

This is the Heart nebula, IC1805, taken by club member Alan B. Gorski from the football field at Anza site using a Televue 127mm refractor and an astro-modified Canon 6D DSLR

From the Orange County Astronomers' Board of Trustees: Response to COVID-19 Crisis

Because of the COVID-19 crisis and ongoing efforts to reduce exposure to the virus, **all in-person club events are cancelled through the end of May, 2020**, including Outreaches, General Meetings, SIG Meetings and Star Parties, and this may have to be extended further; please check our website regularly for updates, and we will also post the information to the email groups and social media.

During this period, we are having our **General Meetings virtually, via Zoom**; please check our website on the day of the meeting for information to connect to the meeting. Other SIG meetings may be by Zoom; please contact the SIG's chair for information.

Any use of the Anza site by members is at their own risk as we have no way of cleaning or sanitizing the site to CDC standards. If you must go to the site, be sure to clean and sanitize surfaces you have contact with and make sure it is cleaner when you leave than it was when you arrived. You must also bring any cleaning supplies or sanitizer with you as it is not provided at the site. Be sure to take any trash that you generate or find on the site out with you, and please maintain social distancing if anyone else is out there.

If you have any questions, feel free to contact board members or post them to the email groups or through social media. We will do our best to respond promptly, but please bear with us if there is a delay as we all have other responsibilities as well.

Best wishes to all of you through these difficult times, and may you, your families and friends all remain safe and healthy!

Next General Meeting is Online May 8, 2020 7:30 pm

"What's Up?": Alex McConahay from RAS

"Detecting Fires with Principles of Astronomy": Carlton Pennypacker from Lawrence Berkeley Laboratory

President's Message

By Barbara Toy

I hope all of you are doing well and staying healthy as we continue to deal with the COVID-19 pandemic and its effects at all levels in our society. This is a difficult time, and, unfortunately, as time passes more and more people are affected by the virus. As I write this, the numbers of those confirmed with the virus keep rising, along with the numbers of those who are hospitalized and those who, tragically, have died. Maybe by the time you read this we will have clear signs that the peak has passed – I hope so.

For those of you who may be suffering from the disease yourself or have loved ones who have contracted it – I am so very sorry you are going through that, and hope you and your loved ones are among those who have fairly minor symptoms. For those who may have lost friends or family members to COVID-19, I don't know any magic words that can ease your pain, but you have my deepest sympathy. I know some of you reading this may be dealing with lost jobs or reduced paychecks in addition to the worries about the disease itself – I hope that's very short-term for you and that you'll be back on your financial feet again quickly.

Not surprisingly, a lot of people are feeling overwhelmed and depressed in these stressful and, for too many of us, dangerous times. There also seem to be a lot of people who are feeling exceedingly house-bound, with the stay-at-home orders and all. It may not a solution for everyone, but many of us find that astronomy helps give us relief from our earth-bound worries, and it certainly can expand the horizons of those feeling too confined in their homes. If you happen to have a solar scope and can check out the sun during the day – that can give a new perspective on a body we all rely on for survival (though it would be nice if it would give us a bunch of sunspots to enjoy). After dark, spending time wandering among the splendors of the night sky, even just admiring the planets and picking out the constellations naked-eye, can refresh the spirit even under light-polluted skies.

These challenging times have called for some innovations on club activities, too...

Virtual Meetings

The club now has a Zoom account, after we successfully experimented with Zoom for the March Board meeting. At this point, it seems likely that our May Board meeting will be by Zoom as well, and one advantage we've seen already is that it makes it possible for Board members to attend when they otherwise would have had to miss the meeting because they're out of town. Since we've also had periodic problems with finding locations for the Board meetings in recent years, we may continue to have them, or some of them, via Zoom even after this crisis has passed.

Club members are always welcome at Board meetings, and that includes meetings held via Zoom. If you want to attend our May meeting, please contact our club Secretary, Alan Smallbone (asmallbone@earthlink.net, or see the website Contacts page), so he can add you to the list when he sends out the link for the meeting.

Our Vice President and webmaster, Reza AmirArjomand, was able to put together a program for our first virtual general meeting, which was on our usual date and time, April 10 at 7:30 p.m. We are very grateful for the willingness of the speaker for our cancelled March meeting, Dr. Laura Danly from Griffith Observatory, to give her talk on line for this April meeting – it was a new experience for her, speaking from home and not being able to see her audience, and a real treat for us. An added treat was Chris Butler's virtual "what's up," which posed particular challenges for him as his microphone wouldn't work and he couldn't find a webcam anywhere – an unexpected shortage that was apparently due to the large number of events of all kinds that suddenly had to be done on line. So, being Chris and naturally innovative, he gave us an excellent video he put together without a camera, with his narrative as written comments.

