

Houston Astronomical Society

GuideStar



September, 2007

At the September 7 meeting...

Satellites of the Outer Planets, Part II

Justin McCollum

HAS Member, (and novice meeting leader) Justin McCollum will continue the discussion that he began in July on the many and varied satellites of the outer planets. Many of these are observable from Earth. Galileo was the first to see the 4 large moons of Jupiter and to track their orbits around the planet.

Since then, many more satellites of Jupiter have been found (and are being found) and the satellites of Saturn, Uranus, and Neptune are all under scrutiny.

What do we know about these objects?
Come to the September meeting, and Justin will tell us the rest of the story.

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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 cover for a map to the location.

Novice meeting: 7:00 p.m.
Justin McCollum
"An Introduction to Celestia & Cartes du Ciel"
(alternative astronomy software)

Site orientation meeting: 7:00 p.m.
Classroom 121

General meeting: 8:00 p.m.
Room 117

See last page for a map

September/October Calendar:



Photo by Scott Mitchell

Date Time Event

September

2	4:00 p.m.	2 Pallas at opposition
4	9:34 p.m.	Moon at Last Quarter
7	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
8		Prime Night, Columbus Observing Site
9	2:00 p.m.	Uranus at opposition
11	7:44 a.m.	New Moon
15		Annual Picnic, Columbus Observing Site
		Star Party, Columbus Observing Site
19	11:48 a.m.	Moon at First Quarter
22	4:00 a.m.	Mercury 0.10 degrees North of Spica
23	12:00 a.m.	Venus brightest for this apparition, Mag -4.6
	4:54 a.m.	Fall or Autumn Equinox
26	2:46 p.m.	Full Moon
27	7:30 p.m.	HAS Board Meeting, Houston Chronicle Building
29	11:00 a.m.	Mercury at greatest elongation east

October

3	5:07 a.m.	Moon at Last Quarter
5	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
9		Draconid Meteors Peak
11	12:01 a.m.	New Moon
13		Prime Night, Columbus Observing Site
19	3:33 a.m.	Moon at First Quarter
21		Orionid Meteors Peak
26	11:52 p.m.	Full Moon
28	10:00 a.m.	Venus at greatest elongation west

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

Check the web site:

www.astronomyhouston.org

Webmaster: Kay McCallum

KayMcCallum@MccLibrary.net

The Houston Astronomical Society Web page has information on the society, its resources, and meeting information.

Want your astronomy work and name on the Internet for the whole world to see? Have some neat equipment? Pictures in film, CCD, hand drawings or video format are all welcome on the page. Do you have an idea to improve the page? I'm listening. Send me Email at KayMcCallum@MccLibrary.net.

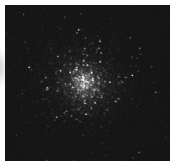
Special "Help" Volunteers

Any member who wants specific information on an astronomical topic may call special help volunteer (listed in most issues of the *GuideStar*). If you have a moderate knowledge of a special subject and would be happy to have others ask you about that subject, let the editor know and your subject, name and phone will be listed in *GuideStar* in the future.

**GuideStar deadline
for the October
issue
is September 15**

Observations... of the editor

by Bill Pellerin, GuideStar Editor



Rare observing time

A few weeks ago, as you read this, Clayton Jeter and I were enjoying a cup of coffee and a desert at the IHOP on I-10 East. We were bemoaning the lack of available observing time, with all the rain and clouds that we had in June and July. Somehow, we started talking about public star parties and sharing our love of and interest in the sky. We've both done public events, and I have a great time doing these.

Here's the problem. Observing time is rare and I look forward to every opportunity I have to get out under the stars. Since this time is so rare, do we have 'spare' observing time that we can share with others? Yes, some. Are we willing to forgo personal observing time to participate in a public star party? Yes, sometimes, we are.

So, how do we balance working on our personal observing programs with our desire to share the sky with others (and recruit new HAS members)? It's not always easy. In the end, though, the future of amateur astronomy and of this organization requires that we bring new people into the hobby. I hope we can all continue to do our part to keep amateur astronomy viable for the future.

Values

Usually I'm not focused on buying the least expensive product within a category, but there are plenty of times when I'm a value buyer. For example, I don't get too excited about the car that I drive. I want a car that's reliable, reasonably comfortable, and functional, but I'm not inclined to spend extra money for extra features. You won't see me driving a high-end automobile any time soon.

On other occasions, I'll focus on the quality of what I'm buying, and I'll be willing to spend extra money to get the quality I want. I'm thinking about telescopes. The best telescope I have is made by TeleVue, and, admittedly, it's quite a bit more expensive than a similar instrument that I could get from another supplier. The image quality is quite a bit better, so there's *some* return for the investment. Is the image quality three times as good as a telescope that could be purchased for 1/3 the cost; probably not. It's better enough that I'm willing to pay for it.

What do you think? Maybe if you have money to burn, you get the best of everything. I don't.

Until next time...

clear skies and new moons!

..Bill

billpellerin@sbcglobal.net

Mark Your Calendars!!!

Here is the schedule for future 2007 field trips to our Columbus observing site:

September 15
December 01

Each of these dates is a Saturday, and the September 15 outing will coincide with the HAS Annual Picnic.

We will be inviting members of all the area clubs to each event as we did in March (the turnout was great!).

There will be a laser tour of the constellations to begin the evening, and the observatory will be staffed for telescopic tours as the sky darkens. We will have "light windows" for those who bring families and would like to leave a little early.

Please mark your calendars, pack your gear and observing list, and come on out. Our website www.astronomyhouston.org will keep you up to date on details as they are developed.

See ya' there,

George Stradley, Field Trip /
Observing Coordinator
stradley@sbcglobal.net

Dr. Jill Cornell Tarter

Bernard M. Oliver Chair for SETI Research
Director, Center for SETI Research

Jill Tarter holds the Bernard M. Oliver Chair for SETI (Search for Extraterrestrial Intelligence) and is Director of the Center for SETI Research at the SETI Institute in Mountain View, California. Many people are now familiar with her work as portrayed by Jodie Foster in the 1997 movie *Contact*.

