



March, 2003

At the **March 7** meeting...

Allan Treiman

***Senior Staff Scientist
Lunar and Planetary Institute***

***Martian Gullies
How did they form?***

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: 281-391-3834 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 Telescope Loaner Program
Howard Leverenz 713-957-8667
Jay Levy 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
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.

Table of Contents

4	Observations of the Editor	14	Want Ads
5	Meeting notice		Marg's Star Parties
6	March/April Calendar	15	Membership Renewals
7	Minutes of the February Mtg.	16	HAS Web Page
10	Invisible Tornadoes	17	Observatory Duty Roster
11	Banquet Note	18	Logo Sales
12	Observatory Corner		

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*

My 14.5" dobsonian is gone... in the hands of another of our members. It's a fine instrument, and I'm sure it'll be well used. I very much enjoyed the time that I owned it. My 8" LX-100 SCT is still in my possession, though I've had a few inquiries about it.

My invitation to you is still open. If you have equipment, books, software, or anything else that's related to astronomy, I'd be glad to put an advertisement in the *GuideStar* for it. Just let me know.

So far, it has been a lousy month for observing. It seems like February is generally bad, but I don't have data to support that. Today (1/14/03) it's cloudy with rain predicted for tonight. Not good.

1/15/03 -- It has been raining all morning. It's clearing a bit this afternoon, so the weekend may turn out ok after all. It's full moon, so the observing conditions aren't ideal in any case.

The *GuideStar*

I attended last month's board meeting (but, unfortunately, missed the February general meeting). If we keep the *GuideStar* to 20 pages, replace the hard cover with a soft cover, and choose our printer carefully, we can continue to bring the *GuideStar* to you in printed format. This is good news. I believe (not based on evidence) that sending the membership a *GuideStar* monthly reminds them of the organization, encourages them to come to the monthly meeting, and makes sure they know about upcoming events. So... keep watching your mailbox for the *GuideStar*.

I'll work hard to squeeze as much valuable content into the *GuideStar*'s 20 pages as possible. If you have some high-value content to contribute, I'd love to have it.

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

..Bill

Houston Astronomical Society

***Meeting Notice
For Friday, March 7, 2003***

***Allan Treiman
Senior Staff Scientist
at the
Lunar and Planetary Institute.***

His topic will be the Martian gullies and various ideas of how they formed. There will be lots of pretty pictures of Mars, and a few diagrams.

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.
Ed Preston will talk about Coordinate Systems**

**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.**

March/April Calendar:



Photo by Scott Mitchell

<i>Date</i>	<i>Time</i>	<i>Event</i>
-------------	-------------	--------------

March 2003

1		Prime Night-Columbus
2	8:35 p.m.	New Moon
7	7:00 p.m.	Novice Presentation - U of H.
	8:00 p.m.	General membership meeting U of H. Dr. Allan Treiman will speak on Martian gullies and their formation
11	1:15 a.m.	First Quarter Moon
18	4:34 a.m.	Full Moon
	7:30 p.m.	Advanced SIG meeting, contact Bill Flanagan, 713-699-8819
20	7:00 p.m.	Spring Equinox-sun moves north of celestial equator
24	9:51 p.m.	Last Quarter Moon
27	7:30 p.m.	HAS Board Meeting-Univ. of St. Thomas, Robertson Hall rm. 118
29		Members Observatory Night- Columbus

April 2003

1	1:19 p.m.	New Moon
4	7:00 p.m.	Novice Presentation - U of H.
	8:00 p.m.	General membership meeting U of H. Dr. William Cochran: "Beyond Our Solar System: The Search for Extrasolar Planetary Systems"
6	2:00 a.m.	Daylight Saving Time begins. Set clocks forward 1 hour.
9	6:40 p.m.	First Quarter Moon
15	7:30 p.m.	Advanced SIG meeting, contact Bill Flanagan, 713-699-8819
16	2:36 p.m.	Full Moon
19		Members Observatory Night- Columbus
23	7:18 a.m.	Last Quarter Moon
26		Prime Night-Columbus
27		Texas Star Party begins in Ft. Davis, and goes until May 4

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

Minutes of the H.A.S. General Membership Meeting 07 February 2003

The Meeting was called to order at 8:14pm; this was followed by a brief introduction of the club by President Kirk Kendrick. There was one new member and approximately 10 visitors to this meeting.

