

Reflector

Published by the Astronomical League

Vol. 65, No. 2

March 2013

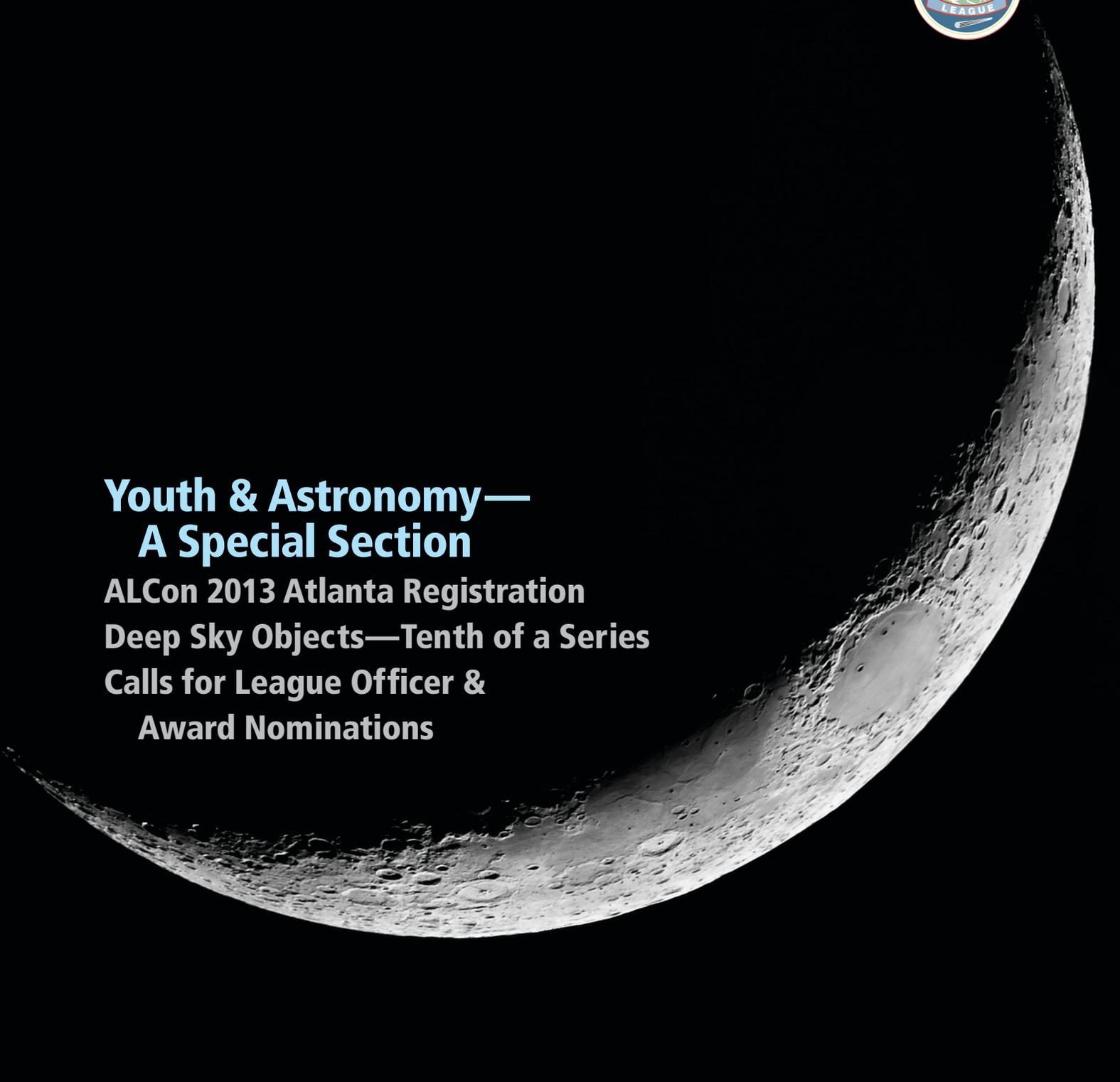


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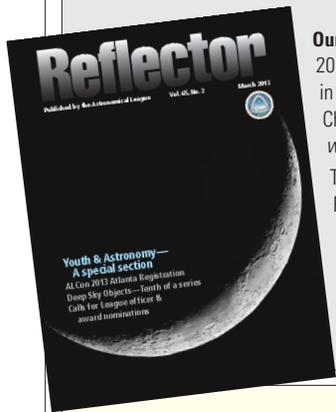
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Our cover: Contributor **Nathan Wright** took this image of the Moon on April 24, 2012, near Harvard, Illinois, with his 10-inch Dobsonian with a Canon digital camera in video mode processed in RegiStax 6. Nathan is 17 years old, hails from the Chicago area, and is a member of the Northwest Suburban Astronomers, www.nsaclub.org. To see more of Nathan's astrophotography, please see page 13.

To our contributors: The copy and photo deadline for the June 2013 issue is April 15. Please send your stories and photos to our magazine Editor, Ron Kramer (editor@astroleague.org), by then.

The Astronomical League invites your comments regarding the magazine. How can we improve it and make it a more valuable source for you, our members? Please respond to the email address above.

Reflector

The Astronomical League Magazine

Vol. 65, No. 2 • ISSN: 0034-2963 • March 2013

A FEDERATION OF ASTRONOMICAL SOCIETIES
A NON-PROFIT ORGANIZATION

- To promote the science of astronomy
- By fostering astronomical education,
 - By providing incentives for astronomical, observation and research, and
 - By assisting communication among amateur astronomical societies.

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Background: NASA/ESA/The Hubble Heritage Team (STScI/AURA)

This Issue Devoted to Youth in Astronomy

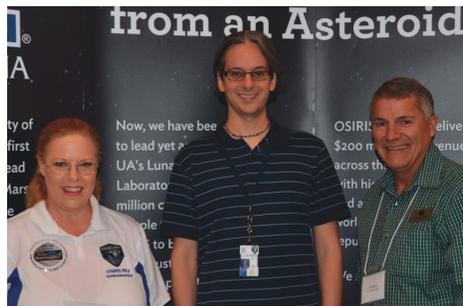
This issue of *Reflector* is primarily concerned with the goal of getting more youth interested in astronomy and in the Astronomical League. I believe most of our current membership realizes that we need to prepare the next generation to take up astronomy's torch. How do we start this process?

There are several articles in this issue that provide more detailed ideas on how we might achieve our goal. I would just like to propose a couple of broad strategies:

Reach out to young people when we see them at our society meetings and outreach activities and make them feel welcome.

Connect with young people "where they are," not necessarily where we think they are. An example of this is providing a cell phone adaptor for a telescope when doing outreach. This allows younger people to take their own photos of the moon, planets, etc., and immediately email them to friends and family. At last year's Venus transit and other recent outreach events, I observed positive examples of the pride young visitors displayed while becoming introduced to astronomy through this activity.

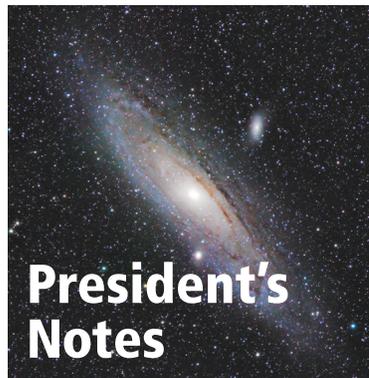
Please continue to give us your comments on this valuable topic.



Left to right: Dolores Hill, coordinator of the AL/UA/NASA Target NEO Observing program; Carl Hergenrother, designer of the Target NEO lists; and Carroll Iorg at the 2012 Arizona Science and Astronomy Expo. Dolores and Carl are affiliated with the University of Arizona.



Carroll Iorg and VLA Education Officer Judy Stanley.



Shutdown of ISS/AT Facility Is Complete

In early November, League Sales Manager Randy Thompson, former League Secretary Gary Pittman, and I made the trip to New Mexico to complete the removal and shutdown of the International Space Station/Amateur Telescope

equipment. The telescope and related equipment were brought back to the national office in Kansas City for evaluation and sale.

In addition, the League was represented at the first annual Arizona Science and Astronomy Expo in Tucson. It was great to meet many longtime supporters of the League as well as many new friends.

It was a real honor for us to visit the Very Large Array radio astronomy facility near Socorro, New Mexico and be given a tour of the control room. Thanks to the personnel for their most gracious hospitality.

New Reflector Editor Effective with This Issue

Andy Oliver, pictured, has resigned as *Reflector* editor. Thanks, Andy, for your outstanding work as *Reflector* editor for the past four years. I wish Andy well in his future pursuits.



With this issue we are introducing Ron Kramer as our new editor. He has functioned as an assistant editor of the magazine for the past several issues. Welcome aboard, Ron! (See page 17.)

New iPhone App from NASA

NASA has just announced a new free iPhone app available for your astronomical pleasure.

Continued on page 6



Left to right: Randy Thompson of League Sales, Gary Pittman of the Astronomical Society of Kansas City, Array Operator Larry Brothers, and Carroll Iorg.

JUDY STANLEY
TITLE PHOTOGRAPH: COMPLIMENTS OF TOM S. MARTINEZ, ASKC

Where Have All the Young People Gone?

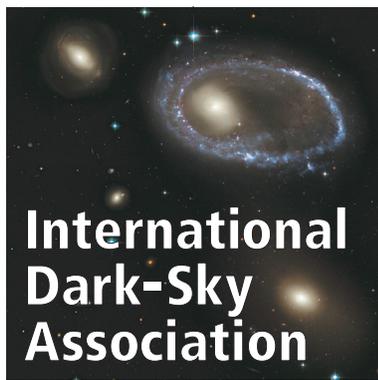
When I was in college in the early 1960s, one of the most popular songs was "Where Have All the Flowers Gone?" sung by Peter, Paul, and Mary. The song was originally composed by Pete Seeger in 1955 and has been recorded by many groups

over the years. It has a beautiful, haunting melody and has been adapted for some-times-contentious political movements in this country. In some quarters its message and frame of reference are controversial. Nevertheless, we can paraphrase it to ask a serious question about amateur astronomy. Where are the young amateur astronomers? Why aren't more young people coming into our beloved hobby and avocation?

I have no statistics at my fingertips, but I believe that amateur astronomers are an aging group, with not enough young people entering the hobby to keep its numbers strong and replace those older individuals who are gradually passing away. Writers and editors for major amateur astronomy publications have told me informally that their readership is getting older, their subscription totals are falling, and their advertising revenue is decreasing. I have also informally heard that attendance at amateur astronomy gatherings is, in general, past its peak, and the average age of attendees is slowly increasing. I cannot verify these assertions, but they somewhat parallel my anecdotal experience. Falling subscriptions and advertising revenue have many causes, two of which are the extraordinary expansion of electronic media in recent years and our poor economy.

I don't know why there are not more young people interested in amateur astronomy and science in general, though I have some educated guesses. Smartphones and tablets are ever more sophisticated and have had a noticeable, not necessarily favorable, impact on the social skills of the younger generation as well as us older, more mature individuals. These devices and their related electronic games probably soak up time that might otherwise be devoted to more traditional hobbies and outdoor activities.

One factor that I believe is often overlooked is the ongoing environmental desensitization that happens to all generations. As the country becomes more populated, open spaces decrease, and there is less of a



connection with the outdoors as a matter of recreation (hiking, backpacking, hunting, and fishing) or as a matter of work (family farm). There is less awareness of what was once there. Looking at the sky and appreciating the beauty of the starry firmament is no longer an everyday experience for

most adults, young or old.

