The View From Arunah

Arunah Hill Natural Science Center

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The Editor's Desk

By Steve Herzberg

Plumbing Comes to Arunah Hill! Thanks to the joint and very heroic efforts of Joe Zuraw and Boy Scout Troop 550 of Hadley the new water capture and shower system is now up and running. Up to 3000 liters of non-potable water can be captured in three urethane tanks, treated and used both at the pavilion through a tap and at the new shower house through two pull chain shower heads. Over 200 feet of 1" water line travels through the woods to the new 100 square foot structure. The shower house is built on a 6 inch steel reinforced concrete slab. The three water tanks are on a reinforced slab and raised three feet off the ground on a 6x6 pressure treated platform.

Plumbing expertise, as well as many of the fittings, were provide by Doug Cranson of Ashfield, who donated three days of his time to the project. The scouts donated the 350 bf of 1x6 boards to sheath the new structure. Joe is still working on the roof trusses but expects to have them built and installed by the end of July. Joe will also be installing some benches, a counter top, mirror and clothing hooks as well as shower curtains between the two shower heads. The roof will probably be translucent fiberglass panels.

To prevent water loss only one tank should be opened and used at a time. People should make sure that the shower head is not dripping and that the brass master valve at the tanks is closed when they are done using the showers. Even though it is treated **this is not drinking water,** and should still be considered unsafe for cooking or drinking.

Summertime observing is in full swing, both on the Hill and around the Valley. The Amherst **5As** are holding weekly solar and evening observing sessions in Amherst, at Mt. Pollux and the Wilder Observatory respectively; in addition they will hold two more star parties atop Mt. Greylock, on August 6 and September 24.

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The Springfield STARS will be participating in Music under the STARS at Tanglewood on August 2 from 2-11 p.m. as part of the Boston Symphony's annual Tanglewood on Parade. The event includes solar and nighttime observing, informational displays and demonstrations—and, of course, music. The STARS are also sponsoring Stars over Agawam in mid– to late-August, see their web-site for further information.

These events attract large and enthusiastic crowds and would welcome your participation—with or without your telescope!

Arunah Hill Days—Labor Day Weekend Tentative Schedule

Friday September 2
Noon: Official opening ...
7 PM: Welcome, followed by Friday Night Keynote Speaker (Pavilion)
9:30 PM: Moon set and dark sky observing all night!

Saturday September 3
11 AM - 4 PM: Kids Events: Rocket building, GPS Treasure Hunt, Making Comet Ice Cream
4 PM - Rocket Launch supervised by Ranger Gary
6 PM - The Famous Arunah Hill Days Raffle
7 PM: Saturday Night Keynote Speaker
8:30 PM - Crescent moon gazing and Green Laser Planetarium Show under the Real Sky!
10:20 PM - Moon set and dark sky observing all night!

Sunday September 4
Free day—possible trip to the Keystone Arch Railroad Bridges, a 19th century engineering marvel
Sunset - 11 PM - Saturn and moon gazing, double star challenge observing
11 PM - Moon set and dark sky observing all night.

Monday September 5
Pack up and farewell!

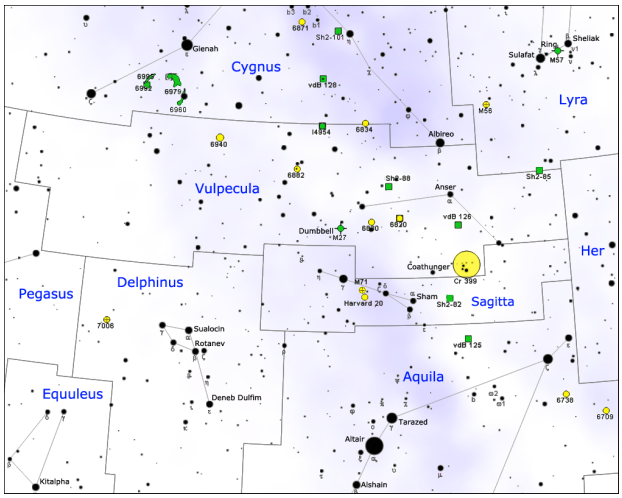
All events are free and open to the public.
Novice Stargazers Welcome.
A limited number of primitive camp sites are available for a modest fee, on a "first come, first serve" basis.
Absolutely no pets or alcohol allowed on the premises.
Attendees are asked to restrict use of white light flashlights when telescopes are in use. (Red Filters OK)
Food and drinks available at reasonable prices (run by a local Boy Scout Troop)

'Twixt Sag and Cyg

By Ed Faits

The short summer nights of June and early July on Arunah Hill are a challenge to star gazers. Twilight lingers til nearly 11 PM, and the morning sky brightens before 3 AM. This small window is often compromised by thick unstable air masses loaded with humidity and pollution. Add a few mosquitoes and it's definitely NOT my favorite time of the year for pointing a telescope toward the heavens.

