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Philippines' *HerAld*

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FEATURE IMAGE THIS ISSUE



A few ALPers were able to successfully view the Great American Solar Eclipse on the path of totality. Total solar eclipse first-timer Eric Africa was able to automate the capture of images of totality and was able to stack the images to create a detailed image of the corona. More on page 97. © Eric Africa, West Chester, Ohio

CLUB NEWS

Monthly Meeting

Last August 6th, the Astronomical League of the Philippines (ALP) held its monthly meeting at Alice Villa-Real's residence in Quezon City. Members who were present were ALP President James Kevin Ty; VP Jett Aguilar; Treasurer Andrew Ian Chan; and directors Ronald Sison and John Ray Cabrera; and, Adi Bontuyan.



The meeting started at around 3 p.m. Dr. Jett Aguilar lectured on his upcoming August 21, 2017 US trip to observe the Total Solar Eclipse. He also discussed the August 7-8, 2017 Partial Lunar Eclipse visible in the Philippines.

Andrew then discussed the ALP free public stargazing session on August 27, 2017 at SM Mall of Asia, SM By The Bay (SMBY), while James Kevin Ty discussed plans for the ALP 17th Anniversary Party preparations to be held at Alice Villa-real's residence. The meeting ended at around 6 p.m. — James Kevin Ty

ALP in Cloud Fest Fun Run

ALP, in cooperation with SMBY and many other sponsor partners, celebrated Cloud Fest Fun Run at SM By The Bay last August 27. Members who attended were ALP President James Kevin Ty, wife Charito and son Kendrick Cole (KC); Treasurer Andrew Ian Chan; Secretary Christopher Louie Lu, wife Karren and daughter Frances; PRO Edge Lat, directors Ronald Sison with sons Ray and Adrian, Justine Garcia, and lah Serna; and Mark Ian Singson.



James brought his Canon EF 100-400 mm f/4.5-5.6 IS L lens with Daystar Quark Chromosphere H α filter on Nexstar mount; Andrew his Skywatcher 80ED refractor on Vixen GP mount; Christopher his Celestron Powerseeker 80 mm f/11 refractor on CG2 mount; and, Mark his Celestron C90 on sturdy tripod.

Telescopes were set up for solar viewing late afternoon, but bad weather prevented letting the public view nighttime objects like the Moon, Jupiter, and Saturn.



This was due to cloudy skies and rain. They packed up their equipment at around 7:45 p.m. when rain started to pour. More than 50 people got to view the Sun through H α and white light. Sunspot group AR2672 was visible on the disk. Only small solar prominences were visible that afternoon.

After the event, some ALPers had their traditional after-event dinner at Teriyaki Boy, and ended it with a warm coffee chat at Coffee Bean before going home (⇒ p. 88).



Although the free public viewing event was hampered by lots of clouds and moderate drizzle, they were still happy to at least share the beauty of the Sun to the public. - *James Kevin Ty; images by James Kevin Ty and Christopher Louie Lu*

Member Reports

Partial Lunar Eclipse

Aug. 7-8. After a short rainfall in the early evening, the sky cleared up for all to observe the Partial Lunar Eclipse from start to end.

The Moon entered the penumbral shadow at 11:50 p.m. Philippine Standard Time (PST), just before midnight, and it entered the umbral shadow at 1:3 a.m.

Maximum eclipse of 25% occurred at 2:21 a.m. It then later exited the umbral shadow at 3:18 a.m. The Moon finally exited the penumbral shadow at 4:50 a.m.

I followed the partial lunar eclipse all the way to the end, and I used my trusty Canon EOS 500D DSLR on Canon EF 100-400 mm f/4.5-5.6 IS L lens set at 400 mm f/11 mounted on Celestron Nexstar mount to take individual images, a selection of which is shown on the right. - *James Kevin Ty*



In the late hours of August 7 and early hours of August 8, we experienced a Partial Lunar Eclipse. This is when part of the Earth's shadow passes across the face of the Moon.

On the following page is a collage of that event over the skies of Mandaluyong City.

Images taken using a Canon EOS 450D DSLR on Celestron Powerseeker 80 mm f/11 refractor on CG2 mount. - *Christopher Louie Lu* (⇒ p. 89).



Stages of the partial lunar eclipse by Christopher Louie Lu (*above*) and Peter Benedict Tubalinal (*below*).





Stages of the partial lunar eclipse by Raymund Sarmiento (above) and two phases by Alice Villa-real (below).





Image taken afocally using Celestron Firstscope 76 mm Newtonian reflector at 15x.

