



May, 2003

At the **May 9** meeting...

**Note: Meeting on 2nd Friday to avoid
conflict with Texas Star Party**

***The Microwave Background:
Cosmic Glitter for the Ages***

***Professor Matthew Baring
Rice University***

Houston Astronomical Society
GuideStar

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.

★★★★★ **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: Kirk Kendrick H: 281-633-8819 Treasurer: Debbie Moran H: 713-666-9428
 Vice Pres: Bill Leach H: 281-893-4057 Past President: Don Pearce H: 713-432-0734
 Secretary: Brian Cudnik H: 832- 912-1244

★★★★★★★★★ **Additional Board Members** ★★★★★★★★★★

Bill Flanagan 713-699-8819	Liaison responsibility
Don Pearce 713-432-0734	Telescope Loaner Program
JayLevy 281-557-4920	Field Trip and Observing, Program
Christopher Mendell 281-488-8906	
Steve Sartor 281-370-3544	

★★★★★★★★★ **Committee Chairpersons** ★★★★★★★★★★

Audit Matt Delevoryas 713-666-9428	Program John Blubaugh
Education Richard Nugent 713-524-1993	Publicity Joe Khalaf 713-660-8219
Field Tr./Obsg. Kenneth Miller	Telescope Clayton Jeter
Novice George Stradley 281-376-5787	Welcoming Marg Nunez 713-529-2549
Observatory Michael Dye 281-498-1703 Hannah Lange 832-715-7833

★★★★★★★★★ **Ad-Hoc Committee Chairpersons** ★★★★★★★★★★

Historian Leland Dolan 713-688-0981	Publ. Star Party Marg Nunez 713-529-2549
Librarian Peggy Gilchrist 281-443-8773	Rice U. Coord. Matt Delevoryas 713-666-9428
Logo Mds Sales Judy Dye 281-498-1703	Schedule Obs'v'ty Steve Goldberg 713-721-5077
Long Range Plan Bill Leach 281-893-4057	Texas Star Pty Steve Goldberg 713-721-5077
Parliamentarian Kirk Kendrick 281-391-3834	

★★★★★★ **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.

★★★★★★★★★ **Dues and Membership Information** ★★★★★★★★★★

Annual Dues: Regular ... \$33.00	Student \$5.00
Associate \$5.00	Honorary None
Sustaining . \$50.00	

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* mag \$29.95/year, *Astronomy* mag \$29/year -- see club treasurer.

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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Check the web site:

<http://www.astronomyhouston.org>

Welcome to New Members!

The Houston Astronomical Society encourages you to join our group of active amateur astronomers and take advantage of the benefits of membership. As a member you'll have access to the club observing site near Columbus, Texas. (You're required to participate in a site orientation meeting before you get the gate lock combination.) The site has concrete pads for setting up your telescope, restroom and bunkhouse facilities, and areas set aside for camping. You'll get monthly issues of the *GuideStar* newsletter, you'll get to vote and to serve the organization as an officer, and you will be supporting the local amateur astronomy community.

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 Flanagan	713-699-8819
Comets	Don Pearce	713-432-0734
Lunar & Planetary	John Blubaugh	713-921-4275
Occultations & Grazes ...	Wayne Hutchison	713-827-0828
Advanced	Bill Leach	281-893-4057

Observations... of the editor

by *Bill Pellerin, GuideStar Editor*

The skies have been somewhat better in April than they were earlier in the year. I even managed to get in a few observing sessions!! Mostly, though, I was setting up the telescope equipment to check it out in preparation for our trek to the Texas Star Party. I hope to see you there this year!!

I have a new book that I'll be taking with me to the TSP, *The Observer's Guide to Stellar Evolution*, by Michael Inglis. I have never seen this approach to the subject of stellar evolution before, and I'm excited about observing some of the stars (and other objects) that Mr. Inglis describes in this book. The book guides the reader through the various stages of stellar evolution, with some associated mathematics (if you're interested), and with examples of stars, clusters, and planetaries that exemplify the topic at hand. I've been through the book and picked out those objects that will be observable at the TSP through my 4" telescope. I'll let you know how this turns out.

