



December, 1999

At the December 3 meeting...

Kandy Jarvis

***... of the Lunar and Planetary Institute
on
Hyperion... a moon of Saturn***

Houston Astronomical Society

GuideStar

Starline - 281-568-9340

Houston Astronomical Society presents *Starline* -- a recorded message of Society events and astronomical happenings. This service is updated regularly, so call often to keep up-to-date on Society functions, new comets and more.

H.A.S. Web Page: <http://spacsun.rice.edu/~has>

Schedule Changes & Up-To-Date Information

See the GuideStar's Monthly Calendar of Events to confirm dates and times of all events for the month, and call Starline for any last minute changes.

Observatory Site Telephone: 409-732-8967

★★★★★ **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 and past president** ★★★★★★★★★★

President: Don Pearce H: 713-432-0734	Treasurer: Bill Flanagan H: (713) 699-8819
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Jay Levy 281-992-2708	Liaison responsibility
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Bill Pellerin 713-880-8061	Education, Telescope
Barbara Wilson 281-933-1289	Audit, Publicity (shared)
Mike Dye 281-498-1703	Novice, Publicity (shared)
	Observatory Director

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Audit Orv Wiens 281-391-2995	Program Scott Mitchell 713-461-3020
Education Bill Leach 713-863-8459	Publicity Michael Cubstead 713-307-0270
Field Tr./Obsg. Kenneth Drake 281-367-1592	Telescope Clayton Jeter 281-383-1337
Novice Sancho/Spore 281-379-4726	Welcoming Marg Nunez 713-529-2549
Observatory Michael Dye 281-498-1703	

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Librarian Peggy Gilchrist 281-558-1190	Rice U. Coord. Matt Delevoryas 713-795-0808
Logo Mds Sales Judy Dye 281-498-1703	Schedule Obs'v't'y Steve Goldberg 713-721-5077
Long Range Plan Don Pearce 713-432-0734	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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Call the Starline, 281-568-9340 for updates and changes

Welcome to New Members!

The H.A.S. welcomes the following new members during October:

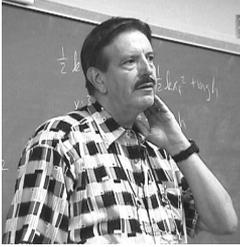
Joe Dellinger, Janet Esparza, Stephen Goodson, David McCaleb, Judy McEnany, Michael McEnany, Cody Peeples, Stephen Penrod, Andrew Sanchez, Christopher Winfield, James Wooten

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	Kenneth Drake	281-367-1592
Lunar & Planetary	John Blubaugh	713-921-4275
Occultations & Grazes ...	Wayne Hutchison	713-827-0828
Advanced	Bill Leach	713-863-8459

The President's Message



There are some interesting astronomical events that will have occurred by the time you read this. There is a rare solar transit of Mercury on November 15th, and on the night of the 17-18th is the predicted peak of the potential Leonid meteor "storm". Many of us are headed to the dark skies of West Texas for this.

In December there are some close conjunctions of Jupiter's satellites; which reminds me that I should encourage everyone to purchase the 2000 Observer's Handbook, for it contains the times of all the Jupiter satellite events, i.e., eclipses, transits, occultations and shadow transits (but not satellite conjunctions). This is a fun activity for novice or any other observers because you can observe these events from your backyard even in the heart of Houston. Also, the Geminid meteor shower peaks on the morning of the 14th. As always, one should seek dark skies to observe meteors.

The November new Moon period (Nov. 7th) offered to me an outside chance to better my own record for observing opposing crescents. New Moon occurred on the night of the 7th at 9:53pm (CST). This meant that there would be an approximate 15.5 hour old morning crescent, and approximately a 19.7 hour new evening crescent, and with a little luck I could better my 35 hour and 14 minute record.

However, unlike in January, 1998, the Moon was closer to apogee rather than perigee, and there was asymmetry in regard to the moment of new Moon in our time zone, both of which worked against setting a new record. As it turned out, on the morning of the 7th, along with Art Ciampi, I set up my 10 x 70 binoculars at the end of the playing field at the rear of Bellaire High School (the same site as in 1998), only this time we were able to enter inside the fence, avoiding both the problems at the height of the fence and

Continued on page 7...

Houston Astronomical Society

***Meeting Notice
For Friday, December 3, 1999***

Kandy Jarvis

of the Lunar and Planetary Institute will talk about Hyperion, a moon of Saturn.

Thanks to Chris Mendell for arranging for this speaker!

Schedule of meeting activities:

Novice meeting: 7:00 p.m.

Jose Sancho and Susan Spore began a new year of novice programs in January. This year the Novice committee will work with you to complete the Messier list. Please bring your Messier (and any other) observation records with you to the June meeting.

Site orientation meeting: 7:00 p.m.

General meeting: 8:00 p.m.

See the inside back cover for more information.

December Calendar:



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

December

3		HAS Club Meeting
	7:00 p.m.	Novice Presentation - U of H
	8:00 p.m.	General Membership Meeting U of H
4		Prime Night-Columbus
7	4:32 p.m.	New Moon
11		Members Observatory Night-Columbus
14	5:00 a.m.	Geminid meteor shower peaks
	7:30 p.m.	Advanced SIG Mtg. Rice Univ., contact Bill Leach, 713-863-8459
15	6:50 p.m.	First Quarter Moon
22	1:45 a.m.	Winter Solstice. Sun farthest south of celestial equator. Winter begins.
	11:32 a.m.	Full Moon
29	8:05 a.m.	Moon at Last Quarter
31	11:59:59	Arguably the last second of the 20th century... and of the Second Millennium. Since there was no year zero, the 21st century and the start of the Third Millennium don't actually begin until another one year (and one second) have elapsed. However, using this method would also mean that a new decade would not start until its first year (instead of its "zeroeth" year as is the current custom). For example, if you think the 21st century should begin on January 1, 2001, (which is technically the case), to be consistent, you must also believe that the 1990s, for instance, didn't start until January 1, 1991. Regardless, have a very happy new year!

