

# GuideStar



August, 2011  
Volume 29, #8

## At the August 5 meeting...

### Developments on Jupiter in 2010-2011

*Dr. Richard Schmude (ALPO)*

Richard Schmude visits the Houston Astronomical Society again this summer to talk to us about what is going on with the largest planet in the solar system, Jupiter.

Jupiter is an observer's delight, large on the sky (about 43 arc-seconds) and the four Gallilean moons hover nearby.

Like the cosmos, Jupiter consists mostly of hydrogen and helium, and is considered the first of the 'gas giant' planets — the others being Saturn, Uranus, and Neptune.



The Houston Astronomical Society is a member of the Astronomical League.

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#### HAS Web Page:

<http://www.AstronomyHouston.org>

See the *GuideStar's* Monthly Calendar of Events to confirm dates and times of all events for the month, and check the Web Page for any last minute changes.

#### Schedule of meeting activities:

All meetings are at the University of Houston Science and Research building. See the inside back page for directions to the location.

Novice meeting: ..... 7:00 p.m.

“How Good are Your Scope and Eyes?” - Observing Saturn and His Moons—Bruce Pollard—President NHAC

General meeting: ..... 8:00 p.m

See last page for directions  
and more information.

## The Houston Astronomical Society

The Houston Astronomical Society is a non-profit corporation organized under section 501 (C) 3 of the Internal Revenue Code. The Society was formed for education and scientific purposes. All contributions and gifts are deductible for federal income tax purposes. General membership meetings are open to the public and attendance is encouraged.

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### Dues and Membership Information

Annual Dues:Regular .....\$36  
 Associate.....\$6  
 Sustaining .....\$50  
 Student.....\$12  
 Honorary..... N/C

All members have the right to participate in Society functions and to use the Observatory Site. Regular and Student Members receive a subscription to *The Reflector*. *The GuideStar*, the monthly publication of the Houston Astronomical Society is available on the web site. Associate Members, immediate family members of a Regular Member, have all membership rights, but do not receive publications. Sustaining members have the same rights as regular members with the additional dues treated as a donation to the Society. *Sky & Telescope* and *Astronomy* magazines are available to members at a discount.

**Membership Application:** Send funds to address shown on last page of *GuideStar*. Attention - Treasurer, along with the following information: Name, Address, Phone Number, Special Interests in Astronomy, Do you own a Telescope? (If so, what kind?), and where you first heard of H.A.S.

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## Other Meetings...

**Johnson Space Center Astronomical Society** meets in the the Lunar and Planetary Institute on the 2nd Friday of each month. Web site: [www.jscas.net](http://www.jscas.net)

**Fort Bend Astronomy Club** meets the third Friday of the month at 8:00 p.m. at the First Colony conference Center. Novice meeting begins at 7:00, regular meeting begins at 8:00. Web site: <http://www.fbac.org>

**North Houston Astronomy Club** meets at 7:30 p.m. on the 4th Friday of each month in the Teaching Theatre of the Student Center at Kingwood College. Call 281-312-1650 or E-mail [bill.leach@nhmccd.edu](mailto:bill.leach@nhmccd.edu). Web site: [www.astronomyclub.org](http://www.astronomyclub.org)

**Brazosport Astronomy Club** meets the third Tuesday of each month at the Brazosport planetarium at 7:45 p.m. The Brazosport planetarium is located at 400 College Boulevard, Clute, TX, 77531. For more information call 979-265-3376



## Observations... of the editor

by Bill Pellerin, GuideStar Editor

### Hot!! ...with Mosquitoes

If you missed the July meeting, you missed some good information from our observatory chairman Bob Rogers on how to combat mosquitoes. One of Bob's main ideas is to not be a mosquito breeder. Don't let standing, still water remain in potted plants, in bird baths or in other areas in your yard. Don't leave buckets with water in them or old tires in which water can collect. This standing water is a great breeding ground for mosquitoes.

Bob was careful to make sure we understood that in his official duties in mosquito control his agency does not endorse specific products. That said, Bob mentioned several products that have been reported to be effective against the mosquitoes. Here's the list:

- Raid or Black Flag 'Yard Guard Fogger' — spray this at the base of plants and on decks when you plan to be outside.
- Repellents — look for Deet or Picardin as the active ingredient in the product.
- Box and ceiling fans can help keep the pests away. They can't fly in high winds.
- Off (brand) Powerpad lanterns
- Wear long sleeve shirts, light colors
- Yellow bug lights — reduced attraction to insects

My most recent observing sessions have been pleasant, actually. While I'm quite uncomfortable being outside during the day, the night time can cool off enough to make my observing enjoyable. Just because it is hot and muggy during the day doesn't mean that the night won't be comfortable.

### Note from Phil Harrington

Our friend, Clayton Jeter is doing a great service to the Houston Astronomical Society membership by providing us with interviews with interesting astronomers, both professional and amateur. His April, 2011 interview was with Phil Harrington, an author of several books, the latest being *Cosmic Challenge*.

On page 6 of the April, 2011 issue of the *GuideStar* Phil used the phrase "go big or go home". I know from reading Phil's writings that he appreciates all manner of telescopes, large, small, reflectors, refractors, and compound designs.

