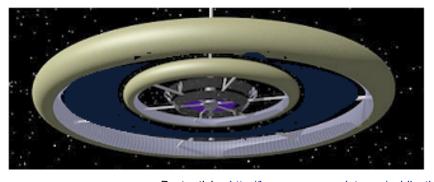
"Towards an Earth-Moon Economy - Developing Off-Planet Resources" Moon Miners' Manifesto & The Moon Society Journal www.MMM-MoonMinersManifesto.com

Tourists will have many opportunities to help open the Moon, and even Mars

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Analog Moon/Mars Habitats in a Rotating Double Torus in GEO for tourists and would-be settlers - page 3

About Moon Miners' Manifesto - "The Moon - it's not Earth, but it's <u>Earth's!</u>"

- 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.
- 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 23 PDF format volumes, for free downloading from this location: http://www.MoonSociety.org/publications/mmm_classics/
- MMM THEME Issues: 14 collections of articles according to themes:/publications/mmm_themes/
- MMM Glossary: new terms, old terms/new meanings: www.moonsociety.org/publications/m3glossary.html
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- 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, there is a daily RSS feed space news section on http://www.moonsociety.org. You can also read Ad Astra magazine mailed to National Space Society members. 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 (202) 429-1600 - www.NSS.org

- **The Moon Society** seeks to overcome the business, financial, and technological challenges to the establishment of a permanent, self— 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 <u>KokhMMM@aol.com</u> Email message body text or MS Word, Open Office 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 📵 The "Megapolicene" Era has begun – not good news!

By Peter Kokh

Mankind, not nature, is now the principle agent reshaping our homeworld, without foresignt or strategy, and this reshaping is not necessarily for the better.

Note: If you stand to make money by what's going on (to hell with your children) you can skip this editorial

The "Megapolicene" era of megapolitan urban areas responsible for a an unprecedented major "geological shift" in which more rock and soil is moved in any given time period.

than by natural geological processes. Yes, I coined the word.

"Mankind, not nature, is now the principle agent reshaping our world, without foresignt or strategy, and not necanessarily for the better."

Desertification - Rising Sea Levels - Overpopulation and many more telltale signs will soon be obvious that w are making the wrong choices, through personal greed, and sheer neglect.

While many who stand to suffer, may look at setlement of the Moon and Mars as a relief,

If we don't try to reverse the course our home planet is being doomed to follow

for the sake of the greed of a few, we will all lose.

The healthier Earth is, the healthier her offspring will be on the Moon, Mars and beyond.

Let's wake up! And yes, I coined the word "Megapolicene" - PK

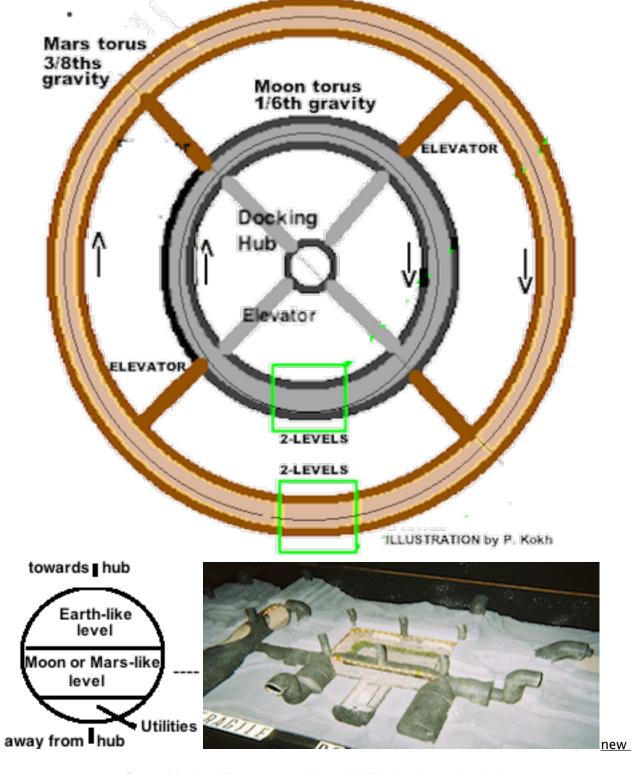
Past articles http://legacy.moonsociety.org/publications/mmm_classics/
Or arranged by themes: http://legacy.moonsociety.org/publications/mmm_themes/

Analog Moon/Mars Habitats in a Rotating Double Torus in GEO

By Peter Kokh – **run in TTSIQ 17 as well, in 10 point**Background: https://en.wikipedia.org/wiki/Stanford_torus

CONCEPT: in Geo-synchronous orbit, it's purpose would be 2-fold, hence the 2 levels in each torus

- 1) Lower level: to give people an idea of what it would be like to live on Moon or Mars under lunar or Martian conditions for those seriously considering applying as pioneers.
- 2) Upper level: a sense of what lunar or Martian gravity is like, but in a suburban Arizona-like setting.



The Purpose of the Moon/Mars Double Torus - Attract tourists; possible recruits

Well-heeled tourists will want to get the experience of being on the Moon or Mars. No "analog' facility on Earth can produce lunar or Martian gravity. For some the experience will be as far as they go. But others, toying with the idea of applying to be a settler, we've provided a more realistic setting on each torus lower level. Staying there will not only tell them whether or not they can handle lunar one-sixth or Martian three-eights gravity "indefinitely" but whether they can handle the soil buried homes and the salmon-colored or black star-studded skies as the case may be, and the ambient temperatures and, on Mars, the doubly long seasons.

The tourists may have enough after a few days or a week or so - the price keeps adding up.

But **serious settler-wannabe's or applicants** will get a much better indication whether or not they have the right stuff, or if they were just kidding themselves. It will be desirable, and worth the cost, to have them stay **a few months**. This will allow them to make friends with others with "the right stuff" – mutually encouraging.

Realism in athletic and sport activities

Outfitting of the lower level lunar and/or Martian homesteads can be made more realistic by outfitting them with furnishings and other things that could be made locally on Moon of Mars by the first settlers. For example, in the lunar torus lower level, many objects could be made of cast or carved basalt, crude glass, etc. Add to that items salvaged from the ships that brought them there.