I believe light pollution partly explains the seeming dearth of young people becoming amateur astronomers. They are distracted by the electronic environment permeating our society, and when they venture out at night, they are confronted with a pallid orange sky devoid of stars. Viewing a star-filled sky or the Milky Way seems just as remote as seeing a group of humpback whales. Yet, a star-filled sky was the experience of most of the older amateur astronomers who grew up in the 1950s and 1960s.

When I was thirteen in 1956, I saved up \$50 from mowing lawns and other chores around the neighborhood to buy a 4-inch Criterion telescope. I spent many a happy hour observing with it from our backyard in Arlington Heights, Illinois, in the Chicago suburbs. I was more aggravated by the elm trees in our yard blocking my view of the sky than I was by light pollution. I never heard of that term and can remember easily seeing the Milky Way going through Sagittarius. My southern sky was blocked only by our neighbor's house, as the elm trees were on the northern and eastern ends of our lots. Most sadly, the elm trees and the dark skies are long gone from the suburbs of Chicago. Arlington Heights is a wonderful city with plenty of trees that have replaced the lost elm trees, and modern forestry science may yet come up with a cure for Dutch elm disease so that elm trees may once again grace American towns. Dark skies could once again come to the suburbs if we work hard at it, but it won't be easy.

If you are a young person living in a busy suburban area or in a large city spending a great deal of time at your computer or with your tablet or smartphone texting with friends, playing games, and doing school assignments, you won't have a lot of free time to actually observe the sky. The sky you can see is blocked by buildings and has few if any visible stars. The view of the sky and the universe as presented by your

Continued on next page

Reflector

QUARTERLY PUBLICATION OF THE ASTRONOMICAL LEAGUE

Issued by the Astronomical League in March, June, September, and December, the *Reflector* is mailed directly to each individual member of its affiliate societies and to members-at-large as a benefit of League membership. Individual copies of the *Reflector* are available at \$2.00 each or as an \$8.00 per year subscription through the League national office. ISSN: 0034-2963.

Reflector and Club Roster Deadlines

December Issue October 15th
March Issue January 15th
June Issue April 15th
September Issue July 15th

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BRINGING ASTRONOMY TO THE PEOPLE



ASTRONOMY DAY

April 20, 2013 & Oct. 12, 2013

The latest tips and information, as well as the Astronomy Day handbook and entry form for the Astronomy Day Award, are available on the League's Astronomy Day website.

Here's your chance to spotlight amateur astronomy while showing off your club!

<p>Displays</p> <ul style="list-style-type: none"> • Club information • Astrophotos • Light pollution • Tonight's sky <p>Demonstrations</p> <ul style="list-style-type: none"> • Telescope varieties • Telescope basics • How to find objects 	<p>Discussions</p> <ul style="list-style-type: none"> • Relative distances • Moon landing hoax • Life elsewhere • Black Holes <p>Telescope Views</p> <ul style="list-style-type: none"> • Solar filtered • Moon • Daytime Venus • Daytime Jupiter • Landmarks
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President's Notes | Continued from page 4

Space Place Prime, the popular NASA iPad magazine, is now available for iPhone. This exciting app gathers some of the best and most recent web offerings from NASA. It taps engrossing articles from The Space Place website, enlightening NASA videos, and daily images such as the Astronomy Picture of the Day and the NASA Earth Observatory Image of the Day.

Space Place Prime targets a multigenerational audience. Kids, teachers, parents, space enthusiasts, and everyone in between will find fascinating features on this new, free NASA iPhone app. Look for it in the App Store today at <http://itunes.apple.com/us/app/space-place-prime/id543935008>.

New Electronic Billing of 2013 Society Dues and Officer Election Ballots

In a few months we'll be submitting 2013 dues statements electronically to societies. This is a new program that will save substantially on postage and printing costs. This will also be the mechanism used for officer election ballots during the spring. Thanks to ALCors and other society officers for helping us keep society officer email addresses current.

Keck Observatory's 20th Anniversary Celebration

Keck Week 2013 will celebrate the 20th anniversary of Keck Observatory with noted speakers and special activities for guests. For more information about this event see www.keckobservatory.org/keck_week_2013.

The League has partnered with Keck on several online events during the past few months.

Follow the League on Facebook and Twitter

Keep up with League announcements between *Reflectors* and the *What's Up with the Astronomical League* ALCor newsletter by joining us on Facebook and Twitter.

ALCon 2013 in Atlanta July 24-27, 2013

Please check the Astronomical League website, www.astroleague.org, often for ALCon 2013 updates. Co-chairs John Goss and Ken Poshedly are planning an outstanding event. Make sure to spend some extra time in Atlanta before and after ALCon visiting the special attractions the area offers. Preferred convention lodging rates are available at Emory Conference Center Hotel. Fernbank Science Center will be the venue for convention presentations.

Great skies!

Carroll Jerg

IDA | Continued from page 5

electronic media is so much more spectacular than what you can see from your backyard or from a nearby park.

There are many active astronomy clubs around the nation that have frequent public star parties and go out of their way to introduce the night sky to the public. This is one of the *raisons d'être* of the Astronomical League, which works especially hard at trying to interest the public in things astronomical. No doubt these efforts help considerably, but it still requires a great deal of effort for a young person to actually attend a star party or an astronomy club meeting.

To be honest, it often requires a deal of experience and learning to appreciate many astronomical views, such as a faint galaxy cluster, or a hazy planetary nebula. Even from a dark sky, most objects do not show the color and the beauty of long exposure images. Most of us have had the experience of showing an object we particularly enjoy to a non-astronomical friend who remarks "is that all there is?" I remember showing a buddy M13 through my beloved 4-inch telescope only to have him say that it did not look anything like the picture and wasn't worth the effort to view it! This was in 1960. Think what a challenge we have today.

However, it is still true that if you set up a telescope on a public sidewalk, you will draw a crowd. People are naturally interested in the sky and things astronomical. Let's take advantage of that. Bigger telescopes are more available, optics are in general far better than in yesteryear, and there are electronic aids, such as video cameras and light intensifying eyepieces, that can help with public viewing. Also, in my experience, Saturn, Jupiter, Albireo, and the crescent Moon never fail to stun even the most jaded young observer. These look like the pictures, even better. Thus, we can judiciously show double stars, the Moon, planets, open clusters, and low-power views of selected bright Messier and NGC objects to inexperienced observers to open them up to the beauty of the night sky. I have shown many non-astronomical persons M31 through tripod-mounted 15x70 or 20x80 binoculars, and they marvel at the low-power view of the Great Andromeda Galaxy and its brighter satellites. It looks somewhat like the pictures. Where a dark sky is possible, the summer Milky Way is simply so stunning that nothing more needs to be said.

To summarize, I feel the lack of young amateur astronomers is a real problem we have to address. Its cause is complex, and it

Continued on page 22

I am going to digress from my usual deep-space topics this month and contribute to this special issue on youths in astronomy. Since other pages of this issue address the challenges we face today motivating young people toward the sciences, I use this space to offer some simple astronomy projects to focus young minds and to keep their interest.

I began my career in amateur astronomy at the age of 13, when I purchased a 60 mm f/10 refractor. This was the first thing I ever purchased with money I earned. Unfortunately, this telescope had very poor optics, terrible eyepieces, and a very flimsy alt-azimuth mount and tripod. But the box it came in said it could achieve 650x and it had fascinating pictures of

planets and galaxies on the cover, which I was sure meant they were visible in this telescope. How many of those have been purchased over the decades and ended up collecting dust in basements after a few fruitless and disappointing attempts using them?

Fortunately mine didn't! While I never spied a deep-space object in this telescope, I used it regularly to view the Moon, Jupiter and its four Galilean moons, Saturn with its splendid rings, and the changing phases of Venus. I used the telescope to find Mars, too, its disk distinguishing it from a red star, but I never resolved its polar ice caps or other surface details. My less-than-stellar telescope (just had to throw in this pun) did have one superb accessory: a small white metal screen attached to a rod that clamped onto the focuser to allow solar projection. It was fascinating focusing a solar image onto this screen and viewing sunspots.

In my early teen years, I began following the paths of Mars, Jupiter, and Saturn across the constellations. Later I learned how to identify Venus as the morning or evening star, and not long after that how to identify Mercury in morning or evening twilight whenever it was present. Eight years after purchasing the refractor, I upgraded to a superb Criterion 6-inch Newtonian. Now I was able to find Uranus and Neptune, too. To this day, I still follow where the seven planets are in the heavens.

DEEP SKY OBJECTS

TENTH OF A SERIES

PLANETARY OBSERVATIONS FOR YOUNG ASTRONOMERS

By Dr. James Dire, Kauai Educational Association for Science & Astronomy



Jupiter and Hyades star cluster. Photo by Dr. James Dire

One of the most important things required to keep a young person's interest in astronomy is an adult mentor. I had a great mentor in my early teen years: past Astronomical League president and solar eclipse enthusiast, Russell C. Maag. Russ was the director of my hometown's college planetarium and throughout my teen years he gave me lots of pointers on using telescopes, astrophotography, and viewing eclipses. On Russell's advice, I studied as much science and math in high school as I could and majored in physics and chemistry in college, which were important precursors to my professional career in astronomy.

I started experimenting with astrophotography as a teen, using a 35 mm SLR camera attached to my 60 mm refractor at prime focus. The easiest objects for a beginner to image through a telescope are the Moon and Sun (with an appropriate solar filter over the aperture). The exposures are short enough so that telescope tracking is not necessary. To keep the shutter from vibrating the telescope on my flimsy mount and blurring the image, I usually had the camera attached to a separate tripod when it was connected to the telescope. While my early results were not impressive enough to make the cover of this

magazine, I was proud to have images of lunar craters and sunspots to call my own.

I progressed to doing piggy-back photography with the camera and lens riding atop my polar-aligned and tracking Newtonian. This was great for capturing whole constellation pictures or parts of the Milky Way with a 28 mm or 50 mm lens, or large nebulae and galaxies like M32 and M42 with 100 to 300 mm lenses.

With today's vast selection of digital SLR cameras, a beginning astronomer can capture pretty cool images with just the camera (and lens) on a tripod—no telescope required. Consider the accompanying image of Jupiter and the Hyades star cluster. I

acquired this image in December 2012 with a Canon 30D SLR camera with a 100 mm f/2 lens (set at f/4) on a tripod. As always, I used a shutter release cable to actuate the shutter so as to not vibrate the camera during an exposure. I set the camera's ISO to the maximum (1600 for this camera, newer cameras can go much higher) and determined the maximum exposure I could take without the stars forming trails was 5 seconds. I then took twelve 5-second exposures and aligned and combined them to create the image here. You don't need a 100 mm lens to duplicate my efforts. A 50 mm lens would still work great. If your DSLR camera has a stock 18–55 mm lens, you will have a range of focal lengths with which to experiment. A middle school student should easily be able to master how to take and process digital images such as mine here!

While the naked-eye planets are easy to find and image in this manner, if you know where in the sky Uranus or Neptune reside, they can be imaged using the same technique. However, to identify which object is actually the planet, you'll need to take images several days apart and find the "star" that has moved. Following the motion of any planet using a digital camera makes a great long-term project for a budding young astronomer. ✨

Summer Skies, Southern Hospitality

July 24–27, 2013 • Atlanta, Georgia



ALCON
2013
ATLANTA

Location: Fernbank Science Center

Host Organizations: Atlanta Astronomy Club, Astronomical League

Partnering Organization: Association of Lunar and Planetary Observers (ALPO) • This year, ALPO presentations will be mainstreamed with League talks

Accommodations...

