



# ORION Trapezium

December 2017

Volume 44, Issue 12

## Who are we?

ORION was founded in April 1974, by a group of scientists at the United States Department of Energy facilities in Oak Ridge, Tennessee. Our original goal was to perform correlated, instrumented observations of atmospheric and astrophysical phenomena. Since then, we have expanded in many directions, including optical and radio astronomy and instrument design. Have a look at <https://orioninc.org> and <https://orionastronomy.wordpress.com/meetings/upcoming-meetings/>

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## Future Events

### ORION Meeting

**Wednesday, December 20, 2017**  
**Christmas Party 1900 hours**  
**7:00 PM at Historic Grove**  
**Theater, High Places Church, in**  
**Grove Center, Oak Ridge**

**Happy Solstice and**  
**Merry Christmas**

### TAO Public Stargazes

Saturday, January 6, 2018  
Saturday, January 20, 2018  
Roane State Community College  
Tamke-Allan Observatory (TAO)  
7:30 pm to 12:00 am  
8:00 pm program  
Look at  
<http://www.roanestate.edu/obs/>

### TAO Notes

ORION people are invited to arrive early (if announced on email) to prepare for evening viewing. Bring a telescope, red flashlight and munchies.  
First time visitors – drive out before dark. Map available at [www.roanestate.edu/obs.visit.htm](http://www.roanestate.edu/obs.visit.htm)

## December 2017 Meeting

Instead of a regular meeting, ORION will celebrate the season with a Christmas party, which will be held at the Historic Grove Center at 7:00 pm on Wednesday, December 20. A main course will be provided with potluck sides and desserts. Bring plates and utensils for yourself.

Christmas Party Wednesday Night Dec. 20 (tomorrow)

7:00 PM at Historic Grove Theater, High Places Church, in Grove Center, Oak Ridge

Here's a start at a food list. Add what you'll bring to the party and send to [ORIONastronomy@yahoo.com](mailto:ORIONastronomy@yahoo.com):

Roy	Margaret's special brownies, (like the TAO brownies, but more fudge and pecans)
Linda	Big hearty pot of CHILI
David	Caraway Onion Bread and Oven-baked Whole Wheat Bread
ORION	Tasty historic Oliver Springs BBQ and exotic sauces
Jennifer	Sumptuous Pecan Pie
John L.	Famous Green Bean Casserole
Larry	Creative Pizza
Everyone	Plates and utensils for yourself

## November 2017 Meeting and Program

Kenneth Roy, shown below receiving an ORION mug from club President David Fields, gave a fascinating talk on the question of whether plants and animals on other worlds might be unsuitable for human consumption due to alien biochemistry. Actually, this works in two directions. Title: "The Problem with Aliens." David presented Ken's ORION cup a couple (ha) of nights later.

