

The Shoreline Observer



The Shoreline Amateur Astronomical Association Newsletter

Celestial Highlights: March

Feb 18th Full Moon

Feb 24th Last Quarter Moon

March 4 New Moon

Mar4-5 Messier Marathon

March 12 First Quarter Moon

March 19 New Moon

March 20 Vernal Equinox

Apr 1-2 Messier Marathon

Upcoming SAAA Events...

Club Meeting: Friday, March 11 @ 7:00 PM

Macatawa Bay School Planetarium

Guest Speaker... Michael Sissing & Students from HNT

Refreshments:

Board Meeting: Wednesday March 2 2011

@ 6:00 PM at Herrick District Library

The Raffle Item The Month Is a Green Laser Pointer

\$1 Per Ticket Must Be Present to Win

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Welcome to the new members

In the February we had 1 new member join, Rick Archer.

A little about Rick

I'm a retired electrical engineer who recently moved to Holland from Charleston, West Virginia. I grew up in the Farmington Hills area near Detroit and went to school at UM in Ann Arbor so Michigan is not new to me. I got my first telescope as a Christmas present when I was in grade school, a 3-inch Newtonian from Edmund Scientific, and I was hooked. At present, I have several telescopes, a Celestron 11 inch SCT, an 80mm APO refractor and an old 6 inch Schmidt-Newt that I'm in the process of upgrading to a more modern configuration. For the past few years, I've been into astrophotography with a Canon DSLR and a couple of SBIG cameras. I'm also interested in spectroscopy. I have an SBIG spectrograph but I'm still learning how to use it.

Fun Facts

The lightning in the sky is nearly 3 times hotter than the Sun.

SAAA General Meeting Minutes – February 11, 2011

The February General Meeting took place on Friday, February 11th at Macatawa Bay Planetarium.

In attendance: Russell Hills, Frank Roldan, Peter Burkey, George Miller, Robin Hudson, Larry Logsdon, Mark Logsdon, Jim Reier, Doug Sutherland, Rick Archer and Lynn Sheehan.

Old Business Items**Treasury Report:**

Account balance as of February 11th: \$854.08
Robin will check the status of our clothing order.

Upcoming Events:

February 14th (Valentine's Day) Park Township Program: Macatawa Bay Planetarium 7:00 to 8:30 PM.

Members should arrive about 5:30 for setup. Head-count is currently at 35. Jim will present a Deep Sky Objects PowerPoint and Jim and Frank will provide a Planetarium show. Robin and George will lead visitors in creating a Planisphere, a Pocket Solar System, and a North Star Clock. Doug Sutherland will assist.

March 4th and 5th Messier Marathon: Hemlock Crossing County Park, if we can make arrangements.

April 1st and 2nd Messier Marathon: Hemlock Crossing County Park, if we can make arrangements.

March 11th SAAA General Meeting: Macatawa Bay Planetarium at 7:00 PM.

May 2011 Park Township Program: has been proposed. Russ suggested a presentation of Constellations and Lore.

New Business Items

SAAA's newest members, Rick Archer and Lynn Sheehan, attended and introduced themselves.

The Membership voted to pay \$72 per year for a Post Office Box, to obtain a permanent mailing address.

Russ presented a list of public outreach topics we could provide for Ottawa County Parks. He hopes that we can draw-up our offer, and present it to OC Parks during the March/ April timeframe.

Frank, Martha, and Larry are reviewing our club Bylaws. They will propose changes to ensure the Bylaws match current policies.

Members discussed Bylaw changes to limit the approval of club expenses. Peter and Russ visited Fifth-Third Bank and learned the bank is not able to limit withdrawals and check-writing permissions to a specified dollar amount.

Russ discussed that SAAA is not on the national database of 501 C(3) non-profit organizations. Full status will require completion of Form 1023 and a \$400 application fee. Membership voted to upgrade to full 501 C(3) status before applying for grants for an observatory and equipment.

We discussed the benefits of converting from a Corporation (inc.) to a Limited Liability Company (LLC.), to limit possible liability claims.

Frank will author a grant for an LCD projector to be used for public outreach, especially Stellarium programs.

Frank was the only volunteer to create and maintain an inventory of SAAA-owned equipment.

We would like to re-establish a rotating schedule of member presentations.

Newsletter submissions should be made each month by the Wednesday after the General Meeting, so the newsletter can be posted by that 3rd Friday of each month.

Rather than hold public outreach at both Holland State Park and Van Buren State Park, can we have two or more events at HSP and drop VBSP, due to the distance?

George Miller – Secretary February 13, 2011

SAAA Board Meeting Minutes – February 08, 2011

The February Board meeting took place on Tuesday, February 8th at Herrick District Library-South.

In attendance: Russell Hills, Peter Burkey, George Miller, and Larry Logsdon.

Old Business Items**Treasury Report:**

Account balance as of December 2nd \$699.91

Dues collected at January meeting +\$140.00

Pay Pal test transaction +\$0.28

Get-Well cards purchased -\$5.41

Account balance as of February 8th: \$834.78

We will not be participating at the March 19th Southwest Symphony Orchestra presentation of "Holst: The Planets".

We have had no further contact regarding the "Journey 4-H Outdoor Challenge".

Upcoming Events:

February 11th SAAA General Meeting: Macatawa Bay Planetarium at 7:00 PM.

