

## A "CONVENTIONAL" DIGITAL CAMERA FOR TAKING MICROSCOPY PICTURES AND/OR VIDEOS

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### INTRODUCTION:

If we like microscopy, sometimes we may only possess just a microscope, possibly an old one, but nothing to record the observations. If a person has a small budget, things are worse.

Though specialized microscope cameras are not too expensive and we can find one from 80 US dollars, on certain occasions the only thing we have is a digital camera for photography. We may wonder if it is possible to take pictures of our microscopy observations: the answer is, yes it is possible, and with a great quality, see below.

### DEVELOPMENT:

I have a specialized microscope camera but I love to demonstrate that it is possible to do microscopy in many different ways using the conventional instruments we may have at home, and that microscopy is limited just to the imagination and wishes of the person making the studies.

Although I have seen some articles on adapting cameras to the microscope, I have never tried one until I purchased this Nikon Coolpix camera:



Since it is difficult to obtain a steady image just by holding it with the hands, I devised a holder which uses from the bottom to the top:

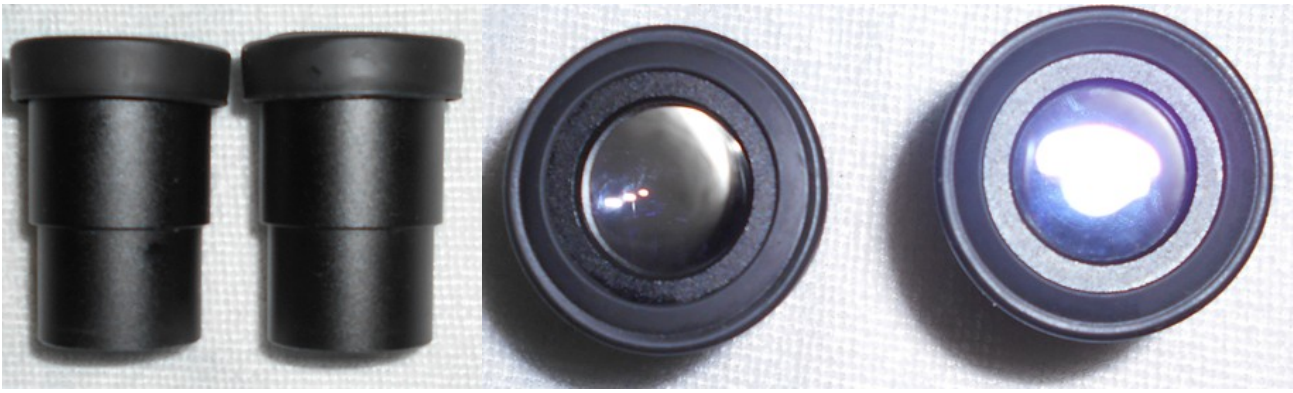
- ✓ a piece of wood,
- ✓ a length of the cardboard tube that typically supports aluminium foil or the film used to wrap foods; this with the purpose of raising or lowering the camera to adjust it to the eyepiece of the microscope,
- ✓ another tube with a hole at the top where I place a piece of PVC pipe to rotate a little the camera if necessary,
- ✓ and to hold the camera in place, a piece of those plastic soap boxes that are used in toilets, I created holes to pass the lens of the camera through to take the photo and another hole in the bottom.



