



***January, 2003***

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At the **January 3** meeting...

***Brian Cudnik***

***H.A.S. Member***

***Lunar Meteoric Phenomenon***

***Brian is one of only a few observers to directly observe a confirmed meteor impact on the moon.***

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***Houston Astronomical Society***

***GuideStar***

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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.

★★★★★ **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

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Bill Flanagan ..... 713-699-8819	Liaison responsibility
Howard Leverenz ..... 713-957-8667	Telescope Loaner Program
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 Jeeter .....
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

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## *Observations... of the editor*

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by *Bill Pellerin, GuideStar Editor*

I am an avid shallow sky observer. I have never heard this term used in polite astronomical company, but it seems to apply to my observing habits quite well.

Deep sky observers are most common. My *Concise Dictionary of Astronomy* defines 'deep sky object' as "An object of astronomical study that does not belong to the solar system. The expression is not precisely defined and is used by amateur astronomers as an umbrella term for both galactic and extragalactic objects, such as nebulae and galaxies." I think of 'deep sky' observers as those folks who wait for the darkest of dark nights, have very large telescopes, and who are working on seeing objects that are at the threshold of invisibility.

The alternative is to be a lunar and planetary observer, which is to say, an observer of objects within the solar system. (Note that 'planetary' in this context does not refer to planetary nebulae, but to solar system objects.)

The dictionary contains no entry for 'shallow sky'. So, I'll make up my own. As a shallow sky observer, I observe bright, extra solar system objects (examples: variable and double stars) that can be seen in small (8" or less) telescopes.

I genuinely enjoy this kind of observing. I'm usually not struggling to pull a dim object out of the background sky, nor am I working on optimizing my equipment for the ultimate in dim-sky observing. In fact, shallow sky observing can be done with rather small, easily portable equipment and under many observing conditions. Face it, if you're looking at Albireo, one of the prettiest double stars in the sky, you won't need a big telescope to see it, and you'll treat yourself to one of the most beautiful objects in the sky. I never get tired of looking at this pair. Nearby, in Lyra is the famous double-double... a set of four stars forming a wide double and a close double at the same time. This time of year, the Trapezium, a set of four stars in the Orion Nebula is a superb shallow sky object.

*Continued on page 14...*

# ***Houston Astronomical Society***

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***Special Meeting Notice  
For Friday, January 3, 2003***

***Brian Cudnik***

## ***Lunar Meteoric Phenomenon***

During the 1999 Leonid Meteor shower, Brian Cudnik, a research technician at Rice University and Prairie View A&M University, was watching the Moon for signs of flashes caused by Leonids striking the lunar surface. At about 4h 46m 20s UT on November 18 he saw a brief flash near the center of the Moon's dark side, close to the edge of the lunar disk. Observing with a 36cm telescope, he estimated that the flash, taking a fraction of a second, was at least as bright as a nearby 4th-magnitude star. Cudnik is an experienced observer, and his observation was confirmed by a video tape made by another observer.

(From the web, NASA Space Science News)  
[http://www.spacescience.com/newhome/headlines/ast22nov99\\_1.htm](http://www.spacescience.com/newhome/headlines/ast22nov99_1.htm)

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### **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.**

**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.**

# January/February Calendar:



Photo by Scott Mitchell

<i>Date</i>	<i>Time</i>	<i>Event</i>
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## January 2003

2	2:23 p.m.	New Moon
3	7:00 p.m.	Novice Presentation - U of H.
	8:00 p.m.	General membership meeting U of H. Brian Cudnik on Lunar Meteoritic Phenomenon
	11:02 p.m.	Earth at perigee
4		<b>Prime Night-Columbus</b>
10	7:15 a.m.	First Quarter Moon
14	7:30 p.m.	Advanced SIG meeting, contact Bill Flanagan, 713-699-8819
18	4:48 a.m.	Full Moon
25	2:33 a.m.	Last Quarter Moon
25		<b>Members Observatory Night- Columbus</b>

## February 2003

1	4:48 a.m.	New Moon
1		<b>Prime Night-Columbus</b>
7	7:00 p.m.	Novice Presentation - U of H.
	8:00 p.m.	General membership meeting U of H. Larry Mitchell will be our speaker
9	5:11 a.m.	First Quarter Moon
16	5:51 p.m.	Full Moon
18	7:30 p.m.	Advanced SIG meeting, contact Bill Flanagan, 713-699-8819
22		<b>Members Observatory Night- Columbus</b>
23	10:46 a.m.	Last Quarter Moon

Send calendar events to [JBlubaugh@aol.com](mailto:JBlubaugh@aol.com)  
or call 713-921-4275.

