

Houston Astronomical Society



GuideStar

November, 2007

At the November 2 meeting...

James Wooten

Houston Museum of Natural Science

James Wooten of the HMNS Planetarium: "The Great Cosmic Year", the history of the universe (13.7 billion years) compressed into one year. At this scale, the universe would age over 37 million years per day!! Time would fly by at 434 years per second.

Understand the scale of time and how you fit in when James Wooten presents at the Houston Astronomical Society.

Highlights:

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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.
Richard Nugent
Introduction to Total and Grazing Occultations

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

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

See last page for a map 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.

Officers & Past President

President: Bill Leach.....H: 281-893-4057
 Vice Pres: Ken MillerH: 936-931-2724
 Secretary: Doug McCormick.....H: 281-996-0177
 Treasurer: Bill FlanaganH:713-699-8819
 Past President: Steve Sartor

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 Brian Cudnik

Allen Gilchrist.....
 Don Pearce.....713-432-0734
 Bram Weisman

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AuditTom Blocker

Education.....Richard Nugent

Field Tr./Obsg.....George Stradley281-376-5787

Novice.....Justin McCollum.....

Observatory.....Bob Rogers281-460-1573

Program.....Don Pearce

Publicity.....John Missavage

Telescope.....Bram Weisman.....

Paul & Kay McCallum

Welcoming.....Lee Lankford

Ad-Hoc Committee Chairpersons

HistorianLeland Dolan713-688-0981

Librarian.....Peggy Gilchrist281-443-8773

Logo Mds Sales.....Judy Dye281-498-1703

Long Range Plan.....Bill Leach.....281-893-4057

ParliamentarianKirk Kendrick281-633-8819

Publ. Star PartyRichard Nugent713-524-1993

Rice U. Coord.....Matt Delevoryas713-666-9428

Schedule Obsv'tySteve Goldberg713-721-5077

Texas Star Pty.....Steve Goldberg713-721-5077

Special Interest Groups & Help Committees

These are now listed on the inside of *GuideStar* (not every month). See the Table of Contents

Advisors

Dr. Reginald DuFour, Rice Univ.
 Dr. Lawrence Pinsky, U. of H.
 Dr. Lawrence Armendarez, U. of St. Thomas

Dues and Membership Information

Annual Dues:Regular\$36.00
 Associate\$6.00
 Sustaining\$50.00
 Student\$12.00
 HonoraryNone

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*. Regular, Student, and Honorary Members receive *The GuideStar*. 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 outside cover 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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Special Interest Group Listing

Any member who wants specific information on a SIG listed below may call the listed individual. Also, see the "Ad Hoc Committee Chairpersons" on the inside front cover and the "Special Help Volunteers" listing (not in every issue).

Advanced.....Bill Leach.....281-893-4057
 CometsDon Pearce713-432-0734
 Lunar & Planetary.....John Blubaugh713-921-4275

Other Meetings...

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>

Johnson Space Center Astronomical Society meets in the the Lunar and Planetary Institute on the 2nd Friday of each month. Web site: <http://www.ghg.net/cbr/jscas/>

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

November/December Calendar:



Photo by Scott Mitchell

Date Time Event

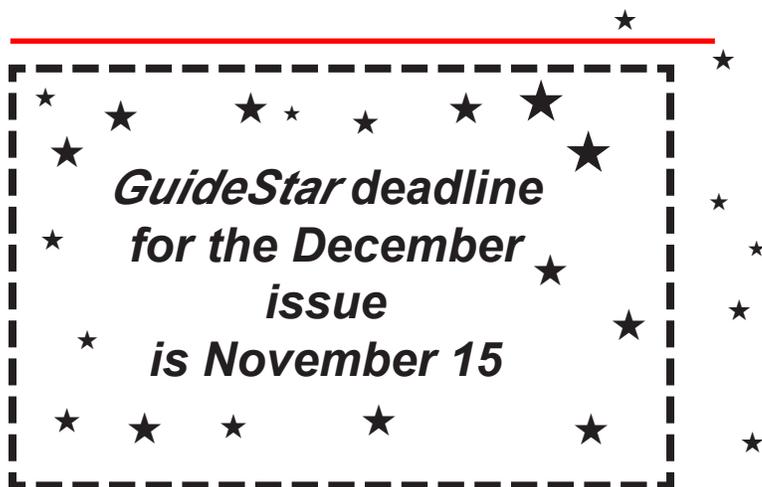
November

1	4:19 p.m.	Moon at Last Quarter
2	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
4	2:00 a.m.	Daylight Savings Time Ends
8	2:00 p.m.	Mercury at Greatest Elongation West
9	6:00 a.m.	1 Ceres at Opposition
	5:03 p.m.	New Moon
10		Prime Night, Columbus Observing Site
17	4:32 p.m.	Moon at First Quarter
18		Leonid Meteors Peak
24	8:30 p.m.	Full Moon
29	7:30 p.m.	HAS Board Meeting, Houston Chronicle Building

December

1	6:44 a.m.	Moon at Last Quarter Observing Field Trip, Columbus Observing Site
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	11:40 a.m.	New Moon
13	7:30 p.m.	HAS Board Meeting, Houston Chronicle Building
14		Geminids Peak
17	4:17 a.m.	Moon at First Quarter
22	12:10 a.m.	Winter Solstice
24	2:00 p.m.	Mars at Opposition
	7:15 p.m.	Full Moon
31	1:50 a.m.	Moon at Last Quarter

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.

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.