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

Presidents message... from page 4

the metal disrupting the compass. Unfortunately, thick haze and low wispy clouds near the horizon prevented a successful observation.

On the evening of the 8th, even through the opposing crescent record was to remain intact, I set up for the evening crescent at Braes Bayou, this time being accompanied by Bill Hand. While the sky was entirely cloud free, thick haze, as evidenced by the blood red color at the setting Sun, would make any successful observation difficult, particularly if too much time elapsed after the Sun set. After setting up the binoculars on a tripod and checking the compass readings, what I had feared appeared to be unfolding. The Moon's altitude at sunset was only $7^{\circ} 51'$. The thick haze extended to almost 4° above the horizon. As the seconds and minutes ticked off and no moon appeared, I began to suspect that this would be a non-event. Then, suddenly (as always) the needle-thin illuminated arc appeared (only 70% of it being visible) The orientation of the horns was about 4-6 o'clock. The time was 5:46 p.m. (CST) and the Moon's altitude was about 5° above the horizon. Of all of my successful observations, I rated this the top 2 or 3 in terms of difficulty. Nevertheless, nothing else can match the exquisite, illusive beauty of such a sight. By 5:53 p.m. the Moon disappeared completely.

This is the last of my regular monthly articles to appear in *GuideStar*, although I will surely contribute some of my thoughts during the year 2000. Here is wishing all of you a Merry Christmas and, depending on your opinion as to when the next millennium starts, Happy New Year/Century/Millennium.

Clear skies and le croissant lunaire

Don Pearce



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Comet C/1999 H1 Lee

By Matt Delevoryas

Following is an ephemeris for Comet C/1999 H1 Lee, slightly overlapping where the ephemeris in the last *GuideStar* left off, brought to you by the folks at Starline, with information provided by the IAU Circulars Committee. During the ephemeris, it leaves Pegasus for Aquarius on the 9th, faint high in the south-southwest evening sky moving to the southwest evening sky as it fades from view. The elements are from MPC 36212, and the magnitude follows IAUC 7278. For elements, contact the Committee. For additional ephemerides, please contact Kenneth Drake, the Chairman of the HAS Comet SIG. The columns C-E and C-S give the comet-Earth and comet-Sun distances in a.u., and each line is for 0^h UTC.

Date mmm dd	Julian Date	J2000.0				B1950.0				Mag	C-E	C-S
		RA h m	Dec deg mi	RA h m	Dec deg mi							
Nov 28	2451510.5	22 24.3	+04 46	22 21.8	+04 31	12.1	2.17	2.45				
Dec 3	2451515.5	22 25.2	+03 41	22 22.7	+03 26	12.3	2.33	2.51				
Dec 8	2451520.5	22 26.7	+02 48	22 24.1	+02 33	12.6	2.49	2.58				
Dec 13	2451525.5	22 28.5	+02 05	22 25.9	+01 50	12.8	2.64	2.64				
Dec 18	2451530.5	22 30.6	+01 30	22 28.1	+01 15	13.1	2.80	2.71				
Dec 23	2451535.5	22 33.1	+01 02	22 30.5	+00 47	13.3	2.95	2.77				
Dec 28	2451540.5	22 35.7	+00 40	22 33.2	+00 25	13.5	3.10	2.83				
Jan 2	2451545.5	22 38.5	+00 24	22 36.0	+00 08	13.7	3.25	2.90				

Comet 1999 S3 LINEAR

By Matt Delevoryas

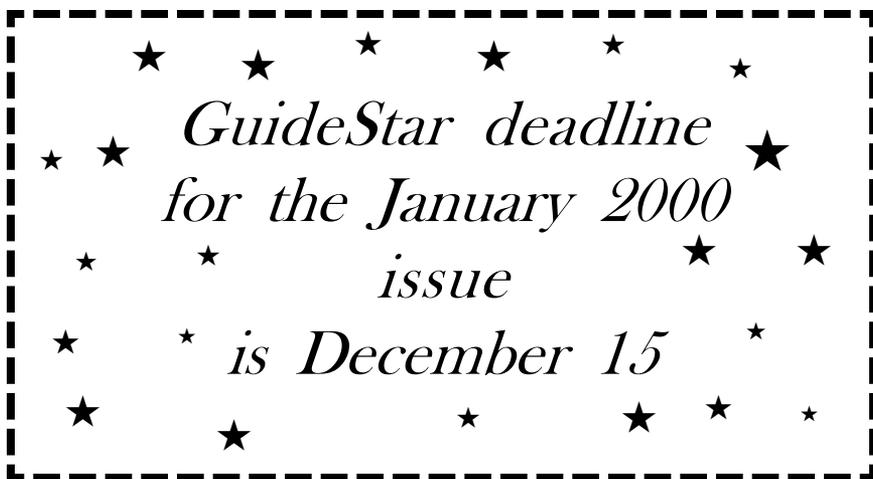
Following is an ephemeris for Comet 1999 S3 LINEAR, brought to you by the folks at Starline, with information provided by the IAU Circulars Committee. Be very suspicious of the faint magnitudes listed here. Since its discovery and original magnitude predictions, these predictions here were revised to be brighter, but in early November, the comet was being seen one additional magnitude, or more, brighter still. During the ephemeris, it is in Cygnus, in the northwest evening sky. The elements are from MPC 36212, and the magnitude follows IAU Circular 7285. For elements, contact the Committee. For additional ephemerides, please

Continued...

Comet 1999 S3 LINEAR... from previous page

contact Kenneth Drake, the Chairman of the HAS Comet SIG. The columns C-E and C-S give the comet-Earth and comet-Sun distances in a.u., and each line is for 0^h UTC.