One caveat... the book isn't inexpensive. The Amazon.com price is almost \$45, and the book is a paperback. It's a good quality book, though, and it should be interesting. One quirk that I've already seen is that it suggests that there is a 'best' month for observing Polaris. Huh?

I've checked out the TSP observing list for this year. It looks like I'm out of the game. There's a 12th magnitude galaxy on the list! I really don't expect to see that thing in a 4" telescope. I'll give it a shot, though. If the skies are really, really dark, and the galaxy is very highly concentrated, then maybe...

Until next time... clear skies and new moons!

..Bill

Houston Astronomical Society

***Meeting Notice
For Friday, May 9, 2003***

The Microwave Background: Cosmic Glitter for the Ages

***Professor Matthew Baring
Rice University***

The February 12th Houston Chronicle carried an article titled "Cosmos Brought Into Focus" in which the age of the Universe was declared to be 13.7 billion years. Prof Baring was quoted in this article and he'll help us understand how the age of the Universe is determined, and the progress that we've made in refining that determination.

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.
Amelia Goldberg - "Navigating the Virgo Cluster"

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

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

**See the inside back cover for a map
and more information.**

May/June Calendar:



Photo by Scott Mitchell

<i>Date</i>	<i>Time</i>	<i>Event</i>
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May 2003

1	7:15 a.m.	New Moon
9	6:53 a.m.	First Quarter Moon
	7:00 p.m.	(On second Friday of May) Novice Presentation - U of H.
	8:00 p.m.	General membership meeting U of H . Dr. Matthew G. Baring: "The Microwave Background: Cosmic Glitter for the Ages"
13	7:30 p.m.	Advanced SIG meeting, contact Bill Flanagan, 713-699-8819
15	10:36 p.m.	Full Moon
	10:40 p.m.	Total Lunar Eclipse, mid-eclipse time
22	7:31 p.m.	Last Quarter Moon
24		Members Observatory Night- Columbus
29	7:30 p.m.	HAS Board Meeting-Univ. of St. Thomas, Robertson Hall rm. 118
30	11:20 p.m.	New Moon
31		Prime Night-Columbus

June 2003

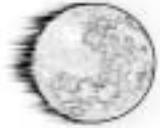
6	7:00 p.m.	Novice Presentation - U of H.
	8:00 p.m.	General membership meeting U of H. TSP Wrap-Up, and More
7	3:28 p.m.	First Quarter Moon
14	6:16 a.m.	Full Moon
17	7:30 p.m.	Advanced SIG meeting, contact Bill Flanagan, 713-699-8819
21	9:45 a.m.	Last Quarter Moon
	2:10 p.m.	Summer solstice. Summer begins in northern hemisphere.
29	1:39 p.m.	New Moon

*Send calendar events to JBlubaugh@aol.com
or call 713-921-4275.*

A Total Lunar Eclipse in May

by Leland Dolan

This year, there will be two total eclipses of the Moon visible from the Houston area. As a bonus for those of us who don't like getting up to observe in pre-dawn hours, both eclipses will occur during evening hours. The first of these will take place on Thursday, May 15, 2003. There will be another lunar eclipse on November 8, 2003, but that one will not be as favorable. Compared to May's eclipse, in which totality lasts 53 minutes, November's eclipse has a totality phase of only 24 minutes. Furthermore, the Moon will not pass as deep into Earth's umbra during the November eclipse, and therefore should not become as dark during mid-totality.



In the following table, I have not listed the time when the Moon enters the penumbra (shortly after moonrise), nor when the Moon exits the penumbra, as these events would not be detectable to the human eye. All events are given in Central Daylight Time.

