is up to 1280x960 pixels, with two levels of compression. You can also shoot at 640x480 resolution, notably when you use the 2X zoom. There is even an option to shoot in black-and-white.

At the highest resolution and least compression you should be able to fit 40 shots on the 4Mb of internal memory. However, the 700 also has a CompactFlash slot, though no cards are supplied as standard, so you can expand the memory in future.

There is still an LCD and a viewfinder, but the viewfinder now has a crosshair in the middle and lines at the corners to help you line up your shots. The lens is equivalent to a 36mm lens on a 35mm camera, but there is an adapter on the front which allows you to fit other, Tiffen lenses, sold separately.

Highly Commended — Personal Computer World

PCW DETAILS

★★★★

Price *£587.50 (£500 ex VAT)*
Contact *Epson 0800 289622*
www.epson.co.uk
Good Points *Panoramic mode (1280 x 480), continuous shot.*
Bad Points *Digital zoom only.*
Conclusion *Excellent picture quality at a reasonable price.*

Fuji DS-300

Fuji supplied two cameras suitable for this group test, but in terms of aesthetics they couldn't be more different. Next to its slinky, silvery MX-700 companion, the DS-300 looks unappealingly angular and chunky. The DS-300 isn't aimed at gadget-heads or even people who quite like cameras and have some spare moolah to throw about; at £1500, it's really for those who make their living from photography.

Capable of two resolutions, 640x480 or 1280x1000, and four types of compression (from "Basic" compression of 1/16 JPEG to an uncompressed "Fine" TIFF file), the DS-300 is fitted with a 10Mb PCMCIA memory card that can fit straight into a notebook. There is an optical as well as X2 digital zoom option, with the Fujinon lens offering the equivalent of a 35mm-105mm lens on a conventional 35mm camera.

Given that the user has total control of the shot, from the white balance to the shutter speed, as well as being able to choose the file size and whether to take a colour or b/w shot, it takes a while to find your way around the wealth of functions, as user-friendly as the controls are. There is an extension unit that attaches to the base of the camera, making it even heftier, but there is a SCSI interface on the extension unit for faster file transfer times if hooked up to a SCSI port on a PC.

PCW DETAILS

★★★★

Price *£1756.63 (£1495 ex VAT)*
Contact *Fujifilm 0171 586 5900*
www.fujifilm.com
Good Points *Excellent functionality and picture quality.*
Bad Points *The size of the camera and its price tag.*
Conclusion *A good bet for the professional.*

Fuji MX-700

The MX-700 is a clear indication that companies are now marketing digital cameras as highly desirable pieces of kit. Coated in a silver matt finish, the MX-700 combines thorough functionality with impressive miniaturisation. Equipped with Fuji's own Fujinon lens, with a focal length equivalent to a 35mm lens on a 35mm camera, the MX-700 has two set resolutions: the lower takes pictures at 640x480 pixels, the higher at 1280x1024 pixels. While there isn't an optical zoom, there is a digital zoom capable of 2X magnification. However, we couldn't help thinking that a lens cap might have proved worthwhile to protect the integrity of the lens. In some reviews of this camera, the controls have been criticised for being fiddly. We liked the rotating dial on the top right of the back of the camera, and the four buttons over the LCD aren't easy to confuse. The dial is perfectly placed if the camera is placed in the right hand because the thumb rests naturally on the dial. The same dial can be used to select which photos to preview on the LCD. The LCD is excellent, bright and clear, and there is an option to switch it off and use the small viewfinder in order to save the batteries. The only real drawback is the amount of memory that comes in the SmartMedia card, a mere 2Mb that can't store more than two or three images at the highest resolution.