So, I was confused by his statement and wrote Phil asking him to clarify. Here's the email I got in return:

Hi Bill,

I think you are misinterpreting what I am saying. By "go big or go home," I am *\*not\** saying big aperture. I am saying big ASPIRATIONS. You can "go big" with pocket binoculars, or you can "go small" with a 40" reflector.

In my mind, veteran observers should put themselves and their equipment to the test by trying to see targets that are at the edge of visibility for their instrumentation. That's the basic premise behind *Cosmic Challenge*. And, of course, that is why I divided the book into aperture classes. *Cosmic Challenge* is *\*not\** just for people with behemoth scopes; it's for anyone who wants to see more, regardless of what telescope (or binoculars, or naked eye) they have.

Hope that clarifies.

Best,  
Phil Harrington

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Philip S. Harrington  
Astronomy author/professor  
<http://www.philharrington.net>

**Until next time...**

**clear skies and new moons!**

..Bill

## Just Looking

### A GuideStar Interview by Clayton L. Jeter

## Barry Simon—Refractor Guy

**B**arry Simon is a well known refractor-guy all over the internet. When I chat or email astronomy friends about telescopes from day to day, his name is always mentioned if the refractor telescope is spoken about. He's like America's second in line refractor-guru, Uncle Al Nagler actually holds that title.

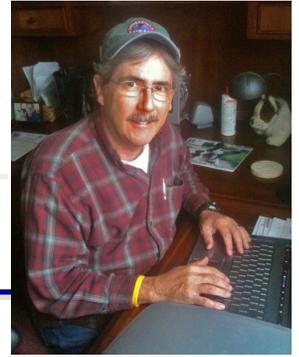


I've chatted with him at a couple of star parties in Louisiana and he's really into astronomy. Listening to him on the field you can hear his love for observing the cosmos (all done with polished glass... not coated mirrors).

I hope you all enjoy reading about Barry Simon's journeys within amateur astronomy. Here's Barry...

### **The Barry Simon bio...**

I got interested in astronomy back about age 8 or 9, probably via *The Golden Book of Astronomy*. Actually it was a tough battle between this book and plastic dinosaurs but the book won out. My first "real" telescope was a 60 mm refractor with a 700 mm focal length; I think it was a Selsi. I do remember that it had no real



finder scope, just see thru metal peep holes which actually worked pretty well as a finder. The next telescope was an Edmund 4.25" f/10 reflector received as a Christmas present when I was 12 in 1964. I had that telescope for about 4 or 5 years, finally selling it to a friend when I reached high school.

During high school and college my astronomy interest was at a low ebb due to "other interests" as I moved from a tripod centered universe to a bipod centered universe. The astronomy interest was not completely gone as I do remember buying a 60 mm zoom refractor and I do remember climbing to the top of one of our trees to see if I could spot Comet Kohoutek back in 1973. What did bring me back to the "Universe of Astronomy" were 3 separate things with only one of them technically being an astronomy thing. The astronomy thing was seeing a very good Perseid Meteor Shower from the beach in Panama City, Florida in 1977. The other two factors were reading Larry Niven short stories with a "space" theme and the 3rd was seeing *Star Wars*.

My first real astronomy purchase after my revival was a 3" f/16 Sears equatorial refractor back in the spring of 1978. Later that year I began acquiring parts and started construction of a Jaegers 6" f/5 refractor, which is still one of my main telescopes today. Early in 1979 I joined the Pontchartrain Astronomy Society (New Orleans) and the rest is history. I have served as President of the PAS for 6 terms as well as holding other elected positions. I have also served as edi-

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tor of *New Horizons* the quarterly newsletter of the Southeast Region of the Astronomical League for 2 years back in the 80's. However the position that is near and dear to me is my many years as Managing Director of the Deep South Regional StarGaze. I started this annual star party back in 1983 and we will be holding the 29th Annual Deep South Regional StarGaze this fall. It is the oldest continuous star party held in the southeastern United States.

Perhaps partially (mostly) because of my involvement with the Deep South Regional StarGaze, David Levy has had one of his asteroid discoveries named after me. See the wikipedia entry for Asteroid 19980 Barrysimon.

[http://en.wikipedia.org/wiki/19980\\_Barrysimon](http://en.wikipedia.org/wiki/19980_Barrysimon)

I am married (going on 33 years). My wife is Susan Simon, a CPA, and very involved with Rotary. We have two daughters, Melissa (University of Texas - Austin, 2007) and Jamie (LSU - Baton Rouge, 2011). My career has been in the medical/pharmaceutical arena for the past 36 years. Primary astronomy interest includes observing with binoculars and with wide field refractors. Other interests include O scale model railroading and military history, mostly naval.

### ***The Barry Simon interview...***

**Clayton:** Well, from what you've stated above in your bio, you sure love the refractor telescope design. Why the fascination with that style of telescope? Sell me on this system (I'm actually a Schmidt Cassegrain user).

**Barry:** Ease of use, more or less permanent collimation, pin point stars across the field and no gymnastic contortions needed, a very, very important benefit as the years go by. Note – I have owned and used SC's maks, Newtonians and they all have their pluses, but the refractor type is the scope for me.