Time	Event	Altitude	Azimuth
9:03 pm	Moon enters umbra	12	ESE
10:14 pm	Totality begins	24	SE
10:40 pm	Mid-eclipse	28	SE
11:07 pm	Totality ends	31	SE
12:17 pm	Moon leaves umbra	38	SSE

In order to make this table easier for beginners to understand, I have given the Azimuth in compass directions instead of the customary numerical values. Let's hope for clear skies on the night of May 15th. Happy observing.

In Search of Alien Oceans

by Patrick L. Barry and Dr. Tony Phillips

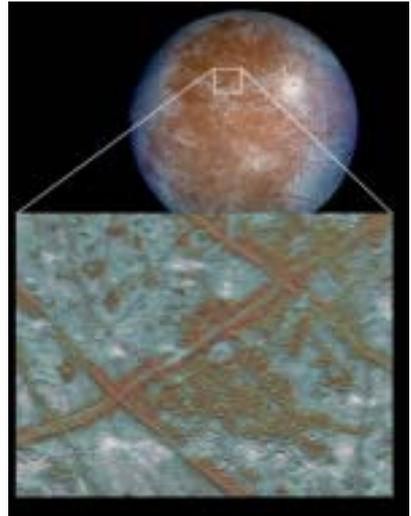
A robotic submarine plunges into the dark ocean of a distant world, beaming back humanity's first views from an alien ocean. The craft's floodlights pierce the silty water, searching for the first, historic sign of extraterrestrial life.



Such a scenario may not be as fantastic as it sounds. Many scientists believe that Jupiter's moon Europa conceals a vast ocean under its icy crust. If so, heat from the moon's interior-which would keep the ocean from freezing solid-may also drive subaquatic volcanoes and hydrothermal vents. On Earth, such deep-sea vents provide chemical energy for ecosystems that thrive without sunlight, and some scientists even suggest that Earthly life first got started around these vents.

So a warm European ocean spotted with thermal vents could be a natural incubator for life. That's why some scientists hope that someday we will send a probe to Europa that could bore through the ice and explore the ocean below like a submarine.

To plan for such a mission, scientists would first need to put a camera in orbit around Europa. By looking for places where water has welled up to fill the spindly cracks that riddle Europa's surface, scientists can estimate where the ice is thinnest-and thus easiest to bore through.



Cracks on the icy surface of Jupiter's moon Europa give evidence of a liquid ocean below

Continued....

Alien Oceans... from previous page

That mission scenario presents a problem, though. Europa orbits Jupiter inside the giant planet's punishing radiation belts. Continuous exposure to such high radiation would damage today's scientific cameras, making the information they gather less reliable and perhaps ruining them completely.

That's why NASA is designing a more radiation-tolerant CCD that could be used on a mapping mission to Europa. A CCD (short for "charge-coupled device") is a digital camera's chip-like core, which converts light into electric signals.

"We've seen the effects of this radiation during the Galileo mission to Jupiter," says JPL's Andy Collins, principal investigator for the Planetary Imager Project. "Galileo has orbited Jupiter for many years, dipping inside the radiation belts only for brief intervals. Even so," he says, "we've seen clear signs of damage to its instruments."

By using the hardier CCD's developed by the Planetary Imager Project, a future probe could remain in Jupiter's radiation belts for many months, gathering the maps scientists will need to finally get a peek behind Europa's icy veil. And who knows, maybe there will be something peeking back!

To learn more about the Galileo mission to the Jupiter system, visit <http://www.jpl.nasa.gov/galileo/>. For children, a fun, interactive "Pixel This!" game at http://spaceplace.nasa.gov/p_imager/pixel_this.htm introduces CCDs and how a really tough one will be needed for a future mission to Europa.

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

Winning Astronomy Friends

(submitted by Steve Goldberg)

The simple acts of sharing accurate information through our club outreach, and encouraging our students, helping them to understand that science is more than just a collection of facts is a huge step in combating science illiteracy.

