Houston Astronomical Society

February, 2013

GuideStar

February, 2013
Volume 31, #2

At the February 1 Meeting

Sir Fred Hoyle

A Rebel with a Cause

Bill Leach, former HAS President

From his youth, Fred Hoyle's belief that only he could best determine what he should learn put him in conflict with established educational authorities. Hoyle always challenged the assumptions behind the science of the majority which led him to some unique insights. Fred Hoyle is credited with determining how the stars forge the elements.

The *GuideStar* is the winner of the 2012 Astronomical League Mabel Sterns Newsletter award.

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

Highlights:

HAS Web Page:

http://www.AstronomyHouston.org

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.**

Debbie Moran (chair) — "Navigating the Sky ". See page 6 for more information

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

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-mailbill.leach@nhmccd.edu. Web site: 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

GuideStar deadline for the March issue is February 15th

President's Message

by Bill Pellerin, President

Wow! The Texas 45 is Off and Running

Based on the list server chatter we've been reading over the past month it seems that the Texas 45 observing program is off to a fast start. It seems that many members have taken on the task of completing the program and a few *have* completed it.

Congratulations to those of you who have done the observing program and to everyone who participated in its creation. This is a great addition to the Houston Astronomical Society. Let's get out and observe!

Personal Observatories

The Observatory Committee has announced the availability of private observatory sites at the HAS observing location near Columbus. Be sure to read the 'Observatory Corner' article in this *GuideStar*. Having your own, permanent, setup will make a substantial improvement in your observing process. Little or no setup; little or no teardown. Most of your time will be spent observing. This is especially important for imagers. Contact our observatory committee soon to get your private observatory site.

Parking — Read this…

Most of us have been parking at entrance 15 off Cullen Boulevard (not in Reserved spaces, please). This parking should still be available on our meeting night. If not, the alternate parking is in lot 16B. Going south on Cullen, take the first left turn after Elgin, enter the parking lot at the left and park in the area to the right.

HAS Board Meeting is February 13

If you'd like to talk to the board (or simply observe the board meeting) you are welcome to attend the next meeting on February 13 at the HEB store at the northwest corner of I-10 at Bunker Hill. At the last board meeting in December we set a budget for the organization. This time we'll be focusing on club services and on any issues that board members bring to the meeting. Board meetings are open to all.

Texas Star Party

Are you going? Among all the other things that will be going on at the TSP there will be an Imaging Symposium. The symposium will include workshops, training and equipment displays and demonstrations. This is a brand new feature for the Texas Star Party and one that has a lot of interest. With imaging equipment becoming more affordable more amateur astronomers are getting involved.

Many HAS members are involved in TSP operations, and there are volunteer opportunities if you're going to be in west Texas for the event. Check this out, along with all the other TSP activities at www.texasstarparty.org.

What Can the HAS do for You?

We're always looking for new ways to serve our members. Is there something you'd like to see the HAS do that we're not already doing? Is there something we can do better?

Cheers,

..Bill Pellerin

President HAS

Club Picnic and Messier Marathon

at Columbus dark site.

9 March 2013 - Gates open at 3:00 p.m.

It took Charles Messier 23 years to find all his objects - join us as we do it in one glorious night.

HAS will provides food and drinks. RSVP to steve.fast@post.harvard.edu.

Any changes due to weather will be announced at 6:00 p.m. the day before.

Watch the web site and NetSlyder for more details.

February/March

Calendar

Date	Time	Event
February		
1	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
3	7:57 p.m.	Moon at last quarter
9		Prime Night, Columbus Site
10	1:22 a.m.	New Moon
13	7:30 p.m.	Board Meeting HEB I-10 / Bunker Hill
16	3:00 p.m.	Mercury at greatest elongation east
17	2:30 p.m.	Moon at first quarter
28	2:28 p.m.	Full Moon
March		
1	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
4	3:54 p.m.	Moon at last quarter
9		Prime Night, Columbus Site
		Picnic / Messier Marathon
10	2:00 a.m.	Daylight Saving Time begins
11	2:53 p.m.	New Moon
19	12:26 p.m.	Moon at first quarter
20	6:01 a.m.	Vernal equinox
27	4:29 p.m.	Full Moon
31	5:00 p.m.	Mercury at greatest elongation west

Send calendar events to Doug McCormick - skygazer10@sbcglobal.net

For the latest information on club events, go to http://www.astronomyhouston.org/

Check the web site: www.astronomyhouston.org

The HAS website not only has news and information about our society, but also a variety of features to manage your membership and connect with other club members. Current members can post photos, trade gear, pay dues, manage discount magazine subscriptions, swap stories in the forum, and more.

Questions about the site? Need a hand to get your account set up?
Contact webmaster@astronomyhouston.org.

The HAS web site is the winner of the 2012 Astronomical League award for excellence.

Follow the *GuideStar* on Twitter at:

GuideStar_HAS

Join Facebook and look for:

Houston Astronomical Society

Starline

Call 832-go4-HAS0 (**832-464-4270**) for the latest information on the meeting and other information about activities within the HAS.