**Clayton:** Where did you get the idea of creating/coordinating the "Deep South Regional StarGaze"? Tell us about this event... I know very little about it.

**Barry:** I attended the Astronomical League Convention in 1980 (Dallas) and my first Texas Star Party in 1983. Both events were instrumental in wanting to get a lot of people under good skies for a star party. I also met Cliff Holmes, founder of the Riverside Telescope Makers Conference during the summer of 1982. He and his wife were on the way to Stella-fane and they were passing thru New Orleans. He contacted me and we spent an afternoon together. So I am sure he was influential in planting a "star party" seed in my mind.

Another factor was a desire to pull 3 clubs together Pontchartrain (New Orleans), Baton Rouge and Jackson (MS). A search uncovered our first location for the Deep South (at Percy Quin State Park) near McComb, MS. Our first DSRSG in 1983 had a registration of 47 and was just one night but it achieved its purpose and grew from there. While not as large as the TSP, we have averaged about 140 people per star gaze.

Our current location, the Feliciana Retreat Center in East Feliciana Parish is about 50 miles north northeast of Baton Rouge. On really good nights our magnitude limit is about 6.5 and our setting is beautiful with accommodations ranging from motel type rooms to tent camping on the observing field. The DSRSG is always held in mid-fall. This year our dates are October 26<sup>th</sup> to October 30<sup>th</sup>.

**Clayton:** Is amateur astronomy becoming more popular in southern Louisiana?

**Barry:** Our neighboring club in Baton Rouge seems to be growing a bit. New Orleans still needs to wake up completely from Hurricane Katrina. While our club membership is good, 125 plus I think many members of our club are not as active as they were before the storm. Hopefully time will heal all.

**Clayton:** I've actually met you at several star parties in the past 5 years or so (Hodges Gardens and Kisatchie) although didn't actually observe with you. Can you tell us about your astronomy? Visual only?

**Barry:** No, not visual only. I was actually quite prolific with photography thru much of the 80's and 90's and the first few years of the this century. (What do we call the 1<sup>st</sup> decade of this century as well as this new decade?) Most of my photography was via film. I am doing some digital solar work and some rare, simple DSLR work using a Canon 20D, but really very little. So mostly visual now including binocular use with a pair of 20x100 Miyuchi binoculars.

To be perfectly honest, the past 2.5 years have been devoted more to battling prostate cancer, a very severe form. I have

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had surgery, radiation therapy, chemotherapy and hormone therapy. I think they also threw the kitchen sink at me, but I ducked. I am happy to report that I am cancer free now and getting stronger every day. The battle though did tend to keep astronomy on the back burner. You should have seen me at the Deep South Regional StarGaze back in 2009 when I had a chrome dome!

**Clayton:** Where is most of your observing performed? At home?

**Barry:** Probably 50/50 between home and either our club observing site (about 60 miles north of New Orleans or at either the Deep South Regional StarGaze in the fall or our informal Deep South Regional StarGaze "Spring Scrimmage" held in May, or at the occasional "outreach" event.

**Clayton:** Are any of your family or neighbors interested in your hobby? Do they observe too?

**Barry:** No not really, observing from home is pretty much a solitary pursuit.

**Clayton:** *Sky and Telescope* or *Astronomy*? Do you have other favorites?

**Barry:** I subscribe to both, also *Astronomy Technology Today*. I spend a lot of time on CloudyNights on the internet. Additionally I am the owner/moderator or moderator of several astronomy related "Yahoo Groups". Chief of which are Uni-tronTelescopes and BinocularAstronomy.

**Clayton:** Do you have an amateur observing mentor?

**Barry:** No, several observing buddies but no one I would consider a mentor.

**Clayton:** We talked about refractors earlier... which is your favorite? Why that telescope?

**Barry:** As I tell my wife, telescopes are like golf clubs, different clubs have different purposes and so do telescopes. The previously mentioned 6" f/5 Jaegers has been with me the longest, 32 years since completion. It sits on a Light Speed "Wagon" alt-azimuth mount with digital setting circles and it still brings in the views. For prime focus photography and great lunar and planetary viewing I rely on my Takahashi TSA 102 apo refractor. This one rides on a Tak EM10 mount.

**Clayton:** How do you envision amateur astronomy in the next 25 years?

**Barry:** Not really sure what direction the hobby will be going in. I think we have to redouble our efforts to get young people involved. Astronomy competes with so many other visual interests today including the internet in general and myriad games.

**Clayton:** Do you have any helpful advice to pass on to observers just starting out in astronomy?

**Barry:** Attend star parties (like our Deep South Regional StarGaze) to check out the equipment and the different types of objects you can see with them. Don't rush into major purchases until you are sure your interest is solid.

**Clayton:** Is there an email address that you have that a Houston Astronomical Society member could contact you for an additional question or two?

**Barry:** Yes, I can be reached at:  
bsimon615@aol.com

**Clayton:** Thanks Barry for taking the time to share your interest and thoughts within our HAS newsletter, the *GuideStar*. We wish you luck with all of your astronomy interests. Please come visit our society when in the Houston area, we'd love to see you.

Clear skies always!