A moment of silence was held on behalf of the seven astronauts killed in the Columbia shuttle accident on 01 February 2003.

The Announcements follow:

- ⇒ With Steve Sartor's image of the observatory scopes projected on the screen, the new and remodeled C-14 telescope was introduced. Allen Gilchrist headed the committee to remodel the scope, Andy Salidas did the machining, and Chuck Shaw helped to get the scope set up and working. These men were thanked publicly for their efforts. The C-14 will be ready for use on Members night, February 22.
- ⇒ Ken Miller announced the meeting of the novice group, to begin at Denny's at 4p.m. in Columbus in Members Observatory Night. This will be followed by an evening spent at the site. The Board had decided to have more light windows at the novice star party and members nights; these windows will be five minutes in duration and will be observed at 10p.m., 11p.m. and midnight.
- ⇒ Marg Nunez gave two announcements
 - The next star party will be held on March 1 at the Katy-Prairie Conservatory. Setup will be at 6p.m., Bill Leach will give his presentation at 7p.m., and viewing will begin at 7:30p.m. Don Mayhall shared some further information about the facility

Continued...

Minutes... from previous page

- As a public service, Marg's brother will do free blood pressure screenings during the break and immediately following the meeting.

- ⇒ Robert Kuna reported that the Solar Star party was held on the 4th of February for seven fourth grade classes for a total of 150 children. The kids made thank-you notes for the H.A.S. and N.H.A.C. volunteers, which helped out during the event.

- ⇒ Amelia Goldberg attempted to present observatory certificates to two members who were not present (Jay Levy and Steve Powell), then received the meteor club certificate for six hours of meteor observing.

- ⇒ Don Pearce gave the comet report:
 - C/2001 Q4 (NEAT) reaches perihelion on May 6, 2004, at magnitude 1. The comet continues to brighten, as of December 3, it was 14.5 magnitude, or one magnitude brighter than predicted. The comet's perihelion and closest approach to Earth are close together in time. If current magnitude trends continue, the comet should reach magnitude 0 at perihelion.

 - C/2002 V1 (NEAT) images were posted, and Don gave a thank you to the one who posted them. This comet had a brightness factor of 25 (normal is 10), and is brighter than expected. Although currently at magnitude 4.9, the comet is beginning to sink into the evening glow—it sets at 8p.m. as it moves Southwestward from Pegasus to Aquarius.

 - C/2002 Y1 (Juels-Holvorcem) is currently at magnitude 8.5 or about 2 magnitudes brighter than predicted, reaches perihelion on April 10. It becomes circumpolar on February 17 and is moving northeastward through Draco.

Continued....

Minutes... from previous page

- Kudo-Fujikawa, is too close to the Sun to be observed, but has faded dramatically. It was predicted to be at magnitude 1.5 now, but is actually at 5.3.
- ⇒ Steve Goldberg advised the membership to get the registration form in as soon as possible for the Texas Star Party. Also, the telescope check-out list for the C-14 is available on the web site.
- ⇒ Judy Dye talked about the logo sales and shared various items on sale, including 10 Observers Handbooks that she has left at \$20 each.

John Blubaugh introduced the introducer, Steve Goldberg, who introduced tonight's speaker, Larry Mitchell, who gave a talk entitled "Volcanoes and the Astronomical Connection".

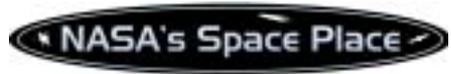
Door prizes were awarded.

The Meeting was adjourned at 10:07p.m.

Invisible Tornadoes

By Tony Phillips

The biggest problem with tornadoes-next to the swirling 300-mph winds-is that it's hard to see them coming.



