

Blue Mars Rocks? – It would be nice if we were sure that these blue tones were real, but we aren't.

Feature Articles:

p. 2 In Focus: Turning the Detours along the Road to Space into Opportunities – Peter Kokh

p. 4 The Challenges of Mars – Peter Kokh

p. 7 The Red Planet “Blues” – Peter Kokh

p. 8 Artificial Gravity Enroute to Mars and Back Strongly Advised – Peter Kokh



< A preview scene from the movie **John Carter** set for a March 9, 2012 release. Those familiar with the “John Carter on Mars” novels by Edgar Rice Burroughs will not be surprised to see a world populated by several races, each with its own culture, and with unique species of plants and animals. These novels had quite a dedicated following at one time. Will this movie fill today's youth with unrealistic ideas about Mars?

<http://disney.go.com/johncarter/> – trailer

About Moon Miners' Manifesto

- **Moon Miners' Manifesto CLASSICS:** The non-time-sensitive articles and editorials of MMM's first twenty years plus have been re-edited, reillustrated, and republished in 22 PDF format volumes, for free downloading from this location: http://www.MoonSociety.org/publications/mmm_classics/
 - **MMM Glossary:** new terms, old terms with new meanings:
<http://www.moonsociety.org/publications/m3glossary.html>
 - **MMM's VISION:** “expanding the human economy through off-planet resources”; early heavy reliance on Lunar materials; early use of Mars system and asteroid resources; and permanent settlements supporting this economy.
 - **MMM's MISSION:** to encourage “spin-up” entrepreneurial development of the novel technologies needed and promote the economic-environmental rationale of space and lunar settlement.
 - **MMM retains its editorial independence** and serves many groups, each with its own philosophy, agenda, and programs. Sharing MMM may suggest overall satisfaction with themes and treatment, requires no other litmus test.
- Opinions expressed herein**, including editorials, are those of individual writers and may not reflect positions or policies of the **National Space Society**, **Milwaukee Lunar Reclamation Society**, or **The Moon Society**. **Copyrights** remain with the individual writers. Reproduction rights, with credit, are granted to NSS & TMS chapter newsletters.
- **MMM color online downloadable PDF file version option for Moon Society Members** using their username and password – do write secretary@moonsociety.org if you need help with your password.
 - **For additional space news** and near-term developments, read **Ad Astra** magazine mailed to **National Space Society** members. There is a daily RSS feed space news section on <http://www.moonsociety.org>
 - **Milwaukee Lunar Reclamation Society** is an independently incorporated nonprofit membership organization engaged in public outreach, freely associated with the National Space Society, insofar as LRS goals include those in NSS vision statement. MLRS serves as the Milwaukee chapter of both **The National Space Society** and **The Moon Society**: – <http://www.moonsociety.org/chapters/milwaukee/>
 - **The National Space Society** is a grassroots pro-space member-ship organization, with 10,000 members and 50 chapters, dedicated to the creation of a spacefaring civilization.
National Space Society, 1155 15th Street NW, Suite 500
Washington, DC 20005 -- Ph: (202) 429-1600 – <http://www.NSS.org>
 - **The Moon Society** seeks to overcome the business, financial, and technological challenges to the establishment of a permanent, self-sustaining human presence on the Moon.” – Contact info p. 9.
 - **NSS chapters** and **Other Societies** with a compatible focus are welcome to join the MMM family. For special chapter/group rates, write the Editor, or call (414)-342-0705.
 - **Publication Deadline:** Final draft is prepared ASAP after the 20th of each month. Articles needing to be keyed in or edited are due on the 15th, Sooner is better! – **No compensation is paid.**
 - **Submissions by email** to KokhMMM@aol.com – Email message body text or MS Word, Text files, and pdf file attachments or mailed CDs, DVDs, or typed hard copy [short pieces only, less than 1,000 words] to:
Moon Miners' Manifesto, c/o Peter Kokh,
1630 N. 32nd Street, Milwaukee, WI 53208-2040
-

In Focus Turning the Detours along the Road to Space into Opportunities

Many “Return to the Moon” Enthusiasts lament the policy change taken by the Obama Administration. But stop and consider! The overly expensive “socialized and bureaucratic” NASA program was going nowhere, and any partial steps along that now (temporarily?) abandoned path would most likely to have led to “Flags & Footprints 2” – something that may have been temporarily exciting but have at best left the ruins of an outpost, a lunar “ghost town” to the relics of Apollo now dotting the Moon’s nearside. NASA is set upon outdated, ill-conceived brute force rocket technologies.

Meanwhile, the new “Flexible Path” can advance technologies to serve a “Triway” of destinations:

- (1) To the Asteroids (for planetary defense, science, and resources),
- (2) To Mars to answer the questions about life long ago, and perhaps even today, to learn more about that fascinating world, and to prepare for establishment of a second “basket” for humanity, good in itself, but especially as humanity’s insurance policy if something were to go terribly wrong on Earth: some environmental disaster, or a significant asteroid impact, and

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

MMM #253 – March 2012 – Annual “Mars Theme” Issue – p 3

(3) Back to the Moon, for scientific exploration of course, but also because anything pioneers could make for themselves out of lunar materials, could be shipped for 1/23rd the fuel cost to “markets” in Geosynchronous Earth Orbit, **GEO** for constructions of giant platforms hosting hundreds of satellites in the too few allocated spots (180 – 2° apart) and possibly solar power satellite arrays – and to Low Earth Orbit **LEO** – for the construction of large space stations, tourist hotels and more.

But what is really exciting about the “Flexible Path” is that it would prioritize development of technologies needed to pursue each of those paths “successfully” – so time and resources sent to develop life support and transportation technologies (but 2 of a long long list of technologies needed in common) and in that sense, any “delay” encountered on this “**Triway Detour**” path will be a very productive and fertile one. When we do “do” the Moon, it will be “done right, done for keeps,” ditto the Asteroids, ditto Mars.

Putting by dedicated but “horse-blinded” Moon and Mars advocates is a waste of their time. **Get with it!** Yes, we may not get to your favorite destination as soon as you would like, and maybe **not in you lifetime**. Letting such highly personal goals get in the way of humanity doing it right, doing it for keeps, would be bogus. The priority of each and every one of us, and of the various destination-focused groups to which we may belong, is best served by doing it right, doing it for keeps. And as the key technologies needed to pursue each of these destinations are developments needed in common.

Nor should any of these Triway goals be pursued by any “national” space agency, as opposed to by an international effort. The experience of ISS is clear. As long as America (Congress and NASA) were proposing this goal separately, Congressional support was weak, unfocused, and ephemeral. Once President Clinton proposed that we build a station together with the Russians (to keep their scientists “out of mischief”) Congress was motivated to give the go-ahead. And as we took on more and more “international partners” ISS took on a certain immunity to cancellation. We are all “human from Earth.” And our individual histories are but local “episodes” of one shared epic: the Epic movement “out of Africa” to become an “Intercontinental” species. It has taken many thousands of years for this “intercontinentalization” to mature and ripen as it has in the past century. Yes, “ripen” is the right world as we now “bloom and seed” to “birth” a second “epic chapter” – we are about to become “Interplanetary.”

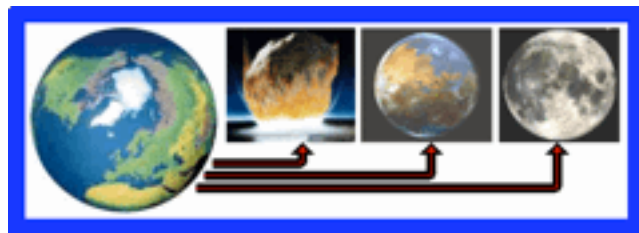
Many, if not most people, are slow to see this, but crossing thresholds are always like this. We do not realize that we crossed one until we are well on the other side. The Moon is the nexus between our “intercontinental habitat” and our much larger “interplanetary” one. Nor, I am sure, will that be the end of our “Out of Africa” epic. It is just a dream right now, but someday, if we play it right and do not selfishly destroy ourselves first for short-term economic advantages, some day, possibly less far in the future than we could reasonably expect, there is another “inter” level of “the beyond” out there. Someday we could, we might, we should become “interstellar.”

Not too long ago, we Americans could delude ourselves into thinking that the future belonged to us, or would be led by us. But given the “globalization/intercontinentalization” of the “world economy” in the past decade or so (beginnings commonly go unnoticed) it is no longer possible to pretend that we are not all in this together.

The “flexible path” more aptly called the “Triway to Space” is pregnant with success. We each owe it to our own dreams, to push this path forward. Moreover, it is a path tailor made for significant commercial contribution.

If you listened to the sorry debates by this year’s crop of Republican presidential candidates, none of them is aboard the train to the future we all want. Gingrich alone seems pro-space. Romney dismisses space. The others ignore it. But the international approach will project a pro-space force that cannot be ignored, and a “Triway” approach will allow us all to reach our goals at a steadily accelerating pace, not the steadily decelerating pace that has prevailed since Apollo 17 boosted off the Moon 50 years ago next December. Take heart!

PK



<http://www.moonsociety.org/presentations/pdf/Triway1.pdf>

NB. One page “Whereas --- Therefore” document in preparation
along with expanded Background Paper

By Peter Kokh and Al Anzaldúa

The Challenges Of Mars

By Peter Kokh, onetime Martian “wannabe”

Many people are understandably more enthusiastic about the prospects of human exploration and eventual settlement of Mars than they are about further human missions to the Moon. The Moon is enormously more visible in our skies, even at times in the daytime, than Mars, and we are bored with its unchanging gray tone appearance. “Familiarity breeds contempt,” as the proverb goes.

Mars, while less frequently, and much less revealingly present in our skies, has become legendary through science fiction as well as by early misunderstandings of the planet’s current climate, similarities to Earth, and of the challenges of thus who would transform Mars into a more Earth-like human frontier by “terraforming.”

Make no mistake, Mars will play an enormous role in humanity’s future. But we will be in a better position to move in that direction, if we better understand the challenges the Red Planet poses for us.

