

*“Two roads diverged in the wood, and I - I took the one less traveled by,
and that has made all the difference”*

- Robert Frost

Microscopy & Micrographs Vs. Astronomy & Astrophotography

Colours. Like so many with a love of the natural world, what thrills me most is the joy of observing the astonishing colours of nature.

The question is: How does one ensure they'll see these colours on a regular basis?
As for a condensed list, these notes are directly from one of my journals:

- Mini-Reef aquariums - Live corals, and other invertebrates.
- Astrophotography - Nebulae and other deep space objects.
- Microscopy: The naturally occurring colours found in many Animalcules.



Partial view of a mini-reef aquarium I kept. Elegance coral (*Catalaphyllia jardineis*) front & center.

The very modest (20 gallon long) fish tank seen above required a total investment of £1442. Keep in mind; this was ~ 20 years ago...

While considering hobbies, which allow one to enjoy the incredible colours of nature (a topic I think about often)...I narrowed it down to the three listed above. I've dabbled in each of these hobbies extensively; over a period of many years.

Which is the hobby that one should devote their precious free time to? Please read on... I'd like to share my opinions on these; with which (incidentally), several microscopists agree!

I've found even the smallest of mini-reef aquariums prohibitively expensive to set-up, stock, and maintain. In the end, the admittedly amazing colours displayed are relatively static. Once the aquarium is stocked with the maximum number of organisms – They don't change very much.

This is not the case when one considers either Microscopy or Astrophotography:

- While enjoying either of these pursuits, one would be hard pressed to run out of objects to observe and/or image.

So, *which* of these two optics related hobbies are more worthy?

Let's begin with some logical answers, straight away:

- Why not simply enjoy both? Enjoy each, when you can, etc. As time allows.

(As my [very understanding] wife frequently tells me)

~ Or ~

- Why not partake in the hobby which you, personally, enjoy more?

Either solution seems simple enough. However, many people simply don't have a huge surplus of leisure time - So, they may elect to spend their precious free time on just *one* avocation. Perhaps hoping that a fuller, deeper, enjoyment can be achieved, using the advantage of focus?

Or, what if (like me) you don't have a lot of time to devote to these entertainments? It's safe to assume that many folks fall into this category. So this is another factor to consider.



I opted to select a Deep Sky Object which just about everyone will recognize.

I can tell you that trying to enjoy any kind of visual astronomy while close to a city is very frustrating. Some folks, in similar surroundings, have found astrophotography to be a bit less annoying (than visual observing) - but not by much.

I've always enjoyed reading any posts or articles I've stumbled upon, regarding these two pastimes (invariably, microscopy tends to come out on top in case you were wondering). If you were to do your own bit of research, you would run into some of the following factors which are frequently mentioned:

-Astrophotography-

Pros:

- Easily "accessible" (more mainstream and popular).
- Several magazines are published monthly (in almost every Country) devoted to the subject.

- Magazines dealing exclusively with astrophotography are typically found in online format.
- Astronomy clubs exist in every major city. Many host Star Parties, which one may attend in person.

Cons:

- Absolutely weather-dependent – Evenings with favorable sky conditions are much fewer than you'd think!
- One should ideally live under dark skies - Although "counter-measures" exist; the level of frustration one endures is in direct proportion to the amount of light pollution present.
- Initial investment must (typically) be substantial in order to get acceptable results.
- If one wishes to capture good images: The extent of investment (of *both* time & money) skyrockets.



A rudimentary set-up, for an evening of astrophotography.

I recently relocated from an urban area, to a much more rural location. At that time, I was still keen on astrophotography. I was regularly imaging deep sky objects under my urban skies (using low-cost equipment). The overall results did improve under the darker skies.

However, the substantial frustration which I began to notice more and more – Was the incredible amount of time spent in front of a laptop screen!

