



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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Saturday, July 28, 7pm at Seagrave Observatory

Mars Party

Ever since NASA's Viking spacecraft arrived on Mars in the mid-1970s we've been mesmerized by amazing landscape images from the surface of the Red Planet. Right now there are two active rovers operating on Mars and there are ways to see what they are seeing in almost real-time (barring any inconvenient dust storms, of course!) Image processor and space news blogger Jason Major will show how to access these images and how he creates "real-color" images from the monochrome data that's available.

Jason Major is a space exploration enthusiast, blogger, and amateur image processor. His articles on planetary exploration missions and scientific findings have been published on Universe Today, Discovery News, National Geographic online news, and on his own site LightsInTheDark.com and his imaging work has been featured by Newsweek, The Atlantic, Scientific American, and by NASA itself. Active on social media

outlets like Twitter (@JPMajor), Instagram (same) and Facebook, he has been expanding to "in-real-life" astronomy outreach programs with some neighborhood skywatching gatherings, most recently at Waterfire in Providence. Jason is a self-taught writer, image processor, and graphic designer living in Warwick, Rhode Island.

You are encouraged to bring any Mars-related materials that you may have. We will also have refreshments, a brief business meeting and observing.

Upcoming Meetings

August Meeting
Saturday, August 18

September Meeting
Friday, September 7

AstroAssembly
September 28 & 29

**Skyscrapers
Board Meeting**
Monday, August 20, 7pm
All Members Welcome

Phases of the Moon

Last Quarter Moon
July 4 07:51

New Moon
July 13 02:48

First Quarter Moon
July 19 19:52

Full Buck Moon
July 27 20:20



MSL Mastcam Panorama
Mission Sol 1463 (Sept. 17, 2016)
Credit: NASA/JPL-Caltech/MSL Entry team/ESA



Seagrave Memorial
Observatory
Open Nights

Saturdays at 9:00 pm
weather permitting

President's Message

by Steve Hubbard

Hello again everyone! First of all, thanks to Francine and Jim for a great presentation at our June meeting about a trip they made earlier this year to a very unique home made planetarium (star theater) in Wisconsin. It was a fun presentation and many thanks also to everyone who brought some yummy treats for our dessert buffet.

Have you seen Mars yet? It's only weeks away from it's closest approach to Earth in many years. Unfortunately as sometimes happens when Mars is close to us, a giant dust storm has started up. This has obscured some of the details, but seeing Mars as big in a telescope as it will be is still going to be a treat. And who knows...the dust just

might settle in time enough to give us some good views.

To celebrate, be sure to try and get to our "Mars Party" on the 29th. We will have a special speaker, some Mars related memorabilia and...keeping my fingers crossed... some views through our telescopes of Mars too.

Don't forget that Jupiter and Saturn will be well placed for viewing over the next few weeks as will many of our favorite summer objects.

Working with the trustees and your officers, we have set up a number of star party opportunities over the next couple of months. If you have ever wanted to know

more about how to use your telescope or binoculars, wanted to spot an object or 2 on your celestial bucket list or just want to spend some time in the company of like minded celestial enthusiasts under pleasant summer skies, watch for upcoming announcements of dates. These are a great way to get to know the universe and your fellow members!

Finally...we are fast approaching another Astroassembly on September 28 and 29. We have been working hard to bring some great speakers and lots of fun to you for this long time annual Skyscraper tradition. Be sure to put the dates in your calendar, this is a not to be missed opportunity!

Skyscrapers Food Basket

Skyscrapers has now started a food donation program! Just simply bring a caned good or two each time you visit the meeting hall or observatory; place it in the Food Donation box in the hall and they will be donated to our local food bank on a monthly basis.

Skyscrapers Library Borrowing Procedure

The catalog of available items to borrow is available at <http://www.theskyscrapers.org/library-procedures>, as well as in the meeting hall in proximity to the bookcases.

To borrow an item a member can: 1) review the list online before coming to a meeting 2) review a hard copy of the list on a meeting night.

Once a member chooses an item they can ask **Dave Huestis** or **Weston Ambrose** to retrieve it from the bookcase. The member will then sign the item out. This check out procedure will occur only between 7:00pm and 7:30pm on monthly meeting nights held at Seagrave.

Borrowed items should be returned at the next meeting unless other arrangements are made.

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<https://smile.amazon.com/ch/05-0382371>



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 **July 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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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.

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



Stunning Saturn Shares Summer Sky

by Dave Huestis

Since the beginning of the year I've been touting the prime-time return of Jupiter, Saturn and Mars. Last month I provided an observer's guide to Jupiter. Bright Jupiter continues to be easily observable during July, starting out the month about 35 degrees above the southern horizon. You'll still have a couple of months to explore Jupiter's striped bands and zones, the Great Red Spot, and the procession of his Galilean moons.