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*Clayton L. Jeter is an avid SCT visual observer and a long time member of the Houston Astronomical Society. Contact him at: [stonebloke@gmail.com](mailto:stonebloke@gmail.com)*

# Observatory Corner

*By Bob Rogers, Observatory Chairman*



## *Hello everyone.*

I want to thank everyone who attended the July membership meeting when I presented my talk about Mosquitoes. I do hope that some of the suggestions that I made will help everyone out while observing.

I want to let everyone know that we will be making an electrical upgrade to the site concerning the amount of power that is supplying the picnic area. Last September at the All clubs star party, we ended up blowing the fuse on the transformer on the pole by the bathroom because we were using too much power. After meeting the electrician and determining that we needed more current capacity to handle the load on that circuit, he met with San Bernard Power Company at the site to see what needed to be done. Bottom line is that the final cost to upgrade the power supply will be around \$3,000.00 give or take a few hundred dollars. I'm hoping to get this done in the next couple of weeks so we don't have this issue happen again.

A reminder that we are taking donations to help with some of the cost of the fence replacement. If you can donate, it would be appreciated and all donations are Tax deductible.

Donations can be made to:  
HAS  
PO Box 20332  
Houston, TX 77225-0332

In the note section, please put – "Observatory donation"

Remember that we are the only club that has an observing site that everyone can go to observe away from city lights. It cost money every year to keep the site maintained for your use and pleasure.

**I do need** to remind everyone that we need to start filling out Log Reports at the site so I can give this information to the Fondren Foundation. The property is on a 99 year lease and part of the Lease agreement is that HAS needs to report every year to the Fondren Foundation that the Property is being used. The Log Reports are located in the box in the middle of the field. Just open the cover, fill out the report and then slide it into the slot that is in the inside of the cover and then close the box. It is very important that **everyone** fill out a Log Report so that we are showing that the Observing site is being used. Your help on this is very much appreciated.

If you have a Randalls card, and have not done so, please have it coded for the Houston Astronomical Society. Our number is #6618. The Society gets 1% of the gross sales that members spend at Randalls. Randalls totals up the amount spent each quarter and will send us a check if the amount goes over \$2,500.00, otherwise the total roles over to the next quarter or zeros out at the end of the calendar year. So

please link your Randalls card to the Houston Astronomical Society so that the society can benefit from this Randalls program. Our number is #6618. This is very easy to do, just go to the Courtesy Booth and tell the person there what you want to do.

If you have any suggestions or thoughts for the site, let me know.

Thanks,

*Bob Rogers*

Observatory Chairman  
281-460-1573  
siteworkerbob@hotmail.com

## New GOES-R to Give More Tornado Warning Time

by Dauna Coulter and Dr. Tony Phillips

So far this spring, more than 1,400 tornadoes have struck the U.S. Some of them have cut jaw-dropping trails of destruction across the countryside and, tragically, across inhabited communities, too. Hundreds of lives have been lost in the onslaught.

Throughout the season, the National Weather Service has routinely issued tornado alerts. In the case of the Alabama tornadoes of April 27<sup>th</sup>, forecasters warned of severe weather five full days before the twisters struck. Because they couldn't say precisely *where* the twisters would strike, however, many of their warnings went unheeded.

"If people get a hurricane warning, they often evacuate the area," notes NOAA's Steve Goodman. "But we react differently to tornado warnings."

Perhaps it's because tornadoes are smaller than hurricanes, and the odds of a direct hit seem so remote. Recent pictures from Tuscaloosa, Alabama, and Joplin, Missouri, however, show the perils of playing those odds. Goodman believes that more precise warnings could save lives.

To fine-tune tornado warnings, NOAA will soon launch the first in a series of next-generation weather satellites – GOES-R (Geostationary Operational Environmental Satellites-R series). The spacecraft is brimming with advanced sensors for measuring key ingredients of severe weather including winds, cloud growth, and lightning.

"GOES-R will be the first geostationary spacecraft to carry a lightning sensor," says Goodman, the GOES-R Program Senior Scientist. "Studies show that sudden changes in the total lightning activity correlate with storm intensity—and with tornadoes."

The lightning mapper will detect and map not only cloud-to-ground lightning, but also bolts within and between clouds. The kind of cloud-to-ground lightning we see from our front yards accounts for only 15-20 percent of total lightning. To get a clear idea of a storm's intensity, meteorologists need to know about *all* the lightning—a view GOES-R can provide.

All by itself, the lightning mapper will provide 7 minutes more lead time in tornado warnings, according to Goodman. GOES-R's state-of-the-art instruments will also improve long-range forecasts.