HAS Board Meeting

HAS Board meetings are scheduled regularly (see the calendar, above). All members are invited to attend these meetings, but only board members can vote on issues brought before the board.

Observations... of the editor

by Bill Pellerin, GuideStar Editor

Workarounds

Last month I told you I was upgrading to Windows 8 on my primary laptop computer. I did it. Almost everything worked as planned. Almost. The SD card (the kind of memory card that most digital cameras use) reader that is built-in to the laptop didn't work. A new driver fixed that problem.

My primary astronomy software, TheSkyX (planetarium) worked, along with SkyTools (observing planning), AIP4WIN (image processing), and PHD (guiding).

I also use a remote USB device, which I've talked about before (think of it as a remote USB hub). It allows me to connect my cameras and telescope mount control to the laptop with only one physical connection to the computer.

I thought it was all working, and I was mostly correct. My telescope mount requires serial port communication for control so I use a USB to serial port converter. This works great when the USB to serial port converter is directly connected to the PC but didn't work (after the Windows 8 installation) with the remote USB device.

Am I dead in the water? No, because I have a **workaround**. A workaround is a way to get done what I need done using an approach or a system configuration different from the intended one. In this case, the workaround is to connect the USB to Serial port converter to the computer directly, which works, and route the serial port connect via a 4 wire telephone cable to the telescope mount.

I've been obliged to use the 'workaround' approach in the past, too. Without going into details, I have some new software that adds some needed functionality to my imaging process. Unfortunately one of the functions of the old software doesn't work in the new software and I need that function as well.

The workaround? Use the old software whenever I need to perform the function that the new software doesn't support and use the new software when I want to take advantage of its additional functionality. Is this ideal? No, but it permits me to do the work I want to do with only a minor inconvenience.

I expect that you've had to use some workarounds to avoid problems that you've encountered in your observing program. What are they? Let me know and I'll put them in the *GuideStar.*

Update: I just heard from the maker of the remote USB device, and there's a firmware update available for the device which should fix the problem. This is a good outcome — I can do what I want (without the update) by using a workaround, and (with the update) the problem will go away.

Shopping for stuff

I just finished reading a book - *To Sell is Human* by Daniel Pink. I enjoyed the book, and one of the ideas in the book is that nowadays the customer can know as much or more about the product being considered for purchase as the salesperson. A few internet searches, some study, and you become an expert.

I've discovered a downside, though. Let's say you're looking for Product A, and that this product is fairly complex. You will often find product reviews on seller sites and elsewhere. Do the product reviews agree? No, not at all. I was looking at a product today that several reviewers rated as 0 out of 5, in other words a complete waste of money. Other reviewers rated the product 5 out of 5. What am I to believe and how am I supposed to know what to believe? If you read a lot of reviews you'll find that some reviewers have high expectations and are likely to rate a product poor if it doesn't meet those expectations. Other reviewers have reasonable needs and expectations and will find a product adequate for their purpose. In the end, you need to know what you expect and why you want the product.

Is a $200 refractor telescope going to give you the same image quality as a $3500 refractor telescope. No. Be realistic. It's not even reasonable or fair in my estimation to compare the two telescopes. The $200 telescope may be the one you want for an eclipse trip — if it is lost or damaged, no big deal. Only the $3500 telescope may be suitable for demanding imaging uses.

Every product is a compromise.

Until next time...

clear skies and new moons!

..Bill

Novice Presentation February, 2013

Navigating the Sky

By Debbie Moran

The Novice presentation for the February meeting will be titled *Navigating the Sky*. This will be an introduction to star charts, celestial coordinates, terms such as right ascension and declination, motions such as precession and nutation, and relevant time systems such as Greenwich Mean Time and sidereal time. In March, we will have an engaging talk by William Spizzirri explaining how the atoms and substances in our bodies followed a long path toward formation going all the way back to the Big Bang and proceeding to the formation of stars and their creation of the elements. We will be back to nuts and bolts in April for those who want tips on telescopes and observing techniques. If you are interested in presenting a novice topic in 2013, please contact me at a meeting or on the HAS list server. I am hoping to learn a few new things myself.

Science Hobbyists Needed for a National Study

Are you a science hobbyist?

We need your help with a new National Science Foundation sponsored research study that will investigate the characteristics and educational experiences of people who are active in science hobbies. More and more people are engaging in science hobbies; schools and science centers would like to know more about the characteristics of science hobbyists and how these organizations might better support hobbyists' networking and education.

What will happen if you take part in the study?

The information gained from this research can help science educators and researchers understand how to better teach science in schools and museums, and how to design better community-based science programs. Participation in this study is voluntary. Information you provide will be anonymous. If you complete the survey, you may elect to enter a drawing for a $100 Target gift card.

Survey Link: http://ncsu.qualtrics.com//SE/?SID=SV_7OOsR9G0Pkp5I2N

Thanks!

Dr. Gail Jones
North Carolina State University

The Art of Space Imagery

By Diane K . Fisher

NASA Space Place

When you see spectacular space images taken in infrared light by the Spitzer Space Telescope and other non-visible-light telescopes, you may wonder where those beautiful colors came from? After all, if the telescopes were recording infrared or ultraviolet light, we wouldn't see anything at all. So are the images "colorized" or "false colored"?