Tarter received her Bachelor of Engineering Physics Degree with Distinction from Cornell University and her Master's Degree and a Ph.D. in Astronomy from the University of California, Berkeley. She served as Project Scientist for NASA's SETI program, the High



Resolution Microwave Survey, and has conducted numerous observational programs at radio observatories worldwide. Since the termination of funding for NASA's SETI program in 1993, she has served in a

leadership role to secure private funding to continue the exploratory science. Currently, she serves on the management board for the Allen Telescope Array, a joint project between the SETI Institute and the UC Berkeley Radio Astronomy Laboratory. When this innovative array of 350 6-m antennas begins operations at the UC's Hat Creek Radio Observatory, it will simultaneously survey the radio universe for known and unexpected sources of astrophysical emissions, and speed up the search for radio emissions from other distant technologies by orders of magnitude.

Tarter's work has brought her wide recognition in the scientific community, including the Lifetime Achievement Award from Women in Aerospace, two Public Service Medals from NASA, Chabot Observatory's Person of the Year award (1997), Women of Achievement Award in the Science and Technology category by the Women's Fund and the San Jose Mercury News (1998), and the Tesla Award of Technology at the Telluride Tech Festival (2001). She was elected an AAAS Fellow in 2002 and a California Academy of Sciences Fellow in 2003. In 2004 Time Magazine named her one of

the Time 100 most influential people in the world, and in 2005 Tarter was awarded the Carl Sagan Prize for Science Popularization at Wonderfest, the biannual San Francisco Bay Area Festival of Science.

Tarter is deeply involved in the education of future citizens and scientists. In addition to her scientific leadership at NASA and SETI Institute, Tarter has been the Principal Investigator for two curriculum development projects funded by NSF, NASA, and others. Tarter is a frequent speaker for science teacher meetings and at museums and science centers, bringing her commitment to science and education to both teachers and the public.

The Jill Tarter interview...

Clayton: It's a real pleasure to be able to interview you here for the *GuideStar* newsletter. That is one impressive astronomy bio you have compiled for us. How did you first become interested in astronomy?

Jill: When I finished my undergrad degree in engineering physics, I realized that I had gotten an excellent education and had lots of problem solving skills, but engineering problems weren't the ones that turned me on. So I took a lot of graduate courses until I found problems that did turn me on: star formation and astrophysics!

Clayton: Can you briefly tell us about the making of the movie, "Contact" and yourself being portrayed in it?

Jill: Carl Sagan wrote a book about a woman who does what I do, but the character is mostly Carl himself. It was a real privilege to meet with Jodie Foster and

Continued ...

Just Looking... from previous page

work with her and the *Contact* crew. She is one very intelligent and gracious lady. The technology of making movies is awesome, and if I weren't doing what I am doing, it would be a very tempting career.

Clayton: In the movie *Contact*, I noted the amount of time that elapsed during Arroway's encounter near the star Vega. According to Arroway, she spent eighteen hours away from Earth. As far as the people on Earth are concerned, she never went anywhere. Consider that Relative Theory says the faster your speed, the lesser the amount of time taken for an event as measured by your clock. What's up with this? Isn't this time factor in the movie the reverse of what should have happened? That segment of the movie confused me.

Jill: You should talk to Kip Thorne, he's the one that advised Carl Sagan on the astrophysics of worm holes. The movie script changed the ending of the book, in part to be less challenging for the audience, in part to give Robert Zemeckis the hook he needed for a sequel. As far as I know, nobody has written a sequel – *Contact* didn't make as much money as some had hoped. The 18 hours of recorded static was/ is the hook.

Clayton: For those that are not in the know, can you briefly describe SETI and what it's all about?

Jill: SETI is an acronym that stands for the search for extraterrestrial intelligence. It's really a misnomer, because what we search for is evidence of some other distant civilization's technology. We do this using large radio telescopes to look for narrowband signals that are compressed in frequency, and with optical telescopes to look for bright flashes that are compressed in time. Both types of signals are easy to produce with technology, but distinctly different from the types of signals produced naturally by the cosmos. If we find evidence of technology somewhere else, we will deduce the existence of intelligent extraterrestrial engineers responsible for building that technology – of course just as in the case of the original builders of the transportation network in *Contact*, we won't know whether they are still there.

Clayton: What do you think the chances are that the SETI project will recover a signal within the next 10 years?

Jill: The only real answer to this question remains the last sentence in the Cocconi and Morrison 1959 *Nature* paper: "The probability of success is difficult to estimate; but if we never search, the chance of success is zero." Over the past few decades, we've started building bigger and better tools with which to conduct the search. We're no longer exploring the Cosmic Haystack with tweezers, we've got some robust pitchforks to help us. Of course, we still have to be able to recognize the needle when we see it.

Clayton: Besides the Allen Telescope Array, what other initiatives is the SETI Institute pursuing at this time?

Jill: Frank Drake is running an optical SETI program on the

Nickel telescope at Lick Observatory. The detector, built by Shelley Wright as her senior thesis at UC Santa Cruz, uses three very fast photodiodes operating in coincidence to find nanosecond flashes from distant lasers, while excluding false positive results due to local interactions at the telescope. We are actively participating with a global community of scientists and engineers who are trying to find a cost effective way to build the next generation of radio telescope that will be 100 times bigger than the Allen Telescope Array. It's called the Square Kilometre Array and would offer the possibility of detecting signals that are 100 times fainter or 10 times further away.

Clayton: Do you have an astronomy mentor?

Jill: When I was a senior in high school, I was lucky enough to have a real mentor – 'Doc' my physics teacher. Today there are a great many scientists that I admire and with whom I'm sometimes fortunate enough to work; Carl Sagan having been one. A particular hero of mine from the past is Admiral Grace Murray Hopper who advised that "It is better to beg forgiveness than to ask permission." Another hero, from the present, is Dr. Margaret Burbidge who opened up the astronomical mountain tops for all of us women.

Clayton: Have you ever owned or presently use a portable telescope? Which design?

Jill: Since radio wavelengths are so long, the collectors aren't exactly portable. But in fact I do own a truly portable telescope (as do most people today) – it's my laptop! The ability to study objects across the electromagnetic spectrum, using stored datasets, is now a reality and will only get better as our national and international virtual observatories get actualized and grid computing becomes commonplace.

Clayton: Do you have or make the time for visual or photographic astronomy?

Continued ...

Just Looking... from previous page

Jill: I've not had the opportunity or talent for that – instead I concentrate on making my images in the frequency-time domain; we're constantly trying to invent the 'cartoon transform', something that could recognize a Dilbert in the noise.

Clayton: How do envision radio astronomy in the next 50 years? Where are we going?