PCW DETAILS

★★★★

Price *£649.99 (£553.19 ex VAT)*
Contact *Fujifilm 0171 586 5900*
www.fujifilm.com
Good Points *All your chums will want one.*
Bad Points *All your chums will want to play with it.*
Conclusion *The choice of the FHM reader.*

Kodak DC220

The DC220 follows closely on the heels of the DC210. Like the DC210, the 220 has a 2X optical zoom and two resolutions: 1152x864 pixels and 640x480 pixels, with three levels of image compression. The lens on both is equivalent to a 29-58mm lens on a 35mm camera. However, the difference between them is in the finer detail. The 220 also has a 2X digital zoom [see p233 for more on digital zoom] and an 8Mb, rather than just 4Mb, CompactFlash card which stores 26 images at the highest resolution and the least compression. The design of the DC220 has obviously been carefully considered: there are nice touches like a lens cap, a double cover over the four AA batteries, and indentations which make it easier to hold the camera without getting your fingers in the way of the lens. The buttons and the multicolour menu system are easy to find your way around, and to make it seem more like a film camera, it clicks and whirrs when you take a shot, as if the shutter is snapping and the film winding on. Like the DC260, it also has a time lapse setting and burst mode settings, both of which let you take pictures at designated intervals.
Other points are less well thought out, though, notably the zoom button which can be hard to adjust to the desired degree.

PCW DETAILS

★★★★

Price *£699 (£594.90 ex VAT)*
Contact *Kodak 0800 281487*
www.kodak.com
Good Point *Well designed, generally easy to use.*
Bad Point *Zoom hard to position correctly.*
Conclusion *A smart point-and-shoot camera.*

Kodak DC260

This is an enhanced version of the DC220 save that, curiously, it lacks that model's macro mode for close-ups. Kodak claims it is the first sub-£1000 camera with 1.6 megapixel sensor, giving a resolution of up to 1536x1024 in 24-bit colour — enough for high-quality 8in by 10in prints. The extra pixels also give more scope for cropping because you can halve the area and still have a full-colour full-screen VGA image.
The DC260 offers a 3X rather than 2X zoom, with a 2X digital zoom kicking in automatically to give a total 6X. You can opt to use external lighting rather than the internal flash, and to focus onto a single point, a general scene, or at a specified distance. The bundled 8Mb CompactFlash card can store around 16 hi-res pictures. Transferring them to a PC can take half an hour or more via a standard serial port, or a few seconds via the alternative USB. A fast infra-red port is also provided, and you can view pictures through a TV.
A script language allows you to configure both the 260 and 220 for specific tasks, and even create wizards to guide users via the rear LCD panel. You might, for instance, use a script to take "bracket" shots at two or more f-stops to ensure a good exposure. You need a CompactFlash drive to load a script.

Editor's Personal Computer World Choice

PCW DETAILS

★★★★★

Price *£899 (£765.11 ex VAT)*
Contact *Kodak 0800 281487*
www.kodak.co.uk
Good Point *Desirable, versatile and smart (in both senses).*
Bad Point *A dollar equals a pound, judging by the US and UK prices.*
Conclusion *Shows the digital camera at last approaching the quality, features and value taken for granted in good traditional cameras. Expect prices to fall.*

Nikon Coolpix 900

Rotatable camera lenses are all the rage nowadays, and Nikon has fitted an eyecatching lens to the side of the Coolpix 900 that can swivel through 270 degrees. Matt silver finish is obviously *in* this season for mega-pixel digital cameras, and the Coolpix 900 is a great example of an attractive gadget that everyone will want to play with.
It offers both optical and digital zoom, with a lens equivalent to a 38-115mm lens on a 35mm camera. The CCD can take photographs of resolutions up to 1280x960 pixels. The 4Mb Nikon CompactFlash memory card, meanwhile, can store up to six pictures at the fine setting, 12 normal and 24 basic, and optional extras include memory cards with up to 24Mb of memory.
The Coolpix 900 is one of the few cameras not to come with a power adapter connection cable to enable the user to save battery life. The camera takes four conventional AA batteries and there is no recharger, so you must simply buy new batteries when they run out.
There is a "Premium" pack available for an extra £100 that includes the power adapter and 12Mb memory card.
On the other hand, the 900 had some of the best software we saw, with NikonView 900 creating a virtual drive, and photos kept there ready to be dragged and dropped like any other Windows file.