Date mmm dd	Julian Date	J2000.0				B1950.0				Mag	C-E	C-S
		RA h m	Dec deg mi	RA h m	Dec deg mi							
Nov 24	2451506.5	20 39.1	+54 16	20 37.7	+54 05	12.7	1.53	1.90				
Nov 26	2451508.5	20 36.5	+54 00	20 35.1	+53 49	12.8	1.55	1.91				
Nov 28	2451510.5	20 34.3	+53 45	20 32.9	+53 35	12.8	1.58	1.91				
Nov 30	2451512.5	20 32.3	+53 32	20 30.9	+53 22	12.8	1.60	1.91				
Dec 2	2451514.5	20 30.6	+53 21	20 29.3	+53 11	12.9	1.62	1.91				
Dec 4	2451516.5	20 29.2	+53 11	20 27.8	+53 01	12.9	1.64	1.92				
Dec 6	2451518.5	20 28.0	+53 02	20 26.7	+52 52	12.9	1.66	1.92				
Dec 8	2451520.5	20 27.1	+52 56	20 25.7	+52 46	13.0	1.69	1.93				
Dec 10	2451522.5	20 26.3	+52 50	20 24.9	+52 41	13.0	1.71	1.93				
Dec 12	2451524.5	20 25.8	+52 47	20 24.4	+52 37	13.1	1.73	1.93				
Dec 14	2451526.5	20 25.4	+52 45	20 24.0	+52 35	13.1	1.75	1.94				
Dec 16	2451528.5	20 25.1	+52 44	20 23.7	+52 35	13.1	1.77	1.94				
Dec 18	2451530.5	20 25.0	+52 46	20 23.6	+52 36	13.2	1.79	1.95				
Dec 20	2451532.5	20 25.1	+52 48	20 23.7	+52 39	13.2	1.81	1.96				
Dec 22	2451534.5	20 25.2	+52 53	20 23.8	+52 43	13.2	1.83	1.96				
Dec 24	2451536.5	20 25.5	+52 59	20 24.1	+52 49	13.3	1.85	1.97				
Dec 26	2451538.5	20 25.9	+53 06	20 24.5	+52 56	13.3	1.86	1.97				
Dec 28	2451540.5	20 26.4	+53 15	20 25.0	+53 05	13.3	1.88	1.98				
Dec 30	2451542.5	20 27.0	+53 25	20 25.6	+53 16	13.4	1.90	1.99				
Jan 1	2451544.5	20 27.7	+53 37	20 26.3	+53 27	13.4	1.92	2.00				
Jan 3	2451546.5	20 28.4	+53 51	20 27.1	+53 41	13.4	1.93	2.00				
Jan 5	2451548.5	20 29.3	+54 06	20 27.9	+53 56	13.5	1.95	2.01				



Observatory Corner



By Michael B. Dye Observatory Chairman



Every year for the last seven to ten years I generate a list of Prime Nights and Member Observatory Nights (previously called be “Open House”). This year I have again collaborated with Matt Delevoryas to come up with this list. The first thing to address is the annual list of good viewing nights (weather excepted) at the Observatory Site. The second item to address is the Members Observatory Night. Each month the Observatory Committee supplies three volunteers who are Observatory

Key holders who operate the Observatory telescopes for the HAS membership. This is the night that society members can observe through the Observatory telescopes without going through Observatory Training. Also included in this list are the New and Full Moon dates. I hope this list helps members select dates to go and use the Observatory Site.

Month	Prime Night	Members Obs Nt	New Moon	Full Moon
January	1	29	6	20
February	5	26	5	10
March	4	25	5	19
April	1	29	4	18
May	27	20	3	18
June	3	24	2	16
July	29	1	1	16
August	26	19	30	13
September	30	23	27	13
October	28	21	27	11
November	25	18	25	11
December	23	16	25	9

Some members may have noticed that the telephone we had at the Observatory Site is no longer attached to the East Observatory wall. It seems that Ma Bell has reclaimed it because as a result of deregulation the phones have to make some sort of profit. The phone at the site was taking in an average of \$0.05 a day. To break even, the phone needs to take in about

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Observatory Corner... from previous page

\$1.00 a day. We are currently looking into getting another Pay Phone for the site for which we will pay a line charge. This will result in a Observatory Site Budget increase of about \$600.00 a year, resulting in an annual budget of about \$5,600.00. Any suggestions will be listened to. See contact information below.

Last night (November 17) Judy and I went out to the Observatory Site to watch the Leonids meteor shower. The Observatory Site was attended by about 20 to 30 members including a few first timers. The sky was almost crisp and was fairly deep, after the moon went down sometime between midnight and 1:30 am. The group I was in consisted of Bob Rogers, Sandra Brown, Marge Nunez, Judy Dye and myself. We were sitting (laying) in folding lounge chairs on one of the old 8 X 8 foot pads in the old original circle of pads facing East. We (Bob, Sandra, Marge, Judy and I) watched from about 1:00 am until about 4:25 am on Thursday morning. At that point Judy and I left. It was agreed that the peak of the shower occurred about 3:57 am when three meteors entered the atmosphere within one or two seconds. That turned out to be the largest number of meteors seen that night. I heard that the Arabian Desert got the good shower. Something on the order of 1700 per hour. Well, we had fun visiting with the people who were at the Observatory Site.

If you have a Randalls card, and have not done so, please have it coded for the Houston Astronomical Society as your favorite Charity. Our number is #6618. The Society gets 1 percent of the gross sales that members spend at Randalls. Randalls totals up the amount spent each quarter and will send us a check if the amount goes over \$2,500.00, otherwise the total roles over to the next quarter or zeros out at the end of the calendar year. 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 what to do.

