

# 2017 Stellafane Convention

The 82st Convention of Amateur Telescope Makers on Breezy Hill in Springfield, Vermont

43° 16' 41" North Latitude, 72° 31' 10" West Longitude

Thursday, July 20 to Sunday, July 23, 2017

*"For it is true that astronomy, from a popular standpoint, is handicapped by the inability of the average workman to own an expensive astronomical telescope. It is also true that if an amateur starts out to build a telescope just for fun, he will find before his labors are over that he has become seriously interested in the wonderful mechanism of our universe. And finally there is understandably the stimulus of being able to unlock the mysteries of the heavens by a tool fashioned by one's own hand."*

—Russell W. Porter, Founder of Stellafane, March, 1923

## SOME STELLAFANE HISTORY

In 1920, when a decent astronomical telescope was far beyond the average worker's means, Russell W. Porter offered to help a group of Springfield machine tool factory workers build their own. Together, they ground, polished, and figured mirrors, completed their telescopes, and began using them, soon becoming thoroughly captivated by amateur astronomy. By 1923 they had formed a club, the Springfield Telescope Makers, and had built Stellafane, our now legendary Clubhouse. In 1925 their activities drew the attention of Albert Ingalls, an editor at *Scientific American*. He visited the club, and soon began publishing articles by Porter and others about telescope making. This generated interest across the country, and the club decided to invite other amateurs to visit. On July 3, 1926, 29 people came to Breezy Hill, and The Stellafane Convention was established. It's been held every year since, except during the Second World War. The convention grew rapidly, and today around a thousand enthusiastic amateurs make the pilgrimage to Springfield.



## STELLAFANE EAST

In 1986, faced with the loss of access to a neighboring field that had been the Convention's camping area, the STM, with the support of members who mortgaged their homes, purchased a 40-acre farm across the road from the original Stellafane site. This became known as Stellafane East. In 1998, STM member Harty Beardsley donated another adjacent 45 acres, ensuring that the Convention has room for growth.

## THE MCGREGOR OBSERVATORY

The McGregor Observatory at Stellafane East was constructed by the club between 1989 and 1995. It houses a unique instrument—a 13" f/10 Schupmann telescope on a massive computer controlled alt-az mount. For a time it was the largest operating Schupmann in the world. This design, which combines reflective and refractive elements, yields a coma-free and essentially apochromatic image, and is ideal for planetary observation. The Schupmann is operated during Convention. Photo by Dennis di Cicco.



## BE SURE TO VISIT THE ORIGINAL STELLAFANE SITE

Since so much of the convention takes place at Stellafane East, it's all too easy to miss the fun of seeing the original Stellafane Clubhouse and the Porter Turret Telescope on Breezy Hill. Catch the shuttlebus near the food tent or the main camping area, or just take the short walk down the road opposite the entry "fruit stand" where you checked in. The original site, including the Pink Clubhouse and the Porter Turret Telescope, was designated a National Historic Landmark in 1989. It remains the location for the Stellafane Convention's optical and mechanical competitions for amateur-built telescopes.

## THE STELLAFANE CLUBHOUSE



The Clubhouse was designed by Russell Porter and constructed by the members. The pink color may simply have been that of donated paint, but it has been hallowed by long tradition. Many fascinating memorabilia of the club's earlier days can be seen here. Although it's now a tight fit with today's larger membership roster, the Springfield

Telescope Makers still hold some meetings at the Stellafane Clubhouse. Photo is from the 1930s.

## THE PORTER TURRET TELESCOPE

The Porter Turret Telescope was constructed in 1930 by the club. Porter, who had endured more than his share of winter cold on polar expeditions early in his career, invented a design that allowed the observer to remain indoors and comfortable on the coldest winter nights. Extensively renovated in the 1970s and fitted with new optics, the Porter Turret remains an excellent instrument. Photo is from the 1930s.



## THE ANDREW SIMONI OBSERVATORY

Now nearly completed on Breezy Hill, this new building houses a c.1930 spectrohelioscope acquired and donated to the club by member Matt Considine. An invention of George Hale, the spectrohelioscope produces an image of the sun in any desired visual wavelength. We expect to have the spectrohelioscope operational during this Convention. A formal dedication of the Andrew Simoni Observatory will take place during the 2018 convention.

# Schedule of Events and Presentations

**KIDS**=ACTIVITY FOR CHILDREN    **TEENS**=ACTIVITY FOR TEENS    **NTA**=FOR THOSE NEW TO ASTRONOMY    **INT**=INTERMEDIATE    **ADV**=ADVANCED  
**ATM**=AMATEUR TELESCOPE MAKING    **COMP**=TELESCOPE COMPETITION    **ALL**=SUITABLE FOR EVERYONE    **MCE**=MAJOR CONVENTION EVENT

**PLEASE SEE DESCRIPTIONS ON FOLLOWING PAGES FOR MORE INFORMATION**

## THURSDAY, JULY 20, 2017

8:30 am - 5 pm	Hartness House Workshop: The Search For and Science of Exoplanets	Hartness House	Separate Registration and Fees for this Workshop
noon- 4 pm	Large RV Permit Holders must arrive	Entry Gate	Please don't arrive before noon!
3 pm - 10 pm	Early Entry Permit Holders can arrive	Entry Gate	Please don't arrive before 3!
6 pm - 8 pm	Hartness House Workshop: The Search For and Science of Exoplanets	Hartness House	Dinner/Keynote (Separate Registration)

