

# GuideStar



June, 2012  
Volume 30, #6

## *At the June 1 Meeting*

# **Astronomy Year in Review**

**Bob Taylor**

As we approach mid 2012, it's time to look back to the year that just passed and to understand what has happened (astronomically). Bob Taylor will give us an overview of last year and prep us for observing coming up this summer.

## *June 5 —*

### **Transit of Venus at Urban Site**

Four days after our June 1 meeting, on June 5, we will have the opportunity to witness an astronomical event that will not happen again in any of our lifetimes — the transit of Venus across the sun. Join your HAS friends at the Urban Observing site in Bear Creek Park at 4:00 p.m. on June 5. Come to the site and see something you'll never see again.



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.

Greg Barolak—"An Introduction to Astrophotography"

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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 Dr. Lawrence Pinsky, U. of H.  
 Dr. Lawrence Armendarez, U. of St. Thomas

### 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

## President's Message

by Gordon Houston, President

### Hello HAS,

All too often we get caught up in our pursuits and forget the purposes for which are our primary objectives. This happens in every facet of life, whether it is personal, spiritual, or business. We often hear this in relation to sports when coaches tell players to "get back to the basics or fundamentals." I believe that this is what I am trying to accomplish in my term as President, get back to the basics. How many of you have actually read, scanned, or otherwise taken note of our by-laws. **Article III states our purposes and reason for the organization.** It reads as follows:

Article III: The corporation is formed for **educational and scientific purposes, for individuals and groups**, of all races, creeds and ethnic backgrounds without regard to sex, for the primary purposes of:

- (1) Developing and implementing programs designed to foster awareness in individuals and in the community with regard to astronomical developments and achievements as well as promoting the science of astronomy.
- (2) Making available to individuals and the community educational resources concerning astronomy.

Article III constitutes the basics and I invite each of you to help contribute to these purposes for the success of our organization.

Helping fulfill these purposes, the May **Basic Observational Astronomy course** was held on two Mondays, May 7<sup>th</sup> and 14<sup>th</sup>. We had 16 participants attend the course, which now makes for around 38 who have attended all or parts of the two courses held so far in 2012. My observation is that most of the participants have been new members, many joining in the week or two prior to the course. Holding the class at least one more time this year, should bring the total to over 50 newly trained members. Hopefully, this will equate into more people helping fulfill our purposes through outreach activities. As I said last month, we are a volunteer organization and that is what makes the Houston Astronomical Society run.

I want to thank all those who contribute to our cause. I first want to recognize the **Two Minute Drill observing tip presenters in May Lunar-Charles Hudson, Planetary-Walter Brown, and Deep Sky-Ian Binmore.** I look forward to hearing the June TMDs. Our new **Membership Chairman, Steve Fast** continues to have an immediate impact on our organization. I want to thank our

primary outreach team of Debbie Moran, Alan Rossiter, and Richard Nugent and all those recognized with HAS nametags for participating in outreach events. These are just a few examples of people contributing to the fulfillment of Article III for HAS.

Finally, **the two big solar events coming up are the partial lunar eclipse the morning of June 4<sup>th</sup>, which we will be able to observe about half of the eclipse before sunrise, but the big event is the next day, June 5<sup>th</sup>. This is the transit of Venus, which will be spectacular.** I have reserved pavilion number 6, which is just south of our Urban Observing site, starting at 3:00PM for set up, 4:00PM for public arrival. I hope to transition this into an Urban Observing night, getting access till midnight. Put this date on your calendar. Now is the time to be preparing your solar filters. You won't see this again in your lifetime. Be there.

*Ad astra,*

*..Gordon Houston*

**President HAS**



## Observations... of the editor

by Bill Pellerin, GuideStar Editor

### Dealing with Uncertainty...

I don't know about you, but I'm very eager to see the Venus transit on June 5. This event has significant historic importance (see Eli Maor's article in the June *Sky & Telescope* magazine, page 28). We know when the event will occur and where the sun and Venus will be in the sky. What could go wrong?

Clouds. I'm writing this on a day on which I saw no direct sunshine. If the event was happening today, I'd have missed it. Any idea what the weather will be like on June 5? Not really. So, we end up playing the odds. While it may be perfectly clear in Houston on that day, other sites have a higher likelihood of being clear (based on long term meteorological data). And, while these other sites may have a greater chance of clear skies, there's no guarantee.

I was in Mazatlan for the July 11, 1991 total solar eclipse. We were lucky to get a look at the event, but the sky was hazy and the view wasn't quite as spectacular as we had hoped.

A lot of us will be studying weather charts on June 4th to try to pick a place to be to see the transit and making travel plans (or not) based on those studies. Still, no guarantees.

Read Eli Maor's article and pay special attention to the experience of Le Gentil. No matter what happens to us, our experience will surely be better than his. Even if we miss the in-person, live experience of the Venus transit, we can see a replay on the Internet.

### Preparing for the Venus Transit

Because this Venus transit will be a once in a lifetime event for most of us it is important to prepare. There's not a lot of time left and some of the things you may need to purchase may be hard to find. I experienced this when I bought a telescope finder especially made to assist with pointing the telescope at the sun. I got it, but there was a delay due to stock shortages.