For the last few months, I have been inserting a paragraph requesting membership feed back concerning installing computers in the Observatory. I have actually got a response. This gives me hope that members are

Continued...

Observatory Corner... from previous page

actuating reading my articles. If you have any ideas about the Observatory Site, including providing some sort of computers for controlling the Observatory Telescopes and maybe for CCD processing. Please contact me at mbdye@aol.com or 281-498-1703.

This is the spot where I plug the HAS Logo Sales. I actually have a very selfish reason for doing this, as all of this stuff (merchandise) is stored in various places around my house. Please buy HAS Logo merchandise and help me get some my house back. Because of a University of Houston scheduling problem, our meeting room has been used for a Chemistry class up until 8:30 PM. I hope measures are being taken to correct this problem. But because of this problem, for the last two months, we have not been able to set up the Logo Sales table and our sales have fallen off as a result. Anyway we still have very nice HAS Logo thermal mugs, T-shirts and other nifty stuff (including some very nice pictures). All at very reasonable prices. We are again running a special on the Thermal Mugs this month, \$5.00 each or two for \$10.00 (same as last month). I have three cases of these in my daughter's old bedroom. She is due back from the Army in June of 2000. My goal is to get my Den back by January 2000, (for Girl Scout Cookies) and my daughter's bedroom back by June 2000. The problem is that I cannot just move stuff from one room to another in order to gain space. We have run out of room to move to. Please buy some Logo Merchandise. Come and see Judy at the Logo Table at the next General Meeting and buy lots of good stuff.

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

Remember we use these forms as attendance records.

Other Meetings...

Brazosport Astronomy Society meets at 7:00 p.m. on the 2nd Thursday of each month in the Planetarium of the fine Arts Center at Brazosport College. Call Steve Lamb for program details (409) 297-3984

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://rampages.onramp.net/~binder/>

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 (formerly Northside Astronomical Society) 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.

HAS Web Page

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

The address is: <http://spacsun.rice.edu/~has>

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

Observatory Duty Roster

by Michael B. Dye, Observatory Chairman

This is the duty list for December of 1999, January and February 2000. 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.

December Supervisor Kirk Kendrick 281-391-3834
Larry Mitchell Members Observatory Night 12-11-99
John Mitscherling Site
Jeff Moore Site
Debbie Moran Site
Ben Negy Jr. Members Observatory Night 12-11-99
Johnny Norris Members Observatory Night 12-11-99
Margaret Nunez Site
Ralph Overturf, Jr. Site

January Supervisor TBA TBA
Don C. Pearce Site
Michael D. Peters Site
Sim Picheloup Members Observatory Night 01-01-00
Leonard W. Raif Site
Glenn L. Ray Members Observatory Night 01-01-00
Mike Reynolds Site
Henry Schneider Site
Carl Sexton Members Observatory Night 01-01-00

February Supervisor TBA TBA
Steve Simpson Site
Larry C. Wadle Site
Mark R. Watson Site
Barbara Wilson Members Observatory Night 02-05-00
Buster Wilson Members Observatory Night 02-05-00
Warren Wundt Members Observatory Night 02-05-00
W. Charles Barnes Site
Don Bates 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.

The Pieces of Comet 141P/ Machholz 2

By Matt Delevoryas

Following are ephemerides for the pieces of Comet 141P/Machholz 2, brought to you by the folks at Starline, with information provided by the IAU Circulars Committee. In 1994, periodic comet 141P/Machholz 2 was found to consist of several different fragments (see the article “The Pieces of Comet P/Machholz 2 (1994o)” in your November 1994 *GuideStar* — you do have it handy, don’t you?). During the ephemerides, the comet is in Aquila, moving into Capricornus the night of the 4th, Aquarius the morning of the 12th, Capricornus the morning of the 21st, then Aquarius again on the night of the 25th, always a low but slowly climbing reasonably bright (7 to 8) object in the southwest evening sky. The elements are from MPC 35815 and 36213 respectively, and the magnitude follows MPC 35815 and IAU Circular 7299 respectively. The A component was seen in October and November several magnitudes fainter than the predictions. The D component magnitude predictions are quite uncertain, and most observations have been a magnitude and a half fainter. Call Starline for latest information on their magnitudes. For elements, contact the Committee. For additional ephemerides, please contact Kenneth Drake, the Chairman of the HAS Comet SIG. The columns C-E and C-S give the comet-Earth and comet-Sun distances in a.u., and each line is for 0^h UTC.

Component A

J2000.0		B1950.0									
Date	Julian	RA	Dec	RA	Dec						
mm dd	Date	h m	deg mi	h m	deg mi	Mag	C-E	C-S			
Oct 23	2451474.5	22 50.8	+24 24	22 48.4	+24 08	10.2	1.12	1.96			
Oct 25	2451476.5	22 46.3	+22 24	22 43.8	+22 08	10.3	1.17	1.99			
Oct 27	<u>2451478.5</u>	<u>22 42.4</u>	<u>+20 34</u>	<u>22 40.0</u>	<u>+20 18</u>	<u>10.5</u>	<u>1.22</u>	<u>2.02</u>			
Oct 29	2451480.5	22 39.0	+18 51	22 36.6	+18 36	10.6	1.27	2.05			
Oct 31	2451482.5	22 36.2	+17 17	<u>22 33.7</u>	+17 02	10.8	1.33	2.07			
Nov 2	2451484.5	22 33.7	+15 51	22 31.3	+15 35	10.9	1.38	2.10			
Nov 4	2451486.5	22 31.6	+14 31	22 29.2	+14 15	11.1	1.44	2.13			
Nov 6	<u>2451488.5</u>	<u>22 29.9</u>	<u>+13 17</u>	<u>22 27.4</u>	<u>+13 02</u>	<u>11.2</u>	<u>1.49</u>	<u>2.16</u>			
Nov 8	2451490.5	22 28.4	+12 10	22 25.9	+11 54	11.3	1.55	2.18			
Nov 10	2451492.5	22 27.2	+11 07	<u>22 24.7</u>	+10 52	11.5	1.61	2.21			

Continued...