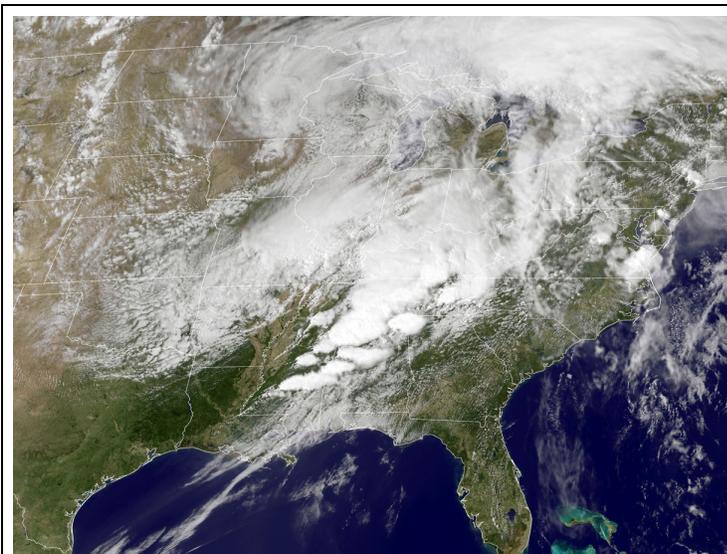
"The satellite's Advanced Baseline Imager (ABI), for instance, will provide a much clearer picture of clouds," says NOAA research meteorologist Tim Schmit. Compared to lesser instruments already in orbit, ABI can better detect super-cold "overshooting tops," evidence

### NASA Space Place

of enormous energy and upward velocity that correlate with subsequent severe weather.

"Accurate advanced notice of high-risk tornadic conditions can cue officials to close schools and businesses even before tornadoes are actually detected," says Schmit.

Forecasters doubt tornadoes can ever be predicted with 100% accuracy. The twisters are just too capricious. GOES-R, however, is a step in the right direction.



*This GOES image shows the storms that spurred the intense April 27 tornado outbreak in the southern U.S. Animation showing the development of weather can be seen at*

<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=50347>.

Find out more about GOES-R's unprecedented capabilities at <http://www.goes-r.gov>. Young people can learn more about tornadoes and all kinds of other weather at <http://scijinks.gov>.

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

# Building an Astronomer's Stool

*This Month: Building a sketch desk and the decision of paint.*

*By Jim Wessell*

*Part 6 of 7*

This Month: A guide to making your own red LED Lighting system.

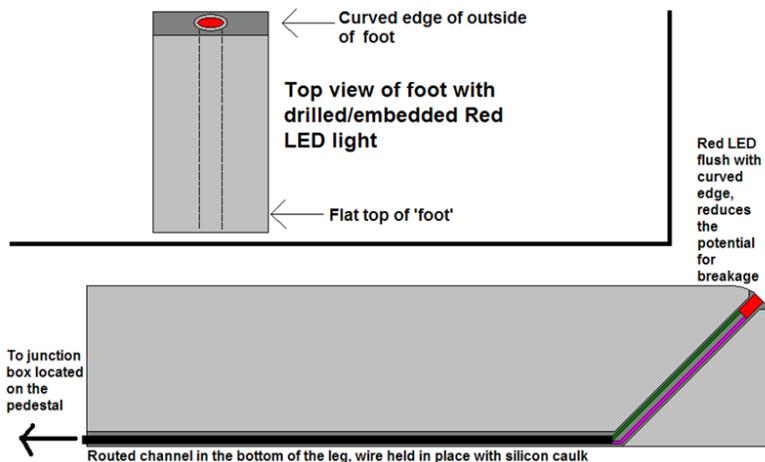
### Protection in these dark and troubling times...

In this case, I mean the danger of tripping in the dark. Here is another time I did not plan ahead, and things might have been easier if I had. As the stool was nearing completion, I was still thinking about the final touches I could add to it to make it really exceptional in both form and function. I have seen lights attached to telescope tripods to alert onlookers to the tripod's wide footprint in the dark. I thought this was a bright (pun intended) idea and in my case would serve to increase the aspect of safety when I carried my astronomer's stool to a publicly attended dark site. My original idea was to go out and buy a few battery powered, press top LED lights. The thinking was that I would cut a notch out of the upper surface of the four stool legs that matched the circumference of the lights, installing them, and then perhaps placing a strip of metal over the light to hold it in place and somewhat protect it from being directly stepped on when getting into or out of the chair. This method has a few drawbacks. Among them are the ever present danger of breaking the lights since they are wider than the width of the 2 x 4 'foot' and the cut-out notch itself would structurally reduce the upper surface of the stool's feet. That upper surface has a critical role as a step when the chair is at or near its maximum height. Also cutting that notch out would weaken the area right before the upper curve of the foot, making it more susceptible to breaking off entirely. For all these reasons, and coupled with the fact that John dabbles in electronics, made us look in a different direction.

After a bit of back and forth brainstorming, I finally proposed to John that we build the entire LED lighting system from components to our own design and specifications. The main idea was that the red LED light would be located near the distal tip of each of the feet and would

be recessed to become flush on the top surface of the foot. Secondly, the line providing the power would be run along the length of each of the four legs to a single central power supply. A preliminary sketch of the idea in both a top and side view is below left.

To start us on the path of a new lighting system, John made a practice foot with exactly the same dimensions as the ones that were already built into the pedestal. This was a good thing, because it allowed us to figure out how to hold the wood at a solid 45° angle for drilling for the LED light without crimping the wood in a vise (a piece of wood to either side of the practice foot worked nicely). The practice foot also allows us to figure out how we were going to rout out the thin areas where the wiring would be run along inside the bottom of the feet. The two pictures below show the routed out areas under a foot and the central pedestal, respectively.