Whether it was controlling the equipment during image capture, overseeing the stacking of individual frames, or the immense time spent post-processing the images (the following day): I found that the time spent in front of a screen was unacceptable. In short, this didn't even qualify as “enjoying astronomy” to me. The reader should bear in mind, that I was doing wide-field astrophotography: The easiest form of astrophotography, requiring the lowest investment in equipment.



The joy of collecting, restoring, and using fine vintage microscopes.

-Microscopy-

Pros:

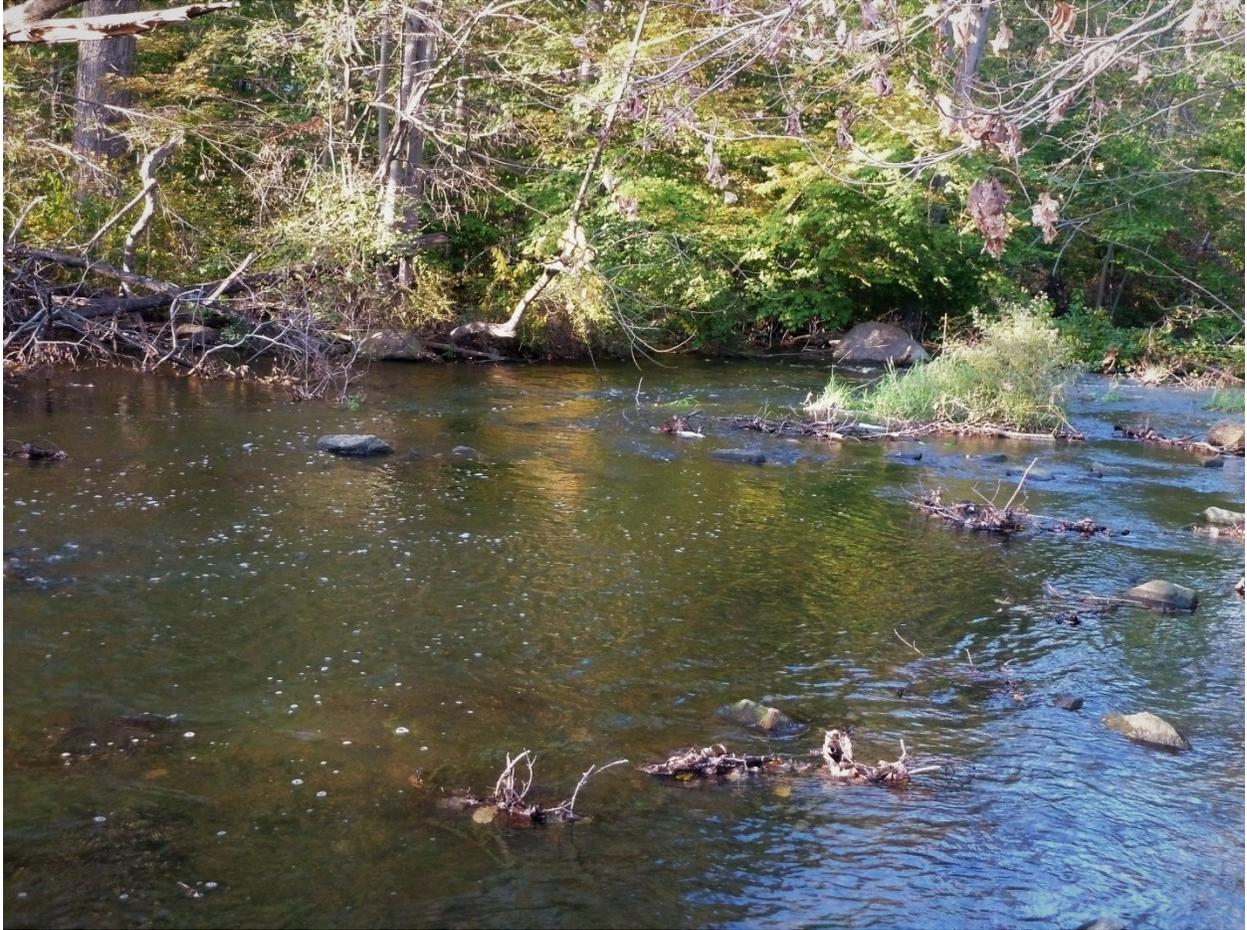
- May be enjoyed 365 days per year, in any weather, at any time.