Note: The gravity difference will be more realistic for actions in place, like lifting things you would nevere attempt to lift on Earth: an automobile engine, a barrell of water, a stack of bricks.

In directional actions as in most sports, one would experience an "English" from the torus' spin that would not mimick what we would feel in similar activities on Moon or Mars. Organized activities would need to be carefully chosen.

Outlocks

But the "lunar" or "Martian" skies could be pretty convincing, as could be the ambient temperatures. And, of course, very low air pressure in the Mars torus, and almost none in the Moon torus. These things can be reproduced convincingly enough. You would need your spacesuits to go "outlocks.

"Outlock" activities would thus need to be chosen carefully. In both cases, those in the more "realistic" levels will be expecting much more, and their activity directors will be challenging them accordingly.

Financing: The curious, will have to pay their own way for a stay on either upper floor.

Those seriously considering settling on either world may have the greater part of the bill paid for by the Settlements on either world. They need more settlers, but it will pay well to weed out those enthusiasts who, when tested in the torus, realize that "this isn't for me."

It would be wise for those choosing the more realistic lower levels with the desire to see if they could handle the real frontiers, to go to analog facilities here on Earth that were designed to mimick the lunar and Martian skies and surroundings and activities.

Why this expensive Moon/Mars double torus?

The cost of subsidizing hopeful settlers this way will be much less than giving them a ticket all the way to the Moon, or to Mars, only to have to send them back home again, after belatedly realizing that "this isn't for me."

This neat facility in Earth Orbit will pay for itself in this way, by filtering out those who don't have "the right stuff" and the "determination."

Other ways to weed out those who despite their enthusiasm, just "don't have it"

Currently, serious Mars enthusiasts can apply for a 2-week stay at the Mars Desert Research Station. MDRS lies on a stunning Mars-like terrain. Southern Utah sure has the right colors! But the tempratures are anything but Marslike. And unfortunately, the same goes for the Mars Society's arctic research station on far northern Canada's Devon Island. But there is one place on Earth that mirrors Mars' seasonal temperature range from just above freezing to deep below freezing ("as low as -90° F, or about -68° C") - Antarctica's "Dry Valleys"



One of Antarctica's Dry Valleys - "Looks like Arizona, but feels like Mars"

Past articles http://legacy.moonsociety.org/publications/mmm_classics/
Or arranged by themes: http://legacy.moonsociety.org/publications/mmm_themes/

Yet there are many many "devoted Mars fans" who have made the "life style choice" to move away from the cold winters of the U.S. Northeast (mild in comparison to Mars) to the warm desert Southwest.

Temperatures in the lower "settlement-like" layer of the Mars torus could be allowed to range from about room temperature to well below freezing. Better to face the facts in Earth orbit than spend nine months (and a lot of money paid for by the settlements) to get to Mars, only to call it quits and put in for the next 9-month long trip back to cozy Earth.

Few Mars "fans" will pass "the right stuff" test. Those who do, will be worth the cost of this facility.

The Upshot – The point is that the hundreds of millions of dollars it would take to put this "tourist" Moon/Mars double torus hotel/settlement mockup in orbit will pay off **if it discourages those who don't have the right stuff.**Mars may look like Arizona, but it feels like Antarctica. We can't stress that enough.

But not to worry, there will be those who can handle it, make it home, and love it! PK

"Daddy, why does our Moon house have all this moon dirt piled on top of it?"

"Honey, on the Moon, houses have to wear space suits, too!"

"Daddy, why is the sky bright here on Mars, but we still have to wear pressure suits?"
"Junior, because this is not the right kind of air and also because it is not thick enough."

Tourists will "Pay their Way" to help Build Lunar & Martian Outposts

By Peter Kokh-

No! Prison labor will not be the way to go! From Theme Issues: **Tourism**, Economy, & 6 pager

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

And from recent articicles on tourists paying to explore, lay foundations for settlement – they may not want to leave Earth behind, but are willing to devote time and money to opening the new lunar frontier.

Unforgettable Experiences & Unequaled Opportunities

Tourists will come not only to see the Moon, but to see how the settlers are managing to make themselves at home, and for the privilege of lending a hand, bringing along gift items they don't have the money to import and which they can't make for themselves.

A way to import items free for the settlers that they cannot make for themselves in exchange for things made on the Moon, and just the experience of helping.

Tourist desire to bring home things made on the Moon will give settlers extra incentie to develop lunar arts and crafts. The incentives work both ways.

As settlement towns turn into "Xities" this trade of imports and souvenirs will increase.

"Prospective settlers may be screened and accepted or rejected not only on the basis of their primary skill and occupation or profession but also on the basis of what they can contribute by their secondary talents, skills, hobbies, and avocations. If the new settlements are to avoid terminal blahs, the popula-tion will have to have a very high talent density in comparison with Earth.

We have already pointed out what we must seek to guarantee in the design of production equipment shipped to the Moon or Mars. We must also seek to guarantee a high priority for artistic and craft talent amongst the selection criteria for prospective settlers."

What tourists will come to see and experience

- Alternating 2-week dayspan and nightspan lifestyles
- "Sixthweight" actiities: hiking, sports, dance, and more
- How the settlers are able to do so much with so little
- Learning to "live downwind and downstream of themselves" systems and approaches badly needed on Earth
- The "8 day weeks" three weeks out of eight
- Performing Arts: song, dance, plays new on Earth

Take along weight limits on visitors to bring and trade

Assuming each tourist has a weight limit of things to leave on the Moon in exchange for things from the Moon and made on the Moon to bring back.

- Can bring new plants, establish gardens
- Bring clothing to leave behind (including costumes for performing arts) switching to clothing made on the Moon for the trip home
- Ditto on jewelry, using their weight limit to bring items that can't be produced on the Moon to exchange for souvenir jewelry that has been made on the Moon.