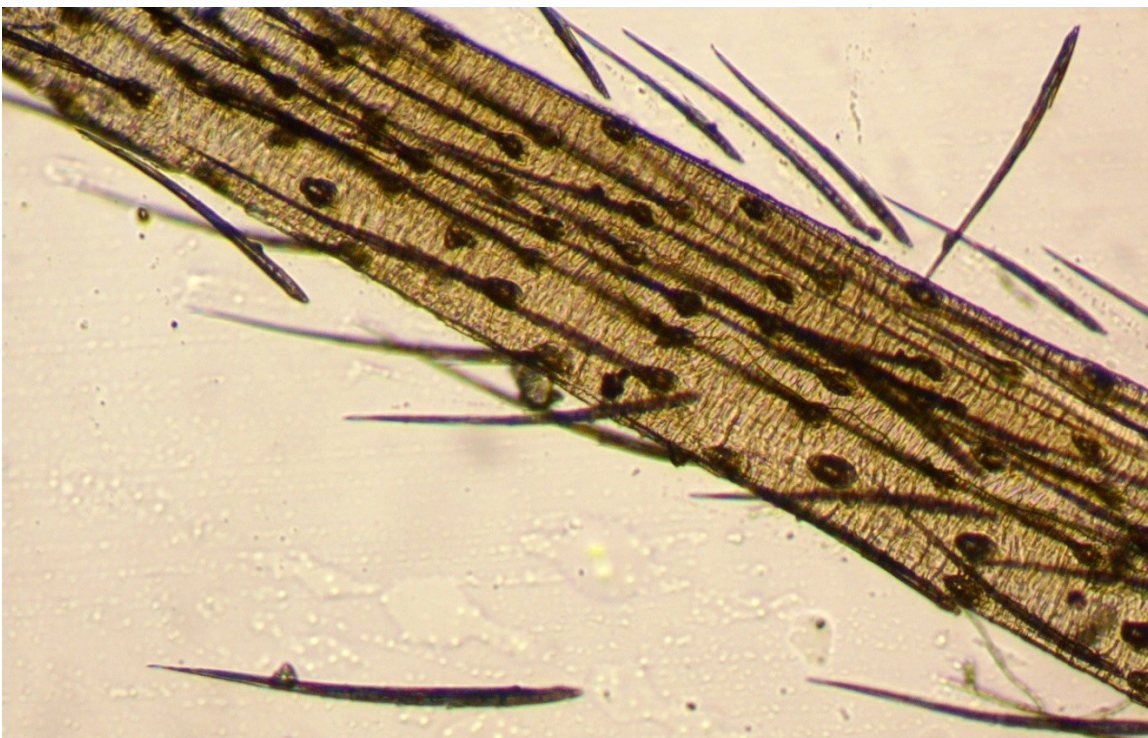
I place the camera in front of the microscope and zoom it to the point that it may be possible to see the image on the screen of the camera. I adjusted it by raising or lowering as needed.



I use it with both the 10x widefield (WF10x) eyepieces and with the 25 widefield (WF25x) eyepieces:



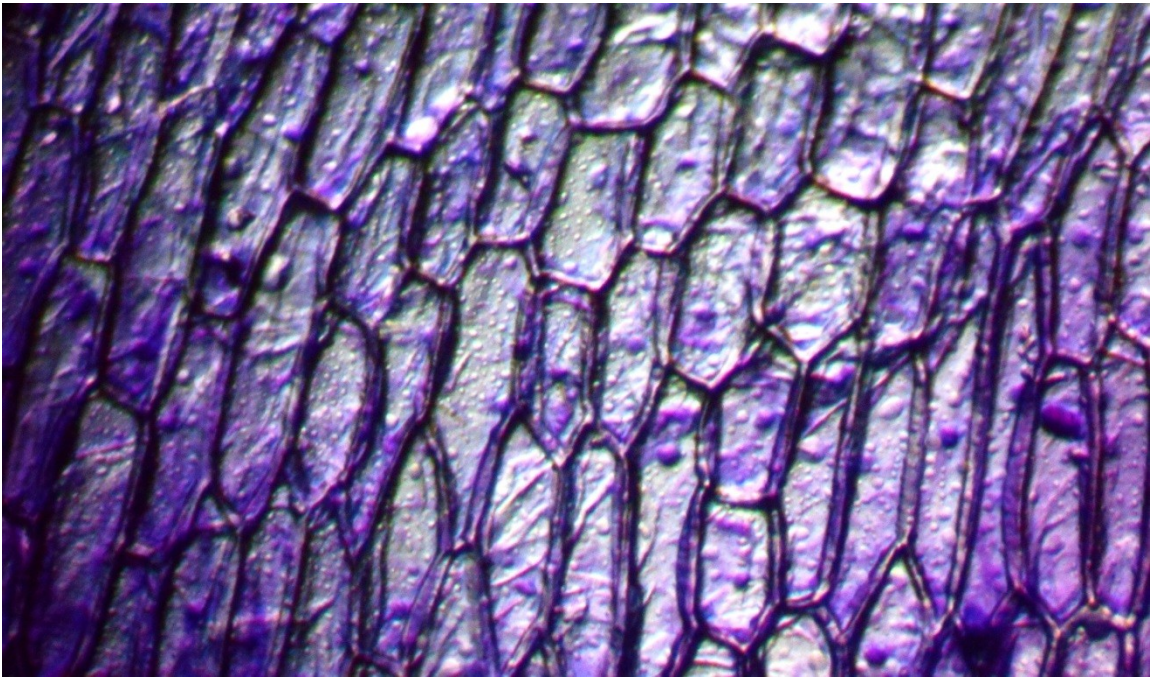
RESULTS:



