

The Shoreline Observer



The Shoreline Amateur Astronomical Association Newsletter

Celestial Highlights:

March / April

March 19 New Moon

March 20 Vernal Equinox

March 26 Last quarter

Apr 1-2 Messier Marathon

April 3 New moon

April 11 First quarter

April 17 Full moon

Apr 21-22, Lyrid meteors

Upcoming SAAA Events...

Club Meeting: Friday, April 8 @ 7:00 PM

Macatawa Bay School Planetarium

Topic: Bylaws Voting & Rick talks about spectrograph

Refreshments:

Board Meeting: Thursday March 31 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

Inside this Newsletter

Board meeting minutes.....	2
Messier Marathon	2
Reviews book & Software	3
Spring Observing.....	4
NASA Happening	5
Women In Astronomy PT2	6
NASA Space Place	6
All-Sky Fireball Network	7

Quick Update

We now have a permanent address:

SAAA
PO Box 1832
Holland, MI 49422-1832

We also have insurance and have additional insured endorsements for Ottawa County Parks.

There now have a [Shop](#) on the website.

I hope to be adding more items soon! If there is something you want but don't see it drop me a e-mail.

Fun Facts

• Ancient Greeks thought that the morning and evening appearances of planet Venus represented two different objects. When Venus appeared in the eastern morning sky, it was called *Phosphorus*, or "light-bringer". When it appeared in the western evening sky, it was thought to be an "evening star" and was called *Hesperus*.

March Board minutes

SAAA Board Meeting Minutes – March 02, 2011

The March 2011 Board meeting took place on Wednesday, March 2nd at Herrick District Library-South. In attendance: Russell Hills, Frank Roldan, Peter Burkey, George Miller, and Larry Logsdon.

Old Business Items

Treasury Report:

Account balance as of Feb. 8 th :	\$834.78
Unknown receipt	+\$19.30
Account balance as of Feb. 11 th :	\$854.08
Dues collected at February meeting	+\$40.00
Stationary supplies (to Russ) -	\$20.66
<u>Post Office Box (\$2 deposit, \$72 annual)</u>	<u>-\$74.00</u>
Account balance as of March 2 nd :	\$820.08

Upcoming Events:

March 4th and 5th Messier Marathon: Cancelled due to weather and Ottawa County Park's requirement that we maintain a liability insurance policy (see New Business #1 below).

March 11th SAAA General Meeting: Macatawa Bay Planetarium at 7:00 PM. We will be voting on the revised SAAA Bylaws, and on liability insurance options.

April 1st and 2nd Messier Marathon: Pending acceptance of a liability insurance policy.

Peter secured the new Post Office Box: PO Box 1832, Holland MI 49422-1832.

Frank is pursuing a grant with Holland/Zeeland Community Foundation for an LCD projector. The next round of awards begins June 01, 2011.

Frank has created a spreadsheet to maintain an inventory of SAAA-owned equipment. Please give him details of any equipment you have in your possession.

Members were encouraged to use our club forum on the www.holland-saaa.org website.

New Business Items

Russ met with a representative from Ottawa County Parks. Russ presented our ideas for a long-term partnership with OCC. SAAA should obtain liability insurance prior to holding any activities on OCC property.

Russ presented copies of IRS Form 1023 and instructions, and asked us to look it over.

We only have hard-copies of the past several years of the SAAA Board meeting minutes. Does anyone know where the minutes can be found for older meetings?

What parts of the Night Sky Network kits do we actually use? We should provide specific feedback to NSN.

We have been using the informal and improper club name "Shoreline Amateur Astronomers". We should order a new batch of business cards, using the full name "Shoreline Amateur Astronomical Association". Russ also proposed changing our email address from webmaster@holland-saaa.org to saaa@holland-saaa.org.

Larry will check pricing for a new vinyl banner to display at outreach programs.

We identified a discrepancy with our ALCor listing between the Astronomy League website and Reflector magazine.

George Miller – Secretary March 07, 2011

Messier Marathon

As you know we are planning on holding Messier Marathon

Dress properly!!!

