SPECTRUM

Northern Cross Science Foundation Newsletter October 2012

LOOKING UP

October 4, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

Business Meeting to follow

October 4, Thursday

Family Fun Night

5:30 p.m. - 8:30 p.m.

Lac Lawrann Conservancy

October 5, Friday

Family Fun Night

5:30 p.m. - 8:30 p.m.

Lac Lawrann Conservancy

October 6, Saturday

Discover Day

9:00 a.m. - 12:00 p.m.

Pike Lake

October 12, Friday

Cedarburg Bog

7:00 PM

UWM Field Station

October 13, Saturday

Luminary Walk

4:30 - 10:30 p.m.

Lac Lawrann Conservancy

October 19, Friday

Public Viewing

7:00 p.m.

Harrington Beach

October 20, Saturday

Haunted Hike

6:00 p.m.

Harrington Beach

October 26, Friday

Great Pumpkin Event

6:00 p.m.

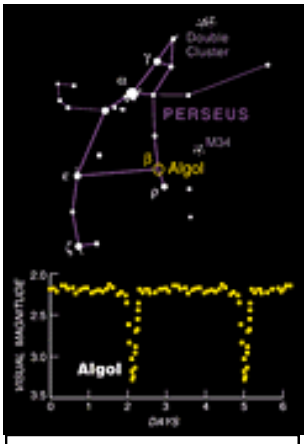
Bayshore Towne Center

The Demon Star - Algol

from AAVSO

A Look at Algol

Algol is one of the most popular and well known variable stars in the sky. One of the reasons for this is that it is a star which can be observed with the unaided eye. Another reason is because it has a relatively short period of less than three days. This means a new observer can go outside every night and see a complete cycle of Algol in their first week of observing if the star is visible at night in their location.



Light Curve of Algol

Algol is an eclipsing binary star system 93 light-years away as determined by the Hipparcos satellite. The main star is a B8 main-sequence star 3 times as large as our sun and the secondary star is a K2-type sub giant. Together they rotate around each other. As seen from Earth, when one star blocks our view of the other star its overall brightness changes. There is a very faint third star in the system. It is an F1 main-sequence star orbiting the inner pair every 1.86 years.

Anglo's variability was discovered in 1667 by the Italian astronomer Geminiano Montanari making it one of the first ever non-nova variable stars discovered. John Goodricke of England is credited with the discovery of Algol's periodicity in 1782-83. It was apparently also independently discovered by a German farmer named Palitzch. At first it was believed that a planet was causing the eclipses. In 1881 astronomers theorized it was actually an eclipsing binary system based on evidence presented by Edward Pickering, the Director of the Harvard College Observatory (HCO). In 1889 this theory was proven through spectrographic analysis by H.C. Vogel at Potsdam.

"The Demon Star"

Human history has not been kind to this star. Homer wrote of Algol in the Iliad: "...the Gorgon's head, a ghastly sight, deformed and dreadful, and a sight of woe". Some common names for Algol are The Demon, the Demon Star, the Blinking Demon, the Ghoul, and the Spectre's Head. Sounds rather more like members of a hard rock goth band than a beautiful astronomical object. The earliest known maligning of this star is from the Arabian name Ri'B al Ohill, the Demon's Head. We also have Al Ghul meaning Mischief-maker. In Hebrew it is called Rosh ha Sitan, Satan's Head, and also Lilith, Adam's legendary demonic first wife (predecessor to Eve) according to Babylonian myth. 17th century maps referred to it as Caput Larvae, a translation of "The Spectre's Head". The Chinese referred to it as Tseih She, the Piled-up Corpses. Even astrologers refer to it as the worst star in the heavens to be involved with. More recently, the name Algol has been given to a violent video game. What does a star have to do to get respect?

"The Algol Paradox"

One way is to excite scientists. Despite its popularity and the attention focused on Algol, it still is not fully understood and has a few surprises for researchers. Recently, "The Algol Paradox" is a term that has been used to describe a discrepancy in our theories of stellar evolution. The primary star should expand first due to its greater mass, yet we find that the secondary is the older star in the Algol system. Many theories abound about how this can be. The most popular is that the secondary star is indeed older than the primary. It is only smaller because it dumped a lot of its mass onto the younger star, making it more massive and subsequently to look beyond it's years.