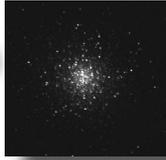
Please drop me a note at the following address.

itjdm0@yahoo.com

John Missavage- HAS Publicity Chair

Observations... of the editor

by Bill Pellerin, GuideStar Editor



What to do? What to do?

It happens. Sometimes we don't set up our telescopes because we think it'll be cloudy, or we've been away all day, or we just don't want to take the trouble.

It's important to have a 'Plan B' for taking advantage of the opportunity to view the sky without the telescope.

Have an easy-to-setup telescope waiting in the wings. I have a small telescope that I can carry out to the observing area in one trip. One hand holds the mount and the other hand holds the telescope. If I want, I can even add a small computer (that's about the size of a deck of playing cards) to the mount to help me find things in the sky.

I also have a Celestron SkyScout that is a fun gadget to use when a complete telescopic session isn't in the cards. I can point the SkyScout at a star or at another object, and the device will tell me something about it (usually something that I don't know). It's a great way to learn the sky. You can also tell the SkyScout to show you where an object or a constellation is located. There are even small constellation maps to help you identify the constellations.

Binoculars can make for a good observing session. Get the book *Binocular Highlights* by Gary Seronic (Sky Publishing) and have it handy for those quick sessions when you don't set up the telescope.

Satellite spotting (suggested by Clayton Jeter). Use heavens-above.com to predict satellite events that you can see from your site. Everything from bright Iridium flares to the International Space Station is listed.

Process data. Do you have any data you've taken (photometry, astrometry) that you haven't processed? Do it, now.

Reading. There is so much new information available.

Until next time...

clear skies and new moons!

..Bill

billpellerin@sbcglobal.net

Mark Your Calendars!!!

There is one more field trips to our Columbus observing site in 2007:

December 01

This date is a Saturday.

We will be inviting members of all the area clubs to each event as we did in previous months (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**

Just Looking

A GuideStar Interview by Clayton L. Jeter

Bob Taylor, JSCAS President

Do you know Bob Taylor? You will! Bob is the current president of the Johnson Space Center Astronomical Society. He refers to himself at the meetings as “el Presidente”. If you enjoy dry humor and haven’t attended a JSCAS meeting, then you’re missing a hilarious evening. Bob is very active in amateur astronomy and even builds his own scopes...a true die-hard ATM’er. I have known Bob and his wife Karen for several years and am in awe at the effort and time that they contribute to the club. Ole’...



The Bob Taylor interview...

Clayton: How did you first become interested in astronomy?

Bob: I was invited by a friend to a public star party hosted by the Johnson Space Center Astronomical Society at Challenger Park about fifteen years ago.

Clayton: There are four astronomy clubs in the Houston metro area... why JSCAS ?

Bob: The JSCAS meetings are pretty close to where I work and live. Very convenient actually.

Clayton: I love that go-to Dob that you designed and built. Can you tell us about its construction?

Bob: I had a lot of help building that scope. My mirror making mentor, Don Caron, coached me for almost a year on the 22” f-3.8 primary mirror. The go-to system is an ongoing effort courtesy of Chuck Shaw. It’s going through yet another upgrade right now!

The structure of the scope is fairly conventional with some unconventional materials thrown in. The swimming pool sand filter turned out to be a conversation piece as much as a structural member. The trunions came courtesy of Andy Saulitis, they’re from a 24” band saw upper wheel. Skateboard wheels, pie pans and shelving brackets came in handy for the drive system, gear guards and curved vane spider. Everything wants to be a part of a telescope...I think.

Clayton: Are you a visual observer only? Tell us about a typical observing session for yourself.

Bob: I really enjoy the eyepiece time with the scope. Imaging is a some-

thing I’ll eventually try, but for now I’m a “social” observer. I mostly enjoy sharing the scope at star parties. I’ve attached a 5” f-3.5 finder which is fun to have folks look through before they get to the 22” view. An exercise in “bigger is better” I guess.

Clayton: Where is most of your observing performed?

Bob: Star Parties and Fort McKavett. Once I retire to Hunt, Texas in six short years I’ll set the scope in a permanent structure.

Clayton: Which computer sky atlas program do you prefer and use?

Bob: I use about six different ones but really don’t prefer any. Once my new drive system is installed I may eventually find a favorite.

Clayton: *Sky and Telescope* or *Astronomy*?

Bob: *Sky and Telescope*

Clayton: Do you have an amateur observing mentor?

Bob: Don Caron, Chuck Shaw, Al Kelly, Andy Saulitis, Dennis Webb, Triple Nickel, Randy Brewer. Wow, this list could get long! I’ve been able to learn from everyone I’ve observed with.

Clayton: Have you a favorite star party that you attend regularly? Are there others?

Bob: Our club hosts quite a few star parties and various venues. Moody Gardens, Haak Winery, Space Center Houston to name a few. My favorite has to be Fort McKavett though.

Continued ...

Astronomy Day 2007

By Bill Pellerin, *GuideStar* Editor

Astronomy Day at the Houston Museum of Natural Science George Observatory was held on October 20, 2007. It was a beautiful day (and night) and the observing area was mobbed, really. During the day I had



my Coronado PST (Personal Solar Telescope) set up on the deck to show visitors what the Sun looks like in Hydrogen-Alpha light. Unfortunately, there wasn't much happening on the Sun on that day. It looked, through the telescope, like a big red/orange ball with very little in the way of surface features or edge features. Some granulation on the 'surface' of the Sun was visible, and some of the visitors were able to see that.

