



the Skyscraper

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AMATEUR ASTRONOMICAL SOCIETY OF RHODE ISLAND * 47 PEEPTOAD ROAD * NORTH SCITUATE, RHODE ISLAND 02857 * WWW.THESKYSCRAPERS.ORG

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Friday, May 11, 7pm at Seagrave Observatory

The Wild West of Star Formation

We explore the extreme center of our Galaxy, a chaotic region containing dense gas, stars, and even a supermassive black hole. The normal rules for star formation do not apply here, and understanding why will help us to understand star formation in galaxies throughout the universe.

Cara Battersby didn't realize school was supposed to end and just keeps coming back. She received her PhD in astrophysics from the University of Colorado at Boulder, then held a postdoctoral fellowship at the Harvard-Smithsonian Center for Astrophysics, and is now an assistant professor of physics at the University of Connecticut. She spends a lot of her time studying how stars are born in our Galaxy's center, developing a new mission with NASA (in spaaaace!), and secretly wants to be Carl Sagan when she grows up. Cara believes equal access to education is the recipe for a better world.

Upcoming Meetings

June Meeting & Dessert Buffet
Saturday, June 2

Mars Party
Saturday, July 27

Augusts Meeting
Saturday, August 4

September Meeting
Friday, September 7

AstroAssembly
September 28 & 29

**Skyscrapers
Board Meetings**
Third Monday of the Month
All Members Welcome

Phases of the Moon

Last Quarter Moon
May 8 02:09

New Moon
May 15 11:48

First Quarter Moon
May 22 13:49

Full Flower Moon
May 29 14:20



Seagrave Memorial
Observatory
Open Nights

Saturdays st 9:00 pm
weather permitting

President's Message

by Steve Hubbard

Skyscrapers Inc is society rich in history and tradition. We are one of the oldest Amateur Astronomy Societies in the country. We have hosted Nobel Prize winning speakers at our meetings and have had members and visitors become inspired by their time with us eventually becoming astronauts and professional astronomers. We have a decades long tradition of hosting events for scouts, students and the general public where thousands of people have learned about the night sky and the magnificent universe we live in. There is much for all of us to be immensely proud of as members.

As your new president my goal over the next year is to build on these strengths and traditions to make Skyscrapers even better.

Like many social organizations in this era, we suffer from a number of headwinds limiting our success and perhaps threatening our future. Our membership is becoming grayer and we are not attracting many younger people. People join us as new members each year, but regrettably many do not stay with us for very long.

This situation is not unique to us, many Astronomy societies are battling these issues. Some are having success in growing and it is those that I and your leadership team are researching to learn from and then implement programs that work.

As a first step, I have created a simple, short survey with a limited number of questions. Questions about your level of knowledge and experience, our meetings, our activities, events, workshops or other things that you think will enrich your experience of membership with us. I sincerely hope that you all take a few moments to answer these questions and help your leadership team better understand what you, our members want in your Society.

Oh... and PLEASE be honest in your answers. If there are things that we could be doing better, let us know. It's the only way we can grow.

Over the next months, we will be working hard to implement your ideas and suggestions. We will be looking at things that work with other groups and try them out here. I'm looking forward to a great year!

Finally, I wish to thank all of the people who served in leadership, on committees, appointed positions or just helped out over the last year. We are all volunteers at Skyscrapers and the donation of time, sweat and caring to our fine group is what keeps us going. Thank you!



The Skyscraper is published monthly by Skyscrapers, Inc. Meetings are held monthly, usually on the first or second Friday or Saturday of the month. Seagrave Memorial Observatory is open every Saturday night, weather permitting.

Directions

Directions to Seagrave Memorial Observatory are located on the back page of this newsletter.

Submissions

Submissions to *The Skyscraper* are always welcome. Please submit items for the newsletter no later than **May 15** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy.com.

E-mail subscriptions

To receive *The Skyscraper* by e-mail, send e-mail with your name and address to jim@distantgalaxy.com. Note that you will no longer receive the newsletter by postal mail.

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The Sun, Moon & Planets in May

This table contains the ephemeris of the objects in the Solar System for each Saturday night in May 2018. Times in Eastern Daylight Time (UTC-4). Ephemeris times are for Seagrave Observatory (41.845N, 71.590W).