Jill: For centimeter astronomy, after the Allen Telescope Array, the Square Kilometre Array will be the next step. Beyond that, the shielded zone of the moon on the lunar far side offers a unique venue for radioastronomy, free from terrestrial interference. Exploiting this preserved real estate will be very costly. We need to be vigilant to insure that our own activities on the lunar surface, in lunar orbit, or at the L2 Lagrange points (Sun-Earth, Earth-moon) do not pollute this pristine radio environment.

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

Jill: Try not to become wavelength chauvinists – find a phenomenon you want to study or a question you want to answer and then explore the physics that is revealed in every part of the spectrum to help you understand. And never throw away those observational anomalies that don't fit your model, this is where you can potentially learn the most – or perhaps discover evidence of somebody else's astro-engineering project.

Clayton: Thanks Jill for taking the time to share your interest and thoughts with us for our monthly HAS newsletter, the *GuideStar*. We wish you luck with all of your astronomy interests and pursuits. If your ever in Houston, please come visit our society, we'd love to have you as our guest.

To the Members of Houston Astronomical Society

I would like to take this opportunity of thanking Clayton Jeter for putting the article about me in the August issue of *GuideStar*. I find it very humbling to be in a group who have appeared in this series of articles, many of whom are very eminent in their fields while I am just a poor old amateur from across the pond.

As I mentioned in the article, my family and I have very fond memories of our trips to Houston and all the folks we met and places we went.

We are still in contact via e-mail with a few, who I won't mention in case it embarrasses them.

If any members would like to contact me my e-mail address is brianstates@btinternet.com. I wish you all dark skies, and long and happy lives

Kindest regards

Brian States.

Plans for the Great Spring Grazing Occultation of Epsilon Cancri

By Paul Maley

International Occultation Timing Association (IOTA)

First Announcement - August, 2007

A grazing occultation is an eclipse of a star by the moon at either the north or South Pole of the moon as the star seems to be tangentially 'clipped' by the moon in its slow motion around the earth. In 1973 a graze of a Pleiades star was seen and timed by many observers from the Rice University campus. The next big event occurs on Saturday night, May

It has been 25 years since a grazing lunar occultation of a reasonably bright star last crossed right through the middle of Houston.

10, 2008 at 1006pm, as a 6.3 magnitude star will graze the darkened north polar edge of the 38% waxing

moon. The moon will be located 44 degrees above the western horizon at that time. The path runs northwest to southeast from Tomball, through Houston, Pasadena, Seabrook, San Leon, and Galveston Island (Bolivar side). Arguably, the best zone for watching the star disappear and reappear is between -0.1 and 2.0km south of the graze center. The name of the target is **Epsilon Cancri**, the 5th brightest star in the constellation of Cancer. We hope to field a large observer team for this very important event and for once, even a small telescope can be employed to observe this interesting lunar phenomenon.

The purpose of watching and timing the star as it disappears and reappears from behind invisible mountains is to determine the absolute heights of lunar mountains and the depth of valleys between them. It is a fun and scientifically valuable adventure. The object is to use a small 3-inch (75mm) or larger aperture telescope preferable (but not mandatory) to have a motor drive so you can keep your hands free, to call out as the star disappears (call out 'D') and then returns ('R'). One would normally use a tape recorder to record your voice and time signals or if you have a sensitive video camera that can record 6th magnitude stars through a telescope, that is event better. The star may disappear and reappear once or several times. Each person will see something completely unique from every other person. The additive combination of all timings from sites placed 50 feet apart will enable us to map these features with considerable accuracy. You will be watching for a 6 minute period starting at 1002pm and ending at 1008pm.

My goal is to have no more than 2 people stationed 50 feet apart with a 3-inch telescope or larger, portable tape re-

order or a video system that will record it. The tape recorder must record continuously and not be voice activated. It needs to be a standard micro cassette recorder. One person acts as the observer, the other as the assistant. In addition you will need a short-wave time signal receiver. These can be found at places like Radio Shack and we recommend one that is digitally tuned; for those who do not have them we intend to rebroadcast time signals on an FM frequency. So, please bring either a high quality FM portable radio with fresh batteries or consider using your car radio. At this point it is not clear if cars will be allowed onto the golf course area so finding a portable FM receiver may be the best solution. The frequency to receive time signals will be provided about a month before the occultation on the web page <http://www.eclipsetours.com/events>. This astronomical event is so easy, anyone can do it and hence, it makes a good educational opportunity to get new people involved.

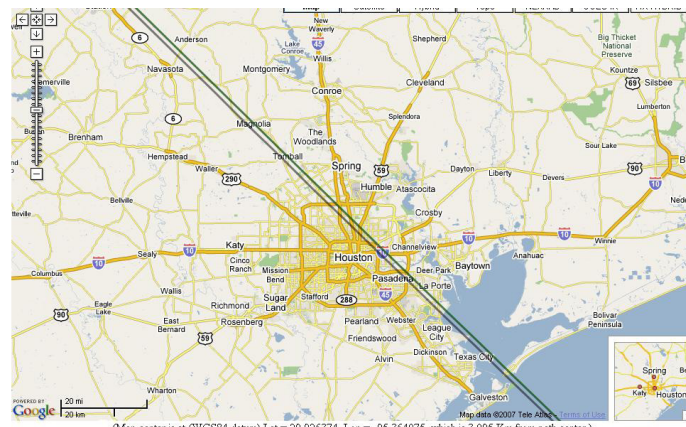


Figure 1. The path as it goes over the Houston area. The observation zone lies ONLY between the parallel black lines. South and west of the lines a total occultation can be seen. North and east of the lines no occultation occurs.

Grazing Occultation.. from previous page

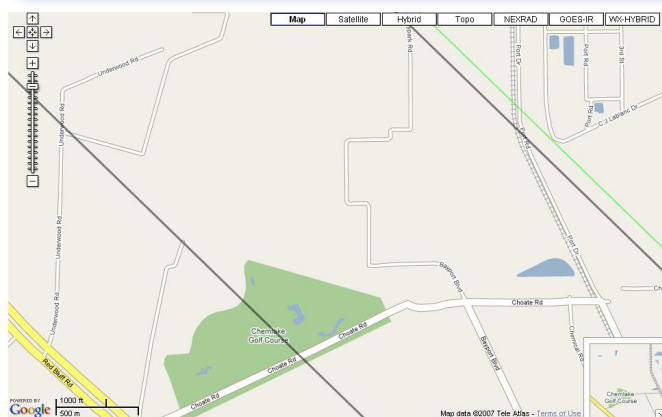


Figure 2. The path goes over the Chemlake golf course off Choate road and Red Bluff. Clear lake observers should consider this as a site. Visual observers here only and just for the southern part of the path. This location has yet to be approved.

