INCLUDING DARK SKY TRAVELS NIGHTSCAPE PHOTOGRAPHY

ISSUE 106

AMATEUR ASTROPHOTOGRAPHY

Cover image by Sean Lian
The Tarantula Nebula

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Cooled Cameras from the ZWO Pro Range

by Tim Cowell

Cooled cameras for long exposure astro-photography have a great advantage over their uncooled cousins by nature of the repeatable results they produce. The cooling process reduces sensor noise and stabilises the remaining interference patterns, making it easier than ever to create very high quality images. To ensure you enjoy the full performance of your new camera, you must provide a good power source that will easily last the length of your imaging session.

The current draw is not especially high but you should keep this additional load in mind when designing your rig. You might also find that your camera has been equipped with a USB2 hub on-board. This is a very useful additional feature for managing your accessories, such as your guide cam and your auto focus unit.

The market today has affordable cooled cameras to suit most budgets, with fields of view from entry level, to the 'Full Frame' sizes found in daylight cameras and beyond.

To ensure the suitability of a sensor matches your particular telescope, you must consider the resolution and focal length in terms of pixel scale, so as to not 'over' nor 'under' sample the incoming data. Your supplier will be able to advise you properly on this and there are many good websites on-line where you can choose camera and telescope combinations that help you find a proper solution.

Almost every camera available is certain to be extremely sensitive and able to manage the long exposures needed to bring out the faintest details of your favourite deep sky objects.The debate regarding Colour v Monochrome is best entered into when you know more about what direction of imaging you would like to follow. Both options have excellent benefits. Advances in filtering, sensitivity and your local conditions may find you selecting a colour device, sometimes called an OSC (one shot colour) camera and these are immensely rewarding machines.

The 'mono' camera can provide greater sensitivity, resolution and choices with filtering, however beprepared for the additional work-load in processing and some extra cost for those filters, holders or filter wheels and the chore of extra imaging and calibration frames where required.

It is fair to say that if cost were not an issue, that many of us would have multiple cameras in both colour and mono formats but realistically this is not always likely to be the case. Your

supplier, forum or Club is a great place to gather the information required to make your informed decision.

Ifyou like what you see others doing, with similar telescopes to yours, there is no reason why then with good practise, you will not be achieving similar or better results in a short time. Second-hand cooled cameras are an option for the thrifty. They can represent value for money but looking in the marketplace they are gems that rarely turn up and this may be because once a cooled camera is properly integrated into a system, it will work tirelessly, night after night, for many years without degrading. Buying new guarantees you the best experience from the get-go and I would recommend that option initially to save disappointment. You may also find that your bargain has notbeen supplied with the original accessories and these are important. The proper data cable of the correct length and grade and the screw-on fittings with their fine tuning spacers are essential pieces that, if missing, will frustrate your early attempts to join in the fun.

The cooled cameras really are something special in our astronomy imaging world and they are game-changers for backyard enthusiasts. Simple to operate, robust and extremely effective - they are miniature marvels.

365Astronomy have been supplying ZWO Pro Cooled cameras to end users and retailers since they appeared on the market and have the experience to advise you and the facilities to support your purchases.

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Photonic Cleaning Technologies presents; Astrophotography: A Journey of Patience - Dale A. Chamberlain

My journey began when I was nine years old and my grandmother presented me with a small reflector telescope for Christmas. The first thing I did was point toward the moon, which was on everyone's mind at the time because of the Apollo missions. What a marvelous view to behold! Seeing detailed craters and shadows on the moon's surface and wondering where the first humans would land. This hooked me then and there. Then came the trips to the McDonnell Planetarium in St. Louis, Missouri and seeing the film slides of deep space objects. I vowed I would someday take my images like those.

The learning curve was steep. The first lesson learned was to take good images: you need a good mount, preferably a German Equatorial Mount (GEM). It took a while for me to realize that. This was probably the most important and expensive lesson for me. My next telescope was an all-manual refractor; it had the GEM but no motor for tracking. I spent a lot of time polar aligning, although the scope was suitable for visual use but not astrophotography.

After that, I acquired a Celestron Nexstar. It had the tracking motor but was "Alt-Azimuth" and did not make for good images, and still missed the mark. Its successor was a Meade LX-200GPS 10" SCT telescope. It was motorized, had a GPS built in, which made alignment easier and could take a camera. It was mounted on a wedge which allowed it to track similarly to a GEM, but it was a fork mount making it difficult to balance when piggybacking a smaller field of view scope on it. At this point, I decided to mount it permanently on a pier inside a roll-off roof observatory.

All these lessons have brought me to where I am today. I have a Paramount ME II GEM mount with adjustable counterweights and plenty of weight capacity to hold a 14" Ritchey–Chrétien (RC) telescope and a piggybacked 80mm aperture SkyWatcher Esprit triplet refractor. All these are housed on a permanent steel pier in a SkyShed POD MAX dome observatory with all the automation, such as dome and slot control.

NGC2174 Monkey Head Nebula

M16 The Eagle Nebula

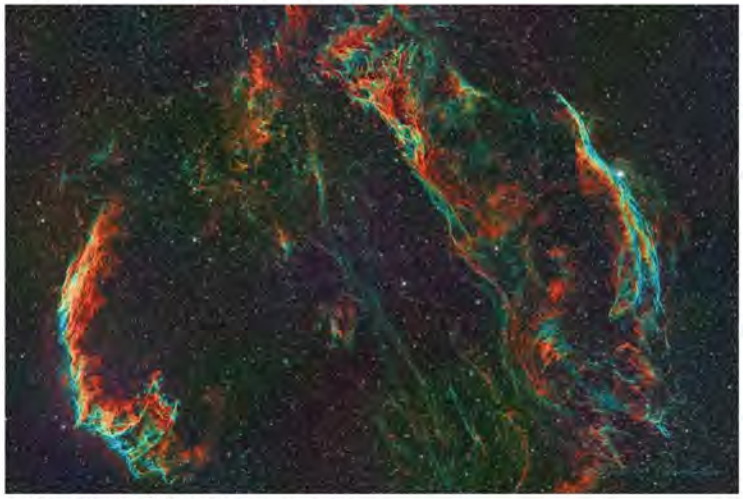
This SkyShed POD MAX was the first constructed in the United States. Prototypes were built in Canada, where SkyShed is headquartered. This was so new that the instruction manuals had not yet been written when I received the materials. This was the next step in the journey. Working together on revisions as they came concurrently for each phase of construction of the dome was crucial.

Camera technology has significantly improved over the years. With backlit CMOS sensors boasting high resolution, deep well depth, and zero-amp glow, they are now the gold standard in astrophotography. Combined with the power of PixInsight for image processing and Nighttime Imaging 'N' Astronomy (N.I.N.A.) for image acquisition, the quality of astroimaging has been unparalleled. For an amateur, imaging can take place over the entire night, from astronomical dusk to dawn, fully unattended. Of course, learning PixInsight and N.I.N.A. did not come without its challenges!

My equipment roster also includes several broadband and narrowband filters. For my monochrome CMOS camera, I have a 7-position filter wheel holding 2" Chroma filters: Luminance, Red, Green, Blue, and 3nm narrowband Hydrogen-Alpha, Oxygen-III, and Sulfur-II. For my one-shot color (OSC) camera, I have a filter slider that can hold one filter at a time. There are various Optolong filters, plus a Radian Triad narrowband filter. Both telescopes have either a flattener lens (refractor) or a reducer/flattener (14" RC). These optics require more frequent cleaning than telescopes.

With the myriad of hardware and software available, you likely will not find two configurations that are exactly alike. Getting all these components working together took a lot of patience and determination. I won't kid you, sometimes I felt like giving up, but having the resolve to see it through yields great rewards. I hope you can see this in my images.

IC 1396A The Elephant Trunk Nebula



Sharpless 103 The Cygnus Loop

Sharpless Sh2-129 and OU4 The Flying Bat and Blue Squid Nebula

As technology and my skills improve, I find myself returning to the older images and replacing them with newer ones. My favorite targets are nebulas due to their beautiful colors and shapes.

There are many advantages to having a permanent outdoor setup in an observatory. Polar alignment does not need to be performed each observing session, and optical trains and balancing can be kept in place. However, the equipment is constantly exposed to dust and humidity, and good clean optics are necessary for good images. My scheme is simple: don't obsess over the mirrors but prioritize the optics closer to the camera sensor. I first saw the First Contact Polymer cleaning system at AIC in San Jose, California and I was intrigued. I ordered a kit that allows me to clean the filters thoroughly and efficiently, 12 in all, as well as the camera sensors, focal reducers/flatteners, and telescope mirrors. I used it on the filters, and they were spotless! Then I cleaned the camera sensors and the focal reducers/flatteners. The dust and smudges on those components will affect the image quality the most. My flat frames were clean! I plan on cleaning the mirrors of the RC telescope and I believe the polymer cleaning system will offer less pressure on the mirrors than the more traditional methods. As any RC owner will tell you, pressure on the mirrors can cause changes to collimation, and collimating an RC is not a simple task!
I hope any future astrophotographer reading this will take the time to plan before buying. And realize there is never a point when you can declare the journey is over.
You can visit my website at
https://chamberlainobservatory.com/

Are you a First Contact Polymer user and Astro Imager?
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Photos by Astrophotographer Agapios Elia - Cyprus

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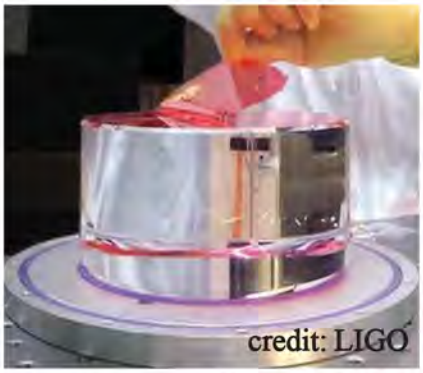

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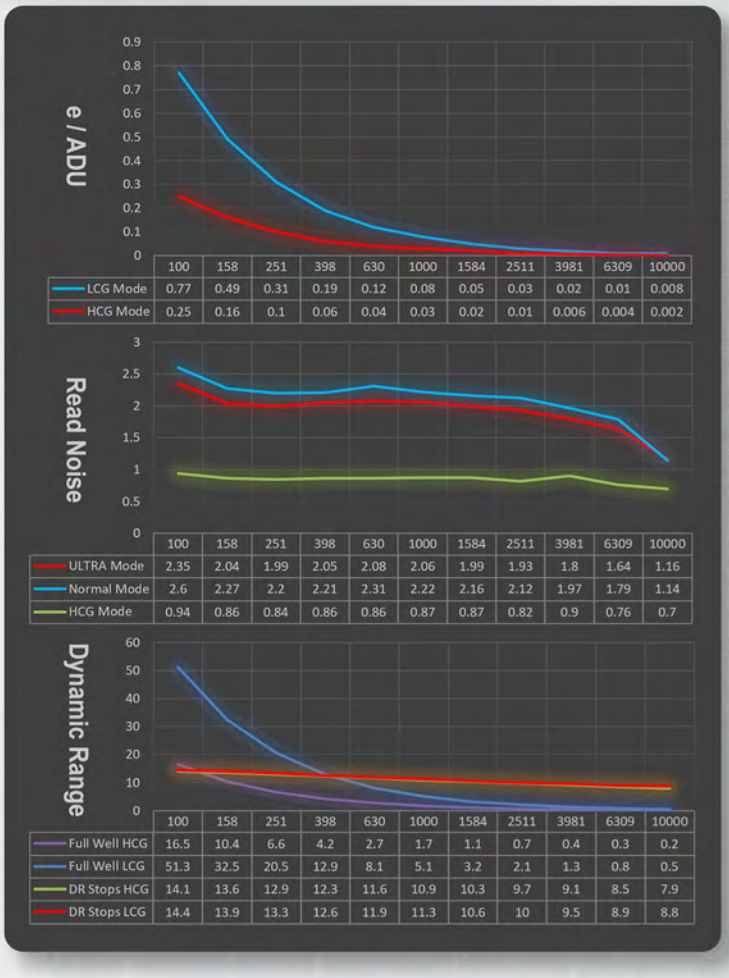

	100	158	251	398	630	1000	1584	2511	3981	6309	10000
LCG Mode	0.77	0.49	0.31	0.19	0.12	0.08	0.05	0.03	0.02	0.01	0.008
HCG Mode	0.25	0.16	0.1	0.06	0.04	0.03	0.02	0.01	0.006	0.004	0.002

	100	158	251	398	630	1000	1584	2511	3981	6309	10000
ULTRA Mode	2.35	2.04	1.99	2.05	2.08	2.06	1.99	1.93	1.8	1.64	1.16
Normal Mode	2.6	2.27	2.2	2.21	2.31	2.22	2.16	2.12	1.97	1.79	1.14
HCG Mode	0.94	0.86	0.84	0.86	0.86	0.87	0.87	0.82	0.9	0.76	0.7

	100	158	251	398	630	1000	1584	2511	3981	6309	10000
Full Well HCG	16.5	10.4	6.6	4.2	2.7	1.7	1.1	0.7	0.4	0.3	0.2
Full Well LCG	51.3	32.5	20.5	12.9	8.1	5.1	3.2	2.1	1.3	0.8	0.5
DR Stops HCG	14.1	13.6	12.9	12.3	11.6	10.9	10.3	9.7	9.1	8.5	7.9
DR Stops LCG	14.4	13.9	13.3	12.6	11.9	11.3	10.6	10	9.5	8.9	8.8

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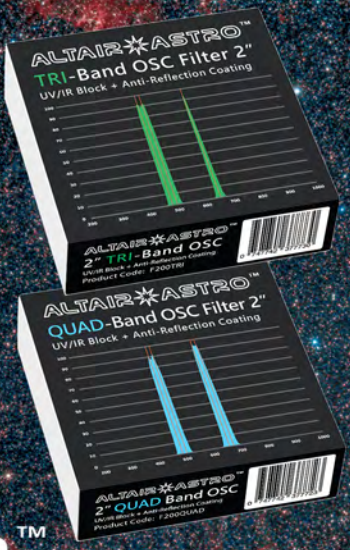
Image: David Tyrer



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FILTERS 2"/ DSLR

Image: Stacey Downton

GPCAM

Image: Gary Varney

MG32

MINI-GUIDER

Image: Dean Hucklesby

Image: Neil Phillips

Image: Gary Palmer

ADC

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astrobiscuit

OOOPS I got a C14

The Celestron 14" Edge HD Optical Tube costs £9k – GULP!

My suggestion of donating a few of the kid's less important organs to pay for a C14 fell on deaf ears so rather than buying one, I'm hiring one for a few months. On Monday I picked up a C14 from Alex Gill's farm in deepest, darkest Wales and last night I got to try it out.

The C14 weights 21kg

The weight of it is the reason Alex doesn't use it much anymore… and I can totally see where he's coming from. The arse factor of setting this up and tearing it down is immense.

Alex lives on a bortle 3/4 farm in darkest Wales

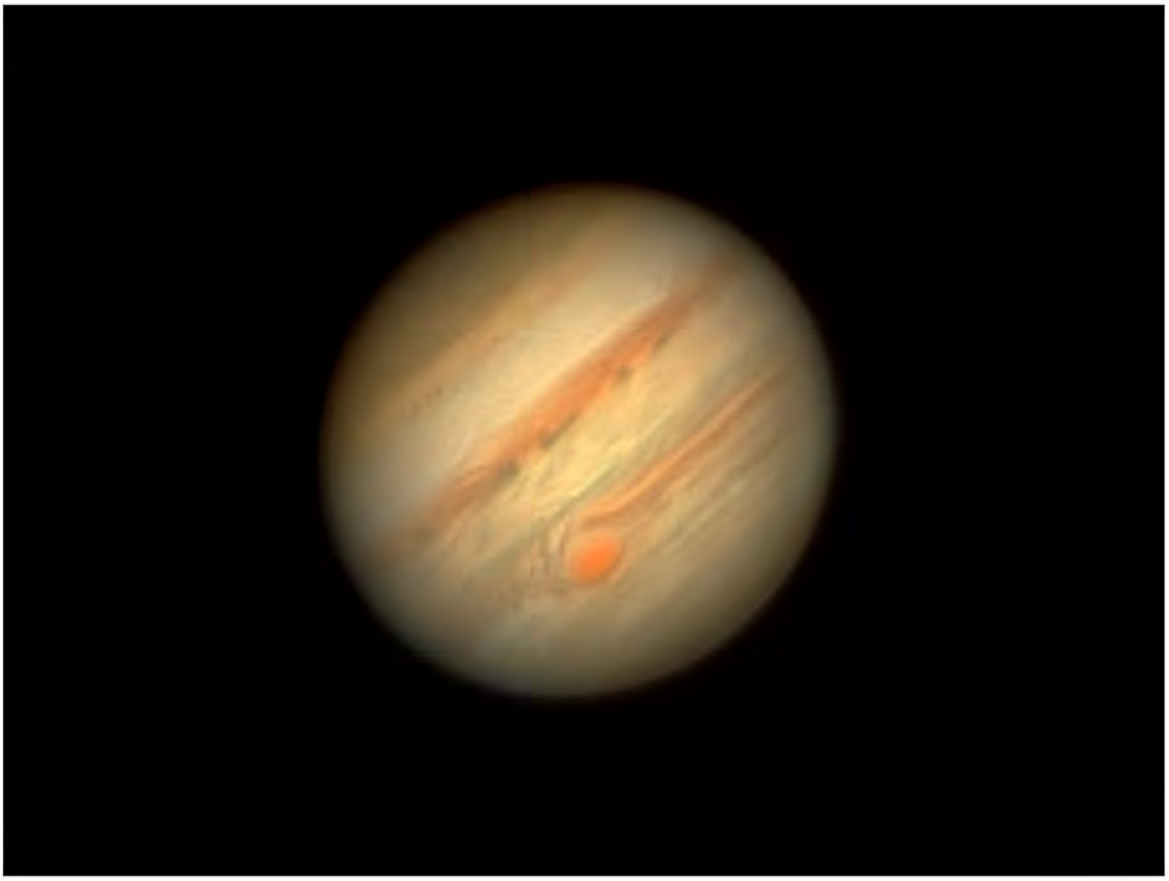
Alex about to give Storm a kiss (lucky girl)

Don't tell Alex but while I'm waiting for Dave from Dark Frame Optics to finish our special mount project the C14 is going to have to sit on my far too small for Big Bertha red Avalon Linear. Getting the scope on the mount requires the kind of drugs that only female Russian weightlifters have access to. Even so I managed it. And getting the scope to balance requires some additional counterweights which had to be improvised (I can't

show you a pic in case Alex sees😉). The giant planet looked good but soon began to go dim… and then really dim. Could it be clouds?