PCW DETAILS

★★★

Price *£759 (£645.96 ex VAT); Premium bundle £859 (£731.06 ex VAT)*
Contact *Nikon 0800 230220*
www.nikon.co.uk
Good Points *Great LCD, pictures easily transferred to the PC.*
Bad Points *Rather stingy basic package.*
Conclusion *Would be a contender if the images were better.*

Olympus Camedia C-840L

The worst thing we could find to say about this camera was that it had no zoom, which is hardly a fault and not a criticism. It was small and neat and far from greedy with the batteries, even though we used the LCD instead of the viewfinder to take almost every picture.
A snap-shut cover turns the camera on and off and, as well as protecting the lens, is the housing for the built-in flash. External connectors include ports for the power supply, PC interface and PAL video out. The maximum resolution of 1280x960 was one of the highest we have seen in this class and the JPEG images can be electronically protected to prevent them from being unintentionally wiped from the camera. Coming with a 4Mb SmartMedia card as standard, the Camedia is capable of capturing between 9 and 60 images at highest (1280x960) and lowest (640x480) modes, respectively, straight out of the box.
A direct printing option lets you output images to the Olympus P-300E and P-150E printers without a PC, while a "mirror" option allows images to be flipped while still in the camera so that the printed images are suitable for ironing onto T-shirts. The utility software allows users to print single sheets containing up to 30 images for indexing purposes.
The OSD is limited, but the supplementary calculator-style display on top covers all necessary functions.

PCW DETAILS

★★★★

Price *£599.99 (£510.63 ex VAT)*
Contact *Olympus 0800 072 0070*
www.olympus-europa.com
Good Points *Small. High resolution. Good LCD.*
Bad Points *A little on the pricey side.*
Conclusion *Good camera, but images are too pixelated.*

Olympus C-1400 L

The SLR design of this Olympus meant that it wasn't necessary to use the 1.7in LCD to see exactly what would be in your finished picture. Instead of using a mirror, it incorporates a prism that passes 40% of the incoming light to the viewfinder and the remainder to the CCD. White balancing is automated, while aperture settings range from wide f2.8 and f5.8 to telephoto f3.9 and f7.8.
We were impressed by the inclusion of two 4Mb SmartMedia cards, each giving room for 49 standard-quality images at 640x512 pixels but only four 1280x1024 high-quality images using JPEG baseline compression. With a lens equivalent to 36-110mm, it has a 3X zoom. The built-in flash folds down when not in use and incorporates the now almost standard red-eye reduction. A 12-second self timer, meanwhile, let us appear in our own photographs. Exposure was automatic but seven settings allow users to adjust this to suit their particular requirements. Although the camera uses four AA batteries, we soon had to resort to the external power supply. External connections allow for hooking up to Olympus' own dye-sub printer to output images directly at a rather obscure 306dpi without downloading to a PC.
The supplied PC utility software is supplemented by a TWAIN driver for extra flexibility.

PCW DETAILS

★★★

Price *£999.99 (£851.06 ex VAT)*
Contact *Olympus 0800 072 0070*
www.olympus-europa.com
Good Points *SLR. Direct print to Olympus printer. High resolution.*
Bad Points *Big and heavy. Greedy with the batteries. Expensive.*
Conclusion *It looks impressive, but there are better options out there.*

Panasonic NV-DCF5B

The Panasonic NV-DCF5B and the Coolpix 600 from Nikon are essentially the same camera. However, we chose to review the Panasonic because it comes with numerous add-ons that increase its functionality and, of course, its weight.
At first glance this is one of the smallest cameras we have reviewed. The DCF5B has a maximum resolution of 1024x768 pixels at a "fine" setting, and 1136x640 pixels at the "widescreen" setting.
The f5 lens is the equivalent of a 36mm lens on a 35mm camera, with an 2X digital zoom. This function can be used to enlarge on pictures already taken and viewed on the LCD.
LCDs represent a large drain on the camera battery, and it's always a good idea to find out whether there's an option to switch them off. The DCF5B allows the user to do just that, and use the viewfinder positioned over the LCD to still take photographs. If you wish to take shots using the "zoom" or "wide" setting, then the LCD will activate automatically to allow you to see the proposed shot.
The DCF5B comes with a lightweight flash that can be screwed onto the side of the camera, plus the Digital Still Camera Station that attaches to the bottom of the camera, which you will need to connect before downloading the pictures you have taken to a PC.

