



Pumping up the stereo

The DRS fundus camera has been upgraded. **Bill Harvey** is impressed by the high quality of the images and the 3D capability

I first reported on the Digital Retinography System (or DRS camera) in *Optician* 18.03.11. At the start of this year, the distributor of the camera, Haag-Streit UK, announced that the DRS had been passed by the National Screening Committee (NSC) as an approved camera for use within the National Screening Programme for Diabetic Retinopathy. At the same time a number of 'major functionality enhancements' were also announced. I was keen to have a look at these so tried out the camera at the recent Eyecare 3000 exhibition in Glasgow (Figure 1).

What's new?

The camera was familiar from my last trial and the features that impressed then – internal 160GB hard drive, large touch screen control panel (Figure 2), wi-fi and ethernet/USB transfer – were still present. Also the operation of the camera, even under the bright lights of the exhibition stand with subjects of smaller pupil diameter, was effortless. The camera automatically aligns itself on axis, at the correct distance and in focus and sets the appropriate flash level. One touch of the screen to state which eye and a clear and high resolution image is achievable within 30 seconds (Figure 3).

So what was new? Well, when specifying whether the image is to be of the right or left eye (or both), you also have the option of selecting a single field image or, if you want a mosaic image, a multiple field capture. On top of this, there is now the option of selecting an anterior image or a stereo image.

The anterior image quality was impressive. For years now I have been advocating using retinal cameras to capture anterior lesions. For most cameras this requires moving the



Figure 1 Eyecare 3000 in Glasgow provided the opportunity to try out the new system



Figure 2 The large touch-screen control panel

patient away from the headrest and fine-adjusting the joystick before taking a shot which, you hope, is in focus. The DRS dedicated anterior programme ensures that the image is crisp and sharp without having to do anything more than selecting the 'anterior' button. Figure 4 shows such an image and the early cortical lens opacities are clearly visible.

Stereo images of the optic disc are considered by some experts at least as useful as disc OCT programmes in the assessment and analysis of optic disc integrity and change. I have to confess to having been somewhat sceptical in previous years about the usefulness of stereo imaging. This was partly as a result of having to use a viewer that detracted from the image or simply that the image quality was

not good enough. Having said that, there is no argument against a stereo view of the disc via a Volk assessment as being able to show rim anomalies, vessel changes such as flyover vessels, and areas of elevation of the disc area usefully. A good stereo image should, in my view, replicate the view through a Volk lens. The fact that I have seen such now has changed my mind on this. I took the images shown in Figure 5 using the DRS stereo function. Each is slightly disparate from the other having been taken sequentially after a small adjustment of the fixation target. This means that if viewed as a fused image, they reveal a three-dimensionality akin to the real life view.

How to view the 3D image

Face the images from around 30cm. Place your finger halfway between yourself and the page. When viewing the page your finger will appear double – simple physiological diplopia. Now view your finger and make it single. The images are now in diplopia. By moving your finger while maintaining focus at the point where it was you should see a central 3D image of the two figures in the middle. If this does not work (half of the office team here had trouble with that method!), simply look at the two images and then defocus until you see a central image



Figure 3 One touch of the screen to state which eye and a clear and high resolution image is achievable within 30 seconds