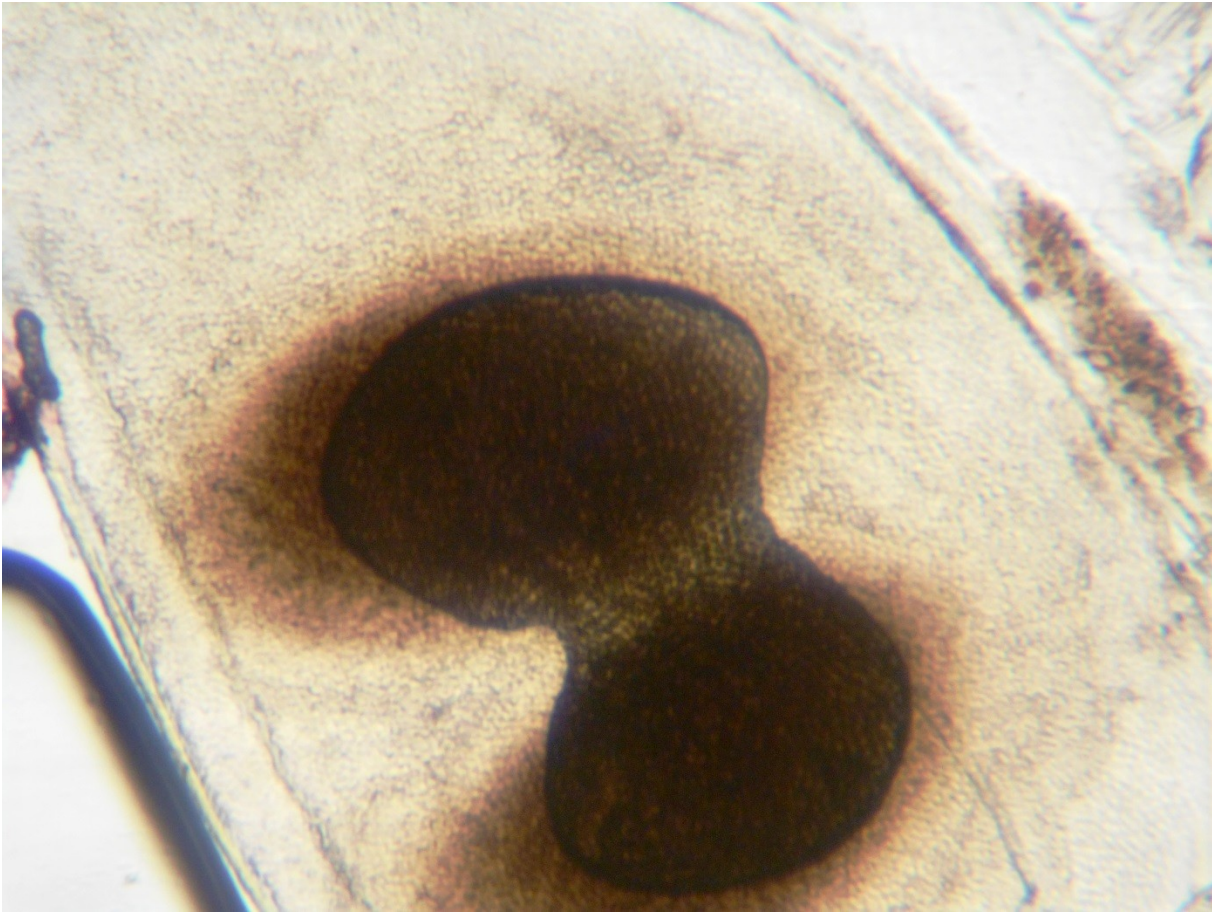
A portion of a spider leg 10x magnification plus WF10x in brightfield.