Mars temperature range is much lower than Earth’s or that of the Moon

http://en.wikipedia.org/wiki/Climate_of_Mars

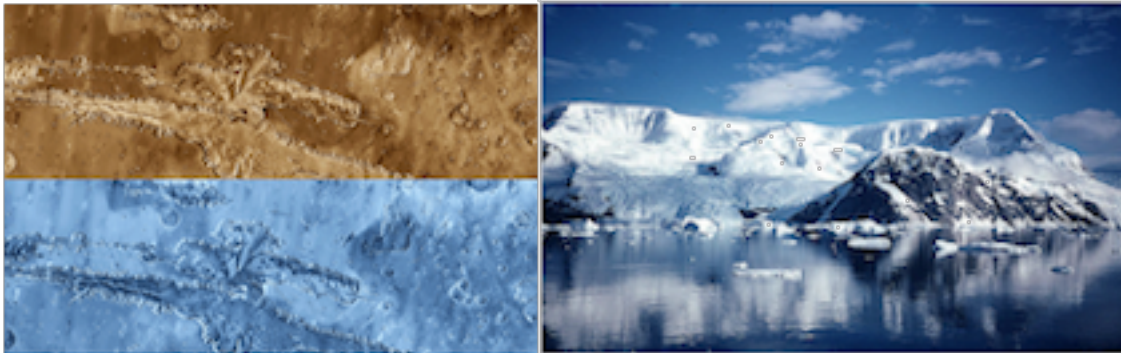
“Surface temperatures have been estimated from the Viking Orbiter Infrared Thermal Mapper data; this gives extremes from a warmest of 27 °C (81 °F) to –143 °C (–225 °F) at the winter polar caps.[17] Actual temperature measurements from the Viking landers range from –17.2 °C (1.0 °F) to –107 °C (–161 °F).”

http://en.wikipedia.org/wiki/Climate_of_Mars#Temperature

In fact, these figures are very similar to the temperature range on Antarctica, which few people seem anxious to settle despite the continent’s fresh breathable air and surrounding fish-teeming waters, and its improving accessibility from other, populated, regions of Earth.

http://en.wikipedia.org/wiki/Climate_of_Antarctica

http://en.wikipedia.org/wiki/Climate_of_Antarctica#Temperature



Mars may look amazingly like Arizona, but we must not fool ourselves. It will feel much more like Antarctica!

<http://www.moonsociety.org/home-page/center-column/changing-images/showimage.php?image=112>

It is puzzling many would-be Mars pioneers have made “life-style” decisions to relocate from the “snow-belt” to the “sun-belt.”

Given that Mars has thin atmosphere and lack of a protective magnetic field provides little protection from cosmic rays and solar flares, we will have to shield ourselves under a blanket of “Mars dust” or loose soil (within lava tubes is another option) at any rate, and this will greatly moderate temperature swings. But make no mistake. The average temperature on Mars at a depth of 2-5 meters is 50° C lower than on the Moon. That means, that whereas Lunar pioneers can store excess dayspan heat for nightspan heating and nightspan cold for dayspan cooling, on Mars, no such easy way to moderate interior temperatures exists. Martian pioneers will need to be tapping various sorts of energy to warm themselves year-around.

For many would-be pioneers, this constant “war” with Mars climate will be too demoralizing. Pioneers from Earth’s cold desert regions will fare much better than those who enjoy sun-bathing on Earth! We do not want to discourage anyone. *Humans will meet the challenge.* But many Mars enthusiasts need to remove their sunglasses. Even if they realize that Mars is not for them, we encourage them to keep supporting human missions to Mars!

Mars’ Long Irregular Seasons

http://en.wikipedia.org/wiki/Climate_of_Mars#Seasons

One of the characteristics of Mars that has long endeared this “future homeland” to would-be pioneers is that Mars has a climate pattern very much like Earth’s Winter, Spring, Summer, Fall, with the seasons in the Southern Hemisphere in inverse sequence from those in the Northern Hemisphere, again as on Earth. But there are two significant differences,

- The sequence is not “cold” - “moderate” - “warm” - “moderate” but rather “very very cold” - “cold” - “moderate” - “cold”
- As Mars orbit is significantly more eccentric, bringing the planet much closer to the Sun during Southern Hemisphere Summer and much further from the sun during Northern Hemisphere Summer as attractive as some northern sites may seem for

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

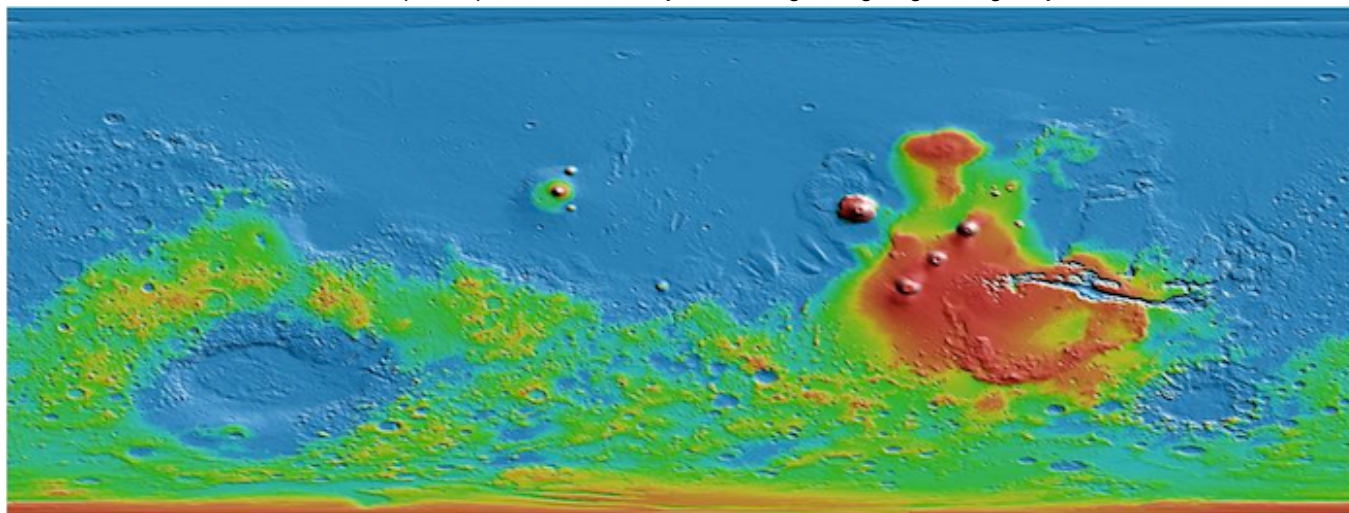
MMM #253 – March 2012 – Annual “Mars Theme” Issue – p 5

settlements, the Northern Climate will be the more challenging. To make it worse, since Mars slows down in its orbit when as it gets further from the Sun, colder Northern Spring (=Southern Autumn) and Northern Summer (= Southern Winter) will be longer than there warmer Southern counterparts. “Daddy why can’t we move to the South? Please!”

Again, since the pioneer habitats will be under the surface at a level where the year-around temperature will be a constant “cold”, future Martians will only notice these climactic differences when they are out on the surface. Now many look forward to the eventual terraforming of Mars: “Red Mars -> Green Mars -> Blue Mars “(but Kim Stanley Robinson forgot a color/ stage between Red Mars and Green Mars - Muddy Mars! “Terraforming” (making Mars more Earth-like) vs. “Rejuvenescence” (meeting Mars halfway) is a whole separate topic in which there is a dire need for realism and respect for Mars. We will bring this up in another issue, perhaps # 263, next year.

<http://www.moonsociety.org/home-page/center-column/changing-images/showimage.php?image=115>

Meanwhile, in choosing sites for a first outpost (hopefully located where it can grow into a viable permanent settlement rather than be doomed to become a historic preserve or the first “ghost town on Mars”) the implications of Mars’ irregular seasons will be taken into account along with other, economic advantages. We have previously written about the unique and superior advantages of a location on the western slopes of Mars Pavonis astride the equator (riddled with lava tubes; ideal site for a launch track up the western very gradual slope, from which spacecraft and payloads could be launched directly into an Earth-Moon rendezvous orbit.) Another site which has unequalled characteristics is Hellas Planitia in the southern hemisphere, the lowest basin on Mars, in which atmospheric pressure will always be the highest, giving it marginally the best climate on Mars.



The mercator map above has been vertically compressed to 75%. The blue areas are below “sea level” and do not indicate ocean beds, but they are where oceans could have been located, “if.” The large blue basin at left is Hellas. On the right we see three volcanoes in a slanting row. Pavonis Mons is the middle one, smack on the equator. This whole “red” area is one lava sheet on top of the other and probably riddled with lava tubes with a “world” of pre-sheltered volume, and could hold the bulk of settler population in the future. Pavonis was the site of a space elevator in Arthur C. Clarke’s “Fountains of Paradise.”

Can future pioneers adjust to Mars’ long and irregular seasons? Of that, I have no doubt! There have been many attempts to create a Mars Calendar. All of them respect the length of Mars’ year, but only one reflects Mars actual seasonal patterns while minimizing cultural implications of the length of Mars year. You are invited to check out my “Mars Pulse” calendar.

http://www.moonsociety.org/publications/mmm_papers/marspulse_cal.html

The Challenges of Shielding Habitats on Mars

On the Moon, thanks to Apollo on location measurements, we have a good feel for how deep the moondust “regolith” blanket is, and how that depth varies. In the more recently formed lava flows that feel many of the Moon’s impact basins and other lowlands, as these areas have not been subject to as much bombardment as have the much older “highlands” the blanket is generally 2–5 meters, whereas in the highlands it can be as thick as 10 meters. In both cases, this is more than adequate for the purpose of “tucking our habitats under a blanket” to shield not only from cosmic rays and solar flares, but also for moderating interior temperatures through the dayspan–nightspace–dayspan cycle.

On Mars, we have much less feel for the depth of the Marsdust “regolith” blanket. But clearly, as Mars does have a thin atmosphere, the winds have concentrated dust to great depths in “dunes” areas, and scraped the surface nearly clean in other areas where patches of bedrock were quite visible to the passing through cameras on the Mars Exploration Rovers **Spirit** and **Opportunity**, witness the image on the cover page.

In the “dunes” areas, which are quite extensive, we could place a habitat complex in between dunes and pull down the marsdust on top. These dunes do move, as do their counterparts on Earth, but given the greatly reduced power of Martian winds, these changes will be tolerably slow. Another suggestion is to burrow into a mountain side. Sounds easy, but that could be quite a project!

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

MMM #253 – March 2012 – Annual “Mars Theme” Issue – p 6

Yet another idea, and a good one, is to use what soil is available to make mars bricks or blocks and build a sheltering structure with them. At the least, a perimeter of Mars blocks or bricks could be used to tightly contain marsdust so that we need less of it.

But where the surface dust is not very deep, shielding may require import of marsdust from elsewhere, hopefully nearby. It is quite clear that the availability of shielding material must be a consideration in choosing a site to locate any outpost that we intend to be the seed of a permanent settlement. It is not at all clear that anyone had considered this.

The way pioneers shield themselves in various areas on Mars, will create a characteristic “architectural style” that will encourage visiting tourists from Earth, as well as from any settlement on Mars, to travel to other areas for one of the reasons tourists on Earth to visit “different” and “distinctive” regions on our home planet. And that will be a plus for the infant Mars’ economy.

