



Image is everything

Optical instrument suppliers were out in force at Optrafair. **Bill Harvey** charts the rise of technology in the optical market

Instrumentation and equipment manufacturers generally do brisk business at Optrafair. Unlike some of the profession exhibiting at the show for whom it is a means to raise company profile, instrument manufacturers tend to make a healthy profit in sales. Many a deal is done at the show and many practitioners get excellent deals on new equipment.

As was the case at the 2005 show, fundus cameras and anterior image equipment were particularly popular this year and I met many a proud owner of a new imaging system as the weekend progressed.

Nidek had its AFC-210 camera on display which was attracting

much interest. The ease of use of the autofocus facility makes this an attractive proposition, not only to those concerned about their technical prowess, but also to anyone wishing photography to be part of a pre-screening process where training of auxiliary staff might be an issue. The instrument had been initially shown at the 2005 exhibition but is just now establishing a foothold in the market.

At the more specialist end of the range, the MP1 microperimeter, allowing sensitivity threshold values to be superimposed over fundus images, and the new Optosol SOCT, allowing 3D imaging optical coherence tomography (OCT) imaging of retinal structures were also featured.

Indeed, the rise of OCT in the optometric profession was very much in evidence, it being the most prominent theme of advertising hoardings on the way in to the show.

In OCT, a light beam is sent simultaneously to the eye and a reference mirror. The light penetrates through retinal tissues and is reflected back. The returning light is compared to the reference and this allows software to reconstruct a representation of the underlying tissues.

This ability to, in effect, show a cross-section through tissues makes the technique invaluable. It allows for accurate diagnosis of conditions where tissue elevation is detectable that might be difficult to visualise

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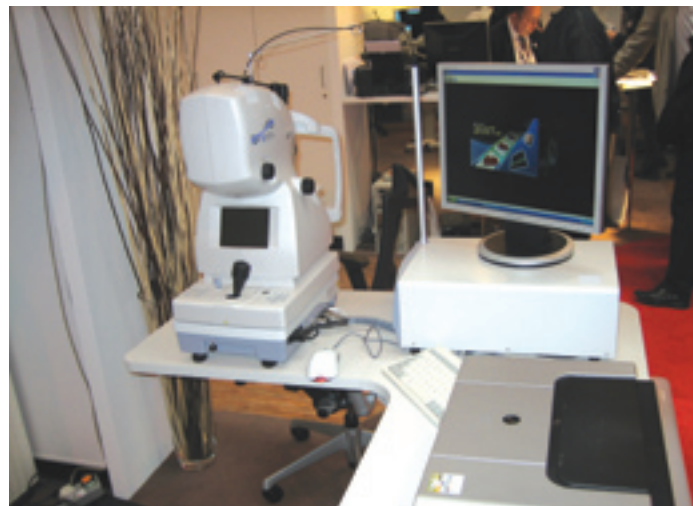


Figure 1 Topcon 3D OCT-100

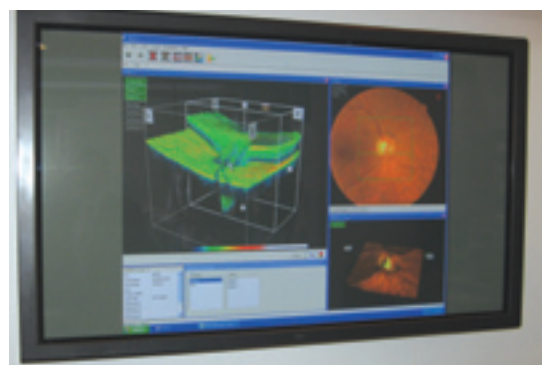
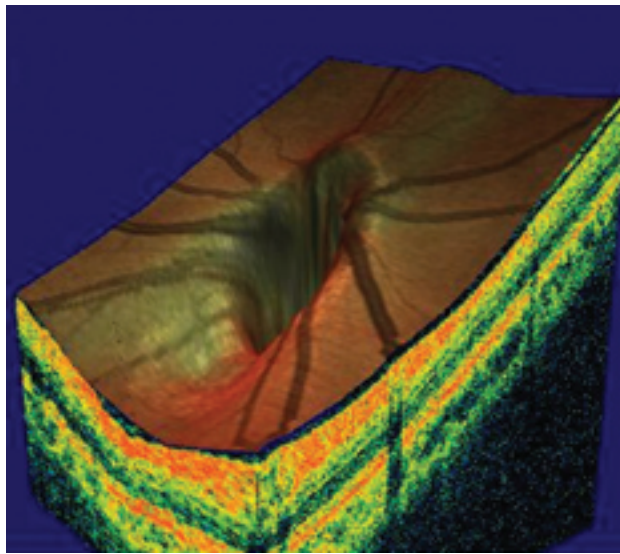


