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FEATURE IMAGE THIS ISSUE

February is special to the amateur astronomy community in the Philippines because of National Astronomy Week. This year, the ALP honored Dr. Jesus Rodrigo F. Torrres (*center*) of the Rizal Technological University, with the Father Victor L. Badillo Astronomy Service Award.

CLUB NEWS

NATIONAL ASTRONOMY WEEK

Opening Stargaze

On February 12, the Astronomical League of the Philippines (ALP) held its National Astronomy Week Free Solar and Night Observation Session at SM By The Bay, Pasay City. Members present were ALP President James Kevin Ty, wife Charito and son Kendrick Cole (KC); Secretary Christopher Louie Lu, wife Karren and daughter Frances; Treasurer Andrew Ian Chan; Auditor Edgar Ang; PRO Edge Lat; directors Justine Garcia, Iah Serna, Peter Benedict Tubalinal and Ronald Sison; Mark Ian Singson; Jason Comia; Russell Limcangco; Vincent Gella; Christelle Mariano; Miguel Cajita and Trix Cajita.

The event started at around 3:30 p.m. with several scopes brought along by ALPers. James brought his Daystar Quark Chromosphere Hα on Canon EF 100-400 mm f/4.5-5.6 IS L lens on Nexstar mount; Andrew his Skywatcher 80mm refractor on Vixen GP mount; Edgar his Orion XT6 Dobsonian reflector; Edge his Meade 90 mm refractor on Meade goto mount; Russell his Celestron Astromaster C130 Newtonian reflector on CG3 mount; Mark his Celestron C90 Maksutov on tripod; Ronald his Celestron C90 Maksutov on tripod; Vincent his Celestron Travelscope 70 on tripod; Christopher his Celestron Powerseeker 80 mm refractor on CG2 mount; and Cutting Edge staff with their Celestron Astromaster C130 Newtonian reflector on CG3 mount.

More than 600 people got to view the Sun in both white light and Hα wavelength as well as night objects such as the planet Venus, the waning Gibbous Moon, and M42, the Orion Nebula.

The stargazing session ended at around 9:30 p.m. with the customary group shot. They then had a late dinner at Razon's before heading home.

February 18, 2017 ALP NAW Astronomy Convention Report

Despite a rainy afternoon on February 18, the ALP held its National Astronomy Week Astronomy Convention at the Rizal Technological University (RTU) on Boni Avenue, Mandaluyong City. Members who were present were ALP President James Kevin Ty; VP Jett Aguilar; Secretary Christopher Louie Lu; Treasurer Andrew Ian Chan; Auditor Edgar Ang; PRO Edge Lat; directors Justine Garcia, Iah Serna, Shubhashish Banerjee, Peter Benedict Tubalinal, John Ray Cabrera and Ronald Sison; Mark Ian Singson; Vincent Gella; Manuel Goseco; Edwin Gatia; and, Michella Esparas.

The event started at around 1:30 p.m. with a ribbon-cutting ceremony to commemorate the opening of one of the 2 RTU Observatories. Afterwards, members and guests went to the penthouse of RTU SNAGAH Building for the start of the Astronomy Convention. The Philippine National Anthem was sung by Himig Rizalia, and was followed by the Opening and Welcome Remarks by RTU VP Dr. Edna Aquino and VP Dr. Salvacion Pachejo *(cont'd on page 18).*

Dr. Jesus Rodrigo Torres joined James Kevin Ty in cutting the ribbon (*above*) to commemorate the opening of the RTU observatories, which house a Planewave catadioptric telescope (*below*)

The 2017 Father Victor L. Badillo Astronomy Service Award given to Dr. Jesus Rodrigo F. Torres was for his lead role in establishing the first full academic program in BS Astronomy Technology, as well as Graduate Diploma and Masters in Astronomy in the Philippines at Rizal Technological University. The award is given to an individual who has contributed to the betterment of astronomy in the Philippines, and is given in honor of Fr. Victor L. Badillo, S.J., PhD, whose dedication and guidance in the field of astronomy is well known throughout the Philippine astronomical community.

ALP President James Kevin Ty cited Dr. Torres' achievement in the field of Philippine astronomy as well as international recognition of his research and publications, as well as being one of the 6 Filipinos to have joined the International Astronomical Union (IAU). James presented the award to Dr. Torres.