The challenge of keeping habitat spaces at “room temperature” will be greater at distances north and south of the equator, as it is here on Earth. Our prediction is that Mars pioneers, if carefully selected or self-selected, will be up to the challenge. The results will add to the tourism-worthy differences between different settlement clusters on Mars.

Mars has as much land area as all Earth’s continents combined

That’s a challenge? Well, that’s a lot of land to settle. Settlements could be antipodes apart. There could be clusters of settlements here and there with great stretched in between providing transportation challenges. It may be quite a while before there is any sort of circum-global road network. The implications are that unless the original settlements are “clustered” in a way that makes mutual access (trade, collaboration, sports, rescue, etc.) easy, it will be that much more difficult to build a “Mars economy.” Yet there are in fact areas that will not be soon mutually accessible but yet are each attractive for settlement. My choice would be the lava-flow-built Tharsis Ridge which gives access to the Valles Marineris area, the most scenic tourist-tempting area on Mars. Other areas can come later. If NASA or an international collaborative effort are tasked with setting up just one location, not looking at the options for growth, they will pick a site fated to be that “first ruin” on Mars;\ (regolith depth varies much lava tubes (Pavonis, Olympus, etc.

The Import/Export Challenge of Mars

Mars is a long way from Earth, or rather from the Earth-Moon “econosphere” – in terms of the speed of light, a 6–40 minutes conversation gap vs. less than 3 seconds. In terms of one-way travel with present rocket technology, 6–9 months vs. 3 days. But that is the least of it. The Moon is in an orbit around Earth at a distance that does not vary greatly. Travel between the two is possible at virtually any time. Earth and Mars are in two different orbits around the Sun. Mars has a longer trip to make at lower speeds. They “line-up” every 25 plus months. So travel “windows” are brief (a month or so) and infrequent. And we must not overlook that some of these launch windows, as many as 2 or 3 in a row, may be in “Active Sun” periods in which the possibility of Coronal Mass Ejection solar flares could erupt with not enough notice, endangering those caught in space en route.

Someday, Vasimir-type rockets (“technologically infeasible” say some, “not” say others) and nuclear-thermal rockets could shorten the travel time and widen the departure-arrival windows. That will ease things greatly for travelers.

http://en.wikipedia.org/wiki/Variable_Specific_Impulse_Magnetoplasma_Rocket (Vasimir)

http://en.wikipedia.org/wiki/Nuclear_thermal_rocket

It is clear that import and export supply runs will have to be planned well in advance. It will be vital to stockpile needed supplies – enough to last perhaps two cycles c. 51 months, over 4 years! Whereas lunar settlements can live and thrive at the end of an “umbilical cord,” for Mars, a “yolk-sac” situation is the only one viable under travel conditions currently feasible.

For both Moon and Mars, the principle export markets will be installations in Low Earth Orbit (LEO) and Geosynchronous Earth Orbit (GEO) where, when timing is not the number one issue, shipments from Mars will require less fuel cost, and from the Moon much lower fuel costs yet, than sourcing equivalent products up from Earth’s surface, simply because of the differing depth and intensity of the three gravity wells. Installations in any of the Earth-Moon Lagrange Points will also be markets for goods from Mars and the Moon.

Yet imports from the Moon will be more attractive than those from Mars, all else (type etc.) being equal, as the Moon’s gravity well “dimple” is much shallower than that of Mars. If cargos can be launched directly into an Earth-Moon orbit using only electric power and no fuel (the Mons Pavonis launch track) and needing no engine except to ease into orbit at the chosen Earth-Moon system location, that could go a long way towards diminishing the Lunar launch advantage – EXCEPT that one can launch from the Moon, in an emergency, at virtually any time.

That Mars is volatile-rich in comparison with the Moon, gives it an edge in products composed largely of such elements: natural organic material products and plastics.

Finally, Mars and the Moon will make natural trading partners.

<http://www.moonsociety.org/home-page/center-column/changing-images/showimage.php?image=45> PK

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

The Red Planet “Blues”

By Peter Kokh, onetime Martian “wannabe”

Mars would seem to offer both viewers from afar and future visitors and pioneers, a monotonous pallet of orange–salmon–beige coloration. Now the Moon’s pallet is perhaps just as monotonous, but at least Mars’ hues do have noticeable color from afar.

Up close, the situation is a little different. The Moon, is transformed into a mini–Mars during eclipses when the Sun’s light reaches the surface only after being refracted by the orange–hued dust in Earth’s atmosphere. That may seem a curiosity for those of us on Earth, but for future lunar settlements, that will mean big bucks from tourists timing their visits to the Moon to experience this awesome temporary and infrequent transformation, as well as for lunar pioneers themselves. We stray off topic.

<http://www.moonsociety.org/home-page/center-column/changing-images/showimage.php?image=91>

Mars pioneers will “compensate” in several ways. Inside their living and working spaces, there will be abundant greenery. Plants will be an integral part of the Life–Support System as well as an integral part of the “morale system” if you will. Of all systems, the human one is the most fragile, and thus maintenance of high morale has top priority, after just “keeping alive.” Foliage itself comes in many shades of green as well as other colors. Flowers will be highly appreciated. You can expect that the “green thumb” culture on Mars will be much more cultivated than here on Earth, where nature provides so much “outdoors.”

<http://www.moonsociety.org/home-page/center-column/changing-images/showimage.php?image=63>

Clothing on Mars will be as colorful or more so than on Earth, for the same reason. Ceramics and stained glass will add. How about glass windows which “translate” Mars’ “salmon–colored skies” into blue ones? The ruddy skies could give one the blues after a while.

Out on the surface, brightly colored vehicles and signage will be easier to pick out against the landscape, a matter of safety. Although, a test at the Mars Desert Research Station showed that regular shapes with set colors can be picked out from the background fairly easily. Roadway signs will have to stand out, both in daylight and headlight conditions

<http://www.moonsociety.org/home-page/center-column/changing-images/showimage.php?image=60>

But what about those distinctly “blue” rocks that show up on **Spirit** and **Opportunity** photos of Mars surface, such as the photo on the cover page of this issue? If you get MMM as black and white paper hardcopy, you can see another such image at: http://www.astrobio.net/images/galleryimages_images/Gallery_Image_7054.jpg

While NASA says it does not doctor the colors on this or similar photos, one wonders if we can be certain that a human eye will see the same shades and tones? We might have to wait until we have “people on the ground.” But who can argue with some welcome coloration outside the range of the usual Mars hues pallet?

Would chemical treatment of rock surfaces to alter the color be something the Martian “Green” Movement would embrace or want to ban? It would be better if we found areas where the coloration of rocks and/or soil was different, as such places would become tourist destinations, boosting at least the local economy. But surely sculpture gardens at “take a break and rest” road waysides would be universally welcome, and here the coloration could come from metal tones, ceramics, stained glass – a treat for the eye that gives the tired body a break as well.

For the Moon Society’s “Artemis Moonbase Sim 1” exercise at the Mars Desert Research Station in Utah in early 2006, of which I was the commander, on a hunch when I happened to see them at a hardware store in Iron Mountain, Michigan (my summer cottage is nearby), I picked up six pair of sunglasses with very large wraparound green lenses. Sure enough, they transformed the decidedly Martian coloration of the MDRS landscapes from orange family hues to whitish tones with a very faint orange tint. The transformation was remarkable.

Most of us have seen photos of Martian sunsets, and these leave a lot to be desired, as the gradation of hues is very coarse. Again, we’ll have to wait until humans are there. Perhaps **Curiosity**’s camera(s) will be much improved and can stun us with more believable photos. Curiosity, aka The **Mars Science Laboratory**, is due to arrive on Mars August 6, 2012.

http://mars.jpl.nasa.gov/MPF/ops/best_sunset.gif

http://www.jpl.nasa.gov/images/mer/2004-02-26/mars_sunset-640.jpg

http://en.wikipedia.org/wiki/Mars_Science_Laboratory

How would fireworks look against the Martian sky? (do they need oxygen to ignite?)

Mars narrow color pallet is a challenge. One could get bored with it all too quickly. But I have a hunch that the pioneers will be inventive enough and challenged enough to be able to insert all sorts of treats for the eye. **PK**

For More on Mars in MMM’s past, and on Mars vs. Moon see the following:

<http://www.moonsociety.org/mars/>

http://www.moonsociety.org/publications/mmm_themes/mmmc_Mars1.pdf

http://www.moonsociety.org/publications/mmm_themes/mmmc_Mars2.pdf

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

Artificial Gravity enroute to Mars and back strongly advised

By Peter Kokh, onetime Martian “wannabe”

Why there is a need

While some brainstorm designs for Mars-bound craft have included provisions for simulating gravity, most writers and designers dismiss the need. Admittedly, such a design requirement would make the craft heavier, more expensive, and because of the added weight, such a craft would require a more robust and more expensive propulsion system – all conditions to be avoided. But hold on a minute! Compare that extra expense to the cost of minutes wasted on Mars by crew members taking time to get their legs back so that they can use their priceless hours on Mars to accomplish the goals they came to do! Most of us are aware how helpless persons find themselves on returning to Earth after a year in “zero-g.”

There is no comparison of the cost of wasted time on Mars to the cost of avoiding the problem by providing shipboard artificial gravity – at the 3/8ths G level they will experience on Mars, and which would allow them to “hit the ground running.” The tipping of the scale is so very self-apparent that it makes one wonder what universe its proponents are living in. Zubrin’s “Mars Direct”, NASA adaptations thereof, and Elon Musk’s Falcon Heavy Mars trip scenarios do not address this problem, despite its obviousness (when you think about it in the terms stated above.

Now if the pennies need to be pinched, the crew could return to Earth in “free fall” as there would be no such urgency to get back on their feet on arrival. Like the MIR and ISS astronauts returning to Earth after very long stays in space, they would eventually recover for the most part. Permanent vision problems reported are hardly disabling. Most people lose some visual acuity as they age anyway. (This writer gets to see 2 or 3 stars where everyone else sees but one. But I can still type and do all I need to do. It’s not fatal!)

If we do provide artificial gravity on the return trip, it could start at Mars-normal 3/8ths G and gradually ramp up to full Earth-normal gravity by arrival, so that the returnees could hit the lecture circuit right away!

How we can provide artificial gravity en route

We do not intend to go into design options in this article. To help you visualize the options, consider the artificial G rotating circular running track in the classic film 2001: a Space Odyssey. There are a number of other films where set designers have gone where no NASA designer dared to go.

Rotating cylinders are the common answer. They do create a problem as their rotation would induce a counter rotation in the rest of the vehicle and that is to be avoided. A pair of mutually counter-rotating sections is one answer. A simple flywheel turning in the opposite direction would be much simpler.