No, not really. The colors are translated. Just as a foreign language can be translated into our native language, an image made with light that falls outside the range of our seeing can be "translated" into colors we can see. Scientists process these images so they can not only see them, but they can also tease out all sorts of information the light can reveal. For example, wisely done color translation can reveal relative temperatures of stars, dust, and gas in the images, and show fine structural details of galaxies and nebulae.

This image of M101 combines images from four different telescopes, each detecting a different part of the spectrum. Red indicates infrared information from Spitzer's 24-micron detector, and shows the cool dust in the galaxy. Yellow shows the visible starlight from the Hubble telescope. Cyan is ultraviolet light from the Galaxy Evolution Explorer space telescope, which shows the hottest and youngest stars. And magenta is X-ray energy detected by the Chandra X-ray Observatory, indicating incredibly hot activity, like accretion around black holes.

Spitzer's Infrared Array Camera (IRAC), for example, is a four-channel camera, meaning that it has four different detector arrays, each measuring light at one particular wavelength. Each image from each detector array resembles a grayscale image, because the entire detector array is responding to only one wavelength of light. However, the relative brightness will vary across the array.

So, starting with one detector array, the first step is to determine what is the brightest thing and the darkest thing in the image. Software is used to pick out this dynamic range and to re-compute the value of each pixel. This process produces a grey-scale image. At the end of this process, for Spitzer, we will have four grayscale images, one for each for the four IRAC detectors.

Matter of different temperatures emit different wavelengths of light. A cool object emits longer wavelengths (lower energies) of light than a warmer object. So, for each scene, we will see four grayscale images, each of them different.

Normally, the three primary colors are assigned to these gray-scale images based on the order they appear in the spectrum, with blue assigned to the shortest wavelength, and red to the longest. In the case of Spitzer, with four wavelengths to represent, a secondary color is chosen, such as yellow. So images that combine all four of the IRAC's infrared detectors are remapped into red, yellow, green, and blue wavelengths in the visible part of the spectrum.

Download a new Spitzer poster of the center of the Milky Way. On the back is a more complete and colorfully-illustrated explanation of the "art of space imagery." Go to spaceplace.nasa.gov/posters/#milky-way.

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

Just Looking

A *GuideStar* Interview by Clayton L. Jeter

Rene Gedaly

It seems our society is getting more and more exciting each year. Through the years we are gaining more new members with fantastic ideas…great ideas to improve our club. It's a wonderful time to be a member in our society. A perfect example is our very own Rene Gedaly. This girl is a godsend for our society with all of her energy, time, devotion to the society, and forward thinking. She's a special person.

Towards the end of last year, I mentioned to Rene an idea that I had of providing our club with its own observing program for use at our observing site near Columbus. She took the ball and ran with it. She did all the work… including creating the list, presenting it to our board for approval, ordering pins and certificates, and then announcing it to our society. She's a work horse!

Ok… if you don't know her yet, you will now. Here's Rene…

The Rene Gedaly bio…

My first memory of things astronomical is an early childhood dream. I'm traveling at high speed through the solar system, passing galaxies left and right, and though this would have occurred before our family had color TV, the objects are in vivid color.

That dream would stay with me for years but my first real encounter with the heavens was in the Brownies. We were all so excited to be on a "midnight" hike trudging up and down the Maryland countryside. It was a moonless night but curiously we still had sufficient glow to find our way. I looked up and immediately saw why: the Milky Way as I'd never seen it before. I was hooked. A teacher pointed me to a book on astronomy in the school library, *Find the Constellations*, by H.A. Rey. That very night I climbed out my bedroom window onto the roof, book and flashlight in hand, to better see the sky. Later I would learn to paint the flashlight red with nail polish. Still later, I learned about telescopes and that one could be built from kit. My uncle built me a grinding room, but when it came time to measure the curvature of the mirror blank, I didn't yet have the math to continue. Around that time I also learned that a comet was coming. I would be 30 years old when it arrived so I had to solve my math shortcomings in time to become an astrophysicist and be ready.

Life happens, and though I never became an astrophysicist, I did have a brush with NASA, worked as a geophysicist before companies started hyphenating their names, and free-lanced in software and IT for a couple of Houston's home-grown computer hardware and software firms. And in 1986 I saw Comet Halley. Some say it was a disappointing show but I thought it was magnificent. Just like that childhood dream.

The Rene Gedaly interview…

Clayton: I'm so glad Rene to have you as a member in our society. You really pull your share of chores within our group. Thanks a million.

I liked your comment above about waiting to observe Comet Halley. Have you seen other comets? Got a favorite?

Rene: Sure, the comet I've yet to see. Actually, my husband and I made a point of spotting Hale-Bopp, and Hyakutake before it. The whole world saw the amazing footage of Shoemaker-Levy 9, and like everyone else, I'm excited about the possibilities for Comet ISON. But in a sense, sighting Halley's Comet was the end of an era for me. I didn't get seriously involved in visual astronomy again until I rejoined HAS.