This was followed by a song presentation by Himig Rizalia and a cultural folkdance by Teatro Rizalia. Afterwards, a buffet hosted by RTU for members of the Astronomical League of the Philippines and guests followed, before the start of the astronomy talks.

The first lecture was made by ALP VP Dr. Jett Aguilar (*above*), entitled "Basic Solar Observation". The Sun is an easily accessible astronomical object for amateur astronomers to observe and image all year round using small to medium-sized telescopes equipped with proper solar filters *(cont'd on page 19).*

In his lecture on basic Solar Observation, Dr. Jett introduced the basic structure of our nearest star and discussed the proper use of and the different types of solar filters for solar observation, such as white light filters (e.g. mylar, glass, foil), solar projection, Herschel wedge, and narrow band filters (hydrogen alpha and calcium-K line). He also showed images of the Sun taken at different wavelengths and the corresponding basic solar features that can be identified.

This was followed by ALP director Shubhashish Banerjee, entitled "Basic Lunar Observation". The talk was aimed at encouraging interest amongst the audience and uncovering the rich features of the moon, which we often ignore. We tried to answer the question - Why should we observe the moon? The discussion started with basic terms which help in understanding simple concepts of the moon. Also discussed were the various hypotheses pertaining to the birth of the moon and possible ways how its formation would have taken place billions of years back.

Discussed were the distances and travel times to get to the Moon at various speeds, as well as the various comparative features between Earth & Moon. The various lunar phenomena, such as Apogee & Perigee and how that impacts the size of the moon; earthshine and why it happens; impact craters and ejecta – these were also tackled. This helped in understanding the basics of the Moon.

Shubhashish then shifted gears to practical observational aspects that help in appreciating the features of the Moon.

He illustrated various tricks on following the lunar phases with the help of simple tools in our day-to-day life. He talked about the features of the Moon as shown on Moon maps and how to get Moon maps for quick observations. He compared the various equipment that can be used to watch lunar features, while emphasizing on recording and log keeping of lunar observations with simple observation logs. Towards the end of the talk, he drew the attention of the audience towards some of the most common questions that people might have with regards to the Moon.

The talk finished with some open question and answer and a message and appeal to go out and appreciate the closest heavenly body to the Earth, which is beautiful and full of features, and thinking of the impact that Earth would have if the Moon wasn't around.

Last but not least, the final lecture session was given by ALPer Mark Ian Singson on "Selecting the Right Telescope."

This presentation and discussion was part of an ongoing series of topics that was determined to be of interest as the result of our lecture series. He covered the following items:

- Brief history of telescopes
- Telescope fundamentals
- Telescope types
- Telescope mounts
- Telescope accessories
- Tips for buying your first telescope
- History of Telescopes: The Inventors and First known use for astronomical purposes
- Three important questions to keep in mind:
  - What do you want to look at?
  - Where will you be observing from?
  - How much money do you want to spend?
- Some telescope fundamentals and terms
- Aperture, how does this affect things
- Magnification, how to calculate and what is reasonable for a given telescope
- Power isn't the whole question, how is the "seeing"?
- Is bigger always better?
- Scopes of all sizes and shapes
- Basic principles of the three major telescope types: Refractor, Reflector & Catadioptric
- Telescope mounts: Tilt and Pan (Alt-Az) or German equatorial
- Manual, Driven or Go-To positioning
- What's in a finder scope?
- Everything has tradeoffs and a price tag
- Conclusions: what is right for you?

The event ended at around 7 p.m. with ALP NAW 2017 Chairman Andrew Ian Chan thanking the members and guests as well as the Rizal Technological University and RTU Astronomical Society for hosting this year's Philippine Astronomy Convention.