Object	Date	RA	Dec	Const	Mag	Size	Elong	Phase(%)	Dist(S)	Dist(E)	Rise	Transit	Set
Sun	5	2 48.0	16 10.3	Ari	-26.8	1903.2	-	-	-	1.01	05:37	12:43	19:49
	12	3 15.2	18 03.7	Ari	-26.8	1900	-	-	-	1.01	05:29	12:42	19:56
	19	3 42.9	19 42.3	Tau	-26.8	1897.2	-	-	-	1.01	05:22	12:42	20:03
	26	4 11.0	21 04.5	Tau	-26.8	1894.8	-	-	-	1.01	05:16	12:43	20:10
Moon	5	18 48.7	-20 57.9	Sgr	-12.3	1758.3	124° W	78	-	-	00:08	04:59	09:50
	12	0 27.9	-2 01.9	Cet	-10.6	1846.1	45° W	15	-	-	04:12	10:24	16:45
	19	7 05.7	20 03.9	Gem	-10.8	1989.7	48° E	17	-	-	09:25	16:58	00:27
	26	13 32.4	-4 56.5	Vir	-12.5	1871.4	138° E	87	-	-	17:12	22:53	04:27
Mercury	5	1 11.9	4 22.6	Psc	0.3	7.3	26° W	52	0.45	0.92	04:47	11:07	17:27
	12	1 46.9	8 00.6	Psc	-0.1	6.5	24° W	63	0.42	1.03	04:42	11:15	17:49
	19	2 29.0	12 23.4	Ari	-0.5	5.9	19° W	75	0.38	1.15	04:40	11:30	18:22
	26	3 19.1	17 05.3	Ari	-1.0	5.4	13° W	88	0.34	1.25	04:44	11:54	19:05
Venus	5	4 43.5	23 18.5	Tau	-3.8	11.8	28° E	88	0.72	1.43	07:04	14:39	22:15
	12	5 20.2	24 25.9	Tau	-3.9	12.2	30° E	86	0.72	1.39	07:08	14:48	22:29
	19	5 57.1	24 59.4	Tau	-3.9	12.5	31° E	84	0.72	1.35	07:15	14:58	22:41
	26	6 34.0	24 58.2	Gem	-3.9	12.9	33° E	82	0.72	1.31	07:24	15:07	22:49
Mars	5	19 50.1	-22 31.8	Sgr	-0.5	11.5	109° W	88	1.49	0.81	01:08	05:44	10:20
	12	20 03.2	-22 15.0	Sgr	-0.7	12.4	113° W	89	1.48	0.76	00:52	05:29	10:07
	19	20 15.2	-22 00.1	Cap	-0.9	13.3	117° W	89	1.47	0.70	00:36	05:14	09:52
	26	20 25.9	-21 48.7	Cap	-1.1	14.3	121° W	90	1.46	0.65	00:18	04:57	09:36
1 Ceres	5	9 10.2	27 43.7	Cnc	8.4	0.5	87° E	96	2.56	2.40	11:07	19:02	02:57
	12	9 17.9	26 52.1	Cnc	8.5	0.5	83° E	96	2.56	2.49	10:52	18:42	02:32
	19	9 26.2	25 57.3	Leo	8.6	0.5	78° E	96	2.56	2.57	10:37	18:23	02:09
	26	9 35.1	24 59.5	Leo	8.6	0.5	73° E	96	2.56	2.66	10:23	18:04	01:45
Jupiter	5	15 07.1	-16 12.5	Lib	-2.4	44.7	175° W	100	5.41	4.40	19:54	00:56	05:59
	12	15 03.5	-15 58.3	Lib	-2.4	44.7	177° E	100	5.41	4.40	19:22	00:25	05:28
	19	15 00.0	-15 44.3	Lib	-2.4	44.6	169° E	100	5.41	4.41	18:50	23:54	04:58
	26	14 56.7	-15 31.0	Lib	-2.3	44.4	161° E	100	5.41	4.44	18:19	23:23	04:28
Saturn	5	18 38.6	-22 15.0	Sgr	0.3	17.5	126° W	100	10.07	9.45	23:55	04:32	09:08
	12	18 37.6	-22 16.0	Sgr	0.3	17.7	133° W	100	10.07	9.36	23:27	04:03	08:40
	19	18 36.3	-22 17.2	Sgr	0.2	17.9	140° W	100	10.07	9.27	22:58	03:34	08:11
	26	18 34.8	-22 18.6	Sgr	0.2	18.0	147° W	100	10.07	9.20	22:29	03:05	07:42
Uranus	5	1 50.2	10 46.5	Ari	5.9	3.4	15° W	100	19.89	20.86	05:01	11:42	18:24
	12	1 51.6	10 54.6	Ari	5.9	3.4	21° W	100	19.89	20.83	04:34	11:16	17:58
	19	1 53.1	11 02.4	Ari	5.9	3.4	28° W	100	19.89	20.78	04:08	10:50	17:33
	26	1 54.4	11 09.9	Ari	5.9	3.4	34° W	100	19.89	20.72	03:41	10:24	17:07
Neptune	5	23 09.7	-6 23.8	Aqr	7.9	2.2	59° W	100	29.94	30.46	03:23	09:02	14:41
	12	23 10.3	-6 20.5	Aqr	7.9	2.2	65° W	100	29.94	30.35	02:56	08:35	14:15
	19	23 10.8	-6 17.8	Aqr	7.9	2.3	72° W	100	29.94	30.24	02:29	08:08	13:48
	26	23 11.2	-6 15.6	Aqr	7.9	2.3	78° W	100	29.94	30.13	02:02	07:41	13:21
Pluto	5	19 31.7	-21 29.2	Sgr	14.3	0.2	113° W	100	33.56	33.15	00:45	05:25	10:05
	12	19 31.5	-21 30.3	Sgr	14.3	0.2	120° W	100	33.56	33.04	00:17	04:57	09:37
	19	19 31.2	-21 31.6	Sgr	14.3	0.2	127° W	100	33.57	32.95	23:49	04:29	09:09
	26	19 30.8	-21 33.1	Sgr	14.2	0.2	134° W	100	33.57	32.86	23:21	04:01	08:41