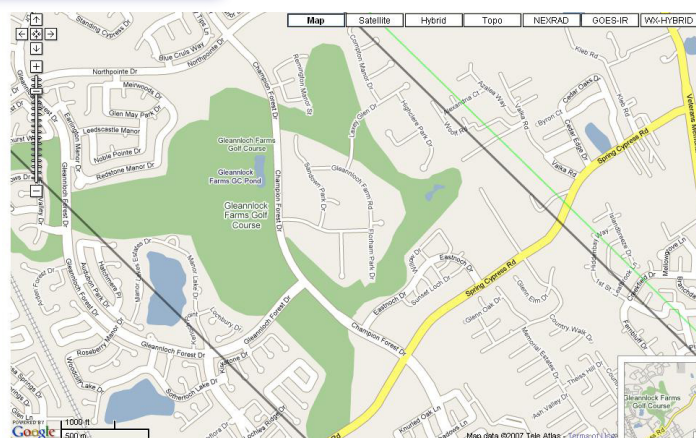


Figure 4. The Gleannloch Farms golf course near FM249 and Spring Cypress--our prime site.

course property. As we move closer to May 10, instructions on how to get to this location on the north side of Houston, the timeline for observation and instructions on what to do with your data will be posted on the web page: <http://www.eclipssetours.com/events>.

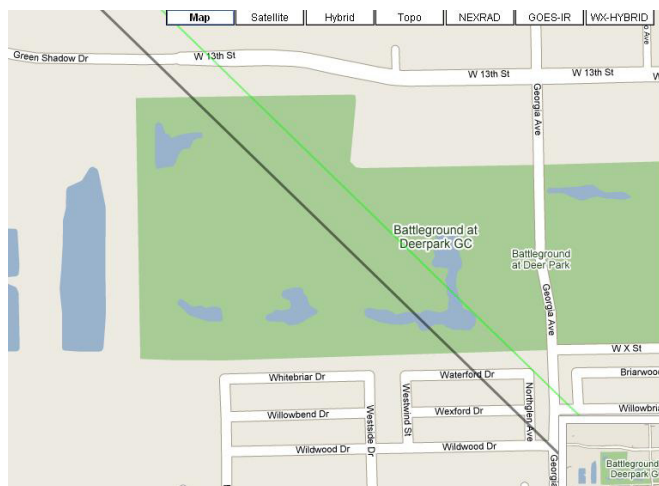


Figure 3. The path as it goes over the Deer Park Battleground golf course. A better spot for video observers but not approved yet. Even though this is in an area with chemical plants and lights, the moon will be easy to spot and in a telescope, the star should also be easy given its elevation and magnitude.

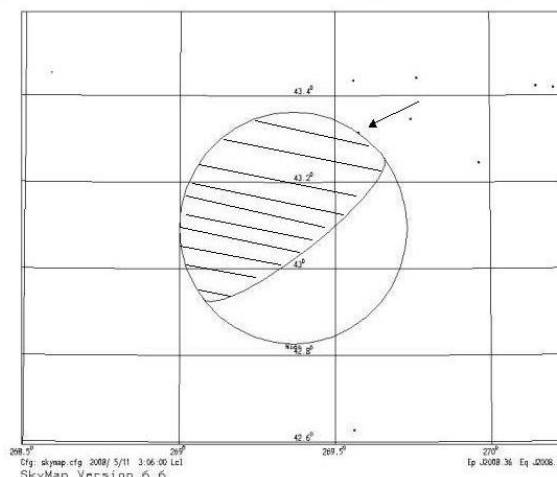


Figure 5. The above map shows how the moon will look to the naked eye at the time of occultation. The dark side is shown shaded and the arrow points to the position of the star just before things start to happen. There are elevation and azimuth markers that are depicted along the axes of this graphic.

As seen in figure 4, sites will be designated between the two black parallel lines. The above location is our planned site for Houston area observers. Its location traverses the entire range of mountains on the lunar surface where the occultation will occur. That range is shown by two parallel black lines separated by 1.9 kilometers (1.18 miles or 6234 feet). I have arranged with Club management to permit our teams to set up on the

Grazing Occultation.. from previous page

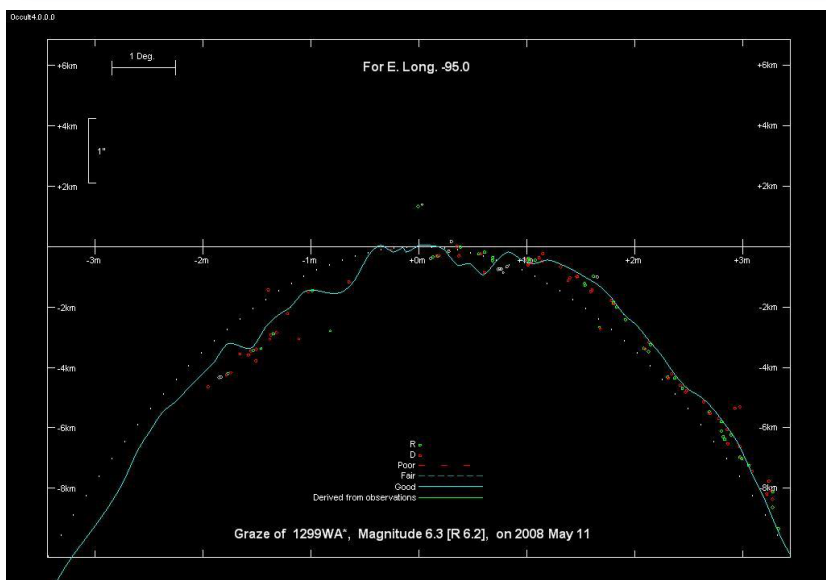


Figure 6. The known profile of the dark side where the star will undergo its disappearing act. This area is not known with a high degree of precision. The wavy line is simply an estimated view of the mountain and valley profile. Our observations will provide a much more accurate refinement of those slopes and elevations. The larger dots are representative of past observations of features in this area, while the small uniformly spaced dots describe an average surface elevation value and should be ignored.