Machholz2.... from previous page

Nov 12	2451494.5	22 26.2	+10 10	22 23.7	+09 55	11.6	1.67	2.24
Nov 14	2451496.5	22 25.4	+09 17	22 22.9	+09 02	11.7	1.73	2.26
<u>Nov 16</u>	<u>2451498.5</u>	<u>22 24.8</u>	<u>+08 28</u>	<u>22 22.3</u>	<u>+08 13</u>	<u>11.9</u>	<u>1.79</u>	<u>2.29</u>
Nov 18	2451500.5	22 24.4	+07 44	22 21.9	+07 28	12.0	1.86	2.32
Nov 20	2451502.5	22 24.1	+07 02	22 21.6	+06 47	12.1	1.92	2.34
Nov 22	2451504.5	22 24.0	+06 24	22 21.5	+06 09	12.2	1.98	2.37
Nov 24	2451506.5	22 24.0	+05 49	22 21.5	+05 34	12.3	2.04	2.40
<u>Nov 26</u>	<u>2451508.5</u>	<u>22 24.1</u>	<u>+05 16</u>	<u>22 21.6</u>	<u>+05 01</u>	<u>12.5</u>	<u>2.11</u>	<u>2.42</u>
Nov 28	2451510.5	22 24.3	+04 46	22 21.8	+04 31	12.6	2.17	2.45
Nov 30	2451512.5	22 24.6	+04 19	22 22.1	+04 04	12.7	2.23	2.48
Dec 2	2451514.5	22 25.0	+03 53	22 22.5	+03 38	12.8	2.30	2.50
Dec 4	2451516.5	22 25.5	+03 30	22 22.9	+03 14	12.9	2.36	2.53
Nov 24	2451506.5	19 24.3	-11 31	19 21.6	-11 37	8.6	0.85	0.79
<u>Nov 26</u>	<u>2451508.5</u>	<u>19 31.6</u>	<u>-11 29</u>	<u>19 28.8</u>	<u>-11 36</u>	<u>8.4</u>	<u>0.82</u>	<u>0.78</u>
Nov 28	2451510.5	19 39.0	-11 27	19 36.2	-11 34	8.2	0.80	0.77
Nov 30	2451512.5	19 46.6	-11 26	19 43.8	-11 33	8.0	0.77	0.77
Dec 2	2451514.5	19 54.4	-11 25	19 51.7	-11 33	7.8	0.74	0.76
Dec 4	2451516.5	20 02.5	-11 25	19 59.8	-11 34	7.6	0.72	0.75
<u>Dec 6</u>	<u>2451518.5</u>	<u>20 10.9</u>	<u>-11 27</u>	<u>20 08.1</u>	<u>-11 36</u>	<u>7.5</u>	<u>0.69</u>	<u>0.75</u>
Dec 8	2451520.5	20 19.5	-11 29	20 16.7	-11 38	7.4	0.66	0.75
Dec 10	2451522.5	20 28.4	-11 33	20 25.7	-11 43	7.3	0.64	0.75
Dec 12	2451524.5	20 37.7	-11 38	20 35.0	-11 48	7.2	0.61	0.75
Dec 14	2451526.5	20 47.4	-11 45	20 44.7	-11 56	7.1	0.59	0.75
<u>Dec 16</u>	<u>2451528.5</u>	<u>20 57.6</u>	<u>-11 53</u>	<u>20 54.8</u>	<u>-12 05</u>	<u>7.1</u>	<u>0.56</u>	<u>0.76</u>
Dec 18	2451530.5	21 08.2	-12 04	21 05.5	-12 16	7.1	0.53	0.76
Dec 20	2451532.5	21 19.5	-12 16	21 16.8	-12 29	7.2	0.51	0.77
Dec 22	2451534.5	21 31.4	-12 30	21 28.7	-12 43	7.2	0.49	0.78
Dec 24	2451536.5	21 44.1	-12 46	21 41.4	-13 00	7.3	0.46	0.79
<u>Dec 26</u>	<u>2451538.5</u>	<u>21 57.7</u>	<u>-13 03</u>	<u>21 55.0</u>	<u>-13 17</u>	<u>7.3</u>	<u>0.44</u>	<u>0.80</u>
Dec 28	2451540.5	22 12.2	-13 21	22 09.5	-13 36	7.4	0.42	0.81
Dec 30	2451542.5	22 27.8	-13 40	22 25.1	-13 56	7.6	0.40	0.83
Jan 1	2451544.5	22 44.5	-13 59	22 41.9	-14 14	7.7	0.38	0.84
Jan 3	2451546.5	23 02.5	-14 16	22 59.9	-14 32	7.8	0.37	0.86

Component D

00.0	B1950.0									
Date	Julian	RA	Dec	RA	Dec	Mag	C-E	C-S		
mmm dd	Date	h m	deg mi	h m	deg mi					
Nov 24	2451506.5	19 24.1	-11 34	19 21.3	-11 40	9.2	0.86	0.80		
<u>Nov 26</u>	<u>2451508.5</u>	<u>19 31.3</u>	<u>-11 31</u>	<u>19 28.5</u>	<u>-11 38</u>	<u>9.0</u>	<u>0.84</u>	<u>0.79</u>		
Nov 28	2451510.5	19 38.7	-11 29	19 36.0	-11 36	8.8	0.81	0.78		
Nov 30	2451512.5	19 46.4	-11 27	19 43.6	-11 34	8.5	0.79	0.77		
Dec 2	2451514.5	19 54.2	-11 25	19 51.5	-11 33	8.4	0.76	0.76		
Dec 4	2451516.5	20 02.3	-11 24	19 59.6	-11 32	8.2	0.74	0.76		
<u>Dec 6</u>	<u>2451518.5</u>	<u>20 10.7</u>	<u>-11 24</u>	<u>20 07.9</u>	<u>-11 33</u>	<u>8.0</u>	<u>0.71</u>	<u>0.75</u>		

Continued...

