



ORION Trapezium

July 2017 Volume 44, Issue 7

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, July 19, 2017
1900 hours (7 pm)
The Historic Grove Theater
Randolph Road
Grove Center, Oak Ridge

TAO Public Stargazes

Saturday, August 5, 2017
Saturday, August 19, 2017
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

July 2017 Meeting and Program

Wed. July 19, 7 PM, Historic Grove Theater, Oak Ridge

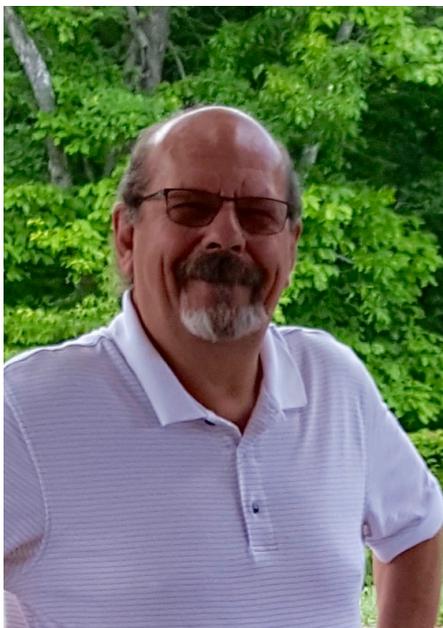
Presentation

Fusion of Art and Science: A Criticality

Abstract

This talk will explore why it is critical important that our education should fuse science with art. In the creative mind, visualization strongly enhances understanding, while science lends the creative writer new metaphors. There's a connection between physics, metaphysics, and religion and the connections become more apparent with art and science taken collectively. Creativity is an essential resource to the scientist.

Speaker: John C. Mannone



John C. Mannone achieved a PhD Candidacy in Electrical Engineering with a dissertation on expanded space charge theory in dielectric fluids (University of Tennessee, Knoxville, TN, 2002), an MS in Physics specializing in plasma physics (University of Tennessee, Knoxville, TN, 1988), an MS in Physical & Theoretical Chemistry specializing in photoelectron spectroscopy (Georgetown University, Washington, DC, 1978), and a BS in Chemistry (Loyola College/University, Baltimore, MD, 1970). His research interests are in astrophysical plasmas and electromagnetic theory.

As a research chemist for Martin Marietta in Baltimore, he worked on life detection systems on the Viking missions as well as on accelerated aging of electro explosives used on the Voyager missions. He broadened his career when he joined Westinghouse Naval Reactors in Idaho. This launched his consulting in the nuclear industry in which he helped to solve industry challenges for over thirty years in both commercial nuclear reactors and DOE nuclear projects. Retired since 2010, Mannone remains active in teaching university level physics and in astronomy outreach, where he is often sought out as a speaker. But he has also developed a passion for the literary arts since 2004, and fuses those arts with science. With over 600 poems and prose published, he has several collections of poetry and has won numerous literary distinctions, including the 2017 Jean Ritchie Fellowship in Appalachian literature. He currently serves as the president of the Chattanooga Writers' Guild.

June 2017 ORION Speaker



Dr. John Rather gave an inspiring talk about total solar eclipses and his personal history of chasing and experiencing these rare and wonderful natural phenomena. The talk was very well received by the attendees, who nearly filled the City Room auditorium on the Oak Ridge campus of Roane State Community College.

To get an idea of how well received the talk was, ORION member Jennifer Hartwig had this to say about it.

I get asked about the upcoming solar eclipse often. I'm here to tell you that I cannot adequately put into words the emotion that I felt a couple of weeks ago while attending a local lecture on that same topic...a lecture that will be repeated this Friday in Oak Ridge. Dr. John Rather's discussions held me in awe (once again) of the wonders of our solar system. It's been a while since I experienced something that left me with a lump in my throat while hearing stories of the simple interactions involving nature and human relationships. The August 21st eclipse could be big in so many ways. I implore you to learn more about it. Experience it in whatever way you want, but by all means experience it.

ORION President's Perspective: Tennessee Valley Interstellar Workshop (TVIW) meets October 4-7, Huntsville, AL

July 2017- David Fields

Tennessee Valley Interstellar Workshop first met in Oak Ridge in 2011. It was a futuristic group of people looking ahead to eventual instrumented and perhaps, human-crewed, missions to the distant stars. I was one of the presenters, along with John Rather, Kent Williams, Les Johnson, Ken Roy, Greg Matloff and Claudio Maccone. Since then we've had participation by an international assembly of scientists and engineers, and usually fill available conference space in our venue at Oak Ridge, Chattanooga, or Huntsville.