- Jowen Kibtiani



Image taken using Canon EOS 60D DSLR on Celestron C90 Maksutov-Cassegrain. - Mark Ian Singson



Taken in Hong Kong using a Nikon 1 V1 with Nikkor 70-200 mm f/2.8 VR II lens. - Emmanuel David

Moon

Aug. 4. Moon before the partial Lunar Eclipse.

12-day old waxing gibbous Moon 91% illuminated. Imaged with a Canon 450d on Celestron Powerseeker 80 EQ. 1/100 second exposure at f/11 and ISO 100.



- Christopher Louie Lu

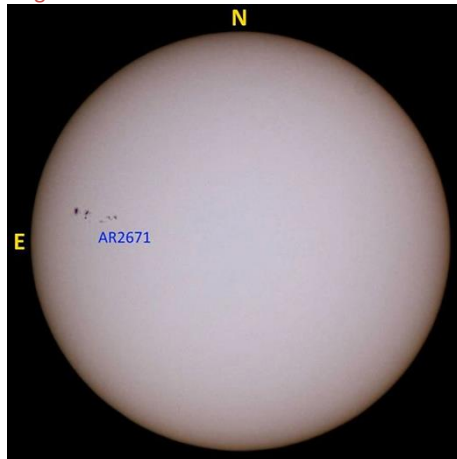
Aug. 25. 13% illuminated Crescent Moon with Earthshine heading toward a Jupiter encounter.



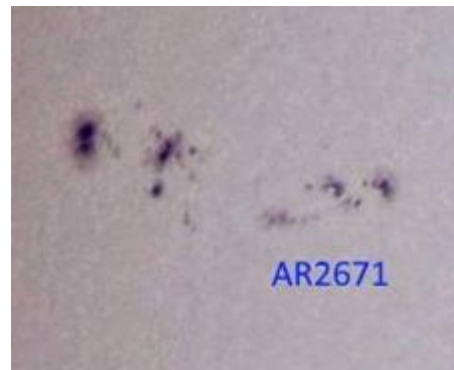
- Jun Lao, Mason, Ohio

Sun

Aug 17.



Our local star was showing some activity in white light, as AR 2671 just rose over the eastern limb.

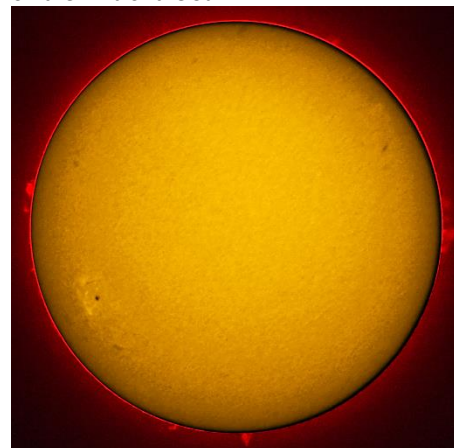


- Christopher Louie Lu

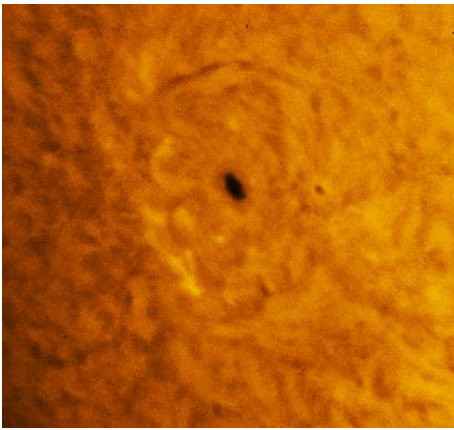
Aug. 3. The Sun had large prominences around its limb, while on the disk, active region AR 2670 was coming in from the limb.



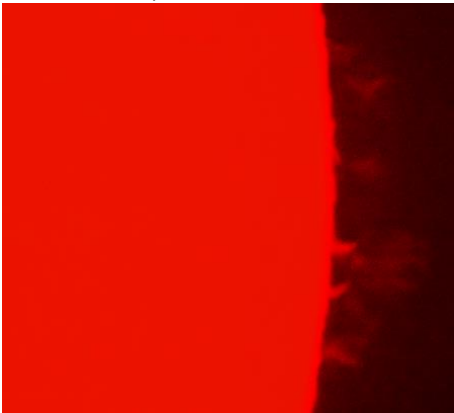
The Sun in white light (above) and in hydrogen alpha (below). Note the many prominences on the limb of the Sun.



The active region was quite interesting in the light of hydrogen alpha, as it showed some swirling spiral structure around the core. Seeing was not so good, so images of the active region and prominences were a little fuzzy (⇒ p. 92).