Solar (white light) filters may be in short supply, too. I expect that the demand for these is quite high now. One web site I visited showed that any orders for these filters wouldn't be filled for several weeks — which will be after the transit is long over.

Please review the information in *Astronomy* and *Sky & Telescope* magazines about safely observing the transit. Protect your eyesight.

Put your setup together and spend some time learning how to make it work properly. Make sure you can get your telescope to focus properly and that the image scale (magnification) is about right.

Once you have everything figured out, put all the stuff you need in one place so that on transit day you'll be able to load it up and take it to your observing site. Don't leave anything to chance.

If you hope to photograph the transit now is the time to do some test photos and see how they turn out. Here is one of my test photos (taken



yesterday) to get the image scale right and the exposure. The equipment configuration I had in mind didn't work well, so I modified it. Better to learn that now than to learn it when I'm trying to grab a picture of the actual transit.

Don't forget that the HAS is providing a transit observing opportunity at the Bear Creek Park observing site. Look for more information in this *GuideStar*.

*Until next time...*

*clear skies and new moons!*

*..Bill*

# Connecting with the Milky Way

by Don Selle

One of the benefits of being an amateur astronomer in Texas is our southern location and proximity to the dark, transparent skies of West Texas. They are what bring people every year to the Texas Star Party, where (when weather permits) the summer Milky Way can be seen at culmination as a luminous arch stretching from the southern hills through the zenith, and finally touching earth again on the northern horizon.

The weather at TSP 2012 was very cooperative, and on one early morning, I decided to take some wide field images of the southern



Milky Way in Scorpius and Sagittarius. As I worked the camera and waited for the exposures to complete, I started to follow the path of its dark lanes far above me, a panorama too big for the camera to capture. Good transparency and seeing combined to make the Milky Way stand out as a physical presence. I had the feeling that the sky was somehow lower –almost as if it was an arch in the ceiling above me, the bulk of it just out of sight in the dim light with the Milky Way and the stars

scattered around it as beautiful glowing decorations.

I realized that, as I looked closely at the Milky Way and recognized features I knew, I was checking them off a mental list, cataloging them for some future use. I couldn't help but wonder how my perception of this marvel was affected by my knowledge of the structure of our galaxy and its place in the vastness of the universe we now know.

Clearly our view (or understanding) of the Milky Way changes how we view (or perceive) it. In our electrified urbanized and light polluted world, it is easy to understand that many people in the United States live their lives without ever seeing the Milky Way. For those of us who are enthusiasts, it takes considerable effort to get to where we can have a nearly pristine Milky Way experience.

Unless they have camped in the wilderness or driven cross country at night, the average person is unlikely to have seen the Milky Way. Even then, unless they knew to look for it, they could easily miss the opportunity, sitting around a campfire or failing to just stop and look up.

Our ancestors living in a world without electric lights to block their view were probably very familiar with the sight of the Milky Way overhead. In fact it is likely that most people were familiar with the sight of it, and to them, like most things familiar, it was just there and subject to only passing interest.

Our understanding of the Milky Way has also changed dramatically through history and especially so over just the last one hundred years. There are numerous myths from ancient and aboriginal peoples to explain the Milky Way. In Greek mythology, the Milky Way is milk spilt by the goddess Hera while she was suckling Heracles. A Cherokee myth of the creation of the Milky Way tells of a dog that was caught stealing newly ground corn meal and was chased away. As he ran, the corn meal fell from his muzzle and was sprinkled across the sky as he ran, thus the Milky Way is called "The Way the Dog Ran."

The ancient Greeks developed explanations which fit into their philosophy of the natural world. Aristotle reported that the philosophers Anaxagoras and Democritus who were atomists, proposed that the Milky Way was composed of stars too small for the eye to discern. Aristotle himself proposed that the Milky Way was at the top of the atmosphere and was a fiery luminous glow caused by the ignition of the material exhaled by the stars.

It was Galileo who proved that the Milky Way is composed of stars when he pointed his telescope at it in 1610 and published his observations in *Sidereus Nuncius* (Starry Messenger), proving the atomists correct. Galileo, however, did not go much further than this to describe the structure of the Milky Way.

Thomas Wright is generally credited as being the first person in the era of science to describe the structure of the Milky Way in 1750. Wright expounded two theories, the first of which is that the Milky Way was composed of sheets or planes of stars stacked on top of each other with earth situated near the center of the strata. Our view of the Milky Way was then due to the optical

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effect of looking through these strata, not all of them with the same thickness or stellar density. Wright also proposed that the Milky Way was composed of two concentric rings of stars again with earth near their center.