People seemed to enjoy the view, however. Between the time the Sun dropped below the trees and the time it got dark I was able to grab a sandwich in the volunteer's room of the visitor's center. (Thanks to Bill Leach for the food.) When evening fell, the site simply exploded with visitors. I don't think I've ever seen more people on the observing deck. I was in a different location on the deck, so my assessment may be because of the new location.

I brought an Orion SkyBlast (a \$180 telescope) to the event to demonstrate that it's not necessary to spend a lot of money to get a workable telescope. One of the visitors asked me if the telescope cost \$2000 and was delighted to learn that it can be had for \$180. I showed the people (mostly recruited from the line going into the dome housing the C-14) Jupiter, the Double Cluster, and the Pleiades. It was a lot of fun.

Meanwhile, in the visitor's center, lectures were being given by Stephen J. O'Meara, Larry Mitchell, Reggie DuFour and others. Other lectures were given outside and, from what I could tell, these were well attended.

Still, my overwhelming impression of the event was that there was an extraordinary number of people there. I have since found out that the visitor count was just short of 4000. I don't know how this compares with previous years, but it seemed like there were many more people. At times, I had to ask people to move out of the light path of the telescope!

The volunteers and organizers deserve a lot of credit for making the event a rousing success. I hope that some visitors got excited enough about amateur astronomy to join one of the various clubs in the area; the Houston Astronomical Society would be a good choice.

Just Looking... from previous page

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

Bob: Armchair for the most part.

Only those with dark skies available will be able to truly enjoy a telescope. Those skies are fleeting!

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

Bob: Visit a local club to see what aspect of amateur astronomy interests you. There you'll find others with the same interests. It can be as simple as reading about astronomy or as complex as building your own telescope. No right way, no wrong way. Talk to others about instruments before you purchase anything.

Clayton: Thanks Bob for taking the time to share your thoughts with us for our monthly HAS newsletter, the *Guide Star*. We wish you luck with all of your astronomy interests. Please come visit our society (we're right down the road from ya); we'd love to see you there. Clear skies, always.

How a Set Up a Go-To Telescope

By Chuck Shaw, JSCAS

The JSCAS listserv had a thread of notes recently that members contributed their thoughts GOTO scopes. I found this thread to be very interesting, and share several member's observations about the hype for GOTO mounts and the expectations that you can simply plop down and push a few buttons and bingo you can find anything (and SEE it under any sky conditions). With any sophisticated tool (a telescope, a VCR, or a lathe, etc.), to use it correctly you need to stop and understand a bit about it (NOT everything, and certainly NOT the minutia). But you do need to know what things are important to get that first 75% of its performance, which is usually more than most folks need on a routine basis. That last 25% of performance is usually a longer learning curve and addresses the more arcane aspects.



Meade's LX200 series telescopes are alt-az mounted and have go-to capabilities.

Since I have helped develop computer controlled telescope drive software for a long time now, and have built and use several computer controlled scopes, I have some observations and suggestions to add to the accumulated knowledge shared on the list-server thread of notes.....

Like anything having to do with a computer (or micro-processor, etc.), the cardinal rule is: "garbage in produces garbage out"..... (GIGO)..... So what do you have to ACCURATELY tell your computer controlled mount to get it to track ACCURATELY, and to do goto's ACCURATELY???

To start with, you need to be able to operate the mount's controls accurately! That is code for READ THE MANUAL, several times probably!!! Put sticky notes on the parts that seem strange or important and read those till you understand them, or ask questions on them until you DO understand them.

To begin with, if its an "equatorial" mount (horseshoe, fork, German equatorial, etc. that has one axis aimed at the North Celestial pole), it needs to be polar aligned accurately! The more accurate the polar alignment, the better the subsequent performance. For visual observing (but not GOTO's), the polar alignment can be a couple of degrees off, since you can recenter occasionally. Imaging requires that you be very accurately aligned (within a few arcminutes at most) to get good performance. ACCURATE GOTOs also require alignment to within a few arcminutes. Think about it, the math in the software depends on knowing accurately where the RA axis is aimed, and if it does not, then you get GIGO.

You do NOT need to see Polaris to polar align. Read up on doing a "drift align". In almost all cases, it is much more accurate than most any other approach. Practice doing it so it becomes second nature and is not frustrating to do.

Very good advice in the thread of notes was to get an eyepiece with a reticle. You can make one with some really really fine wire glued to the field stop of a cheap eyepiece (the quality of the view is un-important!). Use something that gives medium power. The Houston light pollution will allow you to see the crosshair against the bright night sky. Darker skies will require using an illuminated reticle eyepiece to see the reticle (especially with old eyes like mine!!)

Make sure things are fastened together snugly. I mean EVERYTHING!!! Do not "over-tighten", but verify nothing is loose. Go over everything. A floppy connection between the mount and scope, or the optics within the scope will make things move around and really frustrate you and you'll get..... GIGO! Loose means even a few thousandths of an inch of play for some components. Tube sag and such, becomes a factor when trying to put a dim fuzzy into the field of view of a tiny CCD chip. Consider this as part of that last 25%. Walk before you run, and do your GOTOs with a low power eyepiece installed, and have a good finder that is securely attached and aligned with the main scope optics since it will have a larger FOV. This will be useful if the GOTO misses a little.

As part of this bolt tightening exercise, make very sure that the scope is well BALANCED!!!! For an alt/az, that is primarily for the altitude axis. Declutch to make sure it is balanced throughout its entire range of motion! For an equatorial mount, you MUST balance it about the RA axis and about the Dec axis. If you do photography you will often want to introduce a little imbalance about the RA axis, but that is in that 25% of stuff to deal with! When you de-clutch, to test the balance, if the mount does not move smoothly, find out why! Does

Continued ...