Never seen a grazing occultation before, and perhaps just a bit nervous about trying to time something completely new? Not to worry. You can get a first hand look by going on line to watch a great video of a real occultation of a star grazing the moon as seen from near Hockley, TX this summer. The link is:

http://iota.jhuapl.edu/MuArietis_N%20station.avi

and requires a media player like RealPlayer to view. You can see in real time as the star is covered and uncovered repeatedly as the moon passes between us and the star. The field of view is similar to what you can see in an eyepiece, though you want to keep as much of the bright limb out of the field as you can. Some of the events (an 'event' is either a disappearance or reappearance) are rather quick, some take many seconds. Some may be instantaneous; some may take a fraction of a second to occur. A 'blink' or 'flash' is also possible as the star appears to clip the top of a mountain. Hence, it is important to watch and not to talk (except for calling out D or R) during the 6 minute observing window nonstop until the occultation is over.

It is also possible to appreciate how important it is to

focus the telescope properly. This video was easily recorded on the very sensitive and relatively inexpensive Supercircuits PC164 video camera (available from <http://www.supercircuits.com> located near Austin) which operates from DC power; the video output of the camera feeds into a camcorder which acts as the VCR. A lot of camcorders may not accept video input so be sure your camcorder has that feature. Video is much more accurate than the human eye and of course, the disc or tape can be analyzed, replayed and preserved. Time signals must be recorded in order for the data to be of use. So, if you do not have a digital short wave radio (e.g. from Radio Shack capable of receiving WWV on 5.0 and 10.0 MHz), don't worry as we will rebroadcast those signals for you on FM for a short period of time beginning prior to and ending shortly after the graze.

If you think you might want to come out for this and help us record data or would be willing to help out with logistics such as site marking, tape pickup, etc., we really need your assistance. We are looking mainly for observers, but also those willing to help check telescopes for new observers to be sure they are looking at the correct star and troubleshoot equipment problems. Please contact me at pdmaley@yahoo.com or at 281.2440208 during the day.

Publicity Suggestion Box

I welcome any suggestions that *any* member has to offer. It doesn't matter how trivial you think your idea may be. All input will be reviewed and welcomed.

Let's grow.

Please drop me a note at the following address.

itjdm0@yahoo.com

John Missavage- HAS Publicity Chair

Telescope Auction – Cave Astrola

HAS will be holding a Telescope Auction at our regular meeting, September 7, 2007.

The item on the block is a 10" Cave Astrola on a Pier. This telescope originally belonged to Reverend James Breazeale. It was given to his grandson and namesake in 1985. The reverend passed away in 2000.



When young James contacted HAS with his offer, we informed him that this telescope would be too large to be safely handled by novices on the go, and that we would sell the articles and put the funds back into the loaner program to buy modern, portable and novice friendly equipment. James response was: "I believe that my grandfather would approve of his Astrola being in use and contributing to the greater good of fellow astronomy enthusiasts. I would like to donate his telescope, to honor him." HAS is pleased to have been chosen to help fulfill this memorial wish.

The information engraved on the lens is M-750263-f/6-60 1/8 FL and is dated Feb 20 1975. It is in need of some restoration work. More photos are available here...

<http://picasaweb.google.com/BramWeisman/HASCaveAstrola?authkey=tXRCkN8kw50>

The scope will also be on hand for previewing prior to the auction on September 7, 2007. Previewing expected to begin at 7 p.m. or earlier. Payment may be by cash, or by check with verifiable and valid identification.

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Minutes... from page 16

- Treasurer, Bill Flanagan, announced that *Sky and Telescope* (S&T) is changing the way they collect club-discounted subscription renewals. Effective immediately, members currently getting the club discount should send their money along with their renewal notice directly to S&T. Previously, club-discounted renewals were done through the club treasurer. Members not currently getting the club discount on S&T that wish to do receive it, should contact Bill to get signed up. This does not affect renewals on Astronomy Magazine. Renewals on Astronomy go through the club treasurer as always.
- Leland Dolan related the details of the upcoming pre-dawn total lunar eclipse on August 28. These details are available in the August GuideStar.
- Don Pearce gave the Comet Report, highlighting C/2006 VZ13 LINEAR, observed best early in August, and C/2007 N3 Lulin, a recently discovered comet

that could reach 6th magnitude in February 2009. For more information on these comets and other comets of interest, see Don's Comet Corner on the HAS website, <http://www.astronomyhouston.org>.

Program

Steve Goldberg introduced the featured speaker for the evening, Jack "Triple" Nickel. Triple is retired fighter pilot for the US Air Force and currently pilot of NASA's C-9 microgravity training aircraft. Triple gave a well-received presentation on NASA's microgravity training flights. At the conclusion of this presentation, Triple entertained questions, and Steve presented him with a gift of appreciation from the society.

The Sun Crosses the Equator

Object: Sun
Class: Solar System
Magnitude: -26
R.A.: 12 h, 00 m, 00 s
Dec: 00 degrees, 00 minutes, 00 seconds
Distance: 150 Million kilometers
Constellation: Virgo
Optics needed: None

Why this object is interesting.

If you pay attention to the RA and DEC of the Sun, listed above, you can guess that something special is happening. This occurs at a single moment in time. This year, that moment in time is at 04:51 CDT (yes, 4:51 a.m.) on September 23. So, you won't see the Sun at this time.

In fact (do I need to warn you?) you should never look at the sun without suitable filters. Read any beginner's astronomy book to understand what constitutes a 'suitable filter'.

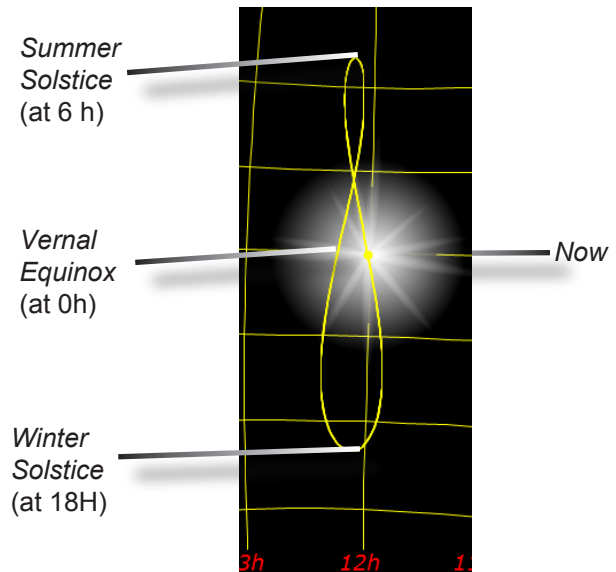
Anyway, at this moment, the sun is crossing the plane of the Earth's equator, on its way south for our fall and winter. It is the moment at which fall begins in the northern hemisphere. It's fun to go to work and announce to your co-workers that fall began today at 4:51 a.m. Most of the responses will be the equivalent of "so, what?", but you may find someone who wants to know more. This becomes what educators call a 'teachable moment'.