Astronomical Potpourri for May

by Dave Huestis

I never tire of observing “burning rocks” falling from the sky. While these remnants of comets or pieces of asteroids really do not burn as such, they do disintegrate due to friction as they slam into Earth’s dense atmosphere at supersonic speeds. Though I haven’t kept a consistent record of all the meteors I’ve seen, I think a conservative estimate of my meteor counts from the early 1970s to present would total between 1,500-2,000 observations. That’s a lot of hours scanning the skies for the opportunity to view the sometimes brilliant demise of a piece of solar system debris. But occasionally one is rewarded with a fireball that lights up the sky during its fiery demise.

The upcoming May Eta Aquarids meteor shower provides everyone an opportunity to observe 10-15 shooting stars per hour at peak on the night of May 6-7. However, to view these “burning rocks” to best advantage you’ll have to observe between midnight and dawn on the morning of the 7th. This very old stream of particles was shed by Comet Halley many eons ago, and due to its orbit is best seen in the southern hemisphere. And in fact, the Eta Aquarids are our southerly neighbors’ best display of the year. These swift and yellow shooting stars enter the Earth’s upper atmosphere head-on at 41 miles per second.

The meteor shower’s name comes from the fact that the meteors radiate from the constellation of Aquarius. Aquarius will be about 12 degrees above the east-southeast horizon at the 4:00 a.m. hour. The Eta Aquarids radiant point is in the Water Urn asterism (looks like a Y-shaped group of stars). While the meteors appear to radiate from this region of the sky they can be seen anywhere. Unfortunately a bright waning gibbous Moon will be in the nearby constellation of Capricornus, thereby reducing the peak number of meteors a little. However, because the Eta Aquarids come in so fast, you can still expect a few bright ones to be seen despite the Moon’s presence.

For many casual stargazers Aquarius can be a little difficult to recognize even without bright moonlight. But look towards the east-southeast and scan around the sky. The meteors can appear anywhere. The Moon will rise around 1:33 a.m. locally, so you can use it as a general guide to find the sky location. Dawn’s early light begins early at the beginning of May, so the eastern sky will begin brightening around 4:30 a.m.

In addition, that same morning you can glimpse Mars and Saturn. Pumpkin colored Mars will be to the upper right of the Moon and to the left of the teapot asterism in Sagittarius. Meanwhile, Saturn will be farther up and to the right of Mars, to the left of the teapot’s lid. You can locate Saturn ahead of time on the morning of the 4th when it will be less than two degrees from the Moon. That same evening, Venus and Taurus’s bright star Aldebaran, plus the Hyades and Pleiades star clusters will be above the western horizon after sunset. It promises to be a beautiful sky scene to photograph.

For several months there has been a dearth of planets in the pre-midnight hours for casual stargazers to explore and enjoy. That situation has been gradually changing as we transitioned from winter into spring. Jupiter is now visible before midnight during a reasonable hour. Recently it has remained low in the east during the open nights at the local observatories. However, on May 9, Jupiter is at opposition, meaning it is opposite the Sun in the sky. When the Sun sets Jupiter will rise. This time is also when Jupiter is at its closest to the Earth, this year just over 409,000,000 miles away. It will still be a few weeks before Jupiter will rise high enough in the sky to clear tree-lines and interfering buildings from many locations. My June column will contain a Jupiter observing guide for those of you with telescopes, or for those of you who wish to be well informed when they visit Rhode Island’s finest observatories. Once Jupiter is positioned higher in the sky and

away from horizon haze will a keen-eyed observer see a wealth of detail.