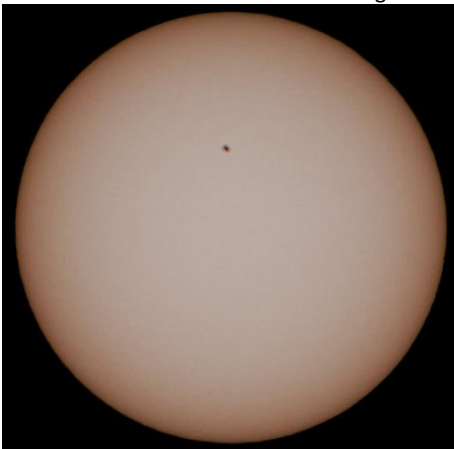
AR 2670 in H-alpha



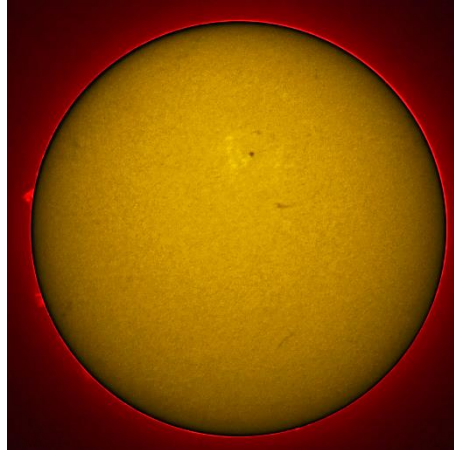
This large set of prominences was hard to image (*above*), while the flame-shaped prominence (*below*) was an easier catch.



Aug. 8. Active region AR 2670 was the only one visible on the Sun's disk in white light:



Seeing was not as good so images were fuzzy in hydrogen alpha:

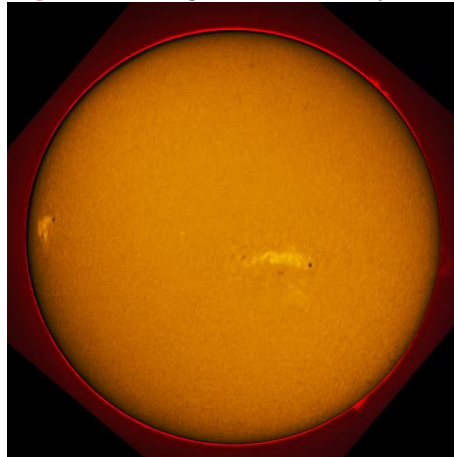


AR 2670 caught in moment of good seeing



A noticeable prominence on the Sun's limb was one that looked like a knight chess piece.

Aug. 22. Sun during the total solar eclipse.

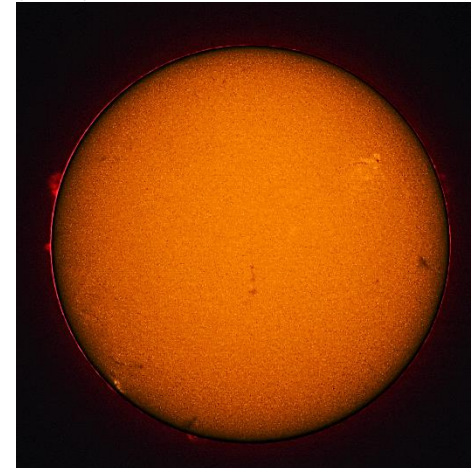


Composite shows the prominences that would feature prominently during totality, as well as the active regions on the disk of the Sun.

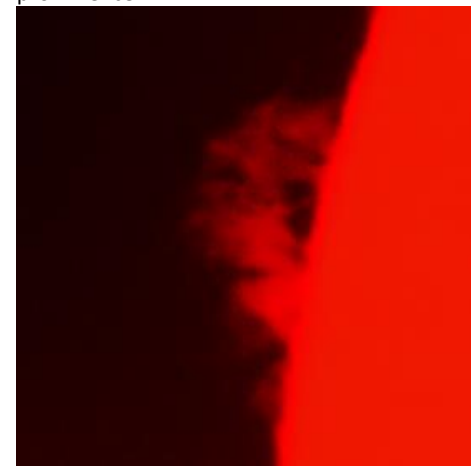
Aug. 29. The Sun had a number of active regions near the limbs.



