

# STARRY NIGHTS

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## Club Officers

Molly Ussery, President  
 Bill Murphy, Vice President  
 Vern Howard, Treasurer  
 Mackenzie Gunnoe, Secretary  
 Jack Haynes, Board Member  
 Brent Snyder, Board Member

## Club AstroNotes

We had our annual Christmas party at the December 9<sup>th</sup> meeting. We had a raffle and gift exchange that was a bit chaotic and a lot of fun!



# STARRY NIGHTS

## Club Events Schedule January-February

**Tuesday, January 13<sup>th</sup> at 6:30pm-** Monthly Meeting at Waterway Church.

**Saturday, November 22 at 4:30pm-** Star Party at Hobbs State Park at 4:30pm.

**Tuesday, February 11<sup>th</sup> at 6:30pm-** Monthly Meeting at Waterway Church.

### AstroBits

#### Message from Vern Howard:

The 2016 Astronomy Calendars will be available at our January meeting for \$15.

Take a look at the photos at the events at the Ozark Botanical Gardens and the Girl Scouts at Hobbs on pages 3 through 7. Kudos to all who lent a hand (or a telescope!).

David Cater is going to do an article in the February newsletter on basic astrophotography with a DSLR and an 80mm scope. Can't wait. It's what I need!

Send your pictures and comments to Jack McDaniel at [Mtecsafety@cox.net](mailto:Mtecsafety@cox.net)

## What's Up in The January Sky

**Solar System:** We will have three planets visible this month: **Uranus**, **Saturn** and **Jupiter**. Jupiter will rule the month! The mighty planet will be at opposition on the 9<sup>th</sup> and 10<sup>th</sup> and will be ideal for observation in the evening all month with any device, including your peepers. Excellent photographic conditions will exist from the 8<sup>th</sup> to the 24<sup>th</sup>. The planet will be paired with our moon in the evening early and late in the month and on the 3<sup>rd</sup> and 31<sup>st</sup> an almost full moon and Jupiter will be about 6 degrees apart in Gemini. That will be a great visual treat, especially with binoculars.

The **Quadrantid Meteor Shower** peaks on the nights of the 3<sup>rd</sup> and 4<sup>th</sup>. **FYI:** Earth's perihelion, our closest approach to the Sun, occurs at 11:16 pm on the 3<sup>rd</sup>.

**Deep Sky:** For you galaxy hunters, **M31**, the great Andromeda Galaxy is visible all month and easy to find on moonless nights. But for a bit of a challenge, view or sketch or photograph the Squid Galaxy **M77** in Cetus. I have done the first two. Now, will somebody do the last one? And send me the picture? Please?

Galactic and planetary nebula abound this month, including the planetary Eskimo Nebula **NGC 2392** in Gemini. Use at least a 6-inch scope for this one. The California Nebula **NGC 1499** in Perseus is a good photographic target for smaller scopes. For you die hard nebula enthusiasts, photograph the Witches Head nebula **IC 2118** in Eridanus. **Vern Howard** did!

For you cluster busters, **M45** (the Pleiades) is still the visual and photographic first choice, but don't forget the open clusters in Auriga: **M36**, **M37** and **M38**. You can see them in any size scope and in binoculars. See if you can locate **M79**, a rare winter globular cluster. It's low in the sky: about 21° altitude in the Southeast in Lepus. M79 may be an extragalactic cluster in a dwarf galaxy that is merging with the Milky Way. Wow!

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## Club Events



Our club did a star party for the Girl Scouts at Hobbs State State Park on November 16<sup>th</sup>. Looks like they were having a great time! Photo by Ray Fletcher. Thanks Ray!

### **This Month in Astronomy History**

•**The Galilean Moons (January 7–15, 1610):** Galileo made his first observations of what he initially thought were "fixed stars" near Jupiter. Over several nights, he realized they were orbiting the planet, making them the first celestial bodies confirmed to orbit something other than Earth or the Sun. The discovery was key in overturning the existing Earth centered model in favor of the Sun centered model of the solar system.

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## Club Events

### WINTER GLOW AT THE GARDENS

We helped the Ozark Botanical Gardens with their winter festival on December 21<sup>st</sup>, by doing a star party for the attendees. We had 12 telescopes plus binoculars set up to provide a look at the night sky at winter solstice. We lost count of the folks that took advantage of the viewing but there were many and it kept us busy from 5 to 8 pm. Our thanks to Navaeh Hatfield and the wonderful staff at OBG!