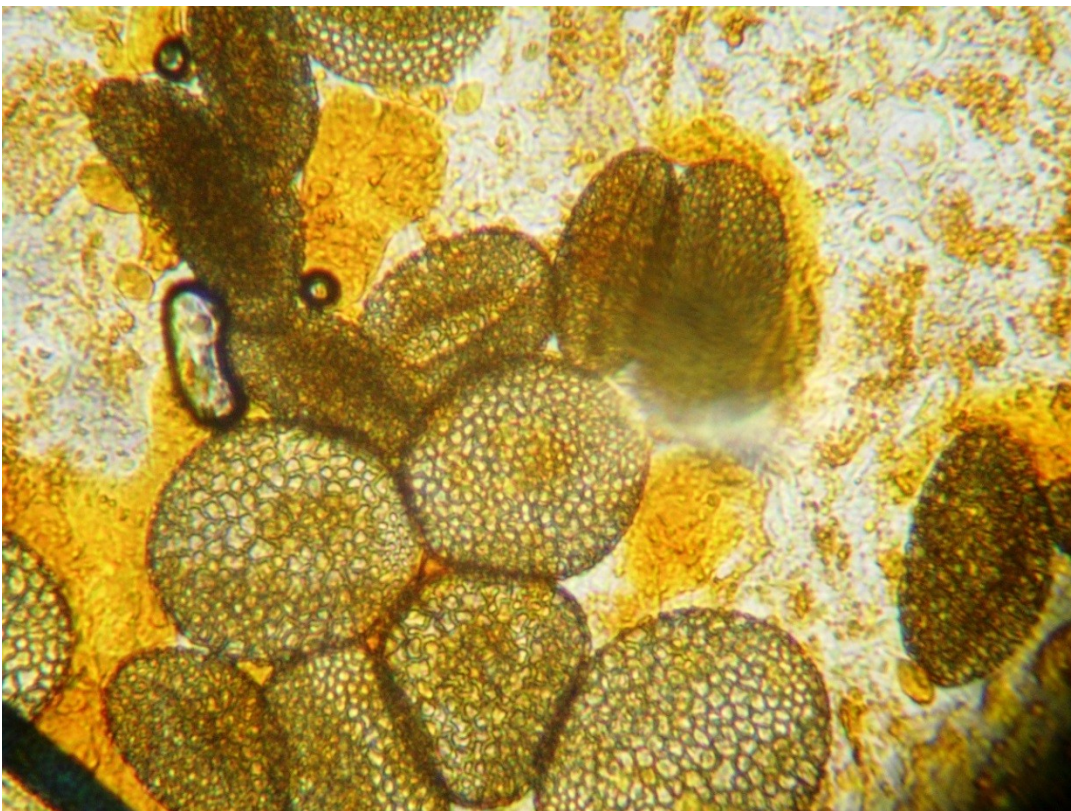
A broken spider pouch and eggs 4x magnification plus WF10x in brightfield.



