
THE RADIANT

January 2009



Volume 09 Issue #1

Official Newsletter of the Piedmont Amateur Astronomers
Statesville, NC



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In this Months Newsletter

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The Moon and planets have put on quite a few shows for us during the month of December. This photo of the Moon, Venus and Jupiter was taken on the 1st of December 2008

See more photos taken on the last day of this month inside.

Photo by: Charles Tilley

Observing Reports

The Sun still Shines

By Charles Tilley 31 December 2008

With only a few hours left of 2008 the Sun is putting on a nice show with several prominences on the western limb. The largest prominence is located on the northwest limb with two columns rising up to around 25,000 miles then merging into a single column for another 10,000 miles or so. It is a very nice prominence.

The second prominence is on the southwest limb consisting of two thick masses side by side but with a height of only around 10 or 12,000 miles high.

There is a third but fainter prominence on the eastern limb. Earlier this morning around 10:00 AM I spotted a strange phenomenon in the northern hemisphere and about $\frac{1}{4}$ the distance in from the eastern limb.

A dark spot suddenly appeared where nothing had been earlier. I re-checked the focus and re-tuned the telescope. Thinking it may be a speck of dust I rotated the eyepiece but the spot remained where it was.

It was at this moment the wind almost blew me over so I moved the telescope around to my front porch. Pointing the scope once again at the Sun I was surprised to see this spot greatly diminished but it was still there. About 20 minutes later it had all but disappeared.

As I looked for it to return over the next couple of hours I notices two more areas of interest (not sure what else to call them) that also had spots that changed color to a darker shade and back. Could these be sunspots trying to form or my over active imagination? No, it is not dust on my eyepieces. I own no eyepieces with dust. Wouldn't have them. Anyway if it is all a hallucination then it certainly has to be Diane's fault. ☺

/cT



The year 2008 goes out with a beautiful show

With the Sun still trying to get out of the old solar minimum the year 2008 had some down points for some of us.

Something up there must have felt sorry for us mortals here on Earth and decided to give us a finally show for the year and I must say it was a good one. Hope everyone had a chance to see it. It was cold but well worth the view.

Below are a few photos from club members.

/cT

From Patrick Fry 31 Dec 2008

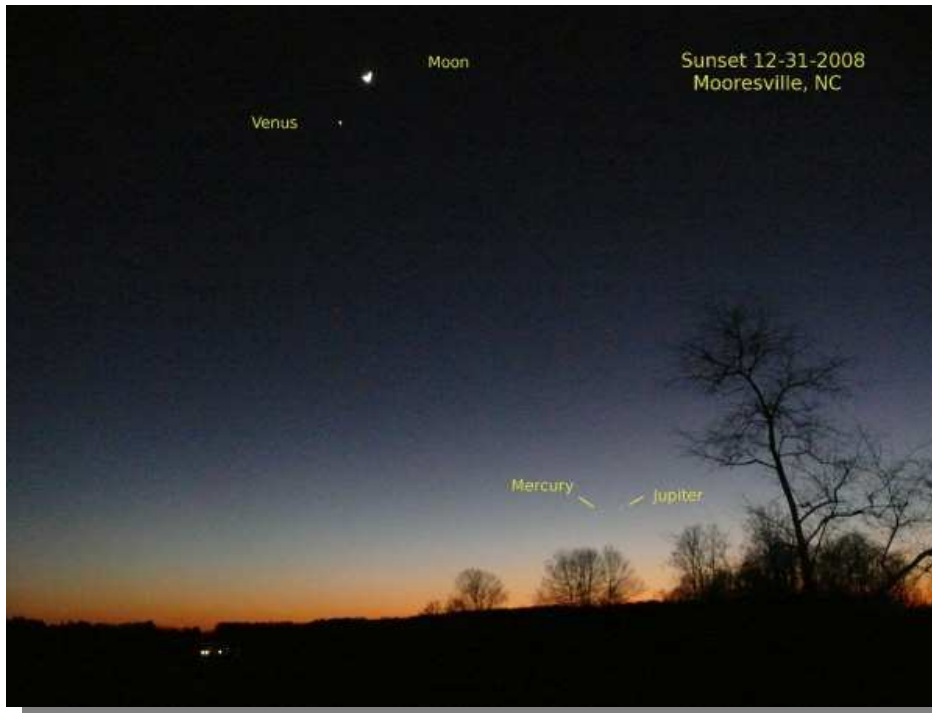
Here are some photos I took New Year's Eve 2008. How did Charles know that some of us wouldn't have anything better to do?

