

BRIGHTFIELD ILLUMINATION: THE BASICS OF MICROSCOPY PART 2

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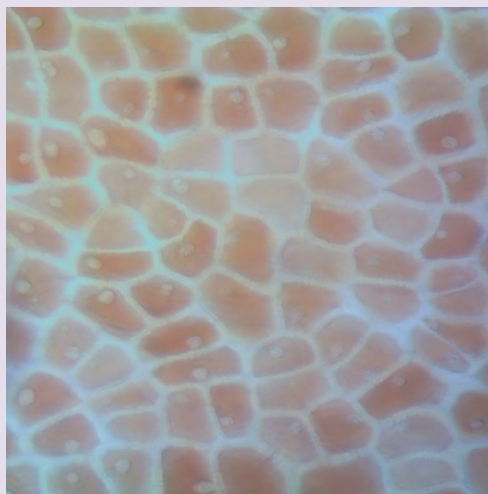
INTRODUCTION:

As I mentioned in the [previous article](#) of this series, brightfield microscopy is the most basic of the illumination techniques, because it just implies turning on an illumination system below a sample and that is all we have - brightfield. Nevertheless it is possible to take advantage of brightfield illuminated samples when a camera is used. In the previous article it was shown that by adjusting the defaults of the WHITE BALANCE menu it is possible to acquire a sample image with some contrast but it appears as a brownish object upon a yellow background. But if we applied the white balance to the sample it is possible to get an image with an approximation to the real color of the sample.

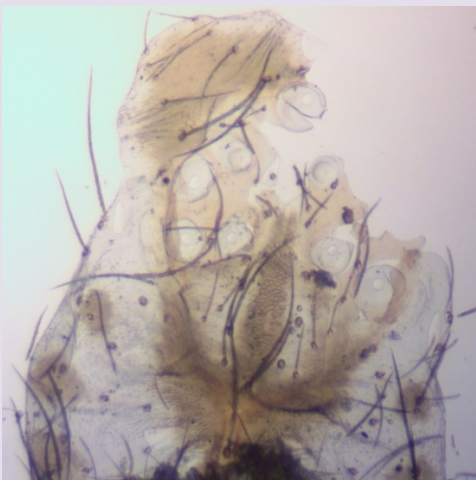
DEVELOPMENT:

White balance is a feature that digital cameras have and it is used to improve the interpretation of the colors by the camera. In fact it is defined as the feature that allows an area of an image that is white to appear really white in the photo (reference <http://www.cambridgeincolour.com/tutorials/white-balance.htm>).

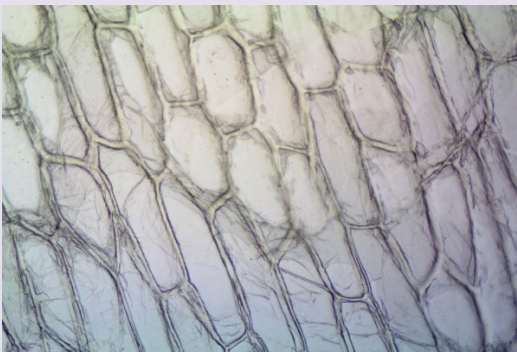
In the case of the camera that I used to take my photos, just by clicking on the white balance button in the WHITE BALANCE menu gives me an image with an approximation to its true colors; for example in the pictures below it is possible to appreciate the natural green color of the filamentous green algae and the natural red color of the cranberry.