## FRIDAY, JULY 21, 2017

9 am	Registration Gate Opens		
10 am - 6 pm	Shuttle Bus Operates	Bus Stops: Pine Island, Food Tent, Pink Clubhouse	
10 am - 4 pm	<b>TELESCOPE MAKING DEMO</b>	TENT north of T-shirt sales area	Organized by Glenn Jackson <b>ATM</b>
10 am - 10:30 am	Intro & Rough Grinding	Presented by Ray Morits	<b>ATM</b>
10:30 am - 11 am	Fine Grinding	Presented by Rick Hunter	<b>ATM</b>
11 am - 11:30 am	Making Dental Stone Tools	Presented by Junie Esslinger	<b>ATM</b>
11:30 am - noon	Making Pitch Laps	Presented by Ray Morits	<b>ATM</b>
1 pm - 1:45 pm	Polishing & Figuring	Presented by Dave Groski	<b>ATM</b>
2 pm - 4 pm	Testing (Bring your own mirror)	Presented by Dave Kelly	at the MIRROR LAB inside the Flanders Pavilion <b>ATM</b>
11 am - noon	Astronomy Activities for Children: Pocket Solar System	McGregor Observatory Library	Ages 5-12; Limited to first 25 <b>KIDS</b>
11 am - noon	Image Stacking Recipe	Flanders Pavilion	Presented by James Ahola <b>ADV</b>
1 pm - 2 pm	Build Your Own Dome from Scratch	McGregor Observatory Library	Presented by Mark Sproul <b>ADV</b>
1 pm - 5 pm	Stellafane Teen Project (Requires Signup)	Bunkhouse	Presented by Paul Fucile & James Lee <b>TEENS</b>
1 pm - 2 pm	Solar System Walk	Meet at the green shed behind the Clubhouse	<b>NTA</b>
1 pm - 2 pm	Imaging the Great American Solar Eclipse	Flanders Pavilion	Presented by Al Takeda    Talk (Demo at 3 pm) <b>INT</b>
2 pm - 3 pm	International Space Law	Flanders Pavilion	Presented by Stephen Lieber <b>INT</b>
2 pm - 3 pm	Solar Observing Hour	Observing Fields	Please set up your Solar Scope and Share <b>ALL</b>
2 pm - 3 pm	Making Eclipse Viewers	McGregor Observatory Library	Presented by Kris Larsen <b>NTA</b>
3 pm - 4 pm	Astronomy Activities for Children: Eclipse Models	McGregor Observatory Library	Ages 5-12; Limited to first 25 <b>KIDS</b>
3 pm - 4 pm	The James Webb Space Telescope	Flanders Pavilion	Presented by Rich Nugent <b>INT</b>
3 pm - 4 pm	Imaging the Great American Solar Eclipse	Near Domed Observatory	Presented by Al Takeda    Demo (Talk at 1 pm) <b>INT</b>
4 pm - 5 pm	Telescope Making in South Africa	Flanders Pavilion	Presented by Chris Stewart <b>INT</b>
4 pm - 5 pm	Introduction to Stellafane	McGregor Observatory Library	Presented by Kim & Dennis Cassia <b>ALL</b>
5 pm - 8 pm	Hartness-Porter ATM Museum Open	Hartness House	Hosted by Bert Willard, Curator <b>ALL</b>
5 pm - 8 pm	Telescope Competition Registration	Clubhouse	Optical and Mechanical Registration <b>COMP</b>
5 pm - 7:30 pm	Free Time	Relax or Enjoy Dinner	No on-site talks or demos scheduled <b>ALL</b>
6 pm - 7:30 pm	Friday Evening Videos	Flanders Pavilion	Astronomy documentaries for the whole family <b>ALL</b>
7:30 pm -	Friday Evening Informal Talks	Flanders Pavilion	Bruce Beford, MC    Short presentations by Convention Attendees <b>MCE</b>
10 pm	Registration Gate Closes		
10 pm	Telescope Competition Optical Begins	Fields around Clubhouse	<b>COMP</b>

**SATURDAY, JULY 21, 2017**

7 am	Registration Gate Opens		
7 am - noon	Swap Tables	Swap Table Area- North of Main Camping Area	<b>MCE</b>
8 am - 9:30 am	Telescope Competition Registration	Clubhouse Mechanical (and Optical if needed) Registration	<b>COMP</b>
9 am - 5 pm	Shuttle Bus Operates Bus Stops: Pine Island, Food Tent, Pink Clubhouse		
10 am - 4 pm	<b>TELESCOPE MAKING DEMO</b>	TENT North of T-shirt sales area Organized by Glenn Jackson	<b>ATM</b>
10 am - 10:30 am	Intro & Rough Grinding	Presented by Ray Morits	<b>ATM</b>
10:30 am - 11 am	Fine Grinding	Presented by Rick Hunter	<b>ATM</b>
11 am - 11:30 am	Making Dental Stone Tools (part 2)	Presented by Junie Esslinger	<b>ATM</b>
11:30 am - noon	Making Pitch Laps	Presented by Phil Rounseville	<b>ATM</b>
1 pm - 1:45 pm	Polishing & Figuring	Presented by Dave Groski	<b>ATM</b>
2 pm - 4 pm	Dobsonian Basics	Presented by Ken Slater	<b>ATM</b>
10 am - 11 am	Astronomy Activities for Children: Star Clocks, Sun Clocks, and Starfinders	McGregor Library Ages 5-12; Limited to first 25	<b>KIDS</b>
10 am - 11 am	A Dipper Full of Stars	Flanders Pavilion Presented by Richard Sanderson	<b>NTA</b>
10 am - 1 pm	Telescope Competition Mechanical	Fields around Clubhouse	<b>COMP</b>
10 am -	Telescope Field Walk	Meet at Front of Clubhouse Led by Read Predmore	<b>NTA</b>
11 am - noon	Observing the 'Great American Eclipse' Safely	Flanders Pavilion Presented by Mario Motta	<b>NTA</b>
11 am - 12:30 pm	Telescope Making For Teens	Bunkhouse Presented by "Stargazer" Steve Dodson Ages 12-16	<b>TEENS, ATM</b>
11 am - noon	Introduction to Stellafane	McGregor Observatory Library Presented by Kim & Dennis Cassia	<b>ALL</b>
1 pm - 2 pm	Solar System Walk	Meet at the green shed behind the Clubhouse	<b>NTA</b>
1 pm - 2 pm	The Foucault Test: Optical Testing in the Computer Age	Flanders Pavilion Presented by Alan Ward	<b>ADV, ATM</b>
1 pm - 2 pm	Astronomy Activities for Children: The Adventures of BB, the Eclipse Chasing Bunny!	McGregor Library Ages 5-12; Limited to first 25	<b>KIDS</b>
2 pm - 3 pm	Development of the Chief Telescope & Jones-Medial Refractor	Flanders Pavilion Presented by Ed Jones	<b>ADV, ATM</b>
2 pm - 3 pm	Making Solar Filters	McGregor Observatory Library Presented by Al Takeda	<b>INT</b>
2 pm - 3 pm	Solar Observing Hour	Observing Fields Please set up your Solar Scope and Share	<b>ALL</b>
3 pm - 4 pm	Twenty Phenomena of Total Solar Eclipses	McGregor Observatory Library Presented by John O'Neill	<b>INT</b>
3 pm - 4 pm	First Steps In Amateur Exoplanet Observing	Flanders Pavilion Presented by Brad Vietje	<b>ADV</b>
4 pm - 5 pm	How a Telescope Works	McGregor Observatory Library Presented by Dave Prosper (Night Sky Network)	<b>NTA</b>
4 pm - 5:30 pm	Advanced Observing	Flanders Pavilion Presented by Larry Mitchell	<b>ADV</b>
5:30 pm - 7 pm	Free Time	Relax or Enjoy Dinner No on-site talks or demos scheduled	<b>ALL</b>
7 pm -	Saturday Evening Program & Keynote Talk	Amphitheater (Flanders Pavilion if rain) Keynote, Shadowgram, Raffle & Awards	<b>MCE</b>
9 pm - midnight	Observing Olympics Pin Awards	McGregor Observatory Pick up your Observing Olympics Pin (see page 6 for more info)	<b>ALL</b>
10 pm -	Telescope Optical Competition Begins	Fields around Clubhouse Optical Competition (Only if not held Friday)	<b>COMP</b>
10 pm -	Discover and Enjoy the Night Sky	McGregor Observatory Library, regardless of weather Steve Dodson	<b>NTA</b>