In 2011, we knew of one planet outside our solar system. Now, we know of about 4000 planets beyond our solar system. Interstellar Research is a \$500 million dollar per year activity, stimulating efforts in phase-locked LASER systems, exotic materials research, advanced computing and SETI. It's still possible to attend TVIW 2017 – you can register at <http://www.TVIW.US> and if anyone wants more information, I can probably provide it.

Here's a perspective on TVIW, mostly taken from the TVIW.us web site:

TVIW was founded with a grand vision — to facilitate an “Interstellar” process of knowing and journeying. To attain grand goals, one must first build an infrastructure that supports steady progress, with plateaus along the way. With this technological, philosophical and economic infrastructure, Mankind can set foot on the moon, establish outposts, even cultures, throughout our solar system, and finally, find its (our) pathway to the stars. TVIW was founded to outline and develop this Interstellar Vision. The ladder to the stars has many waypoints, and our activities support the attendant milestones and processes.

The first TVIW, in November 2011, was a chance for like-minded people to get together and talk about how to move humanity into space, to promote interstellar exploration, travel, and communications. As Les Johnson eloquently put it:

“The Tennessee Valley Interstellar Workshop is an opportunity for relaxed sharing of ideas in directions that will stimulate and encourage Interstellar exploration including propulsion, communications, and research. The ‘Workshop’ theme suggests that the direction should go beyond that of a ‘conference’. Attendees are encouraged to not only present intellectual concepts but to develop these concepts to suggest projects, collaboration, active research and mission planning. It should be a time for engaging discussions, thought-provoking ideas, and boundless optimism contemplating a future that may one day be within the reach of humanity.”

Though the original TVIW concept was explicitly intended to be regional (viz., the American Southeast), it is now, in fact, an internationally recognized event, with major speakers and attendees coming from all over the world. International participation has grown, for example, with the full involvement and support of the prestigious British Interplanetary Society, as well as the Initiative for Interstellar Studies and the International Space University.

Why should we gather to discuss the challenges and opportunities of interstellar travel? *Because we must.* We are compelled by our nature to think positively about the future of humanity in a beautiful yet extremely hostile universe. Life on Earth is wonderful and we should do what we can to protect and preserve it here, but there is more. Among the billions of galaxies, stars and planets, we sense a call to explore. A call to disperse ourselves and settle a multitude of worlds in order to preserve and protect what must be very rare indeed: a bipedal species of intelligent tool users who dare to dream, to love, to create and to aspire for more than mere survival. To do this, we must push boundaries and go. There are many challenges and some of them will take generations to overcome.

These efforts will take all of humanity. We will need everybody ‘onboard the boat.’ We hope that one day we will see the great diversity that is the human race on the way to other planets and other stars

TAO Events

Public Stargaze July 15

Roger Lane sent this picture showing his mighty 100 mm binoculars and the big C14 Schmidt-Cassegrain catadioptric telescope. Roger noted the night started off with some clouds and by 10:00 pm things were clear. Most of the visitors did not stay around for the clear sky observing.





This picture proves that red light does indeed attract night creatures.

Outreach and Education

Tellico Village Library Loaner Telescopes

The Tellico Village Library has obtained a grant from Cornerstone of Science for two Starblast 4.5 in. reflecting telescopes to be loaned to library patrons.

From the **Cornerstone Web** site:

Cornerstones' STAR (Sharing Telescopes and Astronomical Resources) Program fosters interest in astronomy by getting quality telescopes into the hands of the public. *Checking out the telescope as they would a book*, people can explore the wonders of the night sky at home. The STAR Program is an accessible way to make hands-on science fun and give people a greater appreciation for astronomy.

While telescopes can be used by children with adult supervision, the telescopes must be checked out by library patrons 18 years or older, and transported by motor vehicle.

The modified Orion StarBlast 4.5 inch Telescope comes complete with a simple instruction book and guides to additional resources (such as books, websites, and most importantly, local astronomers and clubs). Each telescope is modified and upgraded to help assure a positive user experience.

