**The Skyscraper**
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the monthly publication of


**The Amateur Astronomical Society of Rhode Island**

**47 Peeptoad Road**
**North Scituate, RI 02857**

www.theskyscrapers.org



See back page for directions to Seagrave Observatory.

Please submit items for the newsletter by September 15 to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy.com

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



# The Skyscraper

**September 2003**

## September Meeting: Archaeoastronomy in America

**Friday September 5, 7:30pm at Seagrave Observatory**
Member and archaeologist Rick Lynch will give a presentation on the archaeoastronomical sites of native people in the northeast and the southwest United States.

## Skyscrapers Calendar

Public observing is held every Saturday at Seagrave Observatory. Note that public nights have been added on Friday nights from September 26 – October 17 (excluding October 3).

| | | |
|---|---|---|
| **September 5 Friday** | **7:30pm** | **Monthly Meeting** at Seagrave Observatory |
| **September 6 Saturday** | **8:00pm** | **Public Observing Night** at Seagrave Observatory |
| **September 13 Saturday** | **8:00pm** | **Public Observing Night** at Seagrave Observatory |
| **September 20 Saturday** | **8:00pm** | **Public Observing Night** at Seagrave Observatory |
| **September 26 Friday** | **8:00pm** | **Public Observing Night** at Seagrave Observatory |
| **September 27 Saturday** | **8:00pm** | **Public Observing Night** at Seagrave Observatory |
| **October 3 Friday** | **6:00pm** | **AstroAssembly Friday Night Program** at Seagrave Observatory |
| **October 4 Saturday** | **9:00am** | **AstroAssembly** all day at Seagrave Observatory |
| | **5:30pm** | **AstroAssembly Saturday Evening Program** at St. Philips Church |

# President's Message

*Dan Lorraine, President*

Wow ... what a turnout on Saturday August 23!! The ProJo article on Mars, clear skies, and the thought of getting a glimpse of what has always been considered one of the most mysterious planets to the general public, turned out about 300 people over the course of the evening at Seagrave!! The skies were the best I've seen there in years! Although the seeing was initially a little turbulent, it settled down somewhat an the southern polar cap, Mare Acidalium and Niliacus Lacus were apparent to most people observing the red planet.

We had a great group of Skyscrapers' volunteers and everything was well controlled -- including all scopes being manned, parking was being directed, grounds rovers to inform our guests where all of the scopes were, and Rick Lynch even had about 50 people in the club house for a lecture on archaeoastronomy that he will give at our September monthly meeting since Gary Walker had to cancel.

It was busy ... but it was great and a lot of fun!! So if you haven't come out to see Mars make sure that you do -- Mars will be a great object through most of the fall.

By the way, a reporter and photographer from the ProJo were with us all night (in fact the reporter didn't leave till about 1:00 am!!) and a very nice article and photo made the front page of the Providence Journal on Tuesday August 26.

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Clear skies!

# Mars Mania

## Your Guide to a Close Encounter of the Planetary Kind

*David A Huestis, Historian*

Have you gotten it yet? Mars mania? Mars fever? Mars madness? If not, you will soon. Astronomers have been anxiously awaiting August 27, 2003. Mars will then be closer to our world than it has for 60,000 years, 34,646,418 miles. Even small backyard telescopes will reveal detail only fleetingly glimpsed before in larger aperture scopes under the best of best conditions. Get ready for a close encounter of your lifetime.

"No one would have believed in the last years of the nineteenth century that this world was being watched keenly and closely by intelligences greater than man's and yet as mortal as his own; that as men busied themselves about their various concerns they were scrutinized and studied, perhaps almost as narrowly as a man with a microscope might scrutinize the transient creatures that swarm and multiply in a drop of water. With infinite complacency men went to and fro over this globe about their little affairs, serene in their assurance of their empire over matter....No one gave a thought to the other worlds of space as sources of human danger, or thought of them only to dismiss the idea of life upon them as impossible or improbable. It is curious to recall some of the mental habits of those departed days. At most, terrestrial men fancied there might be other men upon Mars, perhaps inferior to themselves and ready to welcome a missionary enterprise. Yet across the gulf of space, minds that are to our minds as ours are to those of the beasts that perish, intellects vast and cool and unsympathetic, regarded this earth with envious eyes, and slowly and surely drew their plans against us. And early in the twentieth century came the great disillusionment."