However, perhaps everyone's favorite planet will soon steal the spotlight from its neighbor. I'm talking about Saturn and his exquisite system of rings. When word gets out that Saturn will be among the visual treats offered by telescopes at the local observatories, one can expect long lines of stargazers wishing to observe this beautiful planetary system. As astronomer Garrett P. Serviss wrote in his 1901 book, *Pleasures of the Telescope*, "When Saturn is in view the owner of a telescope may become a recruiting officer for astronomy by simply inviting his friends to gaze at the wonderful planet. One returns to it again and again with unflagging interest, and the beauty of the spectacle quite matches its singularity."

Amateur astronomers and casual star-

gazers who are fortunate to own telescopes have been following Saturn for months. They were able to observe this beautiful ringed-world during pre-midnight hours. Their desire to explore the heavens was not hindered by the early closings of the public night observing sessions held during late winter into early spring.

However, good things come to those who wait. On June 27 Saturn was at opposition (opposite the Sun in the sky). When the Sun set that evening Saturn rose. That event also signaled Saturn's closest approach to the Earth for 2018 (841,140,152 miles.) Therefore your exploration of Saturn can begin immediately and a telescope

will reveal a slightly larger image of the planet than your sleep deprived associates experienced.

Saturn can be found in the constellation of Sagittarius, just above the "teapot" asterism and nestled among the stars of the gauzy (depending upon the amount of light pollution from your observing location) Milky Way. By 10:00 p.m. on July 1, Saturn will be about 20 degrees above the southeast horizon and will be the brightest object in this region of the sky. It will be tempting to begin observing Saturn as soon as you can locate it. However, you may wish to wait another hour or so for Saturn to climb higher into the sky to minimize the effects of atmospheric turbulence on image detail.

Each night Saturn will rise higher into the sky as it moves towards the west. By the 20th of the month it will be only about 25 degrees above the southern horizon at 11:00 p.m. This minimal degree in altitude change is because the ecliptic (path of the Sun through our sky and therefore the plane of the solar system) traverses a low arc across our summertime night sky. This scenario is true for Jupiter and Mars this summer as well, as the planets also trace out the ecliptic. Much better views will be



Saturn image by Jeff Padell

obtainable from more southerly latitudes.

When you first observe Saturn through a telescope its rings will initially take your breath away. They are really an impressive sight to behold. The rings are composed of irregularly shaped dirty snowballs, ranging in size from grains of dust to the size of pebbles. There are also some “boulders” as large as several feet across. They all orbit Saturn along the planet’s equatorial plane. It is really amazing that Saturn’s rings are even visible at all, considering the planet’s great distance from the Earth and the fact that the main rings are only about 32 feet thick, whereas other portions of the ring system can be up to about two-thirds of a mile thick.

Furthermore, the ring system is currently tilted 26 degrees toward the Earth providing us with a view of the north face of the ring plane. With the rings so “wide open,” this configuration allows much detail to be seen. Look for gaps within the ring system. You shouldn’t have any difficulty seeing the separation between the primary “A” (outer) and “B” (inner) rings, called the Cassini Division. This gap is only 2,175 miles wide. In comparison, the width of the “A” ring is 9,321 miles and the “B” ring is around 16,032 miles across. Saturn’s rings are slowly de-orbiting and will eventually all “rain” down onto his cloud tops in 50 to

100 million years or so and cease to exist. So you’ve got plenty of time to enjoy the view.

Though Saturn is a gas giant a little smaller than Jupiter, it does not exhibit the prominent bands and zones in its cloud tops as its larger cousin does. Not much detail can be observed at all on Saturn’s disk. In fact, if it weren’t for Saturn’s ring system, this planet would be quite a boring destination for most amateur astronomers and the public alike.

In addition, both before and after opposition as our viewing angle changes, a keen-eyed observer can look for the shadow of the rings upon Saturn’s cloud tops as well as the shadow of Saturn onto his rings. Also, with the rings so wide open they currently block our view of the Saturn’s south polar region.

And finally, Saturn is accompanied by 62 confirmed moons. One can detect up to eight of its brightest moons in a dark moonless sky under ideal seeing conditions with the telescopes available locally and follow their orbital motions around Saturn. In order of size and brightness they are Titan, Rhea, Iapetus, Dione, Tethys, Enceladus, Mimas and Hyperion

While a small two-inch telescope will reveal the beauty of Saturn, search out larger instruments available throughout Rhode Island to explore this exquisite ringed world