**SUNDAY, JULY 22, 2017**

8 am - noon	Convention Cleanup	Please clean up around your campsite Please put trash in the dumpsters	<b>ALL</b>
9 am - noon	Hartness-Porter ATM Museum Open	Hartness House Hosted by Bert Willard, Curator	<b>ALL</b>

**+ EMERGENCIES AND FIRST AID AT CONVENTION +**

**IN CASE OF EMERGENCY PLEASE CONTACT SECURITY (BY THE GATE) OR ANY STM MEMBER.**

If you have a family service radio, you may contact convention staff via channel 7 (please avoid non-emergency use of this channel at convention).

**First aid kits are located in the Bunkhouse, the McGregor Observatory, and the Pink Clubhouse. We have trained medical staff on site.**

# Event and Presentation Details

## ACTIVITIES FOR TEENS & CHILDREN

*These activities are specifically designed for children and teens, but please note that there are many other activities and talks in the sections below that young people will find rewarding.*

### For ages 5-12

There will be four 1-hour astronomy workshops for children; each session has a different activity. These astronomy workshops have been held at the Stellafane convention since 1995. Led by Dr. Kristine Larsen, Professor of Astronomy at Central Connecticut State University and a member of the Springfield Telescope Makers, each of the four 1-hour workshops includes several activities geared for children ages 5 - 12. Younger children are welcome but will need help from a parent.

**Location: McGregor Observatory Library. Due to space limitations, each workshop is limited to 25 children on a first-come basis. Latecomers may be turned away.**

- **POCKET SOLAR SYSTEM**—Friday 11 am to Noon.
- **ECLIPSE MODELS**—Friday 3 pm to 4 pm.
- **STAR CLOCKS, SUN CLOCKS, AND STARFINDERS**—Saturday 10 am to 11 am.
- **ADVENTURES OF BB, THE ECLIPSE-CHASING BUNNY**—Saturday 1 pm to 2 pm.

### For ages 10-21

• **STELLAFANE MARS SCIENCE LABORATORY / CURIOSITY ROVER PROJECT, Friday 1 pm - 5 pm**, in the Bunkhouse (green building north of food tent), presented by Paul Fucile and James Lee.

This year's Stellafane Teen program participants will learn about the science and technology behind the remarkable Mars Science Laboratory mission and Curiosity Rover. Launched on November 26, 2011, and after a voyage of more than 350 million miles, Curiosity arrived above Gale Crater on August 6, 2012. Lowered to the surface using innovative rocket powered sky crane technology, Curiosity has been busy observing Mars climate and geology to determine if life could have ever been supported on our neighboring planet. Covering to date a distance of nearly 10 miles, thousands of images and measurements have been transmitted back to Earth. Curiosity remains in excellent health and continues to operate on an extended scientific mission.

This will be a hands on class working in teams to construct a Curiosity inspired technology that will be demonstrated at the Convention. Attendance will be first-come first-served. If you are 100% sure your Teen will attend the convention and will want to attend this event, then you'll need to get them on the list. Please email us directly at robots@stellafane.org. You will receive a manual reply to let you know your status. When space is filled, we will add the next two names to a waiting list. If space is not filled through preregistration we will accept others on a first-come first served basis at the event, until the class is full.

Note: There will be a lot of specialized instruction so you will need to be on time! Since we will be working with tools and other mechanisms, only closed toe shoes will be allowed.

• **TELESCOPE MAKING FOR TEENS, Saturday 11 am - 12:30 pm**, with "Stargazer Steve" Dodson, at the Bunkhouse. Under Steve's guidance, the group will build an 8-inch Dobsonian Newtonian telescope. Teens aged 12-17 who take part in the entire activity (stay the whole 90 minutes) will receive a special raffle ticket. The winner of the telescope will be drawn at the Saturday night program. You must be present to win and must take the telescope home with you (no shipping is available). Limited to the first 12 participants - so arrive early!

## AMATEUR TELESCOPE MAKING

### Mirror Making Demonstrations

**Friday and Saturday 10 am - 4 pm** (see specific times and topics in schedule on previous pages), tent north of the T-shirt sales area. This is a HANDS-ON mirror making demonstration. Gain first-hand experience working on mirrors at every stage of grinding, polishing and testing. Experienced ATMs will help explain each step of the process and answer any questions you may have. The 24" mirror we have been working on for several years will be available for grinding - please sign the log book when you work on it. **Bring your own mirror for testing between 2 and 4 pm Friday.**

### Dobsonian Basics

**Saturday 2 pm - 4 pm**, tent north of the T-shirt sales area. Ken Slater, creator of

the Stellafane Dobsonian described on the STM website, takes you through the basics of constructing a simple and inexpensive astronomical telescope that performs well and can be made with common hand tools.

