



March, 2000

At the March 4 meeting...

Scott Mitchell

***Archaeoastronomy
and the
Quest for the Lost Civilization***

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** ★★★★★★★★★★

President: Don Pearce H: 713-432-0734	Secretary: Bill Leach H: 713-863-8459
Vice Pres: Barbara Wilson H: 281-933-1289	Treasurer: Gene Horr H: 281-894-4566

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

Liaison responsibility

Bill Flanagan 713-699-8819	
Howard Leverenz 713-957-8667	
Jay Levy 281-992-2708	Field Trip and Observing, Program
Debbie Moran 713-666-9428	
Warren Wundt 713-697-2960	
Mike Dye 281-498-1703	Observatory Director

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

Audit Gary Hlivko 713-864-2541	Program Margaret Nunez 713-529-2549
Education Richard Nugent 713-910-5945	Publicity Mark Egan 281-265-1497
Field Tr./Obsg. Kenneth Drake 281-367-1592	Telescope Darin Palmer 713-223-3123
Novice John Garza, III 409-441-1476	Welcoming Bill Leach 713-863-8459
Observatory Michael Dye 281-498-1703	

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

Historian Leland Dolan 713-529-0403	Publ. Star Party Marg Nunez 713-529-2549
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'ty 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.
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★★★★★★★★★ **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 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.

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

Observations... of the editor

by Bill Pellerin, GuideStar Editor

As I write this I can observe a full (or very nearly full) moon rising over the pasture to the east. It's beautiful.... really. As it came up through the trees it was Halloween orange (like a Jack-o-Lantern) and it turned to the off-white color we're more familiar with as it grew higher in the sky. Above me, Orion's bright stars glow and not far away is Sirius, the Dog Star in Canis Major. Procyon, in Canis Minor glows nearby. Despite the full moon, I can almost swear that I can see M42 in Orion with my naked eye. It has cooled down a bit, too, and feels more like winter than it has in recent days.

It's been a long time since I've enjoyed a 'formal' observing session (with telescopes, charts, observing lists, record keeping, and so on). And, while I can't wait for the next good opportunity to get all the equipment out for a spin, I can, in the meantime, enjoy some informal communing with some old friends in the sky.

Are you doing anything to promote astronomy? Keep your eyes and ears open for opportunities. Just last week I helped a co-worker plan a star display for the ceiling of his entertainment room and I discussed telescopes with a friend who wants one for himself and his young son. They'll use it when they go camping. Astronomy can be enjoyed at all levels. You don't have to be working on a Messier list to enjoy the night sky. Offer your help whenever you have the opportunity.

Anybody doing a Messier Marathon? The lunar circumstances aren't very favorable (full Moon on 3/19, new Moon on March 5, or April 4). Still, it sounds like fun. I've never attempted one and, although I've completed the Messier list, it sounds like fun to try to see the whole list in one night. There's an article in the March *Sky and Telescope* on doing a marathon.

..Bill

Houston Astronomical Society

***Meeting Notice
For Friday, March 3, 2000***

Scott Mitchell

on

Archaeoastronomy and the Quest for the Lost Civilization

How can astronomy be used to evaluate claims that an advanced civilization existed thousands of years before recorded history? Emphasis will be on Egyptian myths and monuments, with information gathered from Scott's recent trip to Egypt.

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.
Across from Room 117

The new Novice committee leader is John Garza, III. Come see what he has in mind for the Y2K edition of the Novice group!

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

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

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

March/April Calendar:



<i>Date</i>	<i>Time</i>	<i>Event</i>
March		
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
5	11:18 p.m.	New Moon
13	12:59 a.m.	First Quarter Moon
14	7:30 p.m.	Advanced SIG Mtg. Rice Univ., contact Bill Leach, 713-863-8459
17	All day	St. Patrick's Day
18	7:00 p.m.	HAS banquet. Contact Bill Molinare, 713-664-3261.
19	10:44 p.m.	Full Moon
20	1:35 a.m.	Vernal equinox-Spring begins. Sun enters northern celestial hemisphere.
25		Members Observatory Night-Columbus
27	6:23 p.m.	Moon at Last Quarter

Please note the 17th. Not really astronomical, but it is just a reminder why God invented whisky; so the Irish wouldn't rule the world, of course.