It was fairly cold and a little breezy for the shorts I was wearing but I persevered. I had to wait until after 6 pm for the bottom 2 planets to be bright enough to photograph. All photos are with my Panasonic DMC-FZ50, which has a permanent zoom lens but is not SLR.

The Moon-Venus-Mercury-Jupiter shot is 1/8-second exposure at f 2.8 and iso 800. The Mercury-Jupiter shot is 1/10-second exposure at f-3.6 iso 800.

Finally, Orion was a pretty sight rising behind me so I turned the whole tripod around and took a 30 second exposure of the rising Orion at f 2.8 Iso 100. I think the star colors were compelling and when I zoom in I think I can make out some of the nebula; a nice bonus I thought.

I have some pictures of some cars slowly driving by wondering what in the _____



someone is doing in shorts and 35-degree weather taking pictures on New Year's Eve if you want to see them. I'd have told them if they had stopped. Did anyone else have a better time?

Mercury and Jupiter
12-31-2008
 Mooresville, NC



Orion Rising 12-31-2008

Bellatrix

Betelgeuse

Rigel



Charles Tilley
31 Dec 2008
I took this photo from my front yard. I could just barely see Jupiter and Mercury through the trees so I did not try to photograph them.



A close call is coming our way.
Should we be worried?

The closest stars currently known are a trio that makes up the [Alpha Centauri](#) system, which is 4.36 light-years away. A light-year is the distance light travels in a year, about 6 trillion miles (10 trillion kilometers).

Meanwhile, our next known close encounter with another star will occur 1.4 million years from now.

A star named Gliese 710, found by Hipparcos and reported in 1999, will pass within 1 light-year of the Sun. That puts it some 70,000 times the distance from Earth to the Sun, on the very fringes of our solar system where icy objects are thought to roam in what's known as the Oort Cloud. Such stellar close calls in the past are thought to have rerouted comets from the Oort Cloud toward the inner solar system, where some hit Earth.

Our Moon

Moon, planets, stars and clusters

- 01st – Check out the Moon, Venus, Jupiter and Mercury in the southwest
- 10th – Moon at perigee (357,497 km)
- 21st – Antares 0.02 degrees south of Moon at 05:00 Am. Moon also skims bottom of M4 at this time
- 30th – Venus 3 degrees south of Moon

Luna Phase for January 2009

- 04th – First Quarter
- 11th – Full Moon
- 18th – Last Quarter
- 26th – New Moon



This months Full Moon is also known as the **Ice Moon**, the **Moon After Yule**, the **Old Moon**, and the **Wolf Moon** and occurs at 3:27 UT time on the 21st of January or at 10:27 PM EST on the 20th of January.

Meteor Shower for January 2009

03rd - Quadrantid Meteor Shower

Get out your 2009 calendar and put a big circle around Saturday morning, Jan. 3.

That's the expected peak date for the Quadrantids, a notoriously unpredictable meteor displays. In 2009, peak activity is due to occur in the pre-dawn hours of Jan. 3 and will strongly favor western North America. If the "Quads" reach their full potential, observers blessed with clear; dark skies could be averaging one or two meteor sightings per minute in the hour or two prior to the break of dawn.

Quadrantid meteors are described as bright and bluish with long silvery trains. Some years produce a mere handful, but for favorably placed observers, an excellent meteor display may be in the offing; at greatest activity, Quadrantid rates will likely range from 30 to 60 per hour for eastern parts of the U.S. and Canada.

Superstar Hide and Seek

By Dr. Tony Phillips

It sounds like an impossible task: Take a star a hundred times larger in diameter and millions of times more luminous than the Sun and hide it in our own galaxy where the most powerful optical telescopes on Earth cannot find it.

But it is not impossible. In fact, there could be dozens to hundreds of such stars hiding in the Milky Way right now. Furiously burning their inner stores of hydrogen, these hidden superstars are like ticking bombs poised to 'go supernova' at any moment, possibly unleashing powerful gamma-ray bursts. No wonder astronomers are hunting for them.

Earlier this year, they found one.

"It's called the Peony nebula star," says Lidia Oskinova of Potsdam University in Germany. "It shines like 3.2 million suns and weighs in at about 90 solar masses."

The star lies behind a dense veil of dust near the center of the Milky Way galaxy. Starlight traveling through the dust is attenuated so much that the Peony star, at first glance, looks rather dim and ordinary. Oskinova's team set the record straight using NASA's Spitzer Space Telescope. Clouds of dust can hide a star from visible-light telescopes, but Spitzer is an infrared telescope able to penetrate the dusty gloom.