RESULTS:



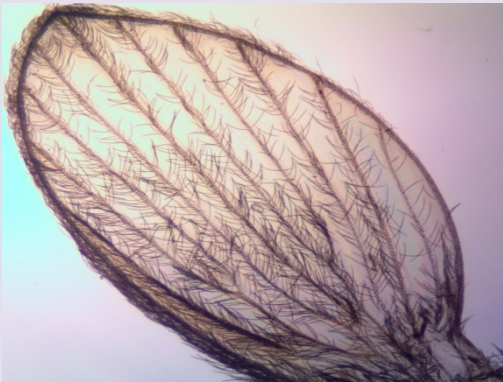
Spider pouch and eggs 4x



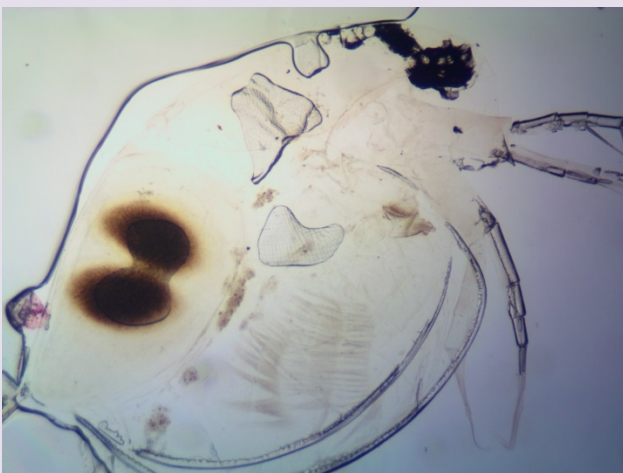
Onion 10x



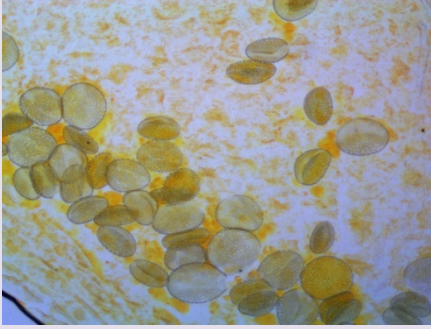
Mosquito 4x



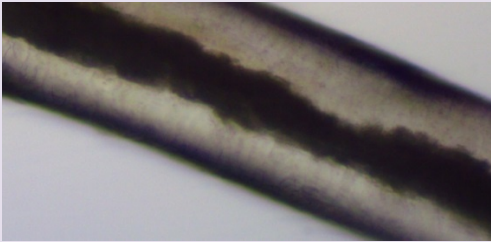
Mosquito's wing 4x



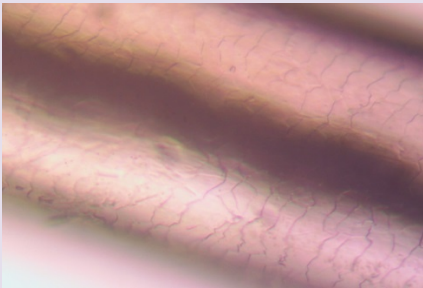
Daphnia 4x



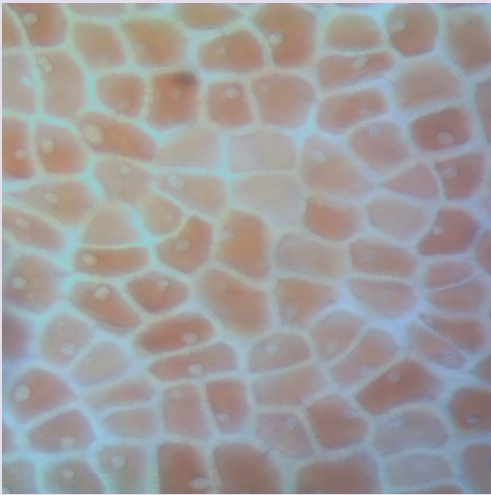
Lily pollen 10x



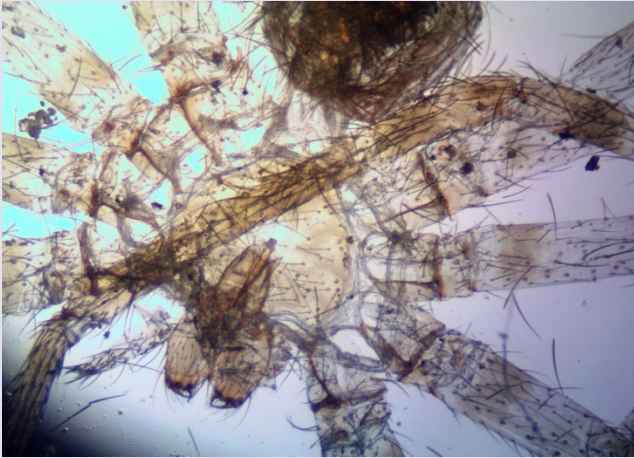
White hair 10x



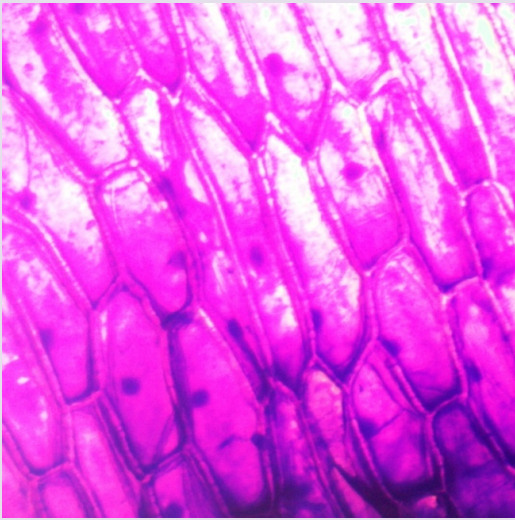
White hair 40x



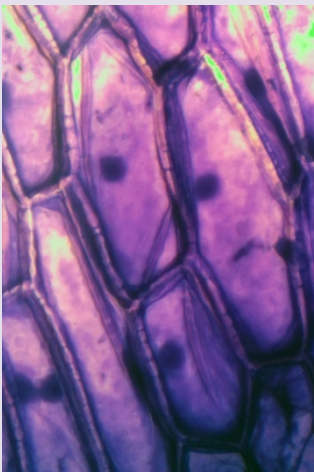
Cranberry 40x



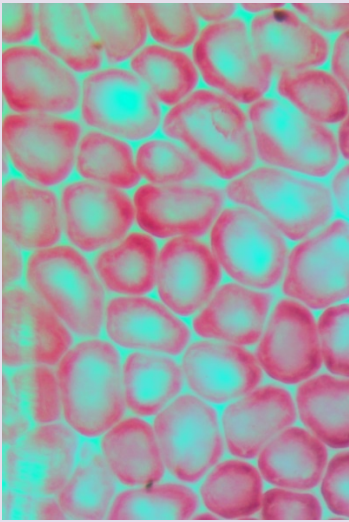
Spider 4x



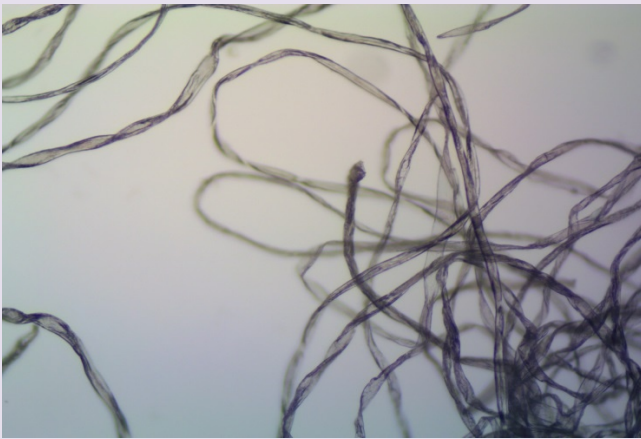
Onion stained with gentian violet 4x