..A Go-To Telescope... from previous page

it need lubricating someplace? Is something binding? Fix this before moving on. Sweat the details.

While on the topic of balancing, try not to overload the mount with a heavy scope. If you stay within the rated capacity of the mount, it will perform better! Longer scopes (like medium sized newtonians) on equatorial mounts are less forgiving of violating the mount capacity. Imaging is also less forgiving of pushing the capacity. And no matter what, when you are at or above the mount's capacity, balance becomes much more critical.

Now that things are snug and balanced, re-collimate the scope. And make sure it is well collimated every time you use it! Two reasons: 1) the images are better! 2) when the collimation is off, the optical axis will have shifted from the mechanical axis of the scope, so you will be lying to it about where the mechanical axis is aimed, especially if you have previously corrected for non-orthogonal axes, etc. (which are part of that final 25% stuff)....

Last thing for the mount, for accurate tracking and gotos, the microprocessor needs to know how much the mount moves for a given command it sends to the motors. Most commercial mounts already have this programmed in, but sometimes not... Also, if the mount has encoders, they also may need to be calibrated. This is NOT a calibration like Periodic Error Correction (which corrects for gear errors, and is NOT required for GOTO or even for most visual observing). PEC is one of those extra 25% things when you get into imaging.

Learn the night sky enough to be able to reliably find where Polaris is, and the major constellations and what their stars are. That does NOT mean MEMORIZE the whole sky!!! Only a few gifted people like Al Kelly have the entire sky memorized. The rest of us use star charts (either paper or a PC). I recommend paper initially (the batteries last longer <grin>). Do NOT use your scope; use a pair of binoculars. And go out EVERY night for at least 5 minutes to practice using your star chart to reliably find the major stars. Why do this????? Tell your scope you are on Altair when the scope is actually on Vega and watch what happens to your GOTO accuracy.

For most goto scopes, you need to tell your scope what time it is, and where it is!! Time usually only needs to be within a minute or so, but a more accurate setting is better. Use "Atomic Clock" (free web based time hack s/w you can google for to find and download), and set your watch by it. Then set the mount's clock (assuming it has one). Not all do, since the software routines used vary, but if it DOES need an accurate time, and you lie to it, you'll get poor results. Virtually all goto control s/w needs to know its location however (again, not all do, but most do.). The GPS scopes on the market get time and location automatically. However, you can use Micro-

soft's TerraServer <http://terraserver.microsoft.com/default.aspx> to get your lat/Long of where you are observing.

So now the scope is polar aligned (or is sitting reasonably level for an alt/az), it knows where it is and what time it is, the scope and optics are all snugged down and aligned, and now its time to initialize the mount. What that means is to give it the information it will use to transform the mount location and the positions of its axes, to positions in the sky. This is called a transformation matrix (but all you need to know is it's the math routine the mount will be doing, and if you feed it incorrect info -- you guessed it: GIGO!! So that's why you want to make sure you know the object the mount is pointing to!!!

Most equatorial mounts that are accurately polar aligned will only need to be aimed at ONE star (since it already knows where the RA axis is aimed, and you told it the time and its location...). Do NOT make that one star you aim at Polaris!!!! Tiny errors in centering Polaris can introduce huge errors in RA. Use your reticle eyepiece and aim at something near the celestial equator where tiny errors in centering are more forgiving! For a GEM (German Equatorial Mount), if you want to do a meridian flip (i.e. look at something in the west when the scope is currently aimed at something in the east), you will probably have to do another initialization on the other side of the meridian, since things get a bit reversed. Forks and horseshoe mounts don't have this meridian flip thing to deal with, but they have their own problems.

Alt Az mounts do their initializations differently, depending on the software they are using and the algorithms used in that software. Some require a level surface, and some do not (although the more level the better). Read the manual to find out! Some will require aiming at the North Celestial Pole (which is NOT Polaris!!!!!!), and then straight up along the Azimuth axis (which is NOT the zenith (i.e. straight up) unless the mount is perfectly level. Some need to know their altitude and azimuth positions first (for

Continued ...

..A Go-To Telescope... from previous page

this you CAN aim at Polaris, and then enter your latitude (which will be close to the altitude of Polaris), and zero for the azimuth. This can end up being almost a degree off, for these entries, but s/w routines that use this approach were written by a guy named Taki, and are very tolerant of errors for this initial alt/az input. However, now you must aim the scope at least two stars (some routines require three), and tell the mount it's aimed at them (this is called initializations, or inits). Use your reticle Eyepiece!!!! The trick for this is when you are using a 2 star init, is to make them about 90 degrees apart in azimuth, and about at the same altitude (not super critical, but this geometry makes the math more accurate). Stay AWAY from Polaris..... Also, for these initialization stars for an alt/az, stay away from the zenith! When you move between stars, you must slew the mount with the motors if you do not have mount encoders (this goes for the equatorial mounts also!) If you use the 3 star init, make the 3 stars separated by about 120 deg, and are at about the same altitude. Routines that use the 3 star init are much more sensitive by the way to lining up the stars accurately!!!