- It's very easy to collect specimens to view; whether they be Protozoa or small cuttings from trees, flowers, plants, moss or algae.
- There are a myriad of permanent slides available for convenient viewing.
- Can be enjoyed regardless of location (Urban/Suburban/Rural)*

* Even someone living in the center of New York, London or Tokyo could entertain themselves with a microscope.

Cons:

- Requires slightly more effort to learn one's way around, etc.
- Clubs (to attend in person) are practically non-existent (on this side of The Pond). Luckily, we all have the benefit of *Micscape*.
- Those who enjoy observing Protists/Animalcules, need to do a bit of planning ahead, to ensure thriving cultures through the coldest months.



Ponds are always an excellent place for water samples; but a small stream (above) may suffice. Especially, if one learns where the most interesting organisms reside.

The only additional challenge which comes to mind, relates to those living in a metropolitan area: Acquiring water samples.

The best way to enjoy the fascinating world of living microorganisms, such as Protists, Protozoa, colorful bacteria, etc., is to get a water sample (or two) from an appropriate pond, swamp, stream, etc.

So a (hopefully short!) trip would be required, to fill a few small containers with suitable water samples.

However, many municipal areas happen to be adorned with small lakes and/or ponds. And generally speaking, there should be no objections to someone collecting a small water sample. Although, as strange as it may sound: This is not always the case. Many readers may recall an incident, in which a young lady was reprimanded by security, for removing a small jar of water from a fountain. Better to stick to lakes, streams, and ponds, as these are ideal.



Orange, brown, green, and purple – Easily visible inside this Animalcule, using a standard light microscope.

Again, for now, I can really only share *my* experiences with both endeavors as a guide. I haven't directly consulted (or interviewed) other hobbyists yet...