Clayton: You really seem to be excited about the new HAS Texas 45 observing program. Where does all this passion come from?

Rene: Evidently, just like with Halley's, I've been preparing all this time to get started again. Amateur astronomy takes planning, patience, and perseverance in addition to knowledge. So when Bob Rogers forwarded me your email in which you outlined a home-

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grown observing program, believe me, I recognized the opportunity and jumped at it.

Clayton: I really like this program concept and your chosen objects for this program. I mentioned to you on the phone last year that other HAS observing programs could also follow in years to come. Do you have any ideas on future lists?

Rene: You and I spent quite a bit of time hashing out this program, Clayton. Looking over my notes, the concept took the better part of two weeks—24x7 worth of texts, emails, and phone conversations. After a while, I do believe we were finishing each other's sentences. But it's a truism that if sufficient time is spent upfront fleshing out an idea, the work flows smoothly—and quickly. That was certainly the case for me and the Texas 45. Zeroing in on the objects was a piece of cake. Of course, cross-referencing the objects against a variety of published resources was another thing entirely!

When you first mentioned additional lists, I was reminded of an idea you had a couple of years ago, a grand one: Holding a star party at the HAS dark site over a long weekend. After all, there are pockets of the year that are not covered by the bigger, week-long star parties, and HAS could fill these nicely. I could talk about the possibilities all day; you could, too. But suffice it to say that I see future lists dovetailing with something like that. On the other hand, one could develop an intermediate to expert visual list, an imaging list, a summer show down, and on and on. Any takers?

Clayton: The observing pins you ordered are beautiful. Will the observer who completes this list receive a certificate also? And…will they be numbered?

Rene: Okay, you got me. I haven't designed the certificate yet, but yes, I suppose they will be numbered. Any reticence on my part is because I probably won't be in the top ten of my own list! A big thanks, by the way, for suggesting allaboutpins.com and to you and your wife for help in brainstorming what we wanted to communicate visually in the design. I hope everyone will be proud to wear these award pins on their lapels at HAS meetings and other astro gatherings.

Clayton: I like the idea of a guest of a current HAS member being able to work on his/her list too. What are rules on this?

Rene: Any member can bring guests with them to the HAS site so working on the Texas 45 would pose no problem, just follow observatory committee policy. It's the award pins that are the stickler; they do have to be ordered in batches of 100 and we want to make sure we have sufficient pins to cover our membership. We may need to see how the Texas 45 takes off first. Of course, there's nothing wrong with encouraging friends to join HAS.

Clayton: Are you getting any feedback from folks who are using this new observing program?

Rene: The website forums are abuzz, the email list server has been chatty, and members are downloading the lists and observation logs. Our novice program chair, Debbie Moran, has been getting questions from members about the Texas 45, specific questions about eyepieces to use, for example. And Steve Fast, our field trips and observing chair, has been a great promoter as well as participant. I'm looking forward to attending Debbie's lectures myself, and am so pleased, okay, jealous, that Steve gets out to the site so often and reports how his Texas 45 is going. He has big plans for star parties at the site, both formal and informal, so we'll have ample opportunity to put tips and techniques to good use.

Like any observing program, the Texas 45 takes a little prep and planning. But if you can build in flexibility, that's where real progress can take off. Now, the great thing about the Texas 45 is you can start any time and finish any time, just keep your records handy. But if members can build flexibility into their observing schedules, they can take advantage of those nights when we do have clear skies. Flexibility can be as simple as changing your mindset. Spend a few hours, even on weeknights, to get in some observing. But if that's not possible, know that the Texas 45 is quite forgiving of moonlight, so prime nights are not required to have a good observing session. Heck, select lunar targets for your five "your choice" objects and you've got it made.

Clayton: When I told you about my idea of creating this program, did I come on too strong? I didn't want you to be overwhelmed.

Rene: Strong? Overwhelming? Sure. But the idea was absolutely irresistible. That we

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could develop an accessible observing program to take advantage of our dark sky observing site, our southern view, with the same latitude as TSP, and brand it with the HAS name… This was a project that had to see the light of day. I had the time to devote and sufficient armchair knowledge, so I had no qualms about giving it a try.

Clayton: How would you like to see your own astronomy grow? What's ahead for you?

Rene: Besides completing the Texas 45? I do see this as a jumping off point for me. Steve Goldberg, one of the list reviewers and my SkyTools tester, made a cross-reference of the objects on the Texas 45 against the objects on the Astronomical League clubs. He found 15! clubs represented. My suggestion is to try the program and see what you like; then go after the corresponding astronomical league club. That's what I'm doing. That, and traveling to every star party in Texas I can get to.

Clayton: I'd like to know a little about your astronomy equipment…including star atlas's and/or astronomy software.