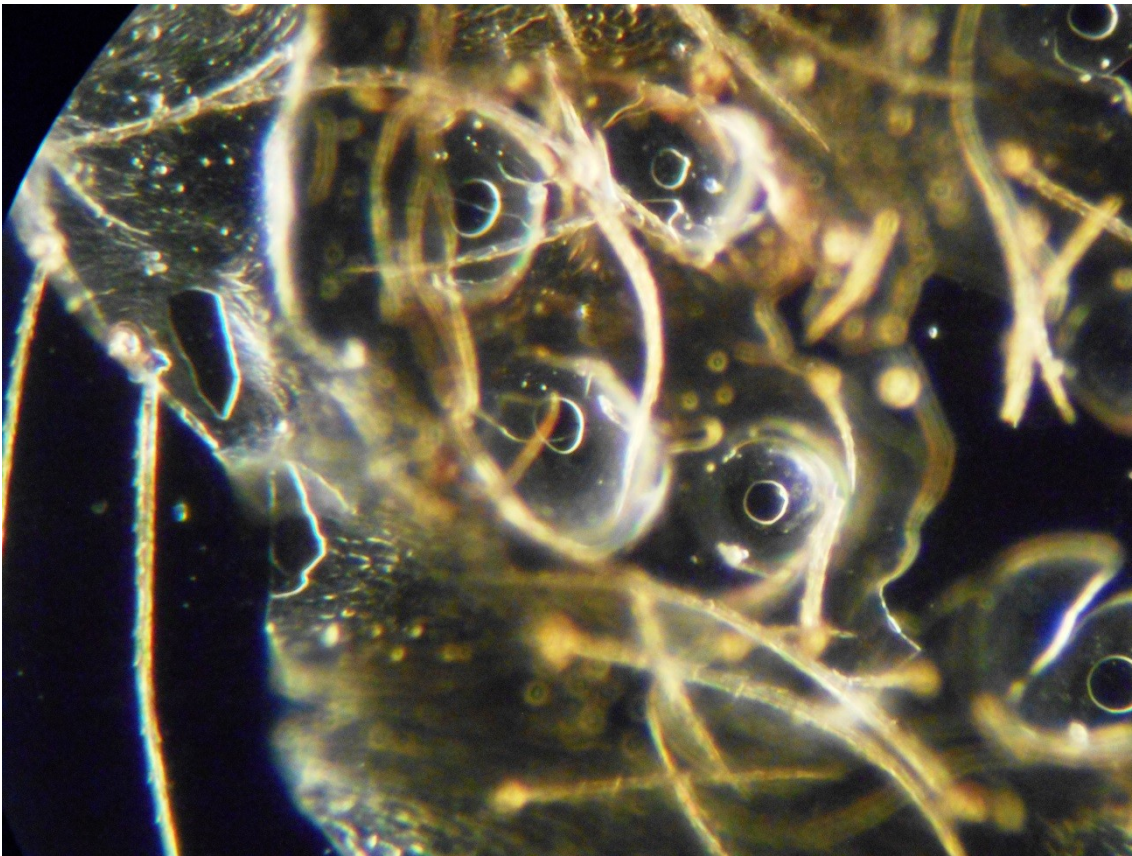
Onion stained with gentian violet with 4x magnification plus WF25X in brightfield.



Daphnia pouch 10x magnification plus WF10X in brightfield.



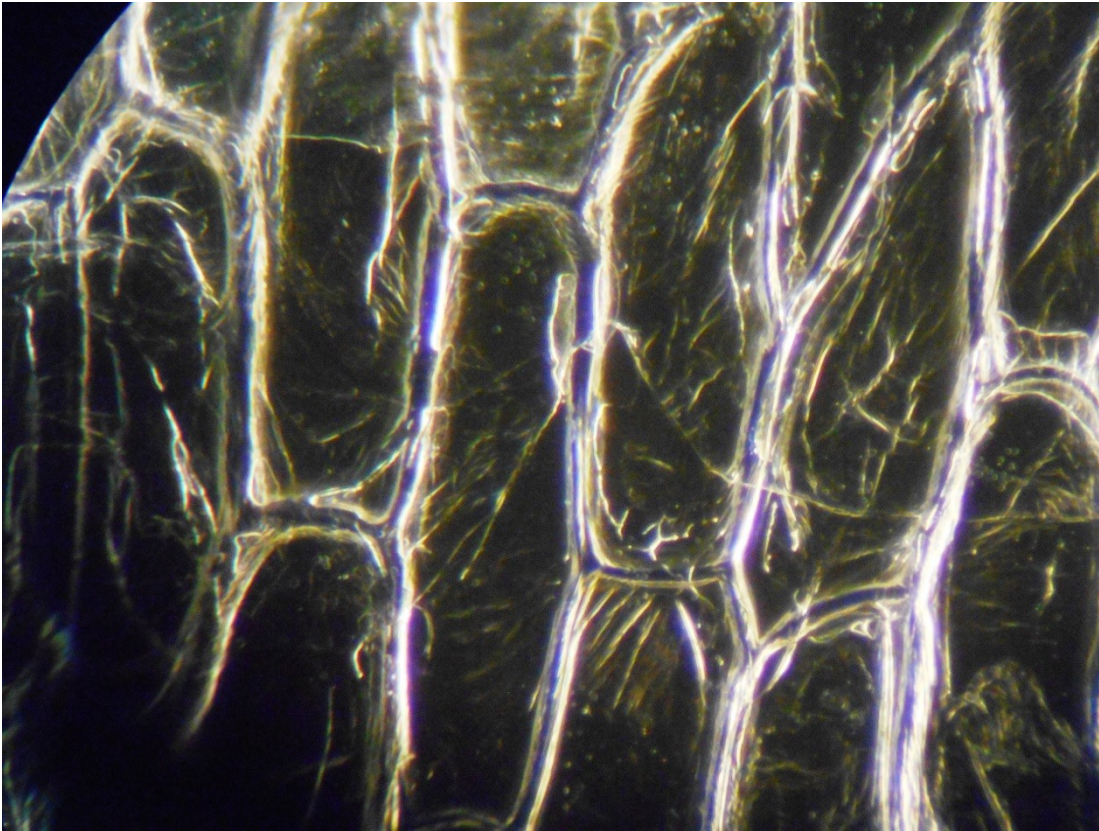
Yellow lily pollen 10x plus WF10x eyepiece brightfield.