Thanks to the gracious support and generosity of Orion Telescopes and Binoculars, Cornerstones of Science has been able to provide telescopes affordably (generally about \$325)

Here is the Cornerstones of Science web site for more information

<http://www.cornerstonesofscience.org/what-we-do/programs-supports-and-services/library-telescope-program/>

The Tellico Astronomers (The Tellico Village Astronomy Club) will provide technical support to maintain the telescopes and to train the users. Thanks are due to Carol DeForest for the initiative to obtain a grant to fund these telescopes. Carol is the manager and librarian for the Tellico Village Library.

The STAR program was implemented by the New Hampshire Astronomical Society.

The Tellico Astronomers look forward to helping implement this program in Loudon County and Tellico Village. The Starblast telescopes are modified to minimize tinkering with the settings by the user.

The telescopes for the Tellico library are fully modified and ready to go. A user manual written by the New Hampshire Society is provided along with other material. Here is a video produced by the Central Arkansas Astronomical Society that shows the modified telescope and how it is used.

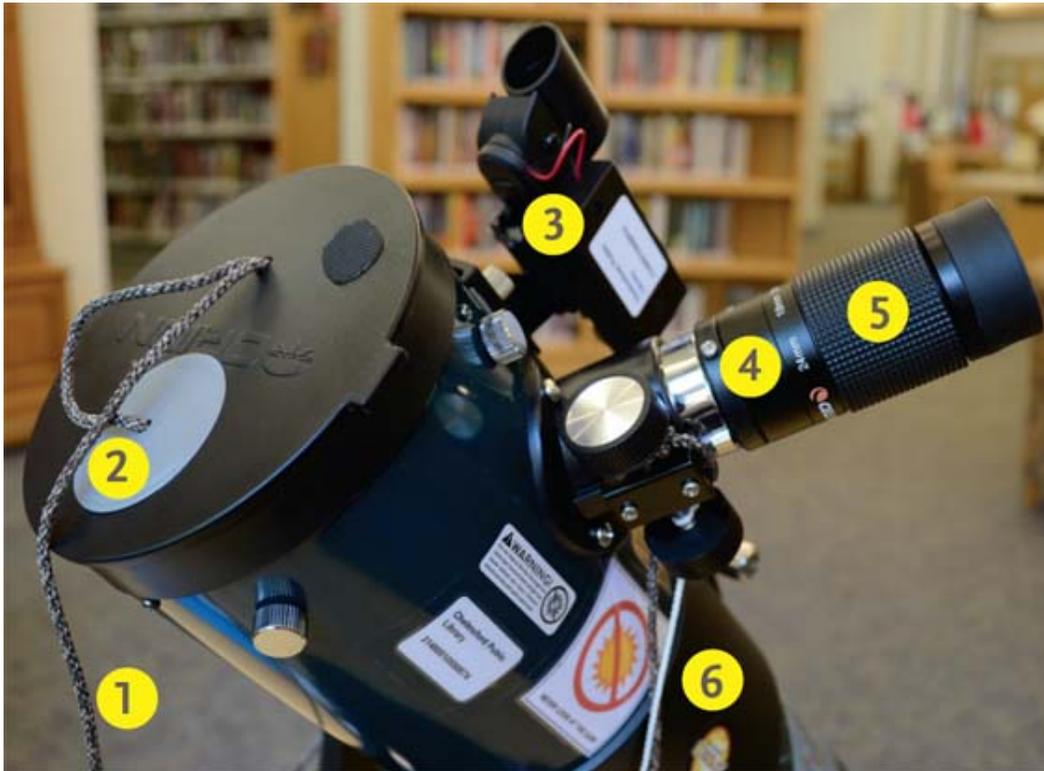
<http://ltp.caasastro.org/>

The STAR program may be unique to East TN and will offer outreach opportunities to our local astronomy clubs. Here is what the modified Starblast telescope will look like.

Lots of changes to make the scope friendly but resistant to “fiddling”.

1. Lanyard securing the scope dust cap and cap to cover the 2” in hole that makes the scope 2” instead of 4” objective . This reduces the need for a moon filter!
2. Plug covering the 2” hole to reduced objective form 4” to 2”.
3. Battery pack for red dot finder
4. Set screw to secure the eyepiece to the focuser
5. Celestron zoom eyepiece
6. Lanyard tie downs

4.5 inch Starblast telescope modified for library loaning.



Here is the link from Sky and Telescope magazine

<http://www.skyandtelescope.com/observing/stargazers-corner/library-telescope-program-update/>

BigFOot's Blog

Roger "bigfoot" Lane is a guest columnist for this issue of the Trapezium. This blog describes the 2014 Fall Star Party at Cades Cove, September 27, 2014.