Preparation for the Feb. 14th Park Twp program. [Michael Sissing will not be joining us.]

February 14th (Valentine's Day) Park Township Program: Macatawa Bay Planetarium 7:00 to 8:30 PM.

March 4th and 5th Messier Marathon: Which location?

April 1st and 2nd Messier Marathon: Which location?

March 11th SAAA General Meeting: Mac Bay Planetarium at 7:00 PM.

Black River School Earth Science Program: Date TBD.

Possible Stellarium presentation for the school.

May 2011 Park Township Program: has been proposed.

New Business Items

We ordered a supply of twelve hats at \$15 each. Some of these were purchased with club funds for prizes and future sales.

SAAA has another new member.

Members voted to pay \$72/year for a Post Office Box to obtain a permanent mailing address.

Russ presented a list of public outreach topics we could provide for Ottawa County Parks. He hopes that we can draw-up our offer, and present it to OC Parks during the March/ April timeframe.

Frank, Martha, and Larry are reviewing our club Bylaws. They will propose changes to ensure the Bylaws match current policies.

Members discussed bylaw changes to limit the approval of club expenses. Peter will also check with Fifth-Third Bank to see if they can limit withdrawals and check-writing permissions to a specified dollar amount.

We voted not to pay \$50 to Vivekananda Monastery to use their grounds for viewing in 2011.

Russ determined that SAAA is not on the national database of 501 C(3) non-profit organizations. We should probably upgrade before applying for grants for an observatory and equipment. Full status will require completion of Form 1023 and \$400 application fee.

We should seriously consider converting from a Corporation (Inc.) to a Limited Liability Company (LLC.), to limit possible liability claims.

We should consider applying for a small grant for an LCD projector. This would be good practice for obtaining larger grants.

We should ask a member to create and maintain an inventory of SAAA-owned equipment.

We would like to re-establish a rotating schedule of member presentations.

Newsletter submissions should be made each month by the Wednesday after the General Meeting, so the newsletter can be posted by that 3rd Friday of each month.

Rather than hold public outreach at both Holland State Park and Van Buren State Park, can we have two or more events at HSP and drop VBSP, due to the distance?

George Miller – Secretary February 13, 2011

DEEP SKY VIDEO IMAGING

Over the years astrophotography has advanced from film to CCD imaging. An area often overlooked is video imaging. Several years ago video cameras began to be developed by the British and over the years advanced with the development of advanced electronics and higher quality CCD chips. Today the most popular video imaging cameras are the Stellacam and Millincam (Canadian made).

So why video imaging? Several reasons but the most im-



pressive is real time viewing of deep space objects (DSO's). Using a small aperture (80-90mm) scope with good polar alignment and tracking will show you amazing images with an exposure time of 8.5 seconds. These pictures are projected on a monitor or other screen or may be captured and processed using various software packages. Small scopes such as a 80mm refractor will show the dark lanes in M31 and stunning detail in M4; even the Veil Nebula.

Another huge advantage of video imaging is the ability to capture DSO's that you

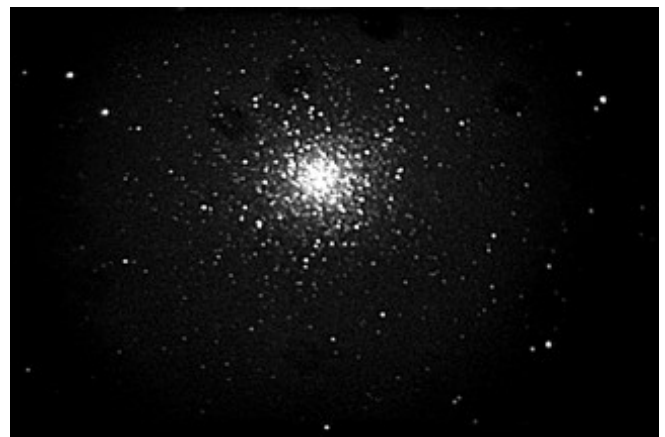


would otherwise not see with your eye looking through any eyepiece. A 6" aperture scope in dark skies can capture stars approaching 18th magnitude. From my prospective, using my Stellacam attached to the Celestron C8 es-

entially increases the scope aperture 2 to 3 times. Using my 14" Tscope brings with the Stellecam means my scope aperture increases between 24" to 36" and the viewing is breathtaking.



Availability and costs of equipment varies. Stellacam has a version III which is in the \$1200 range and Millincam has several models ranging from \$500 to \$1400. Of course you'll need other "toys" such as focal reducers, monitor, etc. Plan on having \$1700 to \$2000 invested unless you're cheap like me. I picked up a used Stellacam II for under \$400 and a F/3 focal reducer for "cheap". A trip to Love Inc. in Hudsonville resulted in a 12" monitor with VCR for under \$20. Total investment, under \$500!



Submitted by Larry Logsdon

Software Review

Book Review

Where is M13?