- Musical instruments that cannot be made on the Moon (no wood, no brass) in exchange for instruments that can be made there.
- A similar arrtwork swap
- Musical instrument besides steel pan drums and marimbas
- Food items unavailable on the Moon for splurging during festivals

Temporary labor on projects otherwise short of needed labor

- · Help start new settlements, build new roads
- Explore lava tube caves not yet visited

Establishing new settlements to cater to visitors wanting to see the 7 Wonders of the Moon (or Mars)

- Rimside and Farside settlements
- Lava tube settlements
- Building roads from established settlements to and between "wonders" and thereby helping grow the economy.
- Helping Explore and lay foundations for new settlements while immigrants are busy building foundations
- Helping invent and develop new sports indoor, outdoor, middoors and lee vac

Helping make things that will lure even more tourists: clothing, jewelry; on and on

The cagemobile, cableways, out-vac, lee-vac, middoor sports

As with the Americas and Australia, visitors contributed a lot. They will help develop ways to celebrate pioneer holidays. Andthings made for tourists will also help improve settler life.

Settler Artists, Crafts, and Sports will lure Visitors & Settlers to the Moon

By Peter Kokh

"Supporting" artists and craftsmen on Earth can help by pre-developing arts and crafts that are practical in the lunar and Martian environments, given the minerals and materials present and the activity conditions the pioneers will experience.

On the other hand, tourists will want to bring back home to Earth arts and crafts items made on the Moon, highly motivating settlers with arts and crafts talents to produce attractive items in ever greater variety. Ditto with jewelry and other artifacts.

Tourists may leave their Earth clothes behind on the Moon, useful in plays and theater, returning to Earth with clothing made on the Moon.

Adding to Variety and Diversity

Tourost needs will help develop settler industries: cast and carved basalt, glass/glass compositesl etc.

They will leave behind Earth clothes for various purposes: ties, blouses, belts; skirts; costumes

Sports

One-sixth gravity sports will be unique. Tourists will want to try them out, testing various kinds of sporting activity, inevitably coming up with some wining games both fun to watch and fun to play.

- · Sports that work well on the Moon, and/or on Mars, may inspire "take off" activities on Earth
- One exciting possibility will be the construction of a shielded, but unpressurized arena where settlers and tourists alike can play "outdoor" sports in vacuum, in lighter pressure suits.
- Visitors can wear clothes made of fabrics that cannot easily be produced on the Moon or on Mars and leave them behind, wearing made on Luna apparell coming home to Earth as a fine souvenier. Their could be an inventory of costumes for actors on Moon and Mars playing the role of Earthers.

Exploration

Tourists may want to join exploration sorties beyond the local settlement. An exciting venture might be lavatube exploration. Another, collecting rocks that came from elsewhere on the Moon in meteor collision events.

The first Luna City Museum

Things made by settlers will be showcased along with things brought or created by visitors

Incentives for every increasing "local" variety.

Various Settlements will be motivated to be as attractive as they can and in diverse ways, as well as to develop surrounging "must visit sites" in competion with other settlements for tourist visitors and the the gifts and talents they bring and other contributions they make. Including their gardesn, parks, artwork, souveniers, etc.

The lunar golf course

Tge golf ball hit by Alan Shepherd may or may not lead to that kind of sporting activity, but other things will be tried and tested, with the most fun and exciting sports and games taking root.

"Location, location, location."

The insatiable derire of tourists for ever more variety, will not only spur the development of new arts and crafts but also the placing of new settlements in new areas: close to the rims of large craters, near winding rille valleys (collapsed lavatubes)/

The lure to the limbs: Nearside and Farside - two experiences one trip

Tourists will want to visit "the limbs" – areas alternately in sight of Earth and with Earth out of sight where the glory of the much darker side of the lunar Farside will be something to experience.

If there were no tourists from Earth because of cost or other reasons

The cost of visiting the Moon is sure to come down over time, but shortsightedness on the part of settlers or settler governments could discourage them. In our opinion, both sides would be the losers. Not only will tourists spur lunar development and amenities, they will trongly inspire new would-be tourists to make the journey.

And some of these tourists will return to Earth determined to come back to the Moon to stay as pioneers.

Lunar tourism need not be limited to the wealthy. Winners of competions or lotteries could get a free ride.

Those with talents or hobbies that could help diversity the young lunar culture might be subsidized.

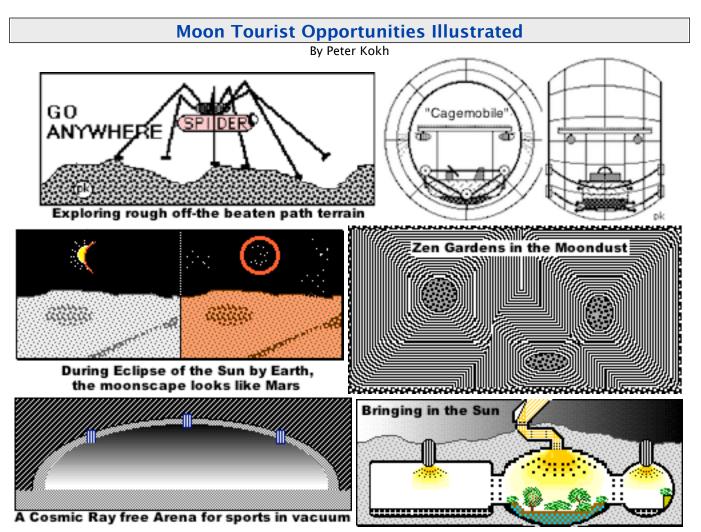
Tourist tales

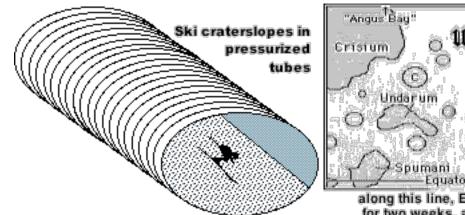
Those who visited the Moon will bring home experiences to share. They might inspire young people as well as adults to consider becoming a pioneer.

In the United States, the opening of the West (of the Mississipi) brought ever increasing vitality to the country as a whole. Tourists having visited the Moon, are sure to inspire young people with a pioneering spirit, willing to go without the tremendous variety of options available to them on Earth, to take part in establishing a new world.

On Mars?