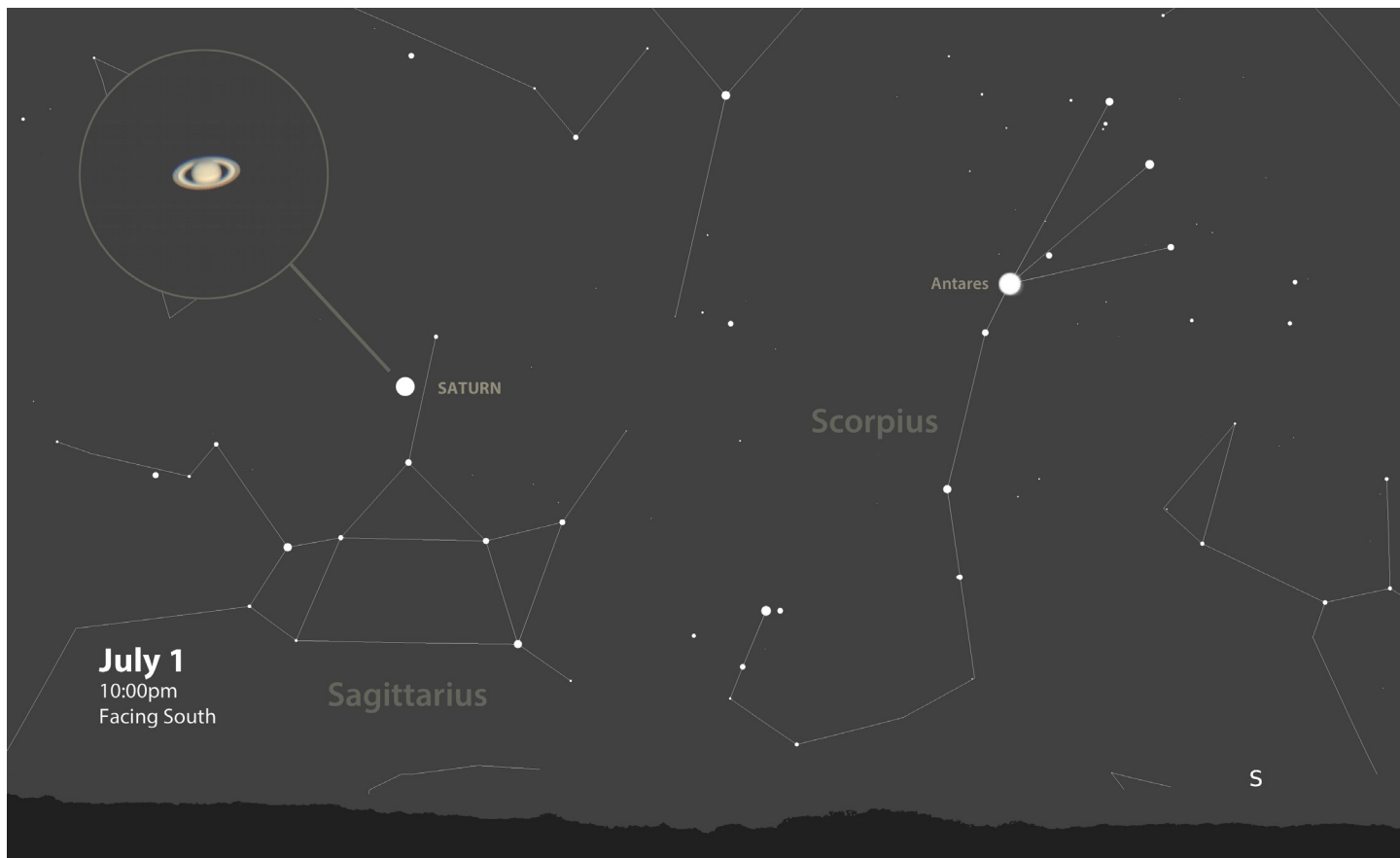
in splendid detail. Seagrave Memorial Observatory in North Scituate (<http://www.theskyscrapers.org>) is open every clear Saturday night for observing. Ladd Observatory (<http://www.brown.edu/Departments/Physics/Ladd/>) in Providence is scheduled to reopen Tuesday, July 10, and every clear Tuesday thereafter. 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. Also consider visiting Frosty Drew Observatory (<http://www.frostydrew.org/>) in Charlestown on every clear Friday night. Please visit the respective websites for details. These observing sessions are free and open to the public.

Join the volunteers at these facilities as they share their love for the beauty of our solar system. August’s column will prepare you for the Earth’s upcoming close encounter with Mars (approximately 35,800,000 miles away) on July 31. Mars won’t be closer until September 11, 2035.

As always, keep your eyes to the skies.



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>



Aphelion: Earth Farthest From The Sun

by Francine Jackson

Although the real, continuous hot summer weather hasn't gotten to us yet, we do have to think about why we are beginning this annual heat wave. After all, aren't we at the farthest distance from the Sun? And, doesn't the differing distance from the Sun determine our seasons?

We're sure many of you have seen what is now an old production, available on YouTube, called "A Private Universe." Filmed many years ago at a Harvard graduation ceremony, creator of the portable planetarium system Starlab Philip Sadler attended the graduation with a microphone and a cameraman, and asked many brand-new graduates what causes the seasons. Although he didn't state how many he actually asked, all the ones that made his video

gave the same reason: That the distance to the Sun was the cause.