### The Foucault Test: Optical Testing in the Computer Age

**1 pm - 2 pm Saturday**, in the Flanders Pavilion, presented by Alan Ward. For over 100 years amateur & professional telescope makers have relied on this simple but very effective device for evaluating the surface quality of lenses and mirrors. Although highly accurate in its ability to reveal minute imperfections, the Foucault Test requires the user to be highly skilled in his/her ability to properly interpret the characteristic 'shadows' it produces. This has always posed a problem in that readings taken by the human eye are subjective and prone to misinterpretation.

For these reasons, the test has been limited in its ability to produce repeatable measurements necessary for the production of high quality large aperture mirrors. Alan Ward will present the workings and advantages of his video / computerized testing system which produces consistent readings regardless of who is conducting the test.

### Development of the Chief Telescope and the Jones-Medial Refractor

**Saturday 2 pm - 3 pm** in the Flanders Pavilion, presented by Ed Jones. Catadioptric Herschelians have a lens or lenses for correcting the tilt aberrations of a tilted primary mirror. The Jones-Herschelian or Chief was accidentally discovered when Ed was looking at correcting lenses for his window (Herschelian) telescope. These correcting lenses can also be used in other telescope designs, which led to Ed's Jones-Medial refractor design, a design with unsurpassed optical performance. Ed hopes to have both his 7-inch-Medial and his 6-inch Chief at his talk.

## FOR THOSE NEW TO ASTRONOMY

### Solar System Walk

**Friday and Saturday, 1 pm - 2 pm**; meet at green shed near the Stellafane Clubhouse. Presented by Keith Goodale on Friday, Bruce Beford on Saturday. To illustrate the vast size of outer space, the Springfield Telescope Makers have constructed a scale model of the solar system, based on the Sun being 12 inches in diameter. At that scale, the Earth would be approximately 1/10 of an inch in diameter and 107 feet from the Sun. Jupiter would be 1.2 inches in diameter and approximately 560 feet from the Sun. The Solar System Walk begins behind the Pink Clubhouse and proceeds down the road going towards the Stellafane camping area. At the appropriate distance from the scale model of the Sun, there are stations with the appropriate planet, built to scale, and a short description of each planet. The Solar System walk can be taken on your own at any time during the convention. However, a guided walk is available at the times mentioned above, when docents will provide additional information about the Solar System Walk and each particular planet. The walk takes approximately 45 minutes, if you walk all the way to the planet Neptune, with a total distance of 3,232 feet or a little over one half mile.

### Making Eclipse Viewers

**Friday 2 pm - 3 pm**, at the McGregor Observatory Library, presented by Kris Larsen. A hands-on introduction to low-tech ways to safely view solar eclipses.

### Introduction to Stellafane

**Friday 4 pm - 5 pm and Saturday 11 am - noon**, at the McGregor Observatory Library, presented by Kim & Dennis Cassia. Are you familiar with these terms: "The Pink," "Tent Talks," or "The Turret"? If not, whether this is your first time attending the Stellafane convention or if you are returning and want to learn more about who the Springfield Telescope Makers are, as well as what is going on during the convention, then this presentation is for you. Topics include, but are not limited to: A short history of Stellafane, a description of our site, including the buildings and landmarks, descriptions of the scheduled talks and activities, services available at Stellafane, local services off site, etc., in addition to answering any questions you may have about the convention.

### Telescope Field Walk

**Saturday 10 am**, meet at front of the Stellafane Clubhouse. Led by REAd Predmore. During the Telescope Field Walk experienced Amateur Telescope Makers will guide small groups through the fields around the Pink Clubhouse, where the telescopes that will be participating in the mechanical competition will be set up. They will describe the various types of optical designs and mounting configurations that will be on display, point out the subtle details that go into award winning telescopes and be available to answer your questions.

## A Dipper Full of Stars

**Saturday 10 am - 11 am**, in the Flanders Pavilion, presented by Richard Sanderson. Using stunning images of constellations, planets, and celestial objects, Richard Sanderson will lead an interpretive tour of the summer nighttime sky. He will describe how the sky appears to move throughout the night and from season to season, and explain the significance of the North Star. He will speculate about life on other worlds and show many of the prominent summer constellations. The presentation is aimed at beginners of all ages.

## Observing the August 21 Eclipse Safely

**Saturday 11 am - noon**, in the Flanders Pavilion, presented by Mario Motta. On August 21 there will be a total solar eclipse that will cross the USA diagonally from Oregon to South Carolina. It is expected that millions of Americans as well as foreign visitors will come to see this spectacular event. Even for those not in the central 71 mile wide totality zone, the entire country will see at least a partial solar eclipse. Mario Motta will describe the particulars of this eclipse, including the best viewing spots predicted based on topography, weather forecasts, and local circumstances, and how to get the most out of your eclipse experience. He will also describe where 140 members of the ATMOb will be located during totality. Finally important eye safety issues and how to observe and photograph safely will be discussed.

## How Telescopes Work

**Saturday 4 pm - 5 pm**, McGregor Observatory Library, Presented by Dave Prosper (Night Sky Network). Dave will discuss how telescopes work in this engaging discussion for the curious. Find out how both refracting and reflecting telescopes use glass lenses and mirrors to allow us to peer to the edges of space - and check out hands-on demonstrations of how both types of telescopes work!

## Discover and Enjoy the Night Sky

**Saturday 10 pm** at the McGregor Observatory Library, Presented by Steve Dodson. Using free Stellarium software, Steve will introduce beginners to observing the sky, including identifying the constellations, the Milky Way, and planets. Weather permitting we shall work outdoors after a brief, fun introduction in the Library.

## INTERMEDIATE LEVEL ASTRONOMY

### Imaging the Great American Solar Eclipse

**Talk Friday 1 pm - 2 pm**, in the Flanders Pavilion, presented by Al Takeda.

**Demo Friday 3 pm - 4 pm**, near domed observatory, presented by Al Takeda

Learn how to safely image a total solar eclipse. Topics will include type of camera, telescopes and camera lenses, solar filters, camera platforms and sage advice from an eclipse chaser.