Most of the illustrations show a very short radius which might induce coriolis problems. The simple trick of colored directional cues, with experience, would keep crew members from turning too fast in certain directions.

Another solution that has been advanced, is to divide the ship into two sections, crew quarters and everything else, pay them out and apart on a tether (a twist-resistant beam or truss would work much better if it were collapsable) then induce rotation about a common center of gravity.

Now there is an ideally perfect option: thrust at 1 G halfway to Mars, flip directions and decelerate at 3/8th G until you arrive. Unfortunately, we know of no engineerable way to do this, or of no propellants with this much oomph for the same mass. With such a system, one could get to Pluto in a week, if I remember correctly (I did the math for all Earth to planet destinations 3 decades ago, on paper, and have no idea if that sheet of paper still exists. Oh yes, to Alpha Centauri in 3 years and we know that isn’t going to work! Jerry Pournelle did the math as well I believe and it may be in one of his paperbacks. Back to the real early 21st Century!

Our purpose here is not to pick the ideal engineering solution, but to help ostrich-minded designers to take a peek at the real world and abandon and start from scratch. Look at all the options and their variables and weigh the plusses and minuses of each, compare the nickels and dimes, determine what needed technology and engineering items are not yet on the shelf, and in general, get to work and give us some real designs.

And Oh by the way, if you can give us some shielding while you are at it, enough shielding so that we can make the Earth-Mars run and Mars-Earth run in Active Sun periods as well as in Quiet Sun years, that would be marvelous. It would be a pity to send out a crew on a very expensive mission only to have them fried on the way by some unexpected Coronal Mass Ejection solar flare event. Now to be honest, these events are directional, and by luck none will expand in the vector our Mars-bound or Earthbound ships are traveling. The gambler needs to know when to fold the cards, however.

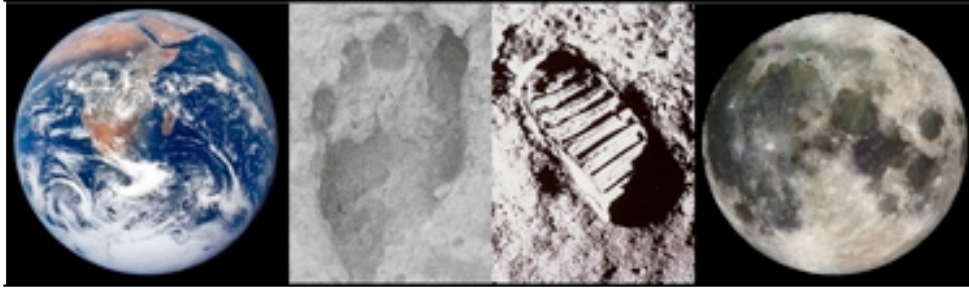
If we are only going to send a ship or two to Mars just to say “Kilroy was here” on an expensive remake of “Flags and Footprints I” perhaps we can take the gamble. But if we are going to stay, the only option that makes any sense at all, including economic sense, we need to gamble intelligently.

Calling all readers

If you find any designs of Mars-run ships that provide artificial G – online – please email MMM the URL (web address) to kokhMMM@aol.com (caps not necessary) and when we get a few, we will publish them. PK

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

From Africa
to the Moon,
the Human
Epic, told in
footprints,
Continues
to the Stars!



Our Goal is
Communities
on the Moon
involving
large scale
industrializa-
tion and
private
enterprise.

The Moon Society Journal Section (pages 9–12)

About the Moon Society

Objectives of the Moon Society include, but are not limited to:

- **Creation** of a spacefaring civilization, which will establish communities on the Moon involving large-scale industrialization and private enterprise.
- **Promotion** of interest in the exploration, research, development, and habitation of the Moon, through the media of conferences, the press, library and museum exhibits, and other literary and educational means
- **Support** by funding or otherwise, of scholarships, libraries, museums and other means of encouraging the study of the Moon and related technologies
- **Stimulation** of the advancement and development of applications of space and related technologies and encouragement their entrepreneurial development
- **Bringing together** persons from government, industry, educational institutions, the press, and other walks of life for the exchange of information about the Moon
- **Promoting** collaboration between various societies and groups interested in developing and utilizing the Moon.
- **Informing** the public on matters related to the Moon
- **Provision** of suitable recognition and honor to individuals and organizations that have contributed to the advancement of the exploration, research, development, and habitation of the Moon, as well as scientific and technological developments related thereto.

Our Vision says it all – “Who We Are and What We Do” – www.moonsociety.org/spreadtheword/whowhat.html

We envision a future in which the free enterprise human economy has expanded to include settlements on the Moon and elsewhere, contributing products and services that will foster a better life for all humanity on Earth and beyond, inspiring our youth, and fostering hope in an open-ended positive future for humankind.

Moon Society Mission

Our Mission is to inspire and involve people everywhere, from all walks of life, to create an expanded Earth–Moon economy that will contribute solutions to the major problems that continue to challenge our home world.

Moon Society Strategy

We seek to address these goals through education, outreach to young people and to people in general, competitions & contests, workshops, ground level research and technology experiments, private entrepreneurial ventures, moonbase simulation exercises, tourist centers, and other means.

Interested in having input? Any member may ask to join the Leadership Committee and attend our Management Committee meetings held twice monthly. You may even express opinions. Decisions are often made by consensus, so this input has value. Write president@moonsociety.org

From the desk of Moon Society President Ken Murphy

Even if, like me, you don't watch television, you have to have noticed increased coverage of our Moon. This bodes well for our organization, but means more work, too. The Society Leadership has projects underway to cement our 501c3 status, and to generate revenue flows for initiatives like scholarships. But we need you to make things happen. It doesn't take much, but there are things you can do to help the cause:

- An MMM subscription for your local library.
- Write a letter/editorial on commercial space for your newspaper.
- Call your congresscritter; tell them to support commercial space initiatives.
- Post Moon-positive comments on the internet.
- Find one new member for TMS by year-end 2012.

The last is the most important. If this Moon thing is going to happen, we need to be in the vanguard of that effort. Help us to make that happen. Get involved! – KM

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

The Moon Society’s Sunday Track at ISDC 2012 Washington, DC – May 27th “The Cis-lunar EconoSphere” – that’s “S” as in “\$”

The annual International Space Development Conference hosted by the National Space Society and co-sponsored by the Moon Society is our annual “best chance” to reach out to space enthusiasts. We have a triple focus for the Sunday track slot we have been awarded.

1. **“Our program will be geared to speakers from Gen X” (Wikipedia; “born from early 1960s through 1981” and “Gen Y” (or Millennial Generation born in the 1980s and 1990s).** These are the generations that are going to make a real breakout into space happen, if they can. “The legacy they’re being bequeathed is quite pathetic when you get down to brass tacks,” says Moon Society President Ken Murphy.

As to the Gen X and Gen Y attendees, this will be a hard sell, as many from these generations are more internet-, and present moment-focused, and less concerned about the long term future.

A Cislunar Symposium: The “Cislunar EconoSphere.” The idea is to showcase how cislunar space (Lunar Space down to Earth orbit), is already a place of commerce, and how extending that to the Moon will only make it grow. Here we’d have to reach out to select speakers, and might be asked for certain ‘accommodations’. However, it also gives us a chance to really sell our message of commercialization. Our buzzword is the **“Cislunar EconoSphere.”** Its all about the tremendous capacity to grow Earth’s Economy outward, based on tapping lunar resources to expand for profit activities primarily, but not exclusively, in Geo-Synchronous Orbit, GEO, which already contributes some \$250 Billion in services annually to the global economy, and is growing rapidly (satellite to home TV being the single biggest money-making sector.)

2. **Moon-focused presentations are submitted by other speakers.** Some will be on current and proposed lunar science and missions. We are sure to hear some new ideas, as well as improved and reinvented ideas that have been around a while.

If you can attend this year’s ISDC in our nation’s capitol, we encourage you to do so. We may again cohost an evening meet and greet hospitality event. You will find information on registration for ISDC in this newsletter. If you have never attended this **“Big Tent” conference**, you owe it to yourself to do so. And if not this year, then next when ISDC will be in San Diego. This conference attracts enthusiasts and speakers from all space-focused groups and organizations, and it is the **planned and unplanned networking** that goes on between people (speakers, attendees, and groups) that makes the annual ISDC such an important event, one that year after year has an effect on the future. Because of this “big tent” atmosphere and attendance, the ISDC is a far more productive an environment for Moon Society members to gather than would be any Moon Society hosted “go-it-alone” gathering.

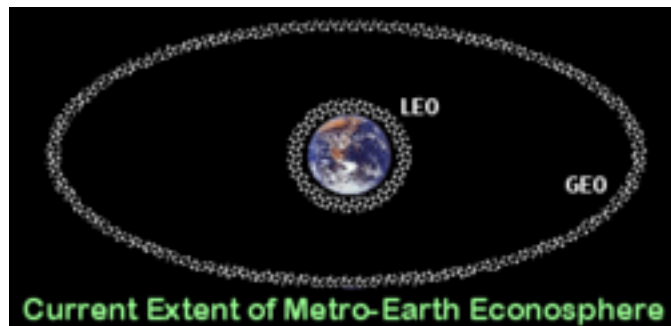
Background Reading: Part I & 2 of Ken Murphy’s article on the Cis-Lunar EconoSphere –

<http://www.thespacereview.com/article/2027/1> – <http://www.thespacereview.com/article/2033/1>

Check out the diagram (too large to print here) <http://www.thespacereview.com/archive/2027aa.jpg>

Shown are EARTH, LEO (Low Earth Orbit), GEO (Geosynchronous Earth Orbit), EML1, the Moon, and EML2 (the Earth-Moon stable libration points in front of the Moon’s nearside and behind the Moon’s farside, the amount of DeltaV (change in velocity, requiring fuel) to go from one of these points to the other, and what it makes sense to put in each location, and what items are most economically sourced from where (that is, from Earth or from the Moon.)

It becomes clear, as we have been saying in MMM all along, that the only way to build out GEO to its full economic potential is with resources from the Moon. Satellites and Satellite Services in Geosynchronous Earth Orbit already account for \$250 billion of economic product annually. As GEO lies 3 Earth diameters above Earth’s surface, the diameter of Earth’s Econosphere is already $[3+1 \text{ (Earth itself)} + 3 = 7]$ Earth diameter’s wide. Earth’s economy has already expanded into space and it is at the point where only lunar resources can develop this Greater Earth Economy to its full potential, and at a fraction of the cost of bringing equivalent products up from Earth’s surface.



The Moon Society – Lunar Frontier Settlement – www.moonsociety.org p.3

Please Keep Your Contact Information up-to-date

It happens all too often that a member who gets the Society newsletter, Moon Miners' Manifesto, by hard-copy to hi/her mailing address on record, moves and fails to inform us of the change of address. “I gave the Post Office my new address for forwarding mail. Shouldn't that take care of it?