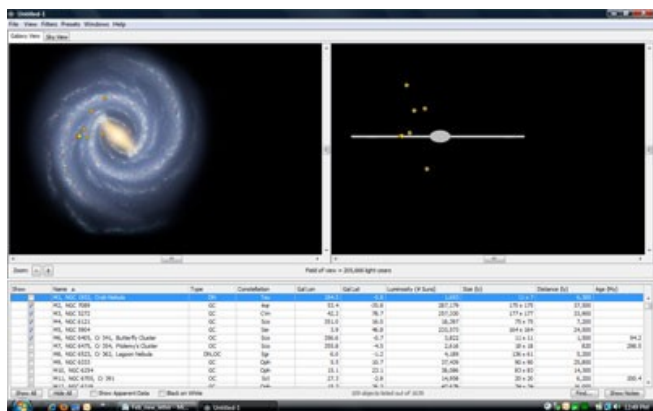
A Three Dimensional Galactic Atlas!

You can Find it [HERE](#)

This is a fun little app.

We all have our favorite deep sky objects that we've looked at hundreds and hundreds of times. We know where to find them in the night sky, but most of us have little idea where they lie in the three-dimensional space around our Galaxy. Isn't that just a bit strange?

But what does it do? The program has but one purpose; it, "Helps you visualize the locations and physical properties of deep sky objects in and around the Galaxy." That's it. Don't look to "Where is M13?" to help plan observing sessions, locate galaxy clusters, or run CCD cameras. Its only *raison d'être* is showing where all those cool DSOs are in relation to the Sun and Milky Way.



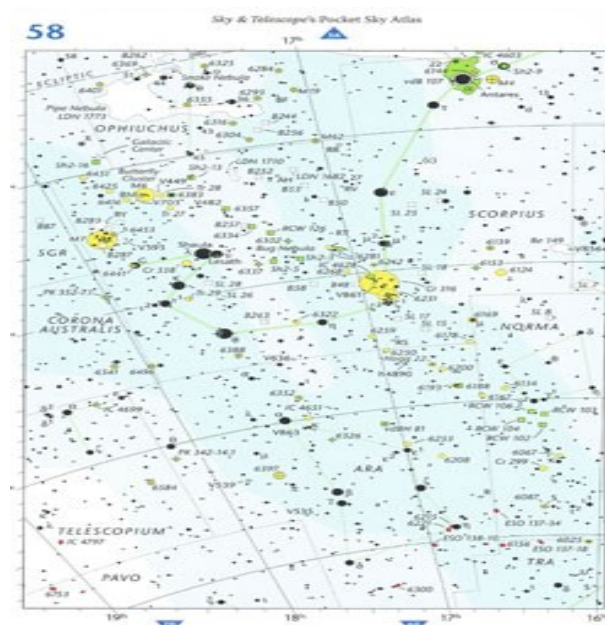
What kind of computer do you need? This is one of the coolest things about "Where is M13?" It, being written in Java, works equally well on PCs, Macs, and Linux boxes. As long as you have Java 1.4 or later installed on your computer you should be good to go.

Ant the very best thing is it's

FREE

Sky & Telescope's Pocket Sky Atlas

It's just the right size; at 9 X 6, it's large enough to be legible and small enough to be easy to handle. It's spiral bound, so it lies flat for easy viewing. The paper is heavy with a semi-glossy finish, so it should resist dew fairly well and won't produce reflections from a flashlight.



Most importantly, the charts are extremely well designed and clear. They are arranged in an order that makes a lot of sense, and it's easy to locate the charts of sections of the sky that are adjacent to the one you're looking at. There is a lot of detail, but not so much that the charts are just masses of dots. The color coding and labeling is very clear and completely consistent throughout the book. Finally, the three index sections-- one general index, one index to Caldwell Catalog objects, and one index to Messier Catalog objects-- are extremely easy to use.

If I had to choose just one sky guide for regular use, this would be the one. I'm very happy I bought it, and I'd do it again.

WOMEN IN ASTRONOMY

Prior to the nineteenth-century, little is written of women's contributions in astronomy. For example, Hypatia of Alexandria is considered the first woman astronomer. Little is known of Hildegard von Bingen (1099-1179) whose ideas on "universal gravitation" predate Isaac Newton's, nor of Sophia Brahe, Tycho's younger sister.

Harvard College Observatory was founded in 1839, a time when astronomy was beginning to be taught as a science subject in its own right, instead of as an extension of philosophy. This was also a time when universities were receiving funds for astronomical research, an endeavor previously pursued by learned men of means.

Astronomy is a science requiring observations and exact calculations, particularly of positions of celestial objects. This was tedious work completed by "human computers." Originally, young men performed these tasks. This changed when Edward Charles Pickering became director of the observatory in 1877 and opened the doors of astronomy to women.

Pickering was sympathetic to the women's suffrage movement and recognized that there was a new breed of women, women that were educated. He also realized that with the new technologies of the time (better telescopes and astrophotography) the collection of data was happening faster than could be catalogued so as to be useful. Although women had been volunteers at the observatory in the past, usually relatives of men on Harvard's payroll, Pickering convinced the Harvard Corporation to hire women for the tedious work of astronomical computing. This occurred none too soon as Harvard College Observatory would be asked to complete a task of astronomical proportions. It was indeed fortuitous that Pickering had hired women to perform the tiresome task of cataloguing and computing. The women's beginning wage was about \$.25 per hour, less than half that paid to men doing the same task. Pickering was able to double his staff of computers by hiring women. He would later find out that the women also did a better job.

The women computers at Harvard College Observatory became known as "Pickering's Harem," an unflattering term. It is unknown if they were bothered by

this. What is known is that they appreciated the opportunity he gave them, to work in the science they loved and to become some of astronomy's brightest stars.