I carried on for two hours shooting an increasingly fading king of the planets. I NEVER have a dew problem in London but turns out the 15 inch diameter corrector lens is prime real estate for any passing droplet that fancies condensing. The front of the C14 was a lake. So I mopped it up and then put the heated dew shield on (thx Alex) hooked up the home made dew heater power thing (thx Alex) and cranked it up to the max.

The dew problem was no more BUT now the wind was catching the dew shield and my little red mount stood no chance of preventing Jupiter from dancing around all over the place. Even so at 22.38 I managed to get this shot of Jupiter. I know @peachastro#2809 can do better but fingers crossed it was poor seeing rather than me that made the difference.



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There is no doubt that the factory configuration of Dobsonian telescopes offer fantastic performance. The many positive user reviews and recommendations back this statement. And while this is true, we took things a step further by looking to increase the performance of this telescope. The multifaceted Apertura Dobsonian Performance Upgrade kit does just that!

Apertura 8" Dobsonian Performance Upgrade Kit
Apertura 10" Dobsonian Performance Upgrade Kit
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HOW DO WE IMPROVE THIS ALREADY GREAT PERFORMANCE?

REDUCTION OF STRAY LIGHT

The open end of a telescope not only lets in the light that we want to view through the eyepiece, but it also lets in unwanted stray light. This rogue light can come from many sources; such as security lights, street lights, the moon, and even bright stars that can sit just outside the field of view. This stray light then reflects off the inner surfaces of the telescope and eventually winds up being viewed through the eyepiece. This causes the dark background of the sky to brighten slightly, muddying the view and decreasing contrast.

There are a couple different methods available to decrease the negative effects of stray light. The most effective option is the installation of precision cut knife edge baffles in the telescope's tube. These baffles are painstakingly designed and positioned for maximum performance. These baffles provide the largest decrease in stray light, but can have a negative side effect outside of being costly to produce and difficult to implement. The baffles can push air currents that normally ride along the inner topside of the tube, into the light path. These currents in the light path act much as a turbulent atmosphere does; stirring the view and causing unsteady conditions. Not all systems are like this, but it is a common negative side effect of a fully baffled open tube telescope like a Newtonian.

The most readily available option is a velvet-like material known as Flocking Paper. This material has many small strands that stick up, much like a carpet. When the stray light hits this surface, the light is dampened and absorbed, creating a positive impact on your view. This method allows internal tube currents to ride smoothly along the interior surface of the telescope. These currents remain mostly out of the light path just as they did in the scope's factory configuration, unlike many baffled systems.

While every surface on the inside of the telescope, with the exception of the mirrors, can be flocked - it would be quite an involved and costly process. This kit provides contrast improving flocking for the most critical areas of the telescope that have the largest positive impact and are easiest to install. In an unbaffled tube there is still the possibility of stray light entering the focuser in some situations, but with the placement of the flocking material in these key areas, that chance occurrence is greatly reduced.

SECONDARY MIRROR COLLIMATION KNOBS

What are these knobs and why are they useful? This is a great question! As you might know, Newtonian telescopes require careful alignment of their two mirrors for optimal performance. When adjusting the secondary mirror so that it lines up with the focuser and the primary mirror at the bottom of the tube, the three screws of the secondary support need to be manipulated. These screws change the angle that the secondary mirror points. To do this in most telescopes requires the use of a screw driver or hex key to turn the adjustment hardware. This can be a hassle at night, requiring the user to step away from the eyepiece or collimation tool being used, and devote all of their attention to turning these screws.

By replacing the screws with Apertura Collimation Knobs, the secondary mirror adjustments can be made by simply turning the knob with one's hand. This makes adjustments fast, safe, and simple; without the risk of dropping a tool down the telescope. After becoming accustomed to the telescope and Apertura Collimation Knobs, users may even find that they are able to make adjustments to the secondary mirror without ever taking eyes off the collimation tool or focuser.

PRIMARY MIRROR COLLIMATION SPRINGS

The primary mirror cell is the device that supports and positions the primary mirror. It uses springs to support the weight of the mirror and allows for some adjustability in its positioning. The upgraded collimation springs take more energy to compress them than the factory springs do, which can help to keep the mirror positioned correctly. This is true both when making adjustments and after they have been completed. The image to the left shows a factory spring, and the stiffer upgrade spring to the right.

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Rainbow Astro Mounts.

RST-135

Capacity	13.5 ~ 18 kg
Weight	3.3 kg
Volume	14.4 x 13.1 x 19.5 cm
Slew speed	7.5 deg/sec
Recommended OTA	5 inch Refractor 8 inch Reflector

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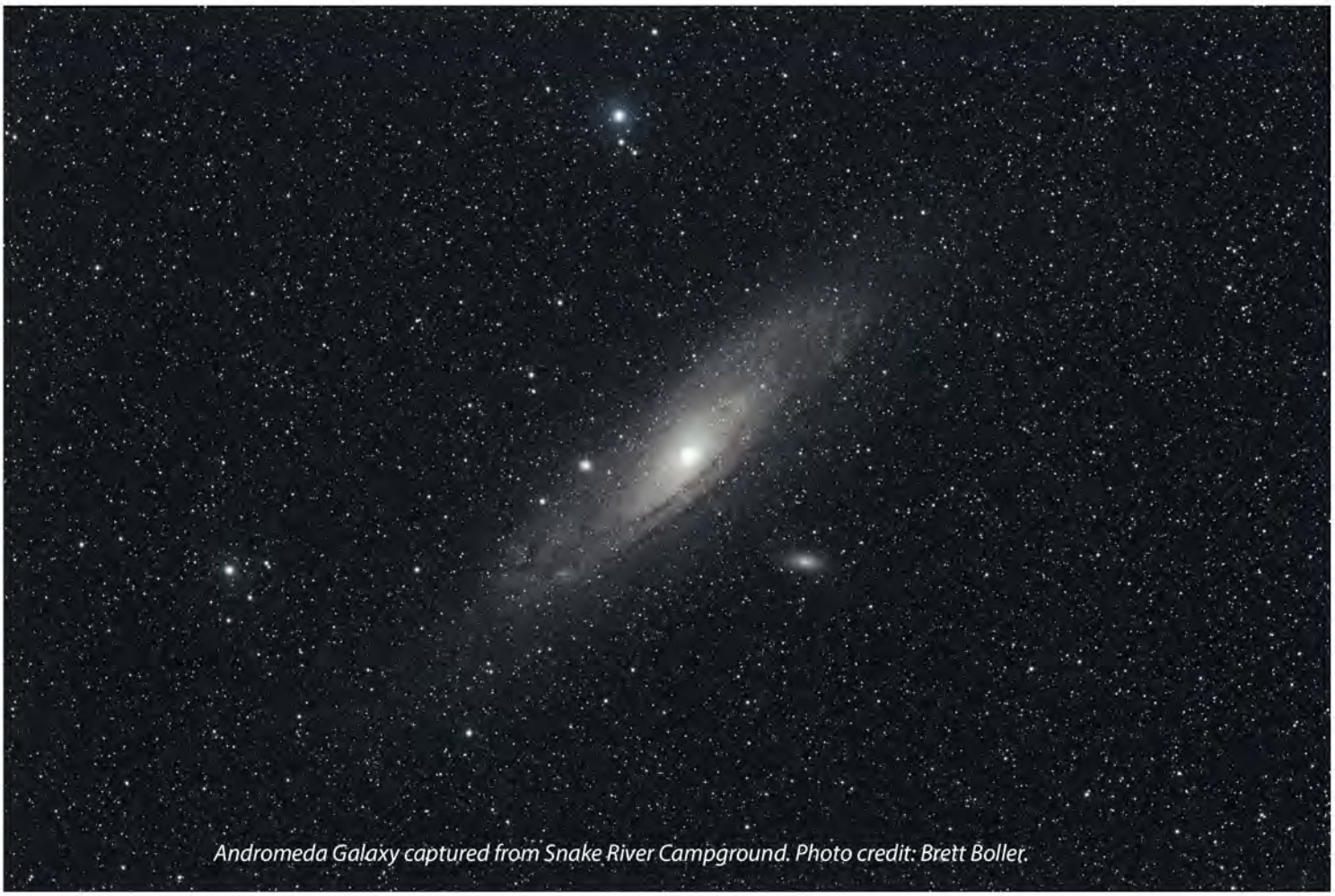
Merritt Reservoir State Recreation Area Named IDA's 200th Certified Dark Sky Place



Andromeda Galaxy captured from Snake River Campground. Photo credit: Brett Bollet.

MERRITT RESERVOIR STATE RECREATION AREA, Cherry County, Nebraska, U.S. – Nebraska Tourism, Nebraska Game and Parks Commission, and the International Dark-Sky Association (IDA) proudly announce Merritt Reservoir State Recreation Area (SRA) is certified as an International Dark Sky Park. Merritt Reservoir State Recreation Area marks a significant milestone in the International Dark Sky Places Program by becoming the 200th certified Place.

The International Dark Sky Places (IDSP) Program is a conservation-based program rooted in grassroots advocacy to protect dark skies and the nocturnal environment. The Program, which has been in place for over 20 years, is structured around a rigorous set of guidelines to ensure each certified Place participates in actions and stewardship that improve the quality of the nightscape environment. Certified Places maintain and extend protection to the night sky through quality outdoor lighting, effective policies, and ongoing stewardship practices that improve the caliber of the nightscape environment. International Dark Sky Places are not just markers for visiting sites and viewing the night sky. They represent an incredible experience that is brought by balancing the view of the universe with sustainable lighting, or put simply – "Stars up, Lights down."

"This recreational area provides a wonderful opportunity to recognize the importance of conserving natural darkness for the local ecosystem, encourages its neighbors to follow its example with quality outdoor lighting, while also providing a place to connect visitors with a quality dark sky experience where the Milky Way is visible to the naked eye – the core elements of what makes an esteemed International Dark Sky Park," remarked Ashley Wilson, IDA's Director of Conservation. "IDA is pleased to recognize Merritt Reservoir SRA as our 200th certified Place as it indicates the success of this Program, as well as the continued

growth, engagement, and inspiration it promises."

As the first International Dark Sky Place to be recognized in the state of Nebraska, this achievement is a major first step in conserving Nebraska's nightscape and an opportunity to highlight it as an astrotourism destination. "The Dark Sky Park will attract people to experience the awe and splendor of our night skies, adding yet another excellent, unique experience to visiting Nebraska," said Executive Director of Nebraska Tourism John Ricks.

Located in northwestern Nebraska, Merritt Reservoir SRA spans 729 acres and is known for its excellent fishing, boating, and camping opportunities situated in what is arguably the state's most fascinating ecosystem: the Sandhills. The scenic reservoir offers 44 miles of shoreline, with nine designated camping areas along the eastern and southeastern shores. The Park is surrounded by a wildlife management area, land maintained as native Nebraska habitat.

The Sandhills are the largest sand dune formation in the Western Hemisphere and one of the largest grass-stabilized dune regions in the world. The expansive, undisturbed land tracts provide breathtaking vistas; spectacular bird populations inhabiting the hundreds of lakes and wetlands throughout the lowlands make for excellent wildlife viewing; and the small towns bespeckling the region are known for their charm and hospitality.

Due to its rural nature and lack of light pollution, Merritt Reservoir SRA has been an ideal host location for the annual Nebraska Star Party for 29 years. The state's premier, weeklong astronomy event offers both beginner and advanced astronomy field schools, observing challenges, an astrophotography contest, and a day of educational presentations. Through combined efforts with Nebraska Tourism Commission and Nebraska Game and Parks Commission over the past three years, the aspiration of receiving the International Dark Sky Park certification is finally realized.

The certification required Merritt Reservoir SRA to survey and retrofit exterior light fixtures throughout the park and implement a Lighting Management Plan to maintain outdoor lighting to be dark-sky friendly into the future. The Nebraska Game and Parks board of commissioners passed a resolution in support of the International Dark Sky Park designation stating that "the night sky represents an important natural resource that contributes to the quality of life for residents and visitors and is necessary for the health of many native wildlife species."

"We're thrilled and honored to have Merritt Reservoir State Recreation Area awarded this prestigious distinction," Nebraska Game and Parks Director Tim McCoy said.

The Bauer family, who own and operate Merritt Trading Post, share in the excitement over the IDSP certification. "I've been fortunate to experience Merritt's dark skies for the last 17 years and there is something incredibly humbling about seeing the depth of the universe with such clarity," says Stacy Ann Bauer, "My astrophotography has allowed me to share and bring awareness to this brilliant natural resource. This designation will illuminate the beauty of the night skies while protecting the park from future light pollution. We cannot wait to share our radiant skies with even more future astronomers."

To help foster this connection, Nebraska Game and Parks has implemented a suite of educational programming focused on nocturnal wildlife, unique nighttime phenomena, and the myriad threats of light pollution. In the coming years, they plan to develop self-guided tours and install educational signage throughout the park.

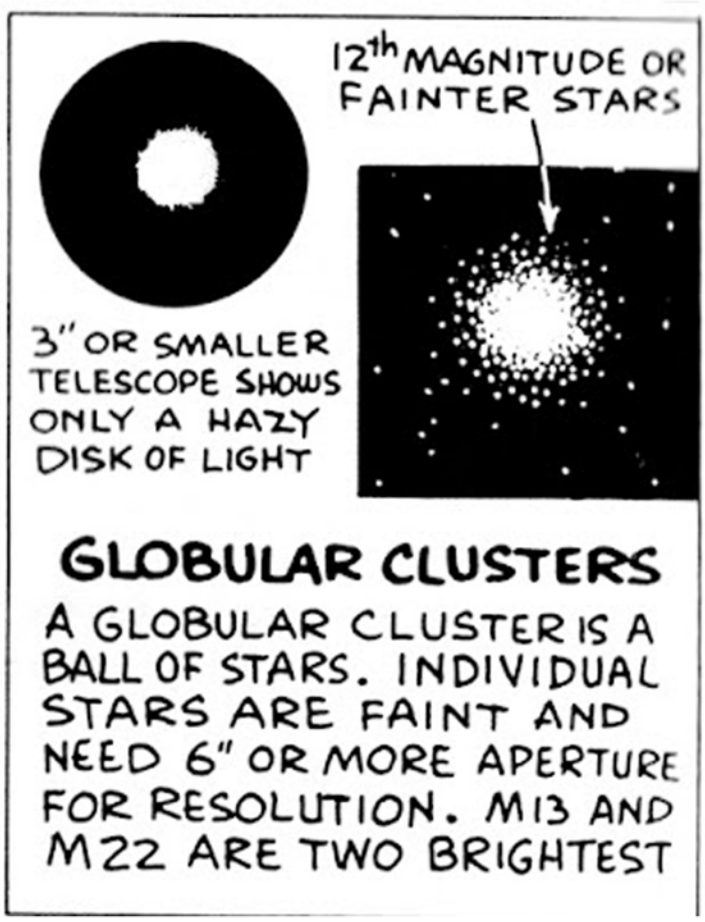
The closest town of Valentine, Nebraska, also is doing its part to keep the Sandhills dark. With guidance from Nebraska Star Party planners, the city council selected dark-sky friendly fixtures for its downtown beautification project currently underway.

My Yearly M13, the 2022 Edition

by Rod Mollise

Well, muchachos, '21 turned out to be a stinker of a year; not much better than that cursed annum, 2020. I sure was hoping 2022 would be different. I even dared hope the world, or at least Unk's world, would get back to something resembling life before covid. Heck, maybe I'd even get out for my yearly ritual of imaging Messier 13, which I missed in 2021.