During the marathon most observers will need heavy, cold weather observing clothes. The most important item for keeping warm, which is often overlooked by those who do not observe in cold weather, is a hat. Most body heat is lost through the head, where blood vessels are close to the surface. Wearing a hat can keep your hands and feet from freezing! Layering is the secret to keeping warm. Wear long underwear under your pants, try using overalls such as are used for skiing or snowmobiling.

As soon as it is possible to see the guide stars for the first objects, begin looking for the first objects. As darkness begins to prevail over twilight, the first objects must be hunted quickly. Do not linger over them, as they will be difficult to find and see at best. The first hour of observing will score you the objects early on the list and you must work rapidly. Once the first early objects are located, you may then begin to work at a slower pace. The first part of the session will end in the Virgo cluster of galaxies. They will challenge even the hardest of observers. After the Virgo cluster is complete, some time around 1 AM, you may then take the one nice long break of the night. You should start back on the search by 2:30 AM, in order to find all the objects left on the list. If you get hung up on any of the remaining objects, remember that they are rising. Don't waste time becoming stranded on one of these, continue with the next objects and come back to the one that tripped you up later.

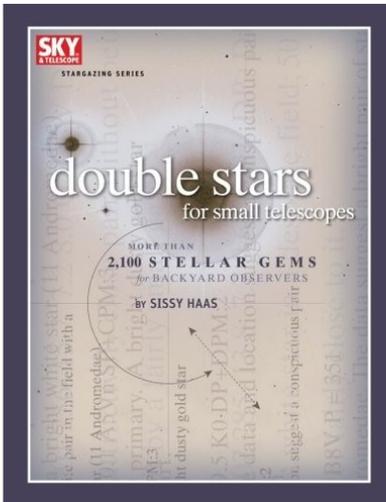
Here is a [LOG](#) in the order to view them.

Let hope for clear skies this year.

Russ

Double Stars for Small Telescopes

The first section gives a brief overview of double stars, and the terminology of position angle and separation,



colour and brightness, resolving double stars, true binaries and optical doubles, and other useful tidbits. This runs ten pages, and is really secondary to the body of the book. The heart of the book is a 158 page catalog of, as the subtitle says, more than 2100 double and multi-

stars. These stars are cataloged by constellation, and by RA within each constellation. For each entry, there is information on position (RA and DEC), magnitudes, separation, position angle, and whether it is known to be an optical double or true binary. There are also comments from the author, as well as comments pulled from other sources, providing reference descriptions of the stars. If you are looking for armchair reading, forget it.

If you are looking for an observing guide to double stars, however, this book is great. Let me tell you how I use it. When observing from my suburban home, the sky is usually too bright for DSO observing, and there are not always planets visible. But double stars tend to be easy suburban targets. I set myself up with *Double Stars for Small Telescopes* and the *Pocket Sky Atlas*, choose a constellation that is in prime viewing position, and just start going through the list. I use the RA and DEC to find the target in my atlas, and then set about finding the target. I try to avoid looking at the details in the catalog until I have had a good look, and then I compare my impressions with those in the book. In all, it makes for a productive and pleasant evening of stargazing.

If double stars interest you, and you want a great big annotated list to guide you through, then this book is definitely one for the collection. If armchair astronomy is more your thing, this book is not for you.

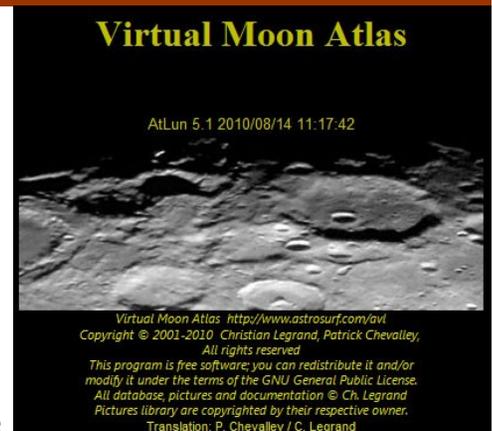
You can order through our [SAAA SHOP](#)

Virtual Moon Atlas

Virtual Moon Atlas can be found [HERE](#)

This software, realized by Patrick Chevalley and Christian Legrand can visualize the Moon aspect for every date and hour and

pilot computerized telescopes on the Moon surface. It permits also to study lunar formations with unique database of more than 9000 entries and a more than 7000 pictures library compiled by Christian Legrand.