Maria Mitchell (August 1, 1818 – June 28, 1889) was born in Nantucket, Massachusetts, and was a first cousin four times removed of Benjamin Franklin. Her parents, William Mitchell and Lydia Coleman Mitchell, were Quakers. Maria was born into a community unusual for its time in regard to equality for women. Her parents, like other Quakers, valued education and insisted on giving her the same quality of education that boys received. The Quaker religion taught, among other things, intellectual equality between the sexes. Additionally, Nantucket's importance as a whaling port meant that wives of sailors were left for months and sometimes years to manage affairs while their husbands were at sea, thus fostering an atmosphere of relative independence and equality for the women who called the island home. In spite of this, the women of Nantucket still lacked the right to own property or to vote, among other things.

After attending Elizabeth Gardener's small school in her earliest childhood years, Maria attended the North Grammar school, where William Mitchell was the first principal. Two years following the founding of that school, when Maria was eleven, her father built his own school. There, she was a student and also a teaching assistant to her father. At home, Maria's father taught her astronomy using his personal telescope. At age twelve and a half, she aided her father in calculating the exact moment of an annular eclipse. Her father's school closed, and afterwards she attended a Unitarian school for young ladies. Later she worked there as a teaching assistant before she opened her own school in 1835. One year later, she was offered a job as the first librarian of the Nantucket Atheneum where she worked for eighteen years.

Using a telescope, she discovered the "Miss Mitchell's Comet" (Comet 1847 VI, modern designation C/1847 T1) in the autumn of 1847. Some years previously, King Frederick VI of Denmark had established gold medal prizes to each discoverer of a "telescopic comet".

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Strange or What?

An image taken by the Context Camera on NASA's Mars Reconnaissance Orbiter shows a heart-shaped feature that the camera's team at Malin Space Science Systems, San Diego, wants to share with other Mars fans on St. Valentine's Day.



The feature is about 1 kilometer (0.6 mile) long, in the Arabia Terra region of Mars' northern hemisphere. It appears in an image taken on May 23, 2010. A small impact

crater near the tip of the heart is responsible for the formation of the bright, heart-shaped



feature. When the impact occurred, darker material on the surface was blown away, and brighter material beneath it was revealed. Some of this brighter material appears to have flowed further downslope to form the heart shape, as the small impact occurred on the blanket of material ejected from a much larger impact crater.

The Context Camera was provided by and is operated by Malin Space Science Systems, San Diego, Calif. NASA's Jet Propulsion Laboratory, a division of the California Institute of Technology, Pasadena, Calif., manages the Mars Reconnaissance Orbiter for the NASA Science Mission Directorate, Washington. Lockheed Martin Space Systems, Denver, built the spacecraft and operates it in partnership with JPL. For more information about the Mars Reconnaissance Orbiter mission, see <http://www.nasa.gov/mro>.

PASADENA, Calif. – NASA's Hubble Space Telescope has captured images of the large asteroid Vesta that will help refine plans for the Dawn spacecraft's rendezvous with Vesta in July 2011.

Scientists have constructed a video from the images that will help improve pointing instructions for Dawn as it is placed in a polar orbit around Vesta. Analyses of Hubble images revealed a pole orientation, or tilt, of approximately four degrees more to the asteroid's east than scientists previously thought.

This means the change of seasons between the southern and northern hemispheres of Vesta may take place about a month later than previously expected while Dawn is orbiting the asteroid. The result is a change in the pattern of sunlight expected to illuminate the asteroid. Dawn needs solar illumination for imaging and some mapping activities.

"While Vesta is the brightest asteroid in the sky, its small size makes it difficult to image from Earth," said Jian-Yang Li, a scientist participating in the Dawn mission from the University of Maryland in College Park. "The new Hubble images give Dawn scientists a better sense of how Vesta is spinning, because our new views are 90 degrees different from our previous images. It's like having a street-level view and adding a view from an airplane overhead."

The recent images were obtained by Hubble's Wide Field Camera 3 in February. The images complemented previous ones of Vesta taken from ground-based telescopes and Hubble's Wide Field and Planetary Camera 2 between 1983 and 2007. Li and his colleagues looked at 216 new images -- and a total of 446 Hubble images overall -- to clarify how Vesta was spinning. The journal *Icarus* recently published the report online.

"The new results give us food for thought as we make our way toward Vesta," said Christopher Russell, Dawn's principal investigator at the University of California, Los Angeles. "Because our goal is to take pictures of the entire surface and measure the elevation of features over most of the surface to an accuracy of about 33 feet, or the height of a three-story building, we need to pay close attention to the solar illumination. It looks as if Vesta is going to have a late northern spring next year, or at least later than we planned."

Launched in September 2007, Dawn will leave Vesta to encounter the dwarf planet Ceres in 2015. Vesta and Ceres are the most massive objects in the main asteroid belt between Mars and Jupiter. Scientists study these celestial bodies as examples of the building blocks of terrestrial planets like Earth. Dawn is approximately 216 million kilometers (134 million miles) away from Vesta. Next summer, the spacecraft will make its own measurements of Vesta's rotating surface and allow mission managers to pin down its axis of spin.

"Vesta was discovered just over 200 years ago, and we are excited now to be on the threshold of exploring it from orbit," said Bob Mase, Dawn's project manager at NASA's Jet Propulsion Laboratory in Pasadena, Calif.

