

High Eyepoint Oculars and the Digicam

Thoughts about this useful combination

By Paul James (uk)



Many potential photomicrographers must have been somewhat frustrated, when after much deliberation over a new digicam, found that it did not capture the full field from the eyepiece.....

This is disheartening, and though the problem varies in extent from one digicam to the other, the principle cause of this dilemma is that the eyepiece's external 'Ramsden's disc' is not high enough to penetrate the camera lens optics. This is especially frustrating for those with large zoom optics on their cameras. Those with fixed focal length camera lens fair a little better.

Potential Solutions

There are two ways around this. One is to buy a relay lens specially designed to optically couple both the camera and the microscope tube or eyepiece. They are expensive and those which slip into the tube without the need for the eyepiece might not be suitable for both achromatic, fluorite and apochromatic objectives?

My approach, the second alternative, was that the high eyepoint eyepiece could not only provide the necessary high Ramsden disc suitable for the camera, but also that it was in itself a very useful and convenient eyepiece in the first instance. Two eggs in one basket.

I purchased an old pair of Leitz Periplan x 10 compensating high eyepoint oculars and found them to be ideally suited to digicam photography, allowing, by use of the camera's zoom, to capture the whole field or a part thereof. As observational eyepieces they have a somewhat moderate field, but a very comfortable eye to eyepiece distance for spectacle wearers, for which they were originally designed. They have eye lenses which are deeply concave :-



.....and of physically large aperture too :-

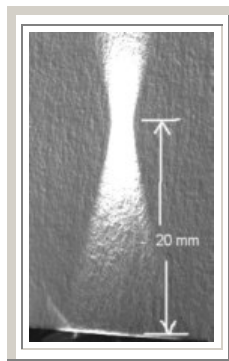


This image below gives an idea of the 'airspace' available when using a Nikon Coolpix 800

(Not coupled for demonstration purposes)



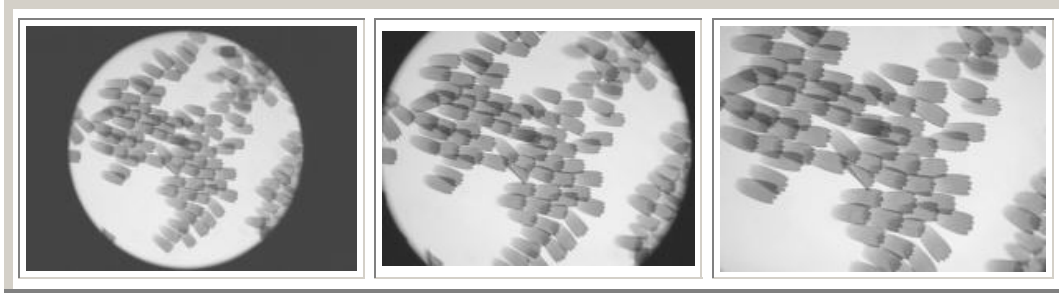
Below shows approximate Ramsden disc height above eye lens:-



These images below show the working distance involved:-



Nikon Coolpix 800, with the Leitz x 10 Periplan, plus wide, mid and tele setting of the x2 zoom produced these 3 samples :-



They are very good observational compensating eyepieces, and which can be used also with most digital cameras too, both in the present and future. But be warned though that they do not work at their best regarding colour corrections with low power achromatic objectives. They are specifically designed for either fluorite or apochromatic objectives, but also work quite well with high power achromats from about x20 upwards.

Looked after they will last a lifetime at least, and any concerns regarding cost should be easily displaced by the knowledge that our eyes alone cost a wee bit more !

All comments welcomed to [Paul James](#).

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