However, sometime later in the summer one of those Canadian High Pressures will descend upon New England and open up a dark sky window. If we're lucky, it will coincide with the dark of the moon and… we can hope… some Persied Meteors. This invariably triggers a flurry of viewing on the Hill for experienced star gazers.



You can spend most of a night just observing within a few degrees of λ Sagittarii and not tap out the wonders of the night sky. The Lagoon and Trifid, the Swan Nebula, the great globular M-22, and the rich open cluster the Wild Duck come to mind, but they have been well covered in many other observing articles.

Add to that the show pieces of Cygnus like the Veil and the classic double star Alberio, and you've had a great night of wonders to gaze at. That doesn't come close to mining the depths of wonders in the Summer Milky Way. The Milky Way provides opportunities to see dazzling open clusters, emission and reflection nebula, and countless double and triple stars. Sometimes it is even what you don't see that is the sensation… the bright Milky Way can reveal the inky voids of dark nebula. Let's take a tour at some of the objects between Sagittarius and Cygnus.

Aquila is a large constellation holding one apex of the Summer Triangle, Altair. The Great Rift obscures some of the distant light of the Milky Way, leaving the constellation mostly devoid of the rich open clusters found in Cyg and Sag. Instead, look for the subtleties of dark nebula. **Barnard 127, 130, and 129** form an interesting shape just northeast of 12 Aquilae and are a good target for any scope with 12" of aperture or more.

For an interesting challenge object go for **NGC 6781**. Crank up the power and use a UHC filter in 'big glass" for this nice planetary nebula. Look close for several faint stars imbedded in the nebula… alas, they are just background stars shining through.

Tiny **Sagitta's** distinct "arrow" is clearly visible from Arunah Hill on a nice night. Sagitta's most interesting objects are the double star **Herschel 84**, with even more color contrast than better known Alberio, and Globular Cluster **M-71**. It is fairly bright, but one of the "looser" of the globular cluster.

Vulpecula is a great constellation to scan with binoculars, in a transition area of the summer Milky Way between the rift and Cygnus. **Brocchi's Cluster** (The Coathanger) is amazing in a good pair of 7 x 50's, but gets lost even in the wide field of my Astroscan at low power. **M-27**, the Dumbbell Nebula, is on everyone's all time favorite's list. Can you see the central star? For a bit of a challenge, go for **NGC 6904**… does it really exist? It was de-listed in the Revised New General Catalog, but many amateurs see it as a respectable cluster in 12" aperture.

Delphinus is on the southeastern edge of the summer Milky Way and is pretty conspicuous around Arunah Hill Days. Planetary Nebula **NGC 6891**is a worthy target for moderate glass. Don't be afraid to crank up the magnification to reveal the disk. About 8° to the north is another Planetary, **NGC 6905**. Observe both at the same magnification… which do you find more appealing? Delphinus also holds one of our galaxy's most distant globular clusters, **NGC 7006**. A quick glance in a moderate scope may make you wonder if this is a globular cluster at all… it looks more like a planetary nebula. Big glass and high power will dispel the illusion.

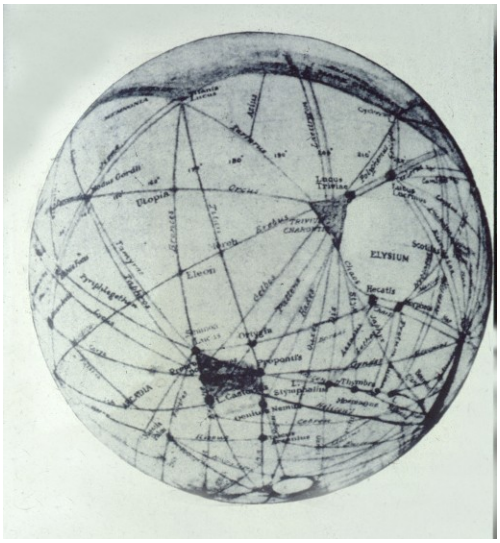
The Milky Way between Cygnus and Sagittarius will keep you plenty busy on a fine late summer night on Arunah Hill whether you are waiting for the Persieds or just getting ready for Arunah Hill Days.