It's conceived to be easily usable "in the field" according to an observing session needs, but also to study "at home" the Moon and its surface. It's interfaced with "[Sky charts](#)" Patrick Chevalley's freeware. This set is certainly now one of the most complete astronomy software's set released.

Rather than a long description, we invite you to read the [complete manual](#) or the [quick user's guide](#) or to look at the screens copies to see what are the possibilities.

This software has been conceived according to the needs of Moon observers, but also as a powerful tool for people interested personally or professionally by selenography.

The authors are decided to upgrade periodically the software, databases and pictures library in the following months and years. If you think that a function would be useful for all Moon observers, don't hesitate to indicate it us. It could be possible to include it.

It's possible to choose the language used by the software and database. Presently we manage directly only English and French version which are available with the basic package. From this Web site, you can download more translations [here](#) .

SPRING OBSERVING

OK, time to dust off those scopes and get viewing. Spring-time offers the opportunity of visiting old friends we've not seen for several months. This month I'll concentrate on getting us warmed with some fairly easy targets. You'll want a minimum of a four inch reflector for DSO's but don't expect any detail with the small scope. At least an eight or ten inch scope would be preferred for better viewing.

Mizar

Let's start with an easy target. Look high in the northeast. At the bend of the Big Dipper's handle, you'll find the star Mizar. Nearby, and visible to most observers without optical aid, is Alcor. But point a small telescope at Mizar, and you'll split that star into two components. The brighter of the two outshines its partner by nearly 5 times.

M81 and M82

Above and to the northwest of the Big Dipper's bowl, you'll find our first two galactic targets: M81 and M82. Through your lowest-power eyepiece, you may be able to spot both of these galaxies at once.

M81 is a spiral galaxy, but its arms lie close to its core. A 4-inch telescope won't allow you to see them well.

M82 lies half a degree north of M81. Astronomers call this galaxy, which seems to be exploding, a starburst galaxy. Here, you'll find much more than a galaxy's normal amount of star formation. Look closely at these two objects. M81 is brighter, but M82 is easier to see because its surface brightness is greater than M81's. That means its light isn't spread out over such a large area.

Owl Nebula (M97)

Head back just below the Big Dipper's bowl to find the Owl Nebula, also known as M97. This large, round planetary nebula has two dark spots, giving the object the appearance of an owl's face. You'll need a dark site to pick out the low-contrast eyes. Be patient, and try all your eyepieces.

M101

Our next object makes a nice triangle with the two stars at the end of the Dipper's handle. It's spiral galaxy M101. Through a small scope, you'll see this object as large and round. Increase the magnification as much as sky conditions allow, and look for faint dark streaks within the circle. Those areas divide M101's spiral arms.

The Whirlpool Galaxy (M51)

Next on our list is one of the sky's true wonders — the Whirlpool Galaxy, also known as M51. To find it, start at the end of the Big Dipper's handle and move 3 degrees southwest. Take your time observing the Whirlpool Galaxy.

The Sunflower Galaxy

Now move a bit more than 5° south of M51 to find the Sunflower Galaxy, also called M63. Through a 4-inch scope, look for an oval halo that surrounds a bright core. Although M63 is a spiral galaxy, you won't see its tightly wound spiral arms until you triple the size of your instrument.

M67

Head over to *Cancer the Crab* next to observe open cluster M67. This cluster lies just outside the range of most observers' vision but appears easily through binoculars. Through a 4-inch telescope, M67 appears compact. You'll resolve a dozen or so of its stars.

NGC 2903

Our next object, barred spiral galaxy NGC 2903, lies not quite 4° southwest of the 3rd-magnitude star Epsilon Leonis. It shines at a relatively bright magnitude 8.9, but you can't see most of its details through small telescopes. Astronomers classify NGC 2903 as a "hotspot" galaxy, a term that describes a ring of infrared-luminous knots near a galaxy's core. Through a 4-inch scope, look for the brighter bar surrounded by an ephemeral haze.