Reza has now posted information about our speaker for our virtual general meeting for May on our website. This will be on May 8, 2020, at 7:30 p.m. and will feature Carlton Pennypacker from Lawrence Berkeley Laboratory speaking about "Detecting Fires with the Principles of Astronomy," which, with fire season due to start any time now, seems definitely timely as well as astronomical. Alex McConahay from the Riverside Astronomical Society has kindly agreed to do the "What's Up" for this meeting. Reza will post the information to connect to the meeting shortly before it starts on the website; please check our website regularly for updates on the meetings as well as other club matters. If you have any problems connecting to the meeting, please contact Reza (Reza@ocastronomers.org) or Alan Smallbone.

Dave Pearson, who teaches the Beginners Astronomy Class, did an experimental version for the April class with a different program that wasn't robust enough for what he needed. Now that we have the Zoom account, he is planning to do the May class via Zoom, which should be able to handle more participants. If you're interested in attending it, please contact him at p.davidw@yahoo.com. The May class will be on May 1, 2020, and it's likely that the June class, on June 5, 2020, will be via Zoom as well.

We hope you'll take advantage of these events – and if other Special Interest Groups plan to have virtual meetings, or there are other virtual events planned, we'll be posting the information on the website when we get it.

Other Club Events Cancelled

During this emergency, all club events other than those we can do virtually are cancelled until further notice. Again, when this situation changes, we will be posting the information on our website and, as appropriate, sending it out to the club's email groups: ocastronomers@groups.io and AstroImagers@groups.io. If you are a club member and haven't signed up for these email groups, I recommend that you do so as we do use them as a way of getting urgent information out to our membership in addition to posting it on the website; they're also good resources for help with problems as well as information about astronomy, the club and astroimaging, and for getting information from fellow club members.

Among the club activities that are cancelled are our star parties. For anyone who does go out to our Anza site, please remember that we don't have the resources or the personnel to sanitize any of the facilities out there. Please take sanitizer with you and sanitize any surface you touch, before and afterward, to minimize the risk of infection. Please also follow the CDC guidelines, including staying at least six feet away from anyone else at the site and appropriate use of masks and gloves.

And, since I don't know if anyone has been or will be able to restock supplies given the general shortages, it would probably be wise to take along a roll of toilet paper. As always, please be sure to take your trash out with you when you leave.

Another Concern:

With the spring rains, we expect that we will have a lot of weeds this year. Generally we ask that pad and observatory holders clear the weeds around their areas in May, but due to this crisis, we expect that many licensees won't be able to do that until June. Unfortunately, fire is a real concern for our Anza site, and when we had a fire come through the site several years ago, where we had damage was where weeds hadn't been cleared adequately. While fires are more common as the brush dries out in the summer, they can strike earlier, so the earlier we can get weeds at Anza cleared, including around Anza House and the Club Observatory, the better. Balancing that against the threat of COVID-19, though, we don't want people risking their health to clear weeds, but for anyone who does go out to Anza for other reasons, please do include weed clearance among your objectives while you're out there.

All that said – be safe, be well, and enjoy the sky whenever you have a chance to!