The newer alt/az mounts do some of these things "automatically" for you (the GPS mounts for instance automatically determine their Location and time, and all you need to do is aim them to the north (usually) and have them reasonably level. They will then slew themselves to their init stars based on their predictions of where things "should" be in the sky. You look in the eyepiece (use a reticle!) and tweak the position, and say OK. It will then slew to another star or object, and you again tweak, and verify, and then you are off to the races. You still need to do things like make sure the collimation is accurate and things are all snugged down. Really sweet, but these mounts are much more expensive. And if you lie to them for the few things you must tell it, you will get the dreaded GIGO. You are simply paying more for a mount that has fewer opportunities for you to lie to it!! <grin>

Even the new mounts, if they are equatorial mounts, will need to be polar aligned. The newer software for polar alignment works really well IF all the other mechanical stuff and basic info has been entered correctly. It will even tell you very accurately how much to move the mount to achieve accurate polar alignment. However, a simple drift align is the acid test, and even though I have helped develop routines for some of the polar alignment software I use, I still do a drift alignment to get it right with the least hassle (although it IS fun to use the software!!!)

There are some really fine add on capabilities to existing mounts (equatorial and dobs) like Argo Navis and other more basic digital setting circles that give you "push to" capability that works great, but for the most part they are subject to the same things that mounts with motors have when doing GOTOs.

And after all of this, it may make you wonder if all of this high powered capability is really worth it? Well, that is literally and figuratively "in the eye of the beholder". Under a dark sky, and not

under any pressure by others to "show me something daddy!!", star hopping to faint little fuzzies is really satisfying! But under Houston's light pollution, or jumping from target to target at a star party with a line of folks waiting to see things, well, a goto scope is really hard to beat. The bottom line is -- there are some "basics" that MUST be done if your mount is to perform to your expectations, other wise you will get.... you guessed it..... GIGO

Hope this helps!

Chuck

Remember --

All HAS memberships are due for renewal in January. Pay your 2008 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.

Ceres - A Dwarf Planet

Object: Ceres (sometimes called 1 Ceres)

Class: Dwarf Planet

Magnitude: 7.2

R.A.: 3 h, 6 m, 25 s

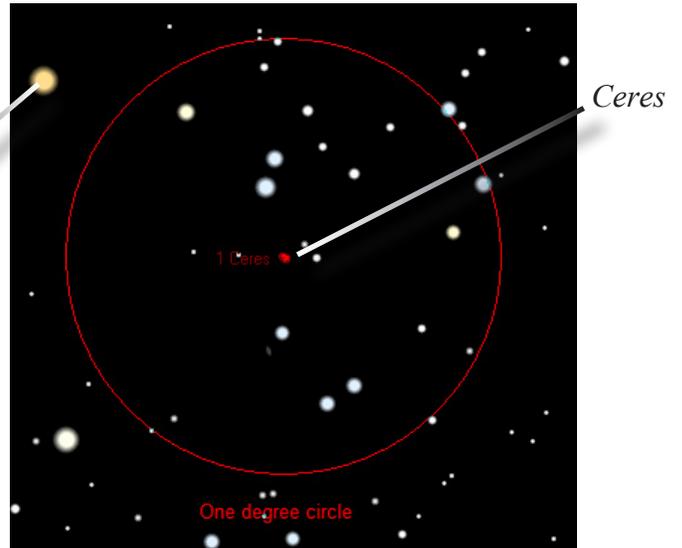
Dec: 8 degrees, 3 minutes, 33 seconds

Distance: 2.8 AU (from the Sun)

Constellation: Cetus

Optics needed: A small telescope

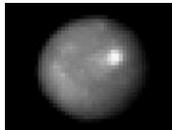
SAO 111002



Why this object is interesting.

This 'dwarf planet' (formerly known as an asteroid) is the largest between Mars and Jupiter and is bright enough to see in a small telescope or binoculars. The trick, of course, is to pick it out among the background stars that accompany it.

The numeric designation '1' specifies the discovery order of the various asteroids. So, Ceres is #1, the first one, discovered on the first day of January 1801 by Guiseppe Piazzi while observing from the Palermo Observatory. He named the object Ceres in honor of the Roman goddess of the harvest, grains in particular. The word 'cereal' is associated with this goddess.



NASA, ESA, J. Parker (SwRI)

In 2015, Ceres will be explored by the Dawn spacecraft which was launched by NASA on September 27, 2007. The Dawn spacecraft will go into orbit around Ceres at that time, gather data on the object, then move on to Vesta.

In the meantime, you can explore Ceres from your backyard. This object is about 600 miles in diameter and is massive enough to have taken on a spherical shape. The diameter of Ceres is about the same as the distance from Houston to the Texas Star Party at Fort Davis, Texas.



The Dawn Spacecraft takes off
(Photo from NASA)

Poor Ceres was subject to the same classification problem as the former planet Pluto. For almost 50 years after its discovery, it was designated a planet. For another 150 years it was an asteroid (a term invented by William

Ceres at 10:00 p.m. on
November 10, 2007
from TheSky v6

Herschel to indicate the object is 'star-like'), and more recently (in 2006) declared a dwarf planet.

Scientists who have studied Ceres believe the surface is covered in water-ice. This conclusion stems from the low measured density of the object. They also believe that Ceres has a differentiated interior. That is, they believe there exists a layered structure to Ceres -- similar to the layers that constitute the Earth.

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 website, 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/socaid/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!

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Logo Sales

In addition to all the other cool stuff that Judy Dye has available in Logo Sales, the 2008 "Observer's Guide" is (or will soon be) available. This book is a must-have for planning your observing in 2008, 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 October, 2007 Meeting of the

Houston Astronomical Society

The October, 2007 meeting of the Houston Astronomical Society was called to order on October 5th at 8:07 pm by President, Bill Leach.