Alas, '22, while it started off promisingly enough, was the year your Old Uncle got the covid. Purty ironic, I thought, after two years of taking precautions, even to include staying out of Heroes Bar and Grill for the longest time(!). And having had four shots. Luckily, no doubt thanks to those shots I had an extremely mild case and was soon feeling almost normal enough to contemplate M13.



As the year wound down and the Great Globular sunk ever lower, though, the less likely that began to seem. You may have heard about that post-covid tiredness some sufferers report. After I'd recovered from the plague, I felt pretty good. For a while. I went from not just thinking about taking my M13 snapshot to at least considering getting back to our local star party, the Deep South Star Gaze. Then—BOOM!—I was suddenly wondering if I could even get up from my desk and walk out to the truck after I was done teaching my university classes. I began to think I wouldn't get M13 this year much less travel to the DSSG.

But… (sometimes that inevitable "but" is a good thing) over the last week I've begun feeling a lot more like my old self. No, I wasn't going to pack up and head for the dark piney woods of Deep South but getting a telescope and camera into the backyard for some quick imaging of M13 didn't seem downright impossible anymore.

Ah, yes, "imaging," "astrophotography." If you have never attempted it in at least semi-serious fashion ("semi-serious" being your Uncle's beat on a lot of things) you don't know what a complex set of tasks it is, and how easy it is to forget what to do and how to do it after even a short layoff. Unk hadn't shot a guided deep sky image in a long time, and figgered there'd be plenty of hiccups, but I bravely began to move gear from the sunroom to the backyard, anyhow.

'Course, before I could move anything into the backyard, I had to decide what to move. If you're a regular reader of the Li'l Ol' Blog from Possum Swamp, you know I began reducing scope headcount rather dramatically seven years ago. But that don't mean Unk is exactly scope poor. I have a brace of refractors in addition to my old friend, Emma Peel, my Edge 800 SCT. I also have a pair of GEM mounts suitable for imaging, a Celestron Advanced VX and a Losmandy GM811G.

Choosing a scope wasn't difficult. "Feeling better" does not mean "at the top of my game." I wanted a telescope that's easy to take pictures with. One that almost takes pictures by itself. That's

my 80mm William Optic Fluorite Zenithstar. She's an F/7, meaning the focal length is short enough guiding is not overly necessary with reasonably brief exposures. One night a few years back, I was out clicking off subframes with the scope, "Veronica Lodge" by name, and thought "Man, PhD sure is guiding well tonight!" Till I realized I'd forgot to start the autoguiding program! The images Ronnie produces are absolutely color-free, too. Down checks? 600 millimeters of focal length ain't a lot for smaller targets like globular clusters.

Choosing Veronica made picking the mount easy, too. The Losmandy is a wonderful GEM, I love it, and it's amazingly easy to lug around and set up despite its impressive payload capacity. There's no denying, however, the AVX is easier. I've had the Celestron mount for nearly a decade now, and it has never let me down.

Remember what I said about "complex" tasks? Setting up an instrument for imaging is one of those. Getting telescope and GEM into the yard is just the beginning. Gotta mount a guidescope and guide camera for starters. I could probably have eschewed guiding, but since I could auto-guide, I thought I probably should. Perfect for the 80mm is the Orion 50mm finder-guide scope I bought years ago. The guide cam is a QHY5-LII I've had for quite a few years as well. The monochrome QHY is sensitive, and the wide field of the 50mm guide scope means there are always plenty of stars in the field.

The main camera, as it often is, would be my Canon Rebel XTi. The chip size and resolution and sensitivity of the old-timer are a good match for the 80mm. Nearly 15 years down the road, the Rebel just keeps on keepin' on like the dadgum Energizer battery. I mounted the Canon on the scope with the aid of a Canon T-ring that attaches to my Hotech SCA Field Flattener (highly recommended). In place of a battery, the Canon is powered by an AC power supply. Since I normally operate the camera with a computer program, Nebulosity, she is tethered to the laptop with a nice cable I got from, yep, Tether Tools.

Ronnie: Still pretty after all these years.

eah, cables. That is one of the prime aggravations of the imaging game. I've got a cable from the camera to the PC, a shutter control cable from the Canon to the computer (the older Canons could not be triggered over USB; I use a Shoestring Astronomy DSUSB to do that), a USB from the guide camera to the PC, an ST-4 cable from guide cam to the AVX's guide input, the power supply cord for the mount, the HC and its cable, and—well, you get the picture. It is extremely important to be diligent about cable wrap issues.

Computer software? I'd keep that to a minimum. I'd use Sharpcap to get the mount precisely polar aligned, the above-mentioned Nebulosity to acquire and store photos, and PhD (II) Guiding to guide the mount. I decided not to use any mount control software like Stellarium. I'd only be after a single target and I figgered the good, ol' NexStar hand control would suffice.

Cables? I has a few...

Whew! I got All That Stuff set up only scratching my head a couple of times over how somethin' went together or what I'd obviously forgotten. Now to wait for darkness, which would thankfully be arriving at a reasonable hour for your old Uncle for whom 2300 local time is a freaking late night.
With the stars beginning to wink on on a frankly chilly—as we judge such things—Possum Swamp evening, came Job One, polar alignment. I used to hate polar alignment, which, when I began astrophotography, involved either the drift method of alignment, or using a polar finder with a polar alignment reticle.

The former took as much as a half hour, but was accurate. The latter was quick and easy, but yielded so-so polar alignments. I'd often find myself in a hurry to get exposures underway, and usually opted for a polar-scope alignment, which meant my pictures suffered.

Flash forward to the turn of the last century and relief was in sight. Almost all of us were using CCD cameras by then, so polar alignment was slightly, but only slightly, less important. Yes, exposures were shorter, but our imaging chips were small and the "magnification factor" inherent in that meant field rotation due to polar misalignment showed up easily and would make your pictures ugly. So, I still had to drift align? Nope. Celestron automated the polar alignment process.

As the NexStar hand control matured, Celestron began to offer a polar alignment routine in the firmware. It worked simply, but pretty well with my old CG5. Set the mount up with the RA axis at least roughly pointed at the Celestial Pole and do a good goto alignment. The polar align routine would then slew the scope to where Polaris should have been if I had a perfect polar alignment. All I had to do then was use the GEM's azimuth and altitude adjusters to center Polaris in the field of a reticle eyepiece, and, voila! Perfect polar alignment.

Well, not quite. The quality of the goto alignment (and the particular alignment stars used) could and did affect the quality of the polar alignment. Celestron improved the routine over the years, though, and about a dozen years ago debuted the version that's in their hand controls to this very day, "AllStar polar alignment." AllStar allowed you to use a larger number of stars (though not all stars as implied) for alignment. Improvements in the mount's goto alignment algorithms made an AllStar alignment good enough for most imaging tasks.

The main problem I had with it was that in order to preserve goto accuracy with the mount, you had to do a new goto alignment following AllStar. Kind of a pain, and while not taking the time a drift alignment would, it was time consuming. Especially if you wanted maximum accuracy,

Typical Unk film image from a long, long time ago.

which involved doing a second AllStar polar alignment after doing your second goto alignment. Oh, and you'd better do a third goto alignment after the second AllStar if you moved the mount much. You might be aligning on as many as 18 stars. Sheesh!

Then came Sharpcap. You can read all about it in this blog entry but suffice to say it has made AllStar obsolete for me. The Sharpcap software uses your guide camera (or your main camera if you've got a wide enough field) to do the polar alignment. In my opinion, it's as accurate as a good drift alignment, and much quicker. I can have a Sharpcap polar alignment done in five minutes now. And since it is quick and easy, I will do it. Especially in the beginning the most important thing you can do to improve your pictures is a good polar alignment.

So, yeah, with stars winking on, it was time to get polar aligned. I set up a little aluminum camp table next to the scope, plunked the laptop onto that, plugged the guide camera's USB output into the laptop, started Sharpcap, and we was rollin'. I was gratified to see the guidescope was still in focus and picking up plenty of stars just past 7pm. Hit "next" a couple of times, Sharpcap had me rotate the mount 90 degrees in azimuth, and it was time to actually adjust the polar alignment.

The AVX is a nice mount for the price, quite an improvement on the old CG5, but it has one problem it shares with most other imported mounts. The bolts used for altitude and azimuth adjustment are a little course and demonstrate a little backlash. That didn't prevent me from getting a polar alignment Sharpcap pronounced to be within 10" of the NCP; it just took a little longer than it would have with my Losmandy mount and its much better alt-az adjusters. Maybe closer to ten minutes than five.

Then, it was time to shut down and head to the local radio club meeting. I'd wanted to get polar alignment out of the way, at least. That would save time the following evening—I was pretty sure I wouldn't feel like taking pictures when I arrived home after a couple of hours with all the friendly OMs and YLs.

The next night, as predicted, was again clear and cool, if a little hazier and a lot damper than the previous one. It was time to screw my courage to the sticking place and get some subframes in the can. First order of bidness was getting the scope goto aligned. To that end I replaced the guide scope with a red dot finder temporarily. Next, I fired up Nebulosity in Frame and Focus mode, and it began clicking off exposures with the camera. The mount had stopped with the telescope obviously pointing in the right direction, and I was hoping the first alignment star would be in the frame. Nope.

Went over and peered up through the finder. Vega was near centered. What the—? Back to the deck (the PC is on the deck on a patio table under a dew-reducing umbrella). A look at Neb revealed the problem. It was taking exposures alright, exposures of 0 seconds duration. Doh! Changed that to 1 second and back at the scope used the HC to center Vega while peering up at the laptop.

The second alignment star was also in the frame when the AVX stopped, requiring just minor centering. I decided to add a couple of "calibration" stars (which improve the AVX's goto accuracy). Probably didn't have to, but I did. Enif required a little slewing, but cal star two, Caph, was dead center when the scope stopped. I figgered alignment was done and punched "M013 into the NexStar HC.

Like the alignment stars, M13 was dern near centered when the slew stopped, and focus, amazingly, was pretty much dead on without adjustment. Guess someone up there was takin' pity on your benighted Uncle who had been rather worried about getting all this workin' after not taking astrophoto one for many, many months.

Time to set up PhD Guiding, then. Again, there was little to do. The last time I'd used the software, it had been configured for the AVX and the QHY guide cam, so all I had to do was connect equipment to camera with a single button mash, choose a guide star, and watch while PhD slewed away from and back to the star for its calibration. I let PhD settle down for a minute or two, and it was soon guiding at just a smidge over 1 arc-second RMS without PPEC turned on in the mount. That would be way, way better than I needed with Veronica and the DSLR.

Finally, I set Nebulosity to take 20 1-minute lights and 20 1-minute darks. I usually try to get 30 minutes on the Great Globular, but it was only at about 30 degrees altitude and by the time 40 minutes had elapsed would be real low and fuzzy. Watcha gonna do? 20 minutes was better than none. I could have gone much longer on the individual subs, but with the target down in the west in the brighter sky near the horizon, I figgered a minute would be best. I watched PhD for a while, but there

weren't nothin' to watch. It was locked on a guiding without complaint.

Image subframes clicking off, I strolled back into the house, poured out a dollop of Yell, and then walked back out into the yard and stood there next to the scope gazing up at somewhat hazy skies that were not a lot different from those I had in Mama and Daddy's backyard some 55 years back up the timestream.

Those familiar-looking skies encouraged my mind to wander back to the long-ago days when M13 was new. New to and quite a pain in the rear for the young Rodster. I wanted to see M13, maybe more even than a spiral galaxy. But when I finally got it in the field of my puny 4-inch Edmund Scientific Palomar Junior, I was badly disappointed. It was just a fuzz-ball…none, not a one, of its hordes of stars were visible. Which might sound strange. Hell, Veronica will resolve some stars in M13 with her 80mm of aperture at high power. So why couldn't I see a one with my Pal?

First, I didn't know how to observe. Most of the amateur astronomy books I had read warned against high power. Patrick Moore practically preached against it. That being the case, I mostly just used my 25mm focal length Kellner at about 45x. If I'd tried my 12mm eyepiece, maybe with my Barlow, I probably would have seen some stars, but I just didn't know.

Perhaps as importantly, I didn't know what I should be seeing. Sam Brown in his famous All About Telescopes tried to give ideas of what objects would look at in amateur telescopes, but he was a little ambiguous when it came to M13. His wonderful little picture tells us M13 is just a fuzzball in a 3-inch…and goes on to say a 6-inch is needed to resolve stars in the marvel. But what could my 4.25-inch hope to do? Maybe at least a star or two? Sam was silent on that.

Be it all as it may have been, I kept trying with M13 and loved it despite my continuing disappointments—which were not to be alleviated for some years, not till I built a 6-inch and got it to some darker-than-suburban skies.

It seemed I'd been standing out there beside Ronnie for only a few minutes when I heard the laptop emit the little fanfare that is Nebulosity's way of saying "Exposure sequence is done, Unk!" I covered up the scope, being careful not to move focus. It needed to remain where it was so I could take flat field frames on the morrow. I grabbed the laptop, shut off the desk lamp with the red bulb in it, and strolled inside for a wee bit more yell and a mite of cable TV with the felines.

Next day with the Sun setting, the task was getting those flats done. I am not fancy in that regard. I make them with a couple of layers of t-shirt material rubber-banded over the end of Veronica's tube. It's easy enough to make flats, and they really do make a huge difference in processing. Unfortunately, something didn't go quite right with my flats. I'm not sure if the exposure was too short, or I didn't apply them correctly in Nebulosity. Oh, well, tomorrow is another day, I guess.

Anyhoo…how I do run on. To cut to the chase, I obtained the flats, stacked them into a master flat, subtracted that from my lights (which had already had dark frames applied to them), and we was done. The result? Nothing Earth-shattering, that's for dadgum sure. About what you'd expect for a DSLR shot from a suburban sky with an 80mm refractor operated by an old coot who can best be described as "astrophotography dabbler."

But you know what? The shot is mine. I made it with my telescope. In my backyard. Even better, I took it as a sign things are getting back to normal for Unk, and I hope for y'all too.

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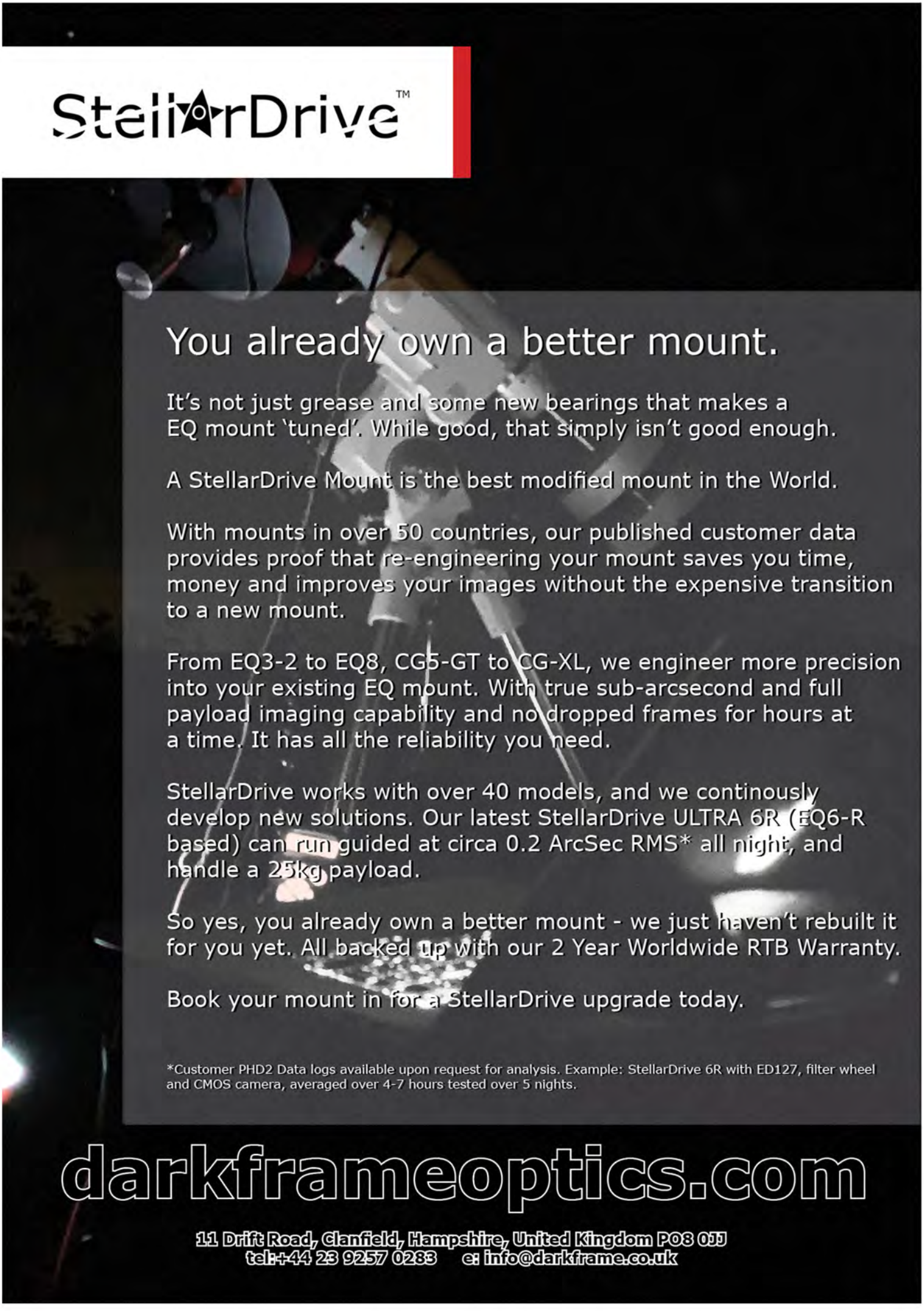
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Skywatcher Evostar 80ED Review

Astro Farsography

Skywatcher Evostar 80ED Review

The Skywatcher Evostar 80ED Doublet Refracting Telescope. A solid entry in the range from Skywatcher, and I've had the pleasure of using this telescope for over half a year now.