So begins "The War of the Worlds," the 1898 sci-fi classic by H.G. Wells. This book was the first science fiction novel I ever read. I remember reading it non-stop from cover to cover because I was so fascinated with the possibility of life on other worlds. Too bad most literary and movie extraterrestrial life-forms almost always seem determined to exterminate us!

Did Mr. Wells dream up the idea of intelligent beings residing on Mars? I'm afraid the credit is not due him. Wells relied upon astronomical studies of his day for the premise. It all began in 1877 when Italian astronomer Schiaparelli reported observing "canali" on Mars. "Canali" means channels. However, when the word was translated into English they were simply called "canals." Canals implied intelligent construction, and thus began the speculation on the Martian builders.

At the turn of the 20th century, U.S. astronomer Percival Lowell began a study of Mars. With the guidance of the Harvard College Observatory, an observatory was erected on a hill in Flagstaff, Arizona, where the seeing was quite good. It is still a working observatory today, named Lowell Observatory in his honor.

Lowell also observed these peculiar markings criss-crossing the planet. He conjectured that the Martians had an impressive irrigation system to carry water from the frozen polar caps to the arid desert regions near the planet's equator. Lowell wrote, "Irrigation, and upon as vast a scale as possible, must be the all-engrossing Martian pursuit." But alas, there are no canals on

Mars, or any Martians either, as far as we know. So what really did Schiaparelli and Lowell see?

No one knows! Some astronomers have speculated that under ideal observing conditions these two astronomers may have detected craters on the Martian surface. It could have also been subtle difference between bright and dark areas. Their brains may have played "connect the dots" with these features to produce the "canals." Only with today's modern telescopes and electronic equipment can one image craters and volcanoes. So it appears the old observations may always remain a mystery.

(I visited Lowell Observatory in 1981 and had the opportunity to observe Saturn through the magnificent 24-inch refractor. It was an awe- inspiring image I will never forget. My only regret is that Mars was not the object of our attention that evening. I can only imagine what images this great refractor provided to Lowell in the clear and stable air of Flagstaff. Would I have succumbed to the Lowellian Syndrome as well?)

Since Lowell's time, many space craft have orbited the red planet. (Currently there are two spacecraft orbiting Mars and taking detailed images, the Mars Global Surveyor and Odyssey. Four more spacecraft are on their way, including three landers and two rovers!! More about that later.) Unfortunately they did not confirm Lowell's observations. Mars is a bleak, desert-like planet that is also very heavily cratered. There are huge volcanoes, global dust storms, and great sand dune fields. In addition, what look like dry river beds abound on the planet. Could Schiaparelli and Lowell have seen these? Not from Earth they couldn't!! Even the craters don't match up to any of the drawings Lowell made of round regions he called oases, where "canals" appeared to merge.

Besides, Mars has been dry for a long, long time. It seems Mars once had an abundant supply of flowing water on its surface. Somehow much of it was lost to space, whereas the remainder may remain trapped beneath the surface as permafrost. The polar caps also contain much water ice, though it is mixed with a lot of carbon dioxide. There is no liquid water on Mars. The atmospheric pressure is so low that a water droplet would explosively evaporate if exposed to the Martian environment.

Prior to 1976 faint hope still persisted that Mars supported some form of life. I'm sure that belief drove the research teams who oversaw the two Viking landers that successfully touched down on the Martian surface in July 1976. Among other experiments, the Viking landers tested the soil surrounding the space craft for microscopic life. The results proved negative, though some biologists and chemists say "inconclusive." A television camera on board scanned the immediate area. No Martian, large or small, sauntered past the lander. I think many researchers would have indeed been shocked if the camera had revealed a curious creature peering into the lens. Our outlook on life in the universe, as well as our place in it, would have dramatically changed.

