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A Special Section

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Contents

4 President’s Notes
Connect with Young Members; iPhone App from NASA

5 International Dark-Sky Association
Where Have the Young People Gone?

7 Deep Sky Objects
Planetary Observations for Young Astronomers

8 ALCon 2013 Atlanta Registration

10 Youth & Astronomy
Page 10: Where are the Young in Our Astronomy Clubs?
Page 11: We Must Bring Young People into Astronomy
Pages 12–13: Astrophotos from Younger Members
Page 14: Youth Interest in Astronomy
Page 15: Embrace Technology; Growing into the Hobby
Page 16: Reversing the Graying of Astronomy

17 Three Editorial Volunteers for Reflector

18 Call for League Officer and Awards Nominations

20 Observing Awards

22 Coming Events

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.nslaclub.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.
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.

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.
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 sometimes-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 graduating 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, not only seeing 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
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 engaging 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 multi-generational 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 the 20th Anniversary Celebration of the Great Andromeda Galaxy and its brighter satellites. It looks somewhat like the pictures, nothing more needs to be said. 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 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 non-astronomical friend a non-astronomical friend who remarks “is that all there is?” I remember showing a non-astronomical friend 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 pictures. Where a dark sky is possible, the summer Milky Way is simply so stunning that pictures.

Great skies!

Carolyn Tang
I am going to digress from my usual deep-space topics this month and contribute to this special issue on youth 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.

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

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
• Be sure to ask for the Astronomical League rate.
  1-800-933-6679, www.emoryconferencecenter.com/index.cfm
• Saturday night’s Awards Banquet

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

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

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.
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:
Name and Title for ID badge:
E-mail Address:
Mailing Address:
Address, Line 2 (if needed):
City, State or Province, and ZIP or Postal Code:
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.

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 to 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  ❑  ; Mediterranean Veggie  ❑
Thursday: Ham and Swiss  ❑  ; Turkey and Cheddar  ❑  ; Mediterranean Veggie  ❑
Friday: Ham and Swiss  ❑  ; Turkey and Cheddar  ❑  ; 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 not to 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.
- 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, daytime, 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

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

How can a telescope and an interest in the night sky compete with fantasy 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 slack-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 should find every gathering enjoyable and learn something new as often as they can without being overwhelmed by complex ideas or overwhelmed 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. ☺
ASTROPHOTOS FROM YOUNGER MEMBERS


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.

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.

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.

YOUTH & ASTRONOMY

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 a 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
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. ✠
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 voila, 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.
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.

- The observation is done with a photometer, CCD, spectrograph, 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

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 looking at the same few objects, we have read. But while most of us observing the objects about which but the real joy in astronomy is about astronomical phenomena, observing. We can read all we want 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 looking at the same few objects.
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 sciences 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.
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**

**Binocular Double Star Award**
No. 45, William E. Moelter, Twin City Amateur Astronomers (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 Medal 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 Rood, Stargazers 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**

**Deep Sky Binocular Award**

**Flat Galaxy Award**
No. 16, Ted Forte, Huachuca Astronomy Club

**Globular Cluster Award**

**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 Nicosa, Central Pennsylvania Observers; No. 798, Jakob Radovic, Member-at-Large; No. 799, Tony 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

**Messier Award**

**Meteor Award**
Observer 60, Steve Jaworiwsky, 24 hours, Howard Astronomical League of Central Maryland; Observer 134, Michael D. Stewrat, 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, Eta Aetos; 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, Daryel 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**
Texas Star Party

MAY 9-12, 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’alll

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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.

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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

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• 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.
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  
Belleville, 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.cumberlandsolarastronomicalsociety.org

May 17–18  
MSRAL Con 2013  
Eugene T. Mahoney State Park, Omaha, NE  
www.msr2013.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  
www.ifastro.org

The Minnesota Astronomical Society presents:  
Northern Nights Star Fest  
When: September 4, 5, 6, 7 & 8 2013  
Where: Long Lake Conservation Center  
Palisade, MN

Join avid amateur astronomers and dark sky enthusiasts for our 6th annual Northern Nights Star Fest. Enjoy some of the darkest skies in Minnesota and view thru 25” and 26” Obsession scopes. Onsite accommodations. Guest speakers, swap meet, and door prizes are some of the scheduled events. Medals also available.  
Registration information at www.mnastro.org/NSNF

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

To join the Astronomical League as a Member-at-Large, send a check for $30.00, $45.00 foreign, made payable to the Astronomical League, to:  
Astronomical League National Office, 9201 Ward Parkway, #100, Kansas City, MO 64114  
Phone: 816-333-7759; Email: leagueoffice@astroleague.org  
Or join online at: WWW.ASTROLEAGUE.ORG

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League Sales are online!

The League’s online store is available at the website, www.astroleague.org. Click on the link on the left side of the home page. The online store includes the latest shopping cart technology and accepts credit cards. Shipping & handling (S&H) is calculated at checkout. Merchandise is also available by mail order, payable by check. Please select your items, add the applicable S&H fee, and mail your order to:

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Kansas City, MO 64114

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$8: coffee mug plus $1.20 S&H

Astronomical League full color cloth patch (three-inch diameter)
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Astronomical League blue and white cloth patch (three-inch diameter)
$6 plus $1.05 S&H

Astronomical League lapel pin (one-inch diameter)
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"Guide to the Stars" 16" Planisphere
$21 plus $3.15 S&H
The Astronomical League invites its members to submit astrophotography for publishing in the *Reflector*. When sending photos, please include a brief explanation telling us when and where the photo was taken, your club affiliation, what equipment was used, and any computer processing that was involved.

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.