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AstroSpace Update

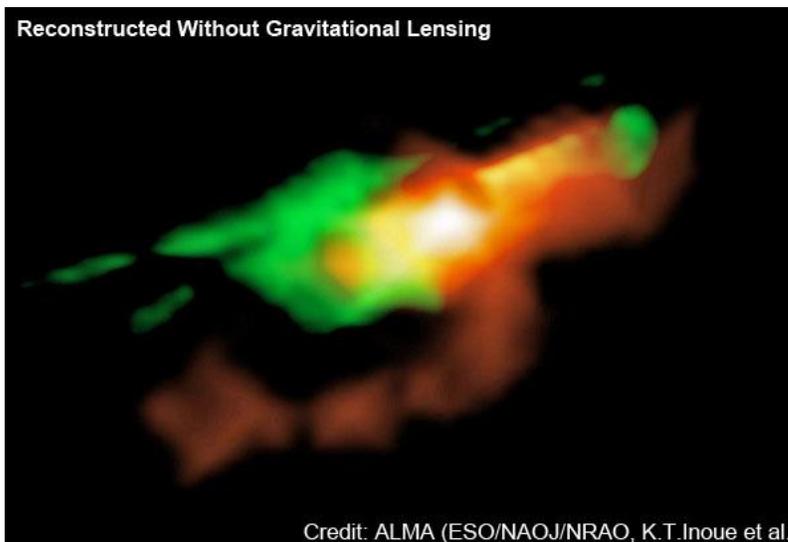
May 2020

Astronomy and space news summarized by Don Lynn from NASA and other sources

Earth-like Planet Found – An exoplanet has been found that is the closest yet to being the size and temperature of Earth. It was found in archived Kepler data, and has been dubbed Kepler-1649c. It is 300 light-years away. It is at a distance from its star in the habitable zone, that area where the planetary surface temperatures are likely to allow liquid water to exist. It gets about 75% the amount of sunlight from its star as Earth gets from the Sun. It is 1.06 times the diameter of Earth, and is therefore quite likely a rocky planet. It is unknown whether it has an atmosphere. Its star is a red dwarf star, much smaller and dimmer than our Sun. Red dwarf stars are known to often emit huge flares, though none has yet been seen from this one. A year on 1649c is a bit under 20 Earth days. Another rocky planet closer to this star was also found, but it is too warm to be in the habitable zone. The 2 planets orbit with a 4:9 resonance. That is, 4 of the outer planet's years are 9 of the inner planet's years. This is an unusual resonance, prompting some astronomers to guess that there is an intermediate planet that is in 2:3 resonance with each, since 2:3 resonances are common (such as Neptune and Pluto). But no intermediate planet has yet been found. Teams analyzing Kepler data use a computer program called Robovetter to look through the millions of star dimmings recorded from Kepler to sort out the ones caused by planet transits from those caused by other phenomena. Only about 1 in 8 dimmings is a planet transit. A team of astronomers has been reviewing Robovetter's decisions to find its mistakes in rejecting. 1649c was one of Robovetter's mistakes found by this team.

Intermediate Mass Black Hole Found – Almost all the black holes that have been found are either the mass of a star (known as "stellar mass" black holes) or else supermassive (millions or billions of times the Sun's mass). There are only a handful of objects known that might be black holes of mass intermediate to these extremes. Data from the Hubble Space Telescope and X-ray space telescopes have produced the best evidence yet for an intermediate mass black hole (IMBH). In 2006, X-ray flares were observed that could be explained by many different sources, among those an IMBH tearing apart a star that passed too close. Hubble observations pinned down the location of the X-ray flares to be a star cluster in the fringes of another galaxy. This ruled out several possible causes. The star cluster is possibly the stripped-down core of a dwarf galaxy, a place likely to find an IMBH. The astronomers believe that they have now ruled out all other causes for the observed X-ray flares except for an IMBH consuming a star. They then calculated the size of black hole necessary to emit the observed X-rays, and concluded that it is more than 50,000 times the mass of our Sun, solidly in the IMBH range. The astronomers looked through a large amount of X-ray observatory data before finding this one likely IMBH. They plan to continue with the same techniques in hopes of finding more.

Very Distant Galaxy Imaged – Astronomers were for the 1st time able to image gas clouds in a galaxy so distant that its light took 11 billion years to reach us. This was achieved using ALMA, and was possible only because an intervening massive galaxy gravitationally lenses the light, magnifying it. Unfortunately gravitational lensing also distorts the image, so the astronomers had to computer process the image to reconstruct how the distant galaxy really would look. The team found that the clouds are being disturbed by the jets spewing out from the central supermassive black hole. Further study will be made in hopes that astronomers can find out if the jet disturbances are suppressing star formation in the galaxy.



Binary Star Disks – Data from ALMA (radiotelescope array in Chile) was used to study 19 planet-forming disks around binary stars. The study concluded that the planes of disks around close pairs tend to align with the planes of the stars' orbit, but the wider pairs were not so aligned. The division between aligned and non-aligned occurs at about the size of orbits that have periods of 30 Earth days.