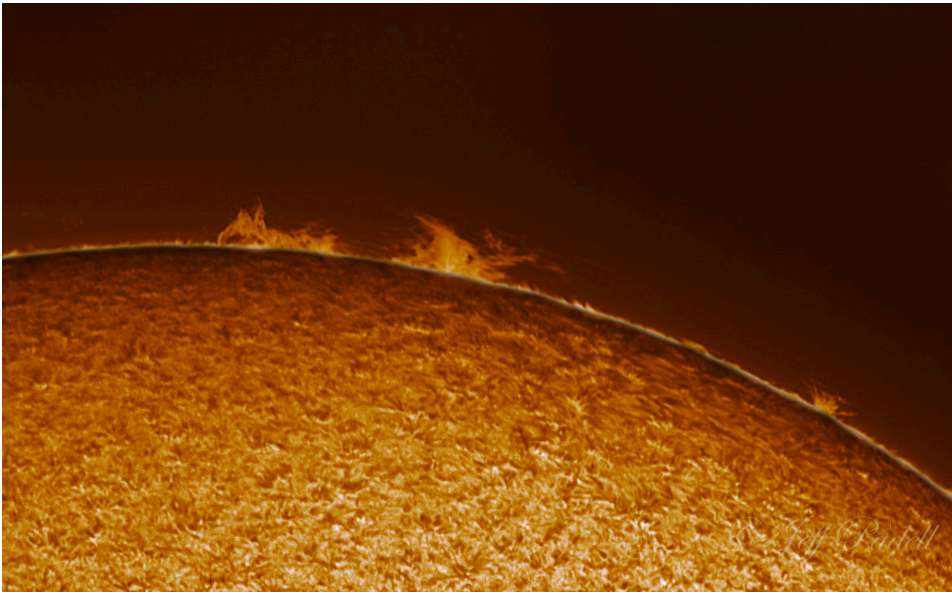
This might be a slight problem, as this month, July 6th, to be exact, is the date we will be as far away from the Sun as we possibly can this year, over 94 million miles away. Now, at first, this concept might not make any sense. It's just illogical. Or is it?

Our planet is tilted 23½ degrees from the vertical. As such, when we are traveling around the Sun in its annual orbit, that tilt will cause the Sun to appear to be in a different position in the sky virtually every day. Right now, as we have just passed June 21st, the day that the Sun, from our perspective, is as high above the celestial equator, 23½ degrees, we are having the most amount of sunlight per day as we can, about 15 hours.

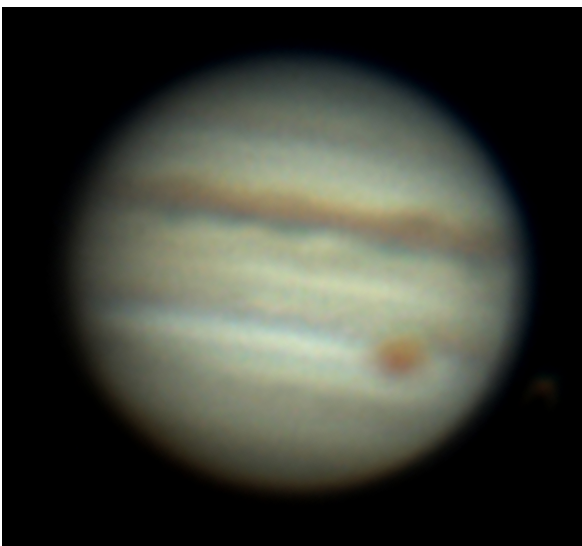
This is occurring as we are now at our furthest distance from the Sun; so, it doesn't appear as if this Earth-Sun distance directly causes any variation in temperature.

Actually, although we are orbiting the Sun in an elliptical path, our change in distance isn't really that much. From closest to furthest, there is only a 3 million mile, or about 5%, change. If we could compare the Earth's path with that of a perfect circle, placing one on top of the other, there would hardly be a difference. The two would appear almost the same; therefore, the only reason for our change of season is our planet's tilt.

Also, if you check any Earth globe, you might find two lines situated 23½ degrees above and below the equator. These, listed as the Tropic of Cancer and Tropic of Capricorn, show the highest and lowest points on the Earth that the Sun appears to pass. Unfortunately, the names refer to the position of the Sun within the constellations it appeared to be in millennia ago. Because of another of the Earth's motions, precession, the Sun has appeared to move a bit, and these lines by right should now refer to the constellations Gemini and Sagittarius. I'll be waiting for the new globe designations to come out.



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>



Jupiter on June 30 by Jeff Padell using a C8.



Jupiter on June 15 by Lloyd Merrill using a C14. The shadow of Io is visible.