Machholz2.... from previous page

Dec 8	2451520.5	20	19.3	-11	25	20	16.5	-11	34	7.9	0.68	0.75
Dec 10	2451522.5	20	28.2	-11	27	20	25.5	-11	37	7.8	0.66	0.75
Dec 12	2451524.5	20	37.5	-11	30	20	34.7	-11	41	7.7	0.63	0.75
Dec 14	2451526.5	20	47.1	-11	35	20	44.4	-11	46	7.7	0.60	0.75
Dec 16	2451528.5	20	57.2	-11	42	20	54.5	-11	53	7.7	0.58	0.76
Dec 18	2451530.5	21	07.8	-11	50	21	05.1	-12	02	7.7	0.55	0.76
Dec 20	2451532.5	21	18.9	-12	00	21	16.2	-12	12	7.7	0.53	0.77
Dec 22	2451534.5	21	30.7	-12	11	21	28.0	-12	24	7.7	0.50	0.78
Dec 24	2451536.5	21	43.2	-12	24	21	40.5	-12	38	7.8	0.48	0.79
Dec 26	2451538.5	21	56.5	-12	38	21	53.8	-12	52	7.9	0.46	0.80
Dec 28	2451540.5	22	10.7	-12	53	22	08.0	-13	08	8.0	0.44	0.81
Dec 30	2451542.5	22	25.9	-13	08	22	23.2	-13	24	8.1	0.42	0.82
Jan 1	2451544.5	22	42.1	-13	24	22	39.5	-13	39	8.2	0.40	0.84
Jan 3	2451546.5	22	59.5	-13	38	22	56.9	-13	54	8.3	0.38	0.85

Observations

by Bill Pellerin, GuideStar Editor

It's been a bad month for the trees, plants, and the yard, but a good one for those of us who appreciate clear skies. I finally finished my double star (Astronomical League) list. Epsilon Cma had been avoiding detection as a double with my 2.7" refractor, but my 8" SCT was able to split it in times of good seeing. This is a fun program that can be completed easily with small instruments. The vast majority of my ds observations were made with my small refractor; only a few of them required a larger instrument.

The Astronomical League has several observing programs available for you to try, and all of these are a lot of fun. You can get a certificate for completing the Messier list, sunspot observing, meteor observing, various binocular lists, double star observing, Arp (peculiar) galaxy observing, lunar observing, the Universe Sampler (developed by H.A.S. member Amelia Goldberg) and the Herschel list programs.

Astronomy Magazine, the December 1999 issue, page 73 describes some beautiful double stars in Cassiopeia. I was able to observe these easily, and they are outstanding examples of some of the nicer doubles waiting for you to see.

Continued on page 26...

B&Ps from the IAUCs

by Matt Delevoryas



IAU Circular 7307 reports what seems to be the first confirmation by an independent means of a suspected extrasolar planet. The sunlike star HD 209458 has been suspected to have a planet with a mass at least two-thirds that of Jupiter, orbiting every 3.523 days. This belief was based on variations in the redshift of the star. However, the three astronomers of the San Francisco State University Planet Search Program, who found this at Lick or Keck (details not given) on November 5th, as usual, made the assumption that not only was there such a planet, but that it there was a chance that we might be close to its orbital plane, allowing us to see it transit the star. A fourth colleague, using the Fairborn Observatory, on November 8.20, approximately when predicted, detected a drop in brightness of 0.017 magnitudes.

The well-known variable star R Coronae Borealis has been faint since August. IAU Circular 7236 reported that it began fading at the beginning of August, apparently July 31st or September 1st. However, the Circulars have had no reports since, so the rest of the story had to come from other sources. R CrB a week into September it had bottomed around September 30th, at magnitude 13 1/2, varied a little over the next few days, then brightened to a little fainter than 10 1/2 for a week surrounding October 1st, only to fade again to 13 1/2 around the 27th. Between November 1st and 15th, it brightened to 10, possibly to return to normal, but possibly to fade yet again. Listen to Starline for latest magnitude reports. Charts with comparison stars can be found in print, on the top of p. 161 of the Peterson's *Field Guide to the Stars and Planets*, second edition, and pages 89 and 90 used together of David Levy's *Observing Variable Stars*, and on the Web at http://charts.aavso.org/charts/CRB/R_CRB/, or contact this author.

And now, something from the "I told you so" department. Back in 1995, when Hale and Bopp discovered comet C/1995 O1, Brian Marsden at the Central Bureau of Astronomical Telegrams published an ephemeris for the comet. That's routine. The ephemeris included magnitude predictions. That's also routine. However, the particular coefficients he picked for the

Continued...

Peterson Field Guides ***Stars and Planets -- 4th Edition***

by Jay Pasachoff

Reviewed by Bill Pellerin - GuideStar editor

The Peterson Field Guide to the Stars and Planets has always been one of my favorites. Stuffed into the 578 pages of this (the newest) edition is enough information to support your observing habit for a long time. The all-sky maps have been redone (for the better) in this edition as have the atlas sky maps. The atlas sky maps are more readable in this version; previous versions had white stars on black backgrounds. This edition has color stars on a white background with a key to the map at the bottom of each map page. I'd prefer that they make the map area larger and place the key at the beginning of the map section.

There is information on double and variable stars, meteors, planet positions, bright star rise and set times.... and lots more. New to this edition are ecliptic map strips showing the positions of Mars, Jupiter, and Saturn against the background stars from 2000 to 2010.