April

1		Prime Night-Columbus (see special note for April 2 nd)
2	2:00 a.m.	Standard Time Ends, Daylight Saving Time begins. Set clocks ahead 1 hour on Saturday night April 1 st (observers loose 1 hour).
4	1:13 p.m.	New Moon
7		HAS Club Meeting
	7:00 p.m.	Novice Presentation - U of H
	8:00 p.m.	General Membership Meeting U of H
11	8:30 a.m.	First Quarter Moon
18	12:41 a.m.	Full Moon
	7:30 p.m.	Advanced SIG Mtg. Rice Univ., contact Bill Leach, 713-863-8459
26	2:32 p.m.	Last Quarter Moon
29		Members Observatory Night-Columbus

Send calendar events to JBlubaugh@aol.com

or call 713-921-4275.

HAS Logo Sales

by Judy Ann Dye

If you are interested in any of the following items and would like to place an order, please contact me (Judy Dye) at 281-498-1703, or send a check for the items requested to 12352 Newbrook, Houston Texas, 77072-3910. Below is the current list of logo items for sale:

Grey Hooded Sweatshirt (M to XL)	\$25.00
22 Ounce Thermal Cup	\$5.00
Observe Messier	\$4.00
Observe Comets	\$7.00
2000 Observer's Handbooks (NEW!)	\$ 14.00

Want Ads

For Sale: Meade 2080 8" astrophotography system.

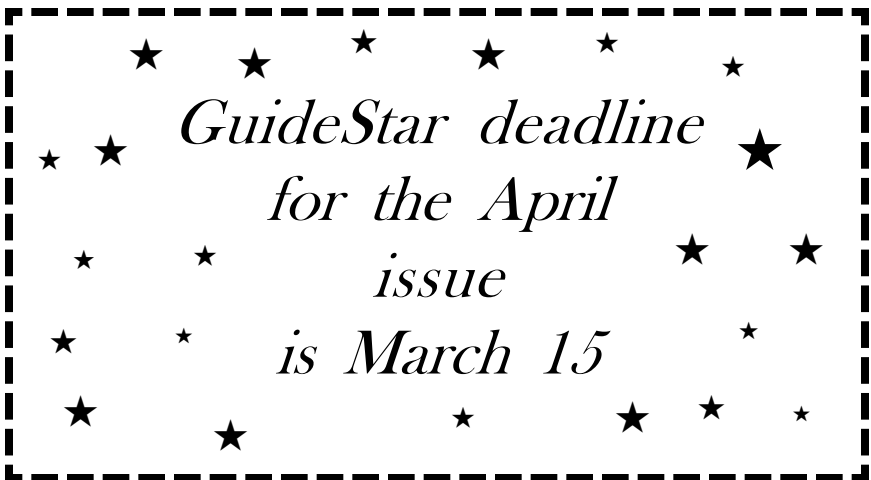
Meade 2080 8" Schmidt-Cassegrain with enhanced coatings, field tripod and wedge, deluxe azimuth adjuster. Also: flexible dew cap, Tuthill precision polar axis finder scope, JMI Mototrak V dual axis drive corrector with PEC, JMI Motodec declination motor, JMI electric power focuser, 9mm Illuminated reticle eyepiece, Lumicon Easy Guider with focal reducer, piggy back mount, counter weight, T-adapter, Celestron f6.3 telecompressor, Orion Ultra-Block Filter, Celestron tele-extender, Lumicon Deep Sky Filter. Total New Retail Value : \$3,050; asking price- \$1,900 This would be an excellent system for someone wanting to get started in astrophotography. The optics are good (I've star tested to better than 1/4 wavefront). Don R. Bates (281) 320-0842 home (281) 584-2518 work