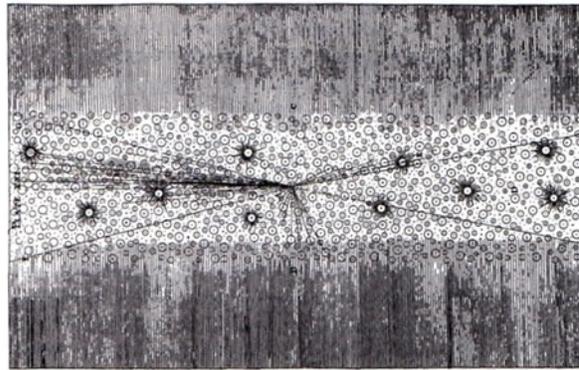
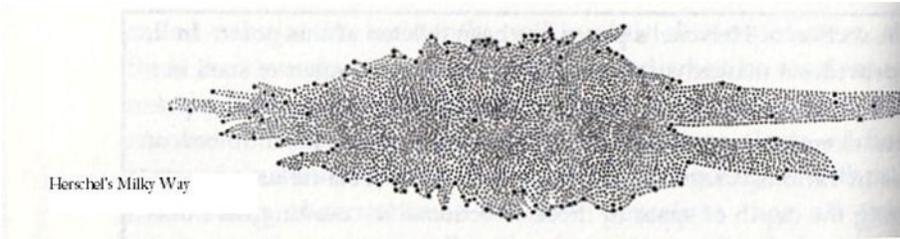


Diagram Used by Wright in Explaining the Optical Principles Involved in the Appearance of the Milky Way

Based on reports of Wright's work, in 1755, in his book *Universal Natural History and Theory of the Heavens*, the German philosopher Immanuel Kant conjectured that the Milky Way was composed of a disk of agglomerated stars too numerous to count, and that because our view of the Milky Way is a great circle on the sky, the earth would be located within this disk. This theory is a view close to our own. Kant also (correctly) asserted that many of the faint nebula with elliptical shapes were really other disks of stars similar to our own though outside of it. This "Island Universe" theory as it became to be known is another largely correct interpretation of the observational data that was available to Kant.



In an era before there was much understanding of our galaxy and only a small amount of observational data available to him, it seems almost incredible that Kant's theory arrived so close to the truth. Kant was a philosopher who was influenced by the Greek Epicurean school, which was founded on the tradition of the materialism of the atomists such as Lucretius and Democritus.

Kant argued from analogy using contemporary speculations about the origins of the Solar System forming from a vortex of material which was set to swirling as it collapsed in on itself due to Newton's force of gravity. The elliptical nebulae Kant recognized as being circular vortices of stars seen at an angle from face on, their very small size and dim light implying that they are a great distance from the earth. Kant's concept of Milky Way and attendant "island universes" was not that widely accepted because it implied a Milky Way of great size and even more inconceivable distances to the elliptical nebulae. However the term island universes survived well into the modern era of cosmology, when it was replaced by the term galaxy of stars in the mid-1920s.

It was William Herschel who first attempted to apply some observational rigor to the question of the composition of the universe (and hence the Milky Way) through a process he called star gauging. His intent was to observe the sky at many different points and complete star counts. Based on his assumption that all of the stars are of the same brightness, Herschel believed that this would provide an indication of the distance or depth of each field. The first results were presented in 1785 to the Royal Society in a paper entitled "On the Construction of the Heavens". In the paper, Herschel included a diagram representing a cross section, centered on the plane of the Milky Way and stated that the stars are arranged in strata or sheets.

The results of this research lead Herschel to the opinion supporting the disk theory of the Milky Way, though he would entertain the ring theory later in his life. Because Herschel believed all nebulae are resolvable into stars if the telescope is powerful enough, he interpreted the dark nebulae as gaps in the fabric of the cosmos, where the stars had left vacancies as they condensed into the various star clusters and nebulae, some evident directly next to the dark gaps. He saw these as evidence of the evolution of our galaxy and, rejecting the notion of "island universes", believed that all nebulae were a part of the "sidereal system of stars" that made up our galaxy.

Herschel's view held sway through most of the 19<sup>th</sup> century. Accumulating knowledge about the distance to the stars and their

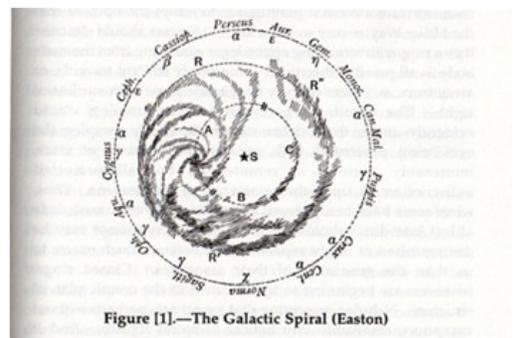


Figure [1].—The Galactic Spiral (Easton)

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motions, including the recognition that many moved on similar paths or streams of stars, lead some to propose a spiral nature to our galaxy, though few believed there was anything beyond our system of stars

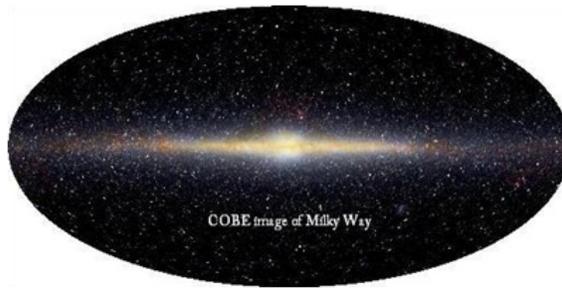
The construction of the great telescopes in the early 20<sup>th</sup> century finally allowed Hubble to directly measure the distance to the Andromeda Nebulae and M33, both great spirals, proving Kant right that “island universes” do exist and vastly expanding our ideas of the size of the universe. Once this occurred, the spiral structure of our Milky Way was accepted by analogy with the spiral galaxies outside our own.