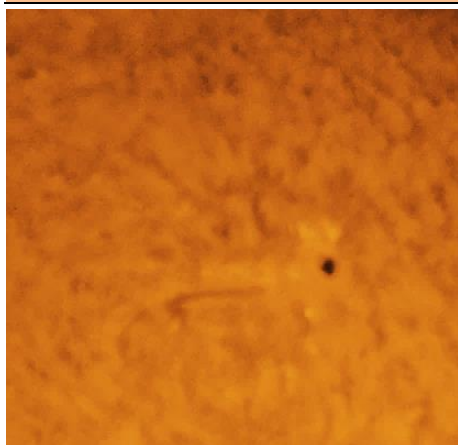
Sun in white light (*above*) and in H-alpha (*below*):



But what called attention were the prominences, especially a large arch prominence:



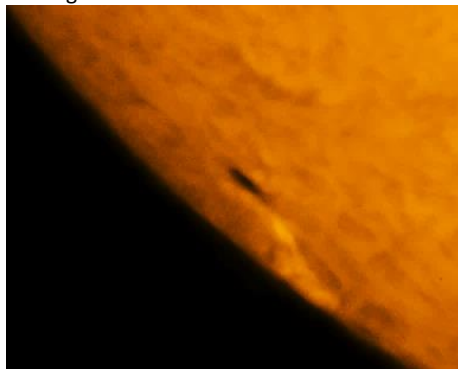
In the meantime, active region AR 2672 was heading toward the Sun's limb. This sunspot group was on the opposite limb of the Sun during the Great American Total Solar Eclipse on Aug. 21 (⇒ p. 93).



AR 2672



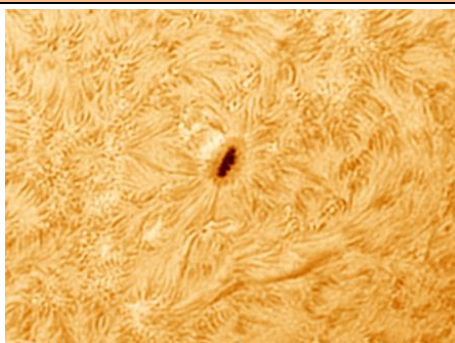
AR 2673 (above) and AR 2674 (below) were coming in from the limb.



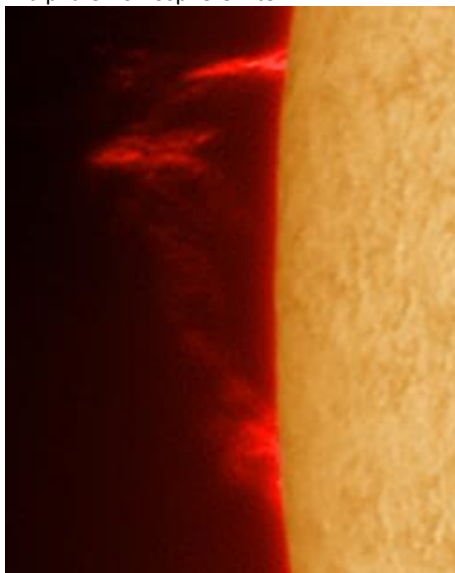
- Jun Lao, Mason, Ohio

Aug. 10. It's been more than 2 months since my last solar imaging session as the weather had been very bad, but since the sky was clear in the afternoon, I had to try to observe the Sun even for a short session just to be able to capture sunspot group AR 2670 before it exits the Sun's western limb in a few days.

AR 2670 was moderate in size and showed some solar activity inside its core. I also was able to see a huge but faint eruptive prominence in the southeast limb before I called it a day, as I was getting drained from the afternoon heat.



AR 2670 imaged with a SSWO ASI120MM webcam on Canon EF 100-400 mm f/4.5-5.6 lens set at 400 mm f/5.6 with Daystar Quark H-alpha Chromosphere filter.



Eruptive prominence - James Kevin Ty

Total Solar Eclipse

In September of last year, I went out on a weekend to scout locations from which to observe the total solar eclipse. A number of people have asked to join me where I would be going, and while other ALPer were going to Idaho (Christopher Go) or Wyoming (Edwin Aguirre and Imelda Joson), I thought mine would only be a short drive away from the point of greatest eclipse, even if there was a 50% chance of clouds (or from an optimist's point of view, 50% chance of clear skies).

After scouting the area around the Land Between the Lakes, I decided to go to Eddyville, Kentucky, a small city north of Hopkinsville, a few kilometers away from the projected crowds at "Eclipse Central." It was close to two major highways, and was easily accessible, and so we were set.

We had a number of Pinoys join us in the Super 8 motel in Eddyville, with the first batch arriving on Saturday afternoon, to get ahead of the traffic and allow for dry run rehearsals on Sunday, with the second batch arriving Monday morning.