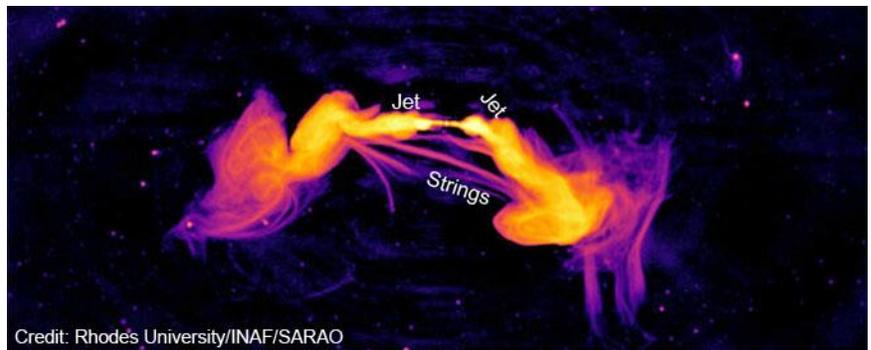
Nova Light Explained – A nova occurs when hydrogen pulled from a companion star accumulates on a white dwarf star until it ignites in a nuclear explosion. Astronomers generally attributed the visible light brightness of a nova to the explosion. But another theory posited that shock waves from the explosion striking surrounding material emitted the light. Observations of nova V906 Carinae made in gamma rays showed that shocks were creating the gamma-ray emission. Simultaneous observations in visible light and gamma rays showed their brightness varied in synchronization, implying the shocks had to contribute most of the nova’s visible light. The generation of light by shocks may well apply to supernovas and stellar mergers.

Extremely Close Binary – A pair of helium-core white dwarf stars, known as J2322+0509, has been discovered orbiting each other quite closely. They are detached, that is, far enough apart that neither is gravitationally pulling material from the other. Their period of revolution is only about 20 minutes, the 3rd shortest period known for detached binary stars. Their orbit is nearly face-on to us, so there is no eclipsing. This made it difficult to determine that this was indeed an orbiting pair of stars. Spectral observations did uncover their orbital motion, however. Their period is decaying due to loss of energy in the form of gravitational waves. In 6-7 million years, they will orbit so closely that they will merge into one more massive white dwarf. The gravitational waves emitted by this pair should be detectable by LISA, a spacecraft mission to launch in 2034 to study gravitational waves. In fact this pair will likely be used to verify or calibrate LISA.

Quasar Jets Imaged – The Event Horizon Telescope (EHT) team gave us the 1st detailed image of a black hole last year. Using the same techniques, the team has now produced an image of the center of another galaxy (which is also a quasar) known as 3C 279. It is too far away to show detail of the black hole (or technically its shadow), but instead shows jets emanating from the black hole in the best resolution yet. 3C 279 is 5 billion light-years away in Virgo. The new image shows that the jet has a surprising twist near the base. This may be the result of shocks or instabilities. Features found perpendicular to the jet may be related to the accretion disk. Details of the image changed from day to day. The EHT technique is to tie together data from almost a dozen radiotelescopes spread across the face of the Earth to achieve resolution like a single radiotelescope the size of the Earth. This is known as very long baseline interferometry. EHT has achieved resolution of 1/50,000th arc second.

Blazar Caught Forming – A blazar is an active galaxy nucleus (“active” meaning its central black hole is consuming matter) with a jet that happens to point in our direction. A leading theory is that such jets form and matter falls into a galaxy nucleus as a result of 2 galaxies colliding. A new discovery appears to be such a collision that has prompted the activity and jets, supporting that theory. The collision has been examined by several Earth- and space-bound telescopes in various wavelengths to make sure what we are seeing. The jet’s age is estimated at just 15,000 years. Both galaxies with their separate central black holes are seen, and they are in the process of merging.

Radio Strings – New images of a galaxy with gigantic jets taken with MeerKAT (radiotelescope array in South Africa) show 3 magnetic plasma strings stretching as long as 261,000 light-years. Few such strings have ever been seen, and no other in this detail. Data analysis determined that the emission is from synchrotron radiation, that is, electrons emitting radio waves as they spiral in a magnetic field. The 3 strings appear to be about the same age. Further work is needed to explain how these strings formed. The galaxy, known as ESO 137-006, is at the center of the Norma galaxy cluster, 220 million light-years away.



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Brown Dwarf Wind – A team of astronomers have made the 1st ever measurement of wind speeds on a brown dwarf, and found them to be 1450 mph. The object is known as 2MASS J1047+21 and is about 33 light-years away. Brown dwarfs are larger than planets but smaller than stars. They lack the mass to press their cores into sustained nuclear fusion, the process that powers stars. The technique used to measure these wind speeds used radio and infrared observations. The radio emitted varies over the object’s daily rotation, because it is affected by the object’s magnetic field, which rotates with the object’s core. The infrared emission varies with the cloud patterns rotating. By monitoring radio and infrared, the core rotation and the cloud surface rotation periods can be measured. The difference is due to cloud surface wind speeds. The technique should also work on many exoplanets.