It was not until the advent of radio astronomy in the middle of the 20<sup>th</sup> century that measurements of the interstellar hydrogen were able to directly show the shape and extent of our galaxy. Later space-based instruments such as the Cosmic Background Explorer (COBE), would

show us directly the true nature of the Milky Way. Collecting data at wavelengths where the normally obscuring interstellar dust are transparent, COBE would

produce an image of our galaxy, showing it so clearly to be an edge on spiral

In order to help define his philosophy, Kant wrote in his *Critique of Practical Reason* – “Two things fill my mind with ever increasing wonder



and awe, the more often and persistently I reflect on them: the starry heaven above me, and the moral law within me.”

Attendees of TSP are regularly reminded to take some time from busy observing and imaging activities to “just look up”. After finishing my photos, I did just that, stilling my mind and just looking, I began experiencing an odd feeling of connection with the Milky Way above me. It was there, a presence outside of me, vast and indifferent, orderly matter following a natural law. Yet because I knew of it, it also felt familiar. I knew I was a part of it but I was also conscious that I was very separate from it.

Human intelligence, thought and research informs our understanding of the universe, our galaxy and our place in it all. Experiencing the Milky Way is to experience a feeling of insignificance and immersion. We also gain a sense of place, a sense of belonging to the universe. Understanding our universe in that same moment, how it is made and how it behaves, we regain our perspective. And through an infinite journey, we arrive back at ourselves.



## Just Looking

### A GuideStar Interview by Clayton L. Jeter

## Will Young—Astronomer/Musician



I meet the nicest people at the many star parties around the country. A good example is running up on Will Young and his wife, at last month's Hodges Gardens party near Many, Louisiana. Will was set up on the field with his Meade 'LightBridge' Dobsonian, not too far from me. As we chatted about his telescope, I asked him where he lived. Not only was he from Beaumont...another Texan at this Louisiana star party, and a member of the 'Astronomical Society of South East Texas' (ASSET), but he's their new President. What a pleasant surprise to meet him there. We spoke for half an hour or so and he told me all about ASSET and what's new with their group.



I then asked him if he'd like to be interviewed and it took him about 8 seconds to say "Yes". We both agreed that folks in HAS could learn a bit more about what's going on in the Beaumont area.

I'm happy to introduce Will Young to all of you here in the GuideStar. You're going to enjoy what Will has to say. Here's Will...

### **The Will Young bio...**

I guess my first memory of astronomy would have to be Halley's Comet. I was barely three years old but somehow I can remember seeing it, being held in my mother's arms. It's probably more of a reinforced memory than anything. It does seem very real to me though. I got really started into astronomy at about age 9. I was fascinated by these bright objects at night and wondered what they were and how they got there. So from nine years old on, I began learning the night sky. The first item on the agenda was the constellations. I didn't have a telescope or even binoculars, but what I did have was two eyes with 20/20 vision. So I began to learn all I could from what I was seeing at night. My parents would buy me books and planispheres to keep me interested. If I had to guess

I'd say Orion was my first confirmed constellation. From there, I moved into the other obvious ones and on to the harder ones.

As time went on I got inventive. At one point, I had taped an old pair of bino's to an even older tripod to get the best views I could. After years of frustration with that setup, slowly astronomy lost its grip on my life. Through the latter teen years and college I did more "research" astronomy than observational astronomy. I never gave up on it, I just changed my focus. I've watched more documentaries on space than Neil deGrasse Tyson has appeared in! In college, I focused more on music and playing guitar and recording songs and such, but I still loved astronomy and longed for a good scope. In 2009, I bought my first telescope. I had waited a long time simply because the money was tight as a young adult. My first scope was a Celestron First Scope reflector. The bug had bitten me and had become a monster, waiting to burst out. After several star parties and joining the Astronomical Society of South East Texas in 2009, I finally chose my main "ride". A 12 inch Meade Lightbridge. The rest is history in the making.

It seems now that I do more astronomy than music. As with all hobbies, shifts do occur. My love for astronomy will always trump my other interests. It's an extremely humbling and enjoyable hobby. It can put your existence into a perspective that allows you to see how small and insignificant we are in the grand scheme of things but at the same time, how important we are. We are the universe and the universe is in us. It's a fascinating concept. I've met some of the greatest people in the world doing this, and I'm meeting more and more each time. After

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only two or so years of being in the Astronomical Society of South East Texas, I was asked to run for the presidency. I wasn't sure if I was qualified, but I took the challenge head on and things are running smooth. My astronomy focus now is more toward the "faint fuzzies" and strange and obscure objects. Currently I am working toward my Caldwell Award and have received my Lunar 1, Outreach and Messier Awards. Recently I finished the Bino Messier and Sunspotters Awards as well. My goal is to be a Master Observer before I'm 35. So that gives me about seven years. I think it's a worthy goal and at my current pace, I am well on my way. I also love doing the outreach part of our hobby. Showing someone something they have only read about or seen in pictures is always a treat. I feel like if we can inspire the next generation, we can make an impact in the world that other hobbyist cannot. It's truly rewarding and worth every hour spent under the skies. Well, that's about as brief as I can get. Great things are coming in astronomy and I want to be on the frontlines when it does.