Onion stained with gentian violet 10x



Poinsettia 40x

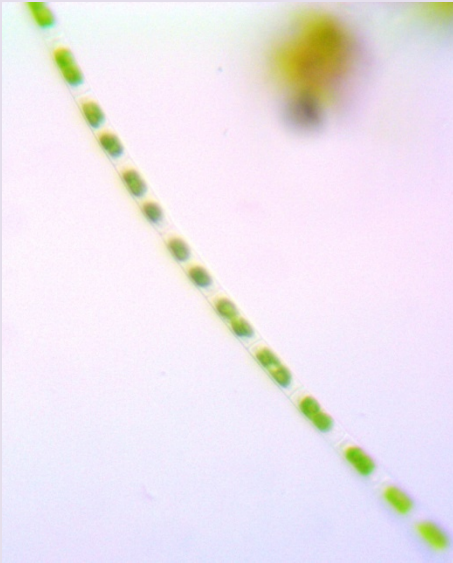


Worm found in pond water 40x

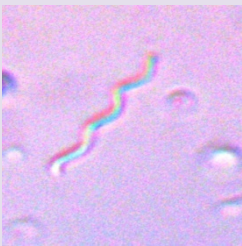




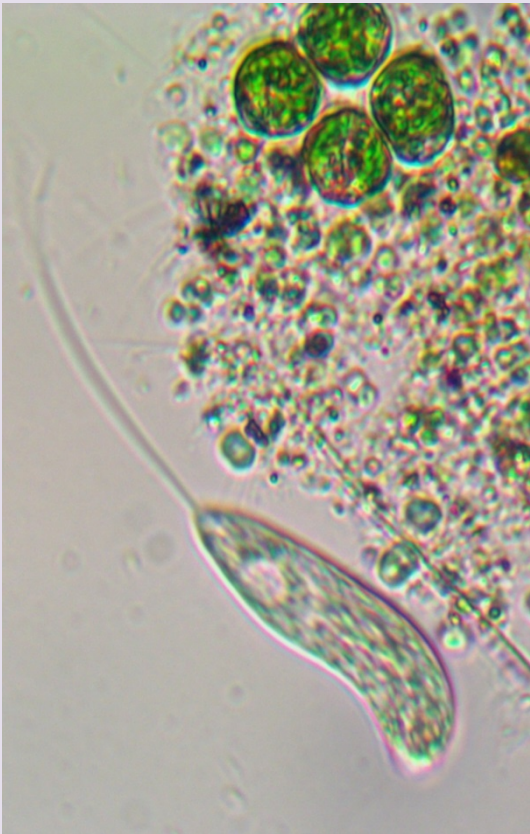
Worm found in pond water 10x



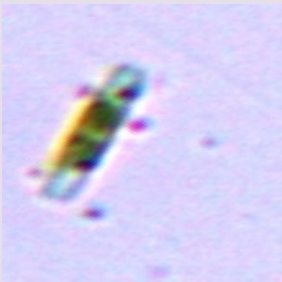
A portion of a filamentous green algae 40x



Spiral bacteria 40x



Astasia and green algae 40x

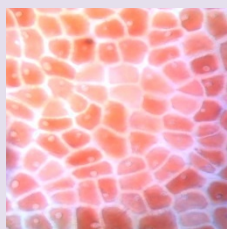
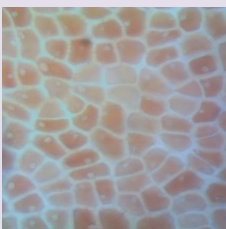


Diatom 10x

NOTE:

-It should be appreciated that in some of the pictures there's a kind of greenish background. This is because of the camera's interpretation of the light passing through some samples.

-Again, I just wanted to show the effect of pure brightfield without modifications, but as shown below, it is possible to obtain a clearer brightfield image using the program MICROSOFT PICTURE MANAGER 2010.



CONCLUSION:

Brightfield is, as in all microscopy simply fantastic, with the help of the camera we can take beautiful pictures of many samples in their “natural” colors because nature has stained for us many things to see under brightfield illumination.

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(Above in anti-spam format. Copy string to email software, remove spaces and manually insert the capitalised characters.)

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