

## Re: Film SLR or Digital Camera?

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"Sam" <[sampath.vanimisetti@xxxxxxxxxx](mailto:sampath.vanimisetti@xxxxxxxxxx)> wrote in message  
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In the last couple of years, the consumer electronics market has witnessed a plethora of affordable digital cameras (even some of the with CCDs), which some amateur astrophotographers have put use to take some amazing pictures. Further, I have noticed in many articles that cheap webcams can also be used to get some handy work done.

Now coming over to my question, I was wondering if some experienced people out there can tell me what the best strategy should be. Should I explore film based camera first and then move on to the digital counterparts. I am aware that there are troubles on both sides. For example, some digital cams donot provide infinite shutter times, rendering them useless for deep space astrophotog and film based astrophotog might be expensive and time consuming!

Been there.

Some things I've learned:

– Canon 300D Digital Rebel all the way, baby. If you are experimenting with imaging, there is NO better solution out there to get you started. This camera is capable of low noise RAW 5 minute exposures at ISO 400, and digital data is easily manipulated on a PC using a plethora of software options, some free, some not. A DSLR can be used at the scope without a computer. Thirty second images are possible without anything but a shutter button press on the camera body. Installing the mirror lockup enabled firmware, means you can press the button, and use the mirror lockup delay to let the scope settle (I use three seconds). That said, get a remote shutter release, or better, the TC-80N3 with mod, or adapter to work with the 300D. The TC-80N3 allows you to set the exposure time, the number of frames, the time between frames, and an initial delay before the first frame. (With computer control, this device is completely unnecessary... but if you want to avoid the PC in the field... get one.)

The 300D also allows reasonable novice level focus using a bright star through the camera's viewfinder. Do this before aiming at your intended target with the finder scope. M42 is the best object to teach yourself imaging. It's bright, and easy to find, and the camera responds to it extremely well. With an F5 scope of 600 to 1000mm focal length, 30 second subframes at ISO 800 in JPG Large mode, will be low noise, forgiving of tracking error, and can be very satisfying for a novice when stacked using Registax 3 (freeware). If M42 isn't available, use M8.

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- Successful imaging with shutter times in excess of 30 seconds is all about the mount. There are several clones of the "original" low end amateur mount that allowed for reasonable success with light gear and moderate exposure times, the Vixen GP and GP-DX. The clones are the EQ-5, CG-5, AS CG-5 and their ilk from several retailers, ultimately all from China. These can be surprisingly okay, but unless you get real lucky, out of the box there will be sub-frames (single multi-minute exposures) that get tossed from time to time. Maybe anywhere from 10% to 50% of all frames. The mount can be re-worked, and improved by regreasing, and adjusting the worms for backlash.
- Worm gear adjustment is necessary. No exceptions (well, as a stance at any rate).
- Polar alignment is crucial for unguided images. The EQ-5/CG-5 Polar Scope sucks, the Vixen GP Polar Scope is AMAZING, if properly installed and calibrated to the mount. The amount of time you spend "drift aligning" your mount is inversely, and exponentially proportional to the quality of the Polar Scope, and your skill using it.
- Once you're hooked, and yet start to feel that the amount of effort getting a simple image is becoming burdensome, get an auto-guider and learn to use it. The amount of time you spend getting your polar alignment exact enough to track tiny pinpricks of light, is better spent setting up an auto-guider. With an auto-guider, short focus DSLR imaging is perfectly fine with a Polar Scope mount alignment only. It also overcomes the short comings in the mount's clock drive and gearing (for minor problems). You will definitely throw away less sub-frames with an auto-guider, which improves data acquisition productivity, and lets you spend more time processing images, than gathering the photons, and worrying about errors.
- If you don't have a permanent installation, and you work from your backyard, get a ScopeBuggy for rough terrain, or JMI "Wheelie bars" for smooth terrain/pavement. The number one hindrance to imaging on any given weeknight, after clouds and/or poor transparency, is the amount of effort it takes to setup and breakdown. Hauling out 10 pieces of equipment to get going, is time consuming. With a ScopeBuggy, a good mount, a good Polar Scope, and an autoguider, you can be up and running in 20 minutes or less. Of course, that only really works if you have everything permanently setup on the ScopeBuggy. This will likely require some ingenuity on your part, as you need a place for everything on the buggy.
- The last thing to making imaging a breeze, is to use your imaging setup for imaging only. I have my DSLR permanently attached to and focused for my Orion 80ED. The ST-4 autoguider is permanently attached and focused in a 5" F6.5 achromat refractor that rides side by side with the 80ED on the mount. I only pull the ST-4 when using the 5" refractor as a finder for the 80ED/DSLR, and then selecting a guide star. To focus the finder eyepiece, I slide it out of the 1.25" adapter on the mirror diagonal. That way the ST-4 doesn't have to be refocused. When my DSLR focus starts to look poor in the images, I use a Stiletto IV with 300 lpi Ronchi grating to get it back in, but that's an expensive solution (which works flawlessly, and is a LOT easier than using a laptop and FWHM software method).

Finally, I am biased toward not using a laptop at the scope. My confidence in the success of the method outlined above, precludes the need for fiddling with a laptop. You will want to get at least a 256MB memory card to allow up to 30 RAW frames to be taken. If you intend to do several targets in one session from a remote location using 10 to 20 frames at 5 minutes in RAW mode, then get a couple 1GB cards and a couple of extra camera batteries.

HTH,  
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