Photos by Wendy Haynes

# STARRY NIGHTS

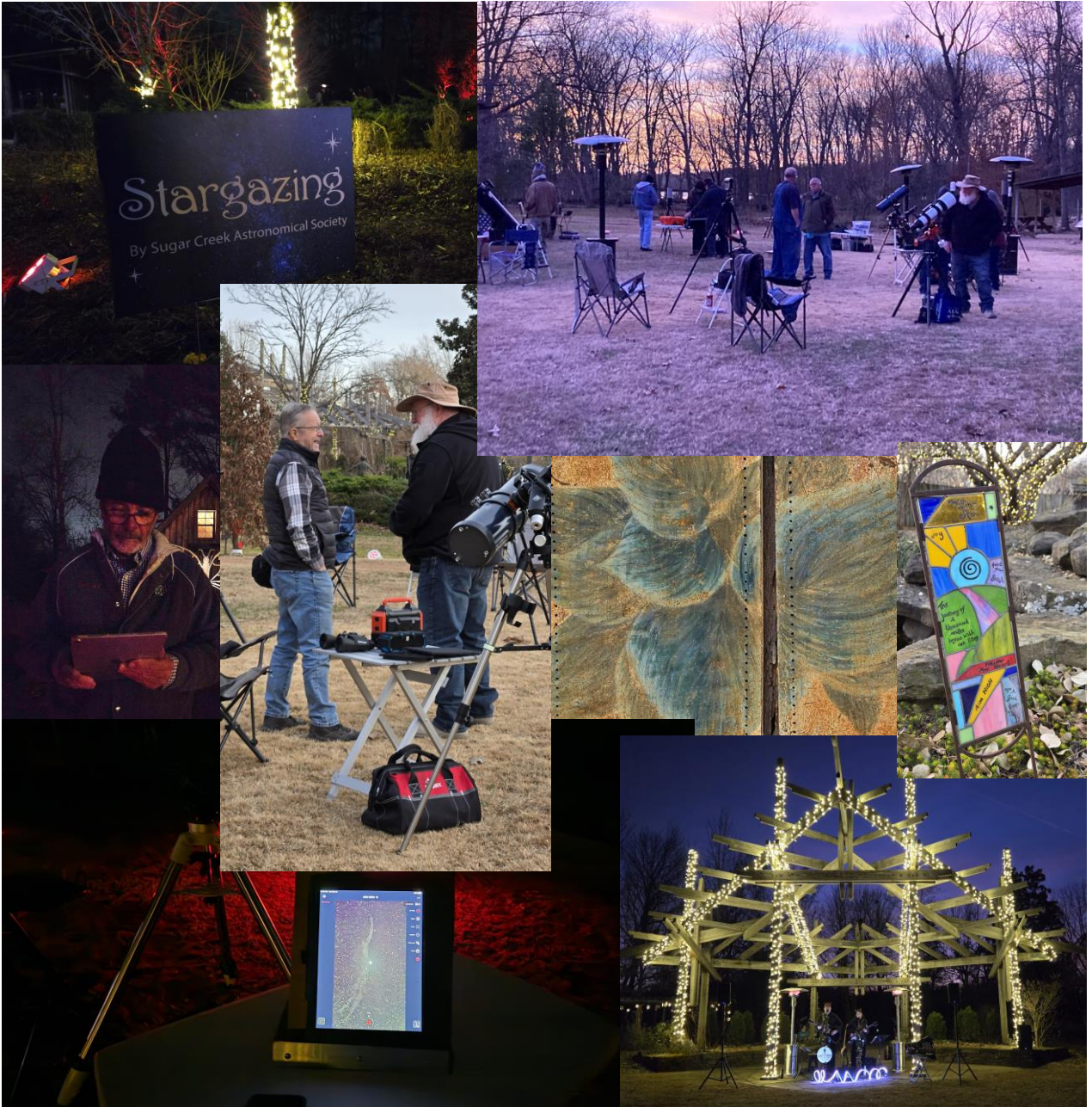
## Club Events

Photos by Wendy Haynes



# STARRY NIGHTS

## Club Events: Winter Glow



Photos by Wendy Haynes

# STARRY NIGHTS

## Photos of the Month



### Winter Glow at Ozark Botanical Gardens

### Photos by Wendy Haynes



## SCAS Old Timers Section

We had several clear nights in early and late December and Vern Howard captured a pair of very interesting nebulas in Auriga called the Spider (IC 417) and the Fly (NGC 1931) with his Seestar S30 and Unistellar II. Jack McDaniel took pictures of the Veil Nebula NGC 6992 and Pelican Nebula IC 5070 with his Seestar S50.