Well, no! MMM is sent by second class mail (much less expensive and that keeps you dues rate down.

The Post Office does *not* forward 2nd Class bulk mail.

So if you move (and stop getting MMM) please let us know at secretary@moonsociety.com

Now if you have chosen to get the electronic colored PDF file version of MMM, you should be covered, right? Well, not quite. If you change or have changed your email address and failed to notify us, you will not get the announcement that “the next issue of Moon Miners' Manifesto is ready for download.”

Not getting that reminder, you might well not think “it must be time” – and then check the download address at <http://www.moonsociety.org/members/mmm/> – but if you don't think of it – and we all lead busy lives – you will stop reading MMM and when it comes time to renew, you will feel less motivated to do so.

Good habits make life go more smoothly – when you move, and/or change your email address, take time to let us know. You paid your dues, but **it is up to you to see that you do your part to keep connected.**

We are busy too, and can't take time to track you down when your contact information changes!

Now, you can always use your Moon Society username and password to change your contact information yourself, (and to check if we have it right) at <http://www.moonsociety.org/mymoon>

But, of course, if you forget your username and password you are stuck! Right! No, just email us at secretary@moonsociety.org and we will work with you to reset it to something easy for you to remember. We admit that the randomly assigned usernames and passwords you receive are not easy to remember, but they can be changed!

So don't just drift out of touch! Let us help you stay connected. You paid for your membership benefits. Let us help you get the full use of them! That's what we are here for. Failure on the member's part to stay connected is the number one reason members decide not to renew. secretary@moonsociety.org

March

Chapters & Outposts

2012

ORGANIZING “OUTPOSTS”

Bay Area Moon Society, CA Outpost – South San Francisco Bay – <http://www.moonsociety.org/chapters/bams/>

Contact: Henry Cates hcate2@pacbell.net Meeting the 1st Tuesday of the Month at Henry's home

Moon Society Nashville Outpost – Contact: Chuck Schlemm - cschlemm@comcast.net

Moon Society Knoxville Outpost – Contact: Jason Tuttle – tuttlepc@gmail.com

Rockford, IL Outpost - Contact: Bryce Johnson – lesausl@sbcglobal.net

Moon Society Milwaukee Outpost (MSMO) –

http://www.moonsociety.org/chapters/milwaukee/msmo_aboutus.htm Contact: Peter Kokh
kokhmmm@aol.com – http://www.moonsociety.org/chapters/milwaukee/msmo_output.htm

Moon Society Milwaukee Outpost meets together with the **Milwaukee Lunar Reclamation Society NSS** chapter on the 2nd Saturday afternoon of each month except in July and August, 1–4 pm, Room G110 lower level Mayfair Mall, 2500 N. Mayfair Rd., Wauwatosa, WI. The “LRS” NSS chapter has recently reorganized under its original name (“MLRS” as above) to regain its nonprofit status. MLRS is the publisher of Moon Miners' Manifesto under contract to the Moon Society.

MLRS was the first “joint chapter” of the former L5 Society and the former National Space Institute, serving members of both organizations prior to their official merger at the 1987 International Space development Conference in Pittsburgh, creating the National Space Society. MLRS hosted the 1998 ISDC in Milwaukee and gave a full track all 4 days to the Moon Society's predecessor in membership services, Artemis Society International.

OUTPOST NEWS: The **Green Bay, WI** based College of the Menominee Nation campus chapter had dissolved when its leader, Dan Hawk found a new position. He and Dave Dunlop, former Moon Society Director of Project Development, remain active, however, and a recent effort to host a Team Israel (Google Lunar X-Prize contender) event at a local synagogue was a big success, and might encourage them to reorganize. However, Dave is on the road a lot.

ORGANIZED CHAPTERS

Clear Lake NSS/Moon Society Chapter (Houston) – <http://www.moonsociety.org/chapters/houston/>

Contact: Eric Bowen eric@streamlinerschedules.com – Meeting 7 pm in the conference room of the Bay Area Community Center at Clear Lake Park – Next Meeting dates: March 12th – May 14th

February Report: Jay Lewchanin is now the new Treasurer for the Clear Lake Area (Houston) NSS & Moon Society Chapter, replacing Marianne Dyson who stepped down after many years of service. Marianne continues to serve as a Chapter board member along with Murray Clark.
Report by Eric Bowen

Moon Society St. Louis Chapter - <http://www.moonsociety.org/chapters/stlouis/>

Contact: Robert Perry surfer_bob@charter.net – Meetings 3rd Wed monthly at Buder Branch Library, 4401 S. Hampton, in the basement conference room – Next meetings – MAR 14 – APR 18 – MAY 16

February 15th Meeting Report: The St. Louis chapter of the Moon Society had their regular monthly meeting at the Buder Branch Library on Wednesday, the 15th of February. Dabney Tolson, Tom Kullman, Dave Dietzler, Mark Rode, Keith Wetzell, Bob Perry, and Rufus Anderson attending. Rufus used his laptop and projector to show Star Gaze II, such a fascinating DVD of Hubble photos that there was essentially no discussion. In an email after the meeting Bob passed on the URL – <http://www.htwins.net/scale2/> – Some of the nebulae in the video were huge, and the URL has several of them, with notes.

Moon Society Phoenix Chapter - <http://www.msphx.org> – Contacts: Craig Porter portercd@msn.com Meeting the 3rd Saturdays of the month at Denny's, 4403 South Rural Road, Tempe Next: MAR 17 – APR 21 – MAY 19 **February 18th Meeting Report**

LepreCon 38: Solar Based Solar Power Demonstrator to be built, but won't be available for this convention. Stand Up for table should be ready in time to introduce the concept to table visitors. A "Free Energy" demonstrator should be ready for the table, should show the reception of the transmitted energy from the SBSP system.

A "Solar Power" demonstrator should also be available for the table.

A Stand Up for Don's Settlement on the Moon.

We will have a Lunar Globe available for the kids to look at and on which to locate features.

We will have "Lunar Videos" available for visitors. We will have at least two panels.

We have the information on the "Space Based Solar Power" demonstrator and are going over it to determine costs and parts requirements and to see if there is a way to "improve" the demonstrator. Don and I will be working on this project together.

Telepresence Racing: The racing has experienced some problems with the signal reception that are being worked on to improve the capability of the racers to demonstrate the abilities of the racers to be used remotely.

Mike's Treasurer's report was received and, yes, we have money in the treasury.

Web Site: The Chapter's minutes are posted. There is also a Calendar on the site for scheduled events. Tranquility Community College is still in need of papers and articles to fill out various branches of the college.

There will be a new "Disaster Strikes" Manual by mid-summer, it is expanded and will have more pictures and illustrations in it. We should have a "Surface Transportation" paper covering High Speed point to point transportation that include Storm Shelters, Emergency and general communications trafficking along with emergency services for "Surface Prospectors."
Craig

Moon Society DUES with Moon Miners' Manifesto Join/Renew Online – www.MoonSociety.org/register/

Electronic MMM (pdf) \$35 Students/Seniors: \$20 Hardcopy MMM: U.S./Canada \$35, Elsewhere: \$60

Moon Society Mail Box Destinations:

Checks, Money Orders, Membership Questions

Moon Society Membership Services: PO Box 940825, Plano, TX 75094-0825, USA

Projects, Chapters, Volunteers, and Information

Moon Society President's Office, 5015 Addison Circle #420, Addison, TX 75001

Moon Society Publications – Chapters Co-ordinator

PO Box 395, Milwaukee, WI 53208-0395

GREAT BROWSING LINKS - FOCUS ON MARS

ASTRONAUTS + SPACE TECHNOLOGY

<http://www.space.com/73-orion-capsule>

<http://www.space.com/14484-red-bull-stratos-supersonic-space-jump.html>

NASA receiving record #s of Astronaut Applications

<http://www.space.com/14469-nasa-astronaut-applications-records-spaceships.html>

Final NRC Report On Space Technology Roadmaps

http://www.nasa.gov/home/hqnews/2012/feb/HQ_12-039_NRC_Roadmaps.html

MOON

<http://au.ibtimes.com/articles/227901/20111010/report-rich-titanium-ore-reserves-on-moon-could-warrant-lunar-mining.htm>

<http://lunarnetworks.blogspot.com/2010/07/lroc-aristarchus-up-from-depths.html>

<http://www.space.com/14518-nasa-moon-deep-space-station-astronauts.html> Chandrayaan-2

Indian Moon lander/rover mission postponed three years

<http://www.thehindu.com/news/international/article2854134.ece>

Growing the Cis-Lunar EconoSphere <http://www.thespacereview.com/article/2027/1>

MARS

http://www.spacedaily.com/reports/SwRI_led_RAD_measures_radiation_from_solar_storm_999.html

<http://www.space.com/14412-mars-sand-dunes-art-photos.html>

<http://www.nasaspaceflight.com/2012/01/opportunitys-eight-years-mars-story-science-endurance/>

<http://www.nasaspaceflight.com/2012/01/sls-exploration-roadmap-pointing-dual-mars-approach/>

<http://www.space.com/14483-mars-ancient-ocean-evidence-european-probe.html>

<http://www.space.com/13681-mars-biggest-mysteries-water-life.html>

<http://www.space.com/14476-mars-super-drought-alien-life-dry.html>

http://www.marsdaily.com/reports/Surface_of_Mars_an_unlikely_place_for_life_after_600_million_year_drought_999.html

<http://www.space.com/14539-russian-mars-probe-failure-investigation-computer-crash.html>

http://www.marsdaily.com/reports/Mars_rocks_indicate_relatively_recent_quakes_volcanism_on_Red_Planet_999.html

<http://www.space.com/14694-nasa-budget-mars-exploration.html>

<http://www.guardian.co.uk/lifeandstyle/2012/feb/24/i-went-on-mission-to-mars>

<http://www.forbes.com/sites/alexknapp/2012/01/31/russian-govt-blames-mars-probe-failure-on-program-ming-glitch/> - Official Phobos-Grunt failure report

Participants sought for 120-day Mars analog study <http://manoa.hawaii.edu/news/article.php?ald=4876>

www.planetary.org/blog/article/00003351/Palestine_students_work_with_NASA_on_future_Martian_colony

<http://palestineherald.com/localscene/x1561259407/Mission-Mars>

Need for real “rocket science” to solve mystery of Phobos-Grunt failure

<http://www.thespacereview.com/article/2016/1>

Wind blown deposits on Mars - http://www.esa.int/SPECIALS/Mars_Express/SEM1NHTXXXG_0.html

http://esamultimedia.esa.int/images/marsexpress/540-20120117-9487-co-SyrtisMajor_H1.jpg

GREAT SPACE VIDEOS

<http://www.cnn.com/video/#/video/us/2011/11/26/nr-curiosity-motivate-kids.cnn>

<http://www.space.com/14406-solar-storm-radiation-dangerous-human-space-exploration.html>

<http://www.space.com/14420-alien-atoms-contact-nasa-satellite.html>

<http://www.space.com/14406-solar-storm-radiation-dangerous-human-space-exploration.html>

<http://www.space.com/14347-apollo-1-remembered-report-archives.html>

<http://www.space.com/14448-europe-space-program-spurring-job-growth.html>

<http://www.space.com/14613-expansive-antarctic-ice-crack-virtual-fly.html>

<http://www.flixxy.com/hubble-ultra-deep-field-3d.htm> - by all means do check this one out!