PCW DETAILS

★★★

Price *£549.95 RRP (£468.02 ex VAT)*
Contact *Panasonic 0990 357357*
www.panasonic.co.uk
Good Points *Pocket-sized. Easy on the eye.*
Bad Points *Too many add-ons needed for full functionality.*
Conclusion *A neat little camera, but images dark and lacking in detail.*

Ricoh RDC-4300

Ricoh's former digital cameras were always instantly recognisable by the flip-up LCD screens. The RDC-4300 looks more like a conventional camera, albeit one with a lens that will swivel through 180 degrees. The flash also swivels, but only through 90 degrees, so if you are pointing the camera at yourself to take pictures it will only flash light at the ceiling rather than the subject. However, the image on the LCD screen will automatically right itself to show the image the right way up, no matter what direction the lens is pointing, or indeed which way up the camera is. The zoom lens is equivalent to a 35 – 105mm lens on a 35mm camera. However, the zoom was a little clunky to use on the pre-production model we saw. As we moved the slider on the back, it grated and was a little jerky in its adjustments.
You can record sound with your images, or just sound on its own through a tiny microphone on the camera, so you can add notes to your pictures. You can record up to eight seconds with pictures, although be aware that this will eat into your 4Mb of SmartMedia.
In use the RDC-4300 is very easy to manage. The controls are all well set out and easy to navigate around. The image quality was one of the best we saw from any of the digital cameras in this test, including those costing considerably more. Colour reproduction was excellent.

Highly Personal Computer World Commended

PCW DETAILS

★★★★★

Price *£599 (£509.79 ex VAT)*
Contact *Ricoh 01782 753355*
www.ricoh.co.uk
Good Points *Rechargeable batteries and recharger as standard.*
Bad Points *Needs a second Lithium battery to record date and time.*
Conclusion *A nice camera to use, with good features and great output.*

Sanyo VPC-X300

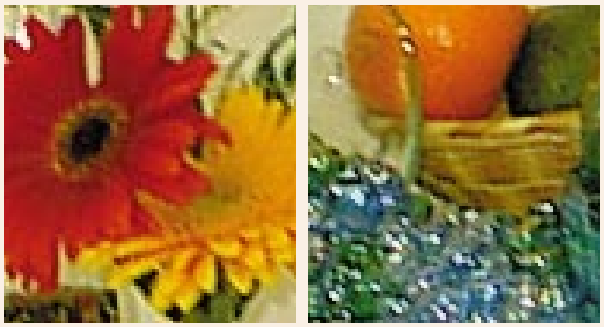
Unique to this camera is the four seconds of audio that can be recorded with each photograph. On the downside, this dramatically decreases the number of pictures you can fit onto the standard 4Mb SmartMedia card.
The lens has a fixed optical focal length and is equivalent to a 36mm lens on a 35mm camera. The 3X digital zoom, however, slices off pixels from around the edge of the image in six increments, which takes the resolution down from 1024x768 to 640x480.
Two multiple-shot options will take nine images in rapid succession — at 0.1 second and 0.2 second intervals respectively. These can be played back as AVI files, but as all nine shots are fitted onto one 1024x768 pixels image, the resolution of each shot is very low.
It takes a long time for the camera to write images to the card, so unless you are using the multiple photograph option you would not be able to take more than one picture without having to wait.
This camera is very easy to use, with the OSD presenting a series of one-step options rather than asking the user to select from a succession of menus. Likewise, the software is friendly and idiot-proof, incorporating a quick download option to dump all images on the hard drive without displaying thumbnails.

PCW DETAILS

★★★

Price *£509.79 (£599 ex VAT)*
Contact *Sanyo 01923 246363*
www.sanyo.co.uk
Good Points *Multiple shots. Easy to use. Audio annotation.*
Bad Points *No power supply. Slow to write pictures.*
Conclusion *Some nice features, but it ultimately failed to impress.*

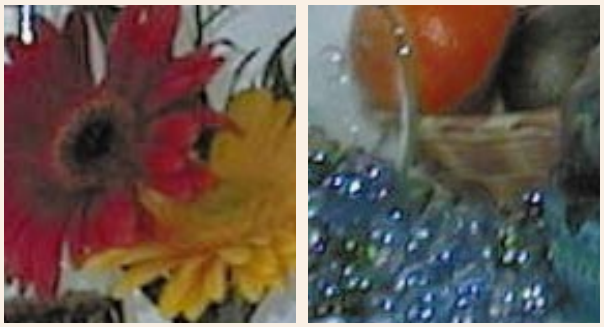
AGFA
ePhoto 780 (640x480)



AGFA
ePhoto 1280 (1024x768)