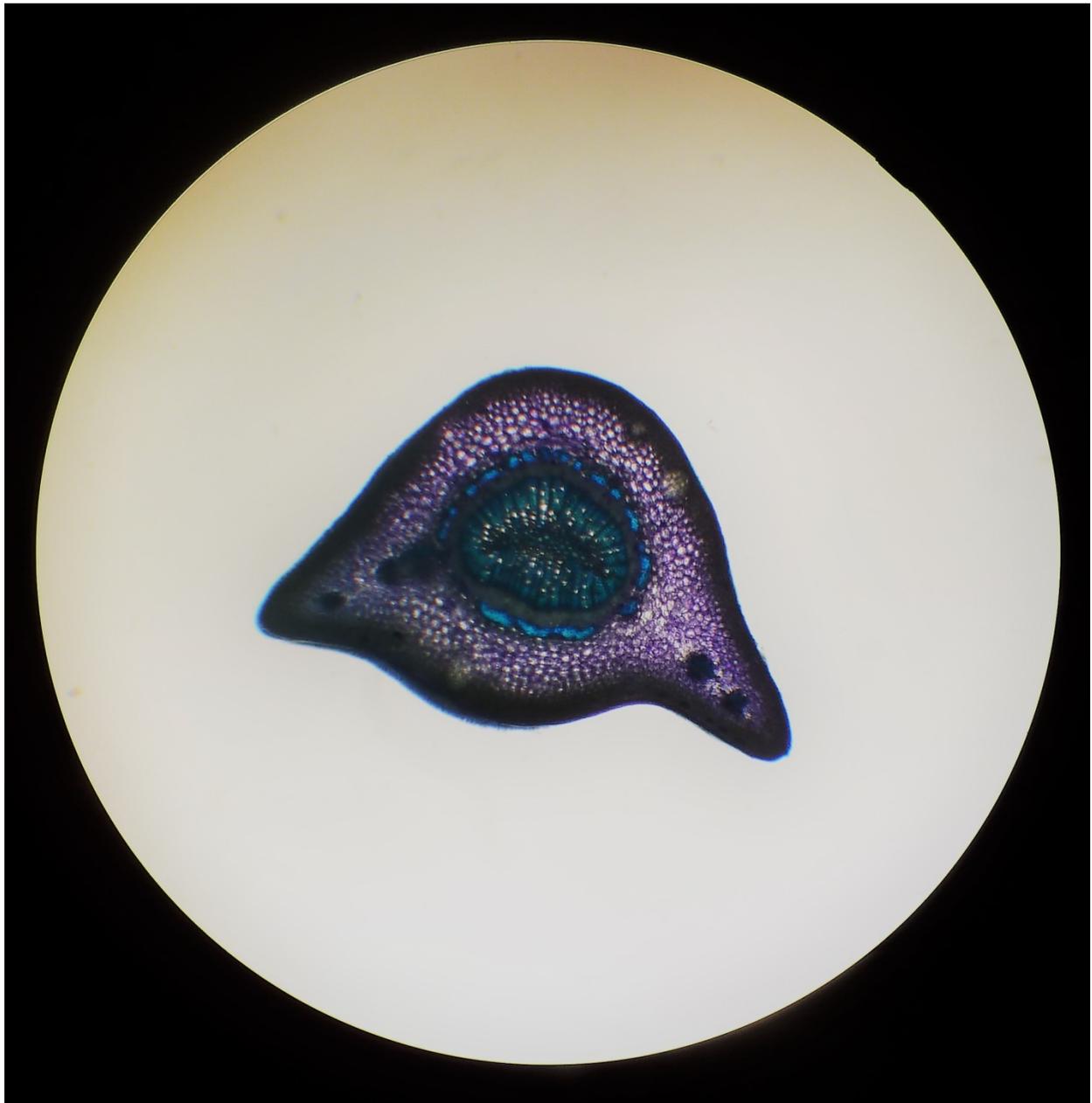
As I type this, the Astronomy related books at my bedside have been reduced to just two; both dealing with one of my favorite subjects - Binocular Astronomy. The others have been steadily returned to their bookcases.

In their place, there are: A Field Guide to Bacteria, other books on bacteria; University textbooks on: Freshwater invertebrates, Protozoa, pollen, plant

microtechnique, etc. Lately, I especially enjoy the (old) books on Plant Microtechnique.

I suppose I'd be remiss, if I failed to mention the myriad of printed (Web-based) resources/articles which are also on my reading list - These deal with fluorescence microscopy, a topic which I've been fascinated with for many years.

Coincidentally, I'm in the process of completing the (minor) repair/restoration of a (American Optical 20 w/ 2070 fluorescence unit) fluorescence microscope from the late 1970's. Preliminary tests look promising.