Rene: I have a Meade LightSwitch LS-8, a nicely retooled Celestron C8 with a Byers worm drive that I got from you, and a 10" Zhumell Dobsonian. Now I'm itching for a good 4" refractor. As for software, I'm a SkyTools junkie and get myself into so much trouble messing with options that I've had to install it on two machines, one as a sandbox. My favorite star atlas is the Uranometria, and I have both volumes. Seems like using a sledge hammer for the objects I look at but I get confused when I don't see a star on a chart that I do see in my scope. So I usually hop from the Pocket Sky Atlas to SkyTools to the Uranometria and back again. Knowing what resources I used to select the Texas 45 list objects is probably of interest also. I'll post those to the forums.

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

Rene: Meet them where they live, online. HAS is doing a great job of this with its web presence. In fact, let me do a search right now on "astronomy houston tx." Hmm, the first hit is "The Houston Astronomical Society," and the summary says "…pack up the scope and head out to Columbus for the HAS Texas 45!" Wow. I see our webmaster, Jeffery McLaughlin, has been busy. Now he's definitely one of our talented and forward thinking members. At a more fundamental level, science is, in fact, hard, so it's important not to extinguish fledgling interest by setting the bar too high.

Clayton: Do you have any helpful advice to pass on to observers just starting out in astronomy? Any last comment on the HAS Texas 45 that you'd like to share?

Rene: Don't give up, help is there. Get to the novice meetings and star parties; check out the website forums, too. If you don't find the help you need, look up the society contacts in the *GuideStar* and call. This can be a tough but rewarding hobby for the beginning observer. With a little persistence, you'll find others who are happy to help. And don't forget binoculars for immediate satisfaction; 10x50s are a nice size that will open up the skies to you, and those skies do not have to be pristine. I only wish I'd followed my own advice when I first joined, albeit briefly, in 1982.

As a last comment on the HAS Texas 45, we owe a big thanks to Brian Cudnik. Brian does a lot of research at the HAS Observatory, and combined with his teaching schedule, he doesn't have a lot of extra time. Nevertheless, he vetted all 60 objects on the list, made the suggestion for optional drawings and silver and gold completion levels, and of particular interest to new observers, enthused that the list had a nice variety of objects and most objects would be easy to find.

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

Rene: The best way to contact me is via our website forums. Log into astronomyhouston.org, hop over to the Forums tab, and send a personal message to rene-gedaly. Better yet, post a comment on any of the forums letting us know how you're doing on your own astro quest; I'll see it and answer. Or go old school and use renegedaly@gmail.com.

Clayton: Thanks Rene 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 including the "HAS Texas 45" observing program. Thanks for all the work you do within our society.

Rene: Right back atcha, Clayton. And before we sign off, let's tell everyone where to find the HAS Texas 45. Go to our website, www.astronomyhouston.org, and hop to the Programs tab. Or go directly there at http://astronomyhouston.org/programs/has-texas-45.

Clear skies always Rene,

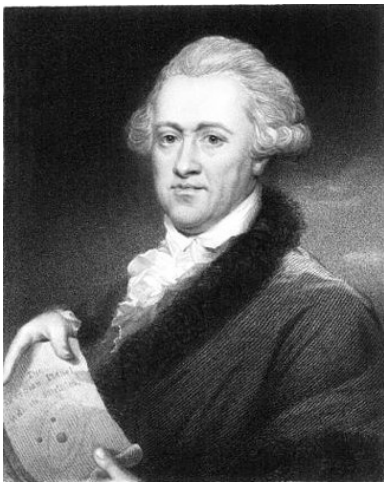
Clayton L. Jeter is an avid SCT visual observer and a longtime member of the Houston Astronomical Society. Contact him at: stonebloke@gmail.com

Sir William Herschel —

Variable Stars, Sunspots and the Price of Wheat

By Gael Mariani

Students and scholars of astronomy need little introduction to the life and work of the German-born English astronomer William Herschel (1738-1822). A true polymath, Herschel was a pioneer of the study of binary stars and nebulae, the discoverer of infrared radiation in sunlight, a skilled mathematician, optical lens grinder and telescope maker, a ground-breaking naturalist and a prolific classical composer. His discovery of the planet Uranus in 1781, as well as two of its moons and two more moons of Saturn, garnered him fame, acclaim and a place in astronomical history. However, not all of Herschel's scientific work was equally well received, and not all his discoveries are as well known today.



William Herschel

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One of Herschel's key areas of study, and a subject of great fascination for him, was those stars that seemed to change their brightness: what we now call variable stars; and he was responsible for much of the progress made in the understanding of these distant suns. His son John Frederick W. Herschel wrote in the 1833 *A Treatise on Astronomy* that, thanks to his father's catalogue of brightness of the stars in each constellation, 'amateurs of the science with only good eyes, or moderate equipment, might employ their time to excellent advantage.'

In today's science, we know why variable stars vary in brightness. But in Herschel's time, this was still a source of some mystery. As he sought to understand why these stars appeared to change, he attempted to correlate the phenomenon with another that he had studied extensively, namely the existence of sunspots on our own planet's nearest star. Herschel posed the hypothesis that these more distant suns might also possess spots, which perhaps were the cause of their vacillation from brightness to dimness. Just two centuries after Galileo had proposed that sunspots were dark clouds floating about in the solar atmosphere, Herschel shared the contemporary scientific view that the greater the number of spots on the Sun, the more these would block out the light energy radiated to earth: hence, the 'spottier' a variable star, the less bright it would appear from Earth.