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Design of a lighting system for this my stool was a little complex as there are two removable legs and a pedestal between the two permanent legs. Since the overriding design was to be able to remove a pair the legs, this also meant we had to also be able to disconnect the power cables from the power supply. This problem was solved by screwing a junction box (photo of its location below, left) to one of the fixed legs with three 1/8" mono mini jacks (normally used for audio purposes) installed in the top long side of the box and a 2.1 mm power jack installed in one end. This power jack enabled us to use an existing battery box (photo of battery box, below, right) with an output of 6 volts from 4 "D" cells and eliminated the need for an "On/Off switch" by allowing one to simply unplug the power supply. If desired, an alternative power supply configuration can be designed, and here is an online reference website to that end: <http://led.linearl.org/led.wiz>



LEDs for the fixed legs could be wired permanently in series as they never have to be disconnected. A 33 ohm 1/4 watt resistor was soldered to the negative lug of the power jack along with another wire that was connected to the negative lugs of each of the three mini jacks. Here is a picture of the internals of the junction box.



The negative wire from another two wire cable was connected to the other end of the resistor and the cable run through a hole in the bottom of the box, through a vertical hole in the leg, to the channels cut in the bottom of the permanent legs and around the pedestal (picture below).

The positive wire from this cable and another wire were soldered to the positive lug of the power jack. The second wire was soldered to each positive lug of the three mini jacks. Length of the wire from the resistor was measured, cut, stripped, and the negative end soldered to the cathode lead of one LED. Shrink tubing was used to cover the joint and wire up to the plastic of the LED. The other wire was soldered to the anode



lead of the LED and another sleeve of shrink tubing placed over the connection. Here is a close up of a red LED unit (left), and a second picture (right) shows the seated red LED in the tip of a foot.



The entire red LED unit was electrical taped before sliding the assembly through the hole in the leg to position it and fixing the cable in the prepared channel in the bottom of the legs.



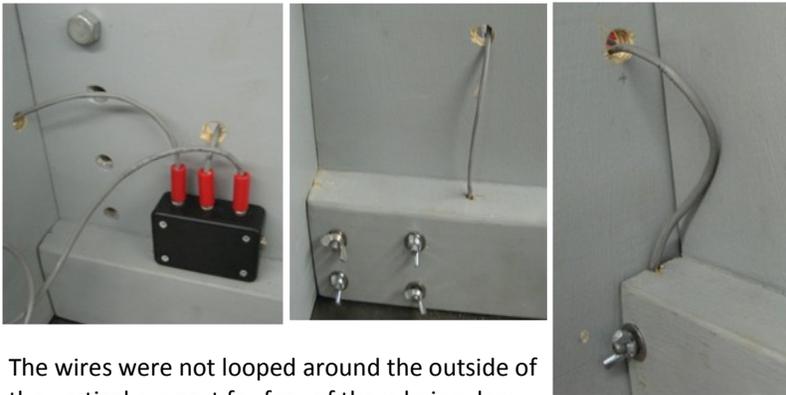
A second LED assembly was prepared and put in place in the other fixed leg and the cable was run to the point where the original cable entered the channel from the junction box. The anode wire from the first LED was soldered to the cathode wire of the second LED and the joint protected by shrink tubing. Next, the anode wire of the second LED was soldered to the positive wire from the junction box and protected by shrink tubing. Note that a slight enlargement had been prepared in the leg channel to accommodate these connections (picture of the connection area is below).

(Continued on page 12)



*(Continued from page 11)*

Preparation of the LEDs for the removable legs was slightly different. These would be single LEDs, powered by parallel circuits, and require more resistance to limit current (150 ohm, 1/4 watt resistors were used), and also require a 1/8" mini plug to connect to the junction box (positive wire to the tip electrode and negative to the body). One removable leg requires an extension of the cord slot up the back end of the leg to allow passage of the cable and a hole drilled slightly above the junction box in the support wedge of the fixed leg to allow access for its plug (picture below, left). The second removable leg required a hole drilled from the channel in the bottom at a point even with the junction box on the fixed leg and a hole drilled through the support wedge of the removable leg to allow access to the junction box for its plug.



The wires were not looped around the outside of the vertical support for fear of them being damaged by either an errant foot, or the hanging footrest itself. The previous two images (center and right) show the other sides of the holes in relation to the feet that the two wires provide power. If you compare them with the previous picture, and think about the geometry for a second, you will quickly deduce which wire goes to which leg. This gives yet another way to make absolutely sure that the correct removable leg is re-attached to the correct position on the central pedestal when it is being re-assembled.

All wiring on the underside of all the feet and central pedestal have been silicon caulked into place, so they are somewhat protected from sticks and stones and such on the ground, but yet it can be quickly removed to make any needed repairs or adjustments.