"We planned this mission to accommodate our imprecise knowledge of Vesta. Ours is a journey of discovery and, with our ability to adapt, we are looking forward to collecting excellent science data at our target."

The Dawn mission is managed by JPL, a division of the California Institute of Technology in Pasadena, for NASA's Science Mission Directorate at the agency's headquarters in Washington. Orbital Sciences Corporation of Dulles, Va., designed and built the spacecraft. Several international space organizations are part of the mission team.

To see the Vesta images and video, visit: http://www.nasa.gov/mission_pages/dawn/multimedia/vestavid20101008.html.

To learn more about Dawn and its mission to the asteroid belt, visit: <http://www.nasa.gov/dawn> or <http://dawn.jpl.nasa.gov>.

Special Request

WOMEN IN ASTRONOMY

Good Morning,

I am Tim Lyman, the principal at Blue Star Elementary School in Hamilton. I received your names from Nancy Cook, who I work with regularly to bring student teachers into Blue Star. We are hosting a camp out night at the school on Friday, April 15. I was hoping to have an astronomer come to the school that evening to discuss what we are seeing in the sky.

Here is a little detail about the event so you can ponder whether this is something that might be of interest to you:

1. We are hosting a "Roof and Hoof" event that is built as the school's Spring fundraiser.
2. The roof part is where some staff will be sleeping on the roof in tents. The students and families are also invited to camp out in the playground/field areas behind the school.
 - a. This is where you would come in and discuss what we are seeing in the night sky. I am thinking maybe 30 minutes or so of time to show students star-charts, or other interesting features of astronomy.
3. Students involved are Y5-5th grade
4. The following morning, students will be walking (the hoof part) in a walk-a-thon to raise money for the school. We have not done anything like this in the past, so I am not sure how well the attendance will be, but I have high hopes for a great turn-out.

My questions are:

1. Is this something you might consider?
2. What would be the cost associated with having you come out?
3. What ideas might you share that would help make the astronomy part of the idea more successful?

I appreciate you taking the time to answer the questions and consider this event.

Thank you,

Tim Lyman, Principal

I am planning on going!

If you would like to help out please drop me an E-mail.

Thanks Russ

Continued page from page 5

The prize was to be awarded to the "first discoverer" of each such comet. She duly won one of these prizes, and this gave her worldwide fame, since the only previous woman to discover a comet had been Caroline Herschel.

She became the first woman member of the American Academy of Arts and Sciences in 1848 and of the American Association for the Advancement of Science in 1850. She later worked at the U.S. Nautical Almanac Office, calculating tables of positions of Venus. She became professor of astronomy at Vassar College in 1865, the first person (male or female) appointed to the faculty. She was also named as Director of the Vassar College Observatory. After teaching there for some time, she learned that despite her reputation and experience, her salary was less than that of many younger male professors. She insisted on a salary increase, and got it.

At Vassar Ms Mitchell emphasized that students should learn by doing, not by reading. This led to many observing sessions and interpretation of the data gathered. Extensive work was done on variable stars for they were recognized as the "guide posts" of the universe.

Today, the Maria Mitchell Association strives to continue her legacy through preservation of her birthplace and papers, astronomical and natural science research, and interactive, hands-on educational programs for all ages. Located on the island of Nantucket, Massachusetts, the MMA serves both visitors, seasonal and year-round residents. Now celebrating over a century of discovery, the MMA is dedicated to opening up the universe to curious minds, and allowing people to see what before was unseen. Their motto - "Explore, Educate, Enjoy" - captures the essence of their programs and activities.

Submitted by Martha Roldan

E.T. Might Fire Up Intergalactic Lighthouses

The Kepler Space Observatory's discovery of over 1200 planet "candidates" announced last week left me with a chilling cosmic loneliness.



Although the Kepler finding makes me even more convinced that E.T. *is* out there, I can't help but ask the question: *Where is everybody?*

The evidence may be staring us in the face and we don't recognize it. It might even be buried as an obscure and mildly curious dataset in our ballooning vault of astronomical observations.

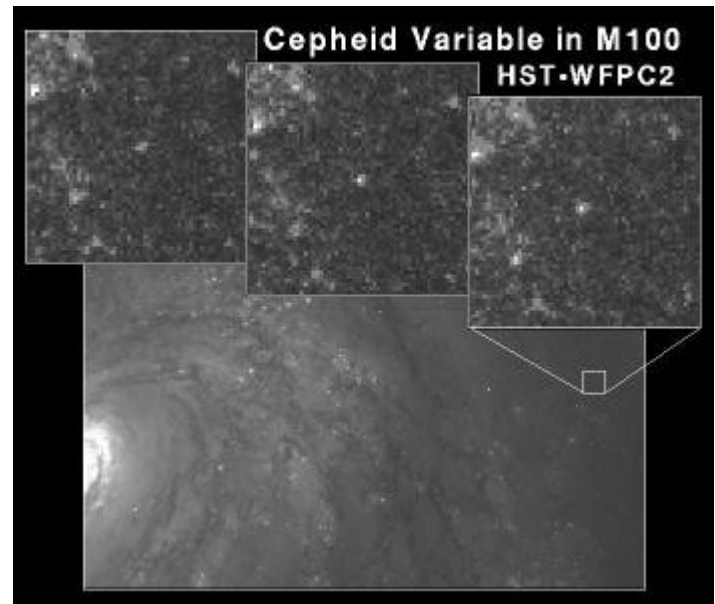
The thesis: advanced civilizations realize that two-way communication between stars is impractical given the roaming charges imposed by the speed of light. So instead they build a beacon that simply says: *We Are Here!*

But painting the sky with that beacon is costly. And, it is unlikely that it will be intercepted at just the right time to attract the attention of another civilization.