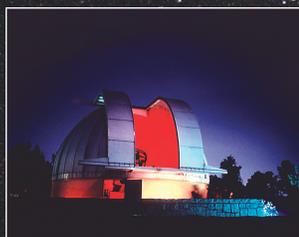
Emory Conference Center Hotel

- Shuttle service between hotel and presentations at Fernbank Science Center and Agnes Scott College Bradley Observatory for those without transportation
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1-800-933-6679, www.emoryconferencecenter.com/index.cfm
- Saturday night's Awards Banquet



Primary Venue: Fernbank Science Center

- Talks held in 70-foot planetarium
- Evening shows with Zeiss Mark V projector coupled with various special effects projectors
- 0.9-meter Cassegrain reflector in the Ralph Buice Memorial Observatory
- Vendor displays



Atlanta Attractions

- World of Coca-Cola
- Georgia Aquarium
- Zoo Atlanta
- Inside CNN
- Atlanta Botanical Gardens
- Olympic Games venues



Conference Speakers...

Chris Hetlage, Deerlick Astronomy Village, a distinctive dark sky community.

Tim Puckett, Supernovae Research



Saturday night's Awards Banquet Keynote Speaker:

Charles Wood, Sky and Telescope Lunar 100 creator

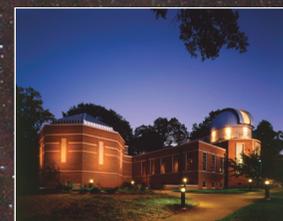


Star BQ, Friday, July 26, Agnes Scott College Bradley Observatory:

Bradley Observatory Tour; 30-inch Beck Cassegrain; Planetarium Presentation

Other ALCon 2013 Excursions

- Atlanta Astronomy Club's Villa Rica Observatory; Full size roll-off-roof observatory with 20-inch Newtonian reflector
- Atlanta Astronomy Club's observing site at the Deerlick Astronomy Village



Check www.ALCon2013.astroleague.org for more information as it becomes available.



ALCon 2013 Registration Information—July 24–27, 2013

Mail completed form with your check made payable to **ALCon 2013** to:

**Astronomical League, ALCon 2013 Registration,
9201 Ward Parkway, Suite 100, Kansas City, MO 64114**

Please use one form for each attendee. One check is acceptable for your group. You may also register online at www.alcon2013.astroleague.org and make remittance with PayPal.

First Name: Last Name:

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Address, Line 2 (if needed):

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Country: ALPO Member?

Daytime Phone Number: Alternate Phone Number:

Astronomical Club, Society, or Organization Affiliation:

You may make your room reservations at the Emory Conference Center Hotel by calling 800-933-6679. Be sure to ask for the Astronomical League ALCon 2013 special rate before the room block is fully booked. Free parking and free internet.

The organizers reserve the right to make such changes to the program and speakers as may be necessary due to conditions outside of their control.

Early Registration Fees (after July 8, add \$20)

Please check each item you wish to include in your registration and enter the amount in the box on right. **Amount**

Individual 2 or 3 day registration: \$50

Single day registration: \$35

Couples 2 or 3 day registration: \$75

Students: \$20

Children younger than 15 years of age accompanying adults registering: free

Shuttle bus from Emory Conference Center Hotel and the Fernbank Science Center (for those needing transportation), 8:15 a.m. to 11:15 a.m. and 2 p.m. to 5 p.m.
\$20 Wednesday \$20 Thursday \$20 Friday

Boxed Lunches:

Choice of Ham and Swiss, Turkey and Cheddar, or Mediterranean Veggie sandwiches with a pickle spear, a half-sized Jumbo Cookie, chips, and water bottle: \$9. Check one for each day.

Wednesday: Ham and Swiss ; Turkey and Cheddar ; or Mediterranean Veggie

Thursday: Ham and Swiss ; Turkey and Cheddar ; or Mediterranean Veggie

Friday: Ham and Swiss ; Turkey and Cheddar ; or Mediterranean Veggie

Friday night Star BQ (Please select one)

Pan Roasted Chicken Breast with mushroom ragout \$32
Tender Beef Brisket with a caramelized onion jus \$37
Grilled Eggplant Steak with chick peas and feta cheese \$32

Shuttle from Emory Conference Center Hotel to Star BQ at Agnes Scott College Bradley Observatory and return: \$20

Saturday night banquet:

1. Vegetarian: Gnocchi with pesto cream, olive oil poached tomatoes, grilled zucchini and shiitake mushrooms: \$45

2. Pan seared sage and garlic infused chicken breast served with red onion marmalade on creamy polenta: \$45

3. Grilled bourbon glazed boneless pork loin with mustard braised greens and smoked cheddar mashed potatoes: \$45 **Please select one**

ALCon merchandise

Silk-screened T-shirt, White ; or Royal Blue
S M L XL XXL XXXL : \$20
Embroidered polo shirt, White ; or Royal Blue
Men's: S M L XL XXL XXXL : \$25
Women's: S M L XL XXL XXXL : \$25

Help the League help amateur astronomy by making a tax deductible donation

Total Enclosed:



WHERE ARE THE YOUNG IN OUR ASTRONOMY CLUBS?

Ron Whitehead, *Astronomical League Executive Secretary*

Choices. Young people today have plenty of them. Looking at astronomical societies in the Astronomical League, their choices are increasingly to not join or even to not be interested in things astronomical. Young people are not opting to be joiners or budding amateur astronomers. Everyone from astronomy club members to the astronomical media has long noted the “graying” of many astronomy clubs and societies. Yes, certainly some children, mostly pre-teens, attend astronomy related events, but usually only with their parent or parents. After they grow a bit older, too often they, and often the parents as well, exit the scene. Young adults, teens, and even “twenty- or thirty-somethings” are poorly represented in many of our clubs, in astronomy, or even the “outdoors” or science as a percentage of the population. Why? Is this perception real?

I asked the question on the Astronomical League website, inviting responses, and I received a lot regarding causes, effects, and possible solutions. I will try to summarize these thoughts in my synopsis, and share some quotes. First, the causes—not in any order, not applicable to everyone, and there are, of course, multiple

causes acting at once. We must be careful to not overgeneralize.

- There are a lot of competing indoor technologies—the Internet, smartphones, and games, to list a few—to fill interested minds.
- There is an increasing and ever-present pressure for success in school, and this demands a lot of time.



Edmund Scientific book by Sam Brown, *How to Use Your Telescope*

- It is difficult in today's fast-paced society to manage time well. We are used to multi-tasking rather than the single focus that study of science, like astronomy, often demands.
- Parents aren't always focused or able to promote the interest.
- A lack of available transportation to meetings and dark-sky

sites is limiting access.

- The high cost of equipment.
- A diminishing interest in joining anything, especially clubs made up of “old folks.”
- The discomfort of spending the night in the cold.

What is true seems to be that youth today are motivated, interested or well educated in the sciences and aspects of nature. Clearly, many youth have a different view of nature than previous generations did, based on changing demographics. Fewer grow up in a rural setting, and many are more “urbanized” than youth a few decades ago. They are motivated, just not toward a goal of becoming amateur astronomers.

So, now we turn to what is to be, or can be, done? What if your club or society wants to attract young people and to promote active interest in some aspect of astronomy—this includes armchair casual interest, study, observing, imaging, night-sky, day-time, lunar, sketching, or even social gatherings?

Some ideas:

- Provide accessible transport for budding young astronomers.
- Provide fun, interesting, creative, and innovative outdoor and night- or day-sky education and activities, including parents if required.
- Provide free or inexpensive equipment, and teach them how to use it.
- Provide fun, interesting meeting programs tailored to their interests.
- Lower fees or other cost barriers.
- Go to where they are, for example, schools, Scout meetings, parks, and youth centers.
- Most importantly, communicate, communicate, communicate! Use media, give talks, and provide information everywhere you can.

How?

- Have your members become Ambassadors of the Night Sky. Use programs like the Night Sky Network.
- Take “baby steps” and ensure that rewards come from effort. Start with the easy stuff.
- Work with schools. Due to budget cuts across the nation, your efforts will be welcome, but must be done with precision and with a degree of professionalism.
- Provide transportation, work with parents, let the youth see a real dark-sky site; or, if an urban club, do for them what you do best.
- Develop materials, or maximize the use of Astronomical League materials and observing programs. Youth like



Array of telescopes prior to Astronomy Night at Wilkinson Junior High School. Over 400 students and parents attend the annual school-wide event. Photo by James Snell, *Science Teacher, Member-at-Large*

a challenge; give it to them.

- Allow the youth to have and run their own programs, separate from the “gray hairs.”
- Look into integration, cooperation, or collaboration with other science pursuits such as computer technology, imaging/photo, nature, or other science clubs.
- Keep at it—results may be slow at first. You need a core. Doing nothing is simply not an option; clubs and societies would do well to develop strategies to deal with it or face the dilemma of turning out the lights in the clubhouse and on the night sky.

Now, I'd like to share some excerpts from the responses. All of your inputs were thoughtful, superb, and tack-on. Thank you

to everyone who responded, but, unfortunately, space does not allow all your comments to appear. Please accept our apologies for the liberal editing and paraphrasing.

**Roger Ivester, Las Vegas
Astronomical Society,
www.rogerivester.com**

How can a telescope and an interest in the night sky compete with fancy games and the social media of today? Do you know many kids who like to go out in the freezing cold with a telescope, in an attempt to look for a distant galaxy, to spy a double star, or to see the rings of Saturn?

I remember those old *Edmund Scientific* books by Sam Brown and Terence Dickinson that seemed to have everything that the beginner would need to know to get started. Are there still any books like those being published for the younger generation?

Jay Crutchfield, MD FACS

I've often had a vision of being able to donate a large 16-inch Meade to my old high school. That's where it needs to start—with large instruments, permanently mounted in high schools—and made part of an "I'm not a geek...let's look at the stars" astronomy club and an "I'm a geek...and belong to the physics club" astronomy club.

**Ron Schmit, Minnesota
Astronomical Society**

As a part-time astronomy educator with the Science Museum of Minnesota and the former Minneapolis Planetarium, I attended the "Girls In Space" workshop at Goddard Space Flight Center, developed jointly by the Girl Scouts of America and NASA.

One of the astronomy outreach specialists suggested reading *Last Child in the Woods* by Richard Louv. It was like the shell cracked open, and I could suddenly see inside. Amateur astronomy is an outdoor activity and within the scope of this book. One of the central themes that really tracks with me is that we've become very risk-averse, especially when it comes to our kids. We don't let kids just go and play outside. When they do go out to play, it's in very controlled environments, on certified equipment,

in parks that are designed and patrolled for safety. Parents come along to proctor the children's experience. I think astronomy may be suffering the same fate.

At our fall Astronomy Day star party, a friend used his iPad to sit down with a young astronomer and show him a personal slide show of some of the sky's wonders. "Here's the Orion Nebula. And look, we can zoom in here and you can see the young baby stars." "Wow," stammered the slacked-jawed cherub. What a magical moment. Awesome! But as I turned around and walked outside, I saw a twenty-something pull out his iPhone and pop-up Star Walk. "Check this out! It shows you the constellations right here. Isn't that sweet?" He turned around in a big circle as the sky wheeled by on his screen. "Cool!" said one. "What's that?" asked another. "Yeah, I don't know," replied the phone's owner. "That's awesome!" Click. The screen's off and it goes back in his pocket. The whole exchange took less than 15 seconds. It felt like he was showing them his new yo-yo trick. There. Done. Not so awesome.

**Pat Craig, Wright State
University, Stillwater
Stargazers, Fairborn, Ohio**

- We need to get into the public schools more. The question that needs to be answered is, "are the schools about education, or are they about something else?"