80mm aperture, 600mm focal length. Natively f/7.5, not slow by any measure but a little slow for deep sky work. If you buy the dedicated matched reducer flattener which is 0.85x, you'll get f/6.3 – almost half a stop faster. I use a 0.8x F/R which gives me f/6 bang on (that's 420mm focal length) – exactly half a stop faster.

1.5x faster. What that means is at f/6, this telescope collects half as much light more than it does without a reducer. What that means is being able to use a 3 minute exposure instead of a 4 minute exposure to get the same result. That's an advantage even before you consider the flat field it gives you and being able to control your focal length.

What's more impressive is at this price point the glass used is FPL-53 glass. That's some of the best quality glass used in amateur telescopes. They originally didn't boast about this when I first wrote my review. Then when I came back to fact check it again, they had begun disclosing it. The Evostar 72ED has different glass though.

Main Points

- As mentioned; it's a refracting telescope. Which means it uses glass lenses at the front. It's a doublet, so there's two of them working together. The ED stands for 'Extra Low Dispersion'. It's what you want to look for in a refractor telescope. It means it has better colour correction and helps eliminate chromatic abberation.

- At the back is an 11:1 dual speed focuser that's silky smooth yet firm at the same time. The focus rack feels like it has substance to it, each turn of the knobs gives you some nice kinetic feedback; it feels like you're moving the rack yet it isn't heavy. The focus lock screw holds it in place nicely and so far I've had no issue with focus slip even shooting straight up.

- The body has a nice diamond effect to it. The 80ED feels sturdy and solid. Nice build quality and weighs about 3kg. Most of the weight is up front of course with the lenses, which incidentally are stored in the dew shield and not the tube body. So no retracting dew shield for storage unfortunately. The dew shield is a hefty chunk of metal as well as a matter of fact.

Key Facts

- 80mm Aperture
- 600mm Focal Length
- F/7.5 Focal Ratio
- FPL-53 Glass
- Air Spaced Doublet
- Apochromatic Design

Problems With The Evostar 80ED

The first issue I encountered immediately was the dovetail. Whilst it's pretty, finished in green as standard – and is probably fine for visual – for photography it wasn't suitable. By the time I hooked my camera to the rear and added the guide scope into the finder shoe, I couldn't balance in declination at all. With the bar all the way forward, and the telescope as forward in the rings, it was still camera heavy. A new bar was required. I eventually settled on a 14" ADM Vixen Dovetail from First Light Optics. However you could also opt for the StellaMira Universal Vixen Dovetail also and save a little money.

The screw for a camera in the tube ring; I couldn't really get it working nicely attached directly to the camera, but I could fit a ball-head on it. However, if you're not careful with it, it comes loose. Then whilst you're manipulating the tube in the rings, you'll scratch up your paint job…

Be aware of the camera screw coming loose and scratching your tube.

The storage case that it comes with is all well and nice. But the foam inserts are held in place with the smallest bit of glue onto some corrugated cardboard. The outside of the case feels thin and flimsy but should survive an impact. It's nice that its included in the price though. It also comes with these tiny keys that I wouldn't dare to use since they just look like they're waiting to break in the locks.

Since the finder scope is off centre (about 10pm), even if you can get good declination balance, it'll always be heavy on one side since the centre of mass is off-centre. You'll never get it perfectly balanced. Your choices would either be rotate the tube so the finder shoe is at 12 o'clock, or piggyback. With piggybacking – they use ¼ camera threaded UNC bolts for these tube rings. Good luck finding guide rings that accept that. What I eventually did was a 3D printed vixen bar and a few bolts from eBay.

However these days there are a lot more options available on the market for vixen dovetails that you'll be able to use for piggybacking.

Skywatcher Evostar 80ED Suitability

I say there is no one telescope that can do it all. The 80ED is no exception to that rule. Yes, you can add a barlow and a small chipped planet camera to see Jupiter. But now you're at f/22.5 – that's even before the crop factor of the camera is taken into account, and a lack of resolution may give you lacklustre results.

I recommend the 80ED to be turned to mid to large nebula. Team this reduced telescope up with an APS-C Canon like the 450 or 600D and you can fit targets like the entire Rosette Nebula, M31 Andromeda Galaxy and even fit the Trifid and Lagoon Nebula in one field of view! Very versatile.

"What's more impressive is at this price point the glass used is FPL-53 glass. That's some of the best quality glass used in amateur telescopes."

Using an APS-C Camera and a 0.8x Reducer You Can Fit Large Targets In Frame. FoV Emulator from Stellarium

If you're choosing a dedicated astronomy camera there are several options that sample well:

- 183 Sensors such as the ZWO ASI 183mc or the Altair 183c
- 294 Sensors such as the ZWO ASI 294mc Pro
- ZWO ASI 533mc Pro cameras. I've also reviewed both the ZWO ASI 533mc and the ZWO 533mm pro.

Summary

All in all I think that Skywatcher has definitely made a very good and versatile telescope within the Evostar 80ED. If you're using it for imaging then be sure to factor in the cost of a new dovetail and the reducer flattener. Pair it with a DSLR and you'll be happy. Be sure to research the deeper FoV if you're using a 183 sensor (I didn't do this and was caught out). The 80ED is great for nebula and galaxies but not for planets and the case is serviceable and will work for moving it.

I feel comfortable recommending this telescope to beginners and veterans alike. It's a forgiving field of view for imaging and versatile for multiple targets in the night sky. The colour correction is on point and I've not seen any fringing or chromatic aberration in my images. If you're looking for a telescope ready for winter for your DSLR then definitely consider a Skywatcher Evostar Pro 80ED.

SKY-WATCHER VIRTUOSO GTI 150P, A GREAT ENTRYLEVEL GOTO TELESCOPE.

by PEDRO RÉ

Sky-Watcher launched recently two dobsonian telescopes (130P & 150P) with GoTo capabilities, easy to transport and use (Figure 1).

The Virtuoso GTi are compact and easy-to-use tabletop telescopes, ideal for all kind of observations. The collapsible system makes it is particularly easy to store and transport. Just extend the tube, point the telescope using the red dot finder scope, insert the eyepiece and enjoy the night sky, these SkyWatcher Telescopes will reveal details in Saturn's rings, Jupiter's bands, the Martian polar ice caps, and the phases of Venus and the moon.

The Virtuoso GTi suffered a major transformation from the original Sky-Watcher Virtuoso mount: (i) Larger aperture, (ii) faster focal ratio, (iii) a collapsible OTA, and (iv) built-in Wi-Fi for full GoTo telescope control via a smartphone and Sky-Watcher's free SynScan app for iOS and Android.

While the original Virtuoso from Sky-Watcher was more focused on planetary, solar, and lunar viewing with its long focal length and included solar filter, the all-new Virtuoso GTi borrows its collapsible optical tube design from the popular line of Flextube and Heritage Sky-Watcher Dobsonians for a versatile package that does it all.

Virtuoso GTi features Sky-Watcher's Radiant™ Aluminum Quartz (RAQ™) coatings on all optical surfaces for bright, bold views and comes complete with everything you need to start exploring the night sky out of the box including a red dot finder and two eyepieces (25 mm and 10 mm). With the free SynScan Pro app – available for iOS and Android -- the user has access to a database that contains over 10,000 objects, including Messier, NGC, IC, and Caldwell catalogs. Align on the stars using one of four alignment methods to put Virtuoso's internal GPS to work and track objects like the Sun, Moon, and stars at precise rates. Patented Freedom Find™ technology uses dual encoders to allow manual control while retaining alignment.

SPECIFICATIONS (150 F/5 Virtuoso GTi)

OPTICAL DESIGN NEWTONIAN (PARABOLIC MIRROR)

DIAMETER 150 MM

FOCAL LENGTH 750 MM

F/RATIO F/5

SECONDARY MIRROR DIAMETER 47 MM

Figure 1 – Sky-Watcher 150 mm F/5 Virtuoso GTi (http://skywatcher.com/)

MOUNT ALTAZIMUTH DOBSONIAN TABLETOP MOUNT

MOTORS DC SERVO MOTORS (TRACKING: SIDEREAL, SUN, MOON)

SLEWING SPEEDS 0.5X, 1.0X, 8.0X, 16X, 32X, 64X, 128X, 400X, 600X

ENCODER RESOLUTION 1068 STEPS PER REVOLUTION

HIGHEST PRACTICAL POWER 260 X

FAINTEST STELLER MAGNITUDE 13.3

FINDER SCOPE RED DOT FINDER

FOCUSER DIAMETER 1.25"

EYEPIECES 1.25" 25 (30X) AND 10 MM (75X)

TUBE WEIGHT 4 KG

MOUNT WEIGHT 5 KG (TOTAL WEIGTH 9 KG)

SHIPPING DIMENSIONS 42X41X55 CM

The Virtuoso GTi Dobsonian Mount Wi-Fi is controllable with iOS and Android and compatible with syncs hand controller. It uses Wi-Fi to control the telescope wirelessly with a mobile device: smartphone or tablet. The mount can be operated with 8 batteries or DC12V (Figure 2 and 3).

The SynScan App is an application running on Android, iOS, and Windows, for controlling the Sky-Watcher motorized telescope mount (Figure 4). This App also supports ASCOM on Windows and the driver can be downloaded from www.skywatcher.com or www.telescope.com.

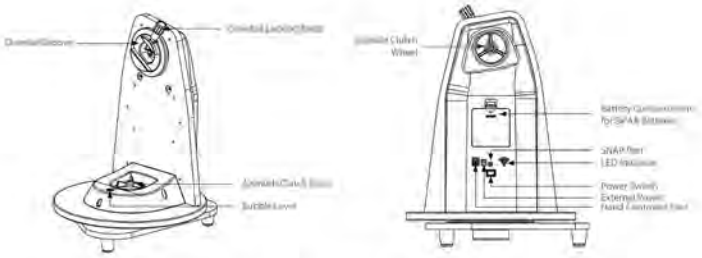

Figure 2 – Virtuoso GTi GoTo Altazimuth dobsonian tabletop mount.

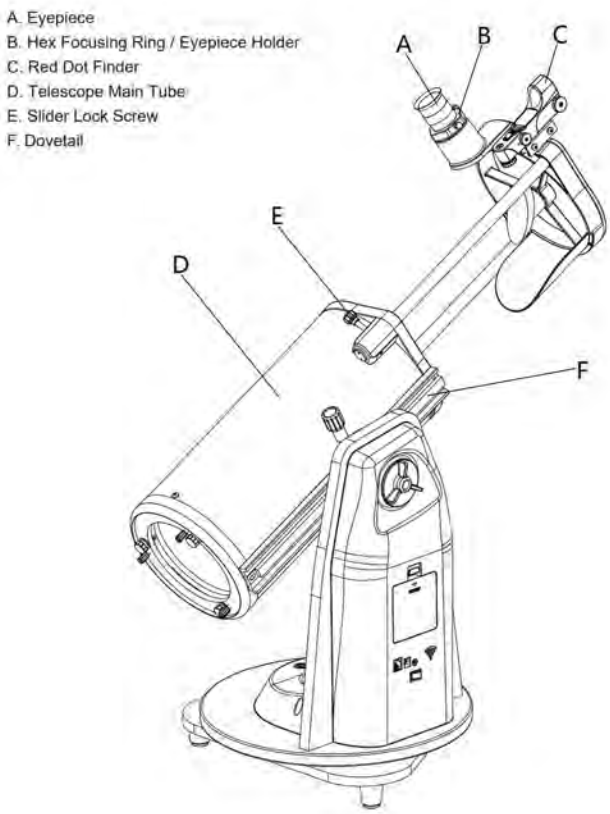

Figure 3 – 150 mm F/5 Virtuoso GTi.

Figure 4 – SkyScan Pro App (Night mode).

After downloading the free SynScan Pro app from the App Store (for iOS) or Google Play (for Android), you must join the SynScan Wi-Fi network on your phone or tablet by hitting "Connect" on the app's opening screen. You're now ready to control your GoTo telescope with your mobile device.

The mount must be aligned to use its the GoTo capabilities. Open the Alignment Menu and choose Brightest star alignment and follow the prompts. The slew buttons must be used to centre the alignment star or stars in the telescope field of view. Always use the low power 25 mm eyepiece to perform star alignment. After choosing a target after the GoTo movement the mount will start tracking. The GoTo accuracy is dependent on

the pointing model (it is preferable to use more than two alignment stars).

Point & Track is an alternative way to track an object, without the need to perform star alignment. This feature is very useful for tracking the Sun (using a full aperture solar filter), Moon and planets. You can choose different tracking speed, Solar, Lunar and Sidereal.

To perform Point & Track the mount must be level (use the bubble level), choose the object to track and select Point & then Track. The mount will keep the object centred in the field of view.

Figure 5- Collapsed 150 mm F/5 Virtuoso GTi mounted on a Sky-Watcher tripod.

Sky-Watcher®

Be amazed.

Figure 6 – 150 mm F/5 Virtuoso GTi mounted on a Sky-Watcher tripod.

Figure 7 – 150 mm F/5 Virtuoso GTi.

Figure 8 – 150 mm F/5 Virtuoso GTi.

Figure 9 – 150 mm F/5 Virtuoso GTi.

Tenerife Astrophotography Holidays

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Tenerife one of the best places in the world for astronomy and astrophotography, NASA calls the Canary islands a window on to the universe. At only 28 degrees latitude above the equator we see the core of the milky way, and with longer nights more time to spend under the stars .

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Accommodation and transport in Tenerife are all provided and prices start at £800.00 for the week non photographer partners are welcome to join you from £250 for the week in self catering accommoda-tion.

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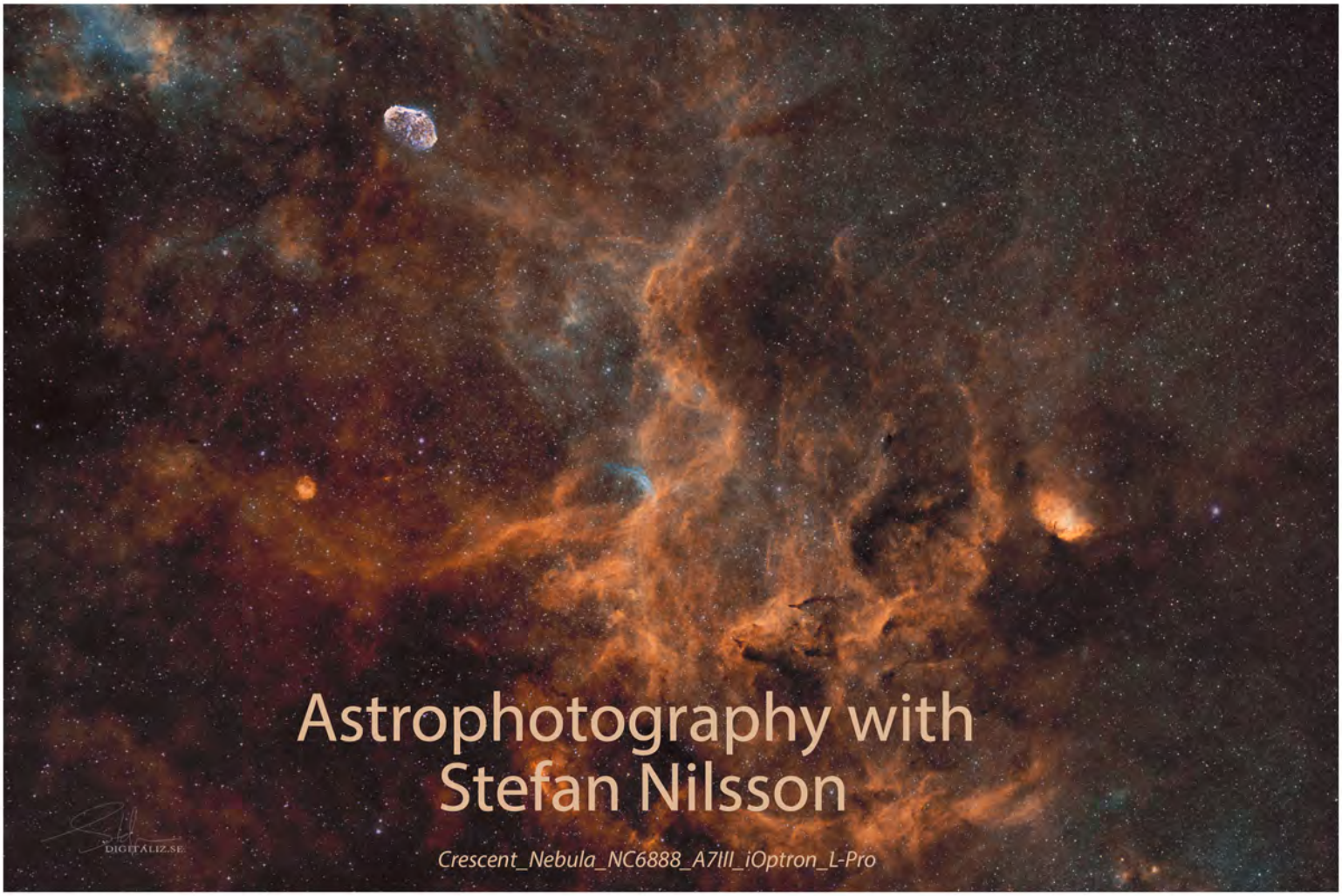


Q1. Please can you introduce –

My name Stefan Nilsson and I live in Sweden with my wife and two children. At day, I work as chemist and analyze chemicals, pollution and other quality assurance parameters. At my spare time I spend quite of time doing photography, editing and watching astrophotography related content on youtube. I usually say that (astro)photography is not just a hobby of mine, it's my passion.