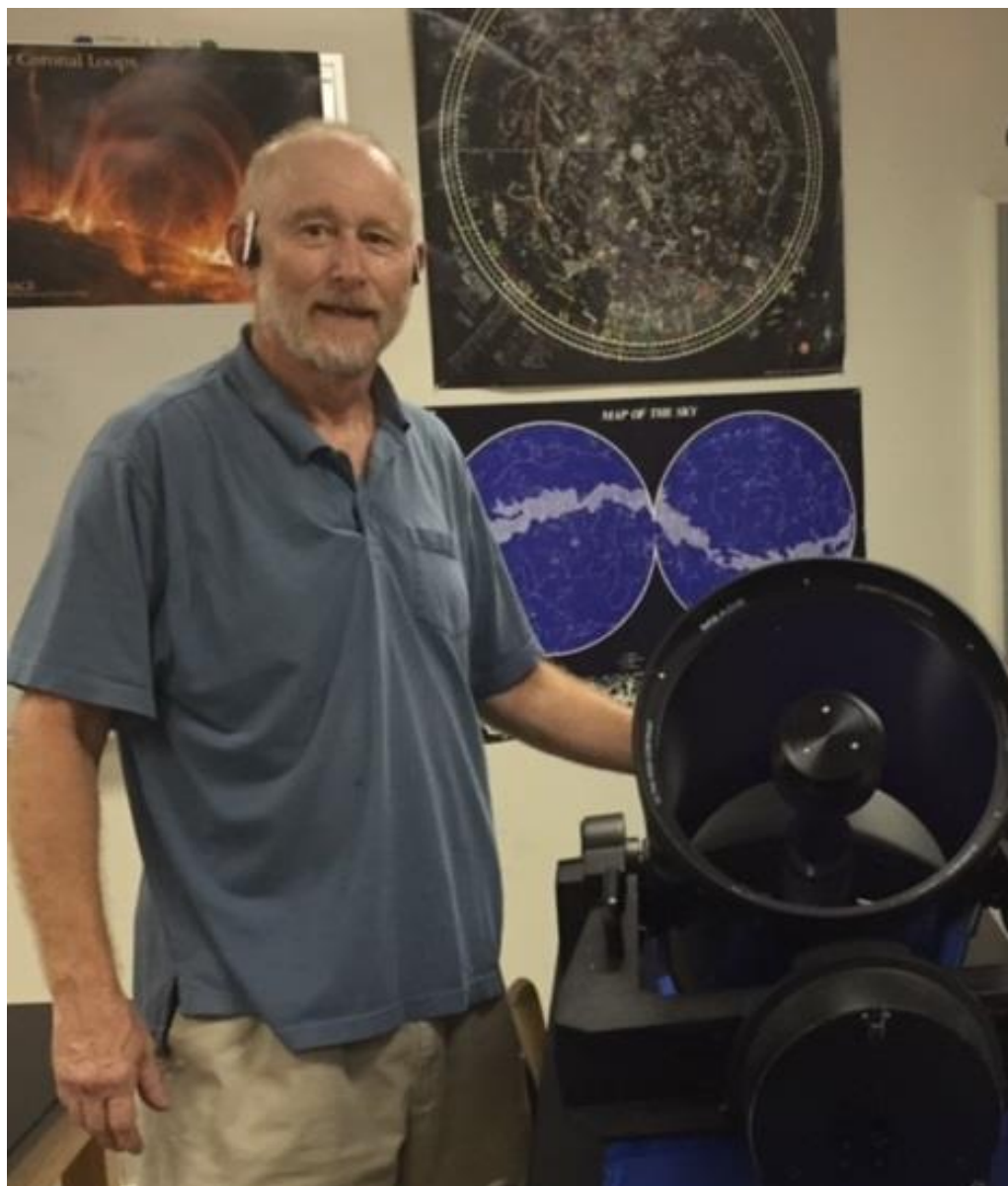


## President's Perspective -- Who's working tonight?

David Fields

First, Thanks to Roger Lane for organizing the KO banquet on Dec. 16. It was a fun group of amateur astronomers, and the food was excellent! Roger is doing a lot for astronomy in East Tennessee!