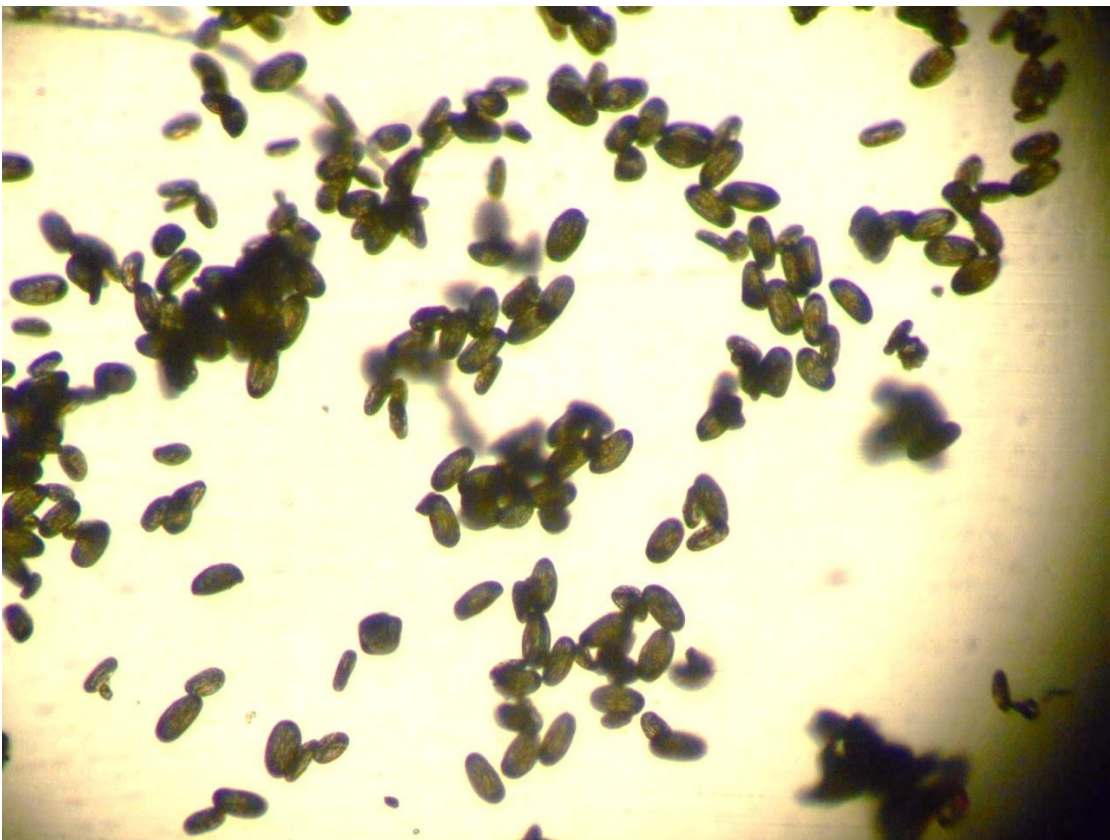
The previous spider's pouch but now 10x magnification plus WF25X in darkfield illumination.