About those star registries: Experience has shown me that we, as a community, need to be very gentle with the public on this subject. Members expounding loudly to a group about this “hoax” can hurt more than it helps. Here is why: Say the parents of a murdered child are in the crowd at your star party. A memorial “star” was “named” for their child by some loving friends. They have the map and certificate tucked close to their heart, waiting an opportunity to ask you to point your scope at their special star, so they know where to look every time they feel sad at night and want to feel connected. Now someone in your group goes into a rant about these rip off star registries. Not good. Maybe they got to the telescope operator and pulled out the map and the operator immediately says “Oh boy did you get ripped off!”

What I am saying is we need to have a real balance in how and when we present this information. We have to avoid being cruel. I suggest that if a club wants to address that topic, a general informational talk about how stars are really named will work, with a gentle mention of star registries being private fundraising or “for profit” activities and that the particular name will only be referred to in their “book”. Our community does not need to come off with heavy handed or thoughtless “debunking” while these folks are still vulnerable and add to their problem.

I also like to consider the same type of approach with “junk telescopes”. How many potential members, especially the young ones are never going to visit us again if that’s how we describe the prized possession that they bring to our telescope help sessions? I recently received an email from someone promoting a book he had written about buying a first scope. His excerpt that was attached was full of what I consider to be offensive and inflammatory language about toy scopes or junk scopes, the department store variety. Wow, I’ll will wager that about half of the people in his target

Continued...

Winning Friends... from previous page

audience already own one of those and now have been insulted, cut down, or otherwise offended and embarrassed. We won't get very far or make any friends telling folks to just throw that junk away and buy "something good". What I encourage people to do is show the proud owner the limits of the scope. Give them any tips to improve it, like making the mount more stable, use lower power eyepiece, teach them the projection method for solar viewing. (One thing I will encourage people to throw in the garbage is the unsafe solar eyepiece filter) But I explain why. Above all, do not demean this person who has come to you for help. We encourage these folks to join the club, come to star parties and view through all the member's scopes and compare. Members in our club have a WIDE range of loaner scopes to borrow, too. Then we try to teach them their way around in the night sky, so they can locate a few bright objects. It won't take long to see if they are going to move up to a better scope when they are able. And now we have made someone feel included, important and wanted!

- Jean Grendler

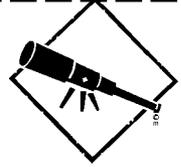
HAS Web Page

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

The address is: <http://www.astronomyhouston.org>

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 goldberg@infohiwy.net. (You can click on my name on the HAS home page). Or, you can call Steve Goldberg (WebMaster), at 713-721-5077.

Observatory Corner



By Michael B. Dye Observatory Chairman



The Observatory Site served as host to 43 members of Boy Scout Troop 404 (of Pearland) who arrived on the evening of April 4th and set up camp around the Bunkhouse. The troop was too large to setup camp in Logan's glen. Everybody finally got to bed about midnight. The troop was roused out of bed about 7:00 the next morning (and you thought you got up early on Saturday morning) for breakfast (which had to be made).

After breakfast the boys and parents started working on the projects that Bob Rogers had mapped out. The first of which was the removal of the dead tree that was behind the barbecue pit. With all the chain saws it went fast. Now we don't have to worry that somebody using the pit will get hurt or worse by a large (dead) branch falling on him or her from the tree. The next item was the removal of the dead tree that was located on the north road just west of the pump house. That tree was a threat to the power lines and anybody driving along the north road. Upon cutting down this tree, it was discovered that there was a 14-foot long, 6-inch diameter piece of steel pipe that was lying in the grass. We decided to put a chain around the pipe and drag it to the exit road for the next project.

The next project was to bury the pipe in a west/east direction across the exit road just north of the sewer dump to help with the drainage in the area. The rainwater has a tendency to collect in the road at that location, generating a rather large mud hole. We hope that the installation of the drain pipe from the West side of the EXIT road to the East side will prevent this sort of thing in the future. While digging the hole to put the pipe in, an old buried road light was discovered. Somebody out there called it a Dinosaur egg. The expired road light was removed and the pipe was buried with a slope towards the east. Sand and gravel were moved to cover the exposed top of the pipe and to raise the grade to improve the water drainage. Also, there were a lot of 'craters' that were filled along the north road.