Q2. When did you start astrophotography? Did someone inspire you?

I'm not sure who inspired me to shoot Astro, but I've always been interested in astronomy and physics. The same goes with photography which I had been doing since the early 90s.
I would say my astrophotography journey started around 200. Back then, it was just more about nightscape images, mixing landscape with random starry sky. However, it didn't take long to discover that having the milkyway in the shot made the image stand out even better and my hunt of the great scenaries incorporating the Milkyway started and which lasted for many years and is still something I love to do.

From time to time I've tried to do some Deep Sky Imaging (DSO), but didn't find it appealing until early 2019 where I gradualy started to shoot DSO using my Samyang 135/2 and tracked the nightsky with Skywatcher Adventurer Pro. A perfect setup in the field doing its thing while I ran around in the darkness shooting Astroscape with my other camera.
This matured till late spring 2021 where I made up my mind and ordered a real telescope, the TS-Optics 115/800 coupled with Skwatcher EQR-6 Pro. Summer came and then the journey into the deep space started for real that very autumn when we got some darkness again.

Q3: Why do you love astrophotography? Is there a moment that makes you have interest in it and turn it into your hobby suddenly?

The simple answer to that question is easy, pretty images! That is why I love astrophotography, the final result ends with pretty images. But that is not the entire truth, there is more I love shooting astro and that being out in the darkness is like balm for the soul. It is just an amazing feeling being out, mostly by your own, staring at the sky and try to make pretty images. For Astroscape, I also find it challenging and fun to locate new places to shoot. A lovely scenary daytime can be a bad one at night and vice versa.

For DSO, the technical challenge is fun. There are always some troubleshooting when it comes to DSO imaging and overcoming them with your own solutions are rewarding. The postprocess is as least as fun as the image capturing part. So many ways to edit and and watching the data come to life is fun.

Q4: How did you learn astrophotography? What has it taken to get these achievements?

I've learned most by trial and error and watching lots of youtube videos. I have tried lots of different techniques and software and have then come up with my own workflow that works well for me. I can say it has taken many hours, even days of testing and to get to the point I have settled with a workflow I have been using lately and as far as I can tell, it is still an ongoing journey. The funny thing is that much of the youtube tutorials that inspire me is about PixInsight. A software I don't use. But I can sometimes see what they do and translate it to Photoshop.

Squide_Nebula_OU4_Sh2-129_A7III_Sharpstar_76EDPH_SWGTI_IDAS_NBZ_259_subs5min

Q5: What gear do you use for astrophotography? Any pictures of them?

For now, my two main imaging trains are.
Skywatcher EQR-6 Pro coupled with TS-Optics 115/800 and ASI2600MC. I have both flattener and reducer and choose them wisely depending which target I shoot, As for filters for this setup I use Optolong L-Pro and L-Extreme. I always use filters in my Bortle Sky 5 backyard.

The second setup is a Skywatcher Adventurer GTI coupled with Sharpstar 76EDPH with a fullspectrum modded Sony A7III. The filters I use with this setup is Optolong L-Pro and IDAS NBZ.
Both are controlled using ASIAir Pro/Plus.

Sometimes I use my everyday camera Sony A7R4 because I need the extra pixels it has.

Q6: Do you want to say something to the newcomers? How to select equipment, how to learn astrophotography, how to do post-processing better, etc. Say whatever you want. We can definitely learn a lot from you.

My best tip for all newcomers is try to the best they can with the equipment they have/can afford. Lean how to use it, learn how to overcome the obstacles lesser equipment have. You can do a lot with basic setup like a stock camera, a tracker and filters. It make take longer time to collect nebulosity, but then again, not all images are about emission nebulas. There galaxies, reflection nebulas and dark nebula that do not need modified nor astrodedicated cameras.

Q7: Which photo or location is your favorite? Would you mind telling us something about it?

About 100km south east from where I live are locations that are Bortle 2/3. It's at the beach towards the ocean so I have clear view to the east and south. I seldom go there anymore, but plan

to do so at spring when we can see the core of the Milkyway for a a very brief period before dawn.

The place is also great for Astroscape so when I get there I plan to do both DSO and Astroscape at the same time.

Q8: People say the complex astrophotography software is one of the reasons that makes newcomers tend to give up at the beginning. What do you think? How to get familiar with the software quickly?

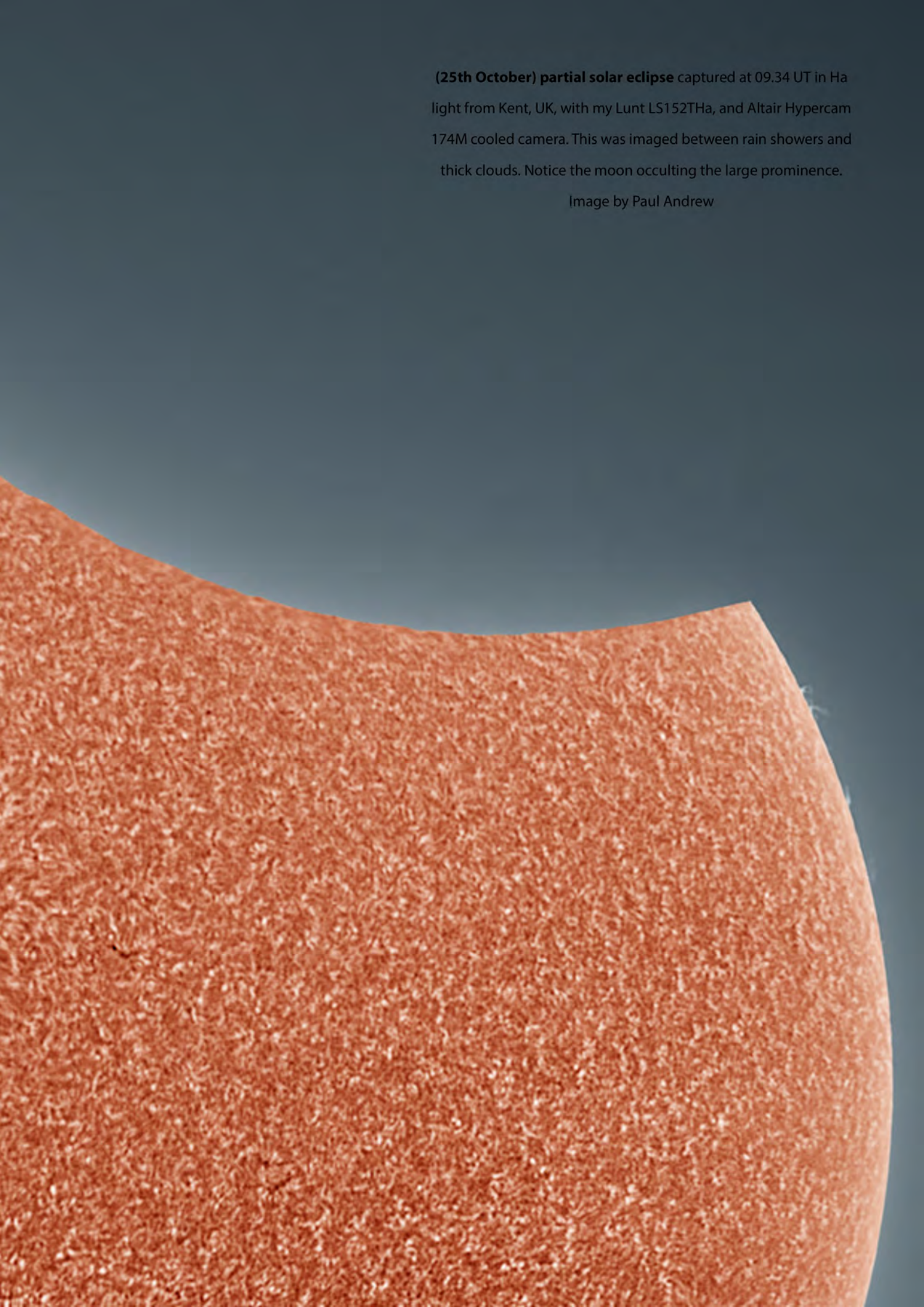
Editing is a very crucial of getting good images. The easiest way to to watch some youtube tutorial and follow along with your own images. Some influencers even give away their images which is even better.
But never give about and it may take a week or two the get the hang of the basics. Most of the time, basic editing and simple workflow can get great images. The more advanced steps can wait untill you are comfortable with the workflow and when you get there, re-edit old data and that great image could become a superb one.

Q9: Do you think astrophotography somehow changed you over the past times ever since you were into this hobby?

Yes, Before I was satisfied with short total integration time. The better my editing skills get, the more/better data I want. I haven't yet started mono imaging, but I guess it is just a matter of time before I start doing that too.

Clamshell_Nebula_Sh2-119_A7III_Sharpstar76EDPH_IDAS_NBZ_SWGTI_68subs_5min

Partial Solar Eclipse 2022

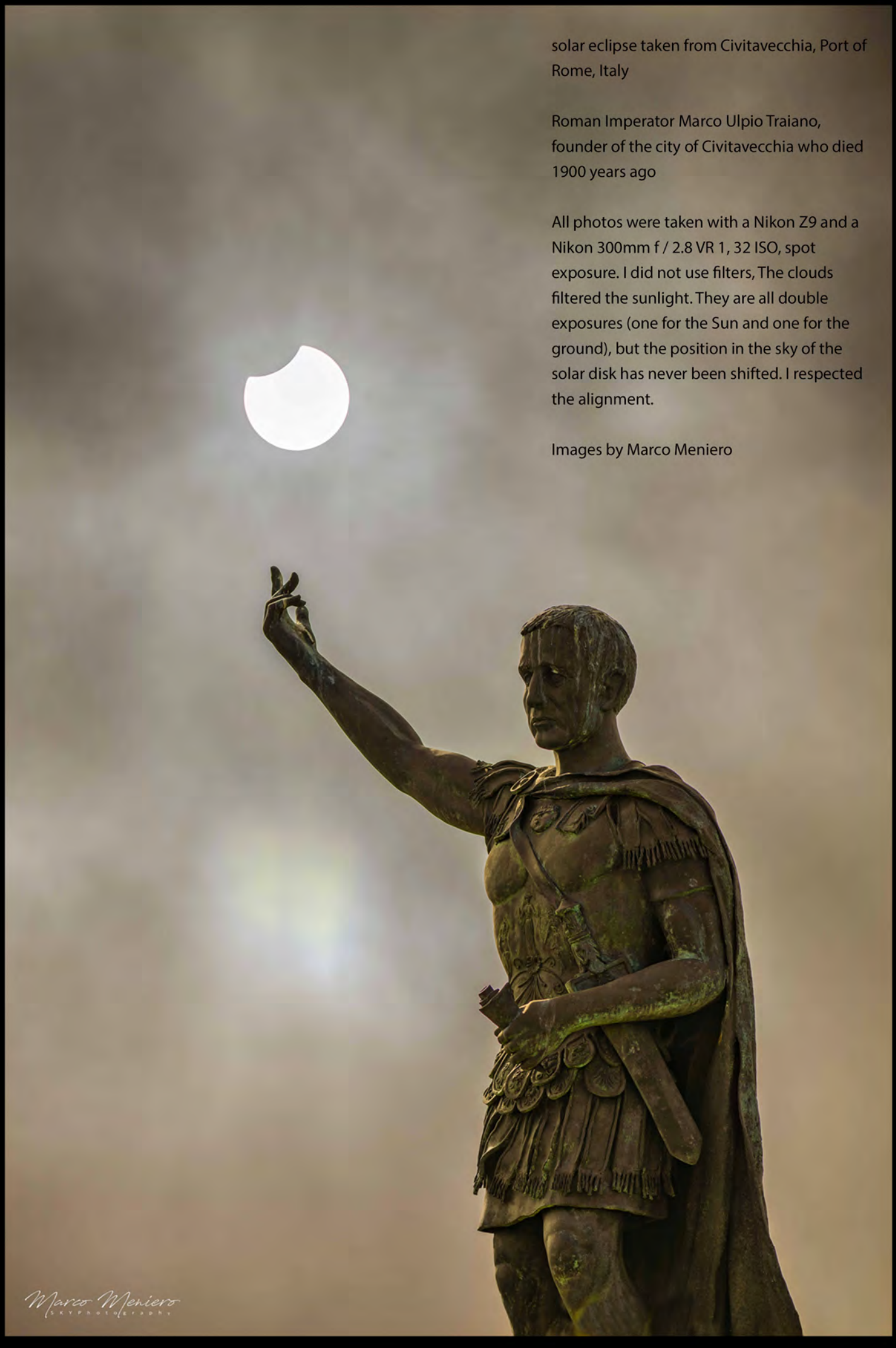


(25th October) partial solar eclipse captured at 09.34 UT in Ha light from Kent, UK, with my Lunt LS152THa, and Altair Hypercam 174M cooled camera. This was imaged between rain showers and thick clouds. Notice the moon occulting the large prominence.

Image by Paul Andrew

statue of two lovers, a sailor and his mistress who are in the port of the city

Bulls grazing under the eclipse.

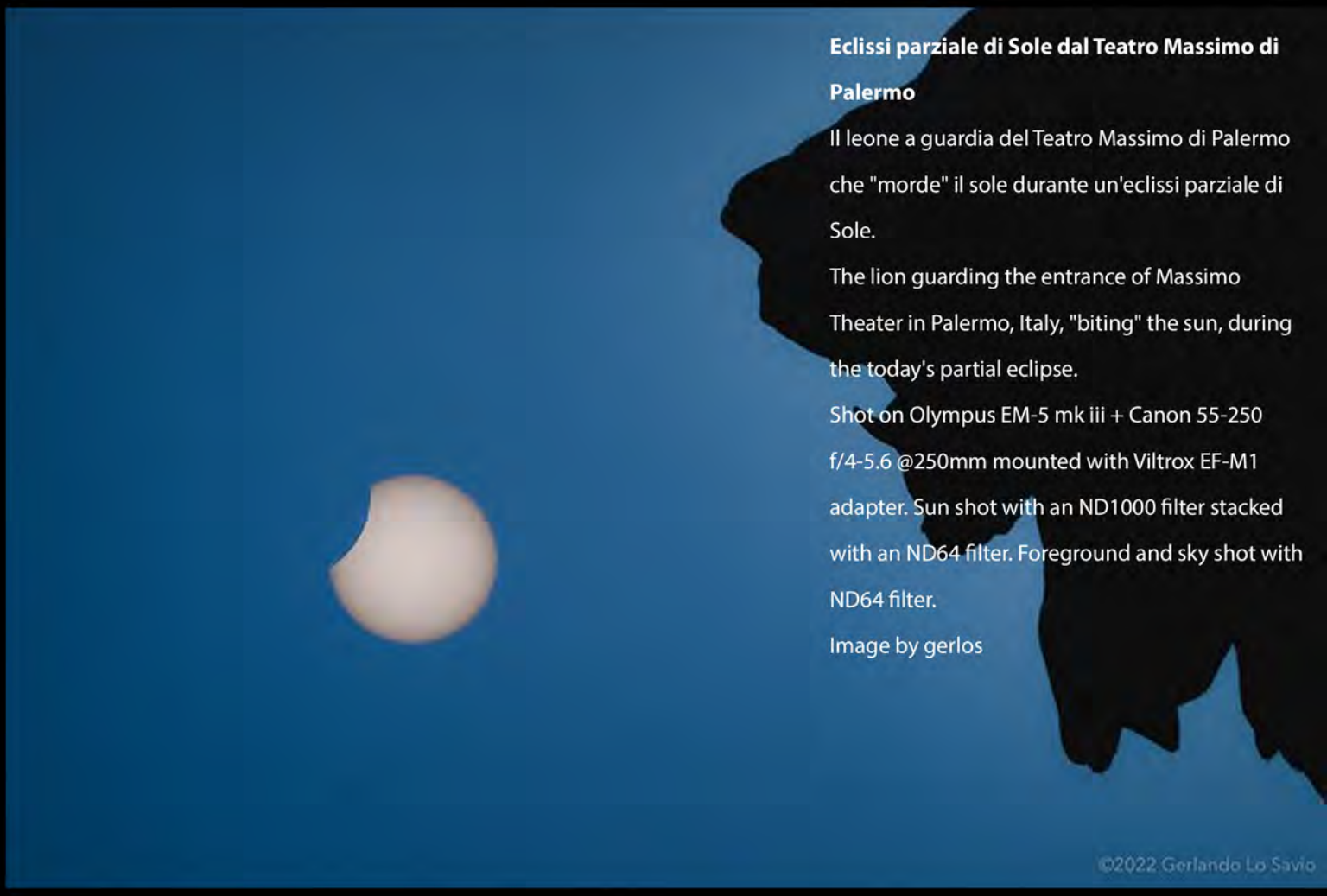


solar eclipse taken from Civitavecchia, Port of Rome, Italy

Roman Imperator Marco Ulpio Traiano, founder of the city of Civitavecchia who died 1900 years ago

All photos were taken with a Nikon Z9 and a Nikon 300mm f / 2.8 VR 1, 32 ISO, spot exposure. I did not use filters, The clouds filtered the sunlight. They are all double exposures (one for the Sun and one for the ground), but the position in the sky of the solar disk has never been shifted. I respected the alignment.