If you are playing along at home, and following the logic here, you will realize that there is one unoccupied female jack on the junction box. Well, for a change I was thinking ahead and asked John to give me the means to provide electricity to a similar lighting system for the legs of my future tripod. Using the same wiring process as described above, a cable had the near end capped with a male plug (positive wire to end electrode and negative to body). The terminal end of the cable was stripped and 3 additional wires were spliced onto it (positive to positive wires and negative to negative with all protected by shrink tubing). Those three wires were each capped with a red LED light unit (150 ohm resistor soldered to the cathode side of each LED and each lead protected with shrink tubing). This allows for one red LED light to be at-

tached to the outside of each of the three legs of my eventual tripod mount. They will likely be secured in place with Velcro. The following 3 pictures show (1) the wiring system for the tripod, (2), the whole lighting system lit up with John's tripod stepping in for the demonstration, and the whole illuminated with ambient lighting, and finally (3) the red LED system up and running, glowing in the dark.



I am very pleased with the final functionality of the entire lighting system. There is very little chance of damage to the wiring within the pedestal proper, and the wire running to the tripod would be easy enough to replace if it was broken or severed. I believe that there is sufficient light for safety's sake but not so much light that it will be distracting to other observers while at a dark site. There is a distinct possibility that the 3 wires at the distal end of the tripod lighting cable aren't long enough to run down the legs for my tripod, but this is a relatively easy fix down the road.

Next Month: Things I would have done differently, acknowledgements, and a final wrap-up.

## What's Up?

### News about HAS members and Astronomy Events in Houston

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The George Observatory is always looking for volunteers on Friday and Saturday nights. This is a great opportunity to introduce the general public to astronomy and the night sky. There's a George Observatory volunteers list server that you can subscribe to. You can also email Cynthia Gustava at cynm31@att.net

PBS (KUHT in Houston) recently presented a documentary called *Journey to Palomar* — excellent. Look for it to be re-played several times. You can buy the video disk at [www.shoppbs.org](http://www.shoppbs.org)

Bil Pellerin has an article on the Astronomical League web site ([www.astroleague.org](http://www.astroleague.org)) titled *Are You a Serious Observer?* that addresses the question of what are the characteristics of someone who is a serious observer. Check it out. Let me know what you think.

We received (via the list server) **4th of July greetings** from our friend Brian States in the UK.

**October 8 is 'Observe the Moon Night'** — anyone interested? <http://observethemoonnight.org> This is the same night as our yearly **Astronomy Day** events. Always a fun time.

There was a lot of discussion on the list server about the **James Web Space Telescope**. The funding for the instrument may be cut. Write your member of congress telling him or her that you want the funding to be maintained.

**Officers, board members, and committee leaders** — As we approach the end of the HAS year, we'll need to consider who we want to lead the organization in the new year. If you are interested in occupying one of the officer or board positions, let our president, Ken Miller know. It's a great way to contribute your talents to the HAS!

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## My Favorite Universe

By Neil deGrasse Tyson

Review by Bill Pellerin, GuideStar editor

If you are not familiar with The Teaching Company, you should be. They produce audio and video courses on very many subjects, including, our favorite, astronomy. I recently purchased *My Favorite Universe* by Neil deGrasse Tyson (director of the Hayden Planetarium, author, lecturer, and host of *Nova Science Now* on PBS).

I saw Dr. Tyson at U of H a few months ago, and it was a great presentation. You should have been there (if you weren't). Anyway, I was motivated to acquire this course because of that lecture.

The topics in this series are not closely related, but are picked by Dr. Tyson as his favorite subjects to talk about. Even if you think you know something about each of the subjects, you'll learn something new by viewing these videos.

The topics include black holes, the big bang, extra-solar planets, life on other planets, and the end of the world.

The package comes with two DVDs and a guide book, even though all the information is on the DVDs. Each DVD contains 6 lectures, so there are 12 total lectures.

You can order these from The Teaching Company at [www.teachco.com](http://www.teachco.com). You should be aware that every course in their catalog goes on sale regularly. The current catalog lists this set at \$39.95 (regular price \$199.95). So, wait until the course you want goes on sale!

## Shallow Sky Object of the Month

# Ring Nebula (M57)

By Bill Pellerin, GuideStar Editor

**Object:** M57

**Class:** Planetary Nebula

**Constellation:** Lyra

**Magnitude:** 8.8

**R.A.:** 18 h 53 m 35 s

**Dec:** 33 deg 1 min 47 sec

**Size/Spectral:**

**Distance:** 2300 ly

**Optics needed:** Small telescope to see ring, large telescope to see central star

### Why this object is interesting:

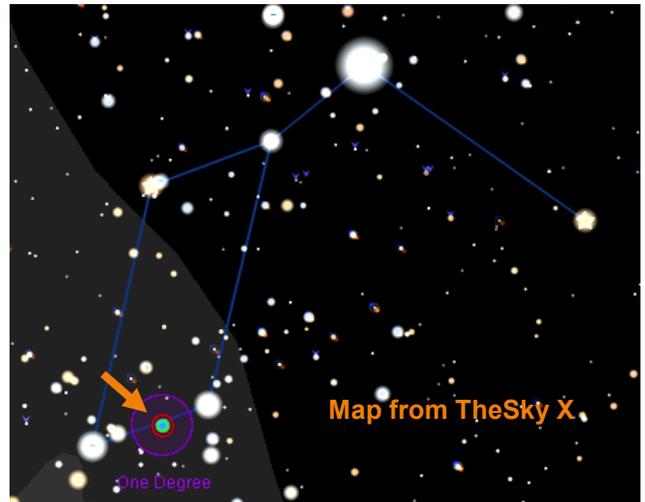
You've probably seen this object many times, but I want you to see it again, and this time with different eyes. You'll see it differently because you will understand its place in the cosmic scheme of things.