- If the young people are buried in the technology, grab a shovel and take astronomy to them! One possibility: mount a campaign to get a planetarium app onto every smartphone on the planet.

- Stop competing with popular culture and integrate it, even if it's only in the smallest possible way. While observing an education program at a middle school, I noticed one of the students was very withdrawn and hard to reach. She was reading a very thick novel, *Twilight* by Stephenie Meyer. In a PowerPoint presentation a week later, I incorporated a picture of Edward and Bella from the upcoming first *Twilight* film into my lesson. When she saw it, the young student didn't just "come out of her shell;"

the shell exploded!

- On YouTube, type "I hate math" into the search box and see how many kids are deeply frustrated with mathematics. The kids are practically screaming "What is this stuff good for?" We, the astronomers, have the answer. Let's give it to them.

**Sue Wheatley, North Houston
Astronomy Club**

I think we are looking for younger members in the wrong places. I am reminded of the Army recruiter who went to the video game stores in the malls and talked to the kids at the machines. I believe she met her quota every month for at least a year.

We need to go to where young people go and talk up how they can blend amateur astronomy into their lives. As a younger male club member told me, "Where else can you ask a girl to stay out until 2 a.m. with the blessing of her parents?"

**Laura Burchell, Salt Lake
Astronomical Society, Age 15**

I, along with my dad, have been a member of the Salt Lake Astronomical Society for close to a year. We both regularly attend meetings and star parties and I am also taking a college-credit astronomy class. I am 15 years old and have grown to love astronomy greatly, with the help of books and

TV specials, especially Carl Sagan's *Cosmos*.

Astronomy isn't every young person's cup of tea, but those who are as deeply interested in it as I am should find every gathering enjoyable and learn something new as often as they can without being overwhelmed by complex ideas or underwhelmed by the basics. This leads me to believe that one of the biggest opportunities in attracting young people is providing more intermediate-level material.

**Rodger Gordon, Delaware Valley
Amateur Astronomers**

We need to change the image of science, from a world of "geeks," a la *Big Bang Theory*, to fun-loving, interesting people. We need an infusion of money into science approaching that in sports today. And, we need educational programs that support science the way they did in the late 1950s and '60s.

**Ricky Carvajal, Fort Bend
Astronomy Club**

Our hobby is indeed graying and that is why our club has in place several efforts to attract the young.

One of those is offering what we call AOWs (Astronomy on Wheels). We cater to the public, and bring our telescopes to their premises such as to school parking lots. ✨

WE MUST BRING YOUNG PEOPLE INTO AMATEUR ASTRONOMY

By Courtney Flonta, President, Back Bay Amateur Astronomers

"Astronomy? Impossible to understand and

madness to investigate." Sophocles said that around 420 BCE. Maybe that is why there are so few young people in astronomy. The world is all about common sense and reason. Why would any reasonable young person study something that even astronomers say is crazy?

All right, maybe "madness" is not the reason for a lack of youth investigating the night sky. But there must be some reason. We have all seen the

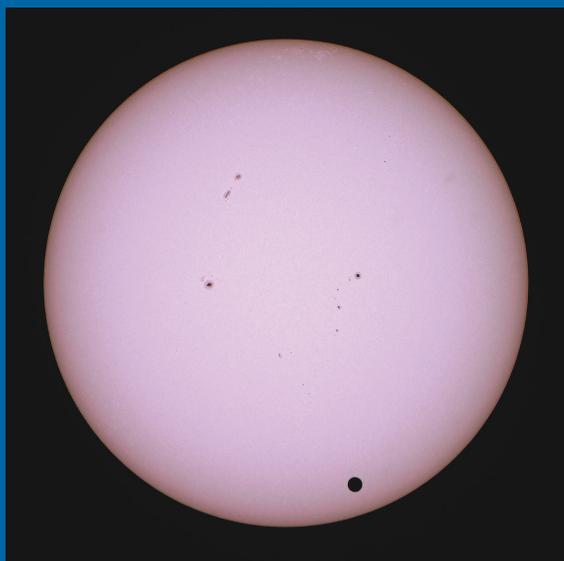


clubs, the events, and the meetings. Maybe a 1:20 ratio of people under age 25 to those above that mark on a good day. Why this happens and how we can fix it are two very hard questions to answer.

The lack of kids in astronomy does not have an easy explanation. Perhaps it is because there is no longer a highly advertised goal for us to achieve, such as the Space Race was for the past generation. We've been to the Moon; we have astronauts on the

Continued on page 14

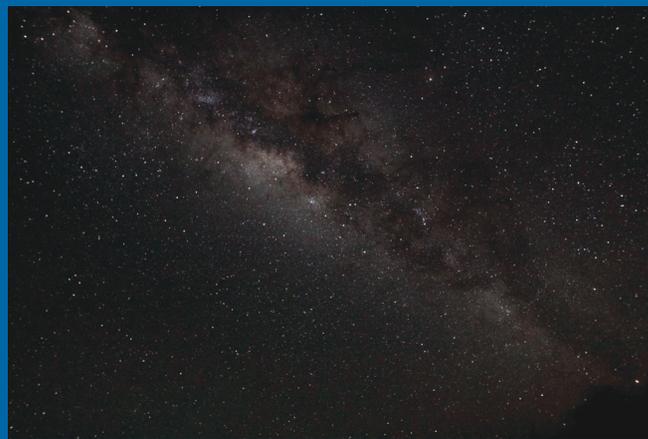
ASTROPHOTOS FROM YOUNGER MEMBERS



Above left and right: Submitted by CJ Wood, 21 years old, Back Bay Amateur Astronomers, Virginia. M31 and M42. Equipment: Orion 80ED on a LXD-75; Nikon D3100 camera with a T-adapter and visual thread.

Left and below: Submitted by Franklin Marsh, 17 years old, Northwest Suburban Astronomers, Illinois. Transit of Venus: white light image taken with 90 mm Takahashi; stacked in Lynkeos. Moon Mosaic: Orion XX12 Dobsonian, Canon 500D with two Barlow lenses. Below: Milky Way pano stitch of 3 frames with each frame consisting of ten 30-second exposures.





Above left and right: Submitted by Evan Clark, 17 years old, Houston Astronomical Society. Transit of Venus, June 5, 2012: Canon 60D; Canon EF 400, f/4 lens on a standard tripod. Summer Milky Way was taken from Mauna Kea with a Canon 60D, Canon EF 16-35mm, and 26-second exposure.



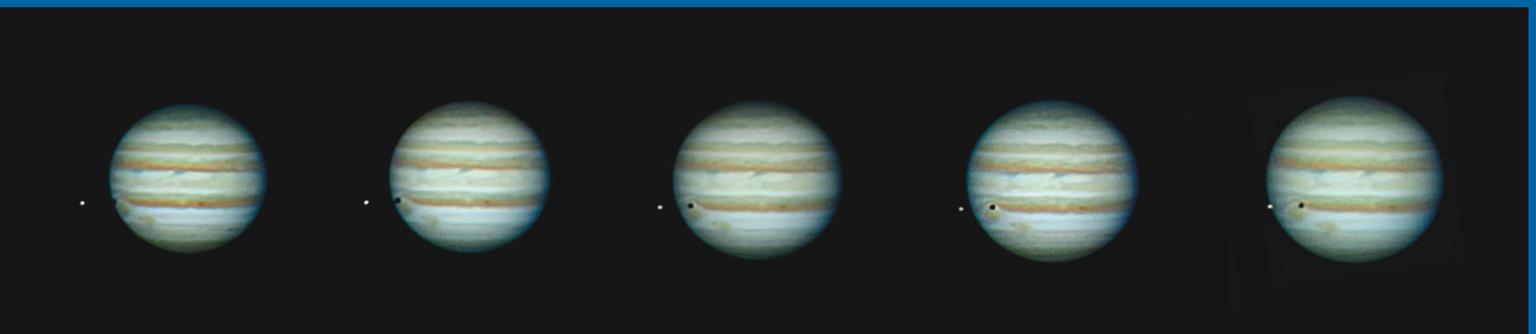
Left and two images below: Submitted by Nathan Wright, 17 years old, Northwest Suburban Astronomers. Left: Gassendi Region of the Moon; each image was captured with 10-inch Dobsonian, Canon digital camera in video mode processed in RegiStax 6.



Left: The Sun captured on July 17, 2012 in H-alpha through Darren Drake's PST with a Canon digital camera and processed in Registax 6.

Above three images were submitted by Joshua Babin, 23 years old, Houston Astronomical Society. Top: Galilean Moons; center: Saturn; bottom: Transit of Venus. Each image was captured from Galleria area in Houston on a smart phone, either a Blackberry 8530 or Samsung Galaxy S2, and an Orion Xt8 Classic Dobsonian.

Below: A Jupiter series taken on November 14, 2012, with 10-inch Dobsonian, Canon digital camera in video mode processed in Registax6.



International Space Station (ISS); we have rovers on Mars and a probe past the edge of the Solar System. But what does the public know about these things? None of these has been advertised for more than a day at a time. The ISS passes over the United States several times a day and yet how many people take the time to look for it? We need to spread the word about these interesting and personal things.

Maybe it's the idea of astronomy. Most kids I know either think that astronomy is just a bunch of old guys discussing old laws about the night sky, or they think it's a lot of standing around in the night, looking at tiny specks and doing calculus equations in your head. Obviously this is an exaggeration, but it makes my point. Astronomy has a lot of stigmas attached to it. So if that is the problem, or part of the problem, the solution is obvious. We must change the stigmas. We must show the current generation, as well as the next generation, what observational astronomy is really about.

It could even be the fact that astronomy is a science. I know a lot of people who say that they're not "science people" and try to avoid anything that looks, sounds, or smells like science. My sister is one of these people. She just isn't interested. She would rather be dancing or listening to music or watching TV. She spends all day in school, and so the last thing she wants to do is spend her free time doing science, which in her mind sounds a lot like homework.

Now that we know what is causing a lack of youth in our wonderful hobby, we must find a solution to remedy this problem. For, if there are no young people in astronomy, what will happen in fifteen, twenty, or fifty years, when the current astronomers are older, losing their sight, and unable to lift a telescope or hold binoculars? Who will not only pursue the science of astronomy, but also

teach the next generation? We must bring young people into our trade.

How do we do this? Well, there are several things we can do. But first, let me explain where my ideas come from. The irony of this article is that I am seventeen years old. I'm writing from the perspective of those who we are trying to reach. I feel as though I am an ambassador, a liaison of sorts. I have a different perspective than most on either side of the fence. So my ideas come from knowing my friends and from meeting a lot of teenagers and kids at school, outreach events, and other extracurricular activities over the years. This unique perspective has served me well in helping other young people become interested in astronomy.

Back to the solutions. Please keep in mind, I'm not in any way suggesting we dumb down or dilute astronomy to make it more palatable for this generation. Instead, we have to change their perception of astronomy.

The first thing we can do is make sure that our technology is all up to date. Have nicely designed, easy-to-navigate websites; spread the word to school websites and online journals and newspapers. As cliché as it sounds, using technology is the best way to communicate with younger people.

The second thing we can do is have entertaining meetings and events. A PowerPoint presentation is too much like school for a lot of kids, and an active event doesn't always cater to the older people. So there has to be a balance and a variety of styles and subject matter.

Third, of course, there is the matter of finding kids to invite. Reach out to colleges, high schools, Boy Scouts, Girl Scouts, Boys and Girls Clubs, and anywhere else you might find kids. My club, the Back Bay (Virginia) Amateur Astronomers, does a huge amount of outreach with groups like these, and so

many kids are indeed interested. The problem usually comes when the parents recognize their kid's interest, but don't know what to do with it. A lot of times, they don't want to sit through an astronomy class or lecture. They want to go outside and look at the stars, and yet they don't know where to start.