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# ***Photos from the December Meeting***

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*by Bill Pellerin, GuideStar Editor*



Kent Francis (left) shows Scott Mitchell the Tele-Vue Pronto that he was selling at the December swap meet.

Marg Nunez draws the name of another winner of a door prize.



Don Pearce was serious about his wheeling and dealing at the December swap meet.

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# ***The Observer's Sky Atlas***

## ***Book Review***

*By Bill Pellerin, GuideStar editor*

If you're looking for an observing guide that will easily fit in your glove box and that will give you all the information you need for a night of observing, *The Observer's Sky Atlas* by E. Karkoschka, and published by Springer is the one you'll want. The book is 5.5" x 8" and less than 3/8" thick and contains maps for the full sky.

The maps are organized by sections of the sky. There's a map on the inside back cover showing the sections of the sky covered by each map. Sometimes, but not always, a sky section covered by a map corresponds to a constellation. Once you find a map page that covers a section of sky that's available to you during your observation session, you'll find a map on the right-hand page and a list of interesting objects on the left-hand page. The objects are categorized as nebulae, star, or binary (double-star).

For each object there's an indication of the location of the object on the main map. The list of nebulae further identifies the type (galaxy, planetary, etc.), the magnitude, and the visibility. Selected nebular objects are described with a sentence or two. The list of stars shows magnitude, color, and other information. For binary stars, the magnitude of each of the stars is listed, along with the separation and position angle.

One significant improvement from an earlier edition is that the full sky map on the inside back cover no longer uses red lines for constellations. These red lines were, of course, invisible when using a red flashlight in the field.

In the appendix is a calendar of new and full moons good through 2018, so you can plan your observing trips based on moon phase.

This book carries a list price of \$19.95, and is easily worth it. It's the one observing handbook that you can easily take and keep with you.

Enjoy!



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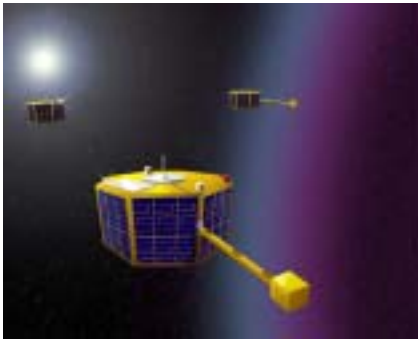
# ***Frisbees in Space***

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*by Dr. Tony Phillips*

When Pete Rossoni was a kid he loved to throw Frisbees. Most kids do-it's pure fun. But in Pete's case it was serious business. He didn't know it, but he was practicing for his future career in space exploration.

Grown-up Pete Rossoni is now an engineer at NASA's Goddard Space Flight Center. His main project there is figuring out how to hurl spacecraft into orbit Frisbee-style.



The spacecraft are small-about the size of birthday cakes. "This wouldn't work with big satellites or heavy space ships like the shuttle," notes Rossoni. But a cake-sized "nanosatellite" is just right.

Nanosatellites-nanosats for short—are an exciting new idea in space exploration. Ordinary satellites tend to be heavy and expensive to launch. The cost alone is a deterrent to space research. Nanosats, on the other hand, can travel on a budget. For example, a Delta 4 rocket delivering a communications satellite to orbit could also carry a few nanosats piggyback-style with little extra effort or expense.

"Once the nanosats reach space, however, they have to separate from their ride," says Rossoni. And that's where Frisbee tossing comes in.

Rossoni has designed a device that can fling a nanosat off the back of its host rocket. "It's a lot like throwing a Frisbee," he explains. "The basic mechanics are the same. You need to impart the spin and release it cleanly-all in about a tenth of a second." (The spinning motion is important because

*Continued...*

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## ***Space Place... from previous page***

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it allows the science magnetometer to measure the surrounding field and lets sunlight to play across all of the nanosat's solar panels.)

The ST5 nanosats are designed to study Earth's magnetosphere—a magnetic bubble that surrounds our planet and protects us from the solar wind. But their primary goal, notes Rossoni, is to test the technology of miniature satellites.

"We haven't done anything like this before," says Rossoni. Soon, however, the concept will be tested. A trio of nanosats is slated for launch in 2004 on the back of a rocket yet to be determined. The name of the mission, which is managed by JPL's New Millennium Program, is Space Technology 5 (ST5).

Can groups of nanosats maintain formation as they fly through space? Will their internal systems—miniaturized versions of full-sized satellite components—satisfy the demands of both the harsh space environment and critical science measurements? Is Frisbee-tossing as much fun in orbit as it is on Earth?