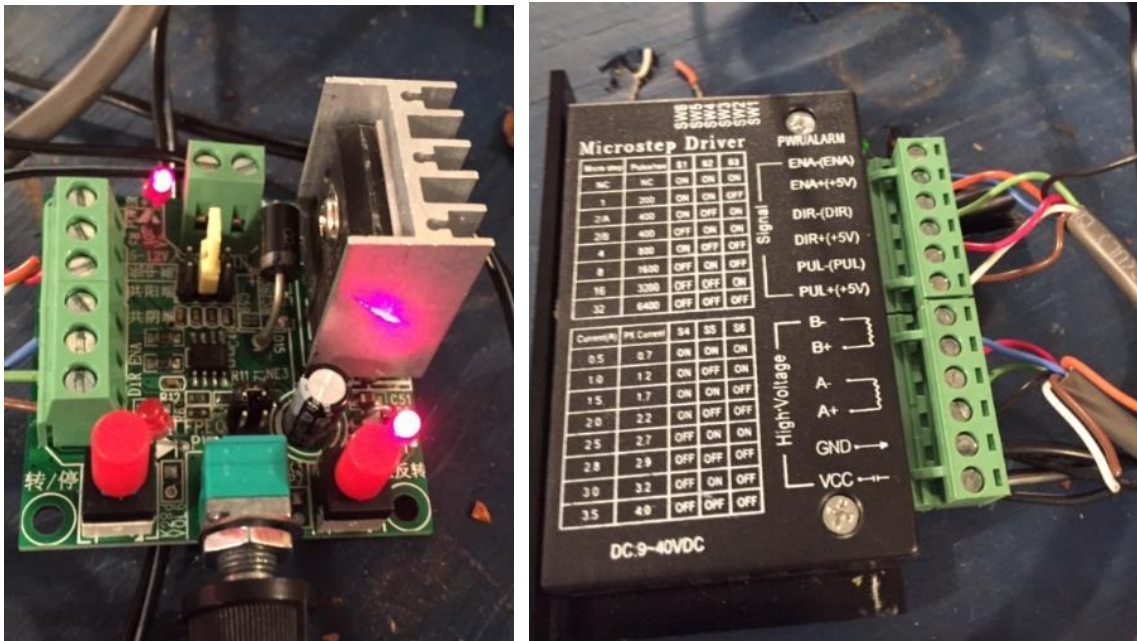
Now, let's talk about work at TAO: Thanks to Drew Bolcie for all his recent work on our telescopes. Drew is just one of our active telescope builders/hackers crew!



Drew did a lot of work on the LX-200 (machining and electronics).



Moreover, Drew replaced the driver circuit on the TAO 8" refractor telescope. If you go into the large dome, you'll find the driver circuit is working well. Here's the timer board (left) and the stepper motor power driver circuit (right).



Another friendly face you'll find helping with everything at TAO is Rob Fowler, our photographer (one of them) and together with John Preston, our videographer. Here's Rob (left) with one of his toys:



Finally, our Interstellar Culinary Delights (ICD's) are usually the creations of Jim Long. Jim tries to hide from cameras, but his tasty creations appear in the TAO Stargaze (classroom) rather often. Above (right) is Jim's sculpture of a dangerous Alien Eye-Stalker beast.

## **Outreach and Education: TAO Events**

**Telescope Innovations Continue! The new mount is working well, and the telescope is aligned. Preparing for January 6.**

### **The 12 inch Meade Telescope**

Thanks to everyone on our reflector scope projects: Dr. Roy Morrow who made the original donation, Dr. Adolf King for the ceremony, D.R. Fudge for loaning us the Dome, Roger Lane who donated the Celestron Mount; heavy hitter Drew Bolcie, who did the machining for the new bolt plate and mount fittings, plus worked with the electronics, Dave MacCallister who guided the deforking work, and DR., Drew and Larry Robinson who helped with alignment..

Background: After nearly 18 years of service, the Meade LX200 telescope finally developed some guidance problems.

This telescope was donated to TAO by Roy in 2000 and housed in DR's POD (portable observatory dome) ever since. The heat in the POD often exceeded 100 degrees and the water leaks contributed to high humidity and mold/mildew growth. The hand paddle failed a couple of years ago and Roy sent it out for repair.. Recently the "go-to" and tracking began to fail and stopped driving in right ascension The LX200 Classic was a very good scope, and the OTA will continue to serve. I think it may be one of the last "quality" scopes from Meade.