Images by Marco Meniero



Eclissi parziale di Sole dal Teatro Massimo di Palermo

Il leone a guardia del Teatro Massimo di Palermo che "morde" il sole durante un'eclissi parziale di Sole.

The lion guarding the entrance of Massimo Theater in Palermo, Italy, "biting" the sun, during the today's partial eclipse.

Shot on Olympus EM-5 mk iii + Canon 55-250 f/4-5.6 @250mm mounted with Viltrox EF-M1 adapter. Sun shot with an ND1000 filter stacked with an ND64 filter. Foreground and sky shot with ND64 filter.

Image by gerlos

No Solar filter, no Tripod, even No DSLR!!

Still, I thought, let's give it a try.. let's take a picture of the eclipse. Climbed up the stairs to the roof and made a small attempt with my Canon Powershot.

Location: Gandhidham, Kutch, Gujarat, India

Date and Time: 25-10-2022, 06.21 PM

Equipment: Canon Powershot SX540 HS

Processing: Adobe Lightroom Mobile App.

Exif:

Exposure: 1/125 Sec

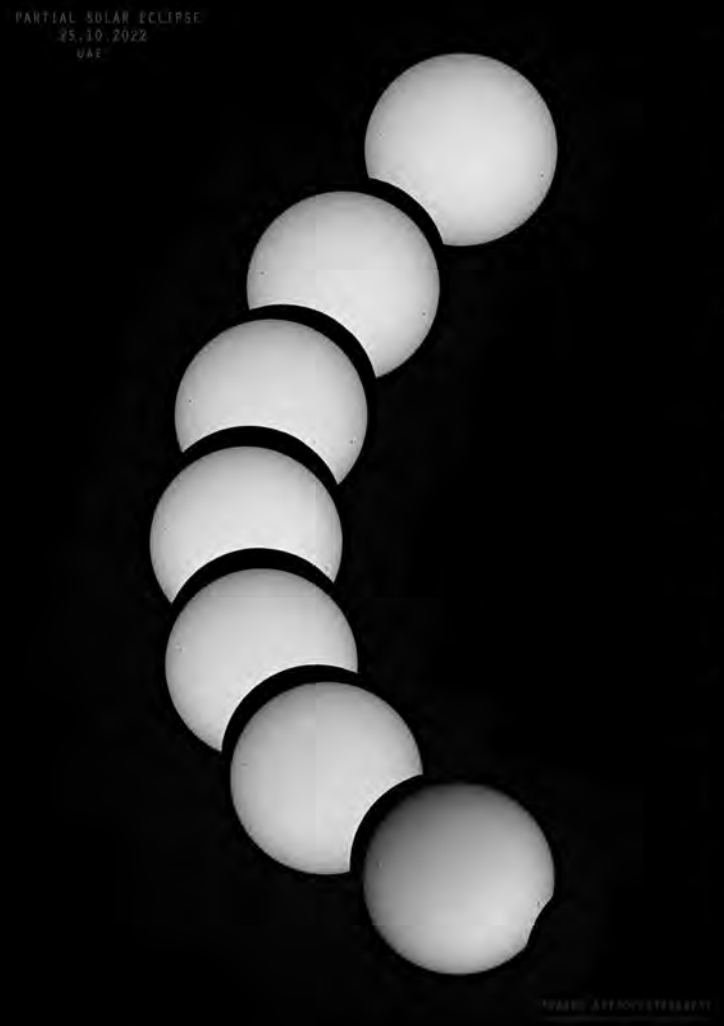
ISO: 80

Aperture: f/6.5

Focal Length: 215mm

Name: ARIJIT GHOSH

PLACE: Gandhidham, Kutch, Gujarat



Collage of the Partial Solar eclipse - 2022

We witnessed the partial solar eclipse from Abu Dhabi, UAE starting from 14:44 GST till 16:55 GST. This collage might look like a 3D image of the sun in vertical view but if you tilt the image 90 degrees you will see the collage of the eclipse.

The sequence starts from the top to bottom showing the start of the eclipse, the maximum eclipse, and the end of the eclipse.

Equipment: Esprit APO 80mm - ZWO 294MMPro - Antlia 36mm Red filter - Baader Solar filter

Exposure: 2.80 ms @ Gain:0

25.10.2022

PrabhuAstrophotography

Image by Prabhu S Kutti

Részleges Napfogyatkozás - Partial solar eclipse

Skywatcher 72ED

AZ-GTi

ZWO asi178mc

Canon Eos PR

Canon RF 24-105mm F4, @105mm

2022 10 25

Image by hodorgabor

SOFI in den Wolken

solar eclipse in the clouds

Image by Michael Wolter

2022 Solar Eclipse

The clouds tried to spoil the moment, however they added some depth and mystery to the eclips the same time.

🔭 Sky-watcher HEQ-5, TS-Optics 115 f/7 APO

Canon 70-200 f/2.8L

📷 Canon 80D/Canon6D

Image by Pilot Astro

Partial Soalr Eclipse

25 October 2022

— in Chandigarh, India.

Image by AJ Singh

Partial Solar Eclipse - 25.10.2022

Partial solar eclipse, captured from the UK at just after 11am.

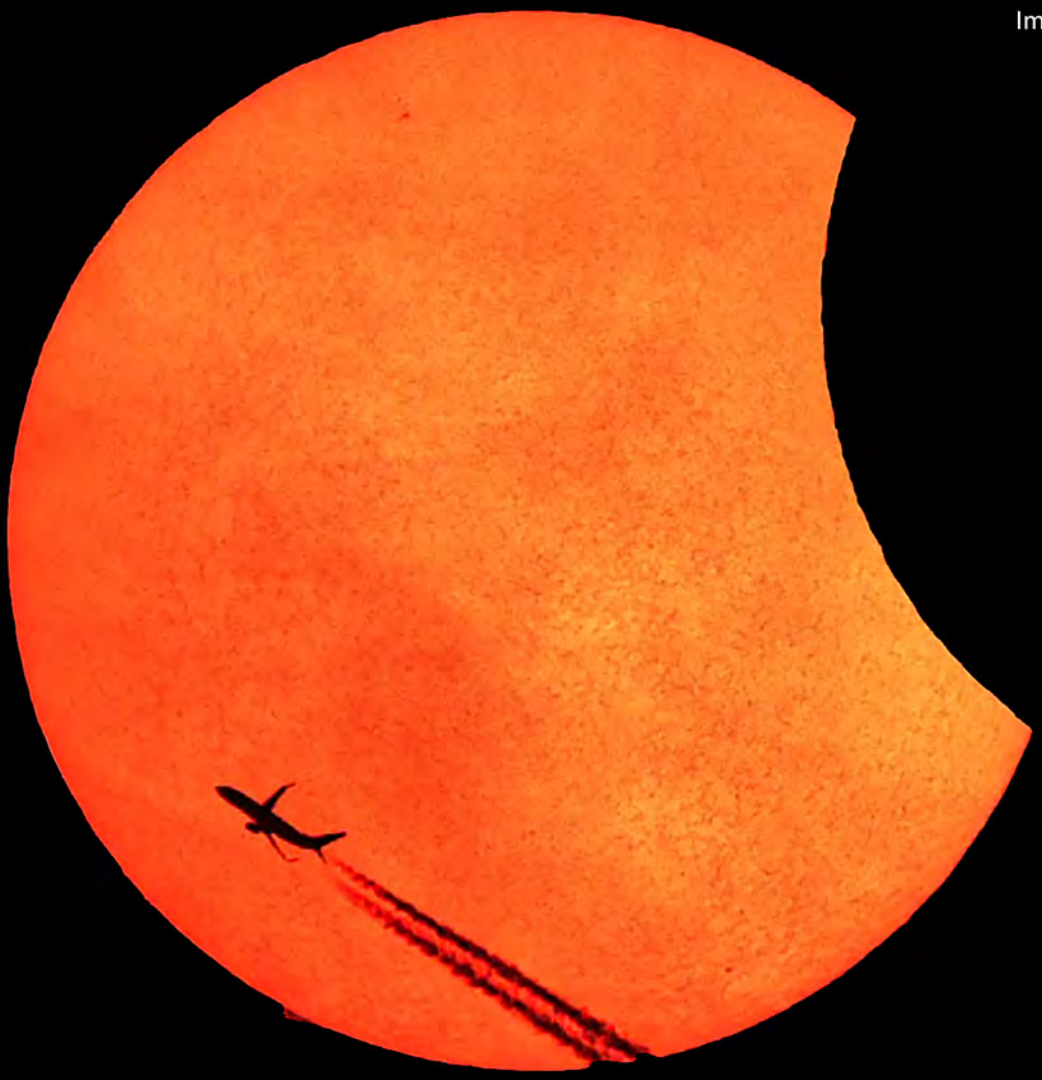
- ZWO 533MM
- Baader solar film
- 8" newtonian with aperture reduce

Image by BBROPHOTO

eclipse avion

Eclipse partielle de soleil du 25/10/2022 prise de Cambrai (59)

Image by Jérémy Derthe



Astrotour on Equinox

On September 2022, Astrnomads Bangla arranged an astrophotography workshop in Singalila National Park. The workshop was conducted in association with Amateur Astrophotography Magazine and sponsored by Samyang, Nisi and Vanguard. The area is located in the borders of India and Nepal, away from busy localities, providing an opportunity for skygazers to enjoy the beauty of the night sky. With the maximum altitude of 3636 meters, it has also become one of the most popular destinations for astrophotographers. The landscape provides distant snow-capped mountains with an extraordinary view of Kangchenjunga, the third highest peak of the world. Within the national park, two areas were chosen, Kala Pokhri and Aahl for camping.

The participants were complete newcomers to the field of astrophotography. A couple of virtual sessions were held before the tour to educate the newcomers on the basics of astrophotography including the subjects for shooting, technical terms etc. However, the weather was not on our side during the tour. We were able to get clear skies only for an hour during the three nights. That one hour was enough to make us and the participants excited. With lightning and milky way in the same field of view, it was a heavenly sight to observe.

Additionally, we were also able to capture some rare optical phenomena like red sprites and blue jet lightning occurring towards the heart of the Sagittarius arm of the milky way.

Post-tour, a virtual post-processing workshop was organized where participants learnt basics of pixinsight and photoshop.

We would like to express our heartfelt gratitude to our equipment partners, Samyang, Nisi, Vanguard, and our associate, Amateur Astrophotography Magazine for their kind support and for extending their helping hand towards popularizing astrophotography in India.

ASTRONOMADS
বাংলা

Author: Avronil Chatterjee

Gear: Nikon Nikon D5600, Nikon 18-55mm

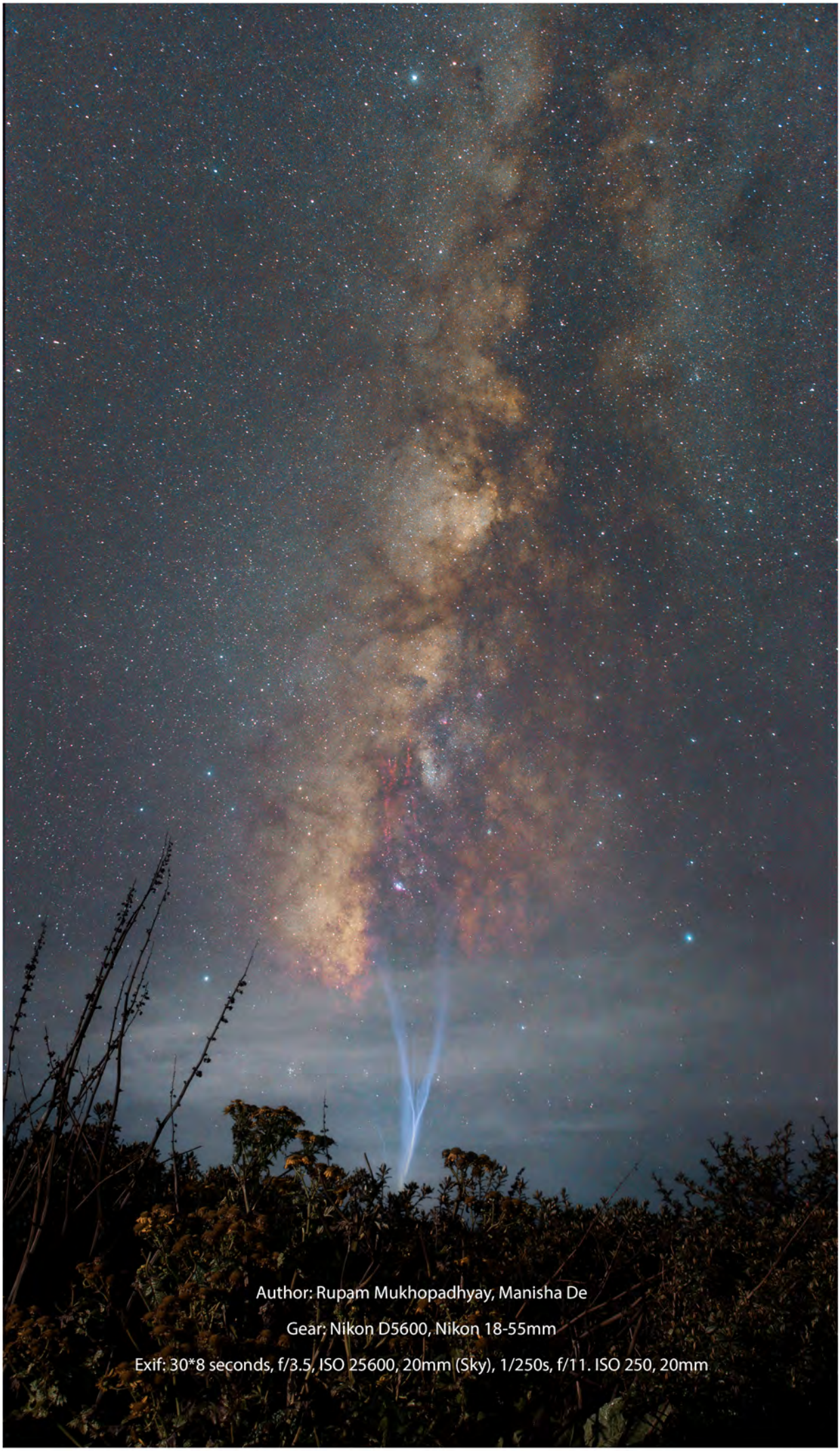
Exif: 20*15 seconds, f/3.5, ISO 2000, 18mm (Sky),

1/250s, f/8, ISO 250, 18mm (Foreground)

Author: Anushtup Roy Choudhury

Gear: Sony A7II, Samyang 14mm, MSM Tracker

Exif: 6*30 seconds, f/2.8, ISO 800, 14mm (Sky), 15 seconds, f/4, ISO 100, 14mm (Foreground)