Spurred on by the fact that he had perfected a telescope that gave him a view of the sun whose clarity was unprecedented at the time, Herschel deepened his study of sunspots, and this led him to form a new and radical notion: the possibility of a correlation between the number of sunspots and Earth's climate.

He had noticed that, between July 1795 and February 1800, there had been a number of days when there had been no sunspot activity at all. Then, they had suddenly returned in abundance. He wrote: 'It appears to me . . . that our Sun has for some time past been labouring under a disposition, from which it is now in a fair way of recovering'. In 1801 he presented a paper to the Royal Society entitled 'The Nature of the Sun', in which he wrote: 'I am now much inclined to believe that openings [sunspots] with great shallows, ridges, nodules and corrugations, instead of small indentation, may lead us to expect a copious emission of heat, and therefore mild seasons . . . A constant observation of the sun with this view, and a proper information respecting the general mildness or severity of the seasons, in all parts of the world, may bring this theory to perfection or refute it if it be not well founded.'

But how was Herschel to back up his hypothesis? Hampered by the lack of precise meteorological records by which to test his theory, he persevered by lateral thinking. Given the effects of lesser or greater quantities of sunshine on vegetation, it struck him that records of good or bad harvests might provide him with the data he needed. Any correlation between these and periods of many or few sunspots would theoretically support his argument. Using Adam Smith's *The Wealth of Nations* as his source, he was able to single out five periods when, due to poor harvests, the price of wheat in England had been particularly high. Comparing these records to those of sunspot activ-

(Continued on page 12)

(Continued from page 11)

ity during those periods, he discovered to his surprise a clear correlation between poorer wheat harvests and a relative *lack of* sunspot activity. Contrary to what had been thought until then, the presence of sunspots did not reduce the amount of heat from the sun, the opposite was true: greater sunspot activity corresponded to good weather and lower wheat prices, while a lack of sunspots corresponded to high wheat prices, which implied less favourable weather. 'It seems probable,' he wrote, 'that some temporary scarcity or defect of the vegetation has taken place when the sun has been without those appearances which we surmise to be the symptoms of a copious emission of light and heat'. As we now know, the Sun emits greater ultraviolet radiation, causing more heating of the Earth's atmosphere, during periods of greater sunspot activity, or solar maximum. But in Herschel's time this was a revolutionary idea – and the apparent correlation with Earth's climate made it more revolutionary still.

Excited by his findings, Herschel urged his scientific colleagues to examine solar activity in more detail. Sadly, far from praising his discovery, his peers responded with scepticism and even ridicule. A piece in *The Edinburgh Review* lambasted his 'erroneous theory concerning the influence of the solar spots and the price of grain' as a 'grand absurdity'. Clearly, the world was not ready to accept such stuff. For once in his illustrious career, the great William Herschel had fallen flat and his attempt to wake the scientific community to his radical idea had failed.

And even to this day, the prevailing views remain largely unchanged. While nobody would now dispute the correlation between solar activity and geometric disturbances on Earth – one only has to think of the SOHO Satellite and the data it sends back, containing potential warnings of increases in solar activity which could have a detrimental effect on such things as telecommunications systems – scientists have generally remained deeply sceptical of claims that there may be a correlation between solar activity and weather on Earth. One respected meteorologist in the 1960s warned that climate researchers risked branding themselves as cranks if they entertained any notion of Sun-weather relationships. And in the modern era of sensitive political debate over climate change and global warming, pointing at possible links between earthly weather and cycles of solar activity has become more charged and contentious than ever.

But the time may come when scientists will be forced to revise the orthodox view. Two hundred years after William Herschel urged the Fellows of the Royal Society to investigate the links between sunspots and Earth's climate, Israeli scientists Dr Lev A Pustilnik and Dr Gregory Yom Din used modern statistical methods to re-examine Herschel's ideas and concluded that the great astronomer had been right after all. The modern findings confirmed that wheat prices in England during that period did indeed fluctuate in line with solar activity, being higher at solar minimum than at solar maximum, suggesting that the crop was more difficult to grow when sunspot activity was at its lowest.

The implications of this finding go far deeper. In August 2012, scientists studying climate patterns in Central Europe, specifically the winter freezing patterns of the Rhine, revealed a striking correlation between unusually cold Central European winters and periods of low solar activity. The studies, headed by Frank Sirocko, Professor of Sedimentology and Paleoclimatology at the Institute of Geosciences of Johannes Gutenberg University, Mainz, Germany, suggest that the extremely cold European winters of 2010/11 were the result of the North Atlantic Oscillation which Sirocko and his team now link to the low solar activity during that time. Furthermore, the researchers found that out of fourteen episodes between 1780 and 1963 when, according to historical records, the Rhine is known to have frozen over, ten corresponded to periods of minimal sunspot activity – establishing for the first time a possible common link between very cold European winters of the last 230 years. The known 11-year cycle of solar activity makes it possible, according to these results, to predict to some degree how the number of sunspots at any given period could affect our climate on Earth. What first drew Professor Sirocko's attention to this possibility was the fact that the 125-mile skating race he once attended in the Netherlands can only be held every 11 years, when the rivers freeze up. 'There must be a reason for this,' Sirocko remembers thinking, 'and it turns out there is.'