For those of you who can’t wait until next month, Jupiter is currently in the constellation of Libra. Libra, the Scales, is not one of the most recognizable constellations to identify. So on May 9th Jupiter rises at 7:35 p.m. in the east-southeast sky within Libra’s borders. Jupiter will be the brightest object in that area of the sky so it will be easy to locate. Bright star Spica, in neighboring Virgo, will be about 24 degrees to the upper right of Jupiter.

Later during the summer Saturn and Mars will be well placed for observation. I will write about observing these two worlds in a future column.

If you do not have your own telescope but wish to explore the heavens in more detail, please visit Rhode Island’s observatories during their free public observing sessions. Seagrave Memorial Observatory (<http://www.theskyscrapers.org>) in North Scituate is open to the public every clear Saturday night. Ladd Observatory (<http://www.brown.edu/Departments/Physics/Ladd/>) in Providence is open every clear Tuesday night. The Margaret M. Jacoby Observatory at the CCRI Knight Campus in Warwick (<http://www.ccri.edu/physics/observatory.htm>) is open every clear Thursday night. Frosty Drew Observatory (<http://www.frostydrew.org/>) in Charlestown is open every clear Friday night year-round. Be sure to check all the websites for the public night schedules and opening times before visiting these facilities, especially as we approach the summer months when the sun sets much later.

Clear skies to everyone!



Dave Huestis is Skyscrapers Historian and has been contributing monthly columns to local newspapers for nearly 40 years. See more at <http://theskyscrapers.org/dave-huestis>

With Jupiter reaching opposition on May 9, Saturn on June 27, and Mars on July 27, the three planets will be in opposition within a span of 79 days. This, according to astronomer Jeffrey Hunt, is the shortest interval of these three planets undergoing this during the time frame of 1930 - 2050.

Venus: Uncovering the Mysteries of the Evening Star

by Francine Jackson

Once again, we're able to look up westward right after sunset and enjoy one of the more beautiful, yet very unique, objects in our solar system. The planet Venus, which for many years was considered Earth's twin, has proven to be anything but. Also, named for the Roman goddess of love and beauty, it has proven to be anything but. Our neighboring planet is a totally alien object, racked with an unbreathable, crushing, and opaque atmosphere. But, then, how do we know anything about it at all?

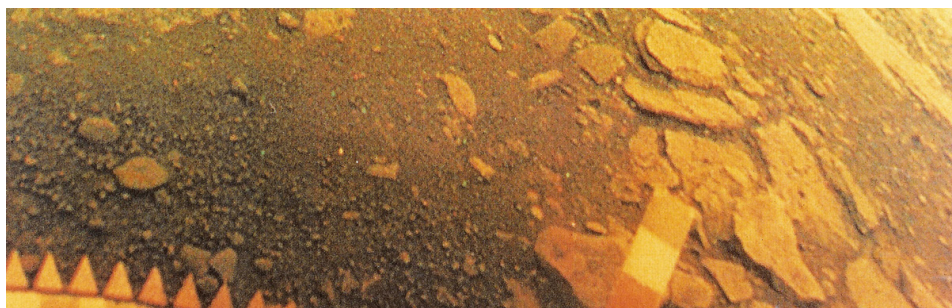
The first attempt to learn about Venus's surface took place in 1967, when the Arecibo radio telescope, a carved-out valley in Puerto Rico, at the time the largest in the world at 1,000 feet, bounced radar beams

onto the planet. This process introduced us to two totally different features of Venus's rotation: It was very slow – at about 243 of our days, slower even than its approximately 225-day revolution around the Sun, making Venus the slowest rotating planet; also, it was rotating backwards, or clockwise as seen from above the ecliptic plane. Venus was almost standing straight up, only off by about 3 degrees, but its rotation was west to east, totally opposite the Earth and most of the rest of our solar system bodies.

Then, of course, came the determination of its atmosphere. No longer were we able to believe in human habitation, unless we could learn to breath almost perfect carbon dioxide. And, with this, the realization

of the runaway greenhouse effect, giving Venus a permanent temperature coverage, close to 900 degrees Fahrenheit. Things were looking worse. Finally, came the attempted exploration of the surface by several Soviet landers, learning very quickly that the atmosphere's pressure was 90 times ours here on Earth, enough to flatten anybody into an immediate pancake.

But, despite all this, Soviet landers and American orbiters (again using radar) have given us fascinating glimpses into the surface of Venus, really confirming how far away from this planet we should be keeping; but, still, when you venture outside in the early evening, enjoy the beauty of this apparent example of Hades, and wonder at the diverse nature of our neighbors in space.



The surface of Venus as imaged by the Soviet Venera 13 lander in 1982.



Francine Jackson is Skyscrapers Public Relations Spokesperson, writes the weekly newsletter for Ladd Observatory and serves as planetarian at the University of Rhode Island. See more at <http://theskyscrapers.org/francine-jackson>

Astronomy Nights at River Bend Farm

Ranger Joshua Bell from the Blackstone River Valley National Historical Park has asked Francine Jackson and Jim Hendrickson to help with summer Friday Night Sky Programs at River Bend Farm once again for summer 2018.