Because of the tilt of the Earth's axis to the plane of its orbit around the Sun, the Sun appears to move north and south in the sky, completing one cycle per year. The Earth's orbit around the Sun is slightly elliptical, so the Sun does not move due north and south. It makes the figure 8 pattern you see in the accompanying image. This pattern is called the analemma. This means that for most of the year the Sun is not exactly on the meridian (the line between north and south) at noon. In fact, the Sun is on the meridian at noon (or the closest it'll get) on exactly four days a year:

The autumnal equinox (this one)
The winter solstice (the southernmost position of the Sun)
The vernal equinox (when spring begins)
The summer solstice (the northernmost position of the Sun)

(This doesn't take into account the fact that the Sun crosses the equator only *sometime* during the day, so while the Sun is only on the equator for an instant, the difference isn't enough to affect this discussion.)

So... on most days of the year a day (measured by when



*The Analemma and the four times the Sun is on the meridian at noon
from TheSky v6*

the Sun crosses the meridian) is *not* 24 hours long. The 24 hour day is the average solar day, and the difference between this average day length and any actual day length is provided by the 'equation of time'. (The maximum difference between an 'actual' day and an 'average' day is about 15 minutes, so, as a practical matter, we'd not be concerned about this.)

So, pay attention to the Sun on this day. It rises due east, it sets due west and it moves into the southern hemisphere. And, the days get shorter while the nights get longer, allowing more time for amateur astronomers to use their telescopes. Life is good.

Now, if all this would just make the clouds go away!

Welcome to fall!

How can I learn more about the Astronomical League?

Amateur astronomers from across the country benefit from perusing the many pages of the Astronomical League's web-site, www.astroleague.org. Naturally, this is the place to go if you're looking for information about upcoming events and League news. But there is so much more...

Want to learn all about one of the great League observing programs? Go to www.astroleague.org/observing.html.

Do you know of a worthy candidate for one of the many League awards? Look at <http://www.astroleague.org/al/awards/awards.html>.

Are you interested in buying a particular book about our fascinating hobby? Then go to www.astroleague.org/al/book-serv/bookserv.html.

There is even something to help your club function better. Try www.astroleague.org/al/soc aids/socaidid.html

Make the most of your Astronomical League membership! **To find out more about what the Astronomical League offers you, why not log on to www.astroleague.org today?**

Membership Renewals...

Your membership is renewable on January 1 of each year.

Total yearly dues are \$36.

If you paid your dues any time in 2006, your payment for 2007 was due as of January 1, 2007. If you want to get a jump start on your 2008 dues, you can pay them now!!

Magazine subscriptions can be renewed at any time and the renewal does not need to be synchronized with your HAS dues.

Membership in the Houston Astronomical Society is one of the great bargains in Astronomy. For a regular membership of \$36 you get the opportunity to support an active and growing organization, you get the monthly *GuideStar* newsletter, and you get access to the outstanding H.A.S. observing site near Columbus, Texas. (You must attend an orientation, given monthly, to use the site.) And, after two months of membership you can borrow, at no charge, one of the Society's loaner telescopes. It's the best deal in town, we think. Please renew your membership when it expires.

Encourage other astronomy enthusiasts to join the organization as well. It's a great group.

Thanks!

2007 Annual Picnic & Star Party

Date & Time: Saturday, September 15, 2007, noon until
Location: HAS Observatory Site in Columbus.
Details: Site will open at noon. Food served at 5:00 p.m.

All area club members are invited to attend.



You must RSVP to Amelia Goldberg no later than Tuesday, September 11 at sgoldberg124@comcast.net. Give your name, number of people in your party and club affiliation.

Hamburgers, hot dogs & trimmings will be provided. Bring your own drinks and bring snacks for later if you plan to observe.

Site has 30+ concrete pads for telescopes. Plenty of grassy area if all pads in use. Electricity available in observing area. Bring 50 ft. extension cord.

Observatory building will be open and staffed until midnight.

Camping sites for tents and RVs (no hookups) available.

Restrooms with showers on site.



Want Ads

For Sale: Losmandy G11 with extras.

This is the non-goto version. Asking \$1750, negotiable. Includes standard equipment: tripod, mount, counterweight, hand controller. Asking price also includes upgraded RA worm gear, aluminum motor covers, deluxe clutch knobs, deluxe tripod knobs, polar alignment scope, and spare hand controller. Other extras available. Contact Dick Locke if interested: rtlocke@gmail.com

For Sale: Celestron Starhopper, 8" Dobsonian Telescope \$250.00, Kerry Warner, 713 784 7673

For Sale: 17.5" Newtonian

Perfect for imaging or visual star parties. 17.5" f4.5 Newtonian telescope with highly accurate microprocessor-controlled, stepper-based alt-az drive system with focal plane rotator. Designed and built by Andy Saulietis and the owner. Accepts ST4-compatible inputs for autoguiding. Mechanical and calibration work done by the owner to optimize system accuracy for autoguided CCD imaging. Original 1981 Coulter mirror refigured to smooth 1/8th-wave surface by Sky Optical in late 80's. Primary and secondary recoated with enhanced coatings group by PAP in early 90's. Optics in excellent condition. 80mm f5 finder. Breaks down to numerous major

pieces for transport. With modest effort, can be a traveling scope, but better as a semi-permanent observatory. See my website for many images made with this system over the last decade.

Price negotiable. For pickup/delivery, maybe can meet you halfway.

Call 281-482-5190 or E-mail Al Kelly.

For Sale: Celestron Nexstar 8

Like New Condition...Celestron Nexstar 8, Used only 2 times in back yard. Some extras include Solor filter, 1 1/4" star diagonal, 40 mm multi-coated nexstar plossel, 8-24 mm Z00 eyepiece, variable polarizing filter, 2X multicoated Barlow. \$ 850.00 Jack DeNina, Willis, Texas 936-856-0704, jjack9485@cs.com

Email your ads to Kay McCallum, our Webmaster, at KayMcCallum@MccLibrary.net



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Logo Sales

In addition to all the other cool stuff that Judy Dye has available in Logo Sales, the 2007 "Observer's Guide" is available. This book is a must-have for planning your observing in 2007, so if you don't have your copy come to the meeting, see Judy, and buy one.

All checks should be made out to HAS for the correct amount, and mailed to Judy Dye, 12352 Newbrook, Houston TX 77072-3910. If there are any questions, please call. Our phone number is 281-498-1703.