**DR Fudge in the POD with the 12 in. LX200**

Roger Lane and Drew carefully removed the scope and mount from the pier. Roger donated a Celestron CGE mount that once carried his 14in scop, and here are Roger and Drew working in the dome:



**Roger and Dru Removing the LX200 from the pier**

The telescope crew removed the telescope from the pier to the classroom where it was “deforked” under Dave’s direction. It needed a new pier plate and interface plug to mate with the pier bolt pattern. Here are Drew Bolcie (machinist for this part of the project), David Fields, and Dave MacCallister with the scope on the ‘operating table in the classroom:





**Drew, David and Dave moved the scope first to the front table.**



The LX-200 scope is part of our history. Here are David and Roy Morrow with the LX200 on the “operating table.” The plaque on the scope was placed there by Dr. Adolph King, Dean of Math-Sciences, Roane State Community College, during the telescope dedication.

### **Where are we now ? Update on the News:**

Drew, DR, and Larry have been aligning the Lx-200 and it is working very well. Let’s use it well at the next Stargaze, on January 6!

## In Other's Words

### Idaho lands nation's first International Dark Sky Reserve

- By keith ridler, associated press

BOISE, Idaho — Dec 19, 2017, 4:19 PM ET



The Associated Press

This June 18, 2017, photo provided by Nils Ribi Photography shows the Milky Way over the Smoky Mountains in central Idaho. A giant chunk of central Idaho with a dazzling night sky has become the nation's first International Dark Sky Reserve. (Nils Ribi Photography via AP)

A giant chunk of central Idaho with a dazzling night sky has become the nation's first International Dark Sky Reserve.

The International Dark-Sky Association late Monday designated the 1,400-square-mile (3,600-square-kilometer) Central Idaho Dark Sky Reserve. The sparsely populated area's night skies are so pristine that interstellar dust clouds are visible in the Milky Way. That such truly dark nighttime environments still exist in the United States is remarkable," said J. Scott Feierabend, executive director of the Tucson, Arizona, -based association, calling the designation a milestone for the group.

Researchers say 80 percent of North Americans live in areas where light pollution blots out the night sky.

The central Idaho reserve covers some of the most remote and rugged areas in the state and is mostly land managed by the U.S. Forest Service. It contains wilderness areas and the Sawtooth National Recreation Area. "The Reserve's chief draw is its wilderness quality, with its lack of development and significant visitor services," the association said on its website.



The Forest Service has supported the designation as part of its mandate to preserve natural and scenic qualities. It has reduced light pollution from its buildings, but said mitigation by others in the recreation area would be voluntary.

Opposition to dark sky measures elsewhere in the U.S. has come from the outdoor advertising industry and those against additional government regulations.

Supporters say excess artificial light causes sleeping problems for people and disrupts nocturnal wildlife and that a dark sky can solve those problems, boost home values and draw tourists.

"Sun Valley is excited about this prestigious designation and I believe this is something that will benefit residents and visitors alike," said Sun Valley Mayor Peter Hendricks. Sun Valley, a resort destination that also has some of Idaho's highest home values, is within the reserve as is neighboring Ketchum. Both towns have worked to limit nighttime lighting.

In November, the International Dark-Sky Association named Ketchum an International Dark Sky Community, only the 16th in the world. Earlier this year, the association named Craters of the Moon National Monument and Preserve in south-central Idaho an International Dark Sky Park, one of about 40 in the United States.

But getting the rarest prize of all with the reserve, officials said, took several decades of work and included efforts from communities on the edges of the reserve to reduce nighttime lighting. The association looks at what surrounding communities are doing to protect the dark core area of a proposed reserve.

Volunteers also fanned out across the region to take light readings at night, and the Idaho Conservation League, an environmental group, supported the designation aiming to limit light pollution. Stanley, a tiny mountain town in the Sawtooth recreation area on the northern side of the reserve, runs mostly on tourism money and has supported the reserve with voluntary measures to limit outdoor lighting.

"Visitors can come here and experience the primeval wonder of the starry night sky," Mayor Steve Botti said.