Algeiba

Before you leave Leo, head to the double star Algeiba, also known as Gamma Leonis. Insert an eyepiece that gives a magnification of 100x or more, and you'll separate this star into two components. One shines at magnitude 2.3, while the other is slightly fainter, glowing at magnitude 3.5. Algeiba makes a fine sight through small telescopes.

The Sombrero Galaxy (M104)

The final object on our list is the Sombrero Galaxy, also known as M104. This object's lens shape and the dark dust lane that splits it are easy to spot through any telescope. As you observe M104, note that the galaxy's two sections have unequal brightnesses. The northern half outshines the southern because the galaxy inclines 6° to our line of sight. Through a 4-inch telescope, you may detect the dust lane only near the Sombrero's center. The core is large and bright. Try to pick out the large halo that surrounds it.

While you're at it why not draw what you've seen. Good time to develop those artistic skills! Also, this would be a good time to review the Astronomical League's awards and take the challenge of tackling at least one of them in 2011. Go to www.AstroLeague.org.

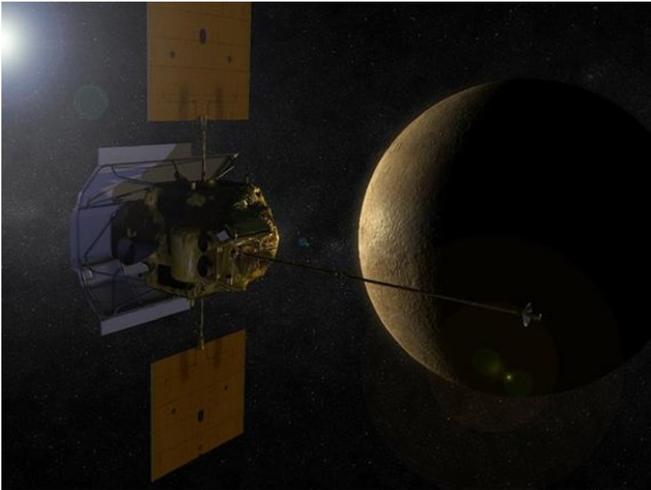
Clear skies and good observing!!

Larry Logsdon

NASA Spacecraft Nears Mercury

by [Mike Wall](#), SPACE.com Senior Writer

Date: 15 March 2011 Time: 05:41 PM ET



A NASA probe that has been cruising through space for more than six years is poised to arrive at Mercury Thursday (March 17), and the excitement is building among scientists with each mile that brings the spacecraft closer to the rocky planet.

When [NASA's Messenger probe](#) arrives at Mercury, it will become the first spacecraft in history to orbit the solar system's innermost planet. Researchers have spent 15 years developing the mission, so the maneuver to fire its [engine](#) Thursday and enter orbit around Mercury will be a huge moment for the mission team, scientists said.

"We are two days away from a new era in the exploration of one of our nearest neighbors," Messenger principal investigator Sean Solomon, of the Carnegie Institution of Washington, told reporters today (March 15). "We are extremely excited." [[Photos: New Views of Mercury From Messenger](#)]

Making history around Mercury

The \$446 million Messenger probe, whose name is short for MErcury Surface, Space ENvironment, GEochemistry and Ranging spacecraft, launched in August 2004. Over the past 6 1/2 half years, the probe has taken a circuitous, 4.9 billion-mile (7.9 billion-kilometer) route through the inner solar system, completing one flyby of Earth, two flybys of Venus and three flybys of Mercury in the process.

At 8:45 p.m. EDT Thursday (0045 GMT March 18), Messenger will fire its main thruster for about 15 minutes, slowing itself down enough to enter into [orbit around Mercury](#). This operation will be the most complex one

the refrigerator-size spacecraft has performed during its years in space, but the flybys and other maneuvers have helped prime the probe and its operators, scientists said. "The team is practiced, ready to go, and the spacecraft is as well, and all the instruments," said Messenger mission operations manager Andrew Calloway, of Johns Hopkins University's Applied Physics Laboratory (APL).