Southern Skies Star Party

The fifth consecutive SSSP will be held this year on June 24 - July 1. We stay at resort lodgings in Bolivia at the shores of Lake Titicaca, and view the Southern hemisphere from an excellent observing site. Excursions to ruins of Tiwanaku, islands on the lake, city of La Paz, and extension trip available to Macchu Picchu. Cost is \$1,649, which includes two meals/day, lodgings, and airfare from Miami. For more information, contact Scott Mitchell (713) 461-3020 or at starscm@aol.com

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. ***Thanks!***



Observatory Corner



By Michael B. Dye Observatory Chairman

In the February *GuideStar*, I announced that we would have a Fence Party on the 19th of February for the purpose of repairing breaks and cleaning up the Observatory Site fence. I am pleased that the party, though sparsely attended, was a success. The HAS members that attended were Rudy Vargas, Steve Sartor and Rob Peterson. None of us claimed to have any knowledge of how to fix a barbed wire fence. I asked the Boy Scout adults on site if any had said experience. One adult, Nathan Nun, indicated that he had some experience. I promptly dubbed him the local expert and put him in charge.



We split into two groups (or maybe three). We had a group each working on the West Fence and the South Fence and a group clearing vegetation from the south fence line. Some of the Boy Scout adults worked on the South Fence line and the Vegetation Clearing group. The Boy Scouts cleaning up the fence line (that I know of) were Bill Douglas, Allen Douglas and Bill Kilty. We completed the activity early in the afternoon (about 3 PM). The Boy Scouts supplied the food for Breakfast (for me), Lunch (the work crews) and Dinner (everyone still at the site).

I have made some references in the above paragraph to Boy Scouts at the Observatory Site. The Observatory Committee has a policy to support Boy and Girl Scouts by having Star Parties at the Observatory Site during Full Moon nights. I use Full Moon nights in an effort to minimize any Light Violations that would impact any H.A.S. members trying to observe. We try to have a few Scout Troops or Packs out to the Observatory Site each year. This month was an exception in that we had Pack 404, Pack 409, Pack 466, Troop 404 and Troop 466 (all of Pearland) at the Observatory Site. In addition Steve Simpson (who owns the lot directly to the South) also brought a Troop to the Observatory to view with the rest of the Scouts. This means we had 3 Troops and 3 Pack of Boy Scouts at the Observatory Site at the same time. A new record.

At this point I would like to talk about the Boy Scouts that were at the Observatory Site to camp, work, play and observe. They were invited by Bob Rogers, the Site Supervisor for the month. The Boy Scout units and the members were:

Pack 404

The adults were Nathan Nunn and Richard Parker. The scouts were James Nunn

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and Michael Parker.

Pack 409

The adults were Jimmy Cobble, Cliff Adams and Artie Jo Wilson. The scouts were Ethan Cobble, Glen Adams and Travis Wilson.

Pack 466

The adults were Richard Malish, John Saffos, Tommy Saia, David Watson and Glen Kenrick. The scouts were Michael Malish, Paul Saffos, Brook Saia, Ross Watson and James Kenrick.

Troop 404

The adults were Mike Guthrie, Lloyd Stephens, Jay Epperson, Rosemary Epperson, Dale Williams and Kevin Stephens. The scouts were Michael Stephens, Brandon Epperson, Brian Epperson, Riley Amick, Tony Brown and Joshua Williams.

Troop 466

The adults were Kathy Ramsey, Bill Kilty, Carolyn Kilty, Mark Teal, Bill Douglas and Mannie Steglich. The scouts were Trey Ramsey, Ryan Steglich, Jaramie Morris, Allen Douglas, Kyle Barsch, Miguel Rivera, David West, Chris Nieteh, and Kevin Gill.

The scouts worked on digging up, cleaning out and reburying the culvert between the main road and the pump house. They also knocked down some of the gopher mounds out in the Telescope Pad area. At the end of the day (Saturday) the Observatory was opened up and the Scouts were aloud to view through the telescopes.