Sources:

The Sun Kings', Stuart Clark, Princeton University Press, 2007

The Herschel Chronicle: The Life Story of William Herschel and his Sister Caroline Herschel, Constance Ann Lubbock, 1933

Understanding Variable Stars, Professor John R Percy, Cambridge University Press, 2007

Daily Science online article, August 2012

This content distributed by the

AAVSO Writer's Bureau

Kids Outreach & Public Star Parties

By Alan Rossiter, coordinator

Event: Mission Bend Elementary Math/Science Night
Type: Elementary School Science Night. Numerous organized activities.
Date: Tuesday, Feb. 12, 2013
Time: 6:00 PM - 8:00 PM
Location: Mission Bend Elementary, 16200 Beechnut, Houston, TX 77083 (west side of Houston, Beechnut beyond Highway 6)

Event: Massey Ranch Elementary "Night Under the Stars"
Type: Elementary School Camp Adventure/PTA Fundraiser.
Date: Friday, February 22, 2013
Time: 7:00 PM - 9:00 PM
Location: Massey Ranch Elementary, 3900 Manvel Road Pearland, Texas 77584 (due south of Houston, just beyond Beltway 8)

Event: Tents in Town
Type: Urban Overnight Camp for Kids & Parents. Numerous organized activities.
Date: Saturday, 4/06/2013
Time: 6:00 PM - 9:00 PM
Location: Zindler Park, 7008 South Rice, Bellaire, TX 77401

Name: The Houston Arboretum BBQ Star Party
Type: Mostly Adults – Arboretum Members. An evening at the Arboretum. Food & Drink!
Date: Saturday, 06/01/2013
Time: 6:00 PM – 10:00 PM (tentative)
Location: Houston Arboretum, 4501 Woodway Drive

Details – especially times – are subject to change

Science Fair Judges Needed—March 1

The Houston Science and Engineering Fair will take place the weekend of March 1st, 2013 at the George R. Brown Convention Center, Hall A3 downtown. Once again, the HAS will be a special awarding agency. We need judges who are able to participate Friday afternoon March 1st from 1:30 to 5:00 pm.

The March meeting of the HAS will follow the same evening. The HAS presents awards in each of the three age categories, Junior Division, 9th grade, and Senior Division. Richard Nugent will be head judge again this year and has the experience to orient new judges.

You do not have to be a scientist, but do need enough background to identify good astronomy or planetary science projects and be willing to interview the student on his or her project. The winners will be awarded prizes and will be invited to present at an HAS meeting during the summer. In the past, judges have found this to be a very rewarding experience. Please consider being a judge this year. Many businesses consider participation to be a positive experience for their employees and are willing to grant the time required. If you are interested, contact Richard Nugent at rnugent@wt.net and Debbie Moran at debbiemoran@earthlink.net.

Observatory Corner

By Bob Rogers, Observatory Chairman

Hello everyone

I would like to thank Allen Wilkerson again for the following items done at the site. He moved the metal storage/drawer unit from the bunk house to the tractor shed. Also, a few weeks ago, Allen, Ana and Don Taylor helped clean out the tractor shed and reorganize it for better storage space.

On Saturday, January 14th, the Observatory Committee held its annual meeting at the site and there was a good turnout of members with some great ideas of things to get accomplished for this year. Some of the items discussed were building a 3 sided shed with gates for storing the old and new tractor implements, the removal of the old satellite dish and moving forward on the Private Observatory project.

I gave a short presentation to the membership at the January meeting for those that are interested in the Private Observatory project. So far, I have 2 signed contracts with 3 more seriously thinking about it. Folks, this is a great way to have your on Private Observatory for some serious imaging or for just regular observations. You don't have to come out, set up, wait for darkness for polar alignment, observe and then tear everything down, pack it up just to do it all over again later when you can already have 95% already done and know that you have your own spot already available. The Observatory Committee will be providing a 12' x 12' or an 8' x 8' piece of land for leasing for a member to install a private observatory. The planning, design, and layout of the observatory will be approved by the Observatory Committee along with a site User Agreement to be signed by the User, Observatory Committee Chairman and the President of HAS. The Observatory Committee will be providing a 10 amp power supply for each private observatory. The rates are set at $350.00 a year or $1,000.00 for a 3 year lease. The idea of this is not only to raise funds for the Observatory Committee and the upkeep of the facilities, but to also provide a way for members to leave their scopes out in their observatories already polar aligned and ready to use. If you have questions about this, you can contact me at observatory@astronomyhouston.org.

As Steve Fast has indicated, I will be changing the combination to the gates at the site on March 2, 2013. In order to get the new combination, that I will be passing out starting at the December HAS meeting, you will need to have your 2013 HAS dues paid and have taken the Site Orientation class. If you are interested in making a donation to the Observatory, please do so when making you dues payment and let either Steve Fast or Don Selle know that you are donating to the Observatory so the donation goes to the right place.