If all goes according to plan, the spacecraft will spend the next year studying the desolate, scorched planet from on high. The main goal is to map Mercury's surface in detail, as well as investigate the planet's composition, magnetic environment and tenuous atmosphere, among other features. Scientists hope Messenger's observations will help them better understand how the solar system — and, in particular, rocky planets like Mercury, Venus, Mars and Earth — formed and evolved. The probe is returning the first new spacecraft [data](#) from Mercury since NASA's Mariner 10 mission in the 1970s.

"Mercury has been comparatively unexplored, considering its proximity in our solar system," Solomon said. [[Most Enduring Mysteries of Mercury](#)]

Sleepless nights ahead

The mission team should know by about 10 p.m. EDT Thursday (0200 GMT Friday) whether the orbital insertion maneuver worked, researchers said.

Success is never guaranteed with such a complex operation. Japan's \$300 million [Akatsuki spacecraft](#), for example, failed to enter into orbit around Venus in December after six months of interplanetary [travel](#). Its thrusters were supposed to fire for 12 minutes in an orbital insertion burn, but they conked out after just 2 1/2 minutes.

Akatsuki is still circling the sun, waiting for a possible opportunity to make another orbital insertion attempt in late 2016 or early 2017.

Messenger scientists said they have contingency plans in case Thursday's maneuver doesn't work — but of course they hope those plans stay on the shelf. So their enthusiasm and eagerness are likely tinged with a bit of anxiety.

"We're all not sleeping," said Messenger propulsion subsystem lead Carl Engelbrecht, also of APL. "We're very excited, very excited."

<http://www.space.com/11134-nasa-mercury-orbit-spacecraft-excitement.html>

WOMEN IN ASTRONOMY – II

By Martha K. Roldán

Caroline Lucretia Herschel (16 March 1750 – 9 January 1848) was the sister of astronomer Sir Friedrich Wilhelm Herschel with whom she worked throughout both of their careers. Her most significant contribution to astronomy was the discovery of several comets and in particular the periodic comet 35P/Herschel-Rigollet, which bears her name. At the age of ten, Caroline was struck with Typhus. The disease stunted her growth and she never grew past four foot three inches. She never married but instead she became a significant astronomer in collaboration with Wilhelm.

Wilhelm's interest in astronomy started as a hobby to pass time at night and Caroline soon became as interested as her brother. Wilhelm built a reputation for his work on high performance telescopes, and Caroline found herself supporting his efforts. Caroline possessed incredible dexterity in polishing mirrors and mounting telescopes involving astonishing discipline and dexterity which Wilhelm did not have. Therefore he depended on her support and presence.

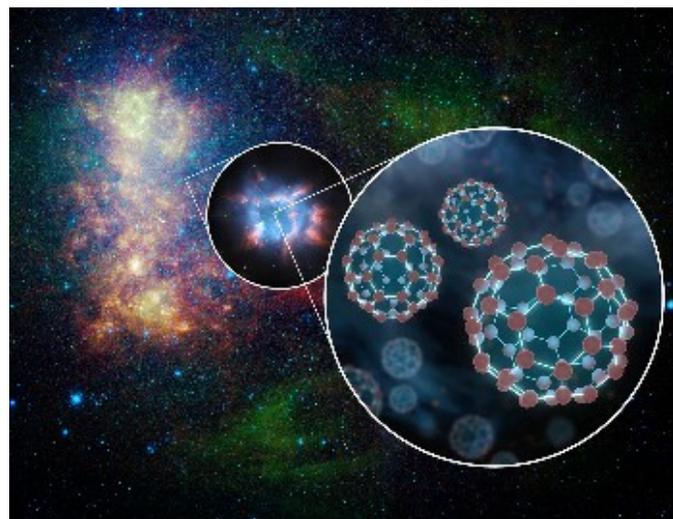
In time, Caroline learned to copy astronomical catalogues and other publications that Wilhelm had borrowed. She also learned to record, reduce, and organize her brother's astronomical observations. She recognized that this work demanded speed and accuracy rather than understanding. However, at William's insistence, Caroline began to make observations on her own in 1782. This insistence led to many accomplishments. Although Wilhelm was labeled as an astronomer, Caroline Herschel was an astronomer in her own right. After taking her brother's advice to understand astronomy, she discovered more than half a dozen comets in the 1780s and 1790s.