That's a whole different story. See below. ##

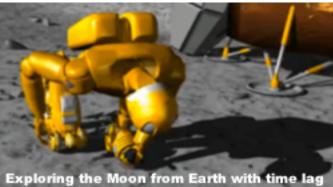






along this line, Earth is above the horizon for two weeks, and hidden for two weeks





Productive, Educational Activities on months long trip out to Mars

By Peter Kokh

Whereas the Moon orbits the Earth in a fairly circulat orbit, roughly once a "month" (roughly once a Moon orbit), Mars is far away at its closest (more than a hundred times the Moon's distance) to much further away on a time scale of many months. "The precise duration of each journey depends on when it is taken. Because both Mars and Earth's orbits are not perfectly circular, the time it takes to travel between them varies from six to eight months." – http://www.mars-one.com/faq/mission-to-mars/how-long-does-it-take-to-travel-to-mars

Now, that time could be shortened if we succeed in developing Vasimir type rockets.

http://www.adastrarocket.com/aarc/VASIMR

Your stay on Mars will necessarily be many months long before a return opportunity arises, again depending upon the availability or not of faster Vasimir rockets.

Twiddling your thumbs vs. "School en Route"

Will tourists waste their time en route? Boring!! This is an opportunity for tourists (and would-be settlers) to take college courses, especially those **courses which will enrich their experience as well as increase their helpfullness once on Mars.** But there could also be courses that fit the future plans of tourists when they return to Earth. Tourist stays on Mars will be much longer than that of tourists on the Moon. Again, opportunities to return to Earth will be more than two years apart.

Courses should include the geology of Mars, the features and resources of various areas on Mars, and courses on applying your terrestrial talents to Mars.

Artificial Gravity en Route

So far, NASA has shied away from Mars ship designs that would provide artificial gravity en route. That shortsightedness will necessarily waste tourist an settler usefullness as they will arrive on Mars not giote ready for active and productive activity. Many Mars ship designs that provide artificial gravity en route have been published – for decades – all ignored by NASA to date.

Getting a ticket to Mars will be harder

"Working tourists only need apply" – if there is no way for you, given your talents and physical condition, to be helpful on Mars, you are unlikely to be selected. Your ticket may cost less depending on the talents and experience you bring, and on the chances that you might choose to remain on Mars, rather than return to Earth Ior to the Moon. PK

THE MOON SOCIETY - LUNAR FRONTIER SETTLEMENT - WWW.MOONSOCIETY.ORG

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 industrialization 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: to inspire and involve people everywhere, from all walks of life, to create an expanded

Earth-Moon economy that contributes solutions to the major problems that 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 Moon Society President Ken Murphy



While the space industry seems to be suffering the summer doldrums, coupled with a media political circus non pareil that cares nought a wit about brainiac things like space. That NASA will continue in a moribund status quo seems a given, and all missions will be sold in the context of #Journey2Mars. Unfortunately, this only highlights the relatively weak development of commercial space to date as compared with expectations, a result of the usual reliance by the private sector on government funds to make things happen.

The pieces are falling into place for things like private dragons to private inflatable stations. Yet we are still several years from either really being used for U.S. spaceflight efforts. This leaves access to things like access to cislunar space and returning to the Moon ever sliding into the future. This is not a good thing, as it slows the development of an industry that could be a significant contributor to the U.S. economy with a fairly de minimis amount of investment in infrastructure: Earth/LEO/Earth access, LEO facilities, access to EML-1, EML-1 facilities, access to Moon/GEO/LEO from EML-1.

The Moon Society – Lunar Frontier Settlement – www.moonsociety.org p.2

This is where The Moon Society and its members and chapters can be most effective – in continuing to get the word out about the Moon and its value. Online comments, social media posts, letters to the editor, white papers, Rotary talks, even visits to local school astronomy clubs. Now, more than ever is the time to be highlighting the Moon and its value. Now is the time when we need to be laying the public groundwork for a solid return to the Moon, as the reality of our situation and continued NASA dithering make things like a #Journey2Mars seem increasingly sci-fi. It shouldn't be, but we are where we are.

I've been contacted about a new initiative for a Moon-based STEM project, and so will hopefully have some interesting news in the future, and ways in which The Moon Society can contribute to its success.

So when the despair of this particularly miserable political season gets to be too much, take a moment to go out and look at the Moon. And know that the future does have a silver lining after all. KM



A Beautiful Planet: A 3D Film of Earth from Space

www.space.com/32743-beautiful-planet-imax-film-earth-from-space.html

IMAX trailer transports you to the International Space Station viewports

The new IMAX documentary "A Beautiful Planet," filmed by astronauts on the International Space Station, illuminates life on the station and the beauty and fragility of the Earth it overlooks.

The film, which will be shown in IMAX theaters on April 29, incorporates 15 months of footage from the space station, and offers offers a rare glimpse of Earth from afar as well as insight into the day-to-day activities of the crews that lived and worked on the station during that time. The film's narration, by Jennifer Lawrence, also delves into the impact of humans on Earth and its potential analogues elsewhere in the Milky Way.

NASA has partnered with IMAX many times before to create documentary films, including "The Dream Is Alive," about the space shuttle program, and "Blue Planet," which shows the changing Earth from space. Veteran astronaut Marsha Ivins, who flew five shuttle missions and also filmed for IMAX from space, shared tips with the astronauts before launch on what to expect when filming in microgravity. The medium offers unique challenges, but also unique rewards to the viewer. ##







The Moon Society – Lunar Frontier Settlement – <u>www.moonsociety.org</u> p. 3

Why this issue, MMM #298, is 2 plus weeks late

By Peter Kokh, Saturday, September 17, 2016

On August 27th or 28th, someone snatched my computer out of my hands, someone 25 and strong and wired up vs. someone (me) going on 79 and frail – no contest Armed robbery using the fear of being beaten up, instead of carved up or shot, is not recognized as a felony in Wisconsin, even when an elderly person is the victim.

Usually, at the end of a day when I have done a lot of writing, I email the file to myself, as a precaution. But the night before, I had not done so.

In the past three weeks, I had become reconciled to the permanent loss and to never having a computer again. (Mac laptops are pricey!) But today I talked the thief into giving it back in exchange for telling the police that I was dropping all charges. It took \$600 and a lot of bargaining but I got it back after about 3 weeks, intact, with all files preserved. The culprit had not taken the power cord, so could not use it himself. Whew!!

I had to get a loan to come up with the \$600, a sum financially catastrophic for me. Donations humbly and kindly accepted. I need to buy a backup drive also. The next issue, #299 will hopefully be on schedule. ##

What might come after MMM's last issue, #301, December 2016

By Peter Kokh

I cannot speak for the Moon Society or National Space Society. Moon Society/NSS chapters that have been getting MMM. So starting January 2017, a substitute is for them to find or create.