General Announcements:

- Bill Leach introduced himself and welcomed everyone, including two new members and two guests plus a group of students from Eastwood Academy Class.
- George Stradley announced two field trips to our site in Columbus—one Saturday December 1st for the general membership and one January 26th for Novices. George also shared his tentative schedule for trips planned for 2008.
- Ken Miller, VP, shared the slate of candidates for next year's HAS officers and board and encouraged members to volunteer as several vacancies exist.
- Bill announced the 7th Annual Regional Astronomy Meeting, which this year will include two new clubs from Huntsville and Galveston bringing the total to seven clubs participating. The Meeting will be held on October 19th, the Friday before Astronomy Day, at Houston Community College, with registration starting at 7 pm and the program at 8 pm. This year the featured speaker will be famous author and observer, Stephen J. O'Meara. Astronomy Day Shirts will be available for sale for \$15 in various sizes. Full details are on the HAS website, www.astronomyhouston.org.
- Bill also announced that Astronomy Day is Saturday, October 20th at the George Observatory from 3-10 pm. There will be many activities both inside and outdoors, with displays, presentations, and observing for all. The details are included using a link from the HAS website or you can go directly to: <http://www.astronomyday.org/>. Bill said more volunteers are needed to help make the day a success. You can sign up directly from the website above, at the top of the page. If you volunteer, you will get

a free pass to the Park and free food and drink for helping with this exciting event.

- Bill Flanagan, Treasurer, announced that members should renew their *Sky and Telescope* subscriptions with the magazine, when they receive a renewal notice.
- Bill announced that the parking problem was being addressed, and that we should park in the Stadium Parking faculty lot using the parking meters across the street (Cullen Blvd).
- Don Pearce gave the comet report and introduced the speaker, Naved Mahmud, a third year graduate student in the Astrophysics department from Rice University. Naved gave an excellent presentation on "Globular Clusters"
- Meeting was adjourned at 9:40 pm by President, Bill Leach.

The H.A.S. secretary, Doug McCormick, thanks Kent Francis who took the minutes for the October meeting in his absence.

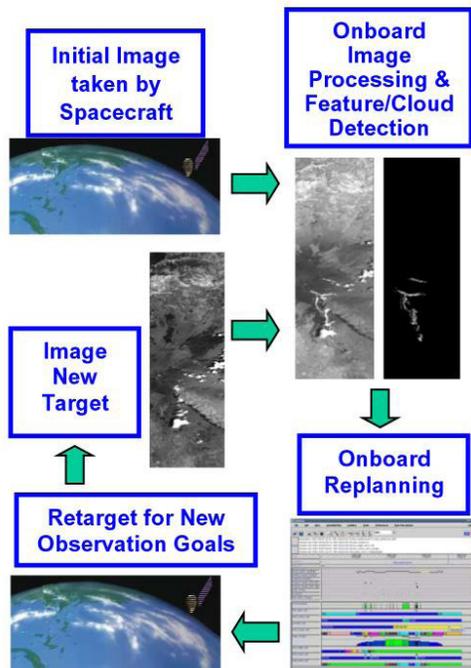
The Red (Hot?) Planet



By Patrick L. Barry

Don't let Mars's cold, quiet demeanor fool you. For much of its history, the Red Planet has been a fiery world.

Dozens of volcanoes that dot the planet's surface stand as monuments to the eruptions that once reddened Mars's skies with plumes of glowing lava. But the planet has settled down in its old age, and these volcanoes have been dormant for hundreds of millions of years.



Just as changing cloud patterns on Earth were identified using Earth Observing-1's Advanced Land Imager along with ScienceCraft software, the THEMIS instrument with ScienceCraft on the Mars Odyssey spacecraft can avoid transmitting useless images.

Or have they? Some evidence indicates that lava may have flowed on Mars much more recently. Images of the Martian surface taken by orbiting probes show regions of solidified lava with surprisingly few impact craters, suggesting that the volcanic rock is perhaps only a million years old.

If so, could molten lava still occasionally flow on the surface of Mars today?

With the help of some artificial intelligence software, a heat-sensing instrument currently orbiting Mars aboard NASA's Mars Odyssey spacecraft could be just the tool for finding active lava flows.

"Discovering such flows would be a phenomenally exciting scientific finding," says Steve Chien, supervisor of the Artificial Intelligence Group at JPL. For example, volcanic activity could provide

a source of heat, thus making it more likely that Martian microbes might be living in the frosty soil.

The instrument, called THEMIS (for Thermal Emission Imaging System), can "see" the heat emissions of the Martian surface in high resolution—each pixel in a THEMIS image represents only 100 meters on the ground. But THEMIS produces about five times more data than it can transmit back to Earth.

Scientists usually know ahead of time which THEMIS data they want to keep, but they can't plan ahead for unexpected events like lava flows. So Chien and his colleagues are customizing artificial intelligence soft-

ware called ScienceCraft to empower THEMIS to identify important data on its own.

This decision-making ability of the ScienceCraft software was first tested in Earth orbit aboard a satellite called Earth Observing-1 by NASA's New Millennium Program. Earth Observing-1 had already completed its primary mission, and the ScienceCraft experiment was part of the New Millennium Program's Space Technology 6 mission.

On Odyssey, ScienceCraft will look for anomalous hotspots on the cold, night side of Mars and flag that data as important. "Then the satellite can look at it more closely on the next orbit," Chien explains.