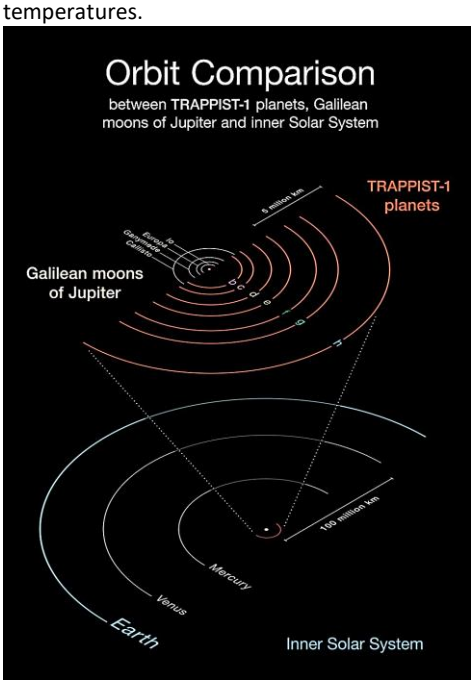
The planned free public stargazing session at SM By The Bay North Fountain area was cancelled due to bad weather. - *James Kevin Ty, Jett Aguilar, Shubhashish Banerjee and Mark Ian Singson; images by James Kevin Ty, Christopher Louie Lu, Jett Aguilar , Edge Lat and Angelito Sing*

BREAKING NEWS

Trappist 1

The ultracool star TRAPPIST-1, located about 40 light-years from Earth, hosts at least seven exoplanets, most likely rocky worlds the size of Earth and smaller. The star boasts not only the largest number of Earth-like worlds in a single system known to date, but also the most planets that could host liquid water on their surfaces.

Of the seven planets in TRAPPIST-1, three lie within the habitable zone, the region around a star where liquid water could form on a planet's surface, making them excellent contenders for the evolution of life. One world lies farther out, and is likely icy, while the three closest to the star are heated by its temperatures.



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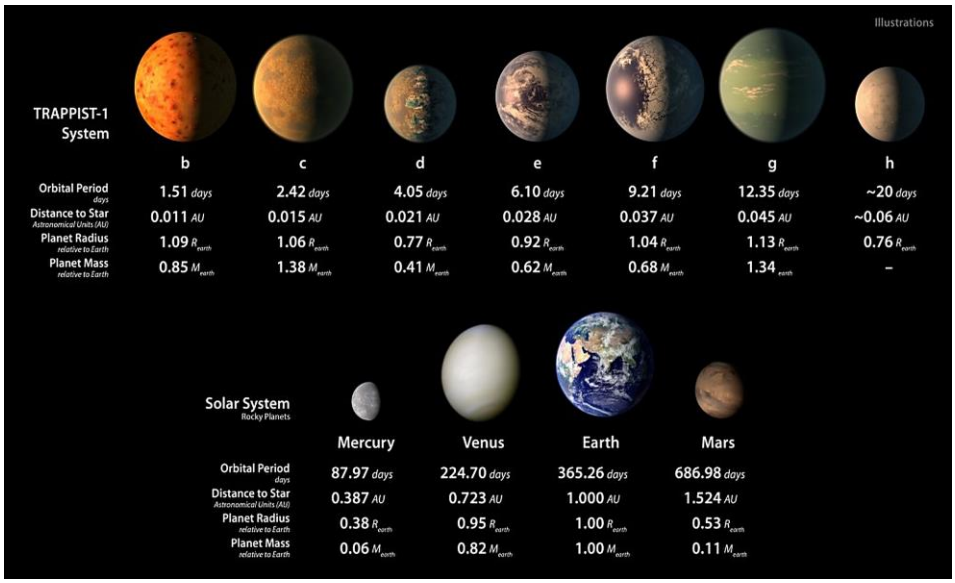
In 2010, Michaël Gillon, an astronomer at the University of Liège in Belgium, and his colleagues began monitoring the sun's smallest neighbors using the Transiting Planets and Planetesimals Small Telescope (TRAPPIST) in Chile. They looked for so-called transits — when the light from the star is dimmed by a planet passing between it and Earth. Because low-mass stars are dimmer than their sun-like siblings, it's easier for astronomers to spot planets around them.



When Gillon and his colleagues turned their telescope to the star now known as TRAPPIST-1, they found that it faded at regular intervals. In 2016, the team announced the presence of three Earth-like worlds around the star. These planets orbited their star every 1.5, 2.4 and four Earth-days, respectively, making them between 20 and 100 times closer to their star than Earth is to the sun. Although the star produces nearly a thousand times less radiation than the sun, the worlds are most likely still too hot to hold a significant amount of liquid water at the surface, although some could be present.