Radio signals, the staple of the 50-year old SETI effort, have to contend with background noise, selection of radio frequencies and the need for lots of power. Communications beyond our nearest neighbor stars is very difficult. Optical laser pulses are being looked for too, but they also suffer from the "needle-in-a-haystack" search challenge.

A better scheme may be to leave a "Rosetta Stone" artifact for another civilization to discover as it becomes astronomically capable. This could take the form of a "galactic lighthouse," with a beacon that is so powerful it can be seen

by inhabitants of other galaxies.



John Learned of the University of Hawaii has proposed using Cepheid variable stars as the light-houses. These brilliant pulsating stars are invaluable for estimating intergalactic distances. Their rate of pulsation, which can range from 1-50 days, is also a measure of their intrinsic brightness. This relationship can be used for calibrating intergalactic distances, a prerequisite for measuring the expansion rate of the universe, which is fundamental to nailing down other cosmological parameters. Therefore Cepheids would automatically get attention from scientifically inquisitive civilizations. By twiddling with a Cepheid's pulsation cycle, the star could be used to broadcast, omnidirectionally, a modulated message.

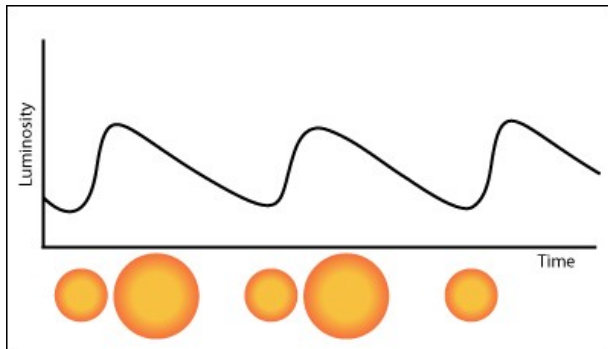
But how do you twist with the dimmer knob on an entire star? This analogy is apt because a small change in voltage inside the dining room dimmer's circuitry is amplified to affect an entire chandelier of bright lights.

Learned proposes that an advanced civilization might build a neutrino beam that would be shot into the upper layers of a Cepheid variable star. Only neutrinos can penetrate matter as if it wasn't there. **Continued on page 9**

E.T. Might Fire Up Intergalactic Lighthouses

So reaching the star's interior at nearly the speed of light would be easy

When helium inside a Cepheid gets hot enough it is stripped of electrons, or ionized. During that ionized state the outer layers of the star are more opaque, absorbing more of the emitted light. And so, the star dims. As the star expands the outer layers of the star are less



opaque. This lets more of the light escape and so appears brighter. As the star expands, the helium captures electrons and "de-ionizes" and the star contracts and cools. This heats the interior and the helium reionizes, and the cycle starts again. A neutrino beam could heat the star at the right moment to trip the expansion prematurely. A simple binary code might be broadcast by modulating the light curves this way.

The aliens would have anonymity because the neutrino projector would have to be sent to a nearby Cepheid variable star. The projector would be located at a safe distance from the seething star, say 100 billion miles. The device might collect stellar energy, storing it like an electronic flash capacitor, and then use it to fire up the neutrino beam.

Such an automated beam could continue working for centuries or even millennia, even after the host civilization has died out or lost interest in the experiment. What's intriguing is that we have many decades worth of Cepheid light-curves in numerous galaxies. Perhaps buried in the archives is as anomalous Cepheid that simply has not been analyzed with this kind of scenario in mind.

<http://news.discovery.com/space/et-might-fire-up-intergalactic-lighthouses.html>

My Observing Picks

My observing picks of the month for March, 2011, are mainly naked eye. Beginning with the pre-dawn sky of March 1, several lovely lunar/planetary close encounters are easily viewed. Forty minutes before sunrise on March 1st, look toward the southeast to spot Venus shining brightly just to the right of a thin crescent Moon. The scene repeats itself at the end of the month when, on the 31st, the crescent Moon is to the planet's upper left.

This month also marks the year's best opportunity to see the planet Mercury. Look toward the western horizon on March 13 – 16, this time forty minutes after sunset. Jupiter shines brightly low in the sky and just to its right you should see Mercury. Binoculars may help.

On the evening of March 6, look for the planet Jupiter in the west 20 minutes after sunset. Immediately to its right will be a thin crescent Moon. Again, binoculars may prove useful.

If you have access to a telescope and are a late-night person, Saturn is your best bet. The planet rises 1-2 hours after sunset and is best viewed in the wee hours. Look for moons and ring details.

Good luck and don't hesitate to post any of your observations on our web site.

By Peter Burkey

What's Up in the Sky – March, 2011

What's Up in the Sky – March, 2011

Exoplanet. Now there is a word that was unknown when I first started teaching astronomy at Fennville HS in 1981. You will not find it in the index of Carl Sagan's 1980 masterpiece, *Cosmos*. Yet the search for exoplanets is the most popular and rapidly expanding field of research in the astronomical world today. In fact, there are so many undergraduate students eager to study in this field that Universities do not have enough faculties to meet the demand.