But soon scientists will be able to foresee, not merely tornadoes, but the severe storms that spawn them, hours before there's even a cloud in the sky! Mind you, this isn't a vague "30 percent chance of rain today" type forecast. Thanks to a new satellite technology being co-developed by NASA, NOAA and the U.S. Navy, emergency personnel will actually watch the invisible beginnings of a storm unfold.



This severe tornado hit south of Dimmitt, Texas, on June 2, 1995.

"They're going to know where the storm centers are forming before the storms are there," says James Miller, project manager for Earth Observing 3 (EO3), a satellite that will test out this new technology in 2005 or 2006.

Unlike the tiny water droplets that make up clouds, the water vapor that feeds storms is invisible to the human eye. Water vapor is easy to detect, however, at infrared (IR) wavelengths. EO3 will use an IR-sensitive device called GIFTS-short for Geosynchronous Imaging Fourier Transform Spectrometer-to make 3D movies of temperature, pressure, and water vapor in Earth's atmosphere.

Three or four hours before the storm clouds are visible, meteorologists will notice water vapor converging toward an area. This water vapor, which provides the "fuel" for the coming storm, is too close to the ground for today's weather satellites to see. Then meteorologists will check precisely how the air temperature over that area varies vertically (something else ordinary satellites can't do). This temperature variation determines

Continued...

Invisible Tornadoes... from previous page

whether the humid air will rise to form storm clouds. And when these conditions look ominous, the meteorologists can alert the public.

The goal of EO3 is to “test drive” this new technology and prove that it works. If successful, NOAA plans to incorporate GIFTS-style sensors into its next generation of weather satellites.

These future satellites will give meteorologists exactly what they need in order to give the people exactly what *they* need: an earlier warning that tornados may be on the way.

GIFTS and EO3 are managed by NASA’s New Millennium Program. NASA and NOAA will operate EO3 during its first year in geosynchronous orbit above the United States. If the technology works as planned, the U.S. Navy will assume control of EO3, move the satellite to a point above the Indian Ocean, and use it to monitor weather in shipping lanes there.

For adults, the EO3 web site at <http://nmp.jpl.nasa.gov/eo3> has more about the mission and the GIFTS instrument. For children, The Space Place web site at spaceplace.nasa.gov/eo3_compression.htm has a jazzy, interactive “squishy ball” demo of the data compression methods that will be used on EO3.

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

H.A.S. Banquet Note

The H.A.S. banquet committee has not finalized arrangements for our 2003 banquet.

Send suggestions for speakers to Marg Nunez at Marg10@flash.net

Observatory Corner



By Michael B. Dye Observatory Chairman



The month of March is the last month in which we will be using the short list for Site Duty, next month (April), and for the next six months, we will be using 10 members for Site Duty. Three of these people will be performing Observatory Duty for Members Observatory Night and the other seven will be performing Site (Vegetation Control) Duty. By having seven people listed for Site Duty I hope we will have enough members present to improve the site. If you are listed for Site

Duty, please call the Site Supervisor for the month you are listed and talk about what you can do that month and when you can do it. Other members of the Society are also encouraged to volunteer to help at the Observatory Site. I am trying to put together a crew to sandblast and paint the Observatory sometime this spring. Call or e-mail (preferred) me if you would like to help.

On February 7th, Judy and I went out to the Observatory Site to observe and do some site repair work. Judy observed and I worked. I installed all eight of the Culvert Lights that Ed Preston made last year. There are two lights at each culvert, one on each side. These lights flash at about a 1-second rate and are not bright enough to disturb anyone's night vision. The lights mark the edge of each culvert pipe and members should take care not to drive over the lamp. Try to drive between the flashing lamps. Driving over the lamp will cause some damage to not only the concrete or iron culvert but most likely damage the culvert light and fence post the light is mounted on. This does not count the damage that your auto undercarriage will sustain. Ed spent about two months getting these lights ready. They work very well and I would like to thank Ed for his diligent work. These lights are powered by two 'D' cell batteries and should last a year or so. Ed designed the lamp assembly so that we could get back into the lamp holder and change the batteries when needed. Again, thanks Ed for the extra effort on your part.