The finding encouraged Gillon and his team to keep investigating. They continued to study the intriguing star with the European Southern Observatory's (ESO) ground-based TRAPPIST and the Very Large Telescope (VLT) in Chile, as well as NASA's Spitzer Space Telescope and other instruments.

In February 2017, the team announced the discovery of four more planets. The worlds are currently known as TRAPPIST-1b, c, d, e, f, g and h, moving in order outward from the star. The observations, published in the journal Nature, revealed that all seven are terrestrial planets.

"This is an amazing planetary system — not only because we have found so many planets, but because they are all surprisingly similar in size to the Earth," Gillon said in a statement.

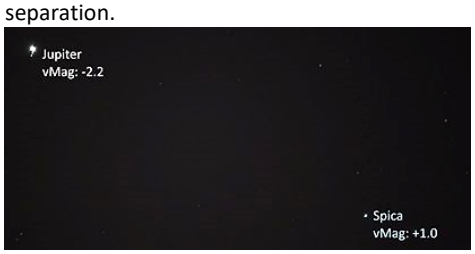
TRAPPIST-1 is about 40 light-years from Earth. It lies in the constellation Aquarius, but it is too dim to be seen by the naked eye or even visually with large amateur telescopes, according to the ESO. It is only about 8 percent the size of the sun, and it's much cooler, redder and dimmer.

All seven worlds have orbits that would fit inside of Mercury's, but they experience much cooler temperatures. TRAPPIST-1c, d and f receive approximately the same amount of energy as Venus, Earth and Mars, respectively. Each of these three rocky worlds could potentially harbor liquid water on its surface — a key ingredient for life as we know it. - *Nola Taylor Redd, Space.comContributor*

Member Reports

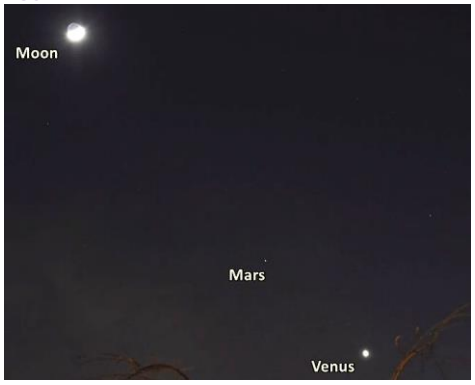
Conjunctions

Feb 7. While taking images of the Moon last night, I saw this minor conjunction between Jupiter and bright star Spica with 3.37 degrees separation.



Imaged with a Canon 450d with EFS 55-250 mm lens. 8 seconds at f/5.6 and ISO 800. - *Christopher Louie Lu*

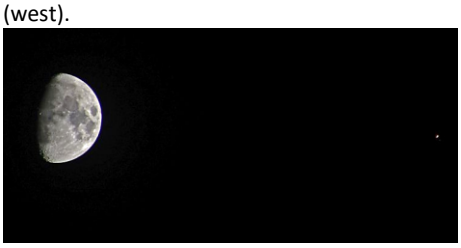
Feb. 1.



(⇨ p. 21).

The crescent Moon joined Mars and Venus for a line-up in the western sky after sunset.

Feb. 5. The Moon cozied up to the bright alpha star of Scorpius, Antares, during the early evening, with Antares being to its right (west).

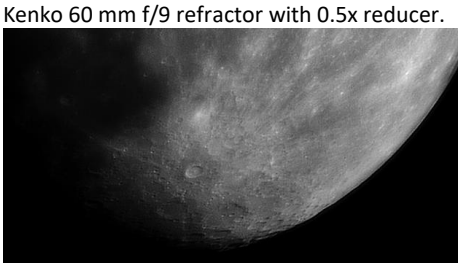


- *Jun Lao, Mason Ohio*

Moon

Feb. 7. The sky this evening was clear but seeing was poor. With all my astro gears transferred to our new place, I only got a flimsy 60 mm f/9 refractor on a lightweight Nexstar mount to image the waxing gibbous Moon with my ZWO ASI120MM webcam. I test shot one with 0.5x reducer while the other image was using the standard webcam resolution. Image was fair as I was not expecting this scope to perform better than my trusty TV-101 refractor, which I will start using when we are completely transferred

Imaged with a ZWO ASI120MM webcam on Kenko 60 mm f/9 refractor with 0.5x reducer.