Globular Cluster in Scorpius

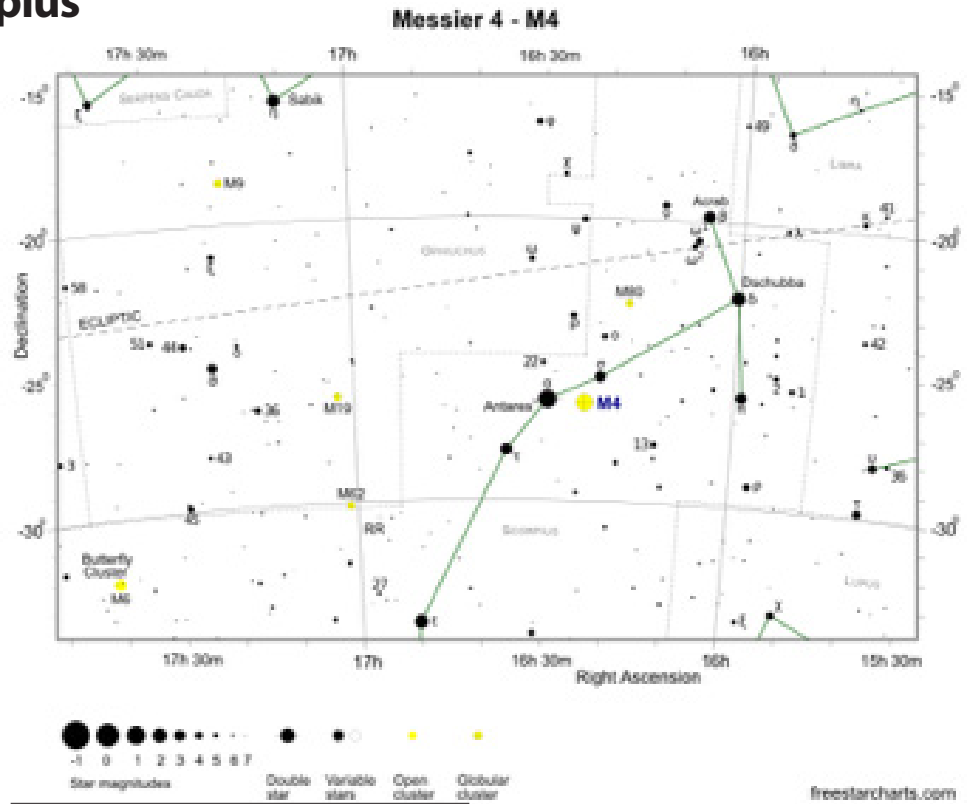
Messier 4

by Glenn Chaple for LVAS

(Mag. 5.8; Size 26')

For the second straight month, the Las Vegas Astronomical Society's Observer's Challenge is a Messier object – this time, the globular cluster M4 in Scorpius. M4 is bright and easy to find (it's visible in binoculars just 1.3 degrees west of Antares), so where is the challenge? For starters, M4 is rather sparse as globular clusters go. What is the smallest aperture that resolves its stars? Secondly, William Herschel reported "a ridge of stars running through the middle from south preceding to north following." This spindle of 10th to 12th magnitude stars appears in the Mario Motta image below. Can you see it visually, and with what aperture and magnifying power? Herschel also noted that these stars were red. Can you detect any color?

At a distance of approximately 7200 light years, M4 is one of the nearest globular clusters. It was discovered by the Swiss astronomer Jean-Philippe Loys de Chéseaux in 1746 and was catalogued by Messier 18 years later.



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



Globular cluster M4 is located just over 1° west of the red supergiant star Antares in Scorpius. Visible northwest of Antares is another globular cluster, NGC-6144. This image was taken by Jim Hendrickson using an 80mm refractor from Seagrave Observatory.

A Close-Up View of Mars

By Jane Houston Jones and Jessica Stoller-Conrad

In July 2018, skywatchers can get an up close view of Mars—even without a telescope! In fact, on July 31, Mars will be closer to Earth than it has been in 15 years.

Why is that?

Like all the planets in our solar system, Earth and Mars orbit the Sun. Earth is closer to the Sun, and therefore it races along its orbit more quickly. Earth makes two trips around the Sun in about the same amount of time that Mars takes to make one trip.

Sometimes the two planets are on opposite sides of the Sun and are very far apart. Other times, Earth catches up with its neighbor and passes relatively close to it. This is called Mars's closest approach to Earth, and it's happening this year on July 31. The Moon will be near Mars on that night, too!

Keep in mind that even during its closest approach, Mars is still more than 35 million miles away from Earth. That's really far. So, Mars won't appear as big as the Moon in the sky, but it will appear bigger than it usually does.

July and August will be a great time to check out Mars. Through a telescope,

you should normally be able to make out some of the light and dark features of the Red Planet—and sometimes even polar ice. However, a huge Martian dust storm is obscuring these features right now, so less planetary detail is visible.

There is another important Mars date in July: Mars opposition. Mars opposition is when Mars, Earth and the Sun all line up, with Earth directly in the middle. This event is happening on July 27 this year.

Although you may see news focusing on one of these two dates, Mars will be visible for many months. For about three weeks before and three weeks after opposition and closest approach, the planet will appear the same size to a skywatcher.

From July 7 through September 7 Mars will be the third brightest object in the sky (after the Moon and Venus), shining even brighter than Jupiter. The best time to view Mars during this time is several hours after sunset, when Mars will appear higher in the sky.