When low mass stars, like our Sun, have fused its hydrogen to helium and have fused the helium to carbon and oxygen the star is done for. There's not enough mass to ignite the carbon and oxygen, so the nuclear fusion stages of the star are over. In the process of getting to this point the star has thrown off some of its outer layers. This material, that used to comprise the outer layers of the star is what we're seeing as the nebula (ring in this case).

This material is being ionized by ultraviolet radiation from the central star.

With a large telescope you may be able to see the central star, called a 'white dwarf', but to call it a star is really inaccurate. A star generates its energy from nuclear fusion, but there is no fusion going on here. What is left is too small to ignite the carbon and oxygen.

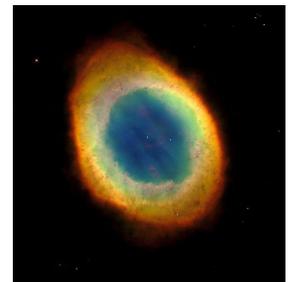
What you're seeing as the central star is the residual heat from fusion that ended not that long ago (in astronomical time). The carbon / oxygen core was, as you might imagine very hot from being inside the star and it is this residual heat that is causing the central 'star' to continue to glow.



When you see a planetary nebula, you are looking at a very short phase in the lifetime of a star, perhaps 50,000 years or so. This is a long time to us, but compared to the billions of years of stellar time (the Sun, for example is expected to burn on the main sequence for 10 billion years), the interval in which a planetary nebula exists is very short. About .0005% of the lifetime of the star.

Eventually, the left over heat in the central star dissipates, the planetary nebula goes out, and we're left with an invisible black dwarf (not a black hole).

This object is conveniently placed between the two southern stars of the constellation Lyra (the Lyre) and is well placed for viewing during the summer months. In mid August, it transits at about 10:30 p.m., and with the Sun setting at about 8:00 p.m. it will be dark enough for you to see it. Look fast, though, in 50,000 years or so there won't be anything to see at this location on the sky.



*M57, the Ring Nebula, from the Hubble Space Telescope*

# **Houston Astronomical Society**

P.O. Box 20332

Houston, TX 77225-0332

## **General Membership Meeting**

The Houston Astronomical Society holds its regular monthly General Membership Meeting on the first Friday of each month, unless rescheduled due to a holiday. Meetings are in Room 117 of the Science and Research Building at the University of Houston. A Novice Presentation begins at 7:00 p.m.. The short business meeting and featured speaker are scheduled at 8:00 p.m.

Parking is NOW across from Entrance 14, by the stadium.

## **Board of Directors Meeting**

The Board of Directors Meeting is held on dates scheduled by the board at 7:00 p.m. at the Houston Chronicle office, downtown. Information provided to *GuideStar* will be published. The meetings are open to all members of the Society in good standing. Attendance is encouraged.

## **GuideStar Information**

The H.A.S. *GuideStar* is published monthly by the Houston Astronomical Society. All opinions expressed herein are those of the contributor and not necessarily of Houston Astronomical Society. The monthly Meeting Notice is included herein. *GuideStar* is available on the HAS web site to all members of H.A.S., and to persons interested in the organization's activities. Contributions to *GuideStar* by members are encouraged. Electronic submission is helpful. Submit the article in text, MS-Word format via email BillPellerin@sbcglobal.net. Copy must be received by the 15th of the month for inclusion in the issue to be available near the end of the same month. Or, bring copy to the General Membership Meeting and give it to the Editor, or phone to make special arrangements.

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The Houston Astronomical Society welcomes you to our organization. The HAS is a group of dedicated amateur astronomers, most of whom are observers, but some are armchair astronomers.

The benefits of membership are:

- Access to our 18 acre observing site west of Houston -- a great place to observe the universe!
- A telescope loaner program -- borrow a HAS telescope and try observing for yourself!
- A monthly novice meeting, site orientation meeting, and general meeting with speakers of interest.
- Opportunities to participate in programs that promote astronomy to the general public (such as Star Parties at schools)
- A yearly all-clubs meeting for Houston area organizations
- Meet other amateurs and share experiences, learn techniques, and swap stories

***You're invited to attend our next meeting.***

***You'll have a great time.***

## **Houston Astronomical Society**

### **Meeting on Friday, August 5**

**7:00 Novice Meeting**

**8:00 General Meeting**

### **University of Houston**

#### **Directions to meeting:**

#### **From I-45 going south (from downtown)**

- exit at Cullen Boulevard
- turn right on Cullen
- turn right into the parking lot (by the stadium)
- Science and Research is across the street (2nd building back)

#### **From I-45 going north (from NASA/Galveston)**

- exit at Cullen Boulevard
- turn left on Cullen
- turn right into the parking lot (by the stadium)
- Science and Research is across the street (2nd building back)

#### **Parking:**

There is Free Parking, **BUT DO NOT PARK IN ANY RESERVED PARKING SPACES AT ANY TIME.**  
U of H parking enforcement will ticket your vehicle.