Tycho crater region

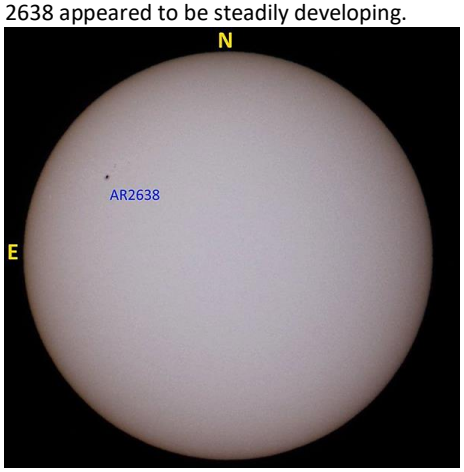
Feb. 10. Waxing Gibbous Moon. Taken with a Samsung S7 Edge handheld afocal shot with Televue 8-24mm zoom lens set at 24mm on TV-101 refractor. 1/250 sec exposure at ISO 100.

- *James Kevin Ty*

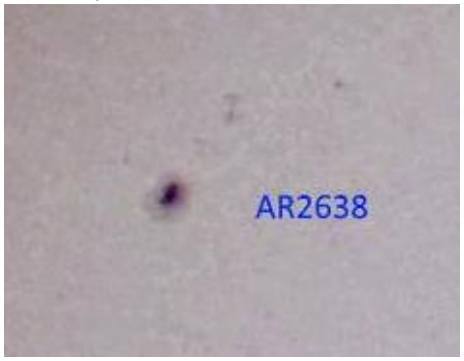
Sun

Feb. 23. It's been a while since I did solar imaging. Such a welcome pleasure to catch our local star again.

Just over the northeastern horizon was the only active region visible on the surface. AR 2638 appeared to be steadily developing.



Imaged with a Canon 450d on Celestron Powerseeker 80EQ at 1/4000 second on ISO 100 and f/11.



Sole sunspot group on the sun.
- *Christopher Louie Lu*

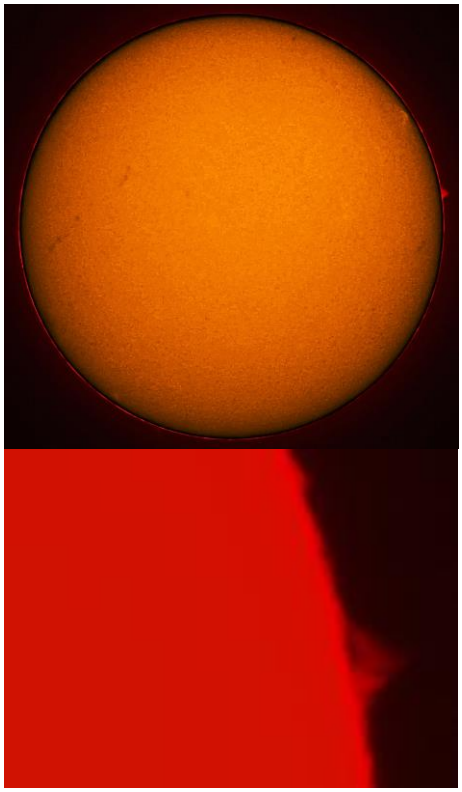
Feb. 3. Our skies had been particularly gray and cloudy since mid-November, and while this winter had been mild, it had been particularly dreary and cloudy.

The string of dreary gray skies was broken on Feb. 3, when the Sun was out, but unfortunately, it was quite cold, causing for fuzzy images if you observed with a telescope that had not fully adjusted in temperature to the outdoors.

The Sun had started settling in to less activity, and even with the light of H-alpha, the disk of the Sun did not show much going on. Where the happening was, was in the limb, with a number of prominences.

There was a nice wide and triangular prominence on the western limb, as well as another clumpy prominence close by. On the opposite side was a hedgerow prominence with at least three peaks.

Feb. 5. The Sun sported two dark filaments on the disk, and a triangular prominence on the limb.