Continued....

Observatory Corner... from previous page

So much fun was had removing the two dead trees that the next item to remove was a dead tree stump that was approximately 16 feet tall and about 24 inches in diameter. The stump was located along the exit road about halfway between the bathrooms and the exit gate on the East Side of the road. A chain was wrapped around the stump and hooked to the back end of a truck. With a little pull it all came down. The stump was so rotten and decayed that it would have fallen at anytime. Anybody driving to the exit gate would have had a very bad experience if this had fallen on their vehicle.

Since it wasn't time for lunch, Richard Parker took some boys and tried to clear the brush along the west fence line as far as he could go. Jay Epperson repaired the urinal in the west bathroom. That was a highlight for some of the boys. The troops finished in time to eat lunch.

Unfortunately the sky clouded over and the scouts were not able to do any observing Saturday night.

Everybody left by 11:00 Sunday morning. It was a very productive weekend and the boys are looking to come back next year.

The Fence Mending project, originally scheduled for March 22nd was rescheduled for April the 19th. Since I am writing this article about a week before the above-mentioned Fence Mending Project, I am not able to include it in this article. If the weather is clear on the 19th I will have something to say in next month's article.

Please remember that the Houston Astronomical Society is an amateur organization and survives by the members volunteering to help with projects and on donations of money. If you don't have time to help, at least send money to the P. O. Box and indicate that the money is for the Observatory Site.

Continued...

Observatory Corner... from previous page

Because we do survive on volunteers doing work at the Observatory Site I would like to thank all the members of Boy Scout Troop 404 for their work at the Observatory Site.

The Boys Scouts were:

Ray Villarreal, Kyle Osborn, Evan Mills, Joshua Rutland, Bryan Walker, Dustin Moody, Cody Jones, Michael Adams, Glen Adams, Jeremy Mash, Michael Parker, Travis Wilson, Joshua Williams, Robert Williams, Chris Mills, Donovan Karydas, Travis Love-Rabe, Kyle Given, Ryan Ramlal, Brandon Epperson & Brian Epperson.

Troop 404 Adult Leaders:

Ray Osborn, Roger Mills, Catheryn Rutland, Patty Moody, Christy Jones, James Jones, Richard Parker, Mike Karydas, Rosemary Epperson, Jay Epperson & Mike Guthrie.

Troop 404 Guests (Family & Friends):

Taylor Rutland, Emily Jones, Travis Griswald, Mindy Karaydas, Susie Love, Linda Karydas & Karla Given.

Troop 404 Cooking Team:

Lloyd Stephens, Pat Stephens, Michael Stephens & Ernest Laitkep.

The Society continues to benefit from members who shop at Randalls. For this we (the Society) thank you. Please link your Randalls card to the Houston Astronomical Society so that the society can benefit from the Randalls program. Our number is #6618. This is very easy to do, just go to the Courtesy Booth and tell the person there what you what to do. We are also in the process of getting a Kroger number that does the same thing for Kroger. A new person has volunteered to spearhead this effort so we may have Kroger card yet.

Please fill out the appropriate log form when you use the site.

Remember we use these forms as attendance records and to report Observatory Site problems such as broken toilets.

Musical Satellites

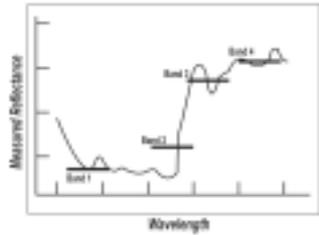
By Tony Phillips

If light were sound, then chemicals would play chords.

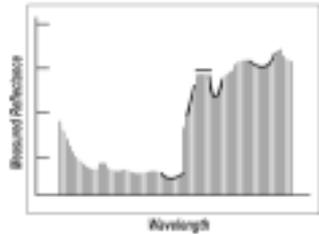
Water: C major. Cyanide: A minor. Chlorophyll: G diminished 7th. (Please note that the choice of chords here is only for the sake of illustration, and not meant to reflect the actual spectra of these chemicals.)