Finding lava is considered a long shot, but since THEMIS is on all the time, "it makes sense to look," Chien says. Or better yet, have ScienceCraft look for you—it's the intelligent thing to do.

To learn more about the Autonomous ScienceCraft software and see an animation of how it works, visit <http://ase.jpl.nasa.gov>.

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

Observatory Corner

By Bob Rogers, Observatory Chairman



Hello everyone.

Fall is finally arriving here in Southeast Texas with cooler weather at night. I went to the site on the weekend of the 13th and enjoyed two great nights of cool temperatures and low humidity. Both nights had great seeing and steady skies. New member Paula Cooper brought out 30 students/adults from Eastwood Academy. Eastwood Academy is a Charter School that is ranked as one of the top ten schools in Houston. These were great kids and they asked a lot of very good questions about Astronomy. Everyone had a great time in the Observatory looking at several items in the sky. I want to thank Sherry and Patrick Irby for coming out and setting up their telescope and helping with the students from Eastwood Academy.

With the cooler temperatures arriving means that the grass cutting will be coming to an end soon for this season. I want to thank Dale "Mow Man" Morningstar and Ed "The Cutter" Fraini for all your help this season with the mowing. Without you two, the site wouldn't look as good as it does.

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 who 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 –December 1st for an All Clubs Field Trip. For 2008 we have January 26th for a Novice Party, March 29th for an All Clubs Field Trip, May 24th for a Novice Party, June 28th for an All Clubs Field Trip, August 23rd for a Novice Party, September 27th for the HAS Picnic and October 18th for a Novice Party. 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**

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 Solar 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

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The Yerkes Observatory

A site in transition or in danger

by Bill Pellerin, GuideStar Editor

The Yerkes Observatory houses the 40" refractor; the largest refractor in the world. If you've been following the story in *Sky and Telescope* or elsewhere, you know that the site is in jeopardy. The University of Chicago which created and owns the facility doesn't want to continue to run it. One proposal, since rejected, involved making some of the grounds (now 77 acres) available for development. New plans are in the works, and a planning committee is working on the details of this plan. An interim report, and other information about the site, is available at: <http://astro.uchicago.edu/yerkes/>

To be sure that I could see the site before anything happened to it, I scheduled a trip for the weekend of 10/13/07 through 10/14/07. Richard Dreiser was our tour leader and has been at the Yerkes long enough to know its history very well.



We began our tour on Saturday night at the back door to the observatory with a discussion of the architecture. The columns that adorn the entrance are covered with interesting elements, two of which are pictured here. There are several faces in the columns, but this one was created showing an individual with a large nose, and, initially, a bee sitting on that nose. Before the observatory was opened, however, the bee was ordered to be chipped off to avoid offending anyone.



The second item is of one of several constellations represented in the columns, this one being Sagittarius, of course.

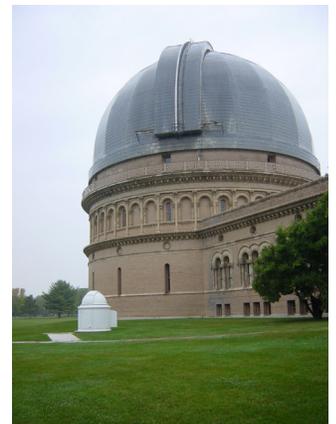
The entrance, and much of the site would be recognizable to the early inhabitants of the observatory. The entrance has an inlaid tile floor that is original to the facility and various architectural details related to astronomy. The main hall leads to various meeting rooms and to the library that contains many old and



current books and copies of the *Astrophysical Journal* (known by its short name, the *ApJ* - the 'app jay'). The *ApJ* is published by the University of Chicago, and was, for many years, published at the observatory.

The crown jewel of the site is the 40" refractor, the largest in the world. A huge dome houses the telescope which is on an equatorial mount with large setting circles visible from the observatory floor. There are no encoders to report the position of the telescope and no plans to install them.

You simply can't appreciate how large this telescope is without being in the dome with it. It's tempting to compare its size with my 4" refractor, but such a comparison doesn't begin to do justice to the size of this beast.



The original clock drive (equatorial drive) of the telescope was powered by weights and an escapement mechanism. The weights were lifted up and as they slowly were pulled down by

Continued on page 18...

Stars Just Got Clearer, Closer for Rice Astronomers

NSF grant funds telescope upgrade

*by Franz Brotzen
Rice News Staff*

For Rice scientists staring into the night sky, the stars just got a little clearer. The National Science Foundation (NSF) has announced it will fund the refurbishment of a telescope at the McDonald Observatory in western Texas that is used by Rice astronomers.



A \$517,000 grant by the National Science Foundation will upgrade one of four main telescopes at McDonald Observatory in western Texas. (Courtesy of the McDonald Observatory)

for a 24-inch mirror. With the current 30-inch mirror and weight of modern instrumentation, the ability to track celestial objects has been compromised. The instrument, a prime focus wide-field imager, however, was recently added and doesn't need an upgrade. This instrumentation allows scientists to take full advantage of the light-gathering ability of the telescope, Johns-Krull said.

The option to use the telescope remotely from the Rice campus is a huge plus, he said. "Most students are interested in distant galaxies, black holes, quasars. With Houston's lights, you can't see these things here."

But, at an elevation of 2,000 meters in the Davis Mountains and 450 miles west of Austin, the McDonald facility offers a spectacular viewing platform. Now Rice undergrads, graduate students and faculty will be able to use that platform without having to take the lengthy trip.