SPRINGFIELD'S RENDEZVOUS WITH THE RED PLANET

By Richard Sanderson

During the summer of 1965, as our military was embroiled in the Viet Nam War and Beatlemania was sweeping the nation, an exciting drama was unfolding in deep space. Mariner 4 was sailing toward history's first close-up look at the mysterious planet Mars and Western Massachusetts residents had a front-row seat for this cosmic adventure.

People have been tantalized by the possibility of life on Mars since the 1890s, when a wealthy businessman from Massachusetts, Percival Lowell, began observing this distant world from his large observatory in Flagstaff, Arizona. Lowell glimpsed what appeared to be straight lines criss-crossing the Martian surface. He identified them as canals built by intelligent beings to save their drought-stricken world and promoted this theory in a series of popular books.



The existence of Lowell's canals was disputed by many astronomers, but the concept of intelligent life on Mars captured the imaginations of science fiction writers like H.G. Wells, Edgar Rice Burroughs and Ray Bradbury. "Martians" became ingrained in our culture and by 1965 the canal mystery still had not been definitively solved.

Mars is only about half the diameter of our own planet and from even the best Earth-bound telescopes, it appears as a tiny orb with ghostly markings on its surface. Mariners 3 and 4 were launched in November of 1964 to unravel some of Mars's mysteries at close range.

Even before the two Mariners blasted off, a popular 19-year-old planetarium lecturer at the Springfield Science Museum, Richard Hoagland, had launched an ambitious project called "Mars: Infinity to 1965." Under the direction of museum director Dr. Frank Korkosz, Hoagland outfitted a large room in the museum with 200 seats surrounded by space murals, pictures of Mars, projection screens, closed circuit TV equipment, a status board and an exhibit about extraterrestrial life. A ceiling model of the solar system was designed to show the positions of the two Mariners during their 7 1/2-month voyage to Mars.

A couple weeks before the museum's dedication of "Mars: Infinity to 1965" on November 21, 1964, disaster struck. Mariner 3 blasted off from Cape Kennedy as planned, but a serious problem developed an hour into the flight. A shroud which protected the spacecraft during liftoff had failed to pop off in space, causing the solar panels to fail. Starved for power, Mariner 3 died less than nine hours after its mission began and entered into an eternal orbit around the Sun. Everyone's attention now focused on the remaining spacecraft.

Mariner 4 lifted off flawlessly into the blue Florida sky on November 28, 1964, and by the following summer, the lone spacecraft was closing in on the Red Planet. On the evening of July 14, 1965, it sped past Mars at an altitude of 6,188 miles. Its automated television camera snapped 22 photographs, the first close-up pictures ever taken of another planet. Each picture was broken into pixels and converted into a numerical code for storage on computer tape within the spacecraft.

Mariner required ten days to transmit these 22 pictures back to Earth, where a series of radio telescopes called the Deep Space Network received the weak signals and relayed them to the Jet Propulsion Laboratory in California. There, they were reconstructed into photographs.

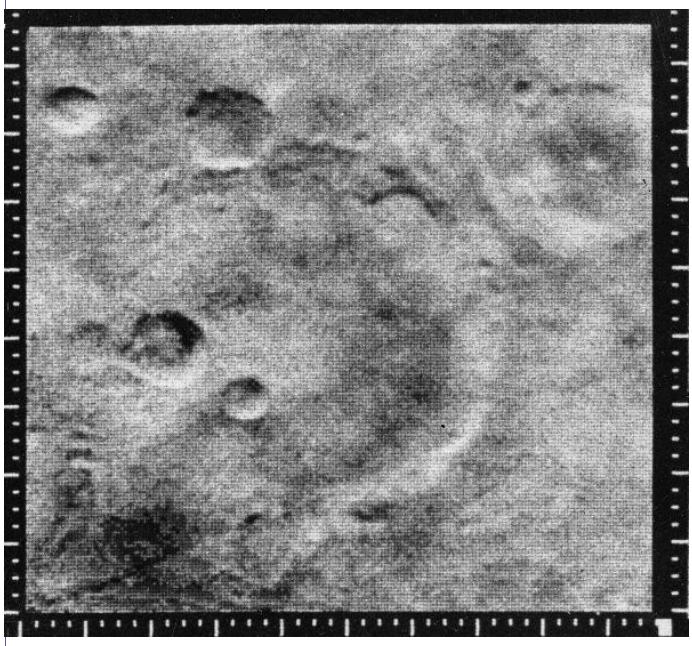
Richard Hoagland's Mariner 4 extravaganza at the Springfield Science Museum featured a two-way link between the museum and the Jet Propulsion Laboratory. As Mariner 4 radioed its pictures back to Earth, NASA relayed them to Springfield, where hundreds of visitors watched breathlessly as they

slowly emerged, line by line, onto a screen in the museum's Mars Complex.

