

The Skyscraper
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the monthly publication of



**The Amateur Astronomical Society
of Rhode Island**

47 Peepthead Road
North Scituate, RI 02857

www.theskyscrapers.org

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The Skyscraper

May 2003

May Meeting: The Todds in Rhode Island

Friday, May 2, 7:30pm at Seagrave Observatory

David Peck Todd was Professor of Astronomy and Director of the Observatory at Amherst College from 1881 to 1914. He traveled the world - frequently accompanied by his wife - to observe solar eclipses, including Texas, Portuguese West Africa, the Dutch West Indies, Russia, and twice each to Japan and Tripoli. In 1907, funded by Percival Lowell, he took Amherst College's 18 inch Clark telescope to an Andean mountaintop to observe the opposition of Mars. He was the author of standard textbooks on astronomy as well as numerous articles.

Mabel Loomis Todd (1856 - 1932) accompanied her husband David on most of his astronomical expeditions, assisting with collecting data as well as collecting artifacts for the Peabody Museum in Salem, MA. She helped write her husband's textbooks and penned several books documenting the expeditions, and was in demand across the country as a lecturer. Mrs. Todd was an accomplished musician and artist, and was the first editor of Emily Dickinson's poetry, but she gained a notorious reputation in Amherst for having a long-standing love affair with Emily's married brother Austin Dickinson.

Ann Maggs and Walter Carroll have been portraying the Todd's and other historical characters for many years. Both have been active with the Hampshire Shakespeare Company in Amherst, where they have played Gertrude and Polonius, Antony and Cleopatra, Mistress Ford and her jealous husband, and many other characters. They have done voiceover work for public television documentaries, museums and computer games. Walter Carroll hosts classical music programs on the public radio station WFCR and is webmaster of wfcf.org. Ann Maggs is a music librarian at Amherst College and a professional singer.

Skyscrapers Calendar

Public observing is held every Saturday at Seagrave Observatory.

May 2 Friday	7:30pm May meeting at Seagrave Observatory
May 3 Saturday	8:00pm Public Observing Night at Seagrave Observatory
May 10 Saturday	8:00pm Public Observing Night at Seagrave Observatory
May 17 Saturday	8:00pm Public Observing Night at Seagrave Observatory
May 24 Saturday	8:00pm Public Observing Night at Seagrave Observatory
May 31 Saturday	8:00pm Public Observing Night at Seagrave Observatory

President's Message

Steve Hubbard, Parting President

My fellow Skyscrapers. A regime change is at hand. Hard to believe, but a year has gone by since you first elected me to the exalted office of president. You've finally come to acknowledge your mistake and a new leader will soon appear at the front of all our meetings.

I have greatly enjoyed the opportunity to represent Skyscrapers and wish to thank the slate of officers we enjoyed this past year. Everyone worked hard and I'm sure you'll all agree that we had a great year. Some highlights of what we can look forward to:

Mars will be exceptionally close to Earth this summer. I am already at work in my new capacity as first VP lining up programs for this time.

We recently obtained a CCD camera for the use of club members thanks to the generosity of members Fred Ewalt and Bobby Napier. We are continuing down the road of being able to do imaging from our Seargraves and have these images available for members, teachers and students via our web site.

Our new web site with these capabilities is just about ready to go on line. I hope you all get a chance to take a look at it soon. There will be a lot more capability with it and it should be more interactive and useful for all.

We are also planning a repeat of our highly successful club outing again this summer and will be working hard to make our meetings this year as good as last. I just hope that the next administration has better luck with the weather.

Thanks to all for your support. We have a great group of people and are lucky to have what we do.

Steve Hubbard

Moon and Mercury Amaze in May

David A Huestis, Librarian

Casual stargazers and avid amateur astronomers are anxiously awaiting a couple of astronomical treats during May. Though the upcoming transit of Mercury across the disk of the sun will be reserved for experienced astronomers, the total lunar eclipse can be observed by everyone. So with good thoughts in mind for a tranquil and mild month of May with clear skies ahead, let's see how we can maximize our viewing of the astronomical opportunities awaiting us.

First up on May 7 at sunrise is a fairly rare event (only 13 or 14 times per century) that should only be observed by experienced amateur astronomers. The event, a transit of Mercury, occurs when the planet passes between the Earth and the Sun. As one might expect, no one should look directly at the Sun at any time. In fact, the image of Mercury

silhouetted against the solar disk is so tiny that it couldn't be seen with the naked-eye anyway.

To observe this transit an observer must use the safe solar observing filters and or techniques one commonly uses for solar observing. If you are not experienced with safe solar observing techniques, do not attempt to view this transit.