My mosquito 4X magnification plus WF10X in brightfield.

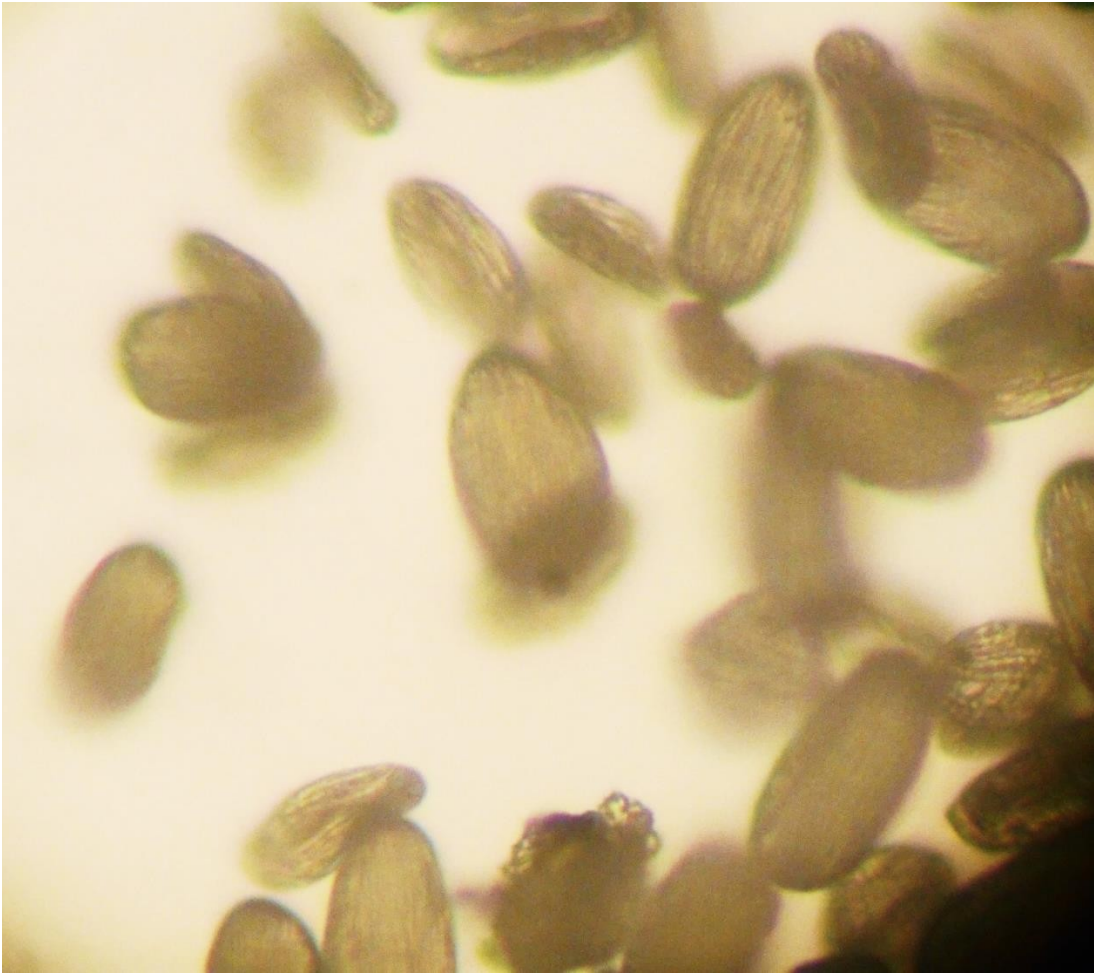


Onion 10x plus WF25x in darkfield.