The park has partnered with local Civil Air Patrol Squadrons to run the program. They'll be explaining basic stuff to visitors like how telescopes work and what it is that they'll be looking at. They'll have some beginner telescopes, but folks should feel free to bring their own. The following tentative dates have been suggested. All dates are Fridays and there are no rain dates. In the event of inclement weather, an indoor presentation will be given.

June 15 - start at 20:30; Sunset 20:22; Waxing crescent Moon sets at 22:18; Venus, Jupiter visible; Saturn rises later; dark night for deep sky, but sky isn't dark until very late.

July 27 - start at 20:30; Sunset 20:09; Full Moon rises at 20:10; **Mars Opposition** - best Mars has been in 15 years - potential big turnout; Venus, Jupiter, Saturn & Mars

visible.

August 17 - start at 20:00; Sunset at 19:43; Waxing crescent Moon (almost 1st quarter); Venus, Jupiter, Saturn & Mars visible.

September 21 - Blackstone Valley GO Event - Kent Cameron Memorial Sky Gaze - start at 18:30; Sunset at 18:44; Waxing gibbous Moon occults delta Cap (3rd magnitude star) beginning at 19:06; Venus sets early; Jupiter, Saturn & Mars visible.

October 5 - start at 19:00; Sunset at 18:20; Waning crescent Moon not visible in evening; Jupiter sets early; Saturn & Mars visible; dark night for deep sky; best night

for Milky Way viewing.

These events have been a lot of fun for us in past years and River Bend Farm is an ideal location with a large, open field away from lights which is ideal for observing. Additionally, we will be dedicating the September 21 night in memory of Kent Cameron, who had hosted night sky events at River Bend Farm for over 20 years. For more information, contact Jim Hendrickson at hendrickson.jim@gmail.com, Francine Jackson at Francine.Jackson@brown.edu or Josh Bell at joshua_bell@nps.gov

River Bend Farm Visitor Center
287 Oak Street, Uxbridge MA 01569



April Reports

Report of the Annual Skyscraper meeting, April 6 2018 Barus Holley building, Brown University.

Treasurer's Report and presentation of proposed budget: Lloyd Merrill presented the proposed budget for fiscal year 2018 to 2019. After a line by line review and discussion, the budget was voted on and approved unanimously.

Proposed Amendment to the by-laws: After discussion with the trustees and executive board, Steve Hubbard revised his proposed amendment to read under Article IV, Board of Trustees: "The disposal of Skyscrapers property as designated within the annual Skyscraper Inventory shall require prior executive board approval." This amendment was accepted by the members in attendance with a unanimous vote. This will be added to the bylaws as Section 5 under the above section.

Future meetings: Ian Dell'Antonio advised that our next monthly meeting will be on Friday, May 11 at Seagrave Observatory. Our speaker is scheduled to be Cara Battersby from UCONN.

There will be a special meeting on Mon-

day, April 23 at Seagrave Observatory. Robert Reeves, coordinator of the Texas Star Party, will be giving us a presentation about the Moon.

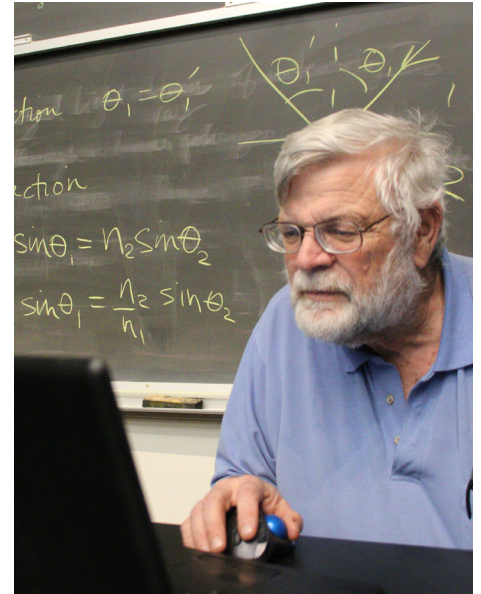
Outreach, Star Party: Donna Gamount, a local teacher will be bringing her 3rd grade class to the Observatory on Friday, April 20. We expect about 20 kids, their parents and some siblings. There may be around 50 people, anyone who can help is asked to be there.

Astronomy Day: This falls on Saturday April 21 this year. Solar observing and night time observing is planned. If the weather is not good, there will be program in the meeting hall. This will be a rain or shine event.

Trustees Report: The Porta John has been delivered to the observatory. All donated telescopes are out of the meeting hall. There is a list of projects to be done at the property that has been put together for this year.