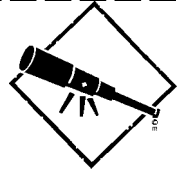
ST5 will provide the answers. Read about ST5 at <http://nmp.nasa.gov/st5> . Budding young astronomers can learn more at [http://spaceplace.nasa.gov/st5/st5\\_tortillas1.htm](http://spaceplace.nasa.gov/st5/st5_tortillas1.htm)

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

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# *Observatory Corner*

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*By Michael B. Dye Observatory Chairman*



The Annual Observatory Meeting will be held at the Observatory Site on January 4<sup>th</sup> which is the Saturday following the General Meeting. The meeting will consist of a review of the previous year (2002) accomplishments or failures, going over goals for 2003 and a walking tour of the Observatory Site. The meeting will start about 2 PM and shouldn't last more than 3 to 5 hours (including the walk). Members are invited to come observe and participate. We are still looking for a new Site Supervisor

to replace Dana Lambert, who was forced to resign from the Committee because of work commitments. The Site Supervisor is responsible for the Site Maintenance and Members Night for two different months during the year. If you are interested, please contact me.

The C-14 is installed and functional – more or less. We still have one problem, which we are in the process of solving. This problem will require a new set of bushings to be procured, modified and installed on the fork pivot points (Declination axis). Classes will start for members to be trained on the upgraded C-14 operation early in 2003. Please contact Steve Goldberg (whose phone number can be found in the inside front cover of the *GuideStar*) to sign up for the Training's. Training Dates will be announced later. Allen Gilchrist gave the first training class for the Trainers on December 13<sup>th</sup>. Kirk Kendrick, Bob Rogers, Don Selle, Matt Delevoryas, Bryan Cudnik, Rusty Fletcher and I attended the class. The actual instructors will likely be Allen Gilchrist, Kirk Kendrick, Bob Rogers and Matt Delevoryas.

The following are the dates for Prime Night, Members Observing Night, New Moon and Full Moon for 2003. The New and Full Moon dates are plus or minus 1 day as I did not bother to check to see if the dates were corrected to Central Standard (or Daylight) Time. I used the US Naval Observatory web site for the dates. The Prime Night and Members Observatory Night dates were generated as a result of some compromises between Matt Delevoryas and myself.

*Continued...*

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## ***Observatory Corner... from previous page***

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<b>Month</b>	<b>Prime Night</b>	<b>Members Night</b>	<b>New Moon</b>	<b>Full Moon</b>
Jan	4	25	2	18
Feb	1	22	1	16
Mar	1	29	3	18
Apr	26	19	1	16
May	31	24	1 & 31	16
Jun	28	21	29	14
Jul	26	19	29	13
Aug	23	16	27	12
Sep	27	20	26	10
Oct	25	18	25	10
Nov	22	15	23	9
Dec	20	13	23	8

The last item to talk about this month will be the Annual Picnic which is currently scheduled to take place on September 20 (Members Observing Night). We will use the same format as we use in 2002. I will be advertising this activity later this year so various members who don't pay attention will have a chance to be notified that there will be an Annual Picnic this year.

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.**

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# *Happy New Year*

*from the*

*Houston Astronomical Society*

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## *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.

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

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## ***Observations... from page 4***

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In fact, there's no end to the list of interesting shallow sky objects. How about a look at 55 Cancri, glowing at 6th magnitude. Easy for any telescope the star is interesting because it was discovered to have three planets orbiting it in positions similar to the large planets orbiting our sun. You won't be able to see the planets, of course, but it's fun knowing that the star you're looking at has been observed to be surrounded by planets.

I always enjoy it when there's a double star list in *Sky and Telescope*. More often than not the list is by Sissy Haas, a confirmed double-star enthusiast. I haven't seen a list in a while, so perhaps we're overdue for some new double stars to enjoy. Sissy Haas makes the extra effort to describe the stars' colors, and usually invites readers to send her their observations to see if they match. I sent her an email once with some of my observations and got a nice email reply. She does a lot of her observing with a 60 mm refractor - very small by today's standards.

Many times, the monthly Sue French article in *Sky and Telescope* includes shallow sky objects, easily visible in small telescopes.

I have a new book, titled *The Hundred Greatest Stars* by James Kaler. I just checked the Amazon.com web site, and it's available there. Most of the book consists of a description of the author's selections. There's a photograph or a drawing on the left-hand page, and text on the right-hand with the author telling you why he thinks that the star is interesting. Many of the objects he describes are quite bright, and easily visible in small telescopes (by shallow sky observers). I plan to have some fun reading about, and then observing the stars in the list.