What continues to draw us to Mars? Is it because we still believe life may once have flourished upon or beneath its now lifeless terrain? Spacecraft images and sensors may provide a wealth of data, but nothing can compare to the experience of seeing first hand even a fleeting image of some Martian surface features through a backyard telescope.

Normally Mars is quite a challenge to observe from Earth. Its usually small appearance through a telescope makes it difficult to discern much surface detail, other than a polar cap or a large feature like Syrtis Major or the Hellas Basin. However, Mars' close encounter with our planet on August 27 will provide the best view of this desert world in the next 15 years, and it won't be this close again until August 28, 2287. So don't make any excuses. Get out those dusty telescopes and put them to good use. If you don't have a scope, see the end of this column for details of a special Mars lecture and viewing session at Seagrave Observatory in September. You won't want to miss it!!

Mars' close encounter will provide views of surface detail that many of us have only glimpsed during past, less favorable encounters. What we will still need is some good observing conditions. Usually I would say perfect or ideal, but Mars' increased image size will more than compensate for some "imperfect" seeing. In fact, the best views of any of the planets I have observed have come under hazy sky conditions. This brings stability to the air. The telescopic image must be steady under medium to high magnification, else the details will blur into indistinct and formless features. Your telescope and mounting must also be sturdy. Any motion of the scope under the magnifications necessary for observing Mars will be quickly transmitted to the image. A clock drive to counter the Earth's rotation is also recommended to keep Mars' image centered in the eyepiece at all times.

When this column appears in mid to late August or early September, Mars will be the bright red "star" in the southeastern sky around 10:00 pm. You shouldn't have any difficulty finding it. On the 28th when Mars is opposite the sun in the sky (called "opposition"), it will shine at magnitude -2.9, the brightest it can ever get. On that night Mars will be due south at midnight about 30 degrees above the southern horizon, a red beacon among the stars of Aquarius.

Even if you have had little experience observing through a telescope, Mars' larger than usual image size will reveal more surface features than it has during past close encounters.

Unless a global dust storm completely covers the planet by the time this article is printed, the first feature that will catch your eye will be the south polar cap. It is conveniently tilted towards the Earth, giving us a great view. Watch it carefully over the coming weeks. When spring began in Mars' southern hemisphere on May 5, the south polar cap began to melt. Summer solstice occurs on September 29, providing more sunlight to shrink the cap. If you begin observing Mars as soon as you read this column, you should soon notice the south polar cap shrinking as time progresses. Ideal observing conditions may allow you to see some irregularities in this cap. During past oppositions dark rifts have isolated portions of the cap as detached segments. The south polar cap may even disappear entirely.

The rest of the planet will appear as a rust-colored beach ball. Several dark features can also be seen. These are the underlying rock exposed by the shifting sands during intense dust storms. During the Mars opposition back in 1988 under favorable observing conditions with my six- inch reflector at 300 power, I was able to see Mars as a soft peach color, while the dark areas appeared as a forest green. I'm sure the dark areas appeared green due to contrast. I can see how the astronomers of old thought the dark regions were areas of vegetation. I even captured a decent image of Mars on film at that time. To enhance the view try red and yellow filters that fit your eyepieces. They often improve the contrast and permit more detail to be seen.

And just a few weeks ago at 3:00 in the morning my wife and I got our first look at Mars during this close encounter with my six-inch reflector. The south polar cap was very big and bright. Anyone could have detected it. We also saw some indistinct dark markings on the surface. I can't wait to see it through the Clark refractor at Seagrave Observatory.

Be aware that the Martian day is 24 hours and 37 minutes long, while our day is 24 hours long. This has an effect on your observation of surface features. If you see a dark feature on Mars' central meridian (an imaginary line that bisects the planet) one evening at 12:00 midnight, the next evening it won't return to the central meridian until 12:37 am. On the following night it would arrive 37 minutes later. Therefore, to ideally observe the same piece of Martian real estate on the central meridian each successive night, you must wait an additional 37 minutes each evening.