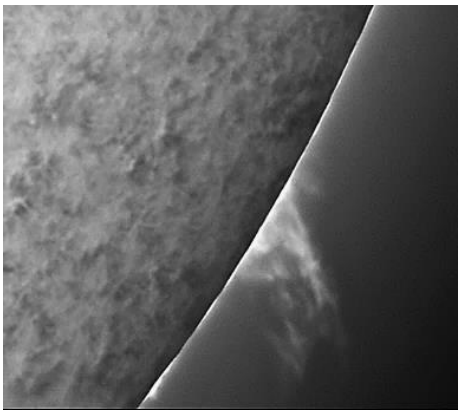


- *Jun Lao, Mason Ohio*

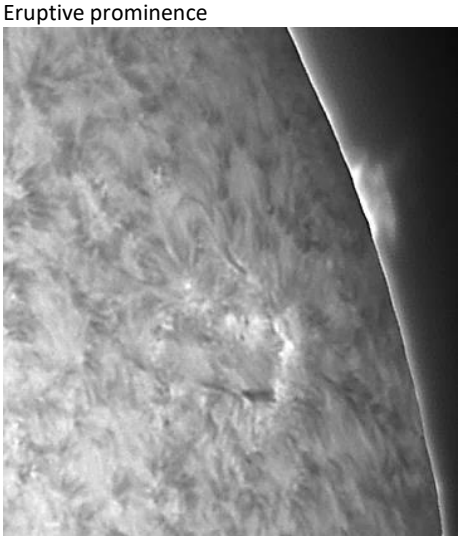
Feb. 4. The sky was partly clear but seeing was still poor. Sunspot groups AR 2632 and 2633 were showing some flaring activity inside their cores while AR2632 also showed a nice dark filament coming out of the group.

AR 2632 and 2633. Imaged with ZWO ASI120MM webcam with Daystar Quark Chromosphere Hα filter with Kenko 60mm f/9 refractor.

Feb. 5. The sky was clear and seeing good. AR2632 was near the northwest limb. There was a large eruptive prominence in the southwest limb.



Eruptive prominence

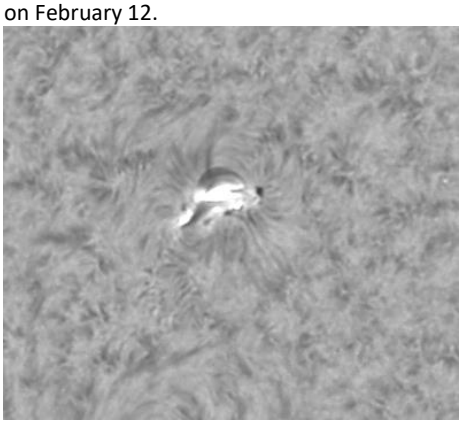


AR2632

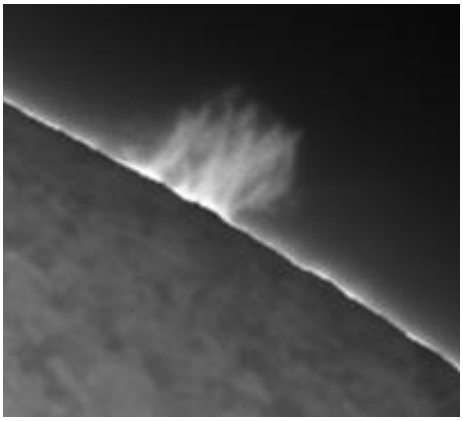
Feb. 7. The sky was cloudy and seeing was poor. I was only able to glimpse the Sun for a few minutes before clouds and roof obstruction ended my short session.

Eruptive prominence

Feb. 9. The sky was clear and seeing good. I changed my imaging configuration once again and used my Canon EF 100-400mm f/4.5-5.6 IS L lens set at 400 mm instead of the Kenko 60 mm f/9 refractor to test a favorable compact solar imaging and visual setup that I can use on the ALP free public viewing session on February 12.