Dues: Steve Siok reminded everyone that dues for the year are now payable.

Elections: Just as with the old Soviet Union, all candidates for 2018 to 2018 were voted in unanimously.



New officers are: President: Steve Hubbard • 1st VP: Jim Hendrickson • 2nd VP: Terry Turner • Secretary: Kathy Siok • Treasurer: Matt Ouellette • Members at large: Bob Janus, Tracy Prell • Trustee: Jim Crawford

After presentation of the new officers, the meeting was adjourned and our speaker, member Jeff Padell presented his talk.

Astronomy Day April 21, 2018

Thanks VERY to everyone who helped out this past Saturday with our Astronomy Day festivities.

A special thanks also to our Outreach Coordinators, Linda Bergemann and Francine Jackson for setting this up.

Solar observing was fun, we just wished there was more to see on the Sun.

We really got rocking and rolling that evening with a group of 3rd graders and lots of people who saw the Lunar viewing opportunity advertised.

Seeing the expressions of joy and amazement on the faces of the kids made it all worth it!

Lots of compliments and happy people!

Hope to see you at Seagrave again for a Saturday open night or special observing event!

Your Humble Society President, Steve Hubbard



Barred Spiral Galaxy in Draco

NGC4236

by Glenn Chaple for LVAS

(Mag. 9.7; Size 22' X 7')

A galaxy with a magnitude of 9.7 should be an easy telescopic target, right? Wrong! Not if the light of said galaxy is spread across an area 21 by 7.5 minutes of arc in size. This is the situation with the barred spiral NGC 4236 in Draco. Testimony to its faintness comes from none other than William Herschel, who discovered it in 1793. He catalogued it as H.V.51 – his 51st Class V (Faint Nebulae) entry.

Nevertheless, NGC 4236 is notable enough to have made it into Patrick Moore's Caldwell Catalog (it's designated as Caldwell 3). Under a truly dark sky, it may be glimpsed with a 4-inch scope. If, however, your observing location is beset with even a mild amount of light pollution, NGC 4236 will challenge a 10-inch instrument.

To locate NGC 4236, look 1 ½ degrees west-southwest of the 4th magnitude star kappa (κ) Draconis. Because of the galaxy's relatively large dimensions and low surface brightness, work with moderately low power. Be sure your eyes are well dark-adapted and use averted vision if nothing is visible with a direct view.



nightskypictures.com

The purpose of the LVAS Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone that is interested, and if you are able to contribute notes, drawings, or photographs, the LVAS will be happy to include them in our monthly summary. If you would like to contribute material, submit your observing notes, sketches, and/or images to either Roger Ivester (rogerivester@me.com) or Fred Rayworth (queex@embarqmail.com). To find out more about the LVAS Observer's Challenge or access past reports, log on to