### International Space Law

**Friday 2 pm - 3 pm**, in the Flanders Pavilion. presented by Stephen Lieber. The recent growth in commercial launch companies has brought about new interest in space law. There are now a large number of articles and texts that cover this topic. This talk will focus on the five UN treaties that provide the foundation to space law. The presentation will help people to understand the basic concepts and their background.

### The James Webb Space Telescope

**Friday 3 pm - 4 pm**, in the Flanders Pavilion, presented by Rich Nugent. In October 2018 the James Webb Space Telescope will leave Earth and begin its 5-10+ year mission to explore the infrared universe. The telescope will allow scientists to study not only stars and galaxies near the edge of the observable universe, but also objects in our solar system, exoplanets in the Milky Way, and, because of the telescope's ability to peer through dust, stellar nurseries. This presentation will not only review the history of space observatories, it will focus on the technologies, orbit, and possible visibility-through backyard telescopes-of the James Webb Space Telescope.

### Telescope Making in South Africa

**Friday 4 pm - 5 pm**, in the Flanders Pavilion, presented by Chris Stewart. An overview of a small group's products and techniques. Some interesting developments are highlighted, following over 25 years of experimenting with alternative approaches, thoughtful repurposing, innovation and lateral thinking. Partly driven by the need to produce viable and effective instruments at low cost, various aspects are quite novel, globally applicable and worth adopting where appropriate.

Chris Stewart is an amateur astronomer and telescope maker who has been interested in light, optics and the sky literally since he was born. Through the telescope making class he started and has run for over 26 years, he encourages people to build their own unique instruments from whatever junk comes to hand. He is co-initiator and

co-organizer of the annual ScopeX telescope and astronomy exhibition, which has been successfully held for the last 15 years.

## Making Solar Filters

**Saturday 2 pm - 3 pm**, in the McGregor Observatory Library, presented by Al Takeda. Al will demonstrate how you can easily make your own solar filter holders for your telescope, camera lens, and binoculars.

## Twenty Phenomena of Total Solar Eclipses

**Saturday 3 pm - 4 pm**, in the McGregor Observatory Library, presented by John O'Neill. A Total Solar Eclipse has been described as being one of the most awe-inspiring events in all of nature. In his talk, veteran eclipse chaser John O'Neill investigates some of the obvious and not so obvious phenomena associated with total solar eclipses. John, with ten total solar eclipses behind him, will also convey a bit of the magic associated with this most spectacular event and hopes to inspire everyone to be in the umbral shadow of the moon this August.

## ADVANCED LEVEL ASTRONOMY

### Image Stacking Recipe

**Friday 11 am - noon** in the Flanders Pavilion, presented by James Ahola. Learn how to use a planetary camera and image stacking to create composite, sharp photos on laptops and PCs. The speaker will use Jupiter as the subject and use RegiStax 6.1 software. James will discuss how to avoid pitfalls in focusing, use of a flip mirror, mount stability, dealing with atmospheric distortion, image drift, and offer many best practices.

### Build Your Own Dome from Scratch

**Friday 1 pm - 2 pm**, in the McGregor Observatory Library, presented by Mark Sproul. Astronomy domes are expensive. You can easily build one out of materials from your local home improvement store. It takes time and dedication, but not much more than grinding a mirror.

### The Foucault Test: Optical Testing in the Computer Age

**Saturday 1 pm - 2 pm**, in the Flanders Pavilion, presented by Alan Ward. For over 100 years amateur & professional telescope makers have relied on this simple but very effective device for evaluating the surface quality of lenses and mirrors. Although highly accurate in its ability to reveal minute imperfections, the Foucault Test requires the user be highly skilled in his/her ability to properly interpret the characteristic 'shadows' it produces. This has always posed a problem in that readings taken by the human eye are subjective and prone to misinterpretation.

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### Development of the Chief Telescope & the Jones-Medial Refractor

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### First Steps In Amateur Exoplanet Observing

**Saturday 3 pm - 4 pm**, in the Flanders Pavilion presented by Brad Vietje. Exoplanets are all the rage these days, with new discoveries and confirmations announced weekly. Can amateur astronomers make contributions to exoplanet science? The answer is YES! We'll explore the equipment needed, observational techniques, and analysis process needed to contribute your own original data, and help you shorten the learning curve for this exciting work.

### Advanced Observing

**Saturday 4 pm - 5:30 pm**, in the Flanders Pavilion, presented by Larry Mitchell. Larry Mitchell's talk will cover this year's observing program: "Visual Observing - The Hidden Gems of Stellafane - 2017".

Larry will discuss in some detail what these objects are, why they are there, and what they are doing. His emphasis will be on visual observing and what these magnificent objects really look like through a telescope, rather than from a camera image.



## OTHER PROGRAMS SUITABLE FOR EVERYONE

### Solar Observing

**2-3 pm Friday and Saturday**, in the observing fields near the Pink Clubhouse and the McGregor Observatory. All attendees with solar filters or projection set-ups are encouraged to share the sun with other attendees. The McGregor will be set up for solar observing as well.

### The Porter/Hartness Museum of Amateur Telescope Making

**Open Friday from 5 pm to 8 pm and Sunday from 9 am to noon.** The Porter/Hartness Museum of Amateur Telescope Making is located in the underground rooms at the Hartness House Inn in Springfield. Admission is free. Follow the signs in town to the Hartness House at 30 Orchard Street. Many of the items on display are by or about Russell W. Porter, including the Springfield and Garden telescopes. His artwork traces his arctic exploration years to his work on the 200" Palomar telescope, culminating in his famous cutaway drawings. Other items of interest include early telescopes and mirror making parts. The Hartness turret telescope, with its 10" Brashear objective, may also be inspected.

### Friday Evening Videos

**Friday at 6 to 7:30 pm** in the Flanders Pavilion. Short astronomy documentaries for the whole family.

## FRIDAY EVENING INFORMAL TALKS

**7:30 pm Friday evening** in the Flanders Pavilion. Bruce Beford of the Springfield Telescope Makers will conduct the informal talks. If you wish to contribute a short talk during this session, please register online. Talks are limited to 10 minutes and 20 slides. The time limit will be strictly enforced! A 35-mm slide projector, overhead projector, VCR, and a digital projector will be available for your use. Note that if you plan to use the digital projector, you must bring your own laptop.