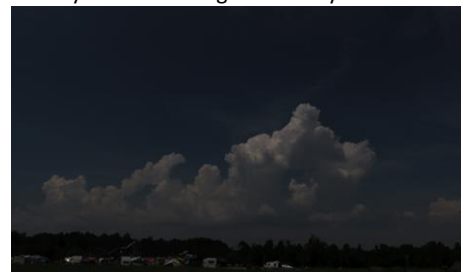
Friday afternoon before the eclipse, I picked up ALPers Dr. Jett Aguilar and Dr. Renan Acosta, from the Cincinnati-Northern Kentucky International Airport, after their long flight from Manila. On Saturday morning, I picked up my sister and brother-in-law from Virginia, from the same airport, and we headed to Eddyville.

Weather conditions were a worry with the threat of high heat and humidity causing thunderstorms. On the morning of eclipse day, the threat of thunderstorms went away. Whew!

On Eclipse Day, the sky was clear, and while setting up, we had some cumulus clouds forming in the northwest where the shadow would be coming from. This was a cause for worry, but would also be a good frame for a diminishing light series, which I set up. See the difference between shots using the same camera and settings below.



The images above and below were taken facing the northwest, with the same camera and settings: 1/200 second at f/8 and ISO 100. Image above taken at 12:58 p.m. CDT, while below was at 1:18 p.m. CDT, 5 minutes before totality. Notice the light intensity difference.



Fortunately, those clouds stayed pretty much where they were, while continuing to build in height. Unfortunately, for those under those clouds, their view of the solar eclipse would be blocked. We only had thin, wispy clouds and jet contrails to contend with during the duration of the eclipse!



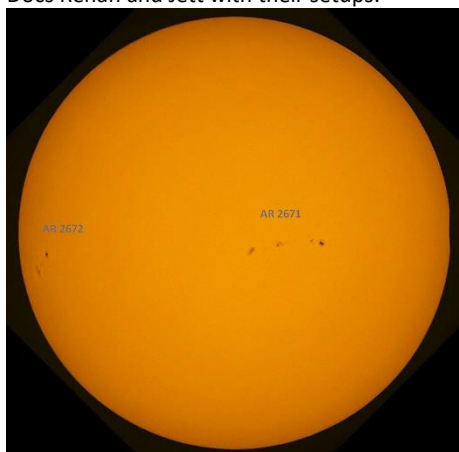
(⇒ p. 94).



We laid a plain white sheet on the ground for shadow bands, and at the same time, a projection area for pinhole images. I punched holes on cardboard, one which spelled out ALP (*previous page*), and another with a crescent on it (*above*).



Docs Renan and Jett with their setups.



First contact. See if you can see the small bump caused by the Moon moving into the Sun at the 3 o'clock position.

While the partial phases seemed to move slowly over the course of one and a half hours, the events of totality moved very quickly from Bailey's Beads to Diamond Ring to totality. And totality was short – 2 minutes and 40 seconds in Eddyville. The shot at right shows the surroundings to the northwest during totality, taken by my sister, Mary Ann Admana (⇒ p. 95).



Inner corona immediately after 2nd contact, showing the red chromosphere (at *left*) and the prominences (at *right*).



Totally eclipsed Sun with corona, imaged with a Nikon D7000 with Tamron 16-300 mm lens set at 300 mm f/5.6. Note the bright star Regulus to the left of the Sun.



The northwest sky at totality, taken with a cellphone by Mary Ann Admana.



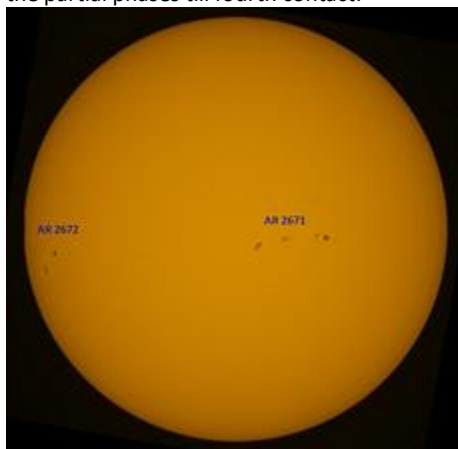
First diamond ring, signaling 2nd Contact. Imaged with a Nikon D7200 on an Explore Scientific ED 80 f/6 triplet apochromat.

The sky was quite bright during totality, brighter than I recall from previous eclipses, and that can be seen in the image of the surroundings taken by my sister. Note that the sky is blue, and not dark blue bordering on black, and the horizon sunset glow was also bright, not a dark orange as is usual.