I myself want to concentrate on putting together a couple of books: "A Pioneer's Guide to the Moon" and one about the Universe and what makes it, and everything in it, invlufing us tick: working titles "The Future Factor" or "The Omega Vector" – to be decided

But I know that in keeping up with the space news, I will have somethig to say now and then.

So I intend to launch a new rag, not a "news" letter but, if you will, "a topicletter" with

- No set publication schedule
- No set length
- No set format
- No time-sensitive announcments



"Outbound MMB" (Moon, Mars, & Beyond") will be avaiable in pdf format only, and downloadable from the Milwaukee chapter website(s), and maybe both the Moon Society and NSS web sites - (That's up to them.)

- Shorthand: "Outbound"
- No set publication schedule. When I have something to write about, I will.
- No time=sensitive announcements
- There may be other contributors
- The first one may make its debut at the Milwaukee Chapter December banquet, Saturday December 10th.
- I already have a list of topics for the first few issues

Meanwhile, 3 more MMMs to go, #299 October, #300 November, #301 December.

The Moon Society – Lunar Frontier Settlement – www.moonsociety.org p. 4



ORGANIZED CHAPTERS

Milwaukee Lunar Reclamation Society - http://www.moonsociety.org/chapters/milwaukee/

 $\underline{http://www.meetup.com/Milwaukee-Space-Exploration-Meetup/-http://www.space-Mlwaukee.com}$

Contact: Peter Kokh - kokhmmm@aol.com - MEETINGs, 2nd Sat 1-4 pm monthly except July, August,

Meetings: Mayfair Mall lower level room G150 for all meetings except December, in G110:

2016 Schedule OCT 8 - NOV 12 - DEC 10 - 2017 Schedule JAN 14, FEB 11, MAR 11, APR 8. MAY 13, JUN 10

After MMM #301: Peter plans to put out a new newsletter of no set publication schedule, no set length to be called "Outbound MMB" (Moon, Mars, & Beyond" avaiable as pdf file only (you print it out).

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

http://www.meetup.com/Saint-Louis-Space-Frontier-Meetup/

Contact: Robert Perry surfer_bob@charter.net - Meetings 4th Saturday of the month in room 162 of McDonnell Hall of Washington Univ. 2016 Sep , Oct , Nov , Dec - 2017 Jan , Feb , Mar , Apr , May , Jun

Gateway to Space 2017 - NSS annual International Space Development Conference Memorial Day Weekend. Thursday-Monday May 25-29 at the St. Louis Union Station.

NSS/Moon Society Phoenix Chapter - http://nssphoenix.wordpress.com/ - c/o Mike Mackowski. http://www.meetup.com/NSSPhoenix/events/161939572/

Meeting 3rd Saturdays monthly at Humanist Community Center, Mesa, 627 W. Rio Salado Parkway.

NEXT MEETINGS 2016 Schedule Sep 17 - Oct 15 - Nov 19 - Dec 17 - We have taken our usual summer break. We return to the Saturday sessions on September 17 at our usual meeting location (the Humanist Center in Tempe). Sep 17th talk by Mike Mackowski: "The 50th Anniversary of Project Gemini: Paving the Way to the Moon"

2017 Schedule Jan 21- Feb 18- Mar 18 - Apr 15 - May 20 - Jun 17 - Jul 15 - Aug 19 - Sep 16.

Tucson L5 Space Society – Now serving Moon Society Members www.tucsonspacesociety.org/ (not updated) – www.meetup.com/NSSPhoenix/events/161939572/ (not updated) Contact: Al Anzaldua – Meets monthly, every 2nd Saturday, 6:30 PM – 2016 Sep 10. Oct 8, Nov 12, Dec 10, 2017 JAN 14, FEB 11, MAR 11, APR 8. MAY 13, JUN 10

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

Contact: Eric Bowen <u>eric@streamlinerschedules.com</u> – Meeting 7 pm 3rd Mondays of even # months in the conference room of the Bay Area Community Center at Clear Lake Park: 2016 Oct 17. Dec 19 2017 Feb 20, Apr 17, Jun 19, Aug 21, Oct 16, Dec 18

Chapter News: A quick update on our last meeting: Our next regular meeting will be Monday, October 17th at the usual place; it will be our business meeting with officer elections. On Saturday, October 22nd we plan to work with Anita to host a welcome party for the national NSS board at her "Party Palace".

There will be a meeting in November 14th but no business; "movie night." Proposed date for the Christmas party is Monday, December 12th, two days after the boat parade. That timing has worked out well for us in the past. I am planning to attend ISDC 2017 in St. Louis. The hosts are inviting out-of-town chapters to participate in a tangible way. I would like to set up a table with some of the handouts that we originally worked up for the Apollo 11th 40th anniversary, possibly the gravity bricks, and anything else that we can gin up between now and May.

Jay mentioned a possible outreach opportunity at a church festival coming up in October. We should be able to have handouts and flyers from NSS.

Elections: Marianne, and I were nominated and seconded to reprise our current positions for another year. We were willing to renominate Doug as well if he is willing to serve another year. Nominations are being accepted via email until just before midnight the evening of Friday, October 7th. Nominations will also be taken from the floor at the October meeting prior to voting.