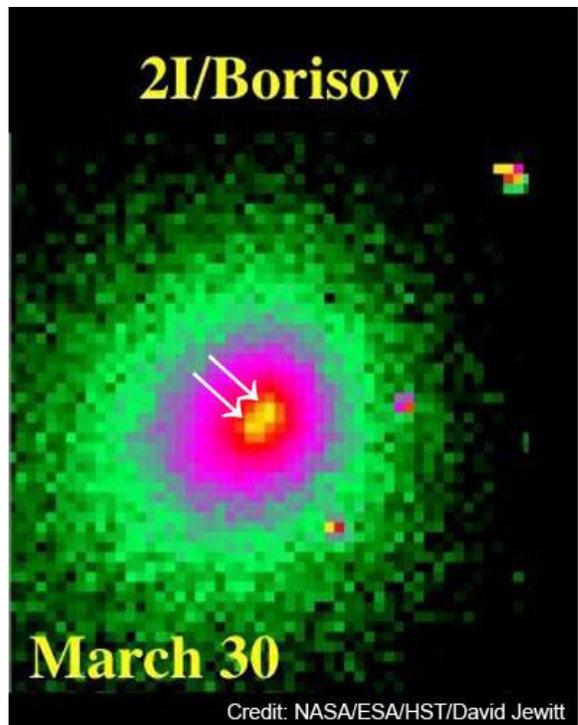
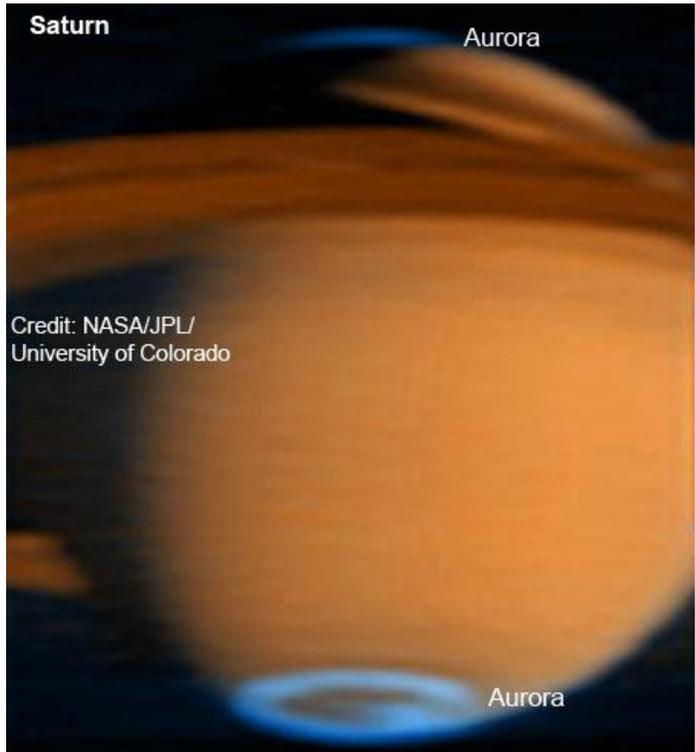
Saturn Mystery Solved – A new analysis of old Cassini data has solved a mystery about gas giants. Cassini ended its mission to study Saturn in 2017, but new discoveries are still being made from its archived data. All 4 of the gas giant planets in our Solar System have layers high in their atmospheres that are hotter than can be accounted for from all known sources of heat. The new study compared the places in Saturn’s atmosphere that were hottest with images of auroras and found that the auroras had to be heating the atmosphere. Winds then were found to be distributing the auroral heat to the other hot areas. The same explanation may apply to the other gas giants.

Exoplanet Atmosphere – A spectrum has been taken of the atmosphere of the hottest known exoplanet, dubbed KELT-9b. It is hot because it orbits extremely close to its star (nearly 30 times closer than Earth is to its Sun). The spectrum identified hydrogen and ionized calcium. The temperatures and pressures were also obtained from the spectrum. The hydrogen was at a lower pressure, and therefore higher altitude, than the calcium. The hydrogen was expected since the planet is a gas giant. The calcium is rarer, this being only the 2nd time it has been found in a hot gas giant exoplanet.