I was a little late capturing the second diamond ring, as I had to shift from the camera with telephoto lens that was meant to capture the outer corona, to the camera with the small refractor, leading to an overexposed second "diamond ring":



After the euphoria of a successful total solar eclipse, we toasted each other with Corona beer, and celebrated. I continued to capture the partial phases till fourth contact:

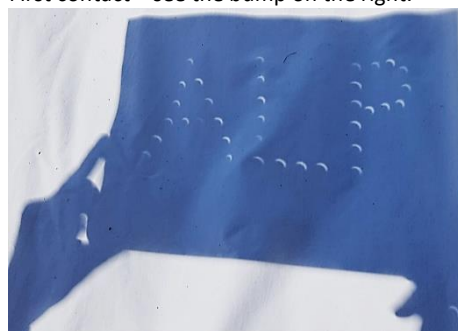


- Jun Lao, Mason, Ohio

The Astronomical League of the Philippines (ALP) was able to conduct a successful observation and imaging of the Great American Total Solar Eclipse of 2017 at Eddyville, Kentucky.



First contact – see the bump on the right.



Projected images of the partially eclipsed Sun.



Bailey's Beads, 1:23:02 p.m. Central Daylight Savings time (Aug. 22 2:23:02 a.m. PST)



Inner corona

The members of the ALP team were Jun Lao (Eclipse Team Leader), Jett Aguilar, Renan Acosta, and Eric Africa.



Additional shots of the totally eclipsed Sun, showing increased span of the corona as the exposures increased (*above and below*).



360-degree image of the sky at totality



Second Diamond Ring ends totality (⇒ p. 96).



ALPers and the Pinoys toasting to the successful observation of the total solar eclipse with Corona beer!



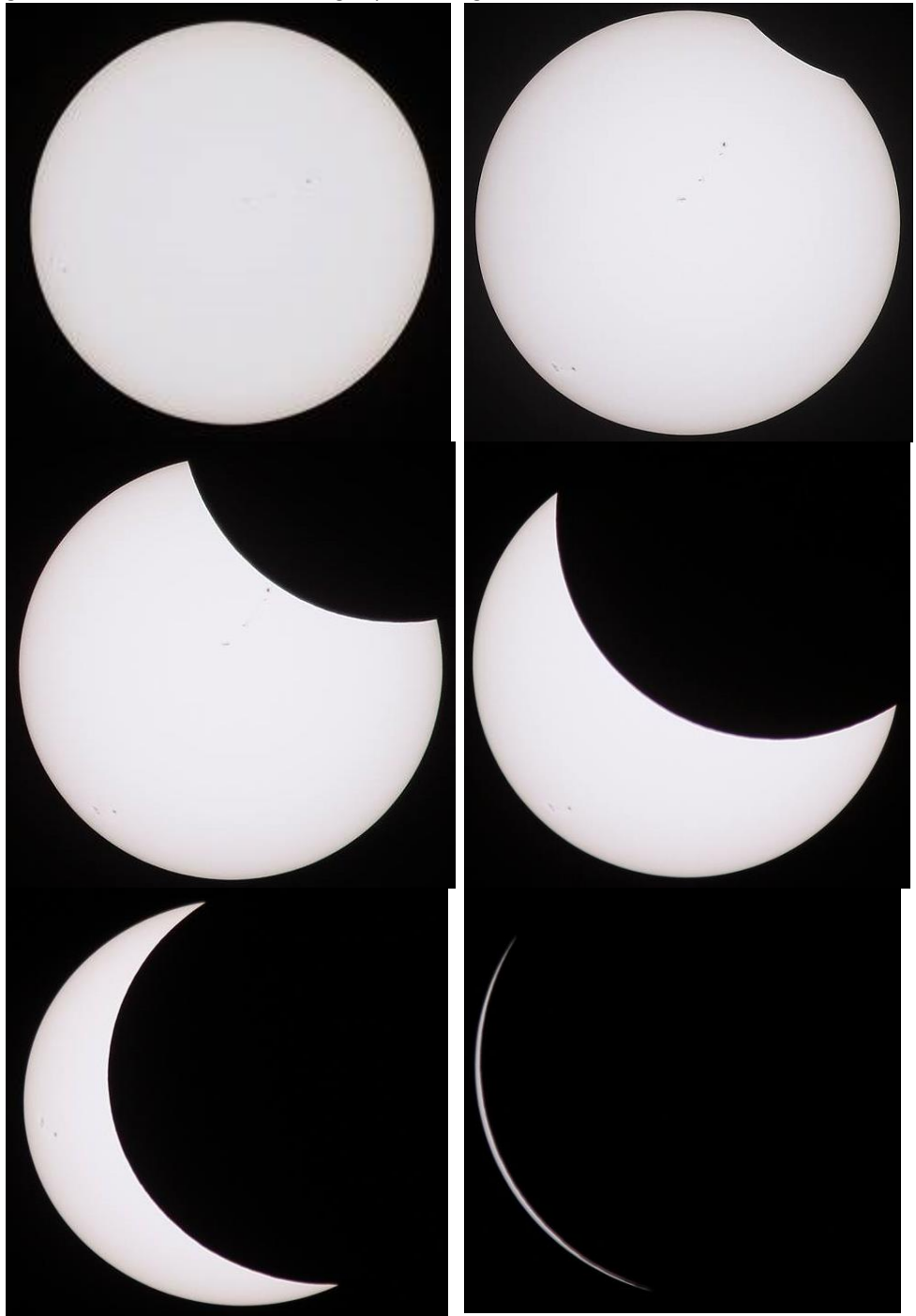
Traffic, though, was horrendous on the way home. The 4½ hour drive back to the greater Cincinnati area doubled to 9 hours because most everyone was driving back, since we intercepted the main highway where people who went to Hopkinsville, Kentucky (Eclipse Central) and Nashville, Tennessee, were driving back.