Eric Erician, who joined us for the June meeting and also the July party at Anita's, has volunteered to act as our Communications and Outreach Coordinator. If the other officers and director give consent I recommend we appoint him in that capacity. He has proposed using meetup.com to get our information out to potential interested participants in the local area, and he'suggessts it might be worthwhile to experiment with Meet-up for a year. He may also help update and maintain the chapter web site and calendar, and postings on the NSS activity calendar. ##

SEPTEMBER 2015 SPACE NEWS BROWSING LINKS

SPACE STATIONS + ROCKETS + COMMERCIAL SPACE

http://phys.org/news/2016-08-port-space-station.html

www.spacedaily.com/reports/Worlds_first_virtual_reality_camera_satellite_to_be_launched_into_space_999.html

EARTH + NEAR SPACE

www.spacedaily.com/reports/Giant cruise ship heads to Arctic on pioneering journey 999.html

www.spacedaily.com/reports/Recent_connection_between_North_and_South_America_reaffirmed_999.html

www.spacedaily.com/reports/Accounting_for_ozone_999.html

www.spacedaily.com/reports/Collecting_Fingerprints_in_the_Sky_999.html

moon

www.space-travel.com/reports/**Roscosmos_to_spend_7_5Mln_studying_issues_of_manned_lunar_missions_**99 9.html

www.space-travel.com/reports/At_Least_8_Space_Tourists_Eye_150Mln_Moon_Trip_on_Board_Russias_Soyuz_9
99.html

www.space-travel.com/reports/Lockheed_Martin_NASA_Ink_Deal_for_SkyFire_Infrared_Lunar_Discovery_Satellite 999.html

www.space.com/33632-moon-express-private-lunar-landing-approval.html

www.space-travel.com/reports/US_company_gets_historic_nod_to_send_lander_to_moon_999.html

www.space-travel.com/reports/Chinas_Jade_Rabbit_lunar_rover_dies_in_blaze_of_online_glory_999.html

MARS

www.marsdaily.com/reports/Opportunity_rover_studying_grooves_999.html

www.marsdaily.com/reports/Test for damp ground at Mars seasonal streaks finds none 999.html

https://www.washingtonpost.com/news/the-switch/wp/2016/06/10/elon-musk-provides-new-details-on-his-mind-blowing-mission-to-mars/

ASTEROIDS + COMETS

www.space.com/33761-nasa-asteroid-redirect-mission-design-milestone.html

www.space.com/20606-nasa-asteroid-capture-mission-images.html

OTHER PLANETS + MOONS

www.spacedaily.com/reports/Methane_Filled_Canyons_Line_Titans_Surface_999.html

http://phys.org/news/2016-08-space-scientists-io-atmospheric-collapse.html

http://phys.org/news/2016-08-nasa-climate-venus-habitable.html

http://phys.org/news/2016-08-simulations-venus-life.html

ASTRONOMY + ASTROBIOTICS

http://phys.org/news/2016-08-earthly-life-premature-cosmic-perspective.html

http://phys.org/news/2016-08-team-second-earth-candidates.html

www.space.com/33683-bacteria-could-aid-alien-life-search.html

www.spacedaily.com/reports/Venus_like_Exoplanet_Might_Have_Oxygen_Atmosphere_but_Not_Life_999.html

http://phys.org/news/2016-08-goldilocks-habitable-planets.html

http://phys.org/news/2016-08-scientists-unveil-earth-like-planet.html

www.space.com/33751-earth-like-planet-proxima-centauri.html

 $\underline{www.universetoday.com/130276/earth-like-planet-around-proxima-centauri-discovered/}$

www.space.com/33780-could-proxima-centauri-be-our-interstellar-getaway.html

www.space.com/33834-discovery-of-planet-proxima-b.html

www.space.com/33825-earthlike-planet-proxima-b-discovery-in-pictures.html

http://phys.org/news/2016-08-aliens-clue-evolution.html

www.spacedaily.com/reports/A_better_way_to_learn_if_Alien_Planets_have_the_Right_Stuff_999.html

http://phys.org/news/2016-08-alien-planets.html

http://phys.org/news/2016-08-brown-dwarfs-reveal-exoplanets-secrets.html

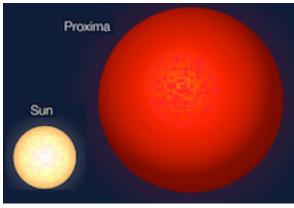
http://phys.org/news/2016-08-giant-planet-brown-dwarf-binary.html

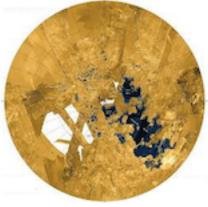
http://phys.org/news/2016-08-astrophysicists-mechanism-spiral-arm-formation-disk.html

www.space.com/33540-cosmic-clocks-search-for-gravitational-waves.html

http://phys.org/news/2016-08-nasa-fermi-mission-dark.html

THE NEWS IN PICTURES







Earth-like planet at closest star Proxima Centauri

Methane-filled canyons on Titan

lo's atmosphere collapse

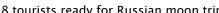


Venus: Once habitable, a long time ago?



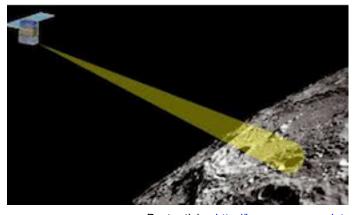
Asteroid redirect mission





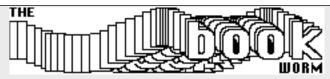


8 tourists ready for Russian moon trip Moon Exptrss Google X-Prize contender





Past articles http://legacy.moonsociety.org/publications/mmm_classics/
Or arranged by themes: http://legacy.moonsociety.org/publications/mmm_themes/







http://marsbase.org - Shaun Moss - International Mars Research Station - 298pp An exciting new plan to create a permanent human settlement on Mars contains approximately 300 pages of science, engineering (including detailed drawings of spacecraft), strategy and philosophy, centered on the idea of establishing a research facility on Mars.

The IMRS plan proposes an alliance between the world's top 10 space agencies in a similiar vein to the International Space Station.

Each mission to the IMRS will be conducted by a international **team of 6 astronauts (3 scientists and 3 engineers)**, progressively building up infrastructure and assets on the Martian surface.

The IMRS plan includes various synergistic measures to maintain affordability, including:

- · Spreading the cost among multiple partners
- Focusing on a single location
- Making use of commercial hardware
- Using resources from the Martian environment

Other Features

- Modern space hardware such as SpaceX reusable Falcon rockets and Dragon capsules,
- Bigelow Aerospace inflatable habitats
- Mechanical counter-pressure spacesuits and NASA's new Space Launch System
- It is more practical than ever before to send humans to Mars; not merely for one, or even a few missions, but an ongoing series of missions that will lay the foundation for permanent human settlement.

Get it: $\sqrt{\text{Amazon kindle: free}} \sqrt{\text{Amazon paperback: $19.99}}$

Editor's recommendation: 5 star - I have known Shaun for many years and we have collaborated more than once. He has always been one to say "whoa" to any idea, and rethink it from scratch, casting aside expensive and thoughtless approaches rooted in the mechanics of bureaucracy. This book is a credible blueprint of what a first Mars settlement might be like.