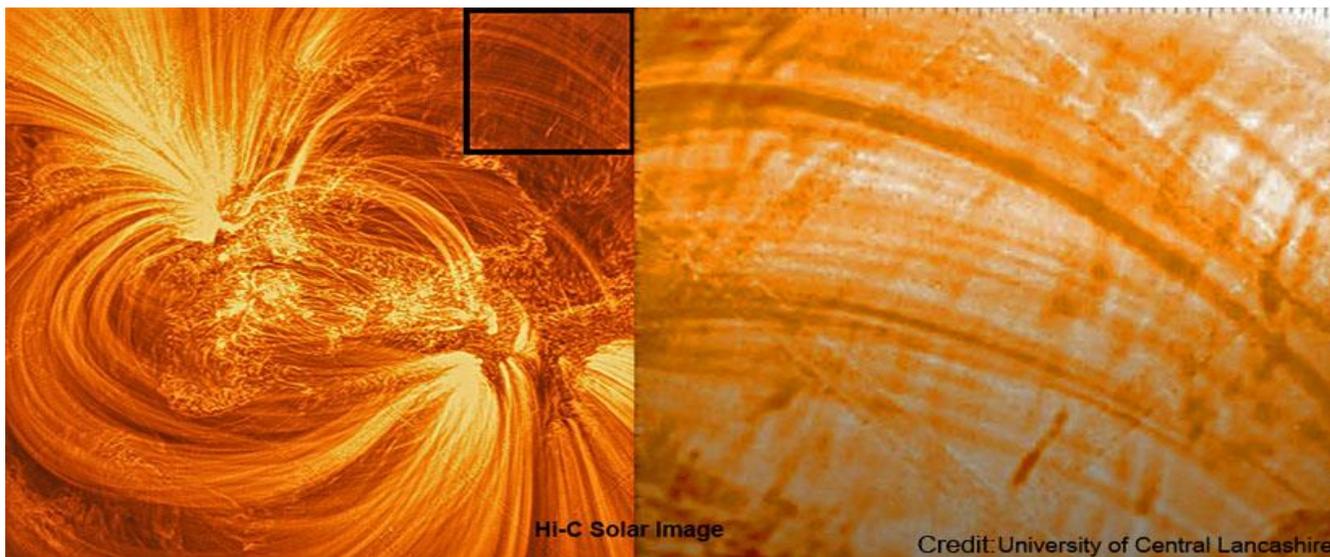
'Oumuamua Explained – New computer simulations of a star tearing apart a planet, planetesimal, or comet by tidal forces may have explained the strange properties of 'Oumuamua, the 1st ever object known to come from interstellar space. The shards of the torn object are often long and thin, as is 'Oumuamua. The shards are often baked by their star, resulting in the surface being devoid of water and other volatiles, though water ice can persist deep inside. This would explain how 'Oumuamua veered off its expected orbit as if jetting out water vapor as it warmed near the Sun, though no volatiles were detected. The surface baking also stiffens up the surface material, making a shard more able to keep its long shape without danger of breaking up further. The shards are often thrown out of their own planetary system, eventually visiting other systems.

Borisov Splits – The 2nd object ever known to visit the Solar System from interstellar space, Comet 2I/Borisov, was observed to split into 2 pieces in mages taken by the Hubble Space Telescope. Such breakups are fairly common with ordinary comets. Soon after discovery, Borisov was found to be moving too fast to have originated anywhere in the Solar System, and thus had to be from interstellar space. The breakup followed some brightenings, which were later attributed to the breakup beginning.

Bepi-Colombo (joint European-Japanese mission to Mercury) flew by Earth on April 10, in order to use our planet’s gravity to fling it toward the inner Solar System. It tested its instruments by observing the Earth and Moon during the flyby. This was the 1st ever time that images were taken of the Moon using thermal infrared wavelengths. It will take 2 flybys of Venus and 6 flybys of Mercury before achieving orbit about Mercury in late 2025. The mission is named after the Italian engineer who designed the orbit of the American Mariner 10 spacecraft so that it encountered Mercury 3 times in 1974-75.



Solar Threads Discovered – A project named Hi-C has been occasionally tossing a solar telescope above our atmosphere on sounding rockets, obtaining very high-resolution solar images. The latest flight got images showing a previously unknown feature consisting of extremely fine magnetic threads made of million-degree plasma. The next Hi-C launch is coordinated to take data simultaneously with the solar space telescopes Parker Solar Probe and Solar Orbiter.