"Using data from Spitzer, along with infrared observations from the ESO's New Technology Telescope in Chile, we calculated the Peony star's true luminosity," she explains. "In the Milky Way galaxy, it is second only to another known superstar, Eta Carina, which shines like 4.7 million suns."

Oskinova believes this is just the tip of the iceberg. Theoretical models of star formation suggest that one Peony-type star is born in our galaxy every 10,000 years. Given that the lifetime of such a star is about one million years, there should be 100 of them in the Milky Way at any given moment.

Could that be a hundred deadly gamma-ray bursts waiting to happen? Oskinova is not worried.

"There's no threat to Earth," she believes. "Gamma-ray bursts produce tightly focused jets of radiation and we would be extremely unlucky to be in the way of one. Furthermore, there don't appear to be any supermassive stars within a thousand light years of our planet."

Nevertheless, the hunt continues. Mapping and studying supermassive stars will help researchers understand the inner workings of extreme star formation and, moreover, identify stars on the brink of supernova. One day, astronomers monitoring a Peony-type star could witness with their own eyes one of the biggest explosions since the Big Bang itself. Now *that* might be hard to hide.

Find out the latest news on discoveries using the Spitzer at www.spitzer.caltech.edu. Kids (of all ages) can read about "Lucy's Planet Hunt" using the Spitzer Space Telescope at spaceplace.nasa.gov/en/kids/spitzer/lucy.



Caption:

The "Peony Nebula" star is the second-brightest found in the Milky Way Galaxy, after Eta Carina. The Peony star blazes with the light of 3.2 million suns.

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

What's Going On With the Planets this Month?

Mercury: On January 4th around 5:30 PM Mercury will be about 13 degrees high in the southwest and a little over 4 degrees above Jupiter.

Venus: As January begins Venus is in Aquarius at a height of 33 degrees but by months end it will be in Pisces at a height of 44 degrees.

Mars: Mars will be very close to the Sun this month.

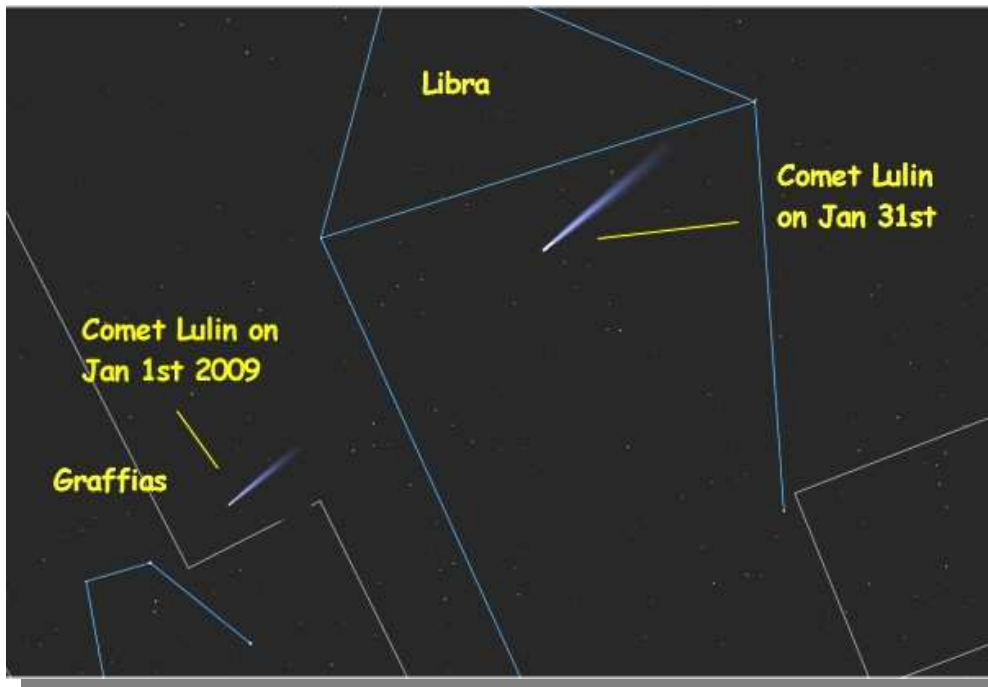
Jupiter: As evening twilight begins on January 1st Jupiter is only 11 degrees above the southwestern horizon and by the 10th Jupiter will be about 7 degrees and sinking fast.

Saturn: Don't forget Saturn in the early morning hours. Saturn is in Leo and rises shortly before midnight and by 02:00 AM sits about 35 degrees high in the east-southeast. How do the rings look?

Uranus and Neptune: Uranus is still in Aquarius while Neptune is still in Capricorn. You will need a telescope to see Neptune and most likely Uranus.