The main cooks for both Lunch and Dinner were Mike Guthrie and Lloyd Stephens. They used the Bar-B-Q pits for most of the cooking. There were other adults who helped with the meal preparation but I am afraid that I don't know who they were.

I would like to thank all the above scouts that helped at the Observatory Site that weekend. I would especially like to thank Mannie Steglich for the chainsaw work. He cut up into smaller pieces some logs that fallen and in some cases cut down some dead growth that was going to fall down soon. Most of the logs were stacked over by the Bar-B-Q pits.

I am currently working on a new Pay Phone for the Observatory Site. Unfortunately I have not been able to follow up a lead from one of our members to get a

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new phone out the Observatory Site. I have every intention of completing this project in March.

The Observatory Committee will be changing the combination to the Observatory Site on or about 1 April 1999, which seems to be an appropriate date. We will use the same system that we have been using in the past. I will hand out Combo Changes to members at the March General Meeting and mail the ones that were not picked up at the General Meetings.

If you have a Randalls card, and have not done so, please have it coded for the Houston Astronomical Society. 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.

And now a word about Logo Sales. We finely got all of the copies of the 2000 Observers Guides. Judy has sold all but four. We will be at the next meeting with those four. If you want one call Judy and she will reserve one for you. Call Judy if you want to reserve a copy.

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

Please fill out the appropriate log form when you use the site. Remember we use these forms as attendance records.

NGST

The Next Generation Space Telescope

by Bill Leach

The Hubble Space Telescope (HST) has opened our eyes to a new generation of astronomy, how could we ever top that? The Hubble sees further into the past, using visible light, than any telescope on Earth. It also sees into the near ultraviolet and the near infrared regions, invisible forms of "light". It will take a NGST to top the Hubble. To appreciate the quantum leap in knowledge that the NGST promises, a little background building is in order.

The story hinges on the nature of light and specifically the light that large mirrors gather from the universe. Excuse me while I indulge, but all forms of light are the same physical phenomena, an oscillating self-perpetuating symbiosis between an electric and magnetic field, a mouthful. It comes in many forms, usually referred to as the electromagnetic spectrum. It ranges from very long wavelength, low frequency/energy, radio waves to very short wavelength, very high frequency/energy, gamma rays. In between those extremes, light goes by many names. The universe is made of all these forms of "light". In the retina in the back of your eye, the light sensitive tissues go by the name, "rods and cones". Some molecules in these tissues can absorb particles of light, photons, and consequently release/absorb electrons, which the brain assigns an image to. The chemicals in our eyes absorb only a small percentage of the total range of light. In the middle of the range is a very narrow band of light that our rods and cones are sensitive to. This narrow band is known as the "visible region". Only in the last 50 years have scientists been able to gather and interpret light from the "invisible" regions of the spectrum.

Light can behave like a wave, where it is continuous and fills all of the space that it has had time to travel to, or it can behave like a particle, like a colliding ball on a pool table. Which one is it? Experimental evidence and the quantum model of matter indicates that light exists as both, and only when experimentally measured, does it become one or the other.

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When light behaves like a wave it can engage in what is called the Doppler shift. When a light source is moving towards us, its wavelength (the distance between two oscillations) gets squeezed shorter, and is therefore shifted to a higher energy region of the electromagnetic spectrum. This phenomenon is known as a blueshift. Light sources moving away from us have their wavelengths stretched out and consequently shifted to a lower energy region of the spectrum. This is known as a redshift (red light has a longer wavelength than blue light). Doppler shifts of this type are detected in the rotating Sun, nearby stars, faraway stars, nearby galaxies and galaxies far away. The motion of the universe is written in the Doppler shifts of the light gathered by telescopes. A fingerprint of dark lines in the rainbow of light emitted by stars, caused by the chemical elements in the star, is what is blue or redshifted.

After corrections for dust and the individual motions of galaxies, the evidence indicates that most galaxies are moving away from one another on a universal scale. The farther away a galaxy, the more its light is redshifted, and the faster it is moving away from us. Being far away tells us that we are seeing the galaxy as it was a long time ago, and moving fast tells us that its light is very redshifted.