Betelgeuse – After the star faded over the last few months to its dimmest recorded level, it then crept back up to its former brightness over a period of about 6 weeks.

Astronauts Return – Astronaut Jessica Meir returned to Earth from the International Space Station (ISS) on April 17 after spending 205 days in space. She participated in the 1st 3 all-female spacewalks during this mission. Also returning in the Soyuz vehicle were astronaut Drew Morgan and cosmonaut Oleg Skripochka. Morgan spent 272 days in space. 4 of his 7 spacewalks on this mission were to work on the Alpha Magnetic Spectrometer, which is searching for evidence of dark matter from its location on the outside of ISS. Skripochka spent 205 days in space this time, bringing his total days in space to 536.

American Spacecraft with Crew – The next astronauts to arrive at the ISS, Robert Behnken and Douglas Hurley, are scheduled for May 27 aboard a SpaceX Dragon Crew Capsule. This will be the 1st American spacecraft with crew to launch into space since the Shuttles were retired in 2011. Both crewmembers have previously flown on a Shuttle to the ISS. Boeing also has a privately developed crew spacecraft almost ready to fly, but problems during their test flight in December have required one more test flight without crew before taking people to the ISS.

From the Editor

Sirius wants photograph submissions from club members

We need submissions for this year. I will also pull some from the OCA members images section on our website but those will be at my discretion. If you would like your picture on the cover, please send it to me along with a brief description of the subject, where the image was taken, and the equipment used.

Ideas for Future articles

The newsletter includes articles from members and / or about subjects suggested by our members. We seek ideas and writers to cover them. To contribute an article or work with the editor to produce one, please contact me at newsletter@ocastronomers.org.

Due dates for submission of articles, pictures and advertisements

<u>Issue</u>	<u>Due date</u>
June	23 May
July	20 June
August	25 July
September	22 August

OCA Loaner Scope Program

Telescopes are checked out only on one designated weekend every 3 months. The loan period is 6 months. Available scopes are listed on the club website. Reservations will be accepted until 7 days prior to the next pickup day. To reserve one, send the program director an email at scopes@ssccorp.com

The request should contain the desired scope's inventory number, the member's name, address, telephone number and email contact address. Pick up time and location will be sent to the borrower via email. Please bring proper identification and sign the club's loan agreement at the time of scope pickup. When ready to return a borrowed scope, please contact John Hoot to make arrangements. He may be able to accept the scope at the OCA general meeting.

OCA Scopes For Rent

INV#	Type	Size	Mfg	Model	Accessories/Notes	Available	Rent
1	Mac	3.5"	Meade	ETX90	Alt/Az Goto	04/12/2020	\$5/Mo
2	Newtonian	4.5"	Meade	DS2114ATS	Alt/Az Goto	04/12/2020	\$5/Mo
5	SCT	8"	Meade	LT8	Alt/Az Goto	04/12/2020	\$5/Mo
6	Newtonian	4.5"	Celestron	1114EQ	Wt Bars In Storage	01/12/2020	Free
10	SCT	8"	Celestron	Orange Tube	w/Encoders,Wedge,Tripod & SlowMo. Ctl	04/12/2020	Free
16	SCT	10"	Meade	LX200 Classic	Alt/Az Goto	04/12/2020	\$5/mo
19	Mac	2.25"	Meade	ETX60	Alt/Az Goto	04/12/2020	\$5/mo
20	Reflector	8"	Orion	SkyView	German EQ wTracking & SlowMo, 2 axis	04/12/2020	Free
22	Reflector	4.5"	Celestron	NexStar	Alt/Az Goto	04/12/2020	\$5/Mo
24	Reflector	4.5"	Meade	4504	German Mount Goto	04/12/2020	Free
26	Dobsonian	8"	Celestron	Starhopper	Alt/Az Manual	04/12/2020	\$5/Mo
29	Schmidt-Cas	8"	Celestron	NexStar 8	Alt/Az Goto	04/12/2020	\$5/Mo
31	MAK-Cas	5"	Meade	ETX-125	Alt/Az Goto	04/12/2020	\$5/Mo
32	Newtonian	4.5"	Meade	DS-114AT	Alt/Az Goto	04/12/2020	\$5/Mo
33	Schmidt-Cas	10"	Meade	LX90-AFCF	Alt/Az Goto	07/12/2020	\$5/Mo
34	Dobsonian	12"	Meade	Light Bridge	Alt/Az Manual	04/12/2020	\$5/Mo
35	Newtonian	4.5"	Meade	DS-2114	Alt/Az Goto	04/12/2020	\$5/Mo
36	Schmidt-Cas	8"	Celestron	Ultima 8	Fork Mount w/Wedge, Tripod Motorized	04/12/2020	\$5/Mo
37	SCT	8"	Meade	LX200GPS	Needs Spreader & Hand-box	04/12/2020	\$5/Mo
45	Refractor	4"	Tashihaki	106FSQ	Motorized German Mount Astro-Imaging	07/12/2020	\$5/Mo
49	Dobsonian	4.5"	Orion	StarBalster 4.5	Table Top Dob - Easy to use	04/12/2020	Free