AR 2634 with flare



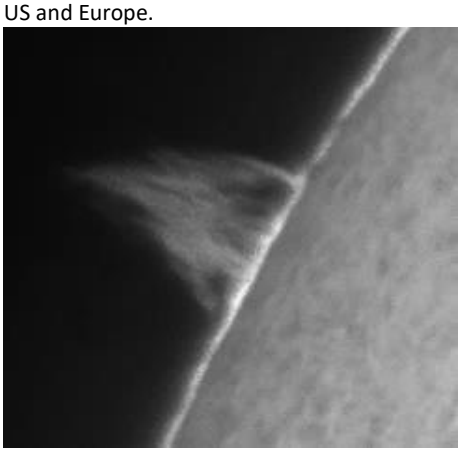
Eruptive prominence

Also on this setup for visual, I can use my star diagonal directly on the Daystar Quark Chromosphere Hα filter with the Canon EF100-400mm L lens set at 400 mm to view the Sun full disk with a Celestron 32mm Plossl. Contrast was not bad.

Small AR2634 was showing off this morning by producing an M flare from its core structure! There was a nice large eruptive prominence visible in the northwest limb.

Feb. 20. The sky was cloudy and I had to wait for a very long time for the Sun to come out of the building obstruction on my eastern horizon.

Clouds got thicker with every moment and I had to fight through clouds to get only a shot of the large eruptive prominence in the northeast limb. I missed out on the beautiful looped prominence visible last night from the US and Europe.



Anyway, I think I'm starting to tame the Quark Chromosphere Hα on my imaging system, and hopefully can do finer details when seeing condition is good.

After I delivered lunch to my son at school, the sky became partly cloudy, but there was ample blue sky, so I went back to set up.

I got to image the huge hedgerow prominence (*above*) on the western limb before obstruction set in and ended my session. - *James Kevin Ty*

Penumbral Lunar Eclipse

The penumbral eclipse shone through some thin clouds over our back yard *(⇨ p. 23)*.

I made sure to shoot with the same camera and telescope (Canon EOS Rebel T6i and Astro-Physics AP130EDFGT) that I used to shoot the Super Moon from November 2016.

On the right is a composite of the Super Moon of November 2016 and the February 2017 penumbral eclipse. Both images were shot with a Canon T6i through an Astro-Physics AP130EDFGT telescope. The same camera and optics were used for both shots to illustrate the differing sizes of the Moon. I'd always wanted to do a side-by-side comparison of a Super Moon with a non-Super Moon.

The bonus is, the non-Super Moon happened to be going through a partial eclipse! – *Eric Africa, West Chester, Ohio*

After a whole day of cloudiness, the skies started opening up after sunset, and the Moon rose and cleared the clouds already in penumbral eclipse.

During the early part of the eclipse, there was some haze over the Moon that made for somewhat fuzzy images. On the following images, notice the location of the shadow as the Moon moved through and away from the Earth's penumbral shadow.

6:54 p.m.

7:43 p.m.

8:02 p.m.

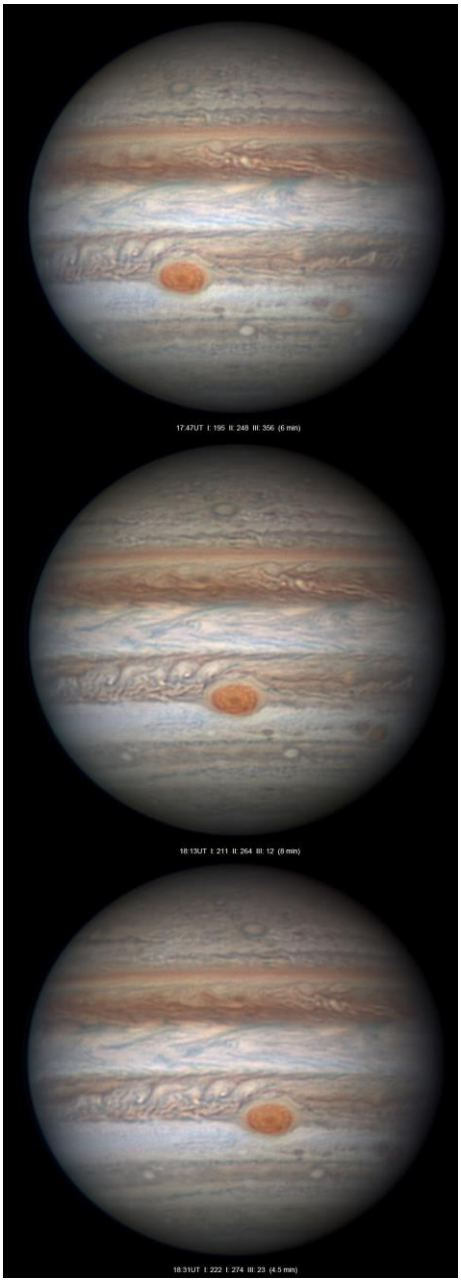
This sequence of images was taken with a DSLR at prime focus on a 102 mm f/7 Vixen refractor. – *Jun Lao, Mason, Ohio*