You should begin watching for dust storms immediately. As of this writing, late July, a dust storm had already begun around July 1 in the Hellas Basin. This deep meteor impact basin is a prime location for dust storms to begin. The global one that prevented our observations of Mars in 2001 started here. This time, fortunately, it began to subside two and a half weeks later.

The dust storms begin as small yellow clouds that grow and grow and can eventually blanket the entire planet. Whitish water vapor clouds can also be detected, as well as bright spots of frost. These features are all possible to see, though you will probably have great difficulty observing anything more than the south polar cap and some of the dark surface features with a six inch or smaller telescope. That is one reason why our observatory will host some public nights in September. The other reason is .... we enjoy sharing the beauty of the heavens with you! More about our open nights later.

In conclusion, be patient when observing Mars. The disk of the planet, though the best in 60,000 years, is still relatively small. Features will be easier to detect than during past close encounters. Wait for steady seeing conditions. Don't try observing Mars if, when you look through the telescope, it seems like you're observing from the bottom of a swimming pool! Take your time in observing this fascinating planetary neighbor and your efforts will be well rewarded. The August 2003 issue of Astronomy magazine and the July issue of Sky and Telescope magazine each contain a fine map to aid you in identifying Martian surface features.

In addition, remember there are four spacecraft heading toward Mars. One is a Japanese craft called Nozomi, whose telemetry has been lost. Its encounter with Mars is in December. Another December rendezvous is by the European space Agency's Mars Express orbiter, with a British lander called the Beagle 2. Arrival is on the 26th. The United States has two Mars Exploration Rovers en route. The Spirit and Opportunity touch down on January 4th and 25th respectively. These two rovers are more advanced versions of the Sojourner rover that traversed the Martian landscape back in 1997 as part of the Pathfinder mission. They'll be much in the news once they arrive at Mars.

This column has presented only a simple introduction to Mars observing. You will not duplicate the observations of Percival Lowell, nor will your view be anything like the electronic images recorded by astronomers you might see on television or when you surf the net. You will, however, be able to take a knowledgeable glimpse of an alien world that inspired generations of astronomers and science fiction writers alike to ponder the existence of Martian life-forms. So drag out those telescopes and expose them to the light of the universe. H.G. Wells imagined the Martians scrutinizing the Earth. We don't want the observations to be one-way now, do we??

Planning is currently underway for Skyscrapers, Inc to host several special Mars observing programs in September at Seagrave Observatory. Watch this news media for dates and times when the details have been finalized.

## Mars on the Net

If you want up-to-date information on the Martian world and you surf the Web, log on to any of the following sites. These sites contain a wealth of information about Mars, including recent images, animations, weather conditions, etc. Related links can also be accessed.

**Association of Lunar and Planetary Observers (ALPO) Mars Section**
http://www.lpl.arizona.edu/~rhill/alpo/mars.html

**Marswatch 2003**
http://elvis.rowan.edu/marswatch

**Mars Exploration Homepage**
http://mars.jpl.nasa.gov/

**JPL News**
http://www.jpl.nasa.gov/

**Sky and Telescope Magazine Home Page**
http://skyandtelescope.com/

**Astronomy Magazine Home Page**
http://astronomy.com/

**Hubble Space Telescope images of Mars at closest approach**
http://hubblesite.org/newscenter/2003/22/

# Secretary's Report

*Bob Napier, Secretary*

## Monthly Meeting

**August 8, 2003**

**Introductions** - Officers, Trustees and Visitors

**Secretary's Report** - Accepted as published in the Skyscraper, with the exception to the start end times of the meeting being the same.