Assuming that the universe is presently 15 billion years old, ground based telescopes, using visible light, have been able to see faraway redshifted objects when the universe was 8 billion years old. The HST has been able to image the universe when it was only 1 billion years old. Light from the universe at an age of 300,000 - 100 million years is so redshifted that it took the COBE (Cosmic Microwave Background Explorer) satellite to detect and map its light in the microwave (radio) region of the spectrum. The missing gap between what Hubble and COBE can detect comes from objects whose light is redshifted into the deep infrared regions of the spectrum, between the visible and radio regions. This light comes from the initial stages of galaxy formation when the universe was only 100 million to 1 billion years old. This missing gap of light is what the NGST will be after. It will be an infrared instrument in a solar orbit. It will collect the light filling in the gap in the chronology of the history of the universe. Only with a Next Generation Space Telescope will we be able to observe the period when the primordial seeds began to evolve into galaxies and stars we see today. Only with a Next Generation Space Telescope will we find the clues that remain hidden by time.

Star Party Notice

Date: Tuesday March 7, 2000

Time: 7:00 PM

Location: Walnut Bend Elementary
11200 Wood Lodge,
at the corner of Briarforest/ Walnut Bend
Houston, Texas
(One-half mile west of Beltway 8/Briarforest)
KEY MAP: 489 Q

Student makeup: 3rd and 4th graders

Organizer: Ricardo Cossio, Walnut Bend Elementary
Richard Nugent, HAS Education Chair

Evening observing targets: Jupiter, Saturn, Orion Nebula, etc.

RAIN DATE: Thursday March 9, 2000. GO /NO GO decision based upon weather will be made at 2:00 PM March 7, 2000. Watch your email or call Richard Nugent at 713-805-7344 for GO /NO GO status.

Volunteers are urgently needed from HAS to bring telescopes for 3rd and 4th grade students for public viewing at Walnut Bend Elementary on March 7, 2000. Several easy targets will be visible: Jupiter, Saturn and the 4 day old crescent moon. Any size telescope or binoculars will be fine. If you don't have a telescope or binoculars, please come to assist those with telescopes and equipment setup.

**Call or email (rnugent@ghg.net) Richard Nugent
if you can help.**

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 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://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 March, April and May. Some names were moved from one month to another to accommodate some conflicts. 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 Robert Rogers 281-997-9682
John Chauvin Site
Art Ciampi Members Observatory Night 03-25-00
Mickey Davis Site
Kenneth Drake Site
Mark Egan Members Observatory Night 03-25-00
Jean-Marc Follini Site
Fred Garcia Members Observatory Night 03-25-00
John Garza III Site

April Supervisor Logan Rimes 713-681-5397
Charles Foyt Site
Clifton Goldman Members Observatory Night 04-29-00
David Granadino Site
Michael Gumler Site
Chai S. Heng Members Observatory Night 04-29-00
Gary Hlivko Site
Clayton L. Jeter Members Observatory Night 04-29-00
Stanley G. Jones Site

May Supervisor Logan Rimes 713-681-5397
Keith Jurgens Site
Arnie Kaestner Site
David Kalich Site
Howard Leverenz Site
Jay Levy Members Observatory Night 05-20-00
Mary Lockwood Members Observatory Night 05-20-00
Christopher Mendell Site
John Mitscherling Members Observatory Night 05-20-00

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.