The Springfield Science Museum was the only museum in the country to undertake such extensive coverage of Mariner 4. Several celebrities visited the museum to speak about the historic Mars mission, including Dr. J. Allen Hynek, whose book inspired the movie "Close Encounters of the Third Kind," and Dr. Edwin Land, developer of the Polaroid camera. Also on hand for the event in Springfield was a relatively unknown exobiologist named Carl Sagan, who would become one of the most famous and influential astronomers of our time.

During Mariner 4's close encounter with Mars, the Springfield Science Museum made history's first laser audio transmission. The laser, provided by Perkin-Elmer Corporation, was mounted on the roof of the George Walter Vincent Smith Art Museum, next door to the Science Museum. The laser carried the museum's live Mariner 4 broadcast to a telescope ten miles away on Provin Mountain, where the beam was converted into an audio signal and broadcast over radio station WTIC. Hot weather created scintillation in the laser signal, cutting short this otherwise successful experiment.

Although Mariner 4 photographed only 1% of the Martian surface, the pictures revealed a moon-like world more hostile than many people expected. According to a NASA spokesman, "Although the line of flight crossed several canals sketched from time to time on maps of Mars, no trace of these features was discernible." As the Mariner 4 pictures were streaking back to Earth at the speed of light, Percival Lowell's theories silently passed into history. The canals melted into natural surface features in rough alignment, which Lowell had perceived as straight lines, an optical illusion of sorts.



Western Massachusetts residents were among the first people in the world to view close-up photographs of Mars taken by the Mariner 4 spacecraft in 1965. Photo courtesy NASA.

Richard Hoagland left the Science Museum a few years later. Unfortunately, his interests appear to have gradually shifted from mainstream science to pseudoscience. Hoagland's controversial 1987 book, "The Monuments of Mars," investigates a mountain formation on Mars photographed by the Viking spacecraft in 1976 that bears an uncanny resemblance to a human face. Hoagland saw this and other Martian features as evidence that intelligent beings once lived on the Red Planet, a space-age reincarnation of Lowell's old ideas. A more detailed picture taken by the Mars Global Surveyor in 1998 revealed that the face is nothing more than a rocky mesa which had been transformed by a temporary trick of lighting.

Other spacecraft have followed in Mariner 4's footsteps, revealing a geologically fascinating world with polar ice caps, gigantic volcanoes and canyons, and dried riverbeds. Evidence gathered by the Mars rovers Spirit and Opportunity show that shallow oceans once covered large sections of the Martian surface and may have provided a suitable environment for primitive life to evolve. Today, we are no longer looking for the intelligent beings imagined by Lowell and Hoagland. We'll be happy to find Martian bacteria, a discovery that would be monumental in the history of science.

The Mars Complex at the Science Museum was dismantled soon after the Mariner flight. The gallery now houses the museum's life-size Tyrannosaurus Rex model, but for many years it was called the "Mars Room" in remembrance of that amazing summer of 1965 when Western Massachusetts was witness to the final chapter in the history of Lowell's Mars, and the beginning of our modern exploration of the Red Planet.

ARUNAH HILL NATURAL SCIENCE CENTER

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On the Web at
www.arunah.org

ARUNAH HILL CALENDAR

Please check the website for updates

Month	Day	Event
July	2	Work Party
	29	Public Observing at Notchview
	28-31	Stellafane
	7/29-8/7	Rockland Summer Star Party
	30	Public Observing at Notchview
August	6	Work Party
	26-27	The Conjunction
	27	Work Party (Arunah Hill Days
September	2-5	Arunah Hill Days
	23-25	Connecticut Star Party 21
October	1	Work Party
	1	Public Observing at Notchview
	22	Public Observing at Notchview

Observing Calendar July-Sept 2011

Full Moon Jul 15, Aug 13, Sep 12, Oct 12
New Moon Jul 1 & 30, Aug 28, Sep 27
Zodiacal Light in East before morning twilight from late Sept to early Oct

JUL 10 Uranus Stationary
12 Neptune returns to discovery position
20 Mercury greatest elongation (E 27°)
29 S. Delta Aquarid meteors (ZHR 20)

AUG 4 Vesta at opposition
13 Perseid meteor peak (ZHR 90)
22 Neptune at opposition

SEP 3 Mercury greatest elongation (W 18°)
16 Ceres at opposition
23 Equinox
26 Uranus at opposition
29 Venus & Saturn 1.3° apart