<http://www.space.com/14612-china-manned-space-mission-shenzhou-9.html> - impressive

Robert Strom's lecture on global warming: - <http://education.azpm.org/azconnection/>

Space-X fires advanced new engine - <http://youtu.be/PUUnYgo1-II>

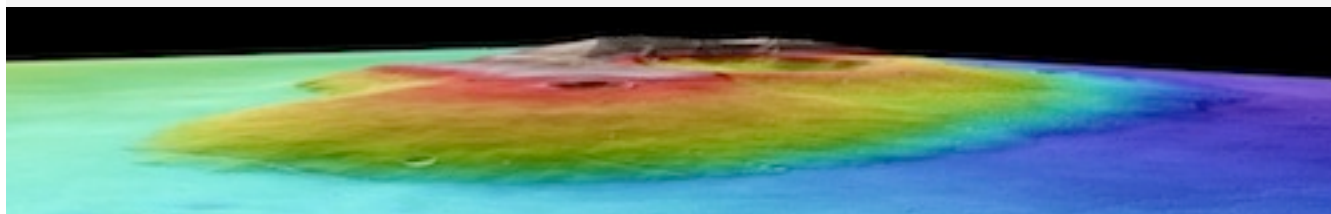
130-some Space Shuttle Videos-<http://www.nss.org/resources/library/shuttlevideos/index.htm>

NSS Video Library - <http://www.nss.org/resources/library/videos/index.htm>

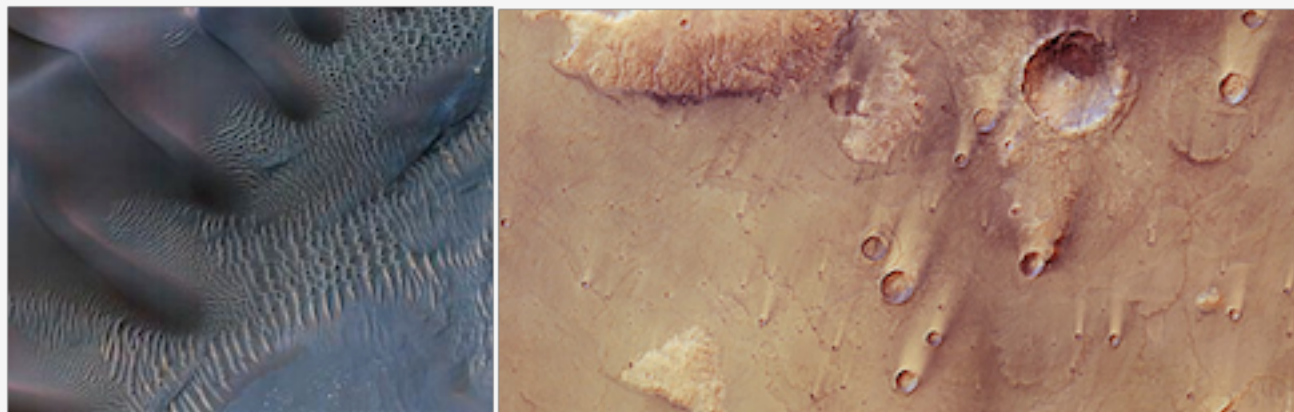
L5 Science Fiction Miniseries Trailer - http://www.youtube.com/watch?v=PtHgJ8Z-F_Y

<http://www.space.com/14465-virgin-galactic-spaceshiptwo-test-flights.html>

MMM PHOTO GALLERY



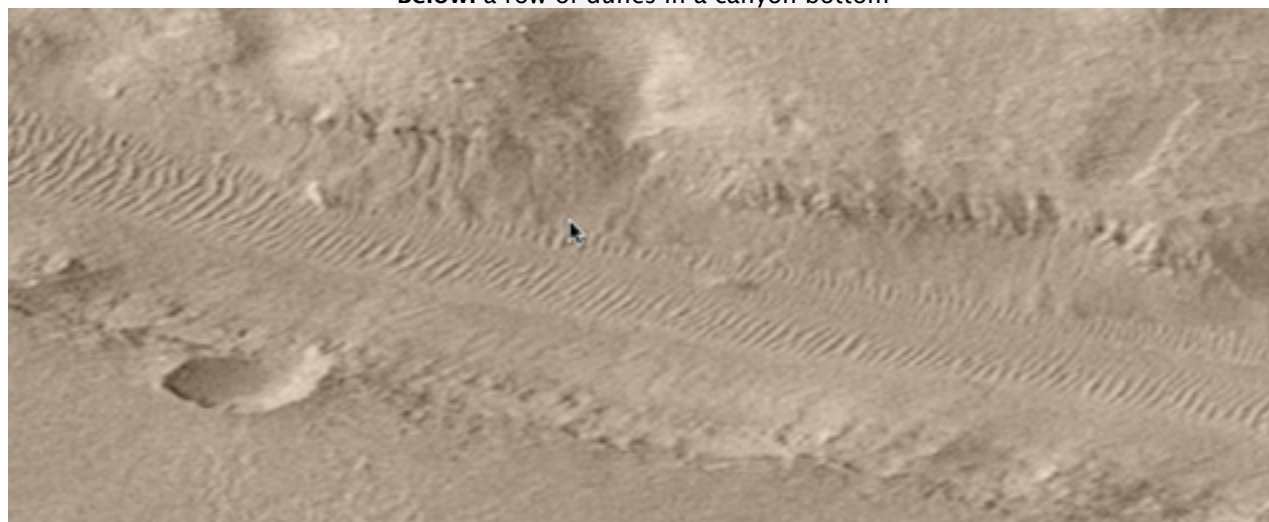
The altitude profile of Mars' 25,000 ft – 8,000 m high Tharsis Tholus Volcano (height not exaggerated)



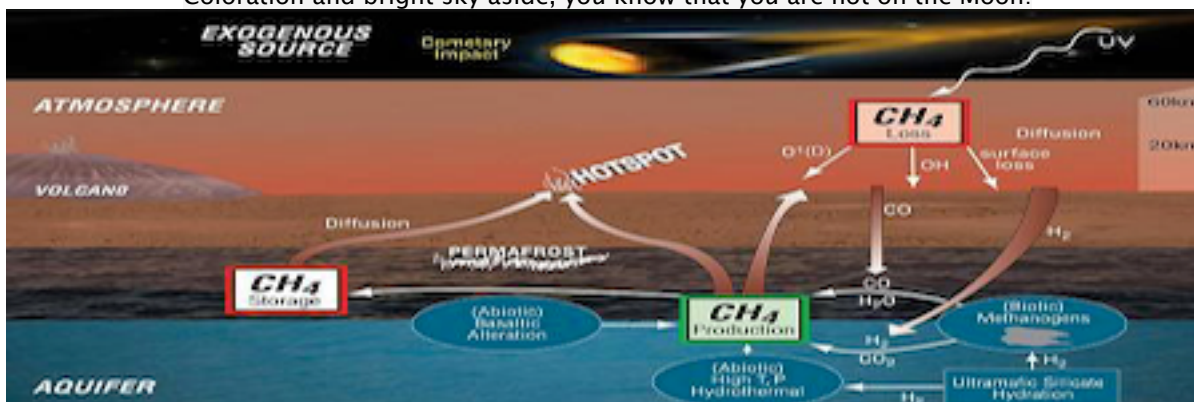
Left: http://www.marsdaily.com/reports/Mars_Orbiter_Shows_Wind_Handiwork_999.html

Right: a wind-sculpted landscape in Syrtis Major

Below: a row of dunes in a canyon bottom

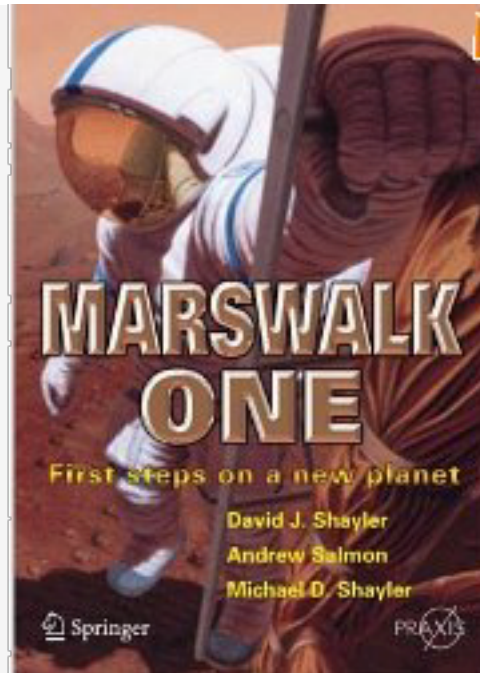
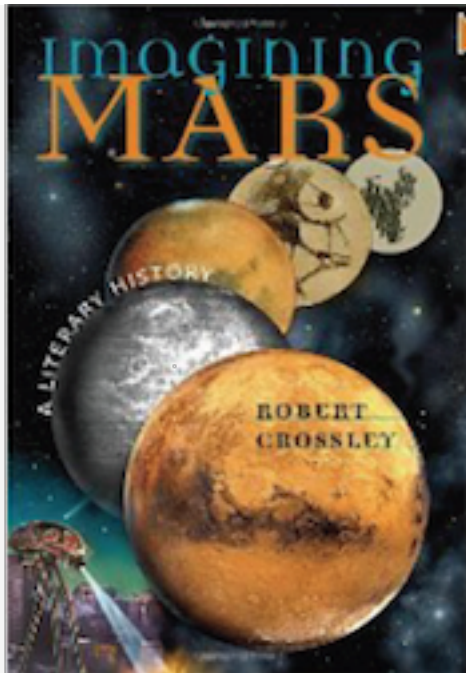


Coloration and bright sky aside, you know that you are not on the Moon!