Continued...

Observatory Corner... from previous page

The good news is that the C-14 is now operational. Allen and Chuck were able to get the new set of bushings on the fork pivot points (for the Declination axis) installed. Allen has been testing the calibrating the C-14 telescope. The first training class took place on the 25 of January and the following members were qualified.

Kenneth Miller
Leonard Raif
Don Selle
Buster Wilson
Barbara Wilson
Steve Goldberg

Contact Steve Goldberg if you are a key holder and would like to be re-qualified on the C-14 telescope operation.

Bob Rogers reported to me that we will be hosting about 100 Boy Scouts (boys and adults) on March the 8th. The scouts will be performing some site duty and do some observing through the scopes in the Observatory and on the pads. The 8th was selected because that night is neither Prime Night nor Members Observatory Night.

I would like to publicly thank Terry Riggle who replaced the lock on the EXIT gate because it was not working very well. He performed this public service act back on November 7th of 2002. I was finally able to find out about this activity because I got the stack of Log Forms from last year. Again, Thank You Terry.

I have talked to Marge Nunez and she is still working on the Banquet. It will most likely be in March.

The last item on our list is the Randalls report. For the Fourth Quarter of this year, October 1st through December 31st, we spent a total of \$9,907.83 at various Randall's stores. This spending spree resulted in a check (not yet received) of \$99.08, which will be split 50/50 between the Observatory Fund and the club General Treasury. Our account will zero

Continued....

Marg's Star Parties

Here's your chance to share your enthusiasm for astronomy with some school 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.

Wednesday, March 25 Star Party at Rice School, off Kirby.

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

∞ Want Ads ∞

8" LX-200 (non-GPS). 2" diagonal, carry bag for telescope, RS-232 cable, f/6.2 adapter, all original equipment. Excellent condition. Asking \$1000.

Call Bill Pellerin at 713-880-8061 or email at BillP10566@aol.com

Observatory Corner... from previous page

out and started over again on January 1st. So please link your Randalls card to the Houston Astronomical Society so that the society can benefit from this Randalls program. Our number is #6618. This is very easy to do, just go to the Courtesy Booth and tell the person there what you want to do. We are also in the process of getting a Kroger number that does the same thing for Kroger.

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.

Membership Renewals...

Please check the mailing label on your copy of the *GuideStar*.

It'll tell you when your membership expires. If it expires soon, please send your renewal to the address on the outside cover of *GuideStar*. The dues information is on the inside front cover.

Membership in the Houston Astronomical Society is one of the great bargains in Astronomy. For a regular membership of \$33 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.

Thanks!

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.ghgcorp.com/cbr/jscas.html>

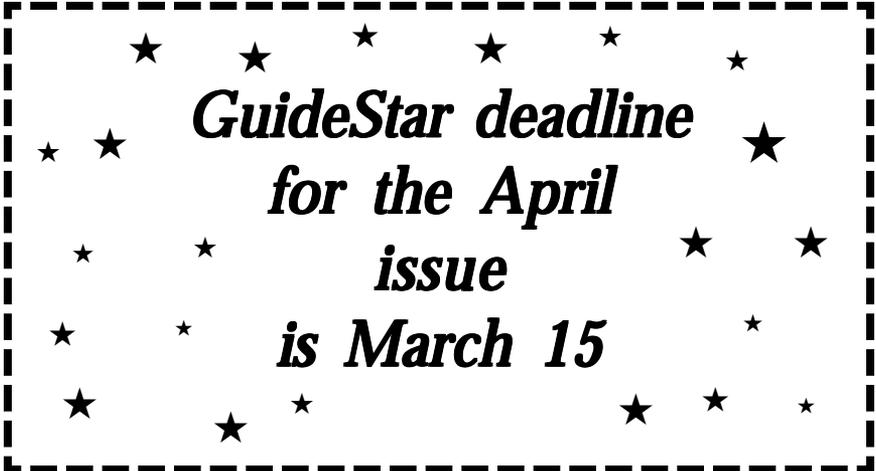
North Houston Astronomy Club meets at 7:30 p.m. on the 4th Friday of each month in the Teaching Theatre of the Student Center at Kingwood College. Call 281-312-1650 or E-mail bill.leach@nhmccd.edu. Web site: www.astronomyclub.org

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.