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

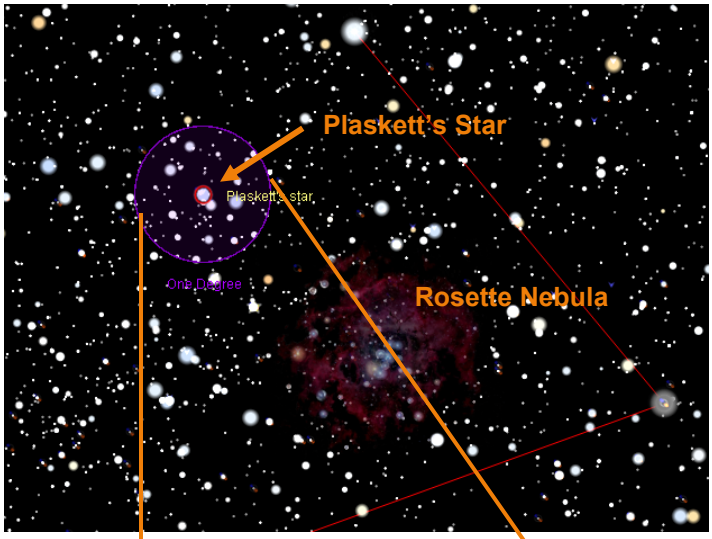
Observatory Chairman
281-460-1573
siteworkerbob@hotmail.com

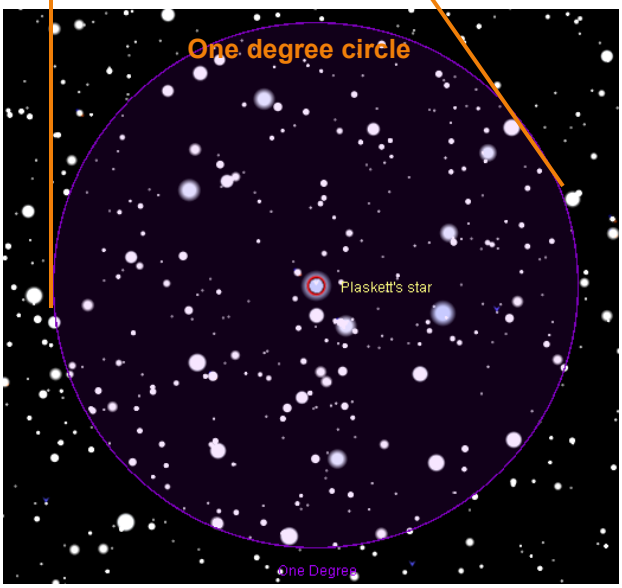
Trailer/RV spots available free for weekend use at the site. **Contact the Observatory Chairman, Bob Rogers siteworkerbob@hotmail.com for more information**

Shallow Sky Object of the Month

Plaskett's Star

Object: Plaskett's Star (SAO114146, HR2422)
Class: Blue star
Constallation: Monoceros
Magnitude: 6.1
R.A.: 06 h 37 m 24 s
Dec: 06 deg 08 min 07 sec
Size/Spectral: (O Class)
Distance: 6600 ly (uncertain)
Optics needed: Small telescope





Plaskett's Star finder and detail charts—north is up

Star chart generated by TheSkyX © Software Bisque, Inc. All rights reserved. www.bisque.com

Why this object is interesting

I observed this star on January 19 of this year, and it's a real beauty. It's the brightest star in a field of stars and shines like a steely-blue diamond in the sky. I found this star in a catalog while looking for an O class star for my 'Observing Stellar Evolution' Astronomical League program.

Most of us are aware of the colors of stars, the most obvious example of the difference in colors being Albireo. This orange/white star pair starkly shows the differences that exist in star colors. Color and temperature are the same thing. The hotter the star, the bluer the star, the cooler the star, the redder. It turns out that finding stars of all (OBAFGKM) colors is something of a challenge because the colors of stars are not equally distributed among the stars in the sky.

You remember that star colors are designated by a letter O being the hottest (whitest) stars and M being the coolest (reddest) stars.

Only one in a million stars is an O star so they're far from being the most common star in the universe. The F (white) stars are about 3% of the stars; the K (orange) stars are 12% (Albireo A is a K star), and M (red) stars are 77% of the stars in the universe. Unfortunately these M stars are low luminosity (dim) so they're difficult or impossible to see.

Plaskett's Star is actually a pair of O stars orbiting each other with a period of just over 14 days. You will not be able to split the pair of stars with your telescope; their binary nature only reveals itself when a spectra is taken of the star. The mass of the star system is estimated at over 100 solar masses.

The star is named after John Stanley Plaskett (1865-1941) who as a Canadian astronomer studied spectroscopic binaries.

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. 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, February 1, 2013

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 — Use entrances 15D and 15F. You can park in this area, but NOT in a RESERVED space. If spaces are full, park in 16B lot near Elgin