Above: How methane may be getting into Mars Atmosphere on a regular basis

For past articles, Visit http://www.moonociety.org/publications/mmm_classics/



Left: Imagining Mars: A Literary History (Early Classics of Science Fiction)

(Hardcover) by Robert Crossley (Author) (January 2011)

“For centuries, the planet Mars has captivated astronomers and inspired writers of all genres. Whether imagined as the symbol of the bloody god of war, the cradle of an alien species or a possible new home for human civilization, our closest planetary neighbor has played a central role in how we think about ourselves in the universe. From Galileo to Kim Stanley Robinson, Robert Crossley traces the history of our fascination with the red planet as it has evolved in literature both fictional and scientific.

“Crossley focuses specifically on the interplay between scientific discovery and literary invention, exploring how writers throughout the ages have tried to assimilate or resist new planetary knowledge. Covering texts from the 1600s to the present, from the obscure to the classic, Crossley shows how writing about Mars has reflected the desires and social controversies of each era. This elegant study is perfect for science fiction fans and readers of popular science.” Above review is quoted from <http://www.aerospaceguide.net/spacebook/mars.html>

Right: Marswalk One : First Steps on a New Planet (Paperback)

By David J. Shayler (Editor), Andrew Salmon (Editor), Michael D. Shayler (Editor) (August 2005)

“**Marswalk One** addresses the question of why we should embark on a journey to Mars, documenting what the first human crew will do when they place their feet in the red dust of the planet. The book also addresses why we need to carry out these tasks and, more importantly, what a human crew could achieve that an automated mission could not.” (Springer Praxis Books / Space Exploration) <http://www.aerospaceguide.net/spacebook/mars.html>

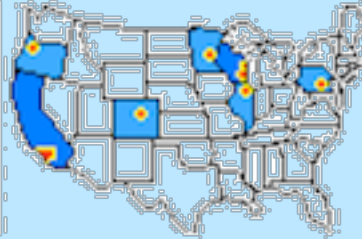
=====

Background of the new IMAX movie “John Carter” (John Carter of Mars)

Edgar Rice Burroughs, best known as the creator of **Tarzan**, wrote almost a century ago about Barsoom (the fictional “native” word for Mars) “The world of **Barsoom** is a romantic vision of a **dying Mars**, based on now-outdated scientific ideas made popular by Astronomer **Percival Lowell** in the early 20th century. While depicting many outlandish inventions, and advanced technology, it is a savage world, of honor, noble sacrifice and constant struggle, where martial prowess is paramount, and where many races fight over dwindling resources. It is filled with lost cities, heroic adventures and forgotten ancient secrets.” – <http://en.wikipedia.org/wiki/Barsoom>

Where to see it: <http://www.imax.com/movies/m/john-carter-an-imax-3d-experience/>

NSS Chapters that share Moon Miners’ Manife



Space Chapter HUB Website: <http://nsschapters.org/hub/>

Feature Page: Project Menus Unlimited <http://nsschapters.org/hub/projects.htm>

WISCONSIN



MLRS – Milwaukee Lunar Reclamation Society
P.O. Box 2102, Milwaukee, WI 53201
<http://www.moonsociety.org/chapters/milwaukee>
<http://www.nss.org/chapters/milwaukee>

Ad Astra per Ardua Nostra = To the Stars through our own hard work!

2012 LRS OFFICERS & • BOARD Contact Information

PRESIDENT / MMM EDITOR - • Peter Kokh NSS 414-342-0705 - kokhmmm@aol.com

VICE-PRESIDENT Doug Armstrong NSS (414) 273-1126

SECRETARY - • James Schroeter NSS (414) 333-3679 - James_Schroeter@excite.com

TREASURER/Database - • Robert Bialecki (414) 372-9613 - bobriverwest@yahoo.com

✓ We have successfully regained our IRS-approved 501(c)3 non-profit status under our original name, “Milwaukee Lunar Reclamation Society (NSS). We had dropped the “Milwaukee” twenty years ago in a premature attempt to “go national,” a goal we have achieved indirectly via the Moon Society’s adoption of Moon Miners’ Manifesto.

✓ **Regular Meetings; 2nd Sat Afternoon (ex. July, August) 1–4 pm room G110, Mayfair Mall, Wauwatosa**

✓ **Dave Dunlop is planning to attend ISDC 2012 in Washington, DC. Peter is saving for San Diego in 2013.**

WISCONSIN



SSS: Sheboygan Space Society
Center St. Kiel, WI 5402-1034
<http://www.sheboyganspacesociety.org>

c/o Will Foerster 920-894-2376 (h) - astrowill@charter.net

SSS Sec. Harald Schenk hschenk@charter.net

DUES: “SSS” c/o B. P. Knier, 22608 County Line Rd, Elkhart Lake WI 53020

Meetings are at The Stoelting House, 309 Indian Hill, Kiel WI 53042 - 3rd Thurs even # months

NEXT MEETINGS: FEB 17 - APR 20 - JUN 15 - AUG 17 - OCT 19 - DEC 8 (SAT in Milwaukee)

CALIFORNIA



SDSS – San Diego Space Society
<http://sandiegospace.org>

Members will soon be getting our new Membership Packets.

We are planning for our biggest annual event – **Yuri’s Night Thursday April 12th**

The San Diego Space Society is going to Space! We are announcing two opportunities where members will be able to build and fly a small satellite into orbit and another to repeatedly fly on suborbital spaceflights. The orbital opportunity will be **part of the KickSat** (CubeSat) program. The suborbital opportunity is part of our **Project PoGo** program. Learn more about KickSat, Sprites, and Project PoGo at <http://sandiegospace.org/projects/>. Our first planning meeting will be in early March. We’ll need all kinds of people and skills to accomplish this goal in 2012 – team leaders, fundraising, promotional and media specialists, people good with their hands, people knowledgeable in electronics, software programming, to name just a few. We will also be participating at the **Next-Generation Suborbital Researchers Conference 2012** in Palo Alto, California February 27–29.

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

MMM #253 – March 2012 – Annual “Mars Theme” Issue – p 17

CALIFORNIA



OASIS: Organization for the Advancement
of Space Industrialization and Settlement
Greater Los Angeles Chapter of NSS
P.O. Box 1231, Redondo Beach, CA 90278
<http://www.oasis-nss.org/wordpress/>

Events Hotline/Answering Machine: 310-364-2290 – Odyssey Ed: Kat Tanaka odyssey_editor@yahoo.com
<http://www.oasis-nss.org/wordpress/> - oasis@oasis-nss.org – Odyssey Newsletter www.oasis-nss.org/articles.html
Regular Meeting 3 pm 3rd SAT monthly – MAR 17 – APR 21 – MAR 19 – APR 21 – JUN 16 – JUL 21

OASIS NEWS AND EVENTS

Thu/Fri MAR 15th/16th 7 pm “Mysterious Titan” Trina Ray, Cassini-Huygens Mission, Titan Orbiter Science Team – Thursday JPL von Karmen Auditorium, 4800 Oak Grove Drive, Pasadena – Friday at the Vosloh Forum, Pasadena City College, 1570 E. Colorado Blvd, Pasadena

Sat. MAR 17th 3 pm OASIS Monthly Meeting, chez Bob Gounley & Paula Delfosse, 1738LaPaz Rd, Altadena

COLORADO



DSS: Denver Space Society
(FKA The Front Range L5 Society)
1 Cherry Hills Farm Drive, Englewood, CO 80133

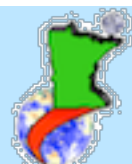
Eric Boethin 303-781-0800 eric@boethin.com – Monthly Meetings 6:00 PM on 1st Thursdays
Englewood Public Library, Englewood, CO 80110 – 1000 Englewood Parkway, First Floor Civic Center
NEXT MEETINGS – APR 5 – MAY 4 – JUN 7 – JUL 5 – AUG 2 – SEP 6 – OCT 4 – NOV 1 – DEC 6

ILLINOIS



CSFL5: Chicago Space Frontier L5
610 West 47th Place, Chicago, IL 60609

MINNESOTA



MSFS: Minnesota Space Frontier Society
c/o Dave Buth, 433 South 7th St. #1808
Minneapolis, MN 55415
<http://www.mnsfs.org>

http://www.nasa.gov/pdf/605284main_Expedition_30_31_Press_Kit.pdf
<http://freemars.org/mnfan/MNSFS/2011-12-ISS-30-Display/>

MNSFS Continuing its tradition of putting up 'Current' space displays MN SFS's current space flight ISS-30 is now on public view at :Radio City Inc., 2663 County Road I. Mounds View, MN 55122
Display text & Graphics from ISS-30-31 Press Kit see address above

MNSFS NEWS – An ambitious chapter project: in 2004 we built a full-size model of the Mars Exploration Rovers Spirit and Opportunity. <http://freemars.org/mnfan/MNSFS/2004-Big-MER-Model/>

Now with the much larger (“car-sized”) Mars Science Laboratory rover “**Curiosity**” en route to Mars and due to arrive in late summer, the chapter is in the process of designing its own mockup.

<https://www.facebook.com/media/set/?set=a.10150606365603516.411505.59271851>

When it comes to events and displays, MNSFS sets an example for the rest of NSS and TMS chapters!

OREGON



OR L5 - Oregon L5 Society
P.O. BOX 86, OR 97045
<http://www.OregonL5.org>

(LBRT – Oregon Moonbase) moonbase@comcast.net

Meetings 3rd Sat. each month at 2 p.m. - Bourne Plaza, 1441 SE 122nd, Portland, downstairs
Regular Meeting 3 pm 3rd SAT monthly – FEB 18 – MAR 17 – APR 21 – MAR 19 – APR 21 – JUN 16 – JUL 21

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

PENNSYLVANIA



NSS-PASA: NSS Philadelphia Area Space Alliance
928 Clinton Street, Philadelphia, PA 19107
<http://pasa01.tripod.com/>

c/o Earl Bennett, Earlisat@verizon.net - 856/261-8032 (h), 215/698-2600 (w)

<http://pasa01.tripod.com/> - <http://phillypasa.blogspot.com>

NSS-PASA JANUARY REPORT

Meeting Location and Times: We meet at The Liberty One Food Court on the Seventeenth Street side of the building. The next two meetings will be here: **February 11, (new date: 25th), March 10th, April 21st.** This is on the Parkway in Philadelphia and is sponsored by The Franklin Institute and The Academy of Natural Sciences among others. We may also be at The State Museum of New Jersey, in Trenton, on the same date (see below).