### ***The Will Young interview...***

**Clayton:** It was great seeing you again at the Hodges Gardens star party in Louisiana. Thanks too for taking the time out for this interview.

Let's kick this off by asking you about your obsession with astronomy. How did this passion develop?

**Will:** Thanks, Clayton and it was great to see you again as well. As far as I can remember, I have been looking up in wonder. It has always fascinated me what was above us and I've always had the drive to learn as much as I can about it. I was 11 when Shoemaker-Levy 9 hit Jupiter and I remember being in awe seeing the scars in pictures. At the time, I didn't realize that events like that would shape my obsession. So I guess, it was one brick at a time.

**Clayton:** Congratulations on being elected president of "ASSET" in Beaumont. I know you were voted into that position, but how did you get into the driver's seat? What's new in the club?

**Will:** I joined ASSET in 2009. I had no idea there was an astronomy club in town. I did a Google search randomly one day and found this group. Lonnie, Howard and a few members started approaching me with the idea of being the president. At first, I was worried I wouldn't be able to commit to something of that caliber. Now that I am in full gear, it's not as tough as I thought. In fact, I have learned even more about the technical side of astronomy and how to bring astronomy to the public. That's one of my main goals is to help the club grow and get more people involved.

**Clayton:** Is the ASSET group growing in membership? Do you guys strive for any sort of public outreach?

**Will:** Absolutely! Our meetings have been steadily growing. We had eight visitors and two families join at our last meeting. We are seeing a trend of younger astronomers coming through. Not only coming to the meetings and joining but becoming active and volunteering when they can. That's everything you can ask for in new membership! Outreach is one of our main focuses and a top priority for me. I have a blast showing people something they have only seen on the internet or TV. It is very rewarding.

**Clayton:** Are the Beaumont dark skies diminishing rapidly? Any ideas on how to save our night skies from the ever encroaching light pollution?

**Will:** Yes, the light pollution is getting worse around my place, if that's even possible. Refineries are on all sides and we all know how inefficient they are with their lighting. We have plans in place to contact refineries in the area and help them see that they are losing thousands of dollars. A good friend of mine, Kelly Taylor, is an expert on light pollution and we have been devising a plan of action to show these businesses how they are not only losing money but hurting the environment at the same time. Very few people realize the damage even one mercury vapor light can inflict on birds, air quality and human sleep patterns. It a serious problem that is rapidly growing and it will take all of us to take action before we see results.

**Clayton:** Tell us a bit about your astronomy. Where are you going with this hobby?

**Will:** Well, for now, it's only a hobby. Recently, however, it seems like more of a second job. I have had to put music on the backburner for now just to keep up. I welcome that change of pace and still make time to write new music and work with others. In fact, I am working on an album with a friend specifically for astronomers. Sort of an ambient, spacey, mystical style to in-

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spire astronomers while they observe or work on photos they took the night before. We aren't sure about a release date yet but we are hoping for summer. I'd love to explore the idea of a bigger dob and some better eyepieces in the near future. This will be a lifelong thing so I'm hoping to upgrade as I go along.

**Clayton:** Astrophotography; once bitten... you're hooked. Any picture taking with camera-telescope?

**Will:** Always. I use my iPhone. If I am out observing something bright like the moon or the sun I try to take some video or pictures to play with later. At one point my wife suggested that I start a website to post all those pictures, so we did — [www.iphoneastronomy.com](http://www.iphoneastronomy.com). It's a website dedicated to a-focal photography. Some of the images you can produce with these cell phones these days are incredible. I also do a ton of DSLR work as well. Mostly star trails and open shutter work. I also have those pictures posted on the site. Any iPhone users are encouraged to send their photos to me and I will post and give them credit. It's a fun way to meet new people and to have a keep sake that you can look at years from now. Eventually, I will own a clock driven light bucket with a multi-thousand dollar CCD, but for now, this is more than fine!

**Clayton:** What are you hunting? Got a favorite object?

**Will:** The Ghost of Jupiter. Right now, I'm working on the Caldwell award. So far, I love all the ones I have been able to see. I'm a fan of planetary nebulae and the faint fuzzy galaxies so it's hard for me to pick a favorite galaxy but if I had to, I'd say NGC 4565, the Needle Galaxy. The edge on galaxies are always a "wow" object for me. One day, I'd like to find a comet or a supernova, but I need some new equipment before I can make that happen.

**Clayton:** How would you like to see your own astronomy grow?

**Will:** More scopes, eyepieces and contacts like you. I learn much just from being around more seasoned astronomers and that is the best part. You can't put a price on the advice and knowledge from others. I recently got a chance to co-host a radio show with my friend Francis Walsh, who is from the north Houston area, and we interviewed Robert McNaught. That is a name most of you should recognize. He is a comet and asteroid hunter from Australia and a super nice guy. I'd like to see myself work with and communicate more with people like that. Astronomy is all about knowing where to look and what to look for, so I have much to learn!

**Clayton:** I'd like to know a little about your telescope(s). Do you feel that goto scopes are a tad bit cheating in finding your way around our night sky?