The interesting thing was that people were courteous despite the long drive, coming from the euphoria of seeing such an amazing event. – *Dr. Jett Aguilar*

ALPer Dr. Renan Acosta was also with the ALP Total Solar Eclipse expedition team, travelling with Dr. Jett Aguilar from the Philippines, and joining up with Jun Lao on Aug. 18, and with ALPer Eric Africa and family on Aug. 19, at Eddyville, Kentucky (⇒ p. 97)



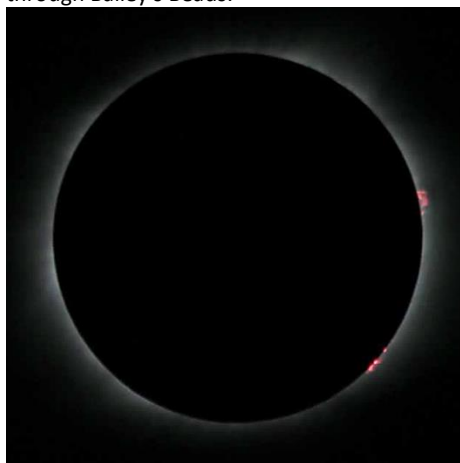
ALPers and Pinoy friends (left to right) – Gabriel Mirasol, Eric Africa, Dr. Renan Acosta, Dr. Jett Aguilar, Jun Lao, and Ver Gabriel. Image by Dr. Jett Aguilar



Partial Phases of the Total Solar Eclipse by Dr. Renan Acosta



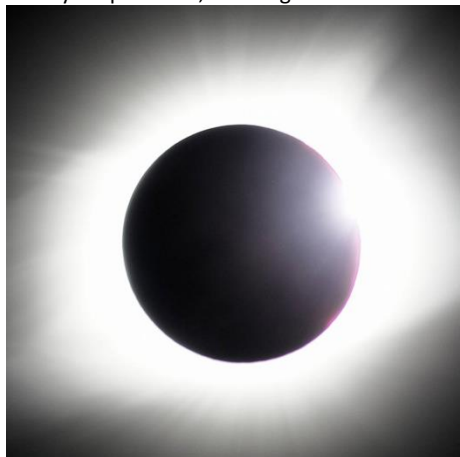
Thin slice of the red chromosphere peeking through Bailey's Beads.



Totality, showing the two large prominences.



Totally eclipsed Sun, showing the corona.



End of totality with the second diamond ring.



Partial phases back to the "normal" Sun
- Dr. Renan Acosta

The August 21, 2017 eclipse has actually been on my mind since 1989. In that year, Mitsubishi aired an ad for its Eclipse sport coupe that referenced the 2017 eclipse. Okay, I haven't obsessed over that event since I saw that ad. Still, suffice it to say that I've been aware of the event since then.

After years of anticipation, plus great planning by a friend and veteran of four prior total solar eclipse expeditions, Jun Lao, my brother-in-law drove my wife and I down to Eddyville, Kentucky in his minivan (we needed that with all the equipment we lugged along!).

I was originally following the advice of many eclipse veterans to NOT even try taking pictures of the eclipse if this was my first one, and I planned to just bring really basic equipment in case we needed to move on eclipse day because of bad weather.

After realizing the automation potentials allowed by today's technology, I decided that it was better to be overprepared for this event and not have anything to show for it, than underprepared when everything could go right. Which explains the amount of equipment we brought.

We drove down the Saturday before the event, which seems a little far in advance, but this was planned out by Jun in case the weather over the area would prove to be unfavorable for the eclipse. Our contingency plan was to check the forecast on Sunday night, then drive out very early Monday morning if conditions in Eddyville were going to be unfavorable. Thankfully, the weather cooperated beautifully.