# STARRY NIGHTS

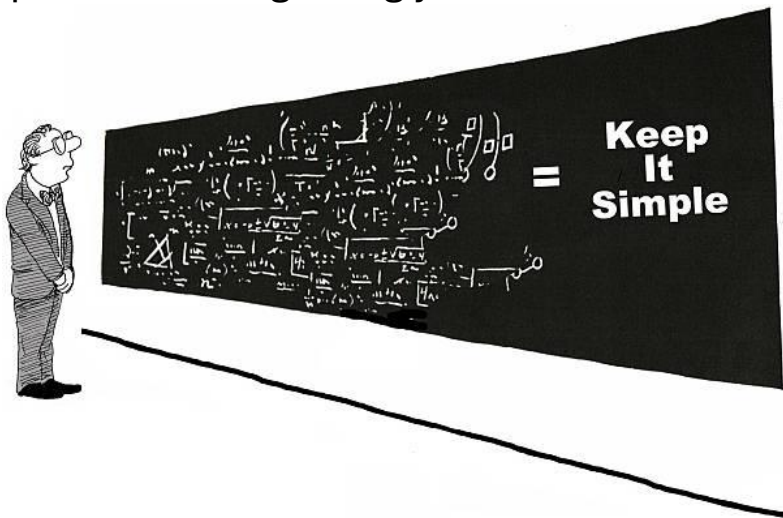
## Ye Olde Astronomer's Column



Ye Olde Astronomer (a.k.a. YOA) is living proof that you are never too old to reinvent yourself! In YOA's case he morphed from a retired engineer and his wife's chief helper into a devotee of all things astronomical. YOA's goal is to share his enthusiasm for the wonders of the universe with others.

## Newton's First Law of Motion

This is the first in a series of articles on Newton's Laws of Motion and Gravity. The goal is to make these fundamental laws of physics understandable and illustrate how they apply both to everyday life and to astronomy. For the math geeks we will use some math, but we will restrict it to basic equations and how the equations can be used. The rest of you can skip the math and concentrate on the concepts. No one is grading you!



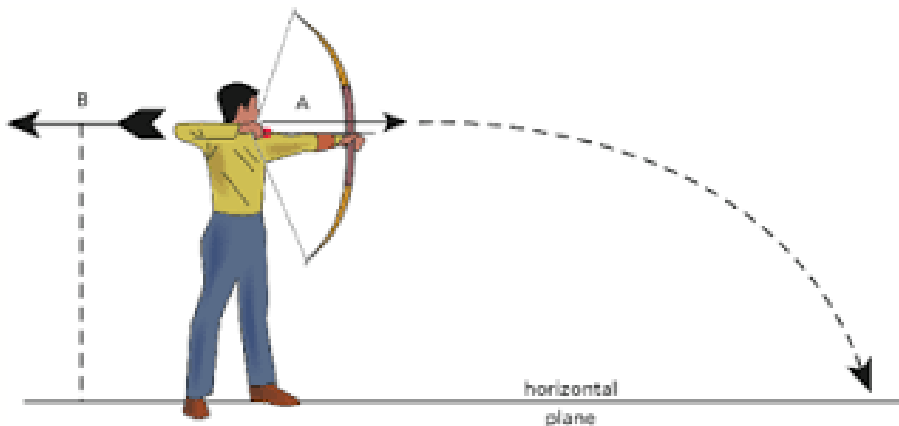
# STARRY NIGHTS

## Newton's First Law of Motion page 2 of 3

Let's start with a little history.

Sir Isaac Newton realized centuries ago that objects on earth that are either in motion at a constant speed and direction, or not in motion at all, would remain so until an “unbalanced” force acted upon them. So, a body at rest will remain at rest and a body in constant motion will remain so until subjected to an “unbalanced” force. This is Newton's **First Law of Motion** also known as the **Law of Inertia**.

But Newton was not the first to realize this law. Decades before Newton formulated it, the famed astronomer Galileo Galilei wrote that an object in motion stayed in motion unless a force or forces stopped it. This was contrary to the prevailing theory established by Aristotle who posited that all objects in motion tended toward a “natural” state of rest and therefore all objects in motion eventually stopped because it was “in the nature of things”. So, a moving wagon eventually stops on its own. Furthermore, according to Aristotle, an arrow in flight eventually falls to the ground because it is simply in the nature of things for the arrow to come to rest.



# STARRY NIGHTS

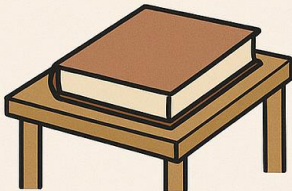
## Newton's First Law of Motion page 3 of 3

Galileo vehemently disagreed noting that there are forces that may not easily be found that act upon the body to affect its motion. So, one of the forces that causes the moving wagon to stop is friction between the axle and wheel bearing. One force acting on the arrow to end its flight is gravity. Galileo was the first to use the word **inertia** to describe an objects resistance to change in motion or rest.

In the figure below, some examples of the **Law of Inertia** are shown. The book will stay at rest until you pick it up. Friction and air resistance will eventually stop the ball from rolling. When the car stops turning, you will stop leaning. In the next issue we will dive into this concept of inertia more deeply. Meanwhile, keep moving!

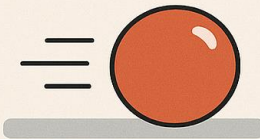
### TYPES OF INERTIA

#### Inertia of Rest



A book on a table won't move unless pushed.

#### Inertia of Motion



A ball rolling keeps rolling unless something slows it.

#### Inertia of Direction



A car turning quickly makes you lean sideways