In short, there are a lot of reasons why there are no kids in astronomy. And there are a lot of reasons that there should be kids in astronomy. Now it's up to us to get them inside, get

them hooked, and give them "aperture fever." Because, as we all know, once you've got the bug, you can never look back.

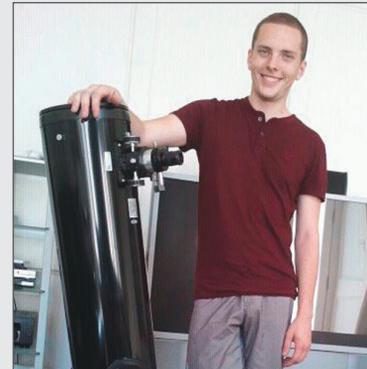
Courtney Flonta is winner of the 2011 Horkheimer Youth Service Award and is president of the Back Bay Amateur Astronomers. She is pursuing an associate of science degree and phlebotomy certificate at Tidewater Community College in Virginia Beach, Virginia. Courtney plans to direct her education toward a PhD in Chemical Physics. ✨

YOUTH INTEREST IN ASTRONOMY

By Joshua Babin, Houston Astronomical Society, Age 23

Interest in astronomy among the youth population has rapidly declined in recent years. Being "inside the box," so to speak, I can see a few key reasons for the trend.

The first problem is the Internet. Why go out and spend time and money when I could just Google it? For lack of a better word, it is laziness. Instead of spending time out with friends, we Skype or text



or instant message. Instead of enjoying the time-honored tradition of gazing toward objects in the heavens, we gaze toward different bright objects: computer screens.

The second problem is cost. If an individual overcomes the first problem and decides that they want to go out and see the great objects in the sky themselves, they will need to make a relatively hefty investment. While \$500–2,000 isn't a huge financial outlay for someone who has been a working professional for years, those numbers are astronomical to those in their youth—I have

never earned over \$5,000 in a year.

The third problem is the learning curve. With many hobbies, there may be a tiny change here and there over time, but overall things don't change much. Getting into

astronomical observation is a slightly different ballgame. The plethora of different optical styles, eyepieces, mounts, cameras, software, and

so on, can be intimidating to a young individual.

The fourth problem is education. The state of education in the United States is deplorable. In my personal opinion, another Cold War might just be the thing we need to spark the ingenuity of today's youth. It used to be that math and science were strongly encouraged in school. Now they are weed-out classes designed to discourage individuals from truly *thinking*. If a much stronger emphasis were placed on science, I believe that we would see a great increase in its popularity in our personal lives.

Roughly summarized, the issue comes down to money and information. With little money and too much information, it is very easy to pass up astronomy and take up video games. It doesn't help that actually *learning* science and math is not

emphasized in today's culture. I don't know what the solution is, but it probably involves education reform and reinforcement by parents when a child is interested in something. If a kid likes space stuff, buy the kid a telescope! ✨

EMBRACE TECHNOLOGY

By Vern Rabin, *Astronomical League Webmaster*

A larger percentage of young people adopts and uses recent technological advances than do older people. Evidence of this is the younger generation's early and nearly universal adoption of cell phones and social media. I say that this is not new; it has probably always been that way. What *is* new, though, is the easy and instant access to the Internet through cell phones and tablets. These devices provide an incredible number of media and entertainment choices.

Watch a group of young people for a moment or two and you might observe that they almost appear to be ignoring each other. They're texting someone, playing games like Angry Birds, or checking out some website. New devices make it possible to be nearly constantly entertained. They are very addictive, and we older folks fall under that spell as well. The widespread use of these devices among young people is both a challenge and an opportunity.

To interest young people in amateur astronomy, we need to have a presence on the devices and sites they are now using. That means we should be on social media sites such as Facebook, Google Plus, and maybe Twitter. It also implies that our websites should be "mobile friendly"—that is, they should display as well on small screens as on large ones. (The NASA website, www.nasa.gov, is a great example showing that this can be done.)

Many of our websites do not have much information on how to

get started in amateur astronomy. That is important in getting young people (and older folks) interested. We can certainly do a better job in this regard. Many local clubs have telescopes and other resources that would be of great help to youth and others in getting started with astronomy. Unfortunately, most of our websites don't publicize this. There are few reasons not to do this; we just haven't. It should be possible to easily join and pay dues on our websites, yet this capability is lacking for the most part. Checkbook? What's that?

Many young people are interested in photography—they happily snap photos of almost anything and everyone around them. This might be used to interest them in astronomy. For example, at star parties they sometimes ask to take pictures of the Moon and planets through our telescopes using their cell phones. Many cell phones have cameras that can take excellent astrophotos. You can attach a small flat bracket to the eyepiece so someone can press a cell phone camera against it, automatically putting the camera lens at the correct distance. Many cell phones can also read QR codes. These codes let you send almost any information to a cell phone. It would be great to have a QR code patch on your scopes to link them to your club's website or maybe provide some background information about an object.

At your club's star parties, maybe a scope or two should

have a video camera and a video display. Planets are usually better viewed with a video or web camera than through an eyepiece at these events. Several people can view the screen at the same time. People with limited vision can view objects that they cannot see in an eyepiece. You can do blink comparisons of difficult objects such as asteroids. Movement will be pretty obvious in only twenty or thirty minutes—well within the length of time most folks stay at a star party. It also lets you introduce the kids to what to look for in the other scopes. There are several low light video cameras available that may be used to show faint objects such as galaxies and nebulae. These devices will let you show objects to 17th magnitude or so even in light polluted suburban skies.

Our awards programs need to be improved. We must have imaging programs as well as observing ones. More amateur

astronomers are now imaging with cameras than are visually observing with an eyepiece. That is especially true among younger members. There are other award areas we should consider as well. How about having "build it" awards? Incredibly small and capable electronic devices such as the Raspberry Pi and Arduino are commonly used in robotics projects. These devices might be used to power some astronomy device. Why not a "build it" award program for robotic telescopes, seeing monitors, meteor cameras, or other astronomy widgets? Go visit a robotics competition in your area. Note how many young people participate in it, then tell me that we can't do better.

Hopefully, some of the ideas mentioned here might entice a few young people to raise their eyes from those tiny screens for a moment. There is a wonderful universe waiting for them to discover. ✨

GROWING INTO THE HOBBY, NATURALLY

Ted Forte, *Huachuca (Arizona) Astronomy Club, AL Planetary Nebula Club Chair*

I have mused on the "dearth of the young" matter. I guess I question the premise that this was ever a young person's hobby. It seems to me that there is a natural process at work here. Kids of nine or ten years old are always interested and enthusiastic, it seems, but

teenagers tend to develop other interests: the opposite sex, the driver's license, and "finding" oneself, among others. Things like that naturally take precedence. Then there is the pressure of succeeding in

school, finding a job, raising a family, and pursuing a career. I mean, do people in the 18-to-30 age group even have "hobbies" in the traditional sense? In later life, when they have the time and the resources to enjoy a hobby, they can rekindle the interest they once had when they were ten.

I take heart in the knowledge that if this is an "old person's hobby" then that is OK, because eventually all of us get old (if we're lucky). The kids we don't attract in their teens may become hard-core



devotees in their forties. Besides, our population as a whole is trending older; astronomy club membership is just reflecting that trend.

So, perhaps we should be less concerned with getting young people into the hobby. It's important, of course, to introduce youngsters to the night sky—to plant seeds that will sprout later and to inspire at least some of them to pursue

careers in astronomy and space science. That's all we can do. We can't expect large numbers of them to put a high priority on astronomy as a pastime.

I am optimistic for the future of our hobby. I think astronomy club membership is increasing overall. If we see a lack of young members, maybe we are looking at it wrong—we should just see them as future old members. ✨

FROM THE VIEWPOINT OF A TELESCOPE RETAILER REVERSING THE GRAYING OF ASTRONOMY!

By Craig Weatherwax, Oceanside Photo and Telescope

One of the big concerns of our industry has been how to get more young people involved in astronomy. Presently, the people predominantly involved in the hobby of astronomy are men between the ages of 45 and 65, with time and disposable income.

So, how do we get more young people involved in astronomy? This issue has been addressed by many with little success. However, with the new emphasis on STEM (science, technology, engineering, and math) in our schools, supported by NSTA (National Science Teacher's Association) and our nation's policy, perhaps the time has come.

Certainly, the mystery of the heavens is still captivating. Hopefully, that will never change! How do we promote this fascination with the wonders of the universe? There are many solutions to this question; let me suggest a few.

First, the time is now to get astronomy equipment into the schools. There is funding available to finance equipment, and we need a vehicle to distribute the money and a worthy project to finance. To that end, Oceanside Photo and Telescope (OPT) has created a non-profit foundation (Oceanside Photo &

Telescope Citizen Science Foundation, OPTCSF) and is championing a project to get solar scopes in the hands of elementary school science teachers. Why solar scopes? Because they can be purchased at reasonable cost, the Sun is fascinating, there are a myriad of projects that can be built around solar observing, and elementary school children can't necessarily be up late into the evening for nighttime observing. So, let's get the youngsters interested in looking up at an early age. For more information about OPTCSF, visit www.optcsf.com.

A great example of getting scopes into the hands of people, young and old, is the New Hampshire Library Telescope

Program. This program was developed by the New Hampshire Astronomical Society. In a nutshell, it is designed to put telescopes in libraries and allow people to check them out just like books. This program has grown to include other states as far away as Michigan and California. For more information, visit www.nhastro.com and click on the "Library" header.

Another example of astronomy outreach to the young is the Charlie Bates Solar Astronomy Project, hosted by Stephen Ramsden. Stephen annually introduces over 50,000 students and adults to our nearest star, the Sun. For more information, go to www.charliebates.org.

A significant fallacy to dispel is that astronomy equipment is expensive. That simply isn't true. There are telescopes available for under \$100 that will allow you to see the rings of Saturn, the moons of Jupiter, or craters on our Moon. An added advantage of astronomical observing over other hobbies such as golf or tennis is that once you have purchased the equipment, the sky is free. You don't have to pay to play!

How easy is it to do astronomy? With today's affordable computer-robotic telescopes, astronomy is easier than ever. This computerization of the telescope should especially appeal to the young. You will spend more time looking at nighttime objects than for them. With new apps that allow the night sky to be accessed

through an iPad or any number of smartphones, we have opened up a whole new avenue to interest in astronomy. With the ability to control your computer-robotic telescope with this technology, we can now make astronomy fun and easy for all ages. Making astronomy fun is the key to engaging today's youth.

How expensive are computer-robotic telescopes? Relatively inexpensive! For around \$300 you can get a computerized telescope that will start you on your journey of discovery. How do we keep the young people involved and interested in astronomy? We have to make sure there is quality equipment in high schools and universities throughout the United States. Projects like OSIRIS-REx, a partnership between OPT, OPTCSF, NASA, and the University of Arizona, allow enthusiastic young astronomers to make meaningful contributions to real scientific research. OSIRIS-REx is a citizen science program, allowing and encouraging amateurs to collaborate with professional scientists. There are many such programs seeking participation. OPTCSF hopes to bolster such programs and foster interest among the youth and the amateur community, with the help of many aerospace companies. We hope to solicit funding from these organizations to help schools, through grants, afford the kind of equipment necessary to keep astronomy at the forefront of science in the STEM buzz! For more information about OSIRIS-REx go to osiris-rex.lpl.arizona.edu, then click on "Target Asteroids!"