## STELLAFANE OBSERVING OLYMPICS

Pick up your list of 29 objects at the McGregor Observatory, the Clubhouse, or the Flanders Pavilion. These objects should be observable with any 4" or larger instrument on a clear night. The first 100 people to observe 15 of them will receive a nice pin—stop by the table near the McGregor Observatory Saturday from 9 pm to midnight to claim yours.

## SATURDAY SWAP TABLES

**7 am to noon Saturday.** The Swap Tables (located at the northeast edge of the main camping/parking area) are provided to give amateurs an opportunity to trade, buy or sell their surplus astronomical and telescope related items. (**Important: see Swap Table Policy, Page 7**)

## THE STELLAFANE RAFFLE

The famous Stellafane Raffle offers spectacular donated prizes to lucky winners, typically including thousands of dollars worth of optical gear and many desirable astronomy and telescope-making books. Your odds of winning are really good. The money raised goes to support next year's convention and to make capital improvements to the convention site. Tickets are available next to the T-shirt table (across from the food tent) and from designated STM members roaming the site. We appreciate the generosity of our donors, and your support by purchasing raffle tickets. Thank you all very much!

## SATURDAY KEYNOTE PROGRAM

**7 pm Saturday**, in the hillside amphitheater. (In case of inclement weather, the program will be held inside the Flanders Pavilion). John Gallagher, of the Springfield Telescope Makers, will be master of ceremonies.

- Greetings, announcements, children's raffle and raffle drawing
- Stellafane Shadowgram: Messier Mania, Aperture Fever, and Eclipse-on-the-Brain: A Guide to Common Astronomical Ailments, by Kristine Larsen, PhD
- Presentation of Telescope Competition Awards
- Stellafane Keynote Talk by Nagin Cox, Systems Engineer, Mars Science Laboratory Operations Team.

## SUNDAY MORNING CLEANUP

**8 am- 12 noon Sunday**, please clean up around your campsite and parking area. All trash should be deposited in one of the large dumpsters by the Food Tent or Exit Lane. Please make sure there are no obstacles to grass mowing in the fields—any rocks, stakes, or other hazards should be returned to the woods or taken to the dumpsters. If you would like to take down rebar and string, we would appreciate that. Pile rebar and string on the side of the road, where it will be easy for us to find and pick up. Thx ans!

# Advice, Guidelines, and Policies

*To ensure your enjoyment and safety at The Stellafane Convention, please read this section carefully.*

### Emergencies and First Aid

In case of emergency please contact Security (by the gate) or any STM member. If you have a family service radio, you may contact convention staff via channel 7 (please avoid non-emergency use of this channel at convention). **First aid kits are located in the Bunkhouse, the McGregor Observatory, and the Pink Clubhouse.** We have trained medical staff on site.

### Where to Set Up your Telescope

We strongly recommend that you set up your telescope in the fields around the Pink Clubhouse or in the field to the south of the McGregor Observatory. Your telescope does not have to be entered in the competition, and **all telescopes are welcome, commercial or homemade.** You may not set up your telescope in a designated parking area. The darkest conditions are available near the Pink Clubhouse, as far south as possible. Please consult the site map as well as the signs posted throughout the convention site for the designated parking locations. Note: You can drive up to the Pink Clubhouse area in daylight hours to drop off and pick up your telescope but there is no extended parking as space is extremely limited. Please move your car to a designated parking area at Stellafane East as soon as possible.

### Lighting Policy

**Stellafane does not allow open white lights** on clear nights, except for one half hour after the Friday and Saturday evening talks end. Vehicular travel after this time is strongly discouraged and is done only at the risk of the operator. Red filter paper for flashlights is available at the Pink Clubhouse and at the Bunkhouse. We thank you for your cooperation.

### Laser Pointer Policy

Lasers pointers can be a helpful tools for astronomers, but can be dangerous if not properly used. Direct viewing of a laser-pointer beam, even briefly and at a distance of a kilometer or two, has the potential to cause temporary blindness – the same effect you get right after a flash photo is taken – or afterimages. These effects last anywhere from seconds to minutes. Glare, which is a reduction or loss of central vision, lasts only as long as exposure to the beam. All these effects could be disastrous if they struck a person operating machinery, driving a car, or flying a plane.

To help use your laser tools safely, the Springfield Telescope Makers, Inc. has adopted these recommendations as policy. These are based on the suggestions from the Laser Institute of America and published in May 2005 by *Sky and Telescope*.

- **Laser pointers are designed to illuminate inanimate objects. Never shine a laser pointer toward any person, aircraft, or other vehicle.**
- **Never look directly into a beam of a laser pointer of any type.**
- **Do not allow children to use a laser pointer unsupervised. Laser pointers are not toys.**
- **If your telescope is equipped with a laser pointer that has a "constant on" setting, do not leave the instrument unattended with the laser switched on.**
- **Do not aim a laser pointer towards mirrors or other shiny surfaces. The reflected beam may inadvertently strike someone in the eye.**
- **Do not aim a laser pointer skyward if you hear or see an aircraft of any kind flying overhead.**

- **Laser pointers shall not be used in the Clubhouse observing fields.**
- **Additional laser use restrictions may be put into place by the Springfield Telescope Makers, Inc. as situations arise.**
- **The convention staff, at its sole discretion, may terminate or prohibit use of lasers by any person on Springfield Telescope Makers, Inc. property.**

### Swap Table Policy

For the sake of historical continuity, to preserve the uniqueness of the Stellafane convention and to encourage conventioners to build their own instruments, the Springfield Telescope Makers, Inc. do not allow commercial sales, of any kind, at the Stellafane convention. All swap table sales must comply, in concept, with the above objective but are also specifically subject to the following criteria:

- **Only surplus astronomical, telescope and telescope making related items may be sold.**
- **Each person will be allowed 16 square feet of table or ground space.**
- **Items which have the appearance of being specifically purchased or manufactured for sale at the Swap Tables may not be sold.**
- **All sales must take place within the designated Swap Table area only between 7 am and 12 noon, the Saturday of the Stellafane convention.**

The Springfield Telescope Makers, Inc. may choose to grant a limited exception to the above policies to astronomy related organizations for their fundraising. Any request for an exemption must be made, in writing, at least one month prior to the convention. If granted, the President of the Springfield Telescope Makers, Inc. will notify the requesting organization in writing.