Meeting notes: Dotty brought in material from a number of locations including: Ongoing activities at The Franklin Institute including the Wildest Weather in the Solar System show at The Fels Planetarium, and, Two Small Pieces of Glass show about the Telescope and its development through time. See show website for details (planetarium on the Institutes tool bar, then look at the Fels Planetarium schedule for times). Dorothy is going, with Larry, to The American Museum of Natural History, in April, for the new space exhibit there. By buying tickets in advance they are paying \$25, rather than ~\$45 dollars at the door, for the special exhibit: “Beyond Planet Earth”. See the Museum website for details, or, check on Dorothy’s Facebook page over time. She also brought notice of the Space X cargo pod being prepped for launch in the near future to the ISS..

Larry brought reports on our website, but, he also gave us a report on The Arctic Oscillation. This is a change in the wind patterns, including the Jet Stream, caused by the changes in the solar output. The chart he brought is an eye opener. We get spills of cold air that shift back and forth depending on the sunspot levels. Check the website of the Weather Underground for more on this, or post to Larry on this subject at: lpezzuto@verizon.net. He has reported on space weather before. This is an important topic for future space occupants.

Hank reported on PSFS activities and an important lack: in the most recent report he audited there was no update on the location of the next Philcon to be held this Fall. Hank thinks it may move back to Philadelphia, but, nothing is firm at this time. Hank may be able to attend several Spring conventions as he is resolving his financial issues in the near future.

Mitch brought news of the Science Carnival on the Parkway (www.philasciencefestival.org) . The Festival lasts from April 20–29, but we are exhibiting on April 21 on the Circle (Logan Circle in central Philadelphia). Mitch talked on several topics including: Stephen Hawking’s seventieth birthday anniversary talk on why space exploration and habitation is a necessity for the survival of the human race. Mitch further talked on the new paradigm for space that involves comfort, security, and inspiration (and meaning) being part of the living in space lifestyle. He did this while using the winter Ad Astra to illustrate some of his points. A sad item: it was the 40th anniversary of humans leaving the Moon for the last time (until the near future only, we hope!). X-Prize landings first!

Earl brought information on the upcoming Carver Science Fair events: Earl and Mike Fisher will be judges for the James H. Chestek Award, in the Elementary level projects division, with Mike being the Judge for the Oscar H. Harris Award at the combined Mid and Senior High Levels. Earl will present the Awards and Prizes on February twenty fourth and March ninth respectively. Earl has picked up several prizes for the recipients including some small robots, a reference book of engineering tables and a camera among other things. It also includes money of course! For technical topics I brought several publications on various topics: The March issue of Analog included “The Earth Dies Screaming” on the effects of gamma ray bursts on the biosphere and speculation on this having caused past die-offs. This would be a consequence of a supernova or being caught in a high flux event from a mass infall into a black hole (a transient, but nasty event). The author, Professor Adrian L. Melott of the University of Kansas, points out that even the milder effects of not being directly in the path of a nearby event could cause major effects: depletion of the ozone layer, damage to our technology infrastructure (from satellites, “minor”, to damage to ground based equipment and the computer infrastructure we depend on now. See article and the bibliography. There is a good article on Mu Neutrinos as Tachyons by John Cramer (Dr. Physics) in the Alternate View section.

There is much more in the numerous publications, but, I want to mention that the N-Prize contest for the launch of a very small satellite (20 grams) on a low cost launcher (under 10,000 pounds) to orbit the Earth, nine times, is still proceeding. And the Google Lunar X-Prize is still going strong. – Submitted by Earl Bennett

The NSS PASA Report for February 2012

Meeting Dates: March 10th, April 21st. Locations: Our regular meeting site is The Liberty One Food Court on the second floor near the Seventeenth Street side of the building. Look for our display/flag in March. In April we will meet at The Science Festival on the Parkway in Philadelphia and, on the same day in New Jersey, also at Super Science Weekend at the New Jersey State Museum in Trenton. More below. Also: in February we will do special awards judging and award presentation in Philadelphia during the George Washington Carver Science Fair Elementary Division events at The Academy of Natural Science. In March we will do special awards judging for the Middle and Sen-

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

MMM #253 – March 2012 – Annual “Mars Theme” Issue – p 19

ior Division students research projects at the Temple University location, with the award presentations occurring at The Academy in March. These are our James H. Chestak and Oscar H. Harris Awards respectively.

February Meeting Notes: We had a good crowd on Saturday with Joe Ingemi making a guest appearance after finding us through NSS. He is a West Point graduate, has worked for NASA and IBM, and, has done outreach for promoting education about space exploration and the U.S. military. He is from the same part of New Jersey that our webmaster Larry grew up, and, near where Michelle and I live! He may join us in the near future as he has returned to our area. He made a number of contributions to our discussions due to his interest in what politicians are saying they want the U.S. to do in space (for example: candidate Newt Gingrich has voiced support for a Moon colony as a priority project to revise the American economy and our edge in technology. Mitt Romney has also mentioned space exploration). Nice meeting you Joe! Come again!

Dennis Pearson also joined us and has become Chapters Organizer for Regions Seven and Eight. He told us that annual reports are now due (Mitch is working on this,) and Dennis is working on a Chapter start up activity that someone in Jamestown New York is engaged in. He also mentioned a science fiction story wherein the Space Elevator is built in Cuba! He will visit and check the location soon. The fiction is “Silver Thread” (from memory). He also mentioned that NASA has yet again had a budget cut. Joe helped explain the way pooling of federal funds was related to this level setting.

Dorothy reported that the Shuttle Discovery is moving to The Smithsonian on March 17th, and The Enterprise is moving to The USS Enterprise in New York from the museum. We talked about what will become of “The Pregnant Guppy” aircraft when all of the shuttles are done traveling. She also brought “Time Out, New York” and its mention of the “Beyond Planet Earth” exhibit in the city. Dotty and Larry will see this on April First, Palm Sunday.

Larry suggested that we pay a fee for our website which would let us be ad free. We will take this up in March, and discuss funding for this. We are still on Facebook as a group, and, also on Twitter in a small way Larry is working on setting up our site to optimize us to search engines (my interpretation of what he is trying to do for us).

Hank reported that Katherine Asaro spoke at the previous nights’ PSFS meeting. She writes Sci-Fi and works as a physicist. Since our meeting, where the location of this years Philcon was not known, I have been informed, by Dotty, that it will be at the Crown Plaza in Cherry Hill between November 9th to the 11th. Also, Hank is working on his finances and is planning on expanding his convention activities which he will report on here. Currently, he is distributing our contact information throughout the Delaware Valley, via our contact cards.

Mitch has commissioned some table flags to let people find us on meeting days and for events. He will bring them to our March Ten meeting. On that subject: we will be talking to the public at both the Science Festival and Super Science Weekend on April 21st. He pointed out that we will have to divide, or create, some of our resources for these events. I have offered to make a new set of space bricks, and, a small vertical green house display. We will have to create some hand outs and share the current documents for copying. Mitch also brought the most recent Ad Astra (Winter) and will work on the annual report for NSS. We will choose a May meeting date, per his request, next month.

Earl brought a number of items, including the magazine Science with its year end round-up, and NASA Tech Briefs. This issue included a report on matching a fabrication robot design that would be optimum for a given level of solar cell fabrication (size of cells, rate of throughput, kind of work area being considered etc.). Starting on page twelve of the February issue. Also in this issue is a report on using “functionalized Nano tubes for attachment to Silicon”. This means that the nano tube has an addition to its structure, on the hollow tubes side wall. Through a number of steps, reported on page 44, these interesting materials can be bonded to a Silicon substrate as individual tubes. On page 41 is another research report on making a “block” of nano tubes weighing 28g! Its mechanical properties indicated that it was composed of highly cross linked tubes. It was cut with a hack saw to test a sample.

Finally in this area, Analog for April 2012 has “Space Weather: The Latest Forecast” by H.G. Stratmann. This is a rather detailed description of many of the conditions that we would have to be aware of, and wary of, when we go into space and try to live on the other planets nearby. The interaction of the solar and Earth magnetospheres, the Suns various emissions (including Coronal Mass ejections and the effect they would have on Technic civilization) and the apparent inverse relation between some cosmic rays and the fluxes around Earth.

And The Winner is: Sara Wolfenden for here project: “H₂O, Where'd it Go?” on water use for various plants. She has won our James H. Chestak Award for Space Related Science and Technology. This was at The George Washington Carver Science Fair Elementary level competition.

Submitted by Earl Bennett

International Space Development Conference (ISDC) 2012

May 24–28, 2012 Washington, DC – Th–M, Memorial Day Weekend

Grand Hyatt Washington, 1000 H Street, NW, Washington, D.C., USA 20001

Tel: +1 202 582 1234 Fax: +1 202 637 4781 – ask for “DC 2012”

<http://grandwashington.hyatt.com/hyatt/hotels/index.jsp?null>

Basic Information: <https://www.nss.org/isdc/2012/> - Registration and Meals, Track Topics, Schedule, Unique Content, Contact Us

For past articles, Visit http://www.moonsociety.org/publications/mmm_classics/

Moon Miners’ MANIFESTO
Lunar Reclamation Society Inc.
PO Box 2102, Milwaukee WI 53201-2102
Address Service Requested
Mail Carrier, Time Sensitive Material <==



Please renew promptly so as not to miss an issue

INDEX to MMM #253 MARCH 2012

1. In Focus: Turning the Detours along the Road to Space into Opportunities
4. The Challenges of Mars – Peter Kokh
7. The Red Planet “Blues” – Peter Kokh
8. Artificial Gravity enroute to Mars and back strongly advised – Peter Kokh

Moon Society Journal Section

- | | |
|--|--|
| 9. Message from the President | 10. Our ISDC 2012 Program: Cis-Lunar EconoSphere |
| 11. Outpost News | 12. Chapter News |
| ----- | |
| 13. Browsing Links – Video Links | 14. MMM Photo Gallery |
| 15. Book Review: Imagining Mars; Marswalk One. | 16. NSS–MMM Chapter News |

CHAPTER MEMBER DUES -- MMM Subscriptions: Send proper dues to address in chapter section

CHICAGO SPACE FRONTIER L5 • \$15 annual dues

LUNAR RECLAMATION SOC. (NSS-Milwaukee) • \$15 low “one rate” to address above

MINNESOTA SPACE FRONTIER SOCIETY • \$25 Regular Dues

OREGON L5 SOCIETY • \$25 for all members

O.A.S.I.S. L5 (Los Angeles) • \$28 regular dues with MMM

PHILADELPHIA AREA SPACE ALLIANCE

- Annual dues with MMM \$25, due March or \$6 per quarter before the next March

SHEBOYGAN SPACE SOCIETY (WI) • \$15 regular, • \$10 student • \$1/extra family member

Individual Subscriptions outside participating chapter areas: • \$15 USA • \$25 Canada;

- US \$55 Surface Mail Outside North America – Payable to “LRS”, PO Box 2102, Milwaukee WI 53201

For past articles, Visit http://www.moon society.org/publications/mmm_classics/