In conclusion, we need to get the youth of America interested in astronomy! Do you remember the first time you looked through a telescope and saw Saturn? Who hasn't looked up and wondered about their place in the vast universe? The wonder is there, we just need to find ways to nurture it. ✨



Young people enjoying looking through telescopes and participating in the Southern California Astronomy Expo.

OCEANSIDE PHOTO & TELESCOPE

Volunteer Reflector Editor Ron Kramer

Gentle readers:

It is a true honor to be the new editor of the Astronomical League's *Reflector* magazine. My primary goal is to give you the best astronomical publication possible. I truly appreciate the opportunity offered by the board of directors



and will do my best to meet their, and your, demands. Please contact me directly (editor@astroleague.org) if you have any questions, comments (positive or negative), or material for submission.

I was asked to write a short biography, so here it is:

Born in the wilds of Brooklyn, New York, I always had an inquisitive mind. At around the age of five, while looking up at the nighttime sky, the Moon was behind some scattered clouds, with the lunar rays looking like a giant clock. That got me interested in meteorology, and all the library books I found on the subject were adjacent to the astronomy section. My eyes drifted to the images of Jupiter on one of these books and *voilà*, I was hooked for life.

My first scope was a 6-inch Criterion RV-6 Newtonian, which I still use. Of course over the years, as my economic fortunes improved, I graduated to a house full of instruments: Orion 8-inch Newtonian, Celestron C-11, Meade 16-inch LX-200, 25x100 binoculars, etc.

Another interest of mine is philately (stamp collecting) and today my home has a room filled with "space covers," which are envelopes with printed or hand-drawn images of space launches from around the world, astronaut experiments onboard the Shuttle, Space Station, Skylab, and Mir, and a slew of Mercury, Gemini, and Apollo launches, landings, orbits, and accidents. With more than 300,000 of these covers, it is one of the largest collections on Earth.

In between all of this, I worked in several industries, including wafer fabrication, electronic cash registers, and electronic components. Most of my adult life was spent with Philips Electronics (the Dutch giant) with whom I lived (for a minimum of one year) in 27 countries and visited about 200 overall. Retiring from Philips I started a small philatelic supply company and migrated into book publishing, which presently pays the bills.

Today I'm semi-retired, publishing a few books per year and planning on building my observatory (for the Meade 16-inch), at my home outside Las Cruces, New Mexico. Skies are dark, about 300+ days of clear nights, and the occasional 80+ mile per hour wind/dust storms. Humidity around 5% (sometimes, even in the midst of the rare rainstorm) (yeah, I know you're all jealous!) and 60-degree temperature swings between daytime and nighttime. I'm planning to get back to my early interest in extra-galactic novae (faint fuzzies within faint fuzzies) and do some planetary work.

Volunteer Reflector Assistant Editor Kevin Jones

In sixth grade, while visiting his grandparents in New Mexico, Kevin managed to find Saturn in his wobbly, nearly unpointable toy telescope and saw the rings. Although tiny and blurry, the view was thrilling and he was hooked! He went on to work at the Arlington (Virginia) Public Schools planetarium during junior high and high school and was active in the Northern Virginia Astronomy Club, serving a term as the youngest member of its board of directors.

Kevin holds degrees in geology (BS, College of William & Mary; PhD, University of Arizona), planetary geology (MS, Brown University), and environmental science (MS, University of



Virginia). He has worked at Goddard Space Flight Center, the Space Telescope Science Institute, the Lunar and Planetary Institute, and Kitt Peak National Observatory, and now researches and writes about geology for the U.S. Geological Survey. His past research includes the geology of Jupiter's moons, the composition of comets, radiocarbon dating, and the ancient solar observatory Chankillo in Peru. Kevin has also worked as a digital editor for the *Papers of Thomas Jefferson: Retirement Series*, specializing in odd astronomical and scientific documents. He's now excited to be joining the editorial staff of the *Reflector*.

When it's clear, Kevin uses his 25-year-old 8-inch Schmidt-Cassegrain telescope to observe the stars and planets from his home in Arlington, Virginia with his wife Andrea and their cat

Betelgeuse. When it's cloudy, he can be found inside, building acoustic guitars, playing old-time music, or making wine.

Volunteer Reflector Assistant Editor Kristine Larsen

Kristine Larsen is an astronomy professor at Central Connecticut State University and faculty coordinator of the Copernican Observatory and Planetarium where her favorite course is



teaching observational astronomy through starhopping. She is a member of the Springfield (Vermont) Telescope Makers and has conducted astronomy activities for children at the annual Stellafane Convention since 1995. Her publications

and presentations stress the connections between science and society, especially science and popular culture and science education and outreach. She is the author of two books, *Stephen Hawking: A Biography and Cosmology 101*, and co-editor of *The Mythological Dimensions of Doctor Who* and *The Mythological Dimensions of Neil Gaiman*.

Candidate for Executive Secretary—Ronald S. Whitehead

It has been my privilege and honor to serve as your executive secretary. I have performed duties as a member of the governing council, assisted the president and officers to form strategies, policies and procedures to guide the League through these changing and challenging times. My duties also included supervising membership election ballots, welcoming our new clubs and societies, and assisting our clubs and societies as required. I led council efforts in reviews of bylaws provisions and in the development of a long-range plan.

In order for the League to grow and continue to provide meaningful support, it must adapt to the reality of our times: In a tight economy, people want to ensure that they are receiving the best value for their money. The League must offer valued services and support to its members. In a high-technology world with video games, the Internet, explosions of astronomical equipment, the reluctance of many to join groups, and the changing nature of youth, the League must adapt and improvise by offering benefits that meet the needs of its membership.

With your support, I will continue my service to the Astronomical League and amateur astronomy.



STAUNTON RIVER STAR PARTY

Spring Star Party

March 7 – 10, 2013

Staunton River State Park

Scottsburg, VA
(near South Boston)

Fee: \$35

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Dark Skies

Fall Star Party: October 1 – 6, 2013

Call for League Officer Nominations

The two-year term of the office of National Secretary and the three-year term of the office of Executive Secretary end on August 31, 2013. If you are interested in using your talents to serve in either of these important positions, we would like to hear from you.

For specific information regarding the duties and responsibilities of this office, please refer to the League's bylaws, which can be accessed on the League website at www.astroleague.org.

Candidates should send Nominating Committee Chair John Goss, vicepresident@astroleague.org, background statements explaining why they are interested and a photo of themselves for publication in the *Reflector*. Please limit all statements to approximately 250 words. All nomination materials must be submitted by March 15, 2013.

The Leslie C. Peltier Award Committee Seeks nominations

The heart of amateur astronomy is observing. We can read all we want about astronomical phenomena, but the real joy in astronomy is going out under the night sky and observing the objects about which we have read. But while most of us are casual observers of the sky, looking at the same few objects

over and over, a few amateur astronomers develop their observing skills to the ultimate degree. They then use these skills to make careful observations of the sky and record them for scientific analysis.

Whether the observation is done with a photometer, CCD, spectroscope, or just the human eye, the ability to find an object and record scientifically useful detail is an uncommon trait. To recognize the amateur astronomer who is not only able to do this, but has contributed their observations to an ongoing observing program, the Astronomical League presents the Leslie C. Peltier Award. The Peltier Award was created in 1980 and the first was awarded in 1981.

The award is named after Leslie C. Peltier, the Delphos, Ohio, amateur astronomer who Harlow Shapley, one of the League's founders, called "the world's greatest nonprofessional astronomer." Born January 2, 1900, Peltier discovered twelve new comets and four novae. But his real contribution was the over 132,000 variable star observations he made in his sixty-two-year observing career. He also wrote many articles on astronomy and penned four books. To ease his observing, he built an enclosed "merry-go-round" observatory. He died in 1980.

It is in his memory, and to celebrate his lifelong love of the heavens, that the Astronomical

League presents the Leslie C. Peltier Award, which consists of a 12-by-15-inch bronze plaque. Scott Roberts of Explore Scientific sponsors this award, for which we are truly grateful.

The Peltier Award now enters its thirty-first year. We are seeking nominations for the 2013 edition, which will be presented at ALCon 2013. Nominations should be emailed to the Committee Chairman and consist of the name of the nominee, the reason for the nomination, and documentation supporting the nomination. Nominations must be submitted by April 15, 2013.

Leslie C. Peltier Award Committee
Roger S. Kolman, PhD, Chairman
(rskolman@yahoo.com)
Barry Beaman, Member
Russ Maxwell, Member

Astronomical League's Webmaster Award

The Astronomical League's Webmaster Award is presented each year to the webmaster with the best club website. With the increased popularity of the Internet, a website is an important asset to any astronomy club. Most websites are designed, administered and updated by the club's webmaster. The purpose of this award is to acknowledge the club webmaster who does an outstanding job of website design and administration. The webmaster of any astronomy

club that is a current member of the Astronomical League is eligible.

The website will be judged on its content, its ease of navigation, and its ability to attract people.

Club presidents, please email webmaster nominations and the club's website address no later than April 1 to WebmasterAward@www.astroleague.org, or you can mail your nomination information to the following address.

Mike Rao
Administrator, Astronomical League Webmaster Award
2559 Rusk St.
Houston, TX 77003
mike.rao@optimus-us.com

Recognize Youth Accomplishments: The Astronomical League's Horkheimer Awards 2013!

It's the time to submit nominations for the Astronomical League's three Jack Horkheimer Youth Service Awards and for the Horkheimer/O'Meara Journalism Award.

If you know a League member, 18 years old or younger, who has brought amateur astronomy to your club or to the public through outreach, presentations, writing, or observing, please consider nominating that person for one of the three Horkheimer Service Awards.

Another youth award is more specialized than the others—the

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Horkheimer/O'Meara Journalism Award. It requires a person who is 8 to 14 years of age to compose a 300- to 500-word essay on any science-related topic.

Since the deadline for the **Horkheimer Service Awards** is March 31, and for the **Horkheimer/O'Meara Journalism Award** is April 10, now is the time for potential candidates to gather their nomination materials and to complete their essays.

If you are a club officer, nominate candidates from your club. If you don't, no one else will! Complete information about each award can be found at www.astroleague.org/allawards/awards.html.

Deadline Approaches for the Mabel Sterns Newsletter Editor Award

The Mabel Sterns Newsletter Editor Award recognizes the work of club newsletter editors across the country.

The deadline for submissions is March 31, 2013.

The nomination package should contain a letter from the club president or vice president telling why their newsletter editor should be considered for the award, a recent issue of the newsletter, and a photo of the newsletter editor taken in an astronomical-type setting. Listing the club's website

where electronic copies of past newsletters are posted would also be helpful. In addition, the postal address of the newsletter editor should be included.

The newsletter nomination materials may be submitted by any of these three methods:

The preferable method is emailing the materials. The supporting club letter and an issue of the newsletter should be attached in Adobe PDF format, although Microsoft Word format is acceptable. The editor's photograph should be attached as a high-resolution JPEG. Please email entries to SternsNewsletter@astroleague.org.

If electronic submission is not possible, paper copies may be mailed to the League's national office. Three copies of the letter of recommendation and three copies of the newsletter are required. Only one copy of the photograph is needed.

If the newsletter is available on the club's website, then its web address can be given along with any password required to access it. The editor's photograph (JPEG) and club recommendation letter (PDF) can be submitted by email as instructed in method 1.

It is strongly recommended that the Astronomical League's logo be prominently displayed in the newsletter, preferably on the front page.

For complete information about the 2013 Mabel Sterns Award program, please see www.astroleague.org/allawards/sterns/sternss.html.