Author: Rupam Mukhopadhyay, Manisha De

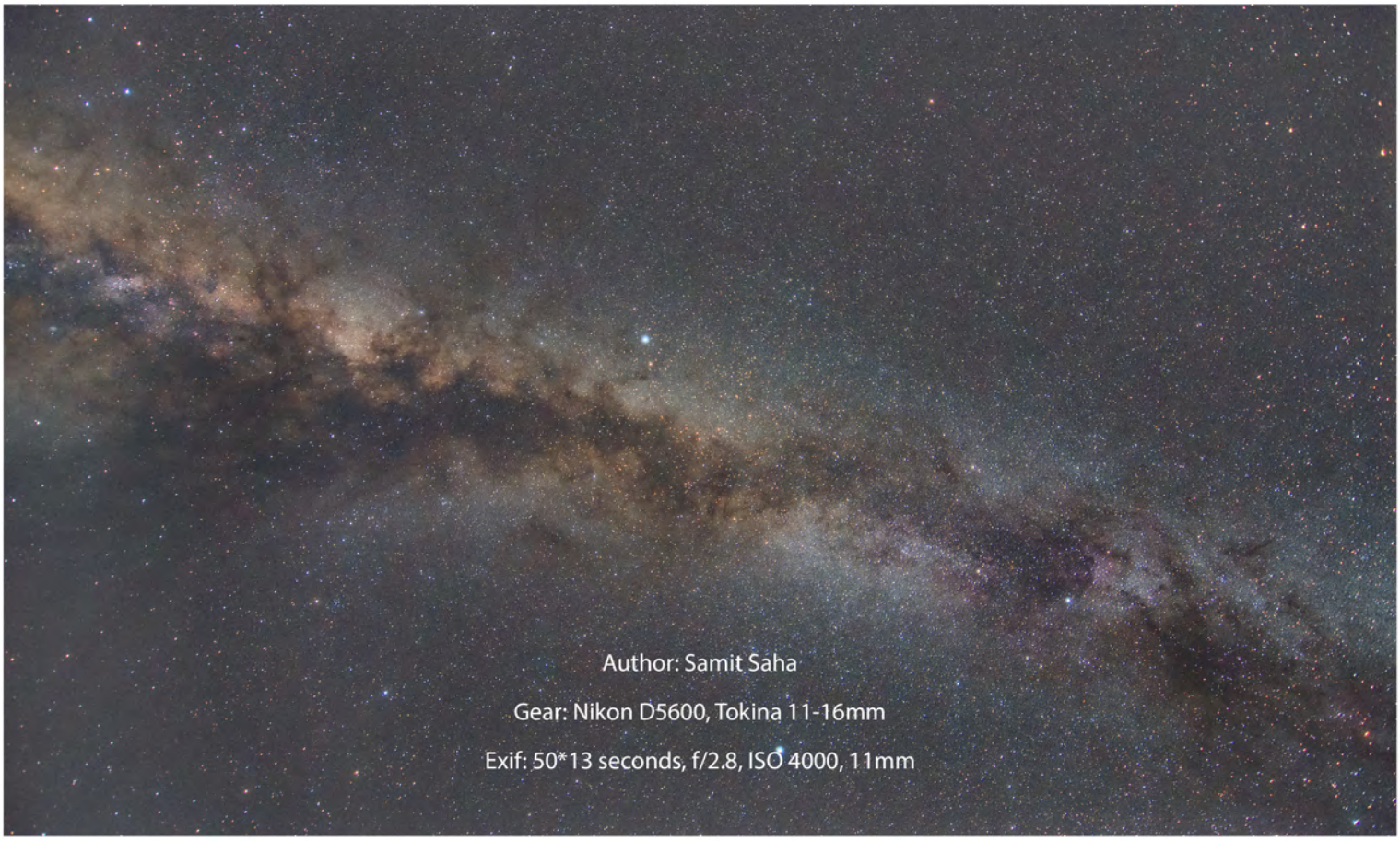
Gear: Nikon D5600, Nikon 18-55mm

Exif: 30*8 seconds, f/3.5, ISO 25600, 20mm (Sky), 1/250s, f/11. ISO 250, 20mm

Author: Tuhinkanti Das

Gear: Nikon D7200, Nikon 10-20mm

Exif: 30*15 seconds, f/4.5, ISO 4000, 10mm (Sky), 3*15 seconds, f/4.5, ISO 4000, 10mm (Foreground)



Author: Samit Saha

Gear: Nikon D5600, Tokina 11-16mm

Exif: 50*13 seconds, f/2.8, ISO 4000, 11mm

Author: Basudeb Chakrabarti

Gear: Nikon D750, Tamron 15-30mm, ioptron Skyguider Pro

Exif: 7*30 seconds, f/2.8, ISO 1000, 15mm (Sky), 1/200s, f/8, ISO 100, 15mm (Foreground)

Samit Saha, Basudeb Chakrabarti, Soumyadeep Mukherjee

Gear: Nikon D5600, Tokina 11-16mm

Exif: 14*15 seconds, f/2.8, ISO 4000, 11mm (Sky), 1/200s, f/8, ISO 250, 11mm (Foreground)

REFRACTORS

EVOLUX™ APOCHROMATIC DOUBLETS

ELEGANT DESIGN. NEXT-GENERATION PERFORMANCE.

Crisp ED Doublet Apochromatic Optics
Fully multi-coated ED doublet lenses are precisely matched to virtually eliminate color fringing

Upgraded Mechanics
An adjustable dew shield, 2.4-inch 11:1 dual-speed rack-and-pinion focuser, and heavy-duty clamshell ring are just some of the mechanical improvements on the Evolux line

Optional Reducer/ Corrector
0.9x reducer/correctors increase imaging speed by 24% while ensuring a flat field across the entire imaging area

Sky-Watcher®
Be amazed

MSM
MOVE-SHOOT-MOVE

Travel Star T
Time-lapse M

Self-Locking Gear
The Rotator employs an innovative worm gear system that locks into place after every movement, requiring no power to remain in place!

This results in:

- Avoidance of gear and motor shake that might otherwise affect image clarity during photo exposure.

- A super-extended battery life. Expect up to 3000 shots between charges.

Thus you can say good-bye to power banks, external batteries and power cables!

Support All Camera & Phones Easily
It's as simple as install ball head to your tripod, Just pointing the star pointer's beam to the Polaris, and then you are ready to shoot.

As a Star Tracker, it can support all cameras.

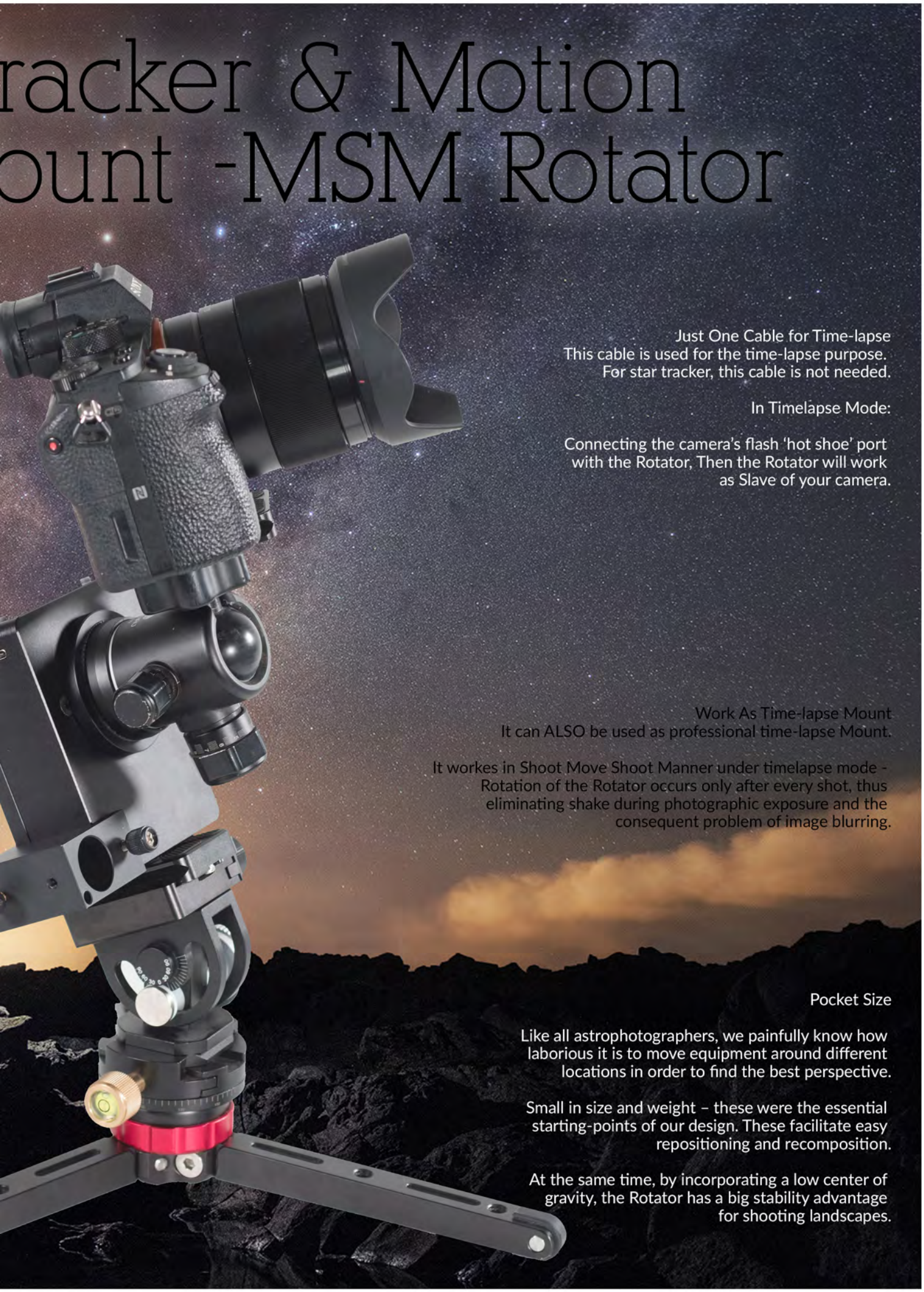
No Star Trails & Noise?
Tired of the trails and Noise?

Want to exposure more than 60 seconds?

Emm.. Star Tracker is what you are looking for, with it, the star will be relatively still with your camera!

Then theoretically, you can do a long exposure at ease.

racker & Motion
ount -MSM Rotator



Just One Cable for Time-lapse
This cable is used for the time-lapse purpose.
For star tracker, this cable is not needed.

In Timelapse Mode:

Connecting the camera's flash 'hot shoe' port with the Rotator, Then the Rotator will work as Slave of your camera.

Work As Time-lapse Mount
It can ALSO be used as professional time-lapse Mount.

It workes in Shoot Move Shoot Manner under timelapse mode - Rotation of the Rotator occurs only after every shot, thus eliminating shake during photographic exposure and the consequent problem of image blurring.

Pocket Size

Like all astrophotographers, we painfully know how laborious it is to move equipment around different locations in order to find the best perspective.

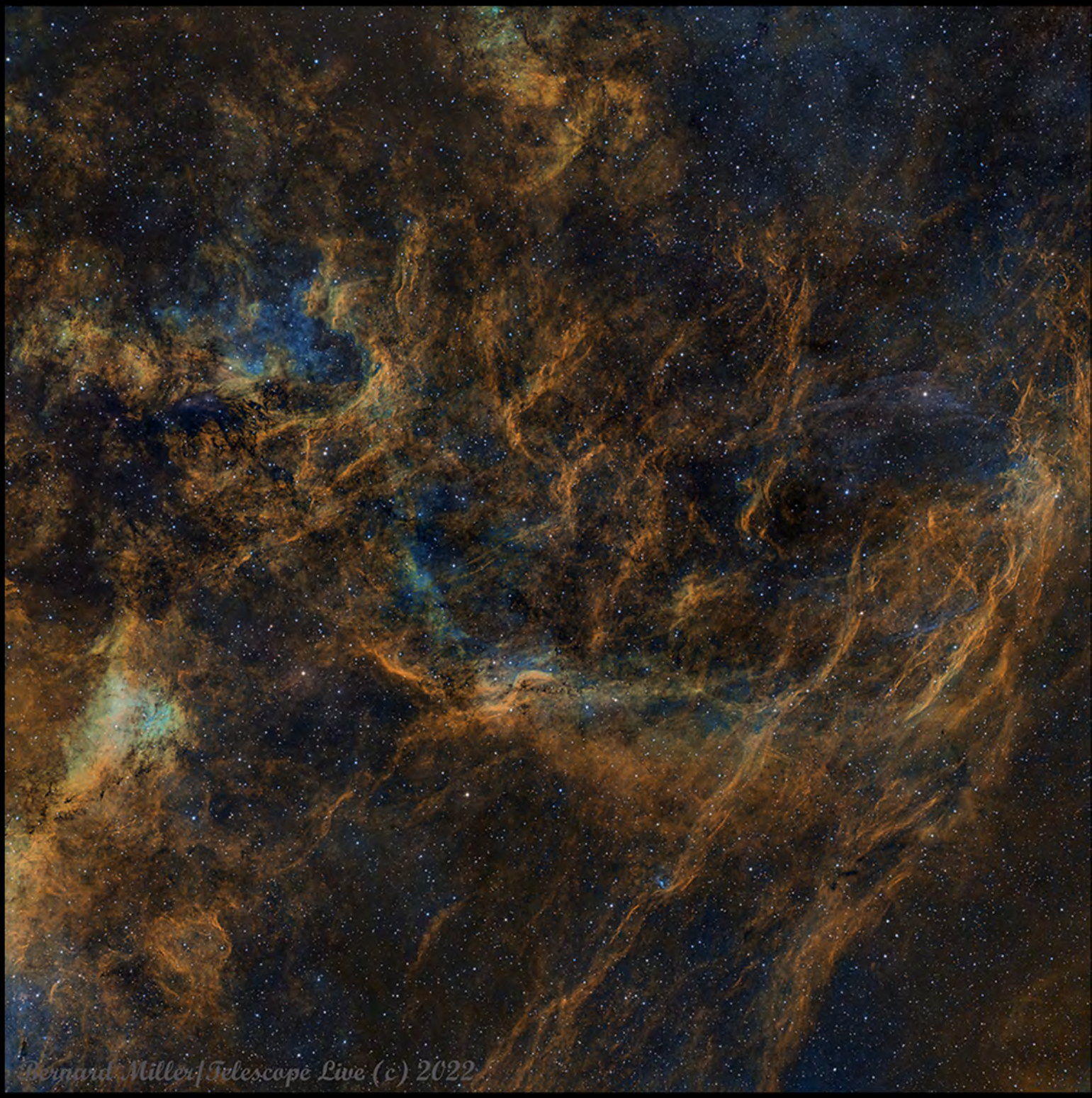
Small in size and weight – these were the essential starting-points of our design. These facilitate easy repositioning and recomposition.

At the same time, by incorporating a low center of gravity, the Rotator has a big stability advantage for shooting landscapes.

Readers DSO Images

M 33 - The Triangulum Pinwheel Galaxy

Color image taken at the remote observatory from the E-Eye site in Spain. The image is composed of 30 hours of exposure time with the ZWO ASI-2600MC color camera using a Takahashi CCA250 f3.6 astrograph, riding a unguided 10Micron GM2000. Image by Maarten Vlh



LBN 292

Processing & Copyright 2022 **Bernard Miller**

October 16, 2022

Location: Oria, Almeris, Spain

Telescope: Takahashi FSQ-106ED

Camera: FLI PL16803

Mount: Paramount MX+

Ha: 32x10 minutes (binned 1x1)

OIII: 32x10 minutes (binned 1x1)

SII: 32x10 minutes (binned 1x1)

Clamshell Nebula Sh2-119

EXIF:

Sony A7III FS + Sharpstar 76EDPH

ISO640

68*5 min IDAS NBZ

14*3 min L-Pro

Tracked and Guided with Skywatcher Adventurer GTI

Bortle Sky 5

Backyard photography

Image by Digitaliz.se

Andromeda Galaxy

(in wide field)

Canon 1200D

Samyang 135mm lens

Optolong CLS CCD filter

f/2.8, 134sec, iso1600

ioptron skyguider pro (unguided,undithered)

Total integrations- 3 hours 32 mins

Stacked in DSS , Edited in Pixinsight & Adobe PS.

Dhubri Medical College campus

October , 2022

Image by DrArunav Borah

I present the first light of a new astrophotography equipment, this is a TS triplet apo 115/800 F7 refractor, a Qhy294M pro camera, Qhy 36mm 7-position filter wheel and Qhy462C off-axis guide.

In the image you can see the **Swan Wall**, in the constellation of the same name, it is a part of the Great Nebula of North America (NGC7000), a region of interstellar gas and dust located about 1,800 light years from Earth.

I am very happy with the result, you can see the leap in quality when going from a modified SLR to a dedicated monochrome camera with filters and a good apochromatic refractor.

Composed of 4:50 hours of integration with S2, Ha and O3 Optolong 6.5nm and 7nm narrowband filters, on 3 different nights, remotely from the Dark Energy Observatory, Àger, Lleida.

Calibrated with darks, flats and bias.

Processed with Pixinsight.