Minutes of the General Meeting of the Houston Astronomical Society

February 4, 2000

HAS Secretary: William W. Leach

1. The meeting was called to order by President Don Pearce at 8:08 PM and the following general announcements were made:
 - a. The general meetings of the membership are in this room, room 117, at 8:00 PM on the 1st Friday of the month, except for May and September when the meeting will be on the 2nd Friday of the month.
 - b. The novice meeting is across the hall in room 116 at 7:00 PM preceding the general meeting.
 - c. The site orientation meeting is in room 121. All members must attend this meeting in order to use the 18-acre observing site in Columbus, Texas by yourself.
2. There were 126 members and 11 guests present.
3. The following new members were introduced:
Jim Babcock, Bill Broussard, Yofre Cabeza, Gordon Hambley, Mike Harris, Don Jaruis, Dr. Ron Masters
4. The following guests were recognized:
Randy Brewer, Vibeesh Bose, Tom Clarke, Don Hausmann, Gary Kunz, Lewis Morriss, Terrance West, Susan & Michael Unger, Margaret Webb, John "Spider" Webb
5. The President reviewed the types of telescopes available to the membership at the observing site: C-14, 12.5 in. f/5, 12.5 in. f/7, and two 12.5 in. Dobsonians.
6. Darin Palmer, the appointed chairman of the Telescope Loaner Program, announced that the society had 14 telescopes in its loaner program and he explained the procedures for borrowing one.
7. The President announced the following membership benefits:
 - a. The *GuideStar* newsletter, whose editor Bill Pellerin was introduced.
 - b. Discount prices for society members on Sky & Telescope (\$29.95) and Astronomy (\$29.00) magazines was announced.
 - c. The Starline (281-568-9340), a service offering various recorded

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- astronomy messages, was also announced.
- d. The HAS website is also available and WebMaster Steve Goldberg was introduced.
 - e. Marg Nunez and Bill Leach of the welcoming committee were introduced.
 - f. The program with Randall's grocery stores was announced and members were asked to register for nonprofit organization number 6618.
8. The annual society banquet will be held on March 18, 2000 at the Westwood Country Club with a cash bar opening at 7:00 PM. Bill Molinare, chairman of this effort, explained the details for the "Millenium Banquet".
 9. The Baton Rouge Astronomical Society regional star party was announced for March 22nd and 23rd.
 10. Bill Pellerin was nominated for the position of Telescope Loaner Program chairman by Mike Dye. He was elected by a show of hands.
 11. Steve Goldberg made an announcement relative to the Texas Star Party, TSP.
 12. Amelia Goldberg requested volunteers from HAS to work the registration desk at TSP.
 13. Judy Dye made an announcement relative to society logo sales.
 14. Mike Dye announced that he and Matt Delevoryas will be distributing to the membership the new combination number for the lock at the observing site after the meeting.
 15. Chris Mendell introduced the speaker for the evening. The program for the evening was the "Structure and Origin of the Universe" by Dennis Webb member of the Johnson Space Center Astronomical Society. The program lasted for 55 minutes.
 16. Marg Nunez presented the speaker with a certificate of appreciation.
 17. Marg Nunez asked for volunteers for a "star party" in The Woodlands on Friday, February 11, 2000.
 18. John Blubaugh showed some slides of lunar eclipses.
 19. Bill Leach announced that the door prizes will be given away after the close of the meeting.
 20. President Don Pearce asked for donations for refreshments. All were invited to stay after the meeting for refreshments and door prizes. The meeting was adjourned at 9:35 PM.

HAS Secretary: William W. Leach
February 4, 2000

It's Only Theory

(Or is it?)

by *Bill Leach*

The **renaissance** was a period of revolution in the freedom of thought that began in the 1300's after the medieval period, and it lasted into the 1600's, the birth of modern times. It was a "**humanistic revival of classical influence**" expressed as art, literature and the birth of modern science. **Galileo Galilei** (1564 - 1642), the father of modern science, invoked the power of experimental evidence in his arguments in support of, what is now known to be a false premise, a Sun-centered universe. **Isaac Newton** (1642 - 1727) gave this new science a mathematical basis to prove and predict its edicts. Out of this grew the "**scientific method**" which is essentially a protocol for using observational evidence to develop an internally consistent "**model**" of some observed changing behavior in the **physical** universe. Mathematical models can be very specific, and yet at the same time, abstract in their implications. A good example of this is the mathematical model that is referred to as "**the electron**".