OCA Scopes For Sale

INV#	Type	Size	Mfg	Model	Price
39	Cassegrain	8"	Celestron	C8 F10 Optical Tube (no mount)	\$250
41	SCT	14"	Celestron	C14 Classic w/ Wedge & Tripod	\$1,000
42	Dobsonian	16"	Obsession	Truss Tube w/Digital Setting Circles	\$600
48	SCT	12"	Meade	LX200 Classic w/Tripod	\$1,200
50	Dobsonian	10"	Orion	Classic Dob	\$200
51	Dobsonian	12"	Oddessey	Red Tube Dob	\$250

Email: [Scopes@ssccorp.com](mailto:scopes@ssccorp.com) with question or for details

Next Scope Pickup Date _____ 2020

Advertisements

Buy, Sell or Trade some of your gear ? This is where club members can place advertisements. Please contact the editor at newsletter@ocastronomers.org to place an advertisement or to learn more about placing one. There is no cost to club members for non-commercial advertisements in the newsletter.

For Sale contact Jeff Gortatowsky jeff.gortatowsky@gmail.com
• Jupiter Ridge pad 5 lease privilege – for sale to any OCA member \$1200
This is a pad with no pier on it. Price is negotiable

For Sale contact Val Akins akins7821@gmail.com
• Celestron piggyback mount for 35mm DSL cameras or finderscopes \$20
• Orion Astro View 120ST f/5.0 Richfield refractor OTA with two inch mirror star diagonal, rings and dove trail attached. \$175

For Sale contact Bill Prats b.bill.p@gmail.com
• Meade LX-70 Tripod & Mount 20lb capacity, Meade Polar Scope (#670010), \$300 OBO
Dual axis motor drive with Controller (#670011), original accessories, fresh 6 volt battery.
Very clean, Used 1 year.

For Sale contact John Derks derksjm@yahoo.com
• Meade 14" LX200 GPS UHTC w/ complete original accessories package: \$3200
2" diagonal, 8x50 finderscope, zero image shift focuser, Autostar II handpaddle,
Series 4000 26mm Super Plossl 1.25 eyepiece, vibration iso pads
• Meade Giant Field Tripod
• Meade Superwedge
• 14" SCT Dewshield
OTA is in like new condition in original Meade foam lined box . Located in So. Orange County

For Sale contact Tom Kucharski astrophd50@gmail.com
LEASE FOR SALE - Cinder Block observatory (Anza Site OBS-A) \$38,000
• 400 Sq ft raised observatory floor with automated roll off roof
• 2 pier footers in place with room for a third
• 2 private bedrooms of approx. 60 sq ft each and 120 sq ft common area with desks and bookshelves
• Great for TWO astro buddies!
• Private driveway and parking

More Images from the Club

Here are a few more pictures from the club archives to remind us of the beauty in our night skies and that it is within our ability to share it with others even when they don't have the means to see it directly.



NGC772 by Check Edmonds. Taken at Anza in September 2005 using a self-made 16 inch Newtonian telescope and ST10XME camera



NGC1365 from Bill Hall taken with ST-402ME camera and 8 inch Newtonian telescope in October 2011 at Anza



Galaxies in Virgo by Alan Smallbone. Taken at Anza January 2007 using Borg 77mm telescope and ST2000XM camera. Central galaxy is M86 and just above it is M84



NGC4038 – the "RingTail" galaxies taken by Bob and Bill Twardy at Kitt Peak in May 2005



ASTRONOMER

The Newsletter of the Orange County Astronomers

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HANDY CONTACT LIST

OCA WEBSITE: <http://www.ocastronomers.org> STARLINE 24-HR. Recording: 714-751-6867 ANZA OBSERVATORY: 951-763-5152

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