**Will:** Well, I think there are two sides to that argument. I'm not sure if its cheating but for someone like me, I enjoy the hunt. I own a 12" light bridge and I love it. To me, it's more about aperture

than the goto. Don't get me wrong, I'd love to have a nice RC on a Astro-Physics or Paramount, but the budget doesn't make room for that. Yet, I feel that both do the job they are tasked to and different set-ups work for different people. I want both! Nothing can compare to knowing your constellations and learning the night sky manually. I encourage all beginners to grab a star chart and spend some hours learning the basics, doing that will basically clear the path and make things easier.

**Clayton:** It seems in recent years that the younger people are not that interested in amateur astronomy, or any of the sciences. Are you attaining any young club members? How can we turn this around?

**Will:** For a while I felt that trend was true but now, seeing what I'm seeing, I am on the fence about that issue yet again. I feel like this whole 2012 related nonsense is compelling people young and old to inquire more about astronomy, which is a great thing. We have to be careful not to give false or vague answers and try to break it down so everyone can understand. We regularly do star parties for local schools and organizations and it seems that the interest is growing. I don't necessarily see a specific age group that is more interested than others. It varies from event to event but I will say we are gaining strength in our club in the 20 to 30 year range. Really, the only thing we can do to encourage the next generation of astronomers is get out and show them what's up. Hopefully the first time they see Saturn or the moon will stick with them for years. It did for me.

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

**Will:** Always look up! Every time I step outside, that's the first thing I do. Ask yourself, "what star is that?", grab a star chart and try to figure it out. That is

(Continued on page 12)

## *Houston Museum of Natural Science*

### *Volunteers needed for Venus Transit, June 5*

**Where:** Houston Museum of Natural Science (Hermann Park and Sugarland); George Observatory (Brazos Bend State Park)

**When:** Volunteers arrive 4:00 p.m., June 5; transit begins at 5:09 p.m. We will observe until 7:00 pm at HMNS and at the George and until 8:00 pm at Sugar Land (they have a horizon free of trees).

**Contact:** James Wooten, HMNS, ([jwooten@hmns.org](mailto:jwooten@hmns.org)) Phone: 713-639-4738

**Please let me know at which of the three sites you can volunteer, and if you need power for your scope. Thank you so much for helping us share this once in a lifetime event with the public!**

*(Continued from page 11)*

basically how I started. Learn your planets and learn how to distinguish them from the stars. Study star charts even during the day and that night, go and see if you can find them. You may surprise yourself!

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

**Will:** Absolutely! Anytime. [darthwyll@gmail.com](mailto:darthwyll@gmail.com) I'm also available for club talks and I visit The George Observatory as much as I can.

**Clayton:** Thanks Will 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.

**Will:** I'd love to and plan to make it out one day. Astronomy is a huge world and we still have much to discover!

**Clayton:** Clear skies always,

**Will:** And clear skies to you and your club! Thanks, Clayton for the good conversation at Hodges and for this interview. I hope to get to chat again soon!

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

# Thank Goodness for Magnetism

By Dr. Tony Phillips

Only 93 million miles from Earth, a certain G-type star is beginning to act up.

Every 11 years or so, the solar cycle brings a period of high solar activity. Giant islands of magnetism—"sunspots"—break through the stellar surface in increasing numbers. Sometimes they erupt like a billion atomic bombs going off at once, producing intense flares of X-rays and UV radiation, and hurling massive clouds of plasma toward Earth.

This is happening right now. Only a few years ago the Sun was in a state of deep quiet, but as 2012 unfolds, the pendulum is swinging. Strong flares are becoming commonplace as sunspots once again pepper the solar disk. Fortunately, Earth is defended from solar storms by a strong, global magnetic field.

In March 2012, those defenses were tested.

At the very beginning of the month, a remarkable sunspot appeared on the Sun's eastern limb. AR1429, as experts called it, was an angry-



*Multiple-wavelength view of X5.4 solar flare on March 6, captured by the Solar Dynamics Observatory (SDO) in multiple wavelengths (94, 193, 335 angstroms). Credit: NASA/SDO/AIA*

looking region almost as wide as the planet Jupiter. Almost as soon as it appeared, it began to erupt. During the period March 2nd to 15th, it rotated across the solar disk and fired off more than 50 flares. Three of those eruptions were X-class flares, the most powerful kind.

As the eruptions continued almost non-stop, Earth's magnetic field was buffeted by coronal mass ejections or "CMEs." One of those clouds

hit Earth's magnetosphere so hard, our planet's magnetic field was sharply compressed, leaving geosynchronous satellites on the outside looking in. For a while, the spacecraft were directly exposed to solar wind plasma.

Charged particles propelled by the blasts swirled around Earth, producing the strongest radiation storm in almost 10 years. When those particles rained down on the upper atmosphere, they dumped enough energy in three days alone (March 7-10) to power every residence in New York City for two years. Bright auroras circled both

## NASA Space Place

poles, and Northern Lights spilled across the Canadian border into the lower 48 states. Luminous sheets of red and green were sighted as far south as Nebraska.

When all was said and done, the defenses held—no harm done.