Comet c/2007 M3 Lulin

An early morning comet is now visible for you early risers. By the 15th it will be about magnitude 8.14 and getting brighter through February. Look about 4 degrees to the upper right of the Graffias in Scorpius (the upper claw). Comet Lulin is located in and will move through the constellation Libra by February 10 and be brighter and easier to observe.



Everybody's Do-It-Yourself Dew Heater

By Alan M. MacRobert

If you're competent with a soldering iron and simple electrical components, you can make your own anti-dew device for a fraction of the price of a commercial unit. Electrical resistors, available for small change at any electronic supply shop, make excellent customized warming devices for your telescope's dew cap, eyepiece holder, finder, and/or reflex sight.

First decide how much heat you need. The usual suggestion is 3 watts for an 8-inch Schmidt-Cassegrain corrector plate and 1½ watts for a finderscope objective or eyepiece. If your dew problems are severe you may need more. Fortunately, resistors are so cheap that you can experiment to find the minimum power consumption that works for a given application.

Electrical resistance is measured in *ohms*. To get a desired heat output in *watts*, the resistance you need is given by the formula $Ohms = Volts\ squared / Watts$ where "Volts" refers to the *voltage* of the power source. For instance, if you have a 12-volt battery and want 3 watts, you need 48 ohms of resistance. Eight resistors of 6 ohms each, wired in series, will do it. Resistors come in a limited variety of values, so you may have to settle for a little more or less than you want. The resistors should be rated to handle the load you'll put on them. With eight identical resistors delivering a total of 3 watts, each puts out 3/8 watt of heat. So ½-watt-rated resistors should be good enough, though 1-watt resistors would provide a wider margin of safety.

The resistors can be taped into place with black rubber electrical tape. Get them as near the glass as possible. But be careful to ensure that no bare wire can touch metal; you wouldn't want a short circuit, much less an electrical fire.

How fast will the heater drain your battery? To find how much *current* it draws, use the formula

$$Amps = Watts / Volts$$

For example, a 3-watt heater running on a 12-volt battery draws ¼ amp. So a battery rated at 1 amp-hour will run the heater for 4 hours before needing a recharge.

If 120-volt power is available, obtain 6 or 12 volts with a small step-down transformer to run all the heaters you want indefinitely. **WARNING:** It would be extremely dangerous to design a resistor heater, with its exposed wires, to run at 120 volts directly. Of course, you shouldn't mess with 120-volt power at all unless you're qualified. That includes knowing that *anything* using house current outdoors must be plugged into a ground-fault interrupt (GFI) circuit for safety — especially if you'll be touching a metal telescope while standing in wet grass! Plug-in GFI adapters are sold in hardware stores. And any power supply that plugs into a 120-volt outlet must be completely weatherproofed against dew.

International Year of Astronomy 2009

IAU

New Year's Day marks the beginning of what will undoubtedly be more than 12 months of celebrating astronomy. The International Astronomical Union (IAU) has designated 2009 as the International Year of Astronomy (IYA2009) to commemorate the 400th anniversary of Galileo's first celestial observations using a telescope. [IYA2009](#) has been endorsed by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the U.N. General Assembly.

Much of IYA2009's activities revolve around 11 Cornerstone Projects. While some initiatives are already underway, others still remain under development. The links to their individual sites are listed below. You'll find even more information at [U.S. National Node](#). If you don't live in the U.S., see [IYA2009's](#) main site for a link to your country's node.

[100 Hours of Astronomy](#): 400 Years in the Making

[The Galileoscope](#): Millions of People Looking at the Sky

[Cosmic Diary](#): The Life of an Astronomer

[Portal to the Universe](#): A One-stop Universe of News

[She Is an Astronomer](#): Breaking Down Misconceptions

[Dark Skies Awareness](#): Seeing in the Dark

[Astronomy and World Heritage](#): Universal Treasures

[Galileo Teacher Training Program](#): Teaching the Teachers

[Universe Awareness](#): One Place in the Cosmos

[From Earth to the Universe](#): The Beauty of Science

[Developing Astronomy Globally](#): Astronomy for All

And while it's not an official Cornerstone Project, the amateur-led [The Earth at Night](#) project is another important element for IYA2009.

We're happy to provide the article "The Year to Celebrate Astronomy" by organizers Catherine Cesarsky, Pedro Russo, and Lars Lindberg Christensen from the January 2009 issue of *Sky & Telescope* as a free download in [PDF format](#). (To display PDF files, download and install the free [Adobe Reader](#).)