Image by Gerard Tartalo Montardit

Gerard Tàrtalo Montardit
Astrofotografia

NGC 300

CDK17, SBIG STXL 11002, Paramount

Total 68+ hours HaLRGB data

Image processing software : Pixinsight, Photoshop

Image by Rocco Sung

IC 342 - Spiral Galaxy in Camelopardalis

PlaneWave CDK-20 20" f/7.7 Astrograph

PlaneWave L-500 Mount

QHY600M CMOS Camera

Total exposure: LRGB 16.2 hours

Sierra Remote Observatories

September, October 2022

Data acquisition by Eric Coles

Image processing by Bob Fera

NGC 2359 Thor's Helmet Nebula

Location: EL SAUCE OBSERVATORY, CHILE

Telescope: Planewave CDK24

Aperture: 3962 mm

Focal ratio: f/6.5

Camera: FLI ProLine PL9000

Pixel scale: 0.62 arcsec/pixel

Pixel Array: 3056 x 3056

Exposure time: 600s

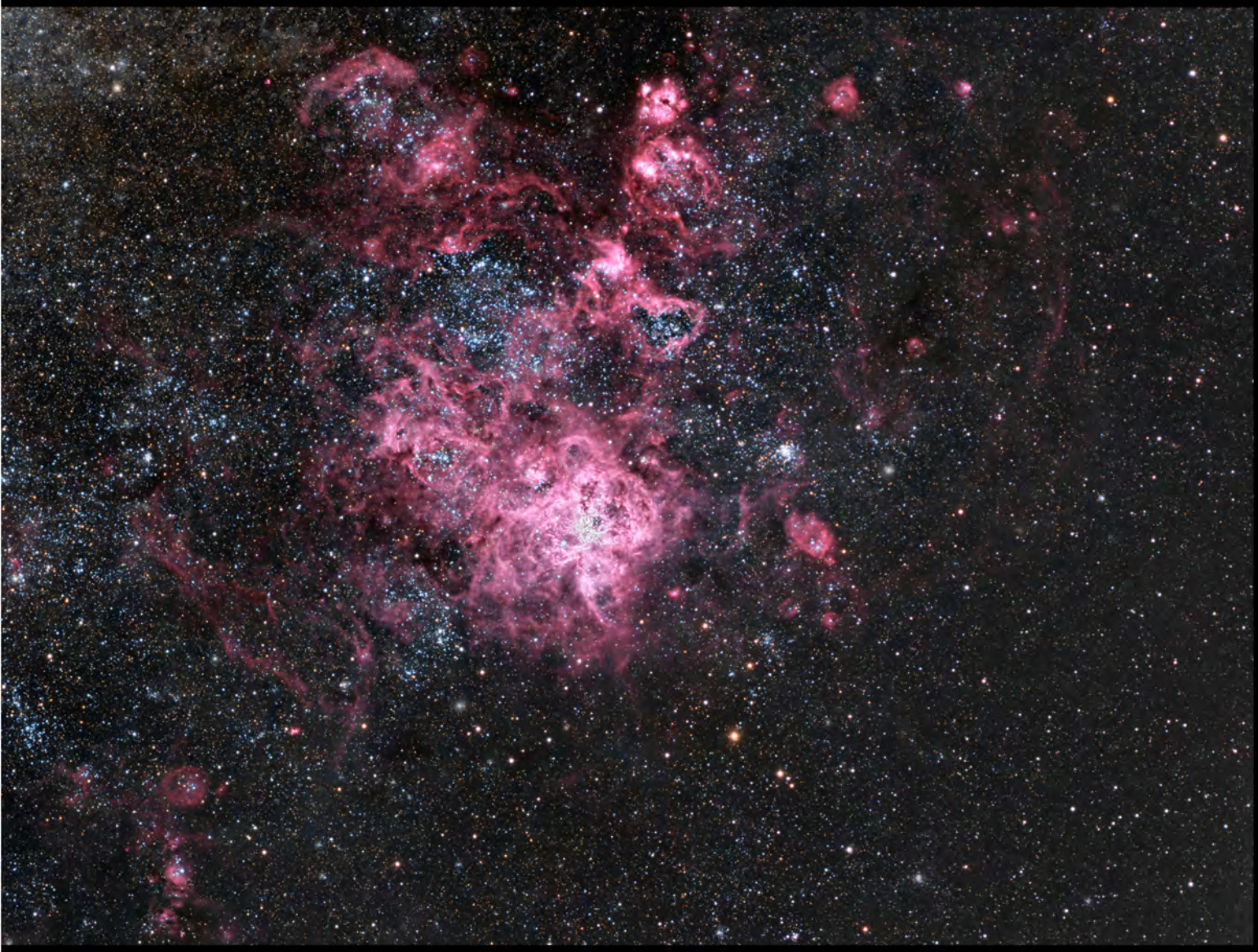
Integration Time: approximately 13 hrs

Filter: LRGB

Image by Sean Liang

Heart of The Heart (IC1805) in the SHO palette. Taken with my EON120/QHY9m using Optolong filters on my iOptron IEQ45 Pro setup. About 3 1/2 hours of data binned 2x2 from my Bortle 4 backyard.

Image by Bob Runyan



NGC 2070 is more commonly known as the Tarantula Nebula (also known as 30 Doradus).

Takahashi FSQ106-EDX at f/5 with QHY9 camera. Acquisition, focusing, and control of iOptron CEM60-EC mount with Sequence Generator Pro. Focus with ZWO Pegasus Focus Cube v2. Guiding with PHD2. Acquired by Carlos Sagan at Copiapó in Atacama, Chile in a Bortle class 2 sky. All pre-processing and processing in PixInsight.

30x5m R = 2hr30m

30x5m G = 2hr30m

30x5m B = 2hr30m

48x5m Ha = 4hr

Total: 11hr30m

Image scale 2.1 arcsec per pixel

Image by Ron Brecher

IC1396A - The Elephant's Trunk Nebula

7.3 hours of SHO data

This was taken with an Astro-Physics 130mm EDT f/8.35 APO scope and a ZWO ASI2600MM-Pro camera, all mounted on an IOptron CEM60 mount.

This image was processed using a synthetic luminance image and starless processing methods.

Dates of Capture: taken over two nights: Oct 21 & Oct 22

Location of Capture: Honeoye Falls, New York, USA.

Light frames

- 34 x 300 seconds, bin 1x1 @ -15C, Gain 100, Astrodon 5nm Ha
- 32 x 300 seconds, bin 1x1 @ -15C, Gain 100, Astrodon 5nm O3
- 22 x 300 seconds, bin 1x1 @ -15C, Gain 100, Astronomiks 6mm S2
- Total of 7.3 hours

Cal Frames

- 25 Darks at 300 seconds, bin 1x1, -15C, gain 100
- 15 Flats at bin 1x1, -15C, gain 100 - for all filters
- 25 Dark Flats at Flat exposure times, bin 1x1, -15C, gain 100

Capture Hardware:

- Scope: Astro-Physics 130mm F/8.35 Starfire APO built in 2003
- Guide Scope: Televue TV76 F/6.3 480mm APO Doublet
- Main Fous: Pegasus Astro Focus Cube 2
- Guide Fous: Pegasus Astro Focus Cube 2
- Mount: IOptron CEM60
- Tripod: IOptron Tri-Pier with column extension
- Main Camera: ZWO ASI2600MM-Pro
- Filter Wheel: ZWO EFW 7x36
- Filters: ZWO 36mm unmounted Gen II LRGB filters
  Astrodon 5nm Ha
  Astrodon 5nm O3
  Astronomiks 6mm S2
- Rotator: Pegasus Astro Falcon Camera Rotator
- Guide Camera: ZWO ASI290MM-Mini
- Power Dist: Pegasus Astro Pocket Powerbox
- USB Dist: Startech 7 slot USB 3.0 Hub

Software:

Capture Software: PHD2 Guider, Sequence Generator Pro

Image Processing: Pixinsight, Photoshop, Coffee, extensive processing indecision and second-guessing, and much swearing….

Image by Patrick A. Cosgrove

CosgroveCosmos.com

The Tarantula Nebula

Equipment and Acquisition Detail:

Date: Dec 2021

Location: Sierra Remote Observatory at Auberry California USA

Telescope: Planewave 24" (0.61m) CDK

Aperture: 610 mm

Focal ratio: f6.5

Camera: FLI-PL09000 CCD

Pixel: 9 Megapixels; 3056 x 3056; 12um

Exposure time: 600s, 1800s

Integration Time: approximately 27.1 hours

Filter: LRGB+HSO

Credit: The original data (archival data) was acquired from iTelescope.net

Image by Sean Liang

JWST and Sculpture Galaxy

Post-processing: Sequator, Photoshop

Equipment: Nikon D5600, Samyang 135mm

Exif: 40 images stacked, 2 seconds, ISO 500, f/2, 135mm

Location: Sukna, India

Details of the Image: The historic launch of JWST took place on 25th December 2021. The visuals were sudden as we did not expect to come across the Ariane V rocket from West Bengal. Initially we thought it to be a comet and confirmed the subject later. It was a "dream come true" moment for us. The image shows Ariane V carrying JWST trailing past Sculptor Galaxy.

Image by Samit Saha, Soumyadeep Mukherjee (Astronomads Bangla)

statue of two lovers, a sailor and his mistress who are in the port of the city

Bulls grazing under the eclipse.

In Kolkata , INDIA Sunset was at 4:55 pm(IST) and Moonrise was 4: 52 (IST) pm but upto 6 pm(IST) we couldn't see the moon due to cloud and horizontal haze . After the 6 pm partial phase was visible in our eyes under penumbral shadow.....

I have taken 6 Pictures after 6 pm to 7 pm and blended them in a single frame....

Which creates a beautiful shadow band on the Right side.

Named by my son " **NERVOUS EMOJI MOON**"

Picture taken from Kolkata, India

Camera : Nikon D 7500

Lense : Sigma 150-500 mm (500 mm used)

Total 6 frames taken in shutter speed 1/50 to 1/125 sec & f 6.3 with ISO 160 to 1250

Also make a collage with same 6 pictures ..

Images by Anupam Naskar

Japanese Lantern Moon

Post-processing: Photoshop

Equipment: Nikon D5600 camera, Sigma 150–600c lens, ioptron Skyguider pro

Exif: f/6.3, ISO 800, 600mm, five exposures blended (10 seconds, 4 seconds, 1/3 second, 1/13 second, 1/100 second)

Details of the Image: This was my first time imaging a lunar eclipse. The beginning was horrible. Thanks to clouds, the moonrise with a completely eclipsed episode was not visible. Gradually the sky cleared up and I could see an eclipsed moon! I gathered as much data as I could for this image. I had no prior experience and things went all over the place.

Image by Soumyadeep Mukherjee

Lunar Eclipse

A sequence of shots in the wee hours of the morning showing the eclipsing of the moon.

Image by Angie Vogel

The colors of totality of the November 8 2022 Lunar eclipse

This Lunar eclipse had soft gradations of color that was quite beautiful. This is my attempt to match my eye view. This series of photos begins just before totality and ends just after totality. All images are 15 images stacked captured with a Questar telescope, Baader UV/IR filter, and a Nikon Z7II. Saw a bright Taurid while doing this and even caught half of it on a camera monitoring the sky.

Image by Eliot Herman

Image by wNG iMAGE aND dESIGN


Osama Fat'hi

California Nebula, Pleiades and Mars (Halpha RGB) with the Desert Rose

White Desert ,Egypt

Desert Rose is one of the naturally shaped rock formations in the white desert, Egypt,

White Desert Protected Area, is a national park in Egypt, first established as a protected area in 2002. It is located in the Farafra depression, 45 km (28 mi) north of the town of Qasr El Farafra.

Date : Sep 2nd 2022

Gears:

Nikon Z6

Samyang 85 mm

Skywatcher Staradventurer 2i

NBX IDAS filter Dual band

EXIF:

Sky tracked stacked : ha (dual band) 22*120 sec, Iso 5000, f3.5,

RGB 25*120 sec, ISO 1250 f3.5

Foreground: 20 sec, Iso 1600, f2.8

Image by Osama Fathi

Setting of Nebulae

Location: Yousmarg, Kashmir

This is my first successful Deep-scape (Deepsky object + Landscape) from my solo Kashmir Astrotour. In the frame, Core of our Milky way alongwith four well known Nebulae (Bottom to top: Lagoon Nebula, Trifid Nebula, Omega Nebula & Eagle Nebula) are visible.

According to Cristine Rose, a renowned Astrophotographer:

"Deep-scape images are complex imagery that lines up a DSO (Deep Sky Objects) as it is rising or setting over an earthly landscape.

This image was created on the same night, from the same tripod position, using the same lens. What it means is these are true to life representations of amazing celestial objects in relation to our earth.

We are not able to see this level of detail with our eyes, but are blessed to be able to capture it via our cameras.

No matter the night, no matter the place, no matter what you can see - you are never truly alone. The night sky is full of amazing objects, and this collection connects amazing DSOs to our amazing earth."

The sky of this image is a vertical panorama whereas the foreground of the image is taken from the same spot, with the same tripod position and with same camera-lens combination.

Special thanks to my team "Astronomads Bangla" for constant support and guidance during the photoshoot.

Image Details:

Camera: Nikon D750

Lens: Samyang 135 mm F2.0

Tripod: Benro Rhino Series

Mount: I-optron sky Guider Pro

Sky: 2 Panel mosaic

Each Panel: 30 X 180 sec at ISO 250

15 Flat Frames, No Dark & Bias

Foreground: 3 X 5 sec at ISO 100 at Blue hour

Post Processing: Pixinsight, Photoshop

Author: Basudeb Chakrabarti Soumyadeep Mukherjee

Milky way and the Rabbit's Rock

White desert Egypt

Rabbit's Rock is one of the fabulous naturally shaped rock formations in the white desert, Egypt, White Desert Protected Area, is a national park in Egypt, first established as a protected area in 2002. It is located in the Farafra depression, 45 km (28 mi) north of the town of Qasr El Farafra.

Gears:

Nikon Z6 Mod, Nikkor 14-24 mm, Starwatcher staradventurer 2i

Exif:

Sky (tracked stacked): 20 *3 min, Iso 800, f3.2 @24 mm

Foreground (stacked): 5*30 sec, ISO 2500, f2.8 @24 mm

Image by Osama Fathi

Sunflower milky way

Sunflower head with bokeh milky way.

Image by Lee Nuttall

Orionids meteor through the Milkyway

On 23rd October, I captured this Milkyway region (Cygnus, Aquila , Lyra) at the zenith , where I stand . It was 7 pm and I stood at Tiger Hill of Darjeeling (8400 ft) to observe Orionids meteor showers, whose peak time was 21 to 23 rd October. With the meteor , the bright stars Vega , Altair and the planet Saturn are also seen from right to left in the middle of this picture.

Camera: Nikon D 7500

Lens: Tokina 11-16 mm lens (pictures taken in 11 mm)

Image by Anupam Naskar

Boulder Lake - Andrews Farm Boulder Lake Trail

This was shot during one of my astro workshops at a very unique area just north of Melbourne, Australia. The are huge granite boulders scattered all over the countryside side like marbles on the ground. I found this location a few weeks before and thought there would be potential for a star reflection in the small dam in the foreground. Turns out, I was right.

Image by Rare View Photography

Kinzua Bridge State Park

Kinzua Bridge State Park. A spectacle to see that pictures and video will not do justice for. This spot was a bucket list location! I was guided on a night photo tour with 8 others to the bottom. Under bottle 3 skies I witnessed the milkyway stretch across from the eerie dark structure that is now the sky walk part of the bridge to across the fallen structures right next to us.

HISTORY: On Monday, July 21, 2003, at approximately 3:15 p.m., an F1 tornado (wind speed 73 – 112 mph) struck the side of Kinzua Viaduct. Eleven towers from the center of the bridge were torn from their concrete bases and thrown to the valley floor

EXIF

Canon 6D

Tamron 35mm f/1.4

SkyWatcher Star Adventure

Sky: Vertical Panorama of 3 panels @ 90 secs f/2.0 ISO800

Foreground: 3 Landscape photos Sitched @ 90secs. f/1.8 ISO1000

Editing was done in Lightroom and Photoshop

Image by Erik Riess

Under a Starry Dome

Post-processing: Lightroom, Photoshop

Equipment: Nikon D5600, Tokina 11-16mm

Exif: 160 images blended, 25 seconds, f/3.5, ISO 500, 11mm

Location: Kashmir, India

Details of the Image: An adventurous horse ride in the dark through the jungle, setting up in a completely unknown place, and many more stories can be told along with the image. Skies of Kashmir presented us with this beauty. The image was captured facing south-west with the Milky Way's arm in the frame. An hour long integration resulted into the final image, a dome, made of stars.

Image by Basudeb Chakrabarti, Soumyadeep Mukherjee (Astronomads Bangla)

Rise of the Hunter's Moon

Post-processing: Photoshop

Equipment: Nikon D5600, Sigma 150-600c

Exif: 1/200s, ISO 800, f/6.3, 600mm

Location: Kolkata, India

Details of the Image:Every full moon has its own charm and comes with a surprise. The rise of the hunter's moon captured in 2021 was no exception. The black and white image was intentionally stripped of its colours to present a vivid glory of the moon and the clouds

Image by Soumyadeep Mukherjee (Astronomads Bangla)