Any member of the Springfield Telescope Makers, Inc. has the authority to determine whether a party is in compliance with the established regulations. Any person who is found to be in violation of the stated policies will be required to comply. Failing compliance, the offending party will be asked to leave the convention and may be escorted from the premises by convention security.

The Springfield Telescope Makers, Inc. encourages those with questions regarding this policy to contact the Club via the Stellafane web page ([www.stellafane.org](http://www.stellafane.org)). During the convention, any questions regarding this policy, the appropriateness of items being displayed, or any information being disseminated, should be directed to a member of the Springfield Telescope Makers, Inc.

### Food Service

The main food service tent is located just to the south of the Bunkhouse. Note: This food service tent is open all night if you need a snack and/or coffee during your observing session.

Food service will be available for Thursday dinner and for Friday breakfast if you are using our new Early Entry Permit option.

### Shuttle Bus

The Shuttle Bus makes two stops in Stellafane East, one by the Food Tent and one by the main Camping Area (See Stellafane East Site Map). It makes one stop on Breezy Hill near the Clubhouse.

### Family Service Radios

The convention staff uses family service radio channel 7 to facilitate communications during the convention. **Please avoid use of channel 7 when you are at the convention site, except in emergencies.**

### 2 Meter Repeater: W1STM

There is usually a 2 meter Ham Radio repeater, call sign W1STM, operating at 14,527 MHz on site.

### Cell Phone Service

Be advised that cell phone service is "spotty" in hilly southern Vermont. Good coverage is generally available near interstates and town centers, but gets less reliable as you move off into the countryside. At Stellafane, you might have to move about the site to get a connection, but most carriers do have a useable signal at least in some (higher) areas of our site. If you can see Mt. Ascutney to the north, you will likely have service.

### Campfires Not Allowed

Open campfires are not permitted. If you are camping and/or cooking on the Stellafane site, you must use approved cooking equipment such as a portable grill or camp

stove. Do not cut any trees. Also, always be careful about disposal of cigarette butts.

### Golf Carts and ATVs

No personal golf carts or ATVs will be allowed at convention. Only golf carts and ATVs being used for official convention purposes will be allowed.

### Generators and Recharging

**Use of generators is discouraged at Convention.** Properly muffled RV generators and quiet portable generators of 1,000 watts or less may be used between the hours of 9 am to 6 pm in the camping areas only. Generators may never be used in the observing fields, after dark, or at other locations at Stellafane. The generator must not create a hazard. Any complaint of unsafe operation or excessive noise will immediately cause the generator to be banned from operation.

There are outlets along the walls of both the McGregor observatory and the Flanders Pavilion that may be used for recharging batteries and portable devices. However, the Springfield Telescope Makers accept no responsibility for unattended property.

### Pet Policy

The Springfield Telescope Makers, Inc. welcomes you to bring your pets to the Stellafane convention, provided the following rules are followed:

- **Pets must be confined, leashed or otherwise under the physical control of a person at all times. Leashes may not exceed 6 feet in length. Pets that are tethered at the campsite cannot be left unattended for more than 30 minutes. Pets may not be tied to trees, bushes, tables or shelter facilities, even when the owners are present.**
- **Pets must be well-behaved at all times. Pets must be confined in the owner's camping unit during quiet hours (11 pm - 8 am).**
- **Pet owners are required to pick up after their pets and properly dispose of all pet droppings in trash receptacles.**
- **Any pet that is noisy, dangerous, intimidating or destructive will not be allowed to remain at the Convention.**

Failure to comply with the above rules will result in you and your pet being asked to leave the convention; you may be escorted from the premises by convention security. The Springfield Telescope Makers, Inc. thanks you in advance for helping to make the Stellafane convention more enjoyable for everyone. Enjoy the convention!

### Stellafane Endowment Fund

The Endowment Fund is intended to ensure that the birthplace of amateur telescope making is preserved for future generations by providing adequate funding to cover the basic costs of maintaining the Stellafane Clubhouse, the Porter and McGregor observatories, and other existing and future buildings and properties owned by the Springfield Telescope Makers, Inc. If you are interested in supporting the endowment fund you may do so by mail or online with our Donation Form at [stellafane.org/help/donate-form.html](http://stellafane.org/help/donate-form.html). Thanks!

### Lost and Found

The lost and found is located at the t-shirt table across from the food tent.

## Stellafane Website

### We Want Your Photos and Videos!

The Stellafane website (<http://Stellafane.org>) offers extensive how-to information and links on telescope making, and detailed Stellafane history. You'll also find accounts and photos from past conventions there, and of course we will post many photos from this convention in the weeks following the event, as well as the list of competition winners.

**Your submissions are very welcome—please send your photos (or links to those you've uploaded to sharing sites) to [webmaster@stellafane.org](mailto:webmaster@stellafane.org). Videos are welcomed as well, but please don't send them directly; use a sharing service like YouTube or Vimeo and send us a link.**

# The Telescope Competition

## The Heart and Soul of Stellafane

*If you have built a telescope or a special gadget, or restored a historical instrument, we strongly encourage you to enter it in the competition!*

Note: You can drive up to the Pink Clubhouse area during daylight hours Friday or Saturday to drop off and pick up your telescope, but there is no extended parking as space is extremely limited. Please move your car to a designated parking area at Stellafane East as soon as possible.

Telescopes may be entered in either competition or both competitions if you wish.

### First Homemade Telescope Certificate

In order to further encourage and recognize telescope building, we are offering a certificate of recognition for first time telescope makers. You do not have to enter the competition if you do not want to, but you must bring your first homemade telescope to Breezy Hill and display it. Please register ahead of time online and check in at the Pink Clubhouse. You will be awarded a certificate recognizing your efforts in building and displaying your first homemade telescope at Stellafane, and your name will be shown on the screen at the Saturday night program.