Opportunity Knocks at the Reflector

Amateur astronomy is a wide field, featuring all sorts of cool equipment and accessories. The Astronomical League is seeking someone who wants to help amateur astronomy by volunteer-

ing to be part of the *Reflector* magazine team and assuming the duties of the *Reflector* advertising representative. This is a great opportunity to meet vendors and manufacturers and to have a firsthand view of the state of the hobby. Duties include disseminating ad design guidelines, accepting ads, and sending invoices. If this is for you, please send your name to *Reflector* Editor Ron Kramer at rjipublishing@aol.com.

Candidate for League Secretary

My name is **Ann House**, I am from the **Salt Lake Astronomical Society (SLAS)**, and I would like to serve as **League National Secretary**. I am a certified financial counselor and educator and work at the University of Utah. I have had an interest in the skies since I was eight years old and witnessed the incredible night sky at Bryce Canyon while on a family vacation. Growing up in the East we couldn't see many stars or even the Milky Way.

I joined SLAS in 2003 (the year of "the huge Mars") and have been a very active member. I have served for four years as board member at large and two years as vice president. I was in charge of school star parties, publicity, and programs such as **Astronomy Day** and **Solstice Festival**, and I assisted with **ALCon2011**, the successful convention at **Bryce Canyon National Park**. I connected SLAS with the **NASA Night Sky Network**, which provides us with educational tool kits for public



programs. This has enhanced our public outreach and our club remains active year-round with 60 scheduled star/solar parties. I have secured \$30,000 in county grants that have been a tremendous benefit to our club as we promote the science of astronomy.

I have good leadership qualities, I make and keep good relationships with individuals, and I am organized. I would enjoy being a part of the Astronomical League on a leadership level as I understand how the League benefits all clubs by being a member on a national level.

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Editor's Note: Congratulations to all these outstanding astronomical observers! All awards except the Herschel 400 require current Astronomical League membership for eligibility. If you have questions about an award, please ask the corresponding Observing Club Chair. Their contact information can be found under the Observing Club site at www.astroleague.org/observing. If further assistance is required, please contact either of the two National Observing Program Coordinators.

Asterism Award

No. 1, Scott G. Kranz, Astronomical Society of Kansas City; No. 2, Michael A. Hotka, Denver Astronomical Society

Binocular Double Star Award

No. 45, Rex L. Kindell, Stillwater Stargazers (all 120 objects); No. 46, Bob Jardine, TAC-AL; No. 47, Pat Al-Greene, Omaha Astronomical Society; No. 48, Mark De Wett, Member-at-Large; No. 49, William R. Carney, Twin City Amateur Astronomers (all 120 objects); No. 50, Keith Davidson, Member-at-Large

Binocular Messier Award

No. 963, Dan Brown, Atlanta Astronomy Club; No. 964, Rusty Hill, North Houston Astronomy Club; No. 965, Marco Calderon, Chesmont Astronomical Society; No. 966, Mark Jones, St. Louis Astronomical Society; No. 967, Jack Fitzmier, Atlanta Astronomy Club; No. 968, Lauren Rogers, Austin Astronomical Society; No. 969, Mark De Wett, Member-at-Large; No. 970, Alex McConahay, Riverside Telescope Makers; No. 971, Alan Carruth, Austin Astronomical Society; No. 972, Janean Shane, Omaha Astronomical Society; No. 973, Brad Schaefer, Baton Rouge Astronomical Society

Comet Award

No. 20, Richard L. Tyson, Gold, Amateur Observers Society of New York; No. 21, Larry C. Wadle, Gold, Houston Astronomical Society; No. 22, Jim Ketchum, Gold, Astronomical Society of Kansas City

Deep Sky Binocular Award

No. 335, Lloyd Watkins, Cumberland Astronomical Society; No. 336, Grant Martin, Astronomical Society of Eastern Missouri; No. 337, Lloyd Lashbrook, Texas Astronomical Society; No. 338, Trevor McGuire, Baton Rouge Astronomical Society

Flat Galaxy Award

No. 16, Ted Forte, Huachuca Astronomy Club

Globular Cluster Award

No. 224, Bruce P. Bookout, Colorado Springs Astronomical Society; No. 225, Nina Chevalier, San Antonio League of Sidewalk Astronomers; No. 226, Bradley E. Schaefer, Baton Rouge Astronomical Society

Herschel II Award

No. 81, Timothy Kristi, Manual, Astronomical Society of Kansas City

Local Galaxy Group and Galactic Neighborhood Observing Award

No. 22-DA, Dan Crowson, Astronomical Society of Eastern Missouri

Lunar Observing Award

No. 796, Bradford Wilson, Member-at-Large; No. 797, Joseph Nicosia, Central Pennsylvania Observers; No. 798, Jakob Radovic, Member-at-Large; No. 799, Doug Wiese, High Desert Astronomy Club; No. 800, James Spriesterbach, Member-at-Large; No. 801, Joseph Richardson, Denver Astronomical Society; No. 802, Richard Grauel, Northern Virginia Astronomy Club; No. 803, Carol Ogden, Island County Astronomical Society; No. 804 Arnold C. Hauswald, Houston Astronomical Society; No. 805, Frederick J. Moelter, San Antonio Sidewalk Astronomers; No.



806, Robert L. Clark, Westminster Astronomical Society; No. 807, Rusty Hill, North Houston Astronomy Club; No. 808, Mike Cook, Kalamazoo Astronomical Society

Lunar II Observing Award

No. 47, John Robinson, Astronomy Connection (Salinas, CA)

Messier Award

No. 2568, Kevin Johnson, Honorary, Minnesota Astronomical Society; No. 2579, Michael Stephens, Honorary, Member-at-Large; No. 2606, Brad Payne, Regular, Northern Virginia Astronomy Club; No. 2607, Gerard Jones, Regular, Minnesota Astronomical Society; No. 2608, Wayne Donohoo, Honorary, Evansville Astronomical Society; No. 2609, Jonathan Wheeler, Honorary, Member-at-Large; No. 2610, Joseph Richardson, Honorary, Denver Astronomical Society; No. 2611, Coy Wagoner, Honorary, Shreveport-Bossier Astronomical Society; No. 2612, Janean Shane, Honorary, Omaha Astronomical Society; No. 2613, Rusty Hill, Regular, North Houston Astronomy Club; No. 2614, Douglas Wiese, Honorary, High Desert Astronomy Club; No. 2615, Ryan Behrends, Regular, Hill Country Astronomers; No. 2616, Roland Albers, Honorary, Tri-Valley Stargazers; No. 2617, Alex McConahay, Honorary, Riverside Telescope Makers; No. 2618, Norman V. Ryan Jr., Honorary, Pushapatapa Astronomical Society; No. 2619, John Huntsberger, Honorary, Austin Astronomical Society; No. 2620, Jake Hairrell, Regular, Minnesota Astronomical Society; No. 2621, Teresa Bippert-Plymate, Honorary, Tucson Amateur Astronomy Association; No. 2622, Rita Livengood, Honorary, Omaha Astronomical Society; No. 2623, Chuck Nejedly, Honorary, Omaha Astronomical Society; No. 2624, Willie K. Yee, Regular, Amateur Observers Society of New York

Meteor Award

Observer 60, Steve Jaworivsky, 24 hours, Howard Astronomical League of Central Maryland; Observer 134, Michael D. Stewart, 18 hours, Astronomical Society of Kansas City; Observer 135, Jonathan Poppele, 18 hours, Minnesota Astronomical Society; Observer 142, Mark Simonson, Honorary 50, Everett Astronomical Society; Observer 147, Trevor McGuire, Honorary 51, Baton Rouge Astronomical Society; Observer 150, Bob Vickers, Honorary 48, West Kentucky Amateur Astronomers; Observer 154, David P. Rudeen, Honorary 49, Etna Astros; Observer 155, Stephen D. Peacock, 6 hours, Member-at-Large; Observer 156, Christopher Kersey, 6 hours, Baton Rouge Astronomical Society; Observer 157, J. Robert Kirkham, 6 hours, Member-at-Large; Observer 158, Daryl Stager, 6 hours, Member-at-Large

Planetary Nebula Award

No. 54, Bob Christ, Advanced Award, Phoenix Astronomical Society; No. 55, Dave Kratz, Advanced Award, Manual, Back Bay Amateur Astronomers

Planetary Transit Special Award: Venus 2012

Albuquerque Astronomical Society: Becky Ramtowski; Central Arkansas Astronomical Society: James Fisher; Astronomical Society of Eastern Missouri: Steve Boerner, Dan Crowson, Grant Martin, Jim Twellman; Astronomical Society of Kansas City: Gary Auchard, Martha Auchard, Jim Ketchum, Scott G. Kranz, Keith F. Rawlings, Mike Stewart; Astronomical Society of Long Island: Andrew Angelillo, Emily Angelillo, Patrick Curtis, Stephen Lieber, Joe Mezzafante; Astronomical Society of Southeast Texas: Timothy T. Myer, Will Young; Astronomy Associates of Lawrence: Jeremiah Baker; Astronomy Club of Tulsa: Ned Skinner, Brad Young; Atlanta Astronomy Club: Jeffery Rebitzke, Kieran Rebitzke-Brown; Back Bay Amateur Astronomers: Nick Anderson, Robert Beuerlein, Thomas Flatley, Dean R. Giangregorio, A. Jeffrey Goldstein, Charles Jagow, Curtis Lambert, Benito Loyola, Annette McLean, William McLean, Scott Patterson, George Reynolds, Jim Tallman, Bird Taylor; Barnard Astronomical Society: George R. Bell; Baton Rouge Astronomical Society: Stephen P. Boeker, Jacob Des Roches, Karen M. Des Roches, Trevor McGuire, Roslyn Readinger, Brad Schaefer, Martha Schaefer, Diane Smith, Forest Smith; Boulder Astronomy and Space Society: David H. Bender, Will Thornburg; Central Arkansas Astronomical Society: Bill Sanders, Robert Togni; Central Texas Astronomical Society: Thomas P. Davis; Denver Astronomical Society: Justin Modra, Joseph Richardson; Etna Astros: David Rudeen; Everett Astronomical Society: Mark L. Simpson; Forsyth Astronomical Society: Paul (Mike) Medeiros; Fort Worth Astronomical Society: Shawn Kirchdorfer, Manuel Lois; Haleakala Amateur Astronomers: Cynthia (Cindy) Krach, Rob Ratkowski; Houston Astronomical Society: James Anderson, Bill Pellerin, Jason Fricke, Steve Grimsley, Chris Ober, Larry C. Wadle, James Wessel; Howard Astronomical League of Central Maryland: Aaron Darby, Hannah Darby; Huachuca Astronomy Club: Ted Forte, Robert Kelher; Indiana Astronomical Society: Joseph R. Goss; Island County Astronomical Society: Ruth Nielson; Kern Astronomical Society: Stephen Andrews; Longmont Astronomical Society: Mike Hotka; Miami Valley Astronomical Society: Keith E. Brandt; Midlands Astronomy Club: John Adams Hodge, Alex Mowery; Millstream Astronomy Club: Kevin Smith; Minnesota Astronomical Society: David Falkner, Jake Hairrell, Kevin Johnson, Gerald Jones, Bob Kerr, Clayton Lindsey, Nancy Rauschenberg, David Tosteson, Marcus Tuepker, Miles Tuepker; National Capital Astronomers: C. A. Brooks; Neville Public Museum Astronomical Society: Brian Chopp, Amy Hannon-Drew, Nina C. Schmitt, Terrance M. Schmitt, Lynn Ward; Northeast Florida Astronomical Society: John Brueggemann; North Houston Astronomy Club: Jim Barbasso, Aaron B. Clevenson, Hugh Harrington, Monica Johnson, Mary Moore, Bruce Pollard, Susan Pollard, Ron Rolando; Olympic Astronomical Society: Jeff Hoffmeister, Douglas Liebert, Clifton E. Mygatt, Jay Nelson; Omaha Astronomical Society: Louis Dorland, Rita Livengood, Janean L. Shane, Shawn Weaverling, Tom Wilson; Penobscot Valley Star Gazers: William Shachelford; Phoenix Astronomical Society: Stanley J. Spielbusch; Popular Astronomy Club: Lee M. Farrar, Roy and Jan Gustafson, Alan Sheidler; Prairie Astronomy Club: Brett Boller; St.