The above light curve is based upon observations of Algol made and submitted by John Isles. It is printed in Chapter 11 of the Hands-On Astrophysics manual.

More Info

The text below was written by Dr. John R. Percy, former AAVSO president, and Dr. Janet A. Mattei, AAVSO director. It was originally published in the Royal Astronomical Society of Canada Observer's Handbook in 1995.

Algol (ß Persei) is the bright eclipsing binary with deep eclipses. It is also the brightest and closest semi-detached binary, a type of binary system in which one component has filled its Roche lobe (the volume within which gas is gravitationally bound to the star) and is now transferring material to its companion.

(Continued on Pg 4)

September Meeting Minutes

By Kevin Bert

The September Business meeting of the Northern Cross Science Foundation was held at Unitarian Church North. President Jeff Setzer opened the meeting at 8:25 pm and welcomed 23 members and guests. He noted that we are nearing the end of the warm weather observing season and that a lot of events still remain. Jeff then asked for standard reports.

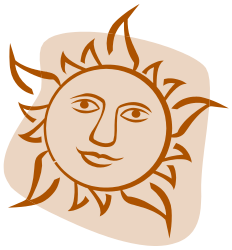
Treasurer Gene DuPree reported that there was $8619.82 in the Checking, $894.14 in the observatory account.

Secretary Kevin Bert said the latest member to join was Richard and Aaron Kessler from Shorewood. No new Astronomical League info was given.

With no new business, Jeff continued with a list of upcoming NCSF events. This coming Saturday is the Community Campfire at Pike Lake State Park. The 14th and 15th are Public viewing nights at Harrington Beach State Park. September 22 has the Horicon Observe the Moon night and Sun-day on Saturday. September 26th is a sidewalk astronomy night at Bayshore.

With no further business Jeff closed the meeting at 8:55 pm.

Sunday-on-Saturday Follow-Up *By Kevin Bert*



After an early morning shower the September Sun-Day on Saturday skies started to clear. There was nothing but blue skies by late morning as I prepared for sun viewing and club members. Clouds started to develop in the afternoon but there were a number of good views taken through the telescopes. The sun was showing several spots with one large sunspot group. After a demonstration on how to set up and operate the club's Coronado, Observations with it revealed some very bright prominences at one limb and a tall dim spike on the opposite limb that extended out multiple earth diameters. Attendance was small this year because of other NCSF scheduled events and questionable weather. A brief shower passed through to cause a mad dash to cover the scopes. Those members that stayed enjoyed some great food and conversation. It was mostly clear as it became dark and I caught several nice views through binoculars before clouds rolled in again. Thanks to all of those that could attend. Look for an earlier scheduled date for next year's event.

A Good way to look at the Full Moon - "*also, before and after*"

by Gene DuPree

Did you ever view the full Moon? You think I am crazy? Don't answer that. Well that is what I did over the Labor day weekend, up North. I put a white utility light (40 watt) on a table behind my telescope. I could not believe the detail I was seeing! I was shocked at how the light helped. I was using a ND96 filter, and at times no filter. The filtered views were just a little bit better. I discovered that it helped to glance at the light, for a few seconds, occasionally.

Gene's setup back-lit with a 40 watt shop light

In the September 2012 *Astronomy Magazine*, Michael Bakich had an article about features to look at on a full Moon. So I wanted to look at some of these features. I remembered another time, he was talking about someone telling him to use a light on the telescope, when viewing the full Moon. So the next clear Moon filled night, get out that utility light, put it behind your telescope and do some fine Moon viewing.

Things to See In the October 2012 Night Sky *By Don Miles*

Saturn & Mercury: Saturn is on the back side of the Sun this month, so won't be visible. Mercury is also finishing its own trip around the back side, and lags behind the setting Sun, but still too closely to be easily observed.

Mars: Sets not long after the Sun, but still visible even though it's low in the sky. It is at (mag 1.2), and sets about (*8:30* early in the month / *8pm* late in the month).

Pluto: Is highest in the southern sky at sunset. It's faint (mag 14.1), and getting to be pretty low in the Southwestern sky (as are all the summer constellations) to have many more viewing chances yet this year. It sets around (*11 / 9:30pm*).