***GuideStar deadline
for the April
issue
is March 15***

Observatory Duty Roster

by Michael B. Dye, Observatory Chairman

This is the duty list for March, April and May. 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.

March Supervisor Allen Gilchrist 281-443-8773
Gary Delzer Site
George M. Dolson Site
Ken Drake Site
Jean-Marc Follini Members Observatory Night 03-29-03
Fred Garcia Members Observatory Night 03-29-03
Stanley Jones Members Observatory Night 03-29-03

April Supervisor Michael B. Dye 281-498-1703
Keith Jurgens Site
Arnie Kaestner Members Observatory Night 04-19-03
David Kahlich Site
Larry Karasevich Site
Howard Leverenz Site
Jay Levy Members Observatory Night 04-19-03
Mary Lockwood Members Observatory Night 04-19-03
Christopher Mendell Site
Robert Menius Site
David Herlinger Site

May Supervisor Don Selle 281-391-5470
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
Leonard Raif Site
Henry Schneider Site

Please remember that Site work can be done anytime and does not have to be done just before Members Observatory Night. Contact your Site Supervisor for details. Names are selected for Site Duty using the current Alphabetical listing for Observatory Key Holders. If any member knows of a conflict please call me before your name is listed.

Logo Sales

The Logo Sales is extending the Discount Sale.

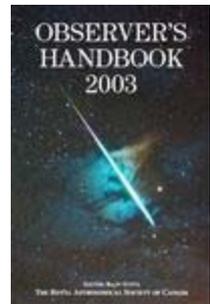
The following items are on sale for the indicated prices. In most cases these prices are almost 50 percent less than the original list price.

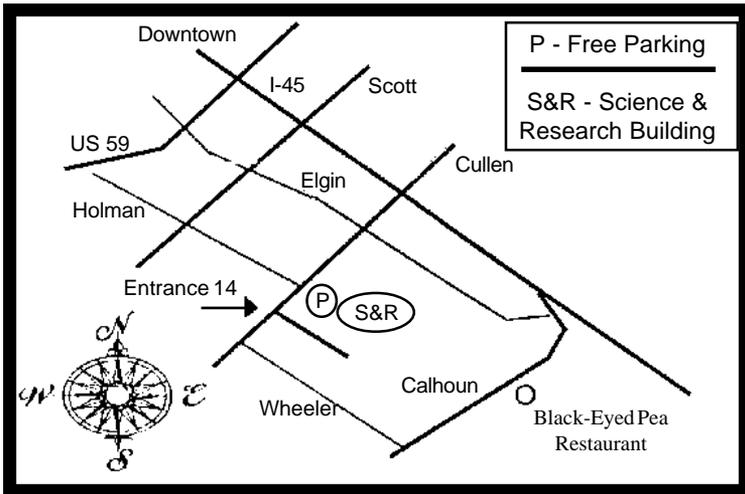
Astronomy Day T-shirts	\$8.00 each
Koozies	\$2.00 each
Magnetic Signs	\$12.00 each
Peel-N-Stick Logo	\$1.00 for four
Thermal Cups - 22 oz	\$3.00 each

SPECIAL

Hooded Sweatshirts	\$3.00 off
--------------------	------------

If you don't have your 2003 Observer's Handbook yet, get your copy at the March meeting. You won't want to be at the observatory site without it!!





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.

Editing & Production: Bill Pellerin, 713-880-8061; FAX: 713-880-8850;
AOL: BILLP10566; Internet: BILLP10566@AOL.COM

Reproduction and Mailing: Anne Hallman & Hannah Lange

Advertising: Advertisers may inquire concerning ad rates and availability of space.



Houston Astronomical Society

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

NON-PROFIT
ORGANIZATION
U.S. POSTAGE
PAID
STAFFORD, TX
77477
Permit No. 183