Jupiter

Feb. 24. It had been over a month since my last imaging run. Conditions had been terrible because of the Northeast monsoon. Seeing was poor and it was rather windy. It was the 11th anniversary of the discovery of Red Oval BA (Red Spot Jr.).

The South Equatorial Belt (SEB) outbreak was rising on the left. Note the new outbreak on the North Equatorial Belt (NEB) close to the Central Meridian (CM).

Feb. 25. Condition was much better. Seeing was variable but much better than the day before.



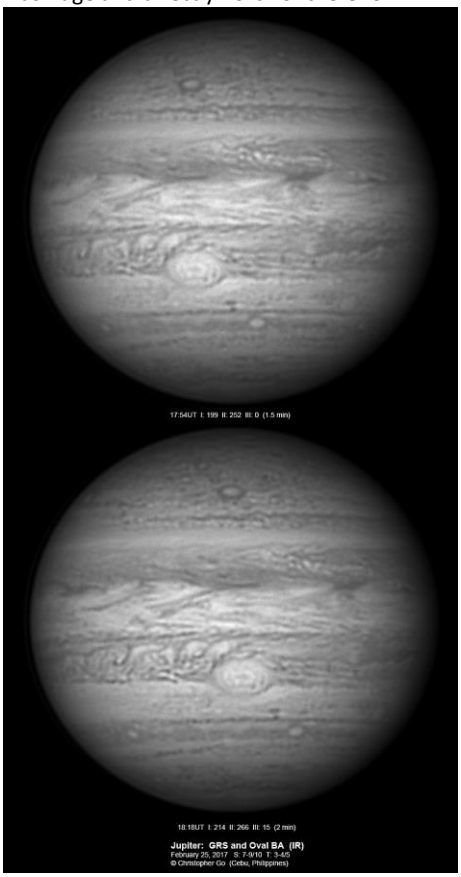
(⇨ *p. 24*).

The Great Red Spot (GRS) was very well resolved. The dark red core could be seen. Note the small ovals on the eastern edge of the GRS.

The wake of the GRS was very turbulent. Note the multiple outbreak white spots on the wake.

Oval BA had a dark orange color and was setting on the right. The source of the SEB outbreak could be seen just above Oval BA.

The NEB had an outbreak. Note the dark oval connected to this outbreak. The North North Temperate Zone Little Red Spot (NNTZ LRS) was huge and directly north of the GRS.



This spot was bright in methane band and had a hint of red.

Feb. 28. Condition was excellent this morning. The wake of the GRS was very turbulent. The NEB looked quiet in this region.

Note the two small ovals on the South South Temperate Bet (SSTB) at the CM. They seem to be merging.

The large dark streak on the NNTZ seemed to be associated with a white oval which was bright in methane band.

- *Christopher Go, Cebu*

Galaxies

M81 and M82. The Cigar and Bode's Galaxy - a pair of beautiful galaxies dancing in the Big Dipper area. So does M82 really look like a cigar?

– Val Abapo, Cebu

The Sky

Luminary Venus departs the early evening sky as it heads to inferior conjunction on March 25, and is set to pop out at in the pre-dawn sky in April.

To compensate for the loss of the bright planet Venus in the evening sky, Jupiter rises around the middle of the evening. Saturn, on the other hand, can be seen in the south, left of Scorpius, and is highest just before dawn.

On the early evening of March 30, try to spot a thin crescent Moon next to Mars. You may need to find a location where you have a clear view of the western horizon.

The view above shows the Moon and Mars at 7 p.m.

On April Fool's Day night, try to catch the crescent Moon inside the Hyades.

The view above shows the crescent Moon very very close to the bright star Aldebaran, the alpha star of Taurus, at 7 p.m. This is a great imaging opportunity. Don't miss it!