It's a loose metaphor, but an apt one. Musical chords are combinations of frequencies of sound (notes), while chemicals leave unique combinations of dips in the frequency spectrum of reflected light, like keys pressed on a piano. Spectrographs, machines that recognize chemicals from their "chords of light," are among the most powerful tools of modern chemistry.

Most earth-watching satellites, like the highly successful Landsat series, carry spectrographs onboard. These sensors measure the spectra of light reflected from forests, crops, cities, and lakes, yielding valuable information about our natural environment. Current satellites do this in a fairly limited way; their sensors can "hear" only a few meager notes amid the symphony of information emanating from the planet below.



Multispectral imaging
(few bands)



Hyperspectral imaging
(hundreds of bands)

Continued...

Musical Satellites... from previous page

EO-1 could change that. Short for “Earth Observing 1,” EO-1 is an experimental NASA satellite in orbit since 2000. It’s testing out a more advanced “spectrometer in the sky”-the Hyperion hyperspectral imager. How good is it? If Landsat were “chopsticks,” EO-1 would be Gershwin’s “Rhapsody in Blue.”

The Hyperion sensor looks at 220 frequencies in the spectrum of visible and infrared light (0.4 to 2.5 microns) reflecting off Earth’s surface. Landsat, in contrast, measures only 10. Bryant Cramer, who manages the EO-1 project at the Goddard Space Flight Center, puts these numbers in perspective. “If we flew Landsat over the northeastern United States, it could readily identify a hardwood forest. But using hyperspectral techniques, you probably can . . . tell the oak trees from the maple trees.”

Future earth-watching satellites may use Hyperion-like instruments to vastly improve the environmental data they provide. EO-1 is paving the way for these future missions by taking on the risk of flight-testing the sensor for the first time.

For farmers, foresters, and many others, this new remote sensing technology will surely be music to the ears.

Read about EO1 at <http://eo1.gsfc.nasa.gov> . Budding young astronomers can learn more at http://spaceplace.nasa.gov/eo1_1.htm ..

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

Marg's Star Parties

...Need Folks and Scopes

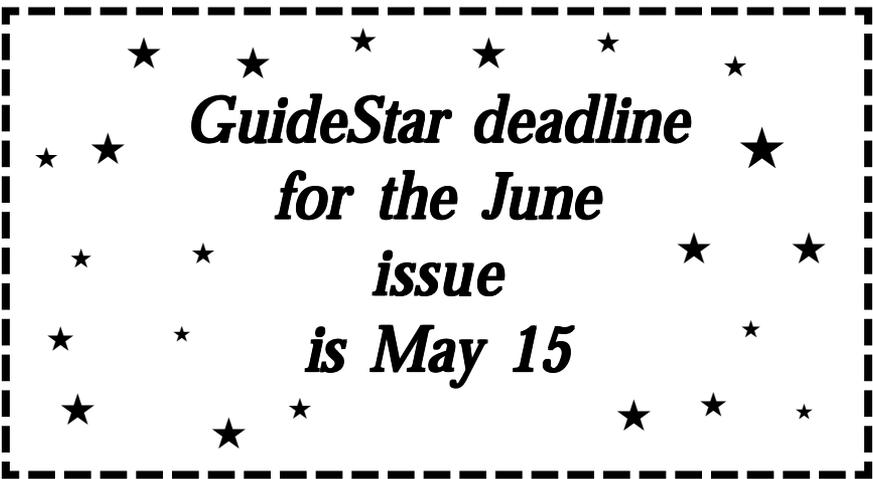
Here's your chance to share your enthusiasm for astronomy with some kids. Marg Nunez has planned events for the near future. Bring your telescope, or just come by... Either way, you'll have a great time. Mark your calendars! So far we have 3 star parties scheduled for the summer month's

Friday, May 31st we will give another try for the Katy Prairie Con. We are expecting good skies.