The \$517,000 grant will upgrade one of four main telescopes at McDonald by replacing the mount and telescope tube and setting up a remote capability so that astronomers in Houston and Austin can use it without having to travel to western Texas. The primary 30-inch mirror, instrumentation and dome will be kept.

"Refurbishing the McDonald Observatory's 30-inch telescope for remote operation will greatly expand the educational and research opportunities for undergraduate and graduate students at Rice," said Christopher Johns-Krull, professor of physics and astronomy. "It will also give our faculty long-term access to a high-quality telescope at an excellent site with which they will be able to conduct cutting-edge research on such diverse topics as extra-solar planets, young stars and supernovae."

The original mount, Johns-Krull explained, was designed



The grant will enable an upgrade to McDonald's 30-inch telescope, which will include a remote capability so astronomers in Houston and Austin can use it without having to travel. (Courtesy of the McDonald Observatory)

Continued ...

Stars for Rice Astronomers... from previous page

The grant, made in collaboration with Juan Carlos Reina, professor of physics and astronomy at the Houston Community College (HCC), comes through the Program for Research and Education with Small Telescopes (PREST), a branch of the NSF. It became official Sept. 1, and construction is expected to begin this fall.

When it is completed, the new telescope will also be used by scientists at HCC and the University of Texas at Austin, which runs the observatory. In addition, according to NSF rules, telescope time must be available to the wider astronomical community 10 percent of the time.

17P/Holmes Brightens

by Bill Pellerin, GuideStar editor

Here's an image I took last night (10/27/2007) at about 11:00 p.m. The comet unexpectedly brightened to about magnitude 2.5, and was visible from even bright skies under a nearly full moon.



This image was taken using a 8" LX200 telescope on an alt-az mount and a Meade DSI Pro II imager. It is the result of stacking 50 images each at .7 seconds (the longest exposure that wouldn't saturate any pixels).

The Yerkes Observatory ...from page 16

gravity they moved the telescope in sync with the earth's rotation.

The telescope, which went into service in 1987, was used by Otto Struve and Subramanyan Chandrasekhar in the 1930's. There's a McDonald Observatory connection here as well; the McDonald was administered from Yerkes from 1934 until 1963.

One aside that I found interesting is that Ritchey (of Ritchey-Chrétien fame) worked at Yerkes and proposed a RC design for the McDonald 82" telescope. In the early 1930's, though, Ritchey was considered a bit eccentric and his design was unproven, so the design was rejected. We now know the design to be a good one, and it's the design used on the main telescope at the Houston Museum of Natural Science George Observatory.

The McDonald Observatory 82" was, in the end, built by the same company that built the 40" refractor - Warner & Swasey of Cleveland, OH. Warner and Swasey even figured the 82" McDonald mirror -- the first one they had ever done.!

We reserved a 24" telescope at the observatory for observing on the nights of 10/13 and 10/14 (backup date). Unfortunately, while it was clear here in Houston on the 13th, it was cloudy and rainy in Wisconsin on the 13th and 14th. This was a disappointment.

If you want to go, the most convenient travel plan would involve flying to Milwaukee and driving to the site. You could also fly to Chicago and drive. The Chicago airports are busy, though, and travel through there will be more involved.

Depending on the plans for the site there are sure to be some changes made. The only way to see the site in its more-or-less original condition is to go soon. Our guide, Richard Dreiser, was frustrated with the process of determining the fate of the site and with the lack of support and funding in the near term.

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, Dale Morningstar, and the site teams did a great job.

November Supervisor – Kirk Kendrick – 281-639-5088

Volunteers:

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

Projects for November:

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!

December Supervisor – Ed Fraini – 979-236-5008

Volunteers:

David Kahlich
Daniel E Lambert
Howard Leverenz
Jay E. Levy
Doug McCormick
Robert C. Menius
Debbie Moran
Richard Nugent

•
• **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
•

January Supervisor – Bob Rogers – 281-460-1573

Volunteers:

Ralph Overturf Jr
Don C Pearce
Sim Picheloup
Leonard W. Raif
Linda Sternbach
Larry C Wadle

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

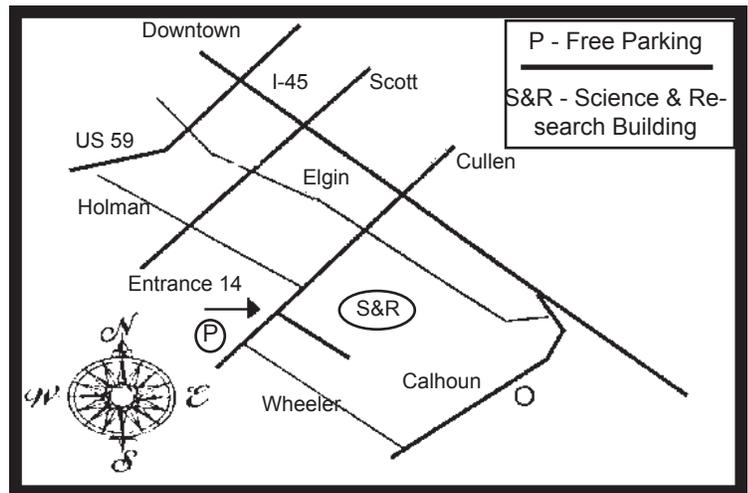
The Board of Directors Meeting is held on dates scheduled by the board at 7:00 p.m. at the University of St. Thomas. Information provided to GuideStar will be published. The meetings are open to all members of the Society in good standing. Attendance is encouraged.

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 November 2, 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.***