CASIO
QV-5000 (1280x960)

CANON
PowerShot A5 (1024x768)



EPSON
PhotoPC 700 (1280x960)

FUJI
DS-300 (1280x1000)

FUJI
MX-700 (1280x1024)

KODAK
DC220 (1152x864)

KODAK
DC260 (1536x1024)

NIKON
Coolpix 900 (1280x960)

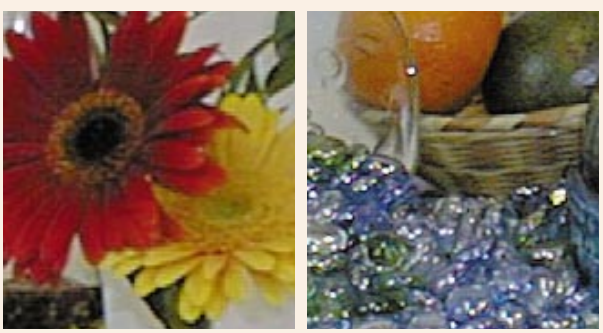
OLYMPUS
C-840L (1280x960)

OLYMPUS
C-1400L (1280x1024)

PANASONIC
NV-DCF5B (1024x768)

RICOH
RDC-4300 (1280x960)

SANYO
VPC-X300 (1024x768)



How we did the tests

All the cameras were set to their highest optical resolution [see page 233], with the least compression applied to the images. We used flash rather than photographic lighting as this is how cameras in this price range will most likely be used. As some of the cameras handled exposure automatically and others allowed adjustments to be made, to create a level playing field we took all the images using the default exposure settings. We have published small sections of the shots we took to give a better indication of close-up quality .

Editor's **Choice**

Digital cameras have come a long way in a very short space of time. Here are three of the best.

All too often peripherals are all talk and no trousers, promising the earth but delivering results that are less than impressive. This year's batch of digital cameras, however, has been anything but disappointing. The most noticeable and obvious improvement has been in terms of resolution, which has leapt from an average of 640x480 to mega-pixels in a very short space of time. If this had meant prices going through the roof, we might have been less keen, but prices are little more than they were a year ago.

Image quality is far more important than gadgety extras

Numerous other factors favour this year's crop. More and more have zoom lenses, which increases their adaptability. More include functions to adjust such things as white balance and exposure, ensuring that you have the tools to overcome obstacles such as bad lighting. Add to this advanced functionality, such as the scripting capability on Kodak's DC260, and you have cameras which are much more than fun accessories — they can be a real business tool.

In making our awards, our prime consideration was to pick those cameras which produced the best images. While functionality is an added bonus, good image quality is far more important than gadgety extras. But we also took price into consideration, so there were several cameras which deserve a mention but just failed to win an award. For sheer image quality, the Fuji DS-300 and the Olympus C-1400L were both on a par with our Editor's Choice. The problem is, they are much more expensive than the other cameras in our test. If you have limited means, our other award winners are not far behind them in terms of quality. The first camera to win a **Highly Commended** award is **Epson's PhotoPC 700**. The image quality is exceptional for what is a relatively cheap camera. And although it doesn't have an optical zoom, you can add on third-party lenses. It has a resolution of 1280x960, 4Mb of internal memory with a slot for CompactFlash cards, and panoramic and continuous shot modes. It gives you the basics for a good price. The second **Highly Commended** award goes to the **Ricoh RDC-4300**. This camera also has a resolution of 1280x960 but comes with an optical zoom lens which can swivel through 180 degrees, as well as a sound-recording facility. Once more, it was the quality of its images that really caught our eye. But the **Editor's Choice** has to go to the **Kodak DC260**. Not only did it have the highest resolution, at 1536x1024, a 3X zoom and superb picture quality, but it also far outstripped any other camera in terms of features. Perhaps the most impressive of these was the scripting facility, which lets you set up various types of shots with details such as the resolution, compression rate and exposure settings without having to fiddle around with the menus for ages. You can even automatically place images in pre-specified positions in documents. In other words, it is the shape of digital cameras to come.

▲ **Kodak DC260**
▶ **Ricoh RDC-4300**

▲ **Epson PhotoPC 700**

Camera **angles**

Digital cameras are strikingly different to traditional film models.