Neptune & Uranus: Neptune (mag 7.9) is highest in the southern sky about 10pm, and is in the constellation Aquarius. Neptune sets about (4 / 2am). Uranus is at (mag. 5.7), and already up as the Sun goes down. It will transit (be highest in the sky) at about (1am / 11pm), and sets about 6am. Both are small in regular scopes, so show no detail, but are fun to find.

Jupiter: Rises about (*10 / 8pm*), and is highest in the sky at sunrise. Jupiter (mag -2.6) is located in the constellation Taurus, and stays halfway up and between the horns. It stays pretty stationary this month, but by the end of the month will start to move westward, but will still remain in Taurus.

Venus: Rises about (3:30 / 4:30am) throughout the month, and is at (mag -4.1). This month, it starts its travels in the constellation Leo just west of Regulus, and speeds eastward to end up in Virgo.

***Moon*:**

October 7th: Last Quarter

October 14th: New Moon

October 21st: First Quarter

October 29th: Full Moon

Special Events:

There are a couple of meteor showers worth looking for this month. The first are the Draconids which peak the night of the 9th with very unpredictable rates of from 10-50/hr. These should be very slow meteors moving at leisurely 12.5 miles per second. The last quarter moon will rise about 12:30am, so the better views will be before then. Unlike many other showers, they will only be seen for a couple of days before and after the 9th, as the debris trail is very concentrated. The second showers are the Orinids. These peak the night of the 21st with pretty reliable rates of 30-40/hr. These are fast (over 41 miles per second) but faint, yellow streaks. The first quarter moon sets around midnight, so shouldn't be a problem for late night viewing (which is the preferred time anyway). Take a comfortable reclining chair and a blanket, and enjoy the free shows.

October General Meeting

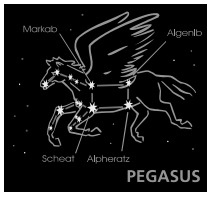
101 Class... *by Kevin Bert*

Astronomy 101 class for September is from The Universe Sampler manual and entitled:

"Star charts and Constellation Patterns"

A manual of the Universe Sampler is available for $10.00

Constellation of the month:
Pegasus



Main Program...

Carl Sagan' Cosmos:

"The Harmony Of The Worlds"

This episode is a historical re-creation of the life of Johannes Kepler, the last scientific astrologer, the first modern astronfiction novel. Kepler provided the insight into how the moon and the planets move in their orbits and ultimately how to journey to them. It's also a story about the scientific process of discovery, and how the search for truth is never easy but always worthwhile.

Business Meeting…

Club Proposal:

Nolan Zadra has made a proposal that the NCSF engage in a large project to build a second observatory', with a high-end imaging telescope , and a suitable camera.

We will have an informal, preliminary discussion of this proposal at the October meeting which will be followed by a formal discussion ; to be held at the November meeting.

September Events

Community Campfire Pike Lake Sept. 8

Reported by Gene DuPree

As the sun set, clouds moved in followed by rain. Despite the weather, seven members were on site with telescopes.

Harrington Beach September 15

Reported for Joyce Jentges

I was thrilled that I could actually be at the observatory, so I signed up with Scott Nehring to be in the observatory this night. I got there early, at 6 pm because I knew there was supposed to be a candlelight hike going on. I had most of the observatory ready to go by the time other members started arriving. Unfortunately, we were not able to see any planets this night, but, it was a moonless night, so everything looked great in the sky. Until the fireworks started. Someone was shooting off fireworks not far to the south of us and it wasn't just a few here and there, it was a complete display. We weren't able to see much in the south until they were done. Visitors got to see the Ring Nebula, M13 and the Wild Duck Cluster (M11) in the Panarusky. We had very long lines waiting to look through the telescope. At one point I walked out of the observatory and the line wrapped around the back edge of the building. There were at least 70 people who had signed in, but there were many more people than that who came to look through the scopes. There were several scopes set up in the parking lot as well. Scott and I closed up the observatory a bit earlier than normal because he needed to get home and I needed to get to bed to be up early for work. But, we fielded many questions from visitors and handed out a bunch of schedules for our events. Hopefully we will have many visitors make a return visit to the Jim & Gwen Plunkett Observatory.