The **ultimate goal** of the scientific method is the model, one that can **explain** and **predict**. Facts are things that can be observed, that is, they are correctly made measurements. From the **facts** scientists use their imaginations to come up with an educated guess (**hypothesis**) as to the underlying natural processes that are resulting in these observations. After repeated testings, adjustments and verifications the model is referred to as a **theory**. **Einstein** once said that no amount of observational evidence could prove his theories to be factual, but that it took only one piece of evidence to disprove them. This all reflects on the nature of the scientific endeavor, it is not about truth, right or wrong, or what is factual, **it's about the model** and its ability to explain and predict. It does not involve any moral judgement.

Most theories encompass a smaller set of observations and concepts, but in modern science, there are major theories (models) that have developed, that cover vast arrays of interrelated ideas and observations. These super models have been extensively tested and will continue to be tested, extended and revised, as this is the way of science. No theory is static, they all change as our observations and ideas change, but there seems to be an underlying set of ideas inherent to these models that seem to be consistent with nature. In geology the theory of continental drift has converted a collection of rocks and observational facts into a major model of the inner workings of not only Earth but many other planets. Comparative planetology uses plate tectonics to trace the life cycles of even extrasolar planets. In biology the theory of molecular evolution has converted leaf collections and detailed descriptions into an all-encompassing model of how change takes place in the biological world. The theory of quantum mechanics has converted chemistry from a cookbook of recipes into our present model of the

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interactions of atoms and their associations with the subatomic world. In physics the general theory of relativity has changed the whole concept of space and time and the effects that matter has on that spacetime. In astronomy the study of the nature of the universe is referred to as cosmology and the study of the origin of the universe is known as cosmogony. Cosmology is presently working on its standard bearer which is known as The Standard Model, The Hot Big Bang Theory. This model encompasses all four previously mentioned theories in one overall vision of the physical force behind the universe. The pursuit of the Theory of Everything (TOE) is the relentless cutting edge of research in modern astronomy.

Which comes first theory or fact? In actual practice it works both ways. For example, in the past it was observations that led to an understanding of the life cycles of the stars, but it was theory that led to the discovery of black holes.

Which is more important theory or facts? Facts have no meaning in and among themselves as they are independent observations. They are a collection of data points. But from the facts a vision or insight is born in the form of a model or theory. Without a vision the facts mean nothing and without the facts the vision means nothing. Robots collect facts in many laboratories but it takes intelligence to create the vision, the dream of understanding. Johannes Kepler called it "the Somnium", the dream.

In 1913 **Neils Bohr** introduced the successful idea that quantum states and quantum jumps can explain the light given off by atoms. When he was asked for proof he responded that his method worked and that he would leave the proof to others. The so-called proof of the big bang theory lies in its ability to detail the **origin of matter**, predict and describe the evolution of the **fireball** that caused the expansion of space and time, and map the expansion through time using the **cosmological redshift**. The **inflation** version of the big bang theory predicts an initial rapid exponential growth of the universe resulting from bizarre subatomic processes. Scientists working on inflation theory feel strongly that the final "proof" will be available within the next twenty years after collecting new facts from the **MAP** and **Planck Explorer** satellites which should improve the resolution of the **COBE** satellite (1992) picture of the infant universe by a thousand. This will allow enough detail to determine which inflation model has the correct parameters.

Why is what I learned yesterday no longer true? The models of science are always improving and, sadly to say, some purveyors of "**the truth**" are not up to par, maybe out of expediency. A scientific mind not only requires that the facts are properly correlated and mathematically consistent, but it requires that the mind be open to **change** and **new ideas**. What has been learned is that nature is **rational**, it can be understood or modeled. Sometimes this understanding can take us into the realm where our **common sense** is no longer a proper guide.