No matter how much manufacturers try to make digital cameras look like film cameras, there are numerous differences between them. First and foremost is the method of capturing the image.

Digital cameras use a CCD (charged couple device), much like that employed by scanners. The CCD consists of a grid of pixels, and the higher the number of pixels, the larger the resolution of the resulting image. So a grid of 1.3 million pixels will translate into an image size of 1280x960 pixels, given that the images created by pixels on the far edge of the CCD are often cropped off.

Each pixel in the CCD has a red, a green and a blue transistor. These are charged when light hits them, so the brighter the light, the higher the charge. This is converted into a digital value, and after passing through a DSP (digital signal processor) to adjust contrast and detail, the data is then sent to the storage medium.

Almost all digital cameras use flash memory, which is small, portable and non-volatile, meaning you don't lose your pictures if the battery goes dead. Most cameras use removable flash memory cards, either in the form of CompactFlash cards or SmartMedia cards. CompactFlash cards can be put into PC Card adapters to download images direct to a notebook. The smaller, slimmer SmartMedia cards can be slotted into what looks and behaves like a floppy drive for downloading direct to any PC. All this makes downloading images much faster than hooking up the camera to the serial port of your PC. Most digital cameras will compress the image before it is stored, and most offer you a choice of two or three levels of compression.

Most digital cameras compress the image before it is stored

Compressing the image will reduce its size, so you'll be able to fit more images onto your media. However, note that image compression, especially the widely used JPEG format, will affect the quality of the image.

Image sizes can only get larger, especially with the explosion in resolution levels. Last year, only a few cameras pushed themselves over the 640x480 pixels limit. This year, the same amount of money can buy you a camera with double that resolution. Be aware, however, when choosing a camera that some manufacturers in this test, notably Agfa, may quote an interpolated, rather than optical, resolution. Obviously, an image at an interpolated resolution of, say 1024x768, derived from an optical resolution of 800x600, is not going to be as good as an image at an optical resolution of 1024x768.

The advantage of higher-resolution images becomes apparent when you come to print. When outputting to an inkjet printer, you can print digital camera images at as low a resolution as 150dpi and still produce reasonable, and quite large, results. When outputting to a typesetter, as magazines do, you need to budget for 300dpi. By looking at the number of pixels and dividing this by the number of dots per inch you are printing at, you can work out what size your image will finally be. So, for example, an image with a resolution of 1280x960 pixels can be output on an inkjet at 8.5x6.4in and on a typesetter at 4.26x3.2in.

When taking your pictures, you are likely to have two ways of setting up the shot — using either a viewfinder or an LCD screen. Both have their disadvantages. As the viewfinder is to one side of the lens, the image you see through it is often just to one side of the image that will actually be captured. LCDs give you a more accurate report of what you will be taking, but are power mad and drain the battery at an alarming rate. As the CCD is minute compared to film — closer to 1/3in than 35mm — the lenses used are much smaller and much closer to the CCD, with a focal length of around 8mm. So lenses are described not in their actual dimensions, but in comparative terms to lenses on 35mm cameras. Many cameras quote "digital zoom" as a feature. Effectively, all it does is take the middle out of the image, cropping off the outer pixels and presenting this as a closer view. As a result, the image's resolution often drops to just 640x480. Some cameras will then try to use interpolation to stretch the image, with mixed results. If your camera is able to take images at resolutions of over 1024x768, you are better off doing the cropping yourself.