Judy Ann Dye

Minutes

of the August, 2007 Meeting of the

Houston Astronomical Society

General Announcements:

The August, 2007 meeting of the Houston Astronomical Society was called to order on August 3rd at 8:02 p.m. by HAS Vice President, Ken Miller.

Announcements:

- Ken Miller welcomed everyone, including several visitors, to the meeting.
- Ken reminded everyone that the Annual Regional Clubs Astronomy Meeting will be held the evening of October 19th with Astronomy Day on the following day.
- Telescope Loaner Program Chair, Bram Weisman, reviewed the details of the Loaner Telescope Program and showed pictures of the 10" Cave Astrola telescope recently donated to the Program. Bram related that this scope is too massive to use in the loaner program so it will be auctioned in the future. Bram will relay details of the auction as they become available.
- *GuideStar* Editor, Bill Pellerin, showed the membership a certificate conveyed by NASA to HAS in recognition of our carrying NASA's Space Place articles in the *GuideStar*.
- Observatory Chair, Bob Rogers, showed a brief presentation on the new tractor donated recently to the HAS Observatory. It's a Yanmar 2610 complete with a Bulldog 287 front-end loader and a Bronco 5' shredder. The anonymous donation was made under the condition that we cover it. Bob related plans to purchase a \$695 cover for the tractor, and he solicited donations from the membership to cover this cost. Donations are tax deductible, and Bob can provide a donation letter for tax purposes. Anyone interested in donating for the tractor cover should contact Bob Rogers or Bill Flanagan at the numbers listed in the *GuideStar*.
- Amelia Goldberg reminded everyone of the HAS Annual Picnic scheduled for September 15th at our Columbus observing site. Other area clubs have been invited, and HAS will be providing hamburger and hotdogs. We're asking HAS members to bring other items such as lettuce, tomatoes, cookies, etc. Please contact Amelia to let her know what food items you'll be bringing to the picnic.
- Awards Chair, Amelia Goldberg, presented Gordon Houston with the Astronomical League's Honorary Messier certificate #2358 and pin. To earn this award, Gordon completed and logged observations of all 110 objects on the Messier Club list.
- Field Trip/Observing Committee Chair, George Stradley, reminded everyone of the novice star party on August 4th. Novices were encouraged to take advantage of this opportunity to become familiar with the Columbus observing site. George asked those planning to attend to sign up with him at the meeting.
- Judy Dye presented a few of the items she has available in the HAS Logo Sales program. Book titles available include: 2007 Observer's Handbooks, Globular Clusters, and Planetary Nebulae.
- Aaron Clevenson, President of NHAC, detailed What's up Doc? a document he creates for NHAC each month. What's up Doc? identifies the objects from the Astronomical League observing programs that are well-presented for observing each month, organized by AL program. In addition, Aaron mentioned a spreadsheet he's developed called What's up Tonight Doc? that enables users to determine the AL program objects visible for any given night. Both of these documents are available on the NHAC website, <http://www.astronomyclub.org>.
- Ken Miller announced the members of the Nominating Committee for this year: Chair Ken Miller, Bill Leach, Don Pearce, and Bill Pellerin. Ken related we need one more volunteer for the Nominating Committee and asked anyone interested in serving on the Nominating Committee or serving in one of the elected positions in 2008 to see him at the end of the meeting.

Continued on page 11 ...

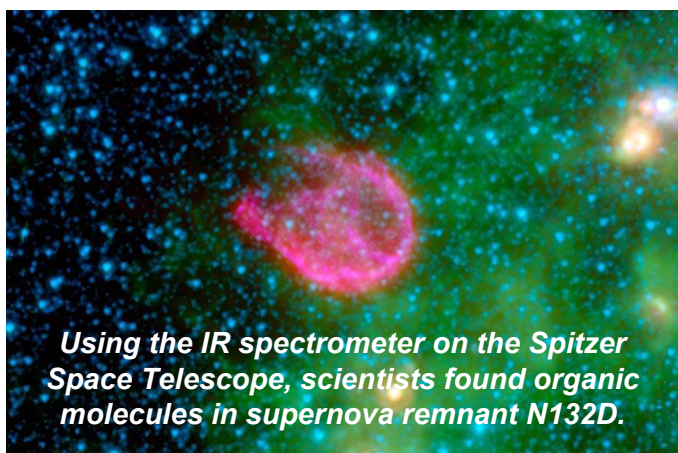
Cosmic Cockroaches

By Dr. Tony Phillips



Cockroaches are supposed to be tough, able to survive anything from a good stomping to a nuclear blast. But roaches are wimps compared to a little molecule that has recently caught the eye of biologists and astronomers—the polycyclic aromatic hydrocarbon.

Polycyclic aromatic hydrocarbons (PAHs for short) are ring-shaped molecules made of carbon and hydrogen. “They’re all around us,” says Achim Tappe of the Harvard Center for Astrophysics. “PAHs are present in mineral oils, coal, tar, tobacco smoke and automobile exhaust.” Aromatic, ring-shaped molecules structurally akin to PAHs are found in DNA itself!



Using the IR spectrometer on the Spitzer Space Telescope, scientists found organic molecules in supernova remnant N132D.

That’s why Tappe’s recent discovery may be so important. “PAHs are so tough, they can survive a supernova.”

The story begins a few thousand years ago when a massive star in the Large Magellanic Cloud exploded, blasting nearby star systems and interstellar clouds with hot gas

and deadly radiation. The expanding shell, still visible from Earth after all these years and catalogued by astronomers as “N132D,” spans 80 light years and has swept up some 600 Suns worth of mass.

Last year “we observed N132D using NASA’s Spitzer Space Telescope,” says Tappe. Spitzer is an infrared (IR) telescope, and it has a spectrometer on-board sensitive to the IR emissions of PAHs. One look at N132D revealed “PAHs all around the supernova’s expanding shell. They appear to be swept up by a shock wave of 8 million degree gas. This is causing some damage to the molecules, but many of the PAHs are surviving.”

Astronomers have long known that PAHs are abundant not only on Earth but throughout the cosmos—they’ve been found in comet dust, meteorites and many cold interstellar clouds—but who knew they were so tough? “This is our first evidence that PAHs can withstand a supernova blast,” he says.