As I have always stated when reporting about partial solar eclipses in our area, any time you observe the sun you must observe caution as well. You don't want to risk serious eye damage. Again, if you don't have solar observing experience, you might want to get on-line and surf the web for a site that may show the transit in real-time. It may not be quite the same experience as observing it firsthand, but it will indeed be safe.

For those of you who know what you're doing, this transit will be a little challenging, since the transit is already in progress as the sun rises here in the northeast. In fact, by the time of sunrise for us, around 5:30 am EDT on the 7th, we will have missed about four hours of the event already. Unfortunately, you'll need to wait a little while for the sun to rise higher into the sky. Don't forget, you'll need a great observing location with an unobstructed horizon to be successful. Thin clouds won't spoil the view too much, but thick clouds will.

Mercury will look like a tiny, perfectly round and very black sunspot, close to the edge of the solar disk. It can be further identified by how fast it will move. Sunspots don't move appreciably in a small amount of time.

Remember, you'll only have about an hour to observe this rare event before it ends. Pay close attention as Mercury begins to move off the solar disk around 6:30 am. A phenomenon known as the black drop effect takes place. As Mercury is just about to exit the disk at around 6:34 am, the dark circular image elongates and appears like a teardrop, looking like it's being drawn out. Use a low-to medium-power eyepiece to start, then use whatever magnification provides the most aesthetic image for you.

One more point, if you have the capability, you might want to attempt to image this rare event. Film or digital, it's your choice. If you get a good image, by all means email us a copy at www.theskyscrapers.org It may end up in our gallery of images.

The next major astronomical event in May occurs on the night of the 15th-16th. While Mercury became visible during its transit of the sun, our nearest neighbor in space may indeed disappear from view. It won't happen in the blink of an eye, rather it will be more like a magician's cape being slowly drawn across the lunar surface. I'm talking about the Full Moon sliding through the Earth's shadow providing a total lunar eclipse.

We are fortunate to be situated here in New England, for we will be able to follow the progress of this event from start to finish. The caveat to that I hate to say, weather permitting of course!!

A total eclipse of the Moon occurs when the Sun, Earth and Moon are nearly in a straight line. With the Earth in the middle of this celestial configuration, our planet's shadow will sweep across the lunar surface. It's like compressing an entire month's phase cycle into one evening.

The eclipse begins at 9:05 pm on the 15th and ends at 2:15 am on the 16th for a duration of 5 hours and 10 minutes. You don't necessarily have to watch the entire eclipse to be impressed with the beauty of this event. Don't have much free time? Just watch through the end of totality. After that it's anti-climatic anyway. To help you plan your evening, the accompanying graphic will show you at a glance what time the significant events will take place (as noted A-G). All times are Eastern Daylight Time (EDT).

The Moon enters the Earth's faint shadow called the penumbra at 9:05 pm and the eclipse begins (A). The penumbra is so dim that the Moon's "first contact" with it cannot be seen. Only as the Moon slides deeper into the shadow will a keen-eyed observer see a subtle shading of the lunar surface. Just prior to the Moon entering the Earth's dark umbral shadow one should notice that the moonlight looks somewhat subdued.

At 10:03 pm the Moon encounters the dark umbral shadow of the Earth (B). The Moon will be moving eastward in our sky when it encounters the Earth's shadow. Therefore, watch for the shadow to sweep across the lunar surface from left to right. By the time the Moon is more than halfway through the umbra we should be able to tell if this is going to be a dark eclipse or a bright one.

Sometimes the Moon will completely disappear from naked-eye view (dark eclipse) due to large amounts of dust spewed into the Earth's atmosphere by recent volcanic activity. The total lunar eclipses of 1992 and 1993 were dark eclipses because of Mount Pinatubo's eruption. Then we have the type of eclipses where the Moon is a coppery color, with various hues of orange and yellow (bright eclipse). The total lunar eclipses of April and September, 1996, were bright eclipses.

With no major volcanoes currently erupting, I would predict the upcoming total lunar eclipse to be a bright one. It should remain visible even during mid-totality, presenting a collage of yellow and orange hues to the observer. The umbral shadow completely envelopes the Moon at 11:14 pm. That's the moment when totality begins.