Mars will still be visible after July and August, but each month it will shrink in size as it travels farther from Earth in its or-

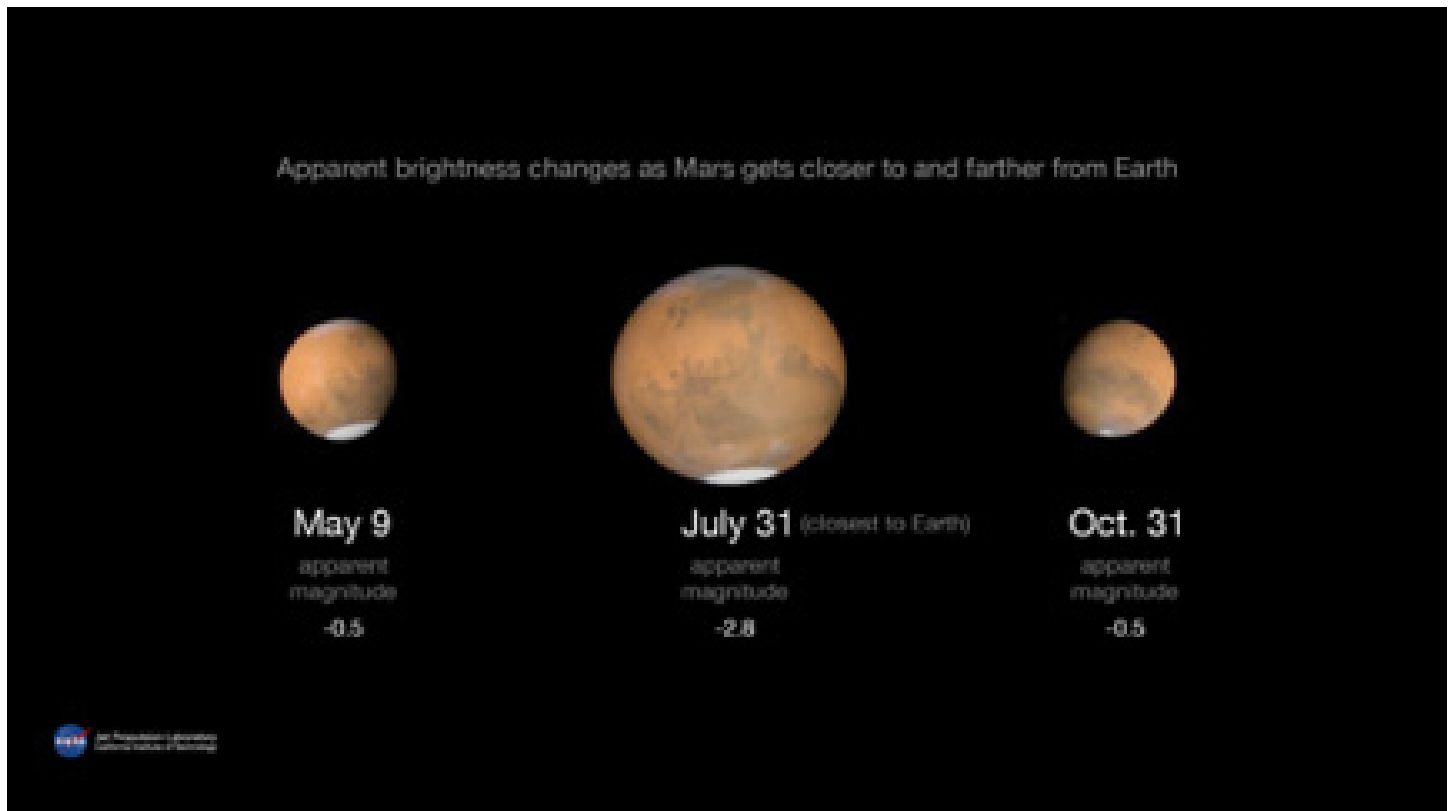
bit around the Sun.

In other sky news, there will be a partial solar eclipse on July 13, but it will only be visible from Northern Antarctica and southern Australia. On July 27 (beginning at 20:21 UTC), a total lunar eclipse will be visible in Australia, Asia, Africa, Europe and South America. For those viewers, Mars will be right next to the eclipsing Moon!

If you're wanting to look ahead to next month, prepare for August's summer Perseid meteor shower. It's not too early to plan a dark sky getaway for the most popular meteor shower of the year!

You can catch up on NASA's missions to Mars and all of NASA's missions at www.nasa.gov

This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!