An exoplanet is a planet that orbits around a star other than our own sun. Astronomers have speculated about their existence since the nineteenth century, but they had no way of detecting them until the technological breakthroughs of recent times. In 1992, the first ones were discovered to be orbiting a pulsar 980 light years from the Sun. The first confirmation of an exoplanet orbiting a Sun-like star was made in 1995, when a giant planet was found to orbit around the nearby star 51 Pegasi every four days. Since then almost 500 exoplanets have been found.

The first exoplanets to be discovered were giants, some four or five times the mass of Jupiter. This is because the earliest method used to detect them was to look for the "wobble" of the parent star caused by the gravitational influence of the planet. Big planets meant big, easy to detect wobble. Since then more sensitive instruments have enabled us to measure smaller wobbles, thus smaller planets.

More recently a new detection method has been employed, that of looking for the tiny dimming of the parent star's brightness that occurs when the planet passes in front of it. This requires extremely sensitive measurements such as those made by the new Kepler Mission. This method has allowed us to discover small, Earth-like planets in

the star's "habitable zone" where temperatures allow for liquid water.

I am confident that within the next few years many similar planets will be discovered, adding to the awe of what's up in the sky.

This month in history:

March 4: Jupiter's ring is discovered - 1979

March 6: Vega 1 makes fly-by of Comet Halley - 1986

March 14: Albert Einstein born - 1879

March 17: Apollo 15 astronaut Jim Irwin is born - 1930

March 22: Comet Hale-Bopp passes closest to Earth - 1997

March 25: Saturn's largest moon, Titan, discovered by Christiaan Huygens – 1655

Here are this month's viewing highlights:

Planets this month: Mercury makes its best appearance of the year at mid-month near western horizon 40 minutes after sunset. Venus shines brightly in SE before dawn. Jupiter is low in the west after sunset. Saturn rises more than an hour after sunset and is visible the rest of the night.

March 1: Venus near SE horizon just right of thin crescent Moon before dawn.

March 4: New Moon.

March 12: First quarter Moon.

March 13-16: Look for Mercury right next to Jupiter low in west 40 minutes after sunset.

March 19: Full Moon.

March 20: Spring begins at 7:21 p.m. EDT when the Sun reaches vernal equinox.

March 26: Last quarter Moon.

By Peter Burkey

What's up with NASA

February 10, 2011

Pasadena, Calif. -- Stars at all stages of development, from dusty little tots to young adults, are on display in a new image from NASA's Spitzer Space Telescope.

This cosmic community is called the North American nebula. In visible light, the region resembles the North American continent, with the most striking resemblance being the Gulf of Mexico. But in Spitzer's infrared view, the continent disappears. Instead, a swirling landscape of dust and young stars comes into view.

"One of the things that makes me so excited about this image is how different it is from the visible image, and how much more we can see in the infrared than in the visible," said Luisa Rebull of NASA's Spitzer Science Center at the California Institute of Technology, Pasadena, Calif. Rebull is lead author of a paper about the observations, accepted for publication in the *Astrophysical Journal Supplement Series*. "The Spitzer image reveals a wealth of detail about the dust and the young stars here."

The new image is online at http://www.nasa.gov/mission_pages/spitzer/multimedia/pia13844.html.

Rebull and her team have identified more than 2,000 new, candidate young stars in the region. There were only about 200 known before. Because young stars grow up surrounded by blankets of dust, they are hidden in visible-light images. Spitzer's infrared detectors pick up the glow of the dusty, buried stars.

A star is born inside a collapsing ball of gas and dust. As the material collapses inward, it flattens out into a disk that spins around together with the forming star like a spinning top. Jets of gas shoot perpendicularly away from the disk, above and below it. As the star ages, planets are thought to form out of the disk -- material clumps together, ultimately growing into mature planets. Eventually, most of the dust dissipates, aside from a tenuous ring similar to the one in our solar system, referred to as Zodiactal dust.

The new Spitzer image reveals all the stages of a star's young life, from the early years when it is swaddled in dust to early adulthood, when it has become a young parent to a family of developing planets. Sprightly "toddler" stars with jets can also be identified in Spitzer's view.

"This is a really busy area to image, with stars everywhere, from the North American complex itself, as well as in front of and behind the region," said Rebull. "We refer to the stars that are not

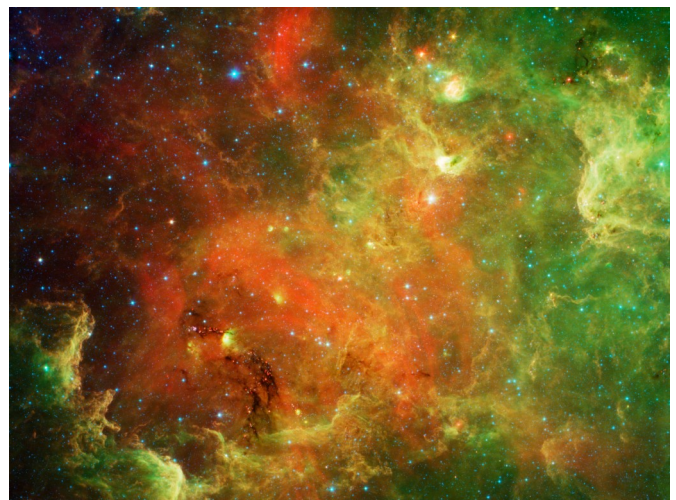
associated with the region as contamination. With Spitzer, we can easily sort this contamination out and clearly distinguish between the young stars in the complex and the older ones that are unrelated."