Members from the Knoxville Observers merged with Smoky Mountain Astronomical Society (SMAS) and David Fields from the ORION Astronomy group to hold a star gazing event at Cades Cove Saturday evening. There were 15 telescopes set up in an open field 1/3 mile from the start of Cades Cove Loop Rd. The event had been promoted through the park service as well as local news stations in the Knoxville area.

My wife Suzy and I picked up Charles Ferguson and drove to the Cove. Also present from KO were James Rollow and his wife, Carol, as well as John Latham and James Cantu. We met up with approximately 20 SMAS members and families at 5:00. The park had additional rangers working overtime to help with the event. SMAS members were gracious hosts and made KO feel welcome. The rangers escorted the convoy to the designated viewing area where we were given special permission to drive our vehicles into the field to set up. Evidently they don't do that for everyone.

SMAS president, Michael Littleton had smoked a turkey and pork butt as the main entrée with other attendees bringing contributions. We had a wonderful picnic in the field before the event started. It was partly cloudy and warm. As soon as the sun went down the temperature dropped 10 degrees. Dew began to settle soon thereafter. At 7:45 the rangers escorted a crowd of approximately 350 visitors to a nearby hillside and gave a 15-minute presentation on the event. I had just enough time to do a 3 star alignment on my scope and set up before the crowds converged on us.

Before I could look up, I already had a line forming at my scope with around 20 visitors. I was going to show them M-11 (Wild Duck Cluster), but there were clouds in the viewing area to the south. Instead I zipped over to M-13 (globular in Hercules) so they would have something to see. I thought that after the clouds blew by I would have a chance to go back to my original target. No such luck! The line continued to form throughout the evening and never let up. Charles Ferguson was a big help as he explained to the visitors what M-13 is and how far away the light travels to reach the scope. We told the story of Charles Messier to those that wanted to know more. David Fields made his way around to all of the astronomers. Using a PA system and microphone, he asked each of us what we were showing the visitors. Me, never missing an opportunity to be a smart ass, told him I was showing the visitors cumulus cloud formations.

After 1-1/2 hours my viewing was hampered by the dew settling on my corrector plate and finder scope. It got so bad I had to pull out the camper's hair dryer and warm up the glass to burn the dew away. It came back about 10 minutes later and this became the ritual for the rest of the evening. It finally got so bad that the electronics in the scope began to malfunction. The scope started slewing to places I wasn't telling it to go. This was exacerbated by one of the visitors who, un-knowingly, tripped over the power cable, unplugging my scope altogether. I tried to do a quick re-boot but it wasn't going to cooperate any longer. I shut down the scope and took the opportunity to do some PR work for KO. I worked the remaining crowd with saved issues of Sky and Telescope and Astronomy Magazine. I also handed out a couple of dozen KO club brochures and invited them to our Facebook page and club meetings.

The event started winding down by 10:00 and the ranger announced it was time to break down the equipment and wrap up. The rangers were being paid overtime you know! With all of my lunky equipment and the fact that I like to talk, uhmmmm mmmm, I was one of the last to finish packing up. Of course, I had to say my goodbyes to Michael Littleton and Shawn Harrison (SMAS astro photographer extraordinaire). We dropped Charles off at his house and got home around 12:15. In my opinion, this was one of the best outreach events I have had the pleasure of being involved in. What made it better was the fact that the three main astronomy clubs in the area worked together to make it happen. My thanks goes out to SMAS for arranging the outreach, I hope that KO can be a part of the event next year.

Parting Shots

Summer is here and we can see the Milky Way! The Summer triangle is overhead shortly after dark. Look for Deneb the tail star of Cygnus and if it is clear look for the dim nebulosity from NGC 7000, the North American Nebula. This deep sky object is a favorite of astrophotographers, because it is so photogenic. A short exposure with a red sensitive camera will yield the North American continent glowing in hydrogen alpha light. Fred Espenak took a break from eclipse writing and lecturing to grab a 5 min snapshot of NGC 7000 and the adjacent Pelican nebula.



Fred used an 8 in Takahashi astrograph for this single 5 min shot and notes he did no processing other than contrast adjustment

Note: The editor is soliciting astrophotography from local club members for inclusion in the Trapezium. These images will also be used on the ORION webpage, www.orioninc.org. Readers are encouraged to submit images

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.

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