Finally, please accept my wishes for a Happy New Year. May all of your astronomical dreams come true.

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

***..Bill***

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# ***Membership Renewals...***

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**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!***

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## ***Other Meetings...***

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**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](mailto:bill.leach@nhmccd.edu). Web site: [www.astronomyclub.org](http://www.astronomyclub.org)

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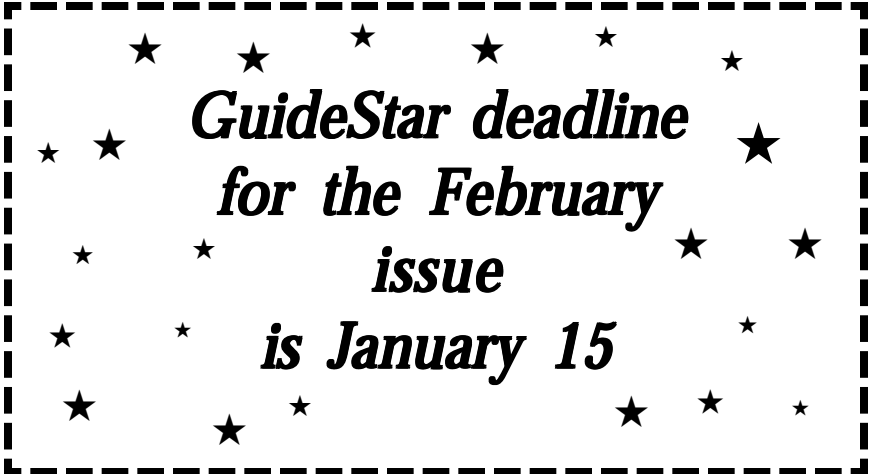
## ***HAS Web Page***

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](mailto: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.

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***GuideStar deadline  
for the February  
issue  
is January 15***



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# *Observatory Duty Roster*

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by Michael B. Dye, Observatory Chairman

This is the duty list for January, February and March. 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.

**January Supervisor ..... Bob Rogers ..... 281-460-1573**  
Marge Nunez ..... Site  
Steve Simpson ..... Site  
Larry Wadle ..... Site  
Mark R. Watson ..... Members Observatory Night 01-25-03  
Barbara Wilson ..... Members Observatory Night 01-25-03  
Buster Wilson ..... Members Observatory Night 01-25-03

**February Supervisor ..... Kirk Kendrick ..... 281-391-3834**  
*(May change)*  
Warren Wundt ..... Site  
Joe Blubaugh ..... Members Observatory Night 02-22-03  
John Chauvin ..... Site  
Art Ciampi ..... Members Observatory Night 02-22-03  
Brian Cudnik ..... Members Observatory Night 02-22-03  
George M. Dolson ..... Site

**March Supervisor ..... To be announced ..... xxx-xxx-xxxx**  
Ken Drake ..... Site  
Mark Egan ..... Members Observatory Night 03-29-03  
John Fennell ..... Site  
Jean-Marc Follini ..... Site  
Fred Garcia ..... Members Observatory Night 03-29-03  
John Garza ..... Members Observatory Night 03-29-03

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.

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# Logo Sales

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***The Logo Sales is extending the December 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

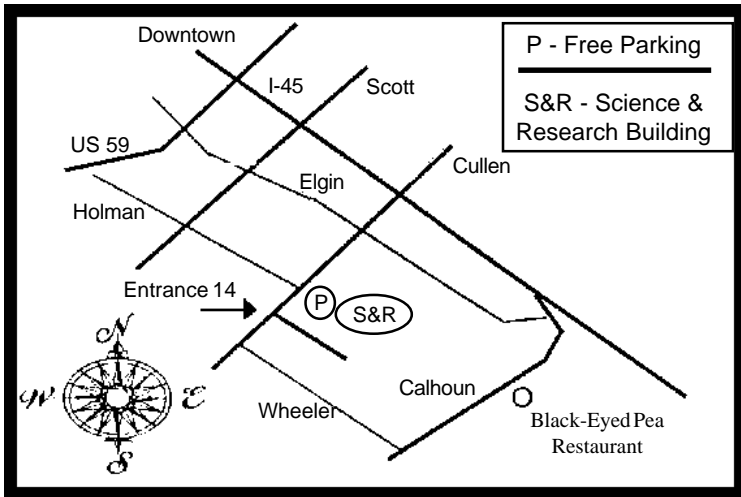
**SPECIAL**

Hooded Sweatshirts	\$3.00 off
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If you don't have your 2003 Observer's Handbook yet, get your copy at the January 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. *GuideStar*s 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*s 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

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## **Houston Astronomical Society**

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