Compared to Shaun Moss's vision, the Mars One project is jibberish. PK



Past articles http://legacy.moonsociety.org/publications/mmm_classics/
Or arranged by themes: http://legacy.moonsociety.org/publications/mmm_themes/

NSS Chapters that share Moon Miners' Manifesto





Space Chapter HUB Webiste: http://nsschapters.org/hub/
Feature Page: Project Menus Unlimited http://nsschapters.org/hub/projects.htm

WISCONSIN



Milwaukee Lunar Reclamation Society PO Box 2101, Milwaukee, WI 53201

www.moonsociety.org/chapters/milwaukee/

www.Space-Milwaukee.com - www.meetup.com/Milwaukee-Space-Exploration-Meetup/

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

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• <u>James Schroeter</u> (414) 333–3679 – <u>james_schroeter@yahoo.com</u> TREASURER/Database • <u>Robert Bialecki</u> (414) 372–9613 – <u>bobriverwest@yahoo.com</u> (• Current Members of the MLRS Board of Directors)

Meetings: Mayfair Mall lower level room G150 for all meetings except December, in G110:

2016 Schedule OCT 8, NOV 12, DEC 10 - 2017 Schedule JAN 14, FEB 11, MAR 11, APR 8. MAY 13, JUN 10 After MMM #301: Peter has decided on an online newsletter of no set publication schedule, no set lenght

to be called "Outbound: Moon, Mars, & Beyond" avaiable as pdf file only (you print it out). (See p.

WISCONSIN



SSS - Sheboygan Space Society

728 Center St. Kiel, WI 54042-1034

www.sheboyganspacesociety.org c/o Will Foerster 920-894-1344 (h) astrowill@frontier.com SSS Sec./Tres. c/o B.Pat Knier dcnpatknier@gmail.org

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

2016 MEETINGS 3rd Thur even # months: 2016 OCT 20 - DEC 10 (Sat: joint meeting with Milwaukee)
2017 - FEB 16 - APR 20 - JUN 15 - AUG 17 - OCT 19 - DEC 11 (Sat: joint meeting with Milwaukee)
(on Peter's 80th Birthday, if..) - for all meetings, Call for location (920) 894-1344

CALIFORNIA



OASIS: Organization for the Advancement of Space Industrialization & Settlement Greater Los Angeles Chapter of the National Space Society PO Box 1231, Redondo Beach, CA 902

Events Hotline/Answering Machine: 310-364-2290 - Odyssey Ed: Kat Tanaka <u>odyssey_editor@yahoo.com</u> <u>oasis@oasis=nss.org</u> - Odyssey Newsletter <u>www.oasis=nss.org/articles.html</u> Regular Meeting 3 pm 3rd SAT <u>monthly</u> - 2016 Schedule Sep 17 - Oct 15 - Nov 19 - Dec 17

2017 Schedule Jan 21- Feb 18- Mar 18 - Apr 15 - May 20 - Jun 17 - Jul 15 - Aug 19 - Sep 16





DSS: Denver Space Society fka Front Range L5
1 Cherry Hills Farm Drive, Englewood, CO 80133
http://www.denverspacesociety.blogspot.com/

James W. Barnard 303-781-0800 trailrdr@ecentral.com - Monthly Meetings every 3rd Thursdays, 7 pm
Englewood Public Library, Englewood, CO 80110 - 1000 Englewood Parkway, 1st Flr Civic Center
2016: Sep 15, Oct 20, Nov 17, Dec 15 - 2017: Jan 19, Feb 16. Mar 16, Apr 20, May 18, Jun 15, Jul 20, Aug 17

ILLINOIS



LDAhean Saol.com CSFL5: Chicago Space Frontier L5 – 610 West 47th Place, Chicago, IL 60609



MSFS: Minnesota Space Frontier Society - http://www.mnsfs.org

Dave Buth, 433 South 7th St. #1808, Minneapolis, MN 55415 c/o Dave Buth, 433 South 7th St. #1808, Minneapolis, MN 55415

MNSFS monthly meetings are held on the first Thursday of each month at the Fairview Community Center (Great Room), 1910 County Road B West, in Roseville, MN 55113 Meetings usually start at 7:00 p.m. and last about two hours. Each meeting features Board member introductions, general announcements,

2016 Schedule Sep 1, Oct 7, Nov 4, Dec 1 - **2017 Schedule** Jan 5, Feb 2. Mar 2, Apr 6, May 4, Jun 1, Jul 6

OREGON



Oregon L5 Society – http://www.OregonL5.org
PO Box 86, Oregon City, OR 97045

(LBRT - Oregon Moonbase) moonbase@comcast.net - Charles Radley: cfrjlr@gmail.com

Meetings the 3rd Sat of the Month at 2:00 PM - 2016 Schedule Sep 17 - Oct 15 - Nov 19 - Dec 17 2017 Schedule Jan 21- Feb 18- Mar 18 - Apr 15 - May 20 - Jun 17 - Jul 15 - Aug 19 - Sep 16

PENNSYLVANIA



NSS-PASA: NSS Philadelphia Area Space Alliance

928 Clinton Street, Philadephia, PA, 19107 http://phillypasa.blogspot.com/ c/o Earl Bennett, Earlisat@verizon.net - 856/261-8032 (h), 215/698-26

Meetings 3rd Thursday monthly - 2016 Schedule Sep 17 - Oct 15 - Nov 19 - Dec 17

2017 Schedule Jan 21- Feb 18- Mar 18 - Apr 15 - May 20 - Jun 17 - Jul 15 - Aug 19 - Sep 16

The NSSPASA Report for August, 2016

Meeting times and locations: We have an August event at the New Jersey State Museum on the twentieth. We will be on the second floor in the new STEAM Center. The September meeting will be on the 10th and, for October, on the15th. And in November we will be at Philcon.

Our first report was from Hank Smith who attended Escape Velocity and Shore Leave (held at the Hunt Valley Inn, by the Star Trek Association of Towson, Md.). He will try for Capclave in October, and, next year, he will attend Lunacon: the Guest of Honor will be Ben Bova. Ben has been a rocket scientist, editor of a futurist magazine, and writer of a number of science fiction novel. And Lunacon is looking for people who work in the sciences for panels and talks in 2017. Sounds like fun, Hank!