In 2018, Mars will appear brightest from July 27 to July 30. Its closest approach to Earth is July 31. That is the point in Mars' orbit when it comes closest to Earth. Mars will be at a distance of 35.8 million miles (57.6 million kilometers). Credit: NASA/JPL-Caltech

The Sun, Moon & Planets in July

This table contains the ephemeris of the objects in the Solar System for each Saturday night in July 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	7	7 04.5	22 36.4	Gem	-26.8	1887.7	-	-	-	1.02	5:18	12:51	20:23
	14	7 33.1	21 42.7	Gem	-26.8	1888.0	-	-	-	1.02	5:23	12:52	20:20
	21	8 01.2	20 30.9	Cnc	-26.8	1888.8	-	-	-	1.02	5:29	12:52	20:15
	28	8 29.0	19 02.2	Cnc	-26.8	1890.1	-	-	-	1.02	5:35	12:52	20:09
Moon	7	1 33.0	3 28.6	Psc	-11.7	1842.7	82° W	43	-	-	1:10	7:41	14:21
	14	8 22.3	18 24.4	Cnc	-8	2011.7	13° E	1	-	-	7:05	14:29	21:46
	21	14 45.3	-11 13.5	Lib	-12.1	1852.6	104° E	62	-	-	15:02	20:22	1:37
	28	20 38.6	-19 18.7	Cap	-12.5	1766.8	178° W	100	-	-	20:10	1:09	6:11
Mercury	7	8 52.9	18 04.9	Cnc	0.2	7.3	26° E	51	0.44	0.92	7:29	14:40	21:49
	14	9 20.2	14 44.1	Cnc	0.6	8.3	26° E	40	0.46	0.82	7:42	14:38	21:34
	21	9 35.8	11 51.1	Leo	1.0	9.4	24° E	28	0.47	0.72	7:40	14:25	21:09
	28	9 37.5	10 05.6	Leo	1.7	10.5	19° E	15	0.46	0.64	7:19	13:57	20:35
Venus	7	9 57.2	14 10.0	Leo	-4.0	16.7	42° E	68	0.72	1.01	8:49	15:44	22:37
	14	10 26.7	11 05.9	Leo	-4.0	17.6	43° E	65	0.72	0.96	9:03	15:46	22:27
	21	10 55.1	7 50.7	Leo	-4.1	18.7	44° E	62	0.72	0.91	9:16	15:46	22:16
	28	11 22.3	4 28.1	Leo	-4.1	19.9	45° E	59	0.73	0.85	9:28	15:46	22:03
Mars	7	20 50.2	-23 21.6	Cap	-2.5	21.9	156° W	98	1.42	0.43	22:04	2:35	7:07
	14	20 45.9	-24 06.4	Cap	-2.7	23.0	163° W	99	1.41	0.41	21:35	2:03	6:31
	21	20 39.5	-24 52.6	Cap	-2.8	23.8	170° W	100	1.40	0.39	21:05	1:29	5:54
	28	20 31.8	-25 34.4	Cap	-2.9	24.3	173° E	100	1.40	0.39	20:33	0:54	5:15
1 Ceres	7	10 35.4	18 17.7	Leo	8.8	0.4	49° E	98	2.57	3.11	9:08	16:20	23:30
	14	10 46.1	17 03.1	Leo	8.8	0.4	46° E	98	2.57	3.18	8:57	16:03	23:08
	21	10 57.0	15 46.9	Leo	8.8	0.4	42° E	98	2.57	3.24	8:45	15:46	22:46
	28	11 08.0	14 29.3	Leo	8.8	0.4	38° E	98	2.57	3.29	8:34	15:29	22:25
Jupiter	7	14 45.0	-14 49.3	Lib	-2.1	40.7	118° E	99	5.40	4.84	15:20	20:27	1:35
	14	14 44.9	-14 51.0	Lib	-2.1	39.9	112° E	99	5.39	4.93	14:52	20:00	1:07
	21	14 45.5	-14 55.3	Lib	-2.0	39.1	105° E	99	5.39	5.04	14:26	19:33	0:40
	28	14 46.6	-15 02.1	Lib	-2.0	38.3	99° E	99	5.39	5.14	14:00	19:06	0:13
Saturn	7	18 22.4	-22 29.8	Sgr	0.0	18.3	170° E	100	10.07	9.06	19:28	0:04	4:39
	14	18 20.2	-22 31.6	Sgr	0.1	18.2	163° E	100	10.07	9.09	18:59	23:34	4:09
	21	18 18.2	-22 33.4	Sgr	0.1	18.1	156° E	100	10.06	9.13	18:29	23:04	3:40
	28	18 16.4	-22 35.0	Sgr	0.2	18.0	149° E	100	10.06	9.18	18:00	22:35	3:10
Uranus	7	2 00.7	11 43.0	Ari	5.8	3.5	73° W	100	19.88	20.16	1:00	7:45	14:30
	14	2 01.3	11 46.1	Ari	5.8	3.5	79° W	100	19.88	20.05	0:33	7:18	14:03
	21	2 01.7	11 48.5	Ari	5.8	3.5	86° W	100	19.88	19.93	0:06	6:51	13:36
	28	2 02.0	11 50.0	Ari	5.8	3.6	92° W	100	19.88	19.81	23:38	6:24	13:09
Neptune	7	23 11.5	-6 15.5	Aqr	7.9	2.3	118° W	100	29.94	29.44	23:17	4:56	10:36
	14	23 11.2	-6 17.6	Aqr	7.8	2.3	125° W	100	29.94	29.34	22:49	4:28	10:08
	21	23 10.8	-6 20.2	Aqr	7.8	2.3	132° W	100	29.94	29.25	22:21	4:01	9:40
	28	23 10.4	-6 23.3	Aqr	7.8	2.3	139° W	100	29.94	29.17	21:53	3:33	9:12
Pluto	7	19 27.1	-21 44.9	Sgr	14.2	0.3	175° W	100	33.60	32.58	20:33	1:12	5:51
	14	19 26.4	-21 47.1	Sgr	14.2	0.3	178° E	100	33.60	32.59	20:05	0:44	5:23
	21	19 25.6	-21 49.2	Sgr	14.2	0.3	172° E	100	33.61	32.6	19:33	0:12	4:50
	28	19 24.9	-21 51.4	Sgr	14.2	0.3	165° E	100	33.61	32.63	19:05	23:44	4:22