Figure 2 Composite data display from the Topcon 3D OCT-100



Optrafair round-up



Figures 3 and 4
The Optovue OCT and 3D scan



Figure 5 HS Endothelium Microscope EM935



Figure 6 Keeler's IntelliPuff

ophthalmoscopically – for example, tissue oedema. It also allows for an accurate profile of surface structure such that any change over time might be accurately monitored.

The 'first generation' of OCT instruments, such as the Zeiss Stratus, gave a series of tangential sweeps across retina allowing for a sequence of cross-sections giving useful structural detail.

A major breakthrough more recently has been the development of Fourier domain OCT from the original time domain OCT. This has meant that the latest batch of OCT instruments can scan the retina much faster, providing higher resolution imaging, less inherent eye movement error, and a more detailed and referable 3D modelling facility.

A large section of the Topcon stand boasted the new 3D OCT-100 (Figure 1). Incorporating Fourier domain technology, the instrument offers 90 decibels of sensitivity, so reducing visual noise significantly and offering resolution of five to six microns. The scanning occurs at over 50 times faster than time domain, so any eye movement is less likely to impact on image quality. The improvement is because Fourier domain OCT uses a spectroscopic method as opposed to a mirror arrangement as with time domain OCT. The 3D representation is also available at much greater speeds and with excellent clarity.

Figure 2 shows how the cross-section can be displayed alongside the fundus photograph and also topographic imaging data. The somewhat prohibitive initial cost (not far short of £40,000) needs to be offset against the fact that the instrument is in effect a 'one-in-three'

set up. You get a high resolution fundus camera, a method for detecting cross-sectional changes, and a method of analysing topographical changes over a period of time (the latter not dissimilar to the excellent HRTIII, also on display at the Haag-Streit stand).

But it is not only Topcon entering this market. Grafton was showing off its latest acquisition, the Optovue OCT. I reported on this after being impressed at the American Academy meeting prior to Christmas. Since then Grafton has secured the rights to distribute the instrument in the UK (Figures 3 and 4).

Again using Fourier domain technology, the instrument provides excellent 3D imagery, high resolution fundus imaging and cross-sectional analysis. Again the ability to accurately monitor thickness changes bears comparison with, for example, polarimetry techniques such as used by the GDx (itself arousing great interest at the Carl Zeiss stand).

In deciding upon the usefulness of these latest OCT instruments, I feel practitioners should remember the range of applications before being put off by the price. They can realistically be compared to several instruments all wrapped up in one.

Something of a somewhat more specialised nature and likely to be of interest to refractive surgery clinics and possibly some specialist contact lens centres, was on display at the Haag-Streit stand.

The HS Endothelium Microscope EM935 (Figure 5) is notable not only for its small size, its ability to provide a clear view of endothelial cells on screen immediately without the need for laborious focusing, the ability of the