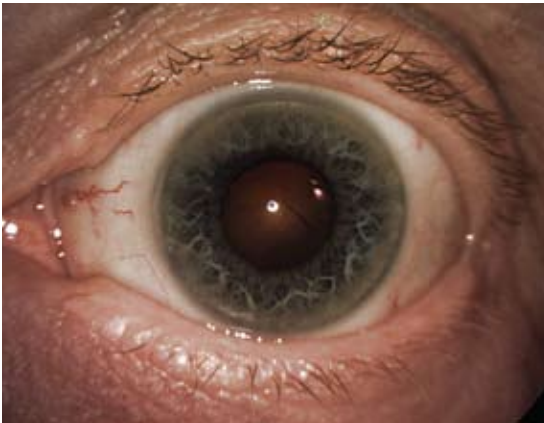


Figure 4 Impressive anterior image quality

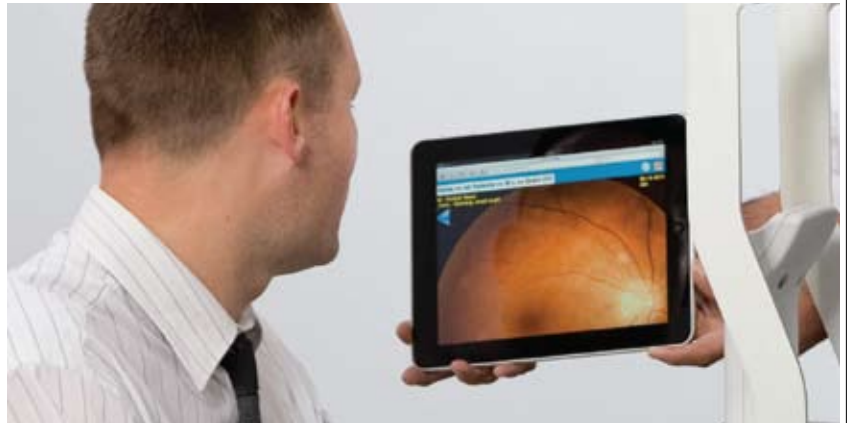


Figure 6 Images can be transmitted directly to a hand-held tablet computer

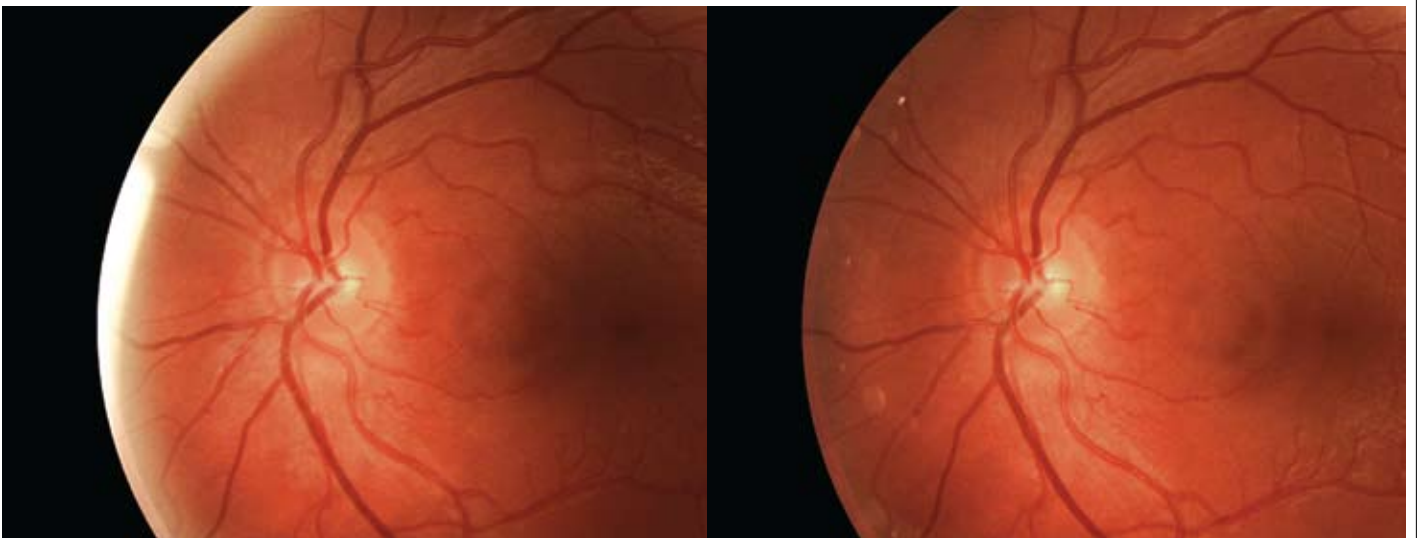


Figure 5 Look at the two images and then defocus until you see a central image in 3D

in 3D, much in the same way as those 'magical 3D images', popular in the 1990s, were intended to be viewed. The images created on the DRS are displayed side by side on the display pad making 3D viewing easy (if you can manage it using the printed journal then you should have no problem).

The 3D capability is supported by further analysis options in the DRS

software. New measuring tools are available including area measurement, a vessel thickness calliper and a 'cup-to-disc' relation tool. Automatic differential analysis is also provided.

Another extra feature on the new incarnation is the ability to transmit images directly to a hand-held tablet or PC where they may be viewed via a web browser. The ubiquity of the

iPad makes this another attractive feature and would impress any patient interested in knowing about their eyes (Figure 6). ●

● *Optician* will be featuring an in-depth CET article on stereoinaging later in the year. For more information on the DRS contact Haag-Streit on 01279 456261