Caroline never married and often made it clear in her writings that she desired to earn an independent wage. Finally the state rewarded her assistance to her brother by paying her wages for her scientific enterprises. This made her the first woman to receive a salary for services to science especially at a time when men rarely received wages for scientific enterprises.

Astronomers Stumble onto Huge Space Molecules

by Trudy E. Bell and Dr. Tony Phillips

Deep in interstellar space, in a the swirling gaseous envelope of a planetary nebula, hosts of carbon atoms have joined together to form large three-dimensional molecules of a special type previously seen only on Earth. Astronomers discovered them almost accidentally using NASA's Spitzer Space Telescope.



“They are the largest molecules known in space,” declared Jan Cami of the University of Western Ontario, lead author of a paper with three colleagues published in Science online on July 22, 2010, and in print on September 3.

Not only are the molecules big: they are of a special class of carbon molecules known as “fullerenes” because their structure resembles the geodesic domes popularized by architect Buckminster Fuller. Spitzer found evidence of two types of fullerenes. The smaller type, nicknamed the “buckyball,” is chemical formula C₆₀, made of 60 carbon atoms joined in a series of hexagons and pentagons to form a spherical closed cage exactly like a black-and-white soccer ball. Spitzer also found a larger fullerene, chemical formula C₇₀, consisting of 70 carbon atoms in an elongated closed cage more resembling an oval rugby ball.

Neither type of fullerene is rigid; instead, their carbon atoms vibrate in and out, rather like the surface of a large soap bubble changes shape as it floats through the air. “Those vibrations correspond to wavelengths of infrared light emitted or absorbed—and that infrared emission is what Spitzer recorded,” Cami explained.

Astronomers Stumble onto Huge Space Molecules

Although fullerenes have been sought in space for the last 25 years, ever since they were first identified in the laboratory, the astronomers practically stumbled into the discovery. Co-author Jeronimo Bernard-Salas of Cornell University, an expert in gas and dust in planetary nebulae, was doing routine research with Spitzer's infrared observations of planetary nebulae with its spectroscopy instrument. When he studied the spectrum (infrared signature) of a dim planetary nebula called Tc 1 in the southern-hemisphere constellation of Ara, he noticed several clear peaks he had not seen before in the spectra of other planetary nebulae.

"When he came to me," recounted Cami, an astrophysicist who specializes in molecular chemistry, "I immediately and intuitively knew it I was looking at buckyballs in space. I've never been that excited!" The authors confirmed his hunch by carefully comparing the Tc 1 spectrum to laboratory experiments described in the literature.

"This discovery shows that it is possible—even easy—for complex carbonaceous molecules to form spontaneously in space," Cami said. "Now that we know fullerenes are out there, we can figure out their roles in the physics and chemistry of deep space. Who knows what other complex chemical compounds exist—maybe even some relevant to the formation of life in the universe!"

Stay tuned!

Learn more about this discovery at

<http://www.spitzer.caltech.edu>.

For kids, there are lots of beautiful Spitzer images to match up in the Spitzer Concentration game at

<http://spaceplace.nasa.gov/en/kids/spitzer/concentration>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



All-Sky Fireball Network



Nasa is installing a network of surveillance cameras called the All-Sky Fireball Network to track meteorites as they enter the Earth's atmosphere. Each of the cameras has a special lens that can view the entire sky above it and a black and white video recorder that documents any meteorites that are brighter than Venus nightly. The cameras have overlapping fields of view to ensure that the same meteorite can be detected by more than one camera. Nasa triangulate the fireball to assess where the meteorites came from and where they will land to help scientists recover space rock and help inform spacecraft designers striving to design meteor-proof shuttles.

There are currently only three cameras (one in north Alabama, one in northwest Georgia and one in southern Tennessee), but the aim is to install a total of 15 cameras in schools, science centres and planetariums.

It is a fully automated system, which detects meteors and then sends the data to the head of Nasa's Meteoroid Environment Office, William Cooke. The data is also available to the public, so you can check out all of the meteors from any given day on the All-Sky Fireball Network website.

The Daily Galaxy via NASA www.dailygalaxy.com/my_weblog/2011/03/nasa-to-scan-skies-247-for-fireballs.html