Friday, June 21st at dusk, Conroe, Camp Deerfoot, Lennon Camp for Boys

Saturday, July 19th at dusk in Conroe, Camp Deerfoot, a camp for boys.

Call or Email Marg for more details. 713-529-2549 **Marg10@flash.net**



***GuideStar deadline
for the June
issue
is May 15***

Observatory Duty Roster

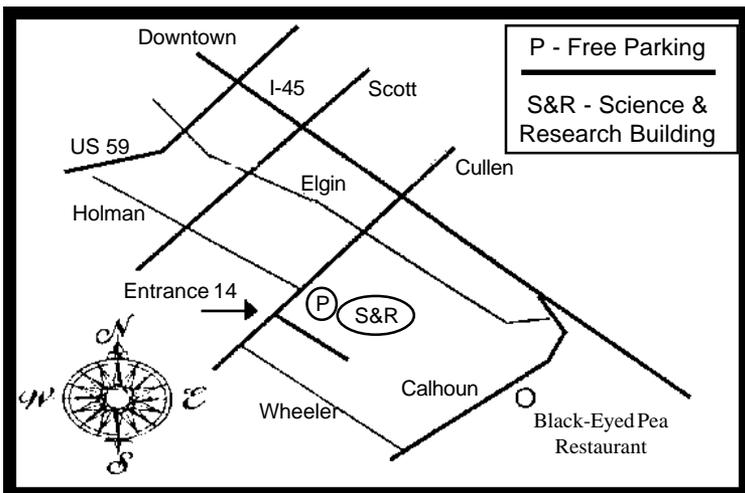
by Michael B. Dye, Observatory Chairman

This is the duty list for May, June and July. If you are listed in this roster, please be sure to contact your supervisor for any information that you may need and the date and time to be at the site. You may change from site duty to open house or from open house to site duty by pre-arrangement with the Site Supervisor for that month. Changes between months require Observatory Chairman coordination.

May Supervisor Don Selle 281-391-5470
David Herlinger Site
Kenneth Miller Site
Debbie Moran Site
Ben Negy Jr. Members Observatory Night 05-24-03
Johnny Norris Site
Richard Nugent Site
Ralph Overturf Site
Don Pearce Members Observatory Night 05-24-03
Sim Picheloup Members Observatory Night 05-24-03

June Supervisor Matt Delevoryas 713-662-2939
Leonard Raif Site
Henry Schneider Site
Marge Nunez Site
Steve Simpson Site
Larry Wadle Site
Mark Watson Members Observatory Night 06-21-03
Tom Williams Site
Barbara Wilson Members Observatory Night 06-21-03
Buster Wilson Members Observatory Night 06-21-03

July Supervisor Kirk Kendrick 281-633-8819
Warren Wundt Site
John Blubaugh Site
Ken Carey Site
John Chauvin Site
Art Ciampi Members Observatory Night 07-19-03
Brian Cudnik Site
Gary Delzer Site
George Dolson Members Observatory Night 07-19-03
Kenneth Drake Members Observatory Night 07-19-03



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.

Board of Directors Meeting

The Board of Directors Meeting is held on dates scheduled by the board at 7:00 p.m. in Room 106 of the Space Science Building at Rice University. Call StarLine for Board Meeting information. 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. *GuideStaris* 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. *GuideStaris* sent via bulk rate mail to Regular, Student, and Honorary Members of H.A.S., selected individuals and recent visitors to the General Membership Meeting. Contributions to *GuideStar* by members are encouraged. Electronic submission is helpful. Submit the article in ASCII text, MS-Word (preferred), or WordPerfect format on an IBM format floppy or via AOL (BILLP10566). Mail copy to the address shown on the outside cover or to the editor at 256 East 5th Street, Houston, TX 77007. Copy must be received by the 15th of the month for inclusion in the issue to be mailed near the end of the same month. Or, bring copy to the General Membership Meeting and give it to the Editor, or phone to make special arrangements.

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