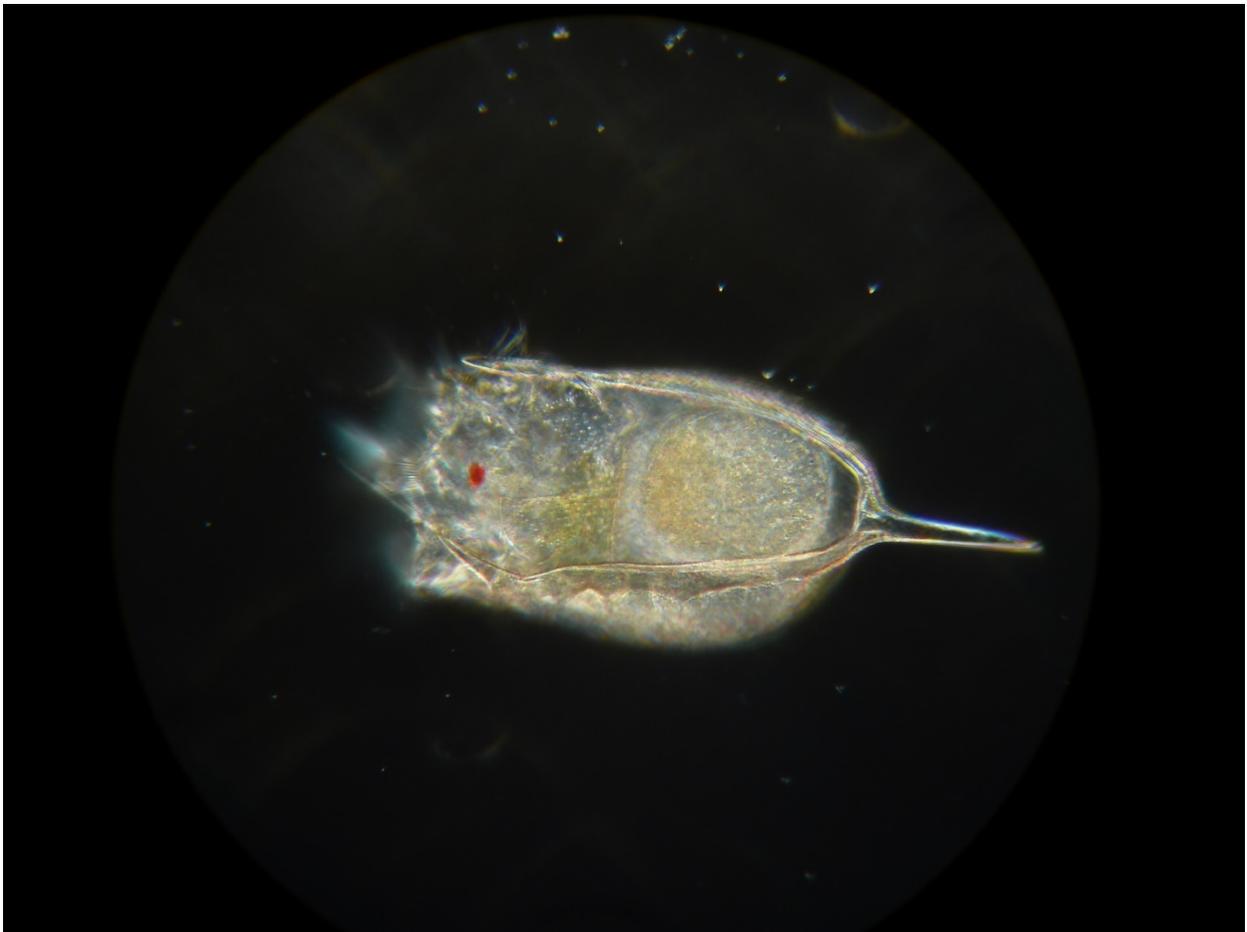


Petiole of leaf (cross section), from a Lime Tree, stained with Toluidine Blue.

Not too many years ago, I came across an article which described a somewhat senior couple who lived in a remote location - And the husband was an avid Microscopist. The article had a profound and lasting impression on me: This gentleman lived in an area, where the nearest other inhabitants were tens of kilometers away. He could have chosen many other ways to spend his time, but choose microscopy.

I am of the opinion, that solitude may somehow distill one's passions. Perhaps it helps to concentrate a person's interests, so that they settle on a pastime which they value most (above other, possible endeavors).

I suppose one of my questions regarding this topic and of comparable hobbies in general is: If you were to live on a "deserted island" and could only enjoy one hobby, which would it be?



A Loricate Rotifer, in darkfield, with red eyespot visible.

Comments to the author, Al Milano, batdetectors AT gmail DOT com.
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www.micscape.org