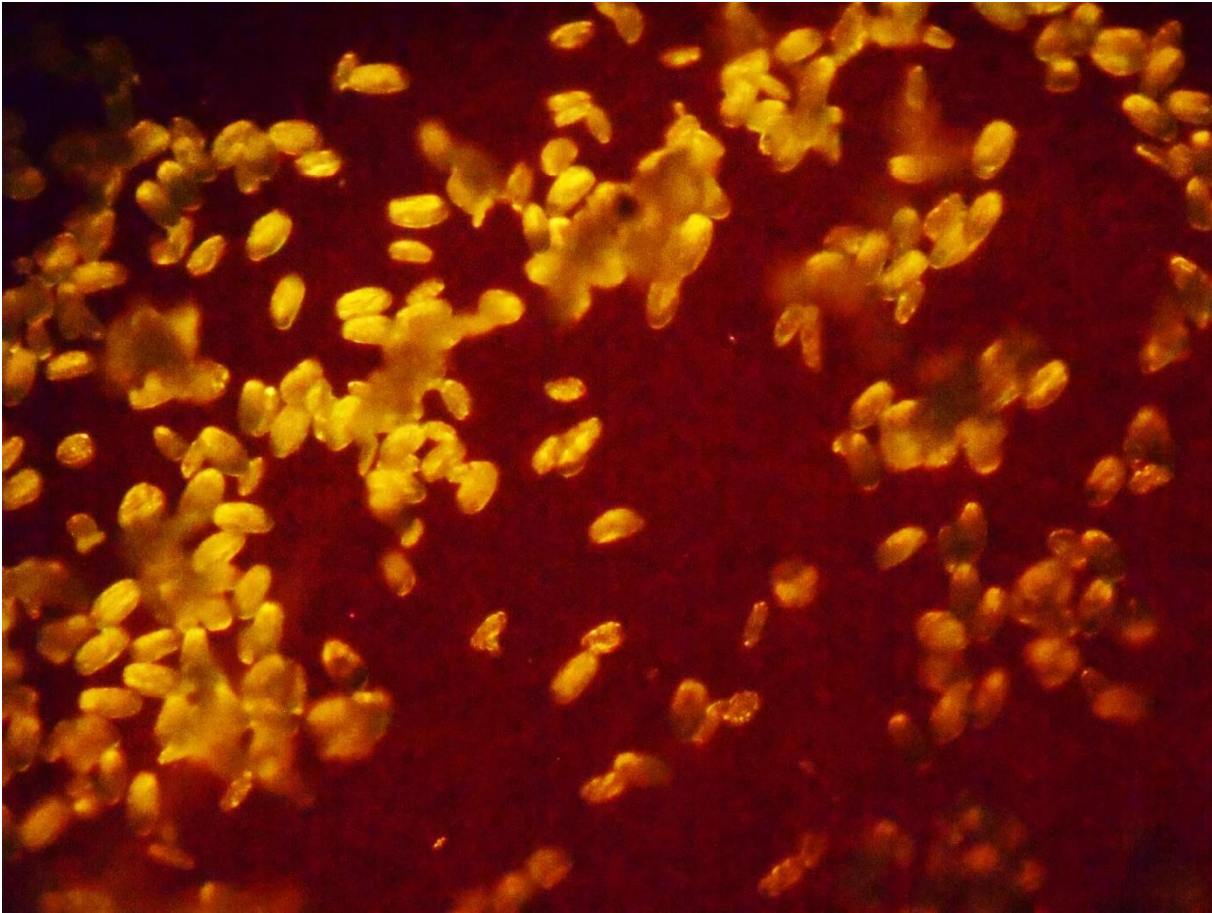


Pollen of *Spathiphyllum wallisii* (Peace Lily) 10x plus WF10x in brightfield.





Pollen of *Spathiphyllum wallisii* 40x magnification plus WF10x in brightfield.



Pollen of *Spathiphyllum wallisii* 40x magnification plus WF10x in Rheinberg illumination with red stop plus yellow annulus.

NOTE: I realized that the objects which are best captured by this camera are those that are well illuminated, so it is not good enough to catch pictures with epi-illumination. I tried this technique but it was not possible, at least with my system, I just got blurred images. I also tried a small piece of fern and I got no results from this because it was too "thick", that is a limitation.

I present no videos because for the moment I had no samples showing movement.

CONCLUSION:

Maybe the quality of the pictures is not as good as those taken with a specialized camera but they are acceptable for recording our microscopy observations but obviously with the limitations expressed above.

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

Published in the June 2016 issue of *Micscape* magazine.

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