## Parting Shots



### Ursa Major

The Big Dipper is really Santa's sled  
freewheeling around the North Pole  
through frosty stars and a red nosed  
bear taking pointers from Rudolf as  
his reins arc to a super giant red-eye  
star, coursing through the circumpolar  
tinsel of stars, a garland of firelights,  
but avoiding the unwinding glittering  
coil of that dragon, Draco, whose cold  
aspic heart, Thuban, thumps the night,

but it's a certain Santa & his Bears  
who bring all those stardust wishes  
full of hope sifted from a special star  
that's twinkling in the silent night.

[Poem first published in *Abyss & Apex*, January 2017; image credit John C. Mannone and Camille Alvey]

**Backstory:** It occurred to me that Santa's sled and reindeer could fit the outline of the Big Dipper, and to the best of my knowledge (and a Google search at the time of publication of the poem), this is an original concept.

In the Nordic tradition, the Big Dipper was known as the Wain or Wagon. So in that spirit, a drawn sled is consistent with that image. And with Santa being in the North Pole, it is fitting that the sled points to the North Star, Polaris: the two pointer stars—Dubhe (Arabic for bear) and Merak (Arabic for loins of the bear)—are aligned with the back of the sled.

Polaris is actually a variable star, so I imagine that this pulsating variable could have undergone a catastrophic perturbation, which caused it to suddenly shine brightly, as if it were the Star of Bethlehem. (I know a great deal about stellar dynamics, so this conjecture is pure science fiction.) The Big Dipper is a circumpolar constellation, which means it revolves around the pole star, so it is visible throughout the night. But I love the symbolism of making the pole star the Star of Bethlehem. Santa Claus, that benevolent gift-giver to children (and aren't we all children at heart when we cut away the impurities?) travels all around the world while always pointing to that bright and shining star.

In star-hopping lingo, we use the Big Dipper handle stars to locate a red supergiant and say "arc to Arcturus." That star becomes a convenient proxy for Rudolf's guiding red light. I use poetic license in this image because Arcturus would not be that close to the Big Dipper, nor would it be glowing that big and that bright!

Also not shown in the image is another circumpolar constellation, Draco, whose brightest star, Thuban, is the serpentine dragon's heart. It is in contradistinction to the goodness implied by the Star of Bethlehem. Of course, the allusion at the end of the poem to that wonderful German hymn, "Silent Night," has special seasonal significance for some beyond the peaceful gift giving.

**John C. Mannone** has work in *Blue Fifth Review*, *New England Journal of Medicine*, *Peacock Journal*, *Pedestal*, *Pirene's Fountain*, *Gyroscope Review*, *Baltimore Review*, and others. He's the winner of the 2017 Jean Ritchie Fellowship in Appalachian literature with three poetry collections. He edits poetry for *Silver Blade* and other venues. John is a former ORION Vice president, teaches physics whenever he can and considers equations another form of poetry.

<http://jcmannone.wordpress.com>



## More About ORION

ORION is an amateur science and astronomy club centered in Oak Ridge, TN that was founded in April 1974 by a group of scientists at the United States Department of Energy facility in Oak Ridge, Tennessee. We serve Oak Ridge, Knoxville, and the counties of Anderson, Knox, and Roane.

ORION's mission is to support science research, teaching, and amateur astronomy in East Tennessee, and therefore we are closely associated with and support TAO by volunteering to host their public events, share our knowledge of the skies with a variety of telescopes, and help provide intellectually stimulating programs at the observatory. ORION works to share the wonders of the cosmos and the culture of science to people from all walks of life.

Members are scientists, engineers, technicians, and others with varied talents and expertise. Over half have telescopes, many are amateur radio operators, and some have a technical interest in astrophotography.

ORION has working relationships with several organizations, including museums and amateur astronomy groups.

Membership is open to individuals who will actively contribute their time and ideas. Our annual membership dues are \$20.00 and student discounts are available.

### Board:

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