This wasn't the strongest solar storm in recorded history—not by a long shot. That distinction goes to the Carrington Event of September 1859 when geomagnetic activity set telegraph offices on fire and sparked auroras over Mexico, Florida, and Tahiti. Even with that in mind, however, March 2012 was remarkable

It makes you wonder, what if? What if Earth didn't have a magnetic field to fend off CMEs and deflect the most energetic particles from the Sun.

The answer might lie on Mars. The red planet has no global magnetic field and as a result its atmosphere has been stripped away over time by CMEs and other gusts of solar wind. At least that's what many researchers believe. Today, Mars is a desiccated and apparently lifeless wasteland.

Only 93 million miles from Earth, a G-type star is acting up. Thank goodness for magnetism.

With your inner and outer children, read, watch, and listen in to "Super Star Meets the Plucky Planet," a rhyming and animated conversation between the Sun and Earth, at <http://spaceplace.nasa.gov/story-superstar>.

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

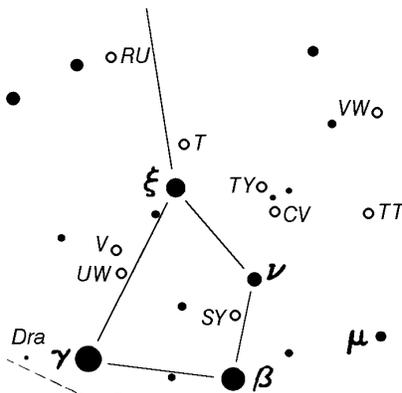
# My Favorite Double Star

By Mike Simonsen, *Simostronomy*, <http://simostronomy.blogspot.com/view/magazine>

If you have spent any time looking through binoculars or telescopes you have undoubtedly come across a double star or two. Someone probably showed you Alberio (beta Cygni) at a star party or tried to impress you with a view of epsilon Lyrae, the famous Double Double in Lyra. One of my favorites is Rigel, the lower foot of Orion. Not many observers know Rigel is actually a double star. It has a 6.8 magnitude companion, Rigel B, 9 arc seconds away. This would be an easy double to separate in most small telescopes, but Rigel is the seventh brightest star in the sky. As such, it is some 400 times brighter than its companion, so Rigel B gets lost in the glare of its primary. Once you know where to look it's easy to find.

Double stars are interesting to people for a number of reasons. Some like the challenge of splitting close pairs with the smallest instrument possible. Others like to measure the characteristics, such as separation, position angle and magnitudes. But what really delights most people is a pair that exhibits a striking color combination. Some of the more popular pairs include Alberio (gold/sapphire), gamma Andromedae (gold/blue), xi Bootis (yellow/red) and alpha Herculis (red/green). I don't want to get

into a debate about the perceived colors of these pairs. Your mileage may vary.



*T Draconis resides just north of the head of the dragon*

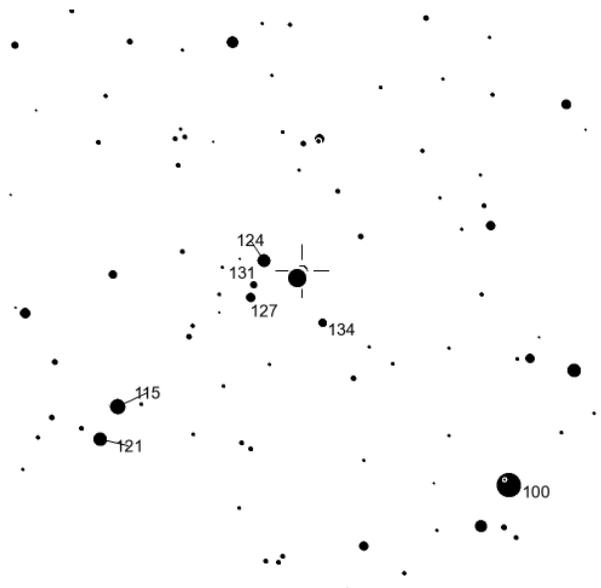
My favorite double has them all beat. It is a very colorful pair, with a blue-white primary and a deep red secondary. But the best part is this. It looks different every time you look at it, because the deep red secondary is a variable star! That's right, my favorite double star is also a variable.

right?

You knew that was coming,

Okay, okay, I'll end the suspense. My favorite double is the Mira variable T Draconis.

As variable stars go, it couldn't be much better. It's easy to find, located just north of epsilon Dra in the head of the dragon. It varies quite a lot, from 6.7 to 13.2V, and has an excellent sequence. Several of the comparisons from 11th down to 13th magnitude are located very close in to the pair, making it very easy to estimate when its fainter than the



*The faint stars in the comparison star sequence for T Draconis*

blue companion. The next time you find double stars on your observing program for the night, try out T Draconis. Take the time to make an estimate of its brightness and submit it to the AAVSO. Who knows, you just might get hooked. And there are plenty of other interesting double variable stars- TU Aql, T CMi, ST Aur, Z Tau, R Cyg...

*This content distributed by the  
AAVSO Writer's Bureau*

Editor's note: This star is well placed for viewing now. Check it out. The separation of the two stars forming the double is about 17 arc seconds, so it will not require high magnification to see both stars.