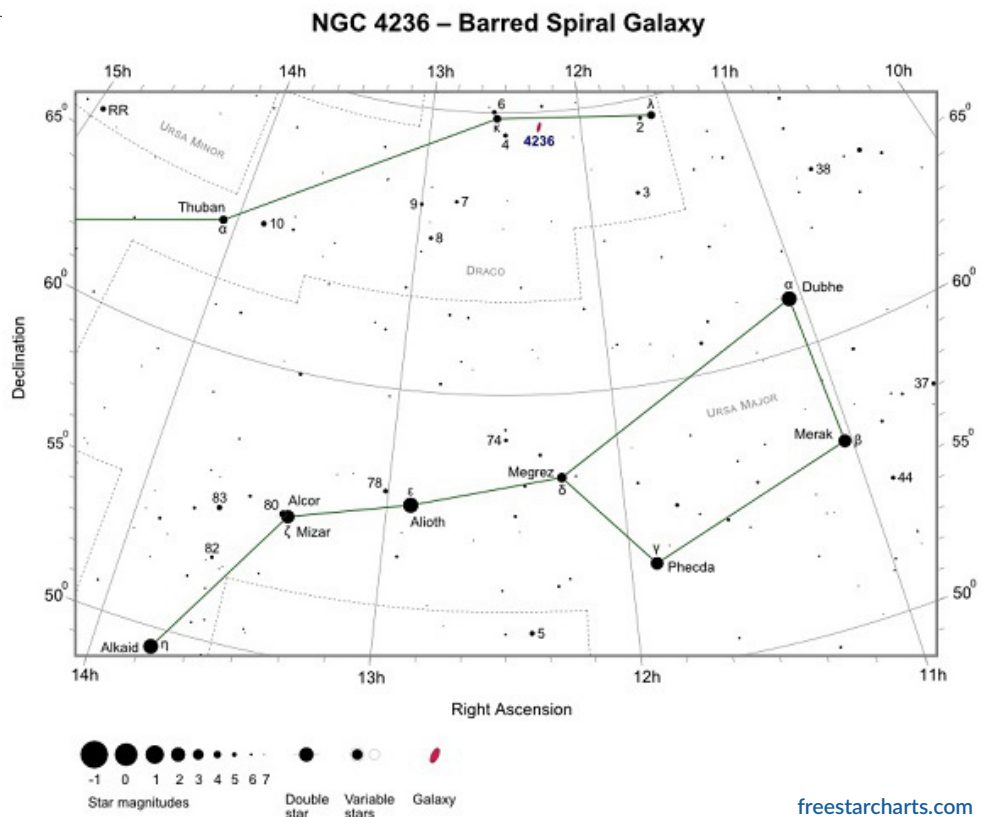


Image Gallery



Bob Horton used his 6" home-made reflector on April 22 to capture this image of the Moon. Seeing was excellent. This shot was taken using an iPhone handheld to the eyepiece using a 2.5x Barlow and a 24mm Panoptic, giving about 100x. Seeing was so good that images were sharp even at 500x and more using the Zoom Nagler.



During Open Night on April 28, Tracy Prell took this photo of the northeastern sky spanning Auriga and Perseus. Unknowingly, she captured nova V392 Persei in outburst at around 6.5 magnitude, several hours before it was first reported.



Hickson 44 galaxy group in Leo by Conrad Cardano. Only 3 of the 4 galaxies are visible. RC 6" f/9 scope with ZWO 174 monochrome camera, 150 frames, of 30 seconds each, plus 16 dark frames, using Astro Art to process the stacked images.



What's It Like Inside Mars?

By Jessica Stoller-Conrad

Mars is Earth's neighbor in the solar system. NASA's robotic explorers have visited our neighbor quite a few times. By orbiting, landing and roving on the Red Planet, we've learned so much about Martian canyons, volcanoes, rocks and soil. However, we still don't know exactly what Mars is like on the inside. This information could give scientists some really important clues about how Mars and the rest of our solar system formed.

This spring, NASA is launching a new mission to study the inside of Mars. It's called Mars InSight. InSight—short for Interior Exploration using Seismic Investigations, Geodesy and Heat Transport—is a lander. When InSight lands on Mars later this year, it won't drive around on the surface of Mars like a rover does. Instead, InSight will land, place instruments on the ground nearby and begin collecting information.

Just like a doctor uses instruments to understand what's going on inside your body, InSight will use three science instruments to figure out what's going on inside Mars.

One of these instruments is called a seismometer. On Earth, scientists use seismometers to study the vibrations that happen during earthquakes. InSight's seismometer will measure the vibrations of earthquakes on Mars—known as marsquakes. We know that on Earth, different materials vibrate in different ways. By studying the vibrations from marsquakes, scientists hope to figure out what materials are found inside Mars.

InSight will also carry a heat probe that will take the temperature on Mars. The heat probe will dig almost 16 feet below Mars' surface. After it burrows into the ground, the heat probe will measure the heat coming from the interior of Mars. These measurements can also help us understand where Mars' heat comes from in the first place. This information will help scientists figure out how Mars formed and if it's made

from the same stuff as Earth and the Moon.

Scientists know that the very center of Mars, called the core, is made of iron. But what else is in there? InSight has an instrument called the Rotation and Interior Structure Experiment, or RISE, that will hopefully help us to find out.