Two philosophers were discussing the nature of the universe. The first said that the universe was supported on the back of a large turtle. The second asked what supported the turtle. The first replied, "**it's turtles all the way down.**"

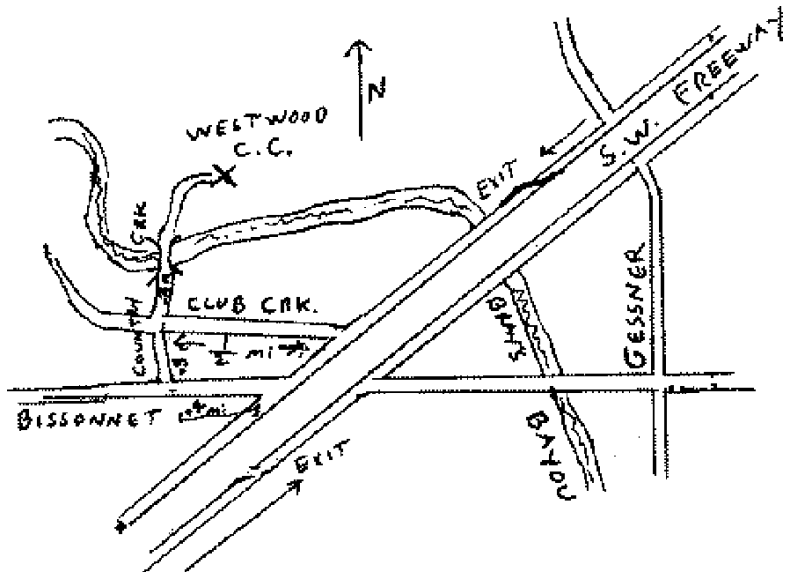
Banquet 2000

Saturday Evening, March 18th

Come celebrate the first banquet of the New Millennium, to be held at the beautiful Westwood Country Club, It is conveniently located at 8888 Country Creek Drive, less than a mile from the intersection of the Southwest Freeway (US 59) and Bissonnet.

Accommodations will be in the Circular Westwood Room, with floor to ceiling windows, overlooking the golf course.

The Westwood is renowned for its ambience and its fine cuisine



Call Banquet Chairman Bill Molinare at (713) 664-3261.

The Menu offers the following choices:

1. Black Peppercorn Crusted Ahi Tuna, with tropical fruit chutney.
2. Medallions of Beef Forestier.

All meals come with salad, two vegetables, rolls, ice tea & coffee, and chocolate mousse dessert.

Cash bar opens at 7:00 p.m., followed by dinner at 7:45.

Following the Dinner, our featured speaker will be Dr. John J. Matese whose topic will be:

***“Looking at the Oort Comet Cloud—
Seeing a Solar Companion?”***

Registration for the H.A.S. Banquet 2000

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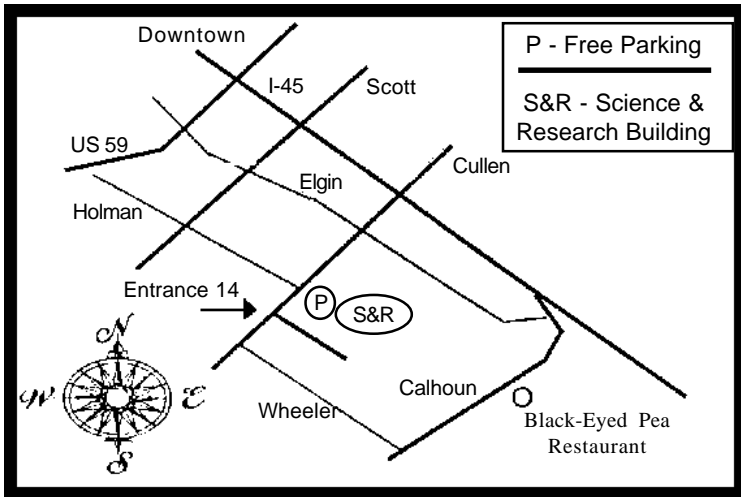
Entrée	(Price)	X	Num.	Total
Tuna:	@\$27.00	X	___ =	_____
Beef:	@\$30.50	X	___ =	_____

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Make check payable to Houston Astronomical Society, and send to:

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5905 Newcastle St.
Bellaire, TX 77401-3215

Or give to Bill at March meeting. Payment required by March 15th.



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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