# Observatory Corner

By Bob Rogers, Observatory Chairman

*Hello everyone.*

The work continues on the Observatory upkeep and repairs. Allen Wilkerson has put in a lot of weekends at the site working on the Observatory and stopping all the leaks in the Chart room and the puddles forming in the Observatory. He has removed old caulking and replaced it with new caulking and sealing tape. I want to extend a BIG thank you to Dan White for letting Allen use his heat gun. Without it, Allen would still be working on removing all the caulking. Thank you Dan very much for your patience of letting us use the heat gun considering that it took several weekends to get the job done.

I also want to extend a BIG thank you to Gigi Daley, a new HAS member, for all her help in removing the old lawn mower shed and other items from the site. I checked into getting a dumpster delivered to the site to have all this stuff hauled away, but the cost of doing this was well over \$600 for one day. After talking to Gigi, who lives in Columbus, she offered to haul it away for me, so in return for all her work, I paid for her HAS membership for the rest of 2012 along with Valarie Spalek. Valarie and her son Zach are members of a Cub Scout pack located in Columbus. All three of them are very good friends with each other and are interested in Astronomy and have offered to help at the site when needed. I explained to them that the best help that they can offer is to check on the place, especially after bad weather, which saves me a round trip from Pearland. Thanks again for all your help.

And the work goes on ....

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](mailto:siteworkerbob@hotmail.com)**

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***Trailer/RV spots available free for weekend use at the site.***  
 Contact the Observatory Chairman, Bob Rogers [siteworkerbob@hotmail.com](mailto:siteworkerbob@hotmail.com) for more information

## Shallow Sky Object of the Month

# Mizar and Alcor

**Object:** Mizar and Alcor

**RA:** 13 h, 23 m, 56 s

**Dec:** 54 degrees, 55 m, 31 s

**Distance:** 83 ly

**Class:** A double (and triple) star

**Constellation:** Ursa Major

**Magnitude:** 2.2

**Size/Spectral:** with Alcor — 11.8'; close double with Mizar at 14.4"

**Optics needed:** This is an easy but very nice double (triple) star group that is a showpiece in small telescopes.

### *Why this is interesting:*

There's more to this system than what meets the eye. But, first things first, and let's take a look at the three stars that you'll see in a small telescope (and you don't have to be at a dark site to see them). The primary star is simply called Mizar and it is in the handle of the Big Dipper (asterism). It's the second star, away from the bowl, and is at the bend of the dipper handle.

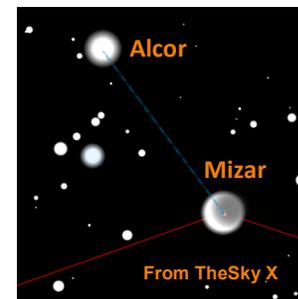
It's easy to see and easy to find in a telescope. This beauty shines brightly and is of spectral type A1B. The sun is a G star, so Mizar is bluer, and bigger, and has a higher luminosity than the sun. The luminosity of a star is a measure of the total power output of the star and Mizar is about 2.5 solar masses and about 30 times as luminous as the sun.

The second star in the group is called Alcor. It shines at magnitude 4 and it is of spectral type A5V, so it's only slightly redder than Mizar. Many references talk about separating Mizar and Alcor with the unaided eye — being able to do so is, supposedly, a test of good eyesight. But is it?

I found many resources that say that the magnification required to resolve a double star is equal to  $480/d$ , where  $d$  is the angular separation of the double star (in seconds) and 480 arc seconds is equal to 8 arc minutes ( $60 \times 8$ ).

So, for the magnification to be one... the separation must be 8 arc minutes — meaning that the resolving power of the unaided eye is about 8 arc minutes.

If you need to calculate the magnification required for



various separations of equal magnitude stars the  $480/d$  rule applies. When the magnitudes are different, more magnification is required. Here is a simple table showing the magnification required for various double stars but this assumes about equal brightness of the stars and doesn't

take into account limitations of the equipment. The magnification of the telescope is simply the focal length of the telescope divided by the focal length of the eyepiece.

So, the Mizar / Alcor pair should be relatively easy to see with the unaided eye. Try it.

Double star (arcsec)	magnif req'd
0.5	960
1	480
2	240
5	96
10	48
20	24
50	9.6
100	4.8
200	2.4
500	0.96
1000	0.48

There is yet another star in this system, Mizar B, at 14.4 arc seconds from Mizar. Even low magnification will separate this star from Mizar A. Mizar B is an A class (bluish) star shining at magnitude 4, so it's easy to see.

Each of these three stars has another companion which can't be seen in amateur telescopes. So, all-in-all it's a six star system.

Historically, Mizar was the first telescopic binary found in 1617 and it was later observed by Galileo. And, Mizar was the first spectroscopic binary discovered in 1889.

# 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 or a conflict with other events at the University of Houston.

## Board of Directors Meeting

The Board of Directors Meeting is held on dates and at locations scheduled by the board. 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](mailto: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, June 1, 2012**

**7:00 Novice Meeting, room 116 Science & Research 1 Bldg**

**8:00 General Meeting, room 117 Science & Research 1 Bldg**

### **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.

**UPDATE — Due to construction in the stadium parking lot, use entrances 15D and 15F. You can park in this area, but NOT in a RESERVED space.**