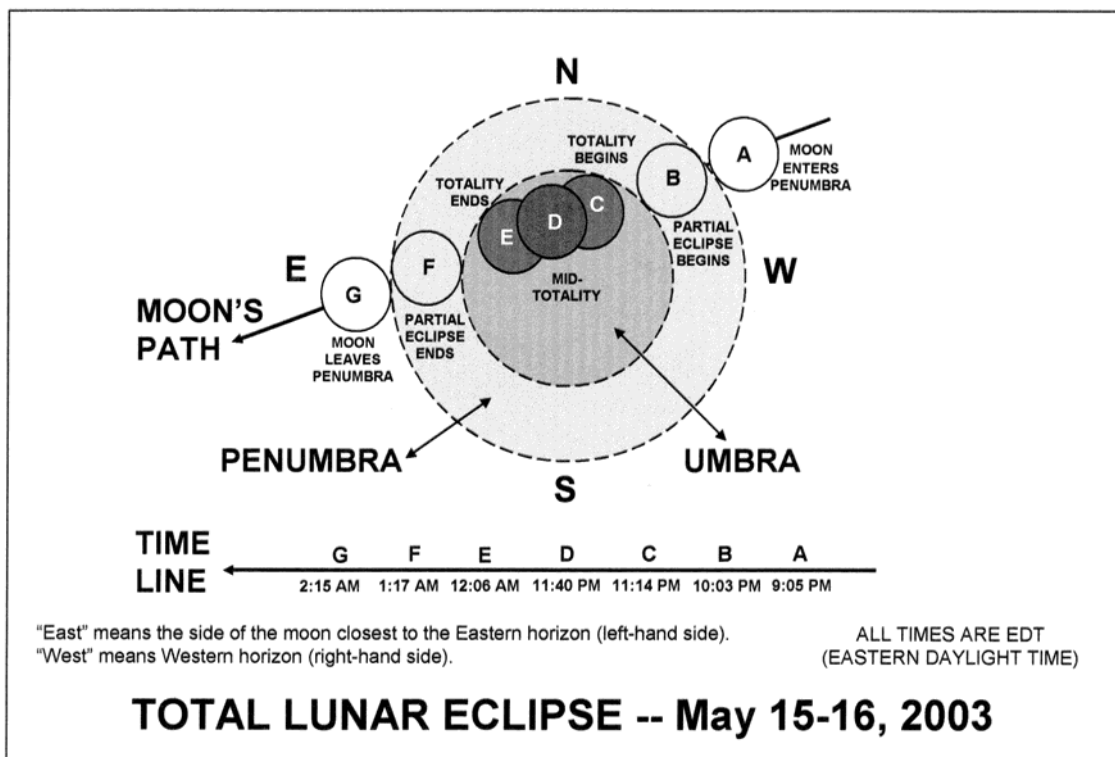
Totality will last for only 52 minutes, during which time you can scan the Moon's surface for a variety of colorful hues. That is, of course, if it doesn't disappear from view. Even during the darkest eclipses that I've observed, a telescope will still reveal some rusty browns or reds on our lunar neighbor. Mid-totality occurs at 11:40 pm (D). Twenty-six minutes later a sliver of brightness marks the end of totality at 12:06 am (E) as the Earth and Moon move out of alignment and sunlight once again strikes the lunar surface.

The partial phase will last until 1:17 am (F). At that time the dark umbral shadow will leave the Moon's surface. Soon thereafter, like the beginning of the eclipse, the remaining phase will hardly be noticeable at all as the Moon begins to

return to full brightness. For just under another hour, until 2:15 am when the eclipse ends, the Moon will remain within the lighter penumbral shadow (G). Only while the Moon is still deep within the penumbral shadow will the lunar surface appear in subdued light.

Most importantly, if you have binoculars or a telescope, this is the time to put them to good use. The more optical aid an observer uses, the more detail one will discern. However, don't despair if you don't have access to expensive equipment. Mother Nature provided you with a pair of the most valuable observing tools - your eyes! Use them to follow the progress of this beautiful event.

Enjoy the celestial show performed by the Sun, Earth and Moon on May 15-16. Make every effort to observe this beautiful phenomenon. If you miss it this time around, we've got another opportunity in November when the next total lunar eclipse will occur here in New England.



Graphic by David A. Huestis, based on one published in *Sky & Telescope*, May 2003

Skyscrapers, Inc. Membership Application

Circle one: **New Member** or **Renewal**

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Check boxes (above) if we may publish any of the information in the newsletter or on our web pages

Membership Dues are payable in April for the dues year then beginning. The annual dues shall be: \$10.00 for Junior Members; \$40.00 for Members; \$50.00 for Family Members; and \$10.00 for Senior Citizen Members. Persons elected to membership during the second half of the fiscal year (October – March) shall pay 50% of the foregoing amounts for that initial year, then renew their memberships the following April for the full amount. Persons making donations over and above the foregoing amounts shall be called Contributing Members. Four distinguished categories of Contributing Members shall be designated: Sponsors (\$60); Supporters (\$100); Patrons (\$250); and Benefactors (\$500).

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North Scituate, RI 02857

Directions to Seagrave 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.
- 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, RI 02857**