Horicon Marsh September 22

Reported for Charlotte DuPree

We went to Horicon Marsh, in the afternoon, to so some solar viewing. We looked around the Education Center, to find out where the Music on the Marsh was to set-up that evening. That is when the rain started falling! when we did have a chance to set up the scopes the clouds did not cooperate. We did get a few peaks at the Sun before the clouds came back. We had a mostly clear sky to host our session of the "International Observe the Moon" night. We also looked at NGC 457, M11, M57, M13, M15, M31, M37, the double cluster, Blue Snowball, Saturn Nebula, Neptune and Uranus. Our visitors received IOM certificates if they could describe any feature they saw on the Moon (craters). Thanks to Carol Nelson for working the information table, and Rick D. for bring his scope

Bayshore Towne Center September 26

Reported by Jeff Setzer

Bayshore was very well-attended, with the Moon as the primary target. Other bright double-stars and the Andromeda Galaxy were also shown to guests. Thanks to everyone who helped! Our last Bayshore event of the year is Friday, October 26; the night of their Great Pumpkin family event. We can use all the help we can get if the skies are even partly clear!

RELATED INFO

Leaders for Public Viewing

October 4

Lac Lawrann Conservancy

Mickey Kazmierski

October 5

Lac Lawrann Conservancy

Mickey Kazmierski

October 6

Pike Lake

Gene and Charlotte DuPree

October 12

Cedarburg Bog

Field Station

Dan Bert

(Helpers Needed)

October 13

Lac Lawrann Conservancy

Jeff Setzer

October 19

Harrington Beach

Leaders Needed

October 20

Harrington Beach

Gene and Charlotte DuPree

October 26

Bayshore Towne Center

Jeff Setzer

October 18, Thursday

Board Meeting:

7:30 p.m.

Home of Jeff Setzer

Jim and Gwen Plunkett Observatory

Observatory Director:
Dan Bert: 262-375-2239

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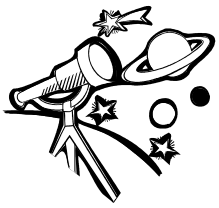
5327 Cascade Drive
West Bend, WI 53095



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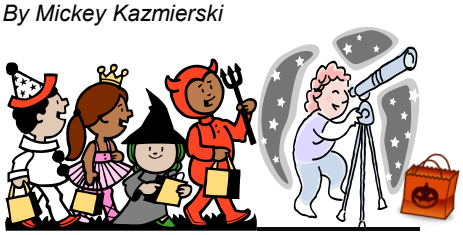
(Continued from Pg 1)

Algol varies in V magnitude from 2.1 at maximum to 3.4 at primary minimum, with a period of 2.867315 days; this period, however, is slowly lengthening. The primary eclipse occurs when the fainter K2IV star passes in front of the brighter B8V star, and lasts for some 10 hours in total. Because the eclipse is partial, the minimum is not flat, but rounded. There is also a shallow secondary eclipse when the B8V star passes in front of the K2IV star. The primary eclipse, however, can easily be detected with the unaided eye, and the magnitude and the time of minimum can be measured.

"Halloweenies" and Telescopes

By Mickey Kazmierski



Jack-o'-lanterns, bobbing for apples, the door bell rings with the anticipated chorus of "Trick or Treat" bringing us a smile and a flood of childhood memories. A worn-out sheet ready for careful placement of eyes and mouth with the length of jagged edges. Dad's old shirt, hat and gloves along with Grandpa's old glassless-frames make a great hobo. Eyebrow pencil is ready for the arched eyebrows, mustache and beard for the little devil. Pancake powder, rouge and lipstick make a great clown along with Grandma's donated floppy bedroom slippers. To the astronomer, Halloween is approximately the halfway point between the autumnal equinox and the winter solstice, the last four cross-quarter days on the solar calendar. Some ideas I've recently read about and wanted to share for those of you who enjoy participating in the fun. What a treat it would be to go up to someone's home decorated with moons and stars with a "cob-webbed-covered telescope" or a" tripod, swirled with eerie little green lights holding a pair of binoculars. And, per Don Miles "Things to See in October", Halloween will just be two days past the full moon. And what little cowboy, princess or super hero wouldn't enjoy a great look at the moon.

SPECTRUM

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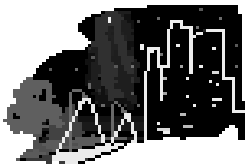

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Monthly Meeting Information
7:00 p.m. Astronomy 101
7:30 Main Program
Unitarian Church North
13800 N. Port Wash. Rd.
Mequon, WI 53097