▲ **Floppy disk adapter**
▶ **SmartMedia card**
▼ **CompactFlash card**

Table of features

Manufacturer	Agfa	Agfa	Casio	Canon	Epson
Model	ePhoto 780	ePhoto 1280	QV5000	PowerShot A5	PhotoPC 700
Price inc VAT	£351.33	£762.57	£499.99	£645.08	£587.50
Phone	0181 231 4906	0181 2314906	0181 450 9131	0121 680 8062	0800 289622
URL	www.agfahome.com	www.agfa.co.uk	www.casio.co.uk	www.canon.co.uk	www.epson.co.uk
Focal length of lens	33mm	38-114mm	35mm	35mm	36mm
Digital zoom?	No	No	Yes	No	Yes
Macro mode	15cm - 40cm	40cm-75cm	10-30cm	9-50cm	10-50cm
No. of pixels in CCD	350,000	810,000	1,300,000	810,000	1,300,000
Max optical resolution	1024 x 768	1280x960	1280x960	1024x768	1280x960
Other resolutions	320x240, 640x480	640x480	640x480	512x384	1280x480, 640x480
Int/ext memory	None/2Mb	None/4Mb	8Mb/None	None/8Mb	4Mb/optional
Memory type	SmartMedia	SmartMedia	Flash memory	CompactFlash	CompactFlash
Images on int/ext mem	None/96	None/60	102/None	None/236	40/Optional
Native file format	JPEG	JPEG	CAM	CIFF	JPEG
Power adapter	Standard	Optional	Optional	Standard	Optional
Video out	NTSC or PAL	NTSC/PAL	NTSC/PAL	PAL	PAL
Image editing software	PhotoGenie	LivePix	QV-Link	PhotoImpact 4,	Hotshots, PageMill

Manufacturer	Fuji	Fuji	Kodak	Kodak	Nikon
Model	DS-300	MX700	DC220	DC260	Coolpix 900
Price inc VAT	£1,756.63	£649.99	£699	£899	£759
Phone	0171 5865900	0171 5865900	0800 281487	0800 281487	0800 230220
URL	www.fujifilm.co.uk	www.fujifilm.co.uk	www.kodak.co.uk	www.kodak.co.uk	www.nikon.co.uk
Focal length of lens	35mm-105mm	35mm	29-58mm	38-115mm	38-115mm
Digital zoom?	No	Yes	2X	2X	Yes
Macro mode	20-40cm	9-50cm	up to 20cm	No	8-50cm
No. of pixels in CCD	1,400,000	1,500,000	1,037,816	1,597,536	1,300,000
Max optical resolution	1280x1000	1280x1024	1152x864	1536x1024	1280x960
Other resolutions	640x480	640x480	640x480	1152x768, 768x512	n/a
Int/ext memory	None/10Mb	None/2Mb	None/8Mb	None/8Mb	None/4Mb
Memory type	Flash ATA	SmartMedia	CompactFlash	CompactFlash	CompactFlash
Images on int/ext mem	None/227	None/38	None/104	None/90	None/24
Native file format	TIFF/JPEG	JPEG	Flashpix or JPEG	Flashpix or JPEG	JPEG
Power adapter	Standard	Standard	Standard	Standard	Optional
Video out	NTSC/PAL	NTSC/PAL	NTSC/PAL	NTSC/PAL	NTSC/PAL
Image editing software	None	PhotoDeluxe 2.0	PhotoDeluxe	PhotoDeluxe	PhotoDeluxe 2.0

Manufacturer	Olympus	Olympus	Panasonic	Ricoh	Sanyo
Model	Camedia C-840L	Camedia C-1400 L	NV-DCF5B	RDC-4300	VPC-X300E
Price inc VAT	£599.99	£999.99	£549.95	£599	£599
Phone	0800 072 0070	0800 072 0070	0990 357357	01782 753355	01923 246363
URL	www.olympus-europa.com	www.olympus-europa.com	www.panasonic.co.uk	www.ricoh.co.uk	www.sanyo.co.uk
Focal length of lens	36mm	36 mm - 110mm	36mm	35 – 105mm	36mm
Digital zoom?	No	No - Optical	Yes	No	Yes 3x
Macro mode	10-50cm	30-60cm	3-70cm	8-40cm	20-50cm
No. of pixels in CCD	1,310,000	1,410,000	1,080,000	1,320,000	810,000
Max optical resolution	1280 x 960	1280 x 1024	1024x768	1280x960	1024 x 768
Other resolutions	640 x 480	640 x 512	512x384, 1136x640	640 x 480	640 x 480
Int/ext memory	None/4Mb	None/2 x 4Mb	None/4Mb	None/4Mb	None/4Mb
Memory type	SmartMedia	SmartMedia	CompactFlash	SmartMedia	SmartMedia
Images on int/ext mem	None/60	None/49	None/75	None/71	None/60
Native file format	JPEG	JPEG	JPEG	JPEG	JPEG
Power adapter	Optional	Optional	Standard	Optional	Optional
Video out	PAL	No	NSTC	NTSC/PAL	PAL
Image editing software	Utility software	Kai's Photo Soap	None	DU-4	MGI PhotoSuite