Their ability to survive may be key to life on Earth. Many astronomers are convinced that a supernova exploded in our corner of the galaxy 4-to-5 billion years ago just as the solar system was coalescing from primitive interstellar gas. In one scenario of life’s origins, PAHs survived and made their way to our planet. It turns out that stacks of PAHs can form in water—think, primordial seas—and provide a scaffold for nucleic acids with architectural properties akin to RNA and DNA. PAHs may be just tough enough for genesis.

Cockroaches, eat your hearts out.

Find out about other Spitzer discoveries at www.spitzer.caltech.edu.

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

Remember --

All HAS memberships are due for renewal in January. Pay your 2007 dues now!! Our membership year now corresponds to the calendar year.

Mail your dues to the address on the last page of this *GuideStar* or bring your payment to the meeting.

Observatory Corner

By Bob Rogers, Observatory Chairman



Hello everyone.

At the August membership meeting, I gave a quick PowerPoint Presentation introducing the Observatory Committee's new "Toy". As you recall, this is a Yanmar 2610 tractor that was donated by a fellow HAS member and his wife. The Tractor comes with a Front End loader and a Shredder for cutting the grass. I also asked for donations for a tractor cover. So far, we have collected a little over \$300.00 for the cover. So, I would like to remind everyone that any and all donations would be welcome at the September meeting. And, of course, all donations are Tax Deductible and I can provide a donation letter for you. You can contact Bob Rogers or Bill Flanagan to donate.

On September 15th is the HAS Picnic at the Observing site. We are planning to cook hot dogs and hamburgers for everyone. If you are planning to attend the picnic, then please contact our picnic chairman Amelia Goldberg to get your name on the list for the food.

A friendly reminder to all the Key Holders of the Observatory, when you took your training in the Observatory, you learned that part of the responsibility of having the key is that you will need to volunteer some time at the site for site duty. In the last couple of years, I have seen the same small group of people come out to the site to work. There are a lot of key holders that are not coming out and putting in their time. We have a couple of projects in the works for the fall when the weather cools down and I would like to see more key holders coming out to help with them. The more key holders that volunteer, the faster the work gets done and the less that everyone else gets burned out from doing all the work. So, please come out and put in your time. Of course, any member can volunteer to help at the site. I won't turn down anybody that wants to help.

Some dates of interest here for everyone. George Stradley, our Field Trip and Observing Chairman, has set the following 2007 Field Trip Schedule – September 15th (HAS Picnic) and December 1st. Keep an eye out on the Web site and here at the Observatory Corner for future updates for these Field Trips.

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

Thanks,

Bob Rogers
Observatory Chairman

Observatory Duty Roster

by Bob Rogers, Observatory Chairman

The site is in great shape thanks to the many, many volunteers who help maintain the site. Ed Fraini, Ken Miller, Ken Carey, and the site teams did a great job.

September Supervisor - Ed Preston – 281-992-8501

Volunteers:

Leonard W. Raif
Linda Sternbach
Larry C Wadle
Mark R. Watson
Tom Williams
Barbara Wilson
Buster Wilson
Jim E Anderson

Projects for September:

Site Cleanup
Weed Eater Control
Field Maintenance

- Please volunteer to help us keep the site in great shape! Contact Bob Rogers with your desires and let him know of any special skills you have that the club could leverage. Thanks!

October Supervisor – Mike Edstrom – 832-689-4584

Volunteers:

Peyton Barnes, Jr.
Don Bates
John Blubaugh
John Chauvin
Art Ciampi
Brian Cudnik
Gary Delzer
Kay Sandor

• **Want new information in the GuideStar? Write it!!**

• **You, too, can be published here.**

- What are you doing that's new and exciting?
- What have you read recently (book report!)?
- What new and interesting software are you using?
- Did you have an observation that was especially interesting?
- Any 'lessons learned' from observing attempts?
- What are you looking forward to at the Texas Star Party next year?

• Send your materials to Bill Pellerin, the GuideStar editor at:
• BillPellerin@sbcglobal.net

November Supervisor – Kirk Kendrick – 281-639-5088

Volunteers:

Kenneth Drake
Fred Garcia
Clif Goldman
David Herlinger
John Huff
Clayton Jeter
Keith Jurgens
Arnie Kaestner

General Membership Meeting

The Houston Astronomical Society holds its regular monthly General Membership Meeting on the first Friday of each month, unless rescheduled due to a holiday. Meetings are in Room 117 of the Science and Research Building at the University of Houston. A Novice Presentation begins at 7:00 p.m.. The short business meeting and featured speaker are scheduled at 8:00 p.m. Also typically included are Committee Reports, Special Interest Group Reports, current activity announcements, hardware reviews, an astrophotography slide show by members and other items of interest. Parking is NOW across from Entrance 14, by the stadium.

Board of Directors Meeting

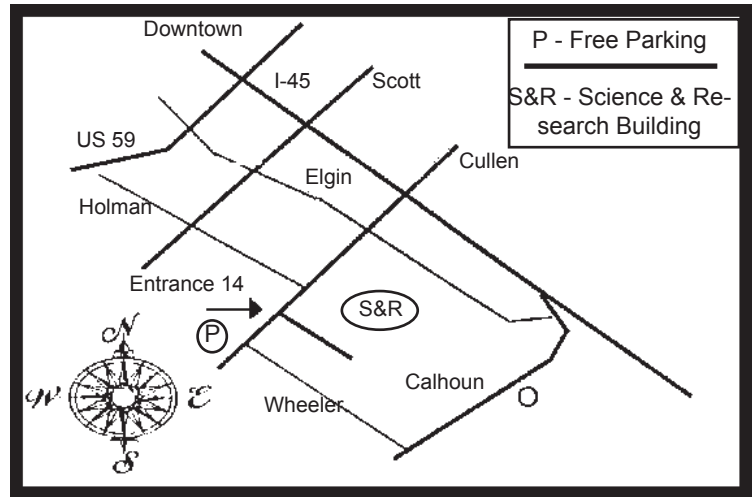
The Board of Directors Meeting is held on dates scheduled by the board at 7:00 p.m. at the University of St. Thomas. Information provided to GuideStar will be published. The meetings are open to all members of the Society in good standing. Attendance is encouraged.

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.

Editing & Production: Bill Pellerin, 713-880-8061; FAX: 713-880-8850;
Email: BillPellerin@sbcglobal.net

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Houston Astronomical Society Meeting

Meeting on September 7, 2007

7:00 Novice & Site Orientation

8:00 General Meeting

University of Houston

Houston Astronomical Society

P.O. Box 20332 • Houston, TX 77225-0332



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 banquet with a special guest
- ☐ 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.**