### New: Master Class

In order to encourage first-time entrants to enter their scopes without feeling that they must be ready to compete with previous first-place winners and optical professionals who enter their amateur work, we have established a separate competition class for entrants with a track record of high achievement. Rules are available at the registration table.

### Optical Competition

Registration for the optical competition will take place on Friday from 5 pm to 8 pm in the Pink Clubhouse. Keep in mind that if you have registered your instrument online, you must still check in at the Clubhouse Friday from 5 pm to 8 pm or your telescope will not be judged! Set up your scope on Breezy Hill before you check in and inform the judges of the location of your scope. If the position of your scope changes it is your responsibility to report its new location to the judges in the Pink Clubhouse. Failure to do so will result in your scope not being judged!

All telescopes in the competition must be fitted with an eyepiece with a focal length, in millimeters, approximately equal to the focal ratio of the instrument. Your instrument must be properly collimated before judging begins at 10 pm. Also, be prepared to point your scope at the star Altair when the judges arrive. Please note that the judges may inspect your telescope more than once. Therefore, you should remain on the field with your instrument until the preliminary results are announced via loudspeaker. Note that judging can last until 2 or 3 am!

If the weather permits the completion of the judging on Friday night, the optical judging will be closed for the duration of the convention and optical awards will be presented during the Saturday evening program. If the optical judging cannot be completed Friday night, it will be continued on Saturday night, weather permitting. Additional optical entries may be accepted on Saturday, at the discretion of the judges. To inquire about this possibility, please ask a judging representative in the Pink Clubhouse from 5 pm to 8 pm on Friday or from 8 am to 9:30 am on Saturday.

In the event that the competition will have to be continued Saturday, some telescopes that were judged on Friday might need to be judged again. Please inquire with the judges if your scope will need to be available again on Saturday. If the optical judging cannot be completed by the end of Saturday night, a partial field of optical excellence awards may be given, at the discretion of the judges.

Please note that it is the intention of the Stellafane judging committee to have the optical competition completed Friday night, weather permitting. Therefore, to ensure that your instrument is judged you must be registered for the Friday night judging.

Clarification on "small" vs. "large" Newtonians: The small category includes any mirror of 12.5 inches optical diameter or less; the "large" category is for mirrors that are greater than 12.5 inches in diameter.

2017 Optical Judging Chairman: Rick Hunter

### Mechanical Competition

Registration for the mechanical competition will be between 8 am and 9:30 am Saturday morning in the Pink Clubhouse. Keep in mind that if you have registered your instrument online, you must still check in at the Clubhouse Saturday morning or your telescope will not be judged. The telescope judging for mechanical excellence will begin at 10 am so please register your telescope as early as possible.

Only telescopes that are operative both mechanically and optically will be accepted in the mechanical competition. The judges will visit the telescopes in several small groups. You must attend your telescope until the end of the competition is announced via the loudspeaker. Be prepared to describe any special construction techniques and components to the judges. Awards for mechanical design, craftsmanship, special gadgets, restoration of historical instruments and junior telescopes, made by persons less than 16 years of age, will be awarded at the Saturday evening talks.

Mechanical design vs. craftsmanship: the mechanical award is for the design of the instrument, how unique it is compared with prior art, and its effectiveness in providing a useful instrument, while the craftsmanship award is for execution (how well the design was translated into a workable and functional instrument).

2017 Mechanical Judging Chairman: Chris Houghton

### Last Year's Competition Winners

#### OPTICAL

- First Place Small Optics (Tie):** Read Predmore, South Deerfield, MA, 8-inch f/6 Newt-Dob  
**First Place Small Optics (Tie)** Patrick Dodson, Sudbury, Ontario, Canada, 8-inch f/6 Newt/Dob,  
First Place Small Optics (Tie)  
**Second Place Small Optical:** Charles Stevenson, Rutland, MA, 8-inch f/5.7 Newt-Dob  
**First Place Compound Optical Award,** Alan Ward, Sudbury, Ontario, Canada, 4-inch f/12  
Achromatic Refractor/AltAz

#### MECHANICAL/CRAFTSMANSHIP

- First Place Mechanical Design; First Place Craftsmanship:** Alan Ward, Sudbury, Ontario, Canada,  
4-inch f/12 Achromatic Refractor/AltAz  
**Second Place Mechanical Design:** Jeffrey Inman, Zion, IL, 8-inch f/12 Hybrid Equatorial Mount  
**Second Place Craftsmanship; 3rd Place Mechanical Design** Larry Shaper, Thetford, VT,  
10-inch f/6 Newt/Dob, ultra thin mirror weighs 2 pounds  
**Third Place Craftsmanship** Jeffrey S. Inman, Zion, IL, 16-inch f4.5 Newt-Dob  
**Honorable Mention Craftsmanship** Read Predmore, South Deerfield, MA, 8-inch f/6 Newt-Dob  
**Honorable Mention Mechanical Design; Honorable Mention Craftsmanship:**  
Peter Pekurar, Kitchener, Ontario, Canada, 12.5-inch f/2.8 Newt-Dob

#### MASTER CLASS

- First Place Compound Optical; First Place Mechanical Design; First Place Craftsmanship:**  
Allen Hall and Dick Parker, Ellington and Tolland, CT, Two Identical 6-inch f/15 Alvan Clark  
Reproduction Refractors  
**Second Place Compound Optics:** Steven Benson, Walpole, NH, 4-inch f/10 Refractor/AltAz, CaF2/  
BAK4 Doublet

#### SPECIAL AWARDS

- First Place Special Award:** Jack Gelfand, Baldwinsville, NY, Microwave Radiometer  
Used to detect cosmic microwave background from the Big Bang  
**Second Place Special Award:** Ken Spencer, Seacliff, NY, 1-inch f/39 Solar Reproduction  
**Antique Restoration Award:** Tom M. Kiehl, Canton, OH, 6-inch f/10 Antique by L.E. Brower  
**Innovative Component Award:** Steven Bellavia, Mattituck, NY, Differential Thread Helical Focuser

#### JUNIOR

- First Place Junior:** Corrine Wilklow, Fairfield, CT, 9.5-inch f/5.6 Newt/Dob (first scope)