**Treasurer's Report** - Accepted as published in the Skyscraper.

**Trustees' Report** - Senior Trustee, Ted Ferneza, reported the meeting hall, anteroom and twin-roll off buildings were stained or sealed with preservative; the is a moisture problem with the Clark dome; the 16" Meade has an erratic drive motion in RA and possibly DEC; the 8" Clark lens has not yet been installed after extensive refurbishment (painting of the tube and rebuilding the drive gears) - this should be completed by Aug. 9; Trustee Rich Arnold will cut down the pine tree next to the 16" building; the slide projector needs an "overhaul" prior to Astro-Assembly.

**AstroAssembly Committee Report** - Approximately 500 AA flyers were passed out at Stellafane; the Antique Telescope Society will display antique and vintage telescopes during AA.

**Historian's Report** - A video tape of Brian Marsden's talk, taken by Greg Shanos, was given to the Skyscrapers' library.

**New Business** - New application(s) for membership received: Michael Koran of Norton, Ma.

**Old Business** - Three new membership applicants were voted in: Gerald White, of Norton, Ma., Keith McAuslan of Pawtucket, RI. and Jerry Jeffrey of Glocester, RI.

**Good of the Organization** - Next month's meeting will be Gary Walker, who will talk about variable stars; Al Hall will schedule a Skyscrapers' members visit to Van Vleck Observatory's 20 Clark telescope at Wesleyan University in Middletown, Ct., sometime in September, to view Mars; there may be awards for the oldest antique telescope at AA, perhaps making it an annual event at AA; there will be an archive preservation meeting on Aug. 16; the Audobon Society will be having a star party at Seagrave Obs. on Thursday Sept. 11; Dave Hurdis reported a talk and star party is scheduled at Blithwald Mansion on Aug. 19, with a rain date of Aug. 20; an E-board meeting is scheduled for Aug. 9; President Dan Lorraine reported that Raytheon has donated a 15' Ash Dome to Skyscrapers and arrangements are being made to pick it up.

**Adjournment** - 8:10 PM

## Executive Board Meeting

**August. 9, 2003**

Attendees: Dan Lorraine, president; Bob Napier, secretary; Dolores Rinaldi, treasurer; Ted Ferneza, trustee, Rich Arnold, trustee.

**Mars Observing Program**

- for members, Aug. 30
- for public, Aug, 26, 27, Sept. 10, 11, 17, 18, 24, 25

**Property Repairs** - Trustees reported progress in fixing a water leak between the Clark building and the anteroom. Flashing was applied and sealed; the 12" roll-off roofing was renailed and recalked to stop dampness.

**Slide Projector** - Al Hall will donate a carousel slide projector to replace the one currently in use for many years.

**Dome Donation** - Options will be reviewed and plans drawn up to mount the Raytheon donation of a 15' Ash Dome.

**Financial Overview** - will be held to review recent expenses and upcoming expenses.

**AstroAssembly Cleanup** - There will be a scheduled clean up of the property to prepare it for AstroAssembly on Oct. 3, 4.

**Other items to follow up** - printing of a color membership brochure; a donation of a computer projector and a computer and CCD camera for the RI Dept. of Ed. remote observing via the Internet project.

# Treasurer's Report

7/19/2003 – 8/19/2003

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|---|---|
| **Inflows** | |
| Deposits | |
| Donations | 57.00 |
| Dues & newsletter | 190.00 |
| Publications | 65.90 |
| Total deposits | 312.90 |
| **Total inflows** | **312.90** |
| | |
| **Outflows** | |
| Reimbursement | 176.19 |
| Cookout (porta john) | 100.00 |
| Electric | 22.65 |
| Landscaping | 40.00 |
| Subscriptions | 65.90 |
| Propane | 4.28 |
| **Total outflows** | 409.02 |
| | |
| **Overall total** | **(96.12)** |

## Account Balances : 8/19/2003

| | |
|---|---|
| **Assets** | |
| Cash and bank accounts | |
| Checking | 4,185.84 |
| Savings | 8,023.78 |
| Total cash and bank accounts | 12,305.74 |
| Total assets | 12,209.62 |
| | |
| **Liabilities** | 0.00 |
| | |
| **Overall Total** | **$12,209.62** |

**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. 1116 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**