Louis Astronomical Society: Rita L. Breeden, William R. Breeden, Cook Feldman, Don Ficken, Jerry Loethen, Jeremy Naethe, James R. Small, Ann P. Trull, James M. Trull; Salt Lake Astronomical Society: Michelle Stratton, Troy Stratton; San Antonio League of Sidewalk Astronomers: Nina Chevalier, Rod Poynter; Seattle Astronomical Society: Jim Pryal; Smoky Mountain Astronomical Society: Michael Rueter, James C. Sanders; Springfield Astronomical Society: David T. Jarkins; Stillwater Stargazers: Rex Kindell; TAC-AL: Robert Jardine, Ryan Liu, Yanzhe Liu; Tallahassee Astronomical Society: Amy Edwards, Scott Howard, Holly Nowell, Robert Nowell; Texas Astronomical Society of Dallas: Joseph Abs, John Rudd; TriState Astronomers: Steve Berte, Rodney Martin; Wabash Valley Astronomical Society: Leah Sameh, Marilyn Sameh; West Kentucky Amateur Astronomers: Jim Phfistner; West Texas Astronomers: Todd Lindley, Matt Vann; Members-at-Large: Melissa Adams, Salvador Aguirre, Grace Aikman, Charles W. Amelotti, Gregory M. Brown, Jnanideva Cewel, Mark Chapman, Del Croom, Mark Croom, Ken Gourley, Melinda Hopper, Emory Horvath, Eric Johnson, Jim Kaminski, J. Robert Kirkham, Joe Michail, Cesar Musitani, Benjamin Philip Palmer, Maynard Pittendreigh, Jeannine M. Rand, George Robinson, Thomas V. Schumann, Mark A. Smith, Daryl Stager, Denise Terpstra, David Trevino, Sarah Tuttle, Luca Vanzella, Alex Vrenios, Jonathan Wheeler, Bradford Wilson

Sunspotter Award
No. 137, Rob Ratkowski, Haleakala Amateur Astronomers; No. 138, Nancy Rauschenberg,

Minnesota Astronomical Society; No. 139, Gerard Jones, Minnesota Astronomical Society; No. 140, John Brueggemann, Northeast Florida Astronomical Society; No. 141, Chris Miskiewicz, Howard Astronomical League of Central Maryland; No. 142, Jay Drew, Springfield Telescope Makers; No. 143, Joseph Nicosia,

Central Pennsylvania Observers; No. 144, Gene Schaffer, Rose City Astronomers

Universe Sampler Observing Award
No. 108, Mike Russell, Naked-Eye, Texas Astronomical Society of Dallas; No. 109, Mark Simonson, Telescope, Everett Astronomical Society

Star parties are for you!

If you've never been to a star party, check out the list on page 22 and pick one that is close to you. Before you go, here is a sampling of what you can do there:

- Visit vendor booths to see firsthand the equipment you want.
- Look for a new scope. See the full variety surrounding you.
- Discover something. Take in a talk given by those who enjoy the subject.
- Observe something new. You're surrounded by those who have been there already.
- Meet like-minded people with whom you can talk shop.
- Learn about other clubs and how they do things.

Are these reasons enough for you? Well, here's one more: Experience the great camaraderie you'll find among people who enjoy what the sky offers. Star parties are made for amateur astronomers. They are made for you.

Texas Star Party

MAY 5-12, 2013

The "Observers' Star Party" on the historic mile-high Prude Ranch!

Once again hosting the Annual Meeting of the Southwest Region of the Astronomical League to be held on Friday, May 10 at 2:00 pm in the main meeting room.

For details, please see www.texasstarparty.org

Come join us, y'all!

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Coming Events

To have your star party or event listed, please send the details including dates, sponsors, and website, to: astrowagon@verizon.net.

March 2

Tri-Star 2013

Guilford Technical Community College, Jamestown, NC; Greensboro (NC) Astronomy Club and the Cline Observatory
www.gtcc.edu/observatory/tristar.aspx

March 9-16

The OzSky Star Safari (formerly the Deepest South Texas Star Safari)

Coonabarabran, New South Wales, Australia
www.ozsky.org

March 13-17

Hodges Gardens Star Party

Baton Rouge Astronomical Society
www.braastro.org/hgsp.html

March 16

2013 All Arizona Messier Marathon

Salome Emergency Airfield
www.saguaroastro.org/content/messier2013.htm

March 21-24

Thirteenth Annual Mid-Atlantic Mirror Making Seminar

Delmarva Star Gazers
www.delmarvastargazers.org

April 4-7

Southern Star Astronomy Convention

Charlotte Amateur Astronomers Club, Little Switzerland, NC
www.charlotteastronomers.org/southernstar

April 10-13

Mid-South Stargaze

Rainwater Observatory, French Camp, MS
www.rainwaterobservatory.org/rainwater

April 12-13

NCRAL 2013

Kahler Grand Hotel, Rochester, MN
www.rochesterskies.org

IDA (Continued from page 6)

is not easily solved, but it must be addressed. Working on restoring dark skies is a worthwhile cause in and of itself, but I do feel it will help considerably with our efforts to attract more people to amateur astronomy. ✨

TIM HUNTER

Co-Founder and Past President, IDA

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Tucson, Arizona 85719-2103

Phone: 520-293-3198; FAX: 520-293-3192

E-Mail: ida@darksky.org; www.darksky.org

April 18-19

Northeast Astro-Imaging Conference

Rockland Astronomy Club, Suffern, NY
www.rocklandastronomy.com/NEAIC

April 20-21

Northeast Astronomy Forum and Solar Star Party

Rockland Astronomy Club, Suffern, NY
www.rocklandastronomy.com/NEAF

May 2-5

South Jersey Astronomy Club Spring Star Party

Belleplain, NJ; www.sjac.us/starparty.html

May 5-12

Texas Star Party

Fort Davis, TX; www.texasstarparty.org

May 10-13

Tennessee Spring Star Party

Fall Creek Falls State Park, TN
www.cumberlandastronomicalsociety.org

May 17-18

MSRAL Con 2013

Eugene T. Mahoney State Park, Omaha, NE
www.msral2013.org

May 21-23

The Symposium on Telescope Science

Big Bear, CA
www.socastrosci.org/symposium.html

May 22-27

RTMC Astronomy Expo

YMCA Camp Oakes, Big Bear City, CA
www.rtmcastronomyexpo.org

May 24-27

Spacefest V—Tucson, AZ; www.spacefest.info

June 5-9

Rocky Mountain Star Stare

Gardner, CO; www.rmss.org

June 6-9

Wisconsin Observers' Weekend

Hartman Creek State Park, Waupaca WI; www.new-star.org

June 7-8

Craters of the Moon Star Party

Idaho Falls Astronomical Society

Minnesota Astronomical Society
Presents
6th Annual Camping with the Stars

WHERE: Onan Observatory at Baylor Park
Norwood-Young America, MN
WHEN: July 12, 13, & 14, 2013



Speakers, prizes, and viewing through the 14", 16" and 20" telescopes. Tent Camping and camper sites available.

Visit our website: www.mnastro.org/campwithstars/
Call 952-466-5250 to register and reserve your spot.

Craters of the Moon National Monument, Arco, ID; www.ifaastro.org

June 7-8

Apollo Rendezvous

Miami Valley Astronomical Society, OH
www.mvas.org

June 7-9

2013 Bootleg Astronomy Star Party

Green River State Wildlife Area, Harmon, IL
www.bootlegastronomy.com

June 8-15

Grand Canyon Star Party – North Rim

www.saguaroastro.org

June 14-15, July 12-13, August 9-10

Stars Over Yellowstone

Yellowstone National Park, WY, Madison Campground
www.smasweb.org

August 6-11

Oregon Star Party

Indian Trail Spring, Ochoco National Forest, OR; www.oregonstarparty.org

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NORTHERN NIGHTS STAR FEST

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Where: Long Lake Conservation Center
Palisade, MN



Join avid amateur astronomers and dark sky enthusiasts for our 5th annual Northern Nights Star Fest. Enjoy some of the darkest skies in Minnesota and view thru 25" and 30" Obsession scopes.

Onsite accommodations. Guest speakers, swap meet, and door prizes are some of the scheduled events. Meals also available.

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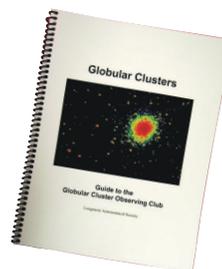
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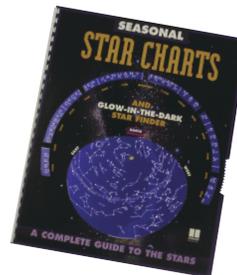
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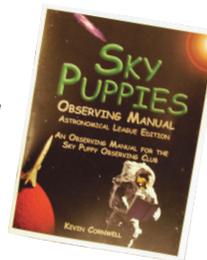
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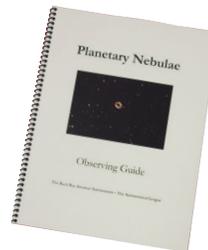
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For the Sky Puppy Observers Club
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Planetary Nebulae

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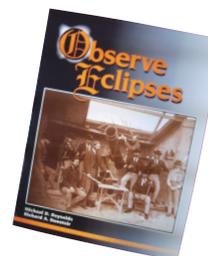
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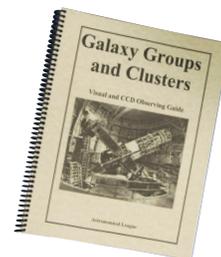
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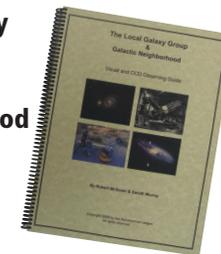
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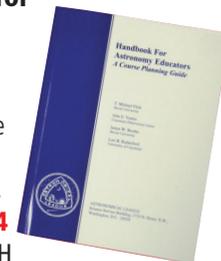
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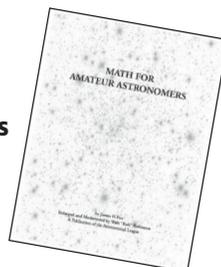
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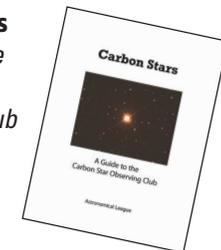
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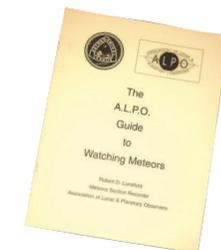
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Brian Kimball took this image of the Sun on November 18, 2012, from his backyard observatory in Longmont, Colorado. He was quite surprised when he captured a jet passing through the image. It was taken with an Astro-Tech AT127EDT refractor and a DMK-41 video camera and processed in AviStack 2, RegiStax 5.1 and Photoshop CS2. Brian is a member of the Longmont Astronomical Society in Loveland, Colorado.