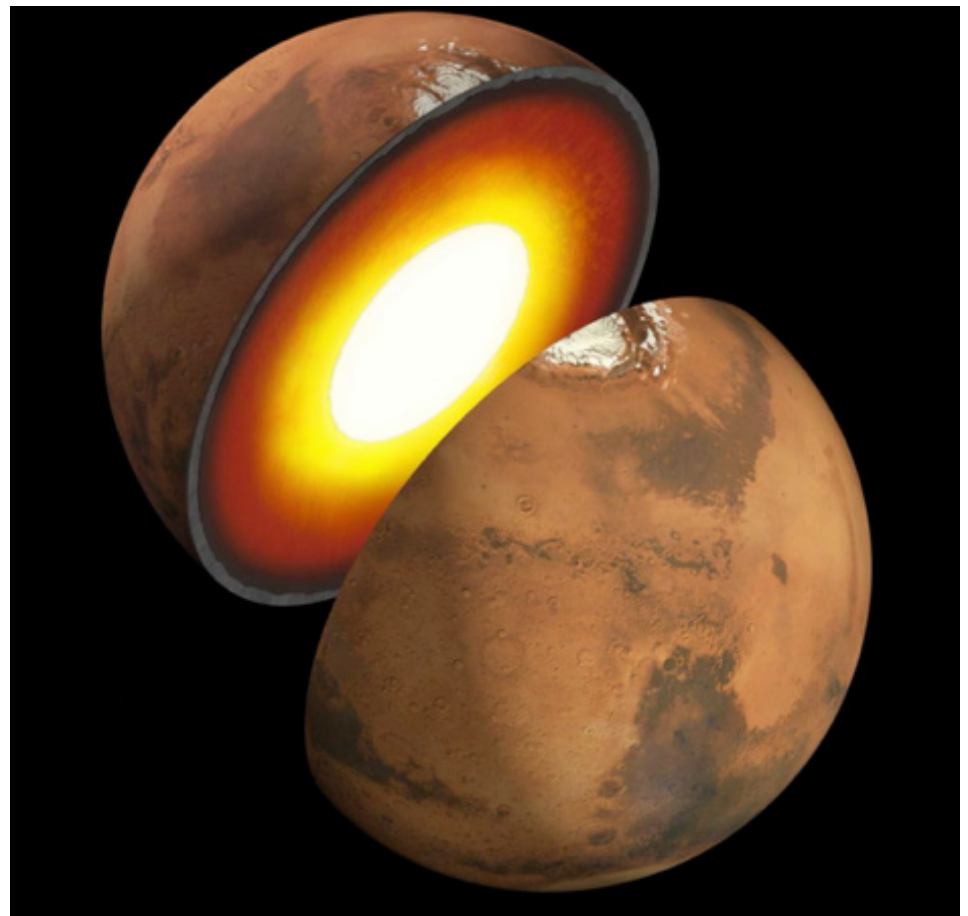
Although the InSight lander stays in one spot on Mars, Mars wobbles around as it orbits the Sun. RISE will keep track of InSight's location so that scientists will have a way to measure these wobbles. This information will help determine what materials are in Mars' core and whether the core is liquid or solid.

InSight will collect tons of information

about what Mars is like under the surface. One day, these new details from InSight will help us understand more about how planets like Mars—and our home, Earth—came to be.

For more information about earthquakes and marsquakes, visit: <https://spaceplace.nasa.gov/earthquakes>

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An artist's illustration showing a possible inner structure of Mars. Image credit: NASA/JPL-Caltech

Pranvera Hyseni from Astronomy Outreach of Kosovo and Robert Reeves visited Skyscrapers on Monday, April 23. Robert Reeves presented Observing & Understanding the Moon



For Sale: Explore Scientific 102mm Carbon Fiber Air-Spaced Triplet ED APO Refractor

Lens Diameter: 102mm (4") • Focal Length 714mm (28") • Focal Ratio: f/7 • Tube Length w/ Dew Shield: 26" • Weight: 7 lb • Dovetail: Vixen

The carbon fiber tube reduces weight and eliminates focus change due to temperature fluctuations. The air-spaced triplet gives color free APO performance with high-contrast images.

Includes: 99% reflective 2" dielectric diagonal • 1.25" compression ring adapter • cradle rings with a Vixen dovetail plate • finder scope base • hard case with custom cut foam • 8x50 right angle finderscope with mounting rings • Thousand Oaks type 2+ white light solar filter • INova PLB-Cx color CMOS camera (1.2 Megapixels)

I am selling this scope for \$850. I have too many scopes and need to downsize. Contact Conrad Cardano: cardanoc@verizon.net



Directions to Seagrave Memorial Observatory

From the Providence area:

Take Rt. 6 West to Interstate 295 in Johnston and proceed west on Rt. 6 to Scituate. In Scituate bear right off Rt. 6 onto Rt. 101. Turn right onto Rt. 116 North. Peeptoad Road is the first left off Rt. 116.

From Coventry/West Warwick area:

Take Rt. 116 North. Peeptoad Road is the first left after crossing Rt. 101.

From Southern Rhode Island:

Take Interstate 95 North. Exit onto Interstate 295 North in Warwick (left exit.) Exit to Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

From Northern Rhode Island:

Take Rt. 116 South. Follow Rt. 116 thru Greenville. Turn left at Knight's Farm intersection (Rt. 116 turns left) and follow Rt. 116. Watch for Peeptoad Road on the right.

From Connecticut:

- Take Rt. 44 East to Greenville and turn right on Rt. 116 South. Turn left at Knight's Farm intersection (Rt. 116 turn left) and follow Rt. 116. Watch for Peeptoad Road on the right.
- or • Take Rt. 6 East toward Rhode Island; bear left on Rt. 101 East and continue to intersection with Rt. 116. Turn left; Peeptoad Road is the first left off Rt. 116.

From Massachusetts:

Take Interstate 295 South (off Interstate 95 in Attleboro). Exit onto Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.



47 Peeptoad Road
North Scituate, Rhode Island 02857