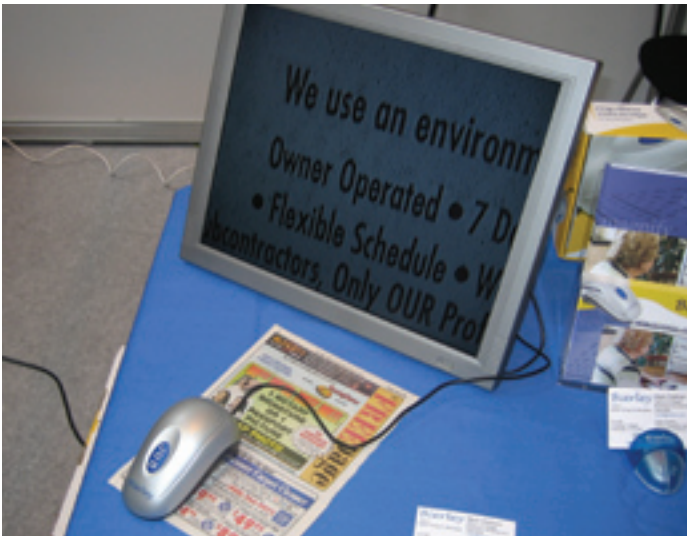


Figure 7 Bierley's BigReader

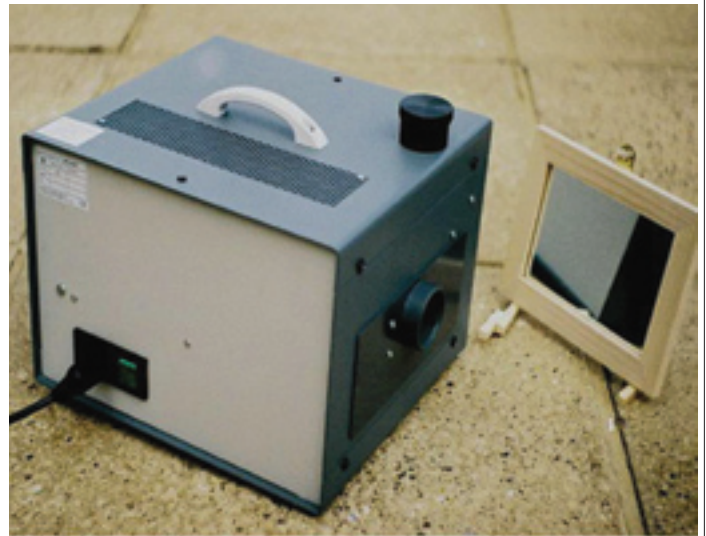


Figure 8 the Fletcher-Evans CAM lantern

software to give an accurate and useful cell count and size data list, but also for its costing, amazingly, just £7,000.

Under pressure

Advances in tonometry are notable at present after a relatively long period of NCT prominence. The latest incarnation of the Tonopen was available at the show, the improved version averaging out 10 readings for the final data. The bigger the number of hits, the better the accuracy of the final average.

Carleton was showing the Pascal Dynamic Contour tonometer. This instrument is one of the few latest developments to attempt to modify external pressure analysis of intraocular pressure with corneal structural influences.

Keeler was making great play of its (in my humble view) amusingly

named intelliPuff (Figure 6), launched at this year's show.

The latest incarnation of the Pulsair, the familiar portable non-contact tonometer used in many practices, is the intelliPuff. It boasts a significantly improved position detector mechanism, reducing the time needed to fire due to patient or practitioner movement, and has a controllable air puff force which may be used to designate the jet and enhance accuracy for a wide range of patients.

Small guys

Optrafair is interesting to see what some of the smaller companies and suppliers are up to.

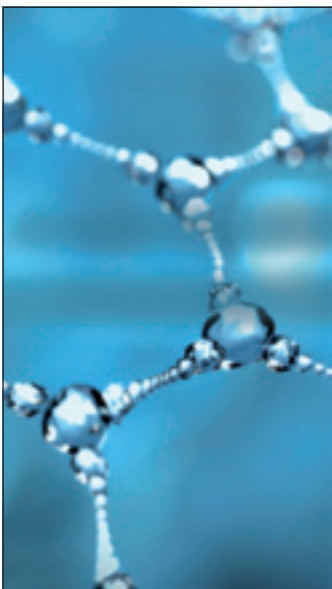
I was interested to see that Bierley, on the back of success with its Monomouse low vision unit, was launching the BigReader (Figure 7).

Initially aimed at the library market


where there is apparently a demand for an attractively priced magnification device, the instrument combines the usability of the Monomouse with an integral flat screen which may be free-standing or wall-mounted. Offering up to 17 times magnification, the unit will also allow reverse contrast modes.

I also bumped into our old friend Professor Robert Fletcher who was pleased to show me details of his Fletcher-Evans CAM lantern (Figure 8). Developed from a prize-winning prototype, the instrument offers effective colour vision screening for a variety of careers (aviation, marine and so on), as well as effective screening for congenital and acquired defects. ●


● *Optician* will be publishing further, fuller reviews of most of the instruments mentioned over the coming months.



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