The North American nebula still has a mystery surrounding it, involving its power source. Nobody has been able to identify the group of massive stars that is thought to be dominating the nebula. The Spitzer image, like images from other telescopes, hints that the missing stars are lurking behind the Gulf of Mexico portion of the nebula. This is evident from the illumination pattern of the nebula, especially when viewed with the detector on Spitzer that picks up 24-micron infrared light. That light appears to be coming from behind the Gulf of Mexico's dark tangle of clouds, in the same way that sunlight creeps out from behind a rain cloud.

The nebula's distance from Earth is also a mystery. Current estimates put it at about 1,800 light-years from Earth. Spitzer will refine this number by finding more stellar members of the North American complex.

The Spitzer observations were made before it ran out of the liquid coolant needed to chill its longer-wavelength instruments. Currently, Spitzer's two shortest-wavelength channels (3.6 and 4.5 microns) are still working. The composite image shows light from both the infrared array camera and multiband imaging processor. Infrared light with a wavelength of 3.6 microns is color-coded blue; 8.0-micron light is green; and 24-micron light is red.

NASA's Jet Propulsion Laboratory, Pasadena, Calif., manages the Spitzer Space Telescope mission for NASA's Science Mission Direc-



torate, Washington. Science operations are conducted at the Spitzer Science Center at the California Institute of Technology in Pasadena.

In The Works

Our 501 C(3)

I have made two phone calls to the IRS checking on our 501 C(3) status.

And what I have found out is we are not recognized in the national database as a nonprofit.

While we can operate as a nonprofit organization we really are not.

What that means in the long run is nobody is going to give us any large sum of money for our observatory or equipment.

So are going to have to go through the process of filing the forms. And it will take four to six months to get our status approved

The 1023 if you know what you're doing will take 15 hours to fill out so we better get started on that.

The filing is going to cost is \$400.

So are going to have to raise some money either by fundraisers or club donations.

Frank pledged \$100 for this I will pledge \$50.

The club owns quite a few old mirror blanks that I'm going to put on eBay to help raise some money.

Every club around us is a full 501 C(3) nonprofit organization. We are the only club in the area that is not and if we want to pursue a permanent home with an observatory and all the high-tech toys, this is something that we have to pursue.

Oval Office

This is the outline of my 2 year plan:

The 2 year goal

A permanent home with Observatory

1 year goal:

be fully integrated with a Park Service

6 Month (May) goal:

Start the 2 monthly public star parties

4 Month (Apr) goal:

Make an appointment with Park Service

3 Month (Mar) goal:

Have our offer worked out to take the park service

Current:

Work out the classes and outreach we can offer the park services.

Here are some example classes

The classes should be in 1 hour blocks

Mapping the night sky

- 1) Making a star map.
- 2) Learn to use your chart
- 3) Use your new star chart under the stars

Constellations

These are 20 minute classes that covers 5 to 10 constellations each.

- 1 Learn the seasonal constellations.
- 2) Learn the seasonal Lore
- 3) Learn about the circumpolar constellations.

This also covers the North Star

Your feedback is welcome

Russ

Russ

Monday, February 28, 2011 • 7:30 p.m.
Loosemore Auditorium
GVSU Robert C. Pew Grand Rapids Campus

How Space Development May Help Solve Our Energy and Environmental Problems on Earth

Les Johnson

NASA Advanced Concepts Office

Utopia or dystopia? Humanity is at an environmental crossroads and whether our legacy is one of prosperous abundance or mere subsistence will depend upon the choices we make in this generation. With an ever-increasing share of the human population making the transition to the "developed" world, we place increasing stress on the Earth's environment, natural resources, and her ability to produce enough food.

The modern environmental movement is tackling these problems head-on by promoting energy efficiency, recycling, and renewable resources. While that is important, we have the potential to tap nearly INFINITE resources—we merely have to move a few hundred kilometers straight up into space to access a literal universe of energy, raw materials and real estate. A future which embraces space exploration, space resource utilization, and eventually space settlement will not only preserve humanity, but potentially all the life forms and habitats that make the Earth our home .



Les Johnson is the Deputy Manager for NASA's Advanced Concepts Office at the Marshall Space Flight Center in Huntsville, Alabama. He is the NASA co-investigator on a JAXA electrodynamic tether propulsion mission launched in August 2010. During his career at NASA, he served as the Manager for the Space Science Programs and Projects Office, the In-Space Propulsion Technology Program and the Interstellar Propulsion Research Project. He was the Chief Scientist for the ProSEDS space experiment, twice received NASA's Exceptional Achievement Medal, and he is the co-author of three popular science books, "Living Off the Land in Space," "Solar Sailing: A Novel Approach to Interplanetary Travel," and "Paradise Regained: The Regreening of Earth," and the recently-published science fiction novel, "Back to the Moon."

This public presentation is co-sponsored by the GVSU Society of Physics Students and the Department of Physics.
Please go to www.gvsu.edu/physics for more information or call (616) 331-2274