The Messier list and the Caldwell list are also included, as are bright star lists, double star lists, and variable star lists.

The list price of the book is \$19, and a bargain considering the density of information. This is the book I'd want to have if I could only have one. Highly recommended!

B&Ps from the IAUCs... from previous page

magnitude formula were not universally accepted. However, for over four years the CBAT has stuck with exactly that formula. Well, when the comet was brightest, in March 1997, it was still following the formula (-1.8) within reasonable tolerances. Now, IAU Circular 7279 has published observed magnitudes through early October, and the formula is still right on the money. For those interested, as December begins the comet is still within reach for dedicated amateur comet observers — but you'll have to fly south to see it in Volans, where it will stay until too faint to see.

The Truth About Martians

By Robert Marcom,

“Do you believe in aliens?” The question was asked by a twelve year-old Boy Scout during an Astronomy Merit Badge class, which I conduct.

“Sure. The Russian Mir space station has had several on-board.” It’s my stock answer.

“I mean aliens from other planets,” he persists.

“I try not to believe anything, about things of which I know nothing at all. I can keep an open mind that way.”

This is not exactly true. Anyone who knows me, knows I “believe” in Martians. I’ve suspected that ever since our first successful series of Mars landers, the Martians have been shooting down the craft we send their way. It would explain the recent disappearance of a Mars lander, and the crash of latest attempt at analyzing the surface features of that planet, ‘94 not withstanding.

We now know more about Mars than we knew about the Moon at the time of our first landing. We knew so little about the Sea of Tranquility that, if not for some very skillful piloting, our first Moon lander might be cold, twisted wreckage on the boulder-strewn plain chosen as its landing sight.

Some scientists once predicted that the Eagle Lunar Lander would sink out of sight in great depths of dust. They may have been the same ones who thought the first atomic explosion would set our atmosphere on fire.

I fear they are the same ones who talk our elected representatives out of reasonable amounts of funding for the space program; or for the search against large Earth killer comets and meteors; or for the Search for Extra Terrestrial Intelligence. These scientists are under the influence of Martians, no doubt.

You see, Martians know that there is still quite a bit for us to get out of space exploration. Many politicians seem convinced that now that we have

Continued...

The Truth About Martians... from previous page

Teflon(TM) and food in plastic squeeze bags, and little stereos that fit inside an ear, we have plumbed the depths of all that space exploration has to offer.

Some of these politicians may be related to the head of the U. S. Patent Office in the late nineteenth century. He proposed shutting the office down, because (he thought) every worthwhile invention had been invented.

During the return voyage of our first Lunar landing, one of the morning news shows interviewed a ninety year old man. He must have been born in the 1870's.

"Did you think you would live to see men walk on the Moon?" they asked with bated breath.

"You think they really went to the Moon?" He looked at the interviewer out of the corner of his eye, an amused expression played around his eyes. "Ain't nobody been to the Moon. It's just TV," he concluded.

This man had a failure of imagination. Our elected officials seem to be experiencing that same failure. Martians, on the other hand, don't have to imagine. They know. If the human race does not get off this planet, it will not survive.

The simple fact is, some day a planet-killer projectile will strike Earth. It will probably come from the Oort Cloud, a collection of space debris, large and small, that is captured by the Sun's gravity out at the edge of our Solar System.

While we can develop protection against comets and meteors up to a certain size, there is no limit to the size of space junk which can come hurling at us. We don't even have to imagine it. We can simply dig out the photos of the fragments of Shoemaker-Levy 9. Remember that one? It left a scar on Jupiter the diameter of the Earth.

2000 Columbus Sunrise/set, Twilight, and Moonrise/set

by Matt Delevoryas

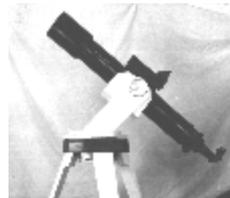
There are now available two tables, one giving the 2000 sunrise, sunset, and twilight, and one giving the 2000 moonrise and moonset times, calculated for the Society's Columbus observatory site. Traditionally these have been made available on opposite faces of paper copies distributed at Society meetings late in the year. This is being done as usual, but the tables are also temporarily available in electronic form.

The sun table gives phenomena for every other day of the year, and the moon table gives phenomena for every day of the year. Since Society members are most interested in information about when it is dark in Columbus on just Saturday nights/Sunday mornings, appropriate information was extracted from these tables. For a reasonable selection of upcoming and recent months, this is made available through the HAS Web site (<http://spacsun.rice.edu/~has>). However, the original complete tables are also available in several different electronic forms (sun: <http://users.aol.com/MDelevorya/c00sun.htm> and moon: <http://users.aol.com/MDelevorya/c00moon.htm>). However, these are only temporary. If you think it would be valuable to have any of those tables available permanently on the HAS Web site, please say so to Steve Goldberg, goldberg@sccsi.com (or to me, MDelevorya@aol.com).

Want Ads

HP LaserJet II printer. 300 dpi resolution. Works great. Recently purchased new fuser. \$200. Bill Pellerin, 713-880-8061 or BillP10566@aol.com

Telescope for sale: Celestron 4" APO/920 mm f.l. Included: prism star diagonal, Telrad finder, home made Alta-Azimuth mount, eyepiece. Call David Blomberg (at work -- leave message) 1-800-828-4250 (picture at right)



Possible Color Changes of the Dog Star

By Richard Nugent

RNugent@ghg.net

Sirius

RA: 6h 45m 8.9 sec

DEC: -16° 42' 58"

Distance = 2.64 pc (8.64 ly)

m = -1.44 (brightest visible star other than Sun)

Type = Blue/white star with white dwarf companion

Sirius, (the “Dog” star) is the brightest star in Canis Major (and the night sky). It appears to the eye and through the telescope as white, as one would expect from its spectral type A1. Yet some classical authors, like Seneca in the 1st century and Ptolemy in the 2nd century, allude to its deep red color. How could the author of the *Almagest* have committed such a gross blunder? Or did he?