After checking in at the Super 8 in Eddyville, we met up with Jun, then (being good Catholics) we attended a Saturday evening Mass at the local church. Afterwards, we dined at a local catfish restaurant.

The following morning, we decided to skip a side trip to Metropolis, Illinois (official home of Superman) that Jun took with some guests. We wanted to rest up for the main event, plus (as per Jun's recommendations) we wanted to work through a dry run of our equipment in preparation for the main event. This gave us a good handle on what we needed to do and make us aware of any "gotcha's" that could mess us up. In my case I practiced with Eclipse Orchestrator, which is software that controls our camera (in this case, a Canon DSLR) and takes care of bracketing exposures for the solar corona (which was my primary goal for this event) (⇒ p. 98).

I'm glad I went through the dry run, as I did run into an issue with an easy fix: the software kept complaining that it could not connect to the camera when I launched it. Turns out the camera needed to be on and connected to the PC!



The night before the eclipse, Jun (wearing his ALP shirt), gave a presentation on the eclipse for all the guests of the hotel, aimed specifically at non-astronomers as well as eclipse newbies.

The manager of the hotel provided pizza and drinks for all the guests as well. Kudos to both him and Jun for making this occasion even more special!

Conditions on Eclipse Day were very good (high, thin clouds overhead, pretty cumulus clouds in the distance that thankfully stayed away). My equipment was set up and ready to go in plenty of time.

I had resolved to enjoy the time leading up to totality and did not even turn any of my imaging equipment on until about a half hour before prime time. So much so that a couple of fellow gazers came up to me wondering why my scope was pointing the wrong way.



In that time, I followed the progress of the eclipse with eclipse viewing glasses and a Lunt H-alpha solar-filtered scope that my wife operated and used to take some fun shots with.

I also wandered around just a little bit, checking out views through other gazers' equipment. At the appointed time, I fired up my equipment, aimed at the sun, focused to the best that my equipment could indicate, and launched Eclipse Orchestrator on my laptop.

This software (which I had rehearsed with repeatedly prior to this trip as well during Rehearsal Day) took care of taking a bracketed set of exposures for me to capture my one main goal: the corona of the eclipsed sun. Thus I was able to enjoy a live view of the eclipsed sun while the software took care of imaging totality for me.



Bailey's Beads prior to Second Contact. I deliberately delayed taking the solar filter off when Eclipse Orchestrator prompted me to, resulting in this happy accident.



First diamond ring, signaling the start of totality (*above*). Totally eclipsed Sun (*below*).



Okay, there were moments when I gazed anxiously at the software's interface to make sure it wasn't hanging up on me, then once I was assured it was working fine (camera shutter happily clicking away), I went back to enjoying the view

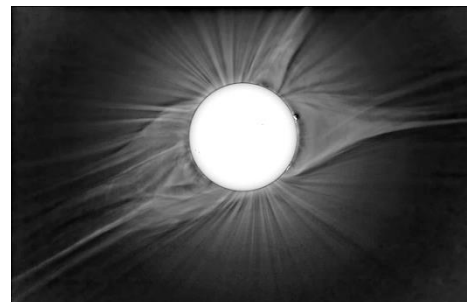
And what a view! The skies did not darken as much as I had anticipated, but the corona was a sight to behold, and the blackness of the eclipsed Sun was unbelievable.

I was especially tickled when I saw a pink spot at the edge of the sun and recognized it as a prominence! I didn't want to risk any binocular views, so held off on zooming in on that feature. And it was just as well: when the second Diamond Ring phenomenon (Sun reemerging from behind the Moon) appeared, I was shocked at how bright that tiny sliver of the Sun was – it was like looking directly at a laser beam! I averted my gaze pretty quickly!



Second diamond ring

After the event, I celebrated the success of our eclipse expedition with other members of our team the best way possible: Corona beer! Okay, the beer would have been used to drown our disappointment had things not worked out.



With my primary objective achieved, I went ahead and shot a sequence of the ending eclipse. I ended with the full disk of the Sun in white light. I thought I'd playfully add this image showing what the Sun technically looked like in that point of time - white light surface with sunspots and corona!

After being able to rest after the long drive home (we arrived around 6 a.m.), I was able to process the images. I couldn't help but wonder what could be done to get more detail out of the sun's corona. I stumbled onto a utility and additional techniques that definitely improved the details in the solar corona, and that's what's on the cover.

Equipment used: Borg 90fl with Canon t6i. Both riding on a Celestron CG5 AS/GT mount.
– Eric Africa, West Chester, Ohio