Larry brought statistics on web visits and his updates on our site. He pointed out that we have a quiz section on the planets. He brought the code for how he set this up (planets. Client. class) and material on The Java Café. We now have a huge Q.R. code paper that can be read from six feet away, and, individual stick ons for older cards we have. There was a question on NASTAR, where people who are going into space can train in our area

(Southampton Pa.) and the education center associated with it (The Johnsville Centrifuge and Science Museum). Larry also brought a listing of present and future GOES weather observation satellites ("R" now, through "T" moving forward). He also reported that a group called PASA is posting pictures of activities and we are following. There is also a Twitter group and "we" are posting to them. Ah the new world.

Rich Bowers, our Bernie Sanders look alike (he says) is now 75 and discussed several topics of interest to our members: there is a movie out on the construction of Space Elevators called "Skyline". It is about one and a halve hours long and may be available on Netflixs as a d.v.d. . He highly recommends this non fiction representation of the concept and how it may bring space habitation into the reach of a number of people. This would include Rich, who hopes to live long enough to move to a "Zero Gee" retirement home at geosynch. .The main emphasis seems to be the eventual need for five elevators according to the film, with the Japanese working on the materials science needed for construction being shown. Google and find out more.

Dorothy gave us material on a number of events at the Air and Space Museums (both in Washington and in Virginia) including the September 12th Women in Aviation and Space. Also the author of "Calculated Risk", by astronaut Guss Grissom, did a book signing on August 20 He was in the Mercury 4 capsule in 1961. Check the Smithsonian site for more. And The Goddard Center will have a "Science Experiment" event every third Sunday. On September 18 they will have "Communications" geared for children. And finally; the Maryland Science Center has held its' 40th anniversary celebration with "40 Summers of Science" opener on June 11, the anniversary of its' opening, with events till the fall. And all have various space and cosmology related movies with The Smithsonian having 3D IMAX presentations.

Mitch Gordon noted that we would see the Perseid Meteor Shower with an unusually high intercept count. Due to cloudy conditions in our mid Atlantic area along the Boston–Washington Corridor few were visible (meteor scatter data of radio signals could be found from the ham radio links though). He also brought a new commemorative sheet available at the Post Office: "the Planets" which is images of all of the planets (and Pluto) that our craft have orbited or flown past. Note that some of these have not been orbited or approached since the 1980s (1989 was the last Grand Tour encounter). The main substance of Mitch's report was a publication from Europe: "Room, The Space Journal" found at the Barnes and Noble book store chain. There was lots of material on legal considerations of space exploration and habitation and development of the solar system in general. If you have read The Moon Miners Manifesto, as issued or from the archives, you will have seen these concerns expressed. These concerns have also been mention in Ad Astra, The National Space Societies publication of record (and at the annual I.S.D.C. conferences) and as part of the concerns of the Mars Society (conference in September!). The magazine Mitch brought was the Spring/Summer issue for 2016, and, included website information: room.eu.com, and: wwwairc.at .

Earl brought in material about the Star Shot Interstellar probe idea and the place where the probes power plant might be located: although the recent probe designs use are launched from Earth orbit, with the laser array being located on the ground, it is not necessary for this to be the location. In several discussions it was pointed out that anywhere in the Earth Moon system for the powerful (100 GIGA WATTS for several minutes) laser would create a potential danger to almost every satellite and spacecraft in that space if control was "given" to the wrong people. As a paranoid I agree with the fear of this possibility. Locating it in L-1 would simply put it where an advanced selective surface could be used to intercept and redirect the beam (although something would have to distract Earths defense systems to let it be launched much less positioned. An alternative that I have thought of, repeating thoughts of others with some added filigree, that could allow the desired launches with reduced threats to Earth: move the Launching Laser closer to the Sun! By moving to the orbit of Mercury we could improve the power for the laser, or any other system actually, by about ten (R Earth orbit/R Mercury orbit) squared. This is in reference to collecting the power to be used to power the laser, not increasing the output power as such. This would have to be a semi autonomous system as far as the operation is concerned; the actual control of the directing of the beams would be hard wired so that clever hacking or deliberate subversion would be severly limited. The creators of the system. The Breakthrough Initiatives organization would have to police the creation of the control system like it was creating a weapon so that no outside interest could use it as such. The location closer to the Sun could create the opportunity to launch in a number of directions directly, first the Centauri System (after the circumstellar tests out to the Oort Cloud) then, using the pre loaded objectives list, to systems with some interesting properties (like planets and Brown Dwarfs. The major objection I see with this safety oriented approach is the added time doing the work in space and moving the laser system away from Earth. Years ago, Robert Forward and others, suggested a continuous "push taking a year or more to gather the required velocity. In this case the laser, or "emitter" (for some non laser based systems) would operate for a year and operate at the 10 Mega Watt level. It would also operate away from Earth and would not be so fearsome as a weapon. The Sail would be in the multi kilometer size range and so could be launched in the next few years and driven, at least initially, by present day Earth based lasers. This is basically the idea of using quickly realizable, and scalable, technology to begin a series of science oriented missions without the same level of concern that the neat new technology driven high power system will cause. O.K. off my soap box!

Submitted by Earl Bennett, President, NSSPASA, KD2CYA.

Moon Miners' MANIFESTO Milwaukee Lunar Reclamation Society, Inc. PO Box 2102, Milwaukee, WI 53201-2102





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- 6. Settler Artists, Crafts, and Sports will lure Visitors & Settlers to the Moon. Peter Kokh
- 7. Moon Tourist Opportunities Illustrated, Peter Kokh
- 8. Productive, Creative Activities on the months long trip out to Mars, Peter Kokh

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MINNESOTA SPACE FRONTIER SOCIETY ● \$25 Regular Dues

OREGON L5 SOCIETY • \$25 for all members

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SHEBOYGAN SPACE SOCIETY (WI) • \$15 regular, • \$10 student/teacher/friend • \$1/extra family member Individual Subscriptions outside participating chapter areas: • \$15 USA • \$25 Canada;

• US \$55 Surface Mail Outside North America - Payable to "MLRS", PO Box 2102, Milwaukee, WI 53201