Image Gallery

Our Celestial Neighbor



Astrophotography by
Tracy Karin Prell

M51 — The Whirlpool Galaxy



Located in the Constellation Canes Venatici
Distance from Earth approx 23.16 million lightyears
Discovered about October 13, 1773, by Charles Messier

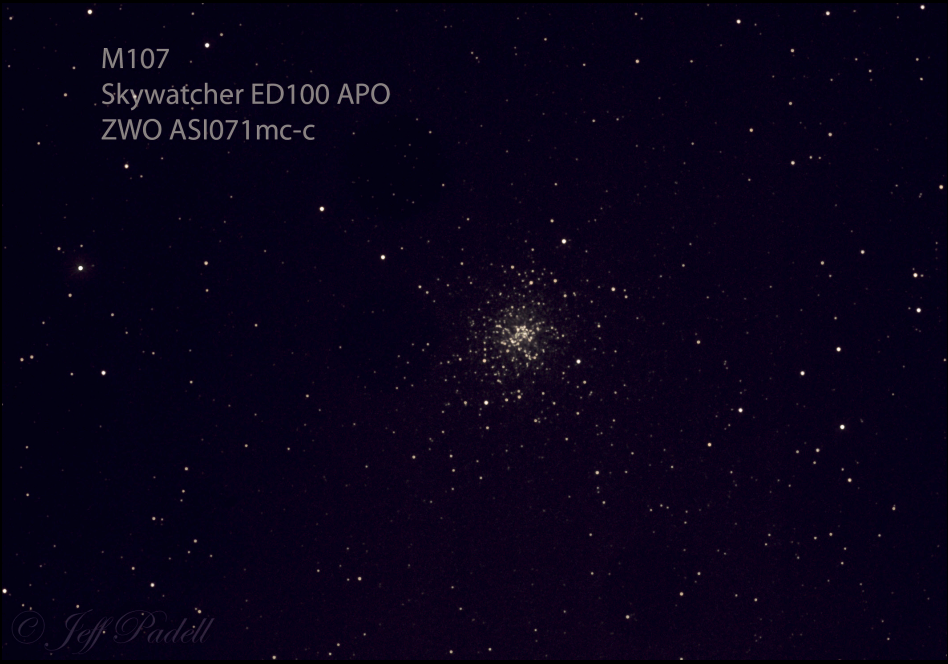
Astrophotography by Tracy Karin Prell
Image Capture June 7th 2018

The Cigar and Bode's Galaxies
in the Constellation Ursa Major

Messier 82
Cigar Galaxy
12 Million light-years away

Messier 81
Bode's Galaxy
12 Million light-years away

Astrophotography by Tracy Karin Prell
Captured on June 12th, 2018 while at
Skyscrapers, Inc.



Globular cluster M3 taken with a 10-inch SCT at f/6.5, 31 second exposure by Bob Horton.

The Deep, Deep Sky

On Monday night, June 11 at Seagrave Observatory, a target I've been trying for for the past 2 years was finally achieved. A tiny point of light in the circumpolar constellation of Draco, just off the bottom of the bowl of the Little Dipper.

Barely visible in a 30cm SCT, the object is easily captured with an 80mm refractor and a Canon SLR camera using 30 second exposures. Here, eleven exposures are stacked to produce a clearer image of the magnitude 14.4 starlike point.

The pixels marked in the center were illuminated by photons that left the target object, known as quasar PG 1634+706, 8.6 billion years ago.

PG 1634+706 is an extremely luminous object, whose light is generated by the energy of material in the accretion disk around a supermassive black hole.

The quasar is so distant—its light more than half the age of the Universe, and nearly twice the age of our solar system—that it lies at a redshift $z=1.337$. Its apparent Doppler redshift velocity, due to the expansion of the Universe, would exceed the speed of light. Its actual relativistic recession velocity cannot exceed the speed of light, but is just over 200,000 kilometers per second. That would cover the distance to the Moon in under 2 seconds.

This is by far the most distant object I have ever observed, both visually and photographically. My previous record was quasar 3C 273 at a distance of 2.5 billion light years.

Image by Jim Hendrickson, location chart from Stellarium.



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