Check back at this page ([SkyandTelescope.com/IYA2009](#)) as we will add additional articles throughout the year.

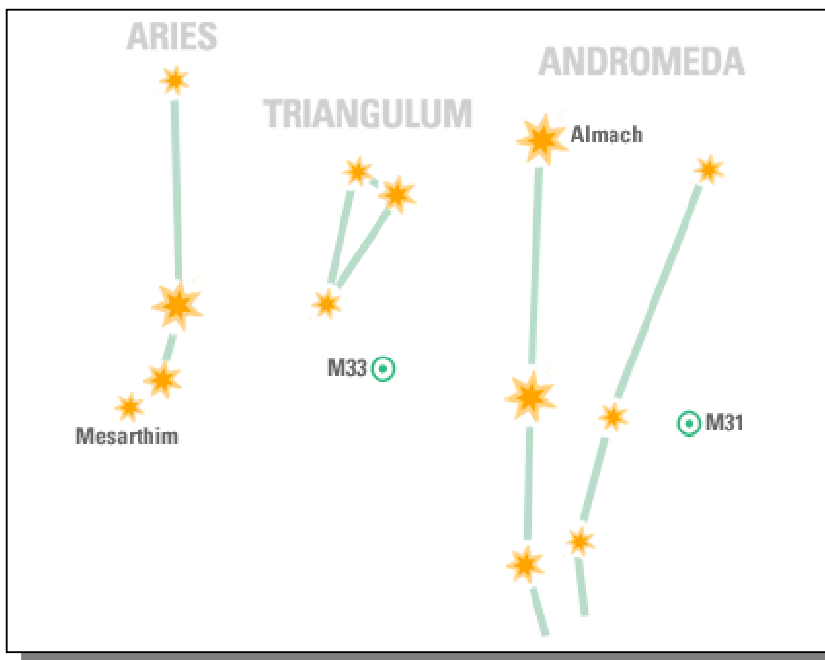


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Triangulum is well placed at this time of year for observations of **M33, a spiral galaxy**. However, at 2.4 million light years and only 5% as massive as our own galaxy, it's a dim fuzzy object in 8" scopes and requires good dark skies to show any detail.

What exactly does a Barlow lens do? How does it work and do I need a 2X or 3X Barlow Lens???????????

When someone mentioned using a Barlow lens they relate it to doubling the power of an eyepiece. If you use a 2x Barlow with a 32 mm eyepiece it becomes a 16 mm eyepiece, a 9 mm eyepiece becomes a 4.5 mm eyepiece and so on.

A 2x Barlow lens does end up doubling the power of the eyepiece it is used with but not in the way most of us think. So how does it work?

A Barlow lens affects the Focal Length (FL) of the telescope. A telescope that has a focal length (FL) of $f/10$ will have a FL of $f/20$ when a 2x Barlow is used, a $f/8$ telescope will become a $f/16$ telescope and so on.

I have a 10", $f/4.5$ reflector telescope that has a great wide-angle field of view. Used with a 32 mm eyepiece I can fit the Andromeda galaxy along with its two satellite galaxies in the same field of view.

If I use a 2x Barlow Lens

By doubling the FL of a telescope you end up doubling the power of the eyepiece in use.

Now the same 2x Barlow can also be used as a 3x Barlow by placing it between the telescope and the diagonal instead of between the diagonal and the eyepiece.

Club News

Thanks to all who contributed material this month.

When submitting articles/photos please include the source. For photos please give specs such as camera, speed, f#, lens, conditions and place.

Send newsletter articles/correspondence/photos to:

Charles Tilley (editor)

ctvideo@yadtel.net

PH: (704) 546-2686

What's Up for 2009

Schedule will be announced at the January meeting.

Club Events For January 2009

Due to the first Thursday falling on New Years Day the club meeting will be on **January 8th**.

Do not forget **Bobfest will be on January 24th**. We will discuss this at the Jan meeting for those who have never attended.

Additional club events will be announced by e-mail as they are scheduled.

Where and when do we meet?

We meet on the first Thursday of each month in the conference room of the Iredell County Rescue Squad Building. Our meetings start at 19:30 hrs (7:30 PM) and last up to two hours. Each meeting covers club business, observing reports and upcoming observing events. We also have an educational or entertaining presentation from a club member or guest speaker with observing afterwards (weather permitting).

If you have an interest in astronomy please feel free to stop by and check us out.

You just may want to join.

Programs for 2009

Schedule will be announced at the January meeting

Club members who sent in material for this month's newsletter are:

Patrick Fry; Charles Tilley

Thanks to all the members who came out and supported club events.

/cT - Editor