The Dogon people in Mali have a tradition whereby Sirius and its dark companion have at times appear red. That this African tribe speak of a dense invisible companion is itself extraordinary, for we now know that Sirius is a binary star system containing a faint white dwarf with an orbital period of 50 years. The University of Sussex astronomer W.H. McCrea tries to explain the red appearance seen by the African tribe as a mirage, from the rising of Sirius in the east. Such a desert mirage could make the image appear as “double” while the air mass at the horizon would redden it.

R.H. vanGent has noted in a 1984 *Nature* article that the ancient Assyrian texts (≈1070BC) also mention Sirius as being red, but also state clearly that the observations were made as the star was rising and therefore close to the horizon, where color effects often occur.

The question of Sirius’s color in ancient times was again reopened in 1985 when a manuscript of Lombardic origin (8th century) was found which contains a lost manuscript of Gregory of Tours (about 538-593 AD). This new source also gives Sirius a red color. Serious astrophysical implications

Continued...

The Dog Star... from previous page

will arise if Sirius B could move from the red giant stage to the white dwarf stage in just a few hundred years.

In 1974, the Vienna astronomer K.D. Rakos did photoelectric photometry on the Sirius B, the white dwarf companion, and concluded that at 24,000° K, it must be the hottest known white dwarf. His claim was that the high temperature may suggest the recently acquired white dwarf-hood, with its red giant stage only 2,000 years behind it. Thus he argued that the reddish hue observed by the Egyptians, the Greeks and perhaps the African tribe Dogon, reflected the rapid evolution of the secondary.

This tempting notion has been decisively quashed by the University of Delaware astronomer Harry L. Shipman. He demonstrated that soft X-rays observed by the ANS satellite from the Sirius system originate in thermal emission from deep inside the atmosphere of the helium-deficient white dwarf companion. Shipman constructed detailed numerical models of Sirius B, using the equations governing stellar evolution. The best model gives a surface temperature of 33,500°K, higher than Rakos. He noted that there was no way any of the models could suggest that Sirius B was a red giant in Ptolemy's time. Shipman concluded that Sirius B has been a white dwarf for at least 30 million years. Mystery solved? FG Sagitta is a known white dwarf whose rapid color change from white to deep red in just 30 years (1955 - 1985) was presented as the unusual target for the JSCAS group in Ft. McKavitt, Texas last month. Is the mystery really solved?

Editor's note: Sirius (the dog star) is easily found east and south of Orion. Follow a line through the belt stars to the east and you can't miss it. When it's low in the horizon the atmospheric twinkle makes it look like a star of many colors -- quite nice to observe.

Observations... from page 18

Sky and Telescope magazine has been publishing an observing article by Sue French in recent issues. I've enjoyed doing the observations described in these articles. They're on a tear-out sheet, so you don't have to take the whole magazine with you to the observing site. If you want to do some casual observing and see some stuff you may not have seen before, try these out. They're good!

The Leonids. I went out to the country (11/17-18) to see the Leonids. I observed from midnight until 3:30 a.m. continuously. The shower (storm?) was a disappointment. Without doing a formal count, I'd guess that we were seeing Leonids at the rate of about 20 to 25 per hour. There were a few sporadics as well. I checked the internet and found out that there was a considerably heavier shower in Europe (as predicted), but that a meteor storm did not develop anywhere.

Get ready for the January 20th total Lunar eclipse. The circumstances of this eclipse will be excellent for viewing from Houston. A lunar eclipse is about as good from the city as it is from the country, so hope for clear skies and get ready. Most of us avoid the full moon for observing, but this is a time to do the opposite. The moon is exactly full at the midpoint of the eclipse, so, I suppose it's fair to say that the full moon in January will be pretty dim.

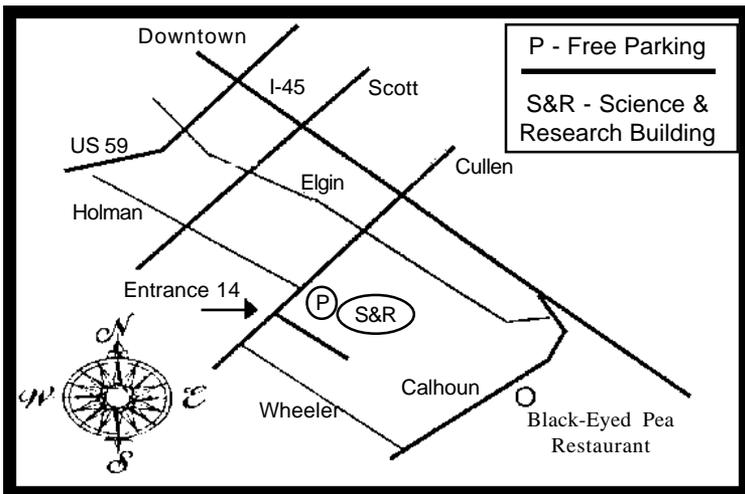
GuideStar. -- We have a large and interesting (I think) *GuideStar* for you this month. Richard Nugent tells us about some of the lore associated with Sirius, the Dog Star. New contributor Robert Marcom tells us the *Truth about Martians*, and frequent contributor Matt Delevorias has contributed several comet reports, information about sun and moon times at Columbus, and his B&Ps. Mike Dye, our observatory chairman, gives us the goings on at the observatory site in his *Observatory Corner* article. Thanks to all who contributed.

Don Pierce won't be continuing his President's message this year, so I'm going to pick up the slack with an editor's message (or something similar). I hope my contribution will be as valuable as Don's has been.

Good observing!!!!

..Bill

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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* 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 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 second Friday 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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