



# **February, 1999**

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*At the February 5 meeting...*

## **Chris Mendell**

*..of the Boeing Company*

**Long Baseline Optical Interferometry in the  
Search for Terrestrial Extra-Solar Planets**

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*Houston Astronomical Society*

# **GuideStar**

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**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
Vice Pres: Kirk Kendrick H: 281-391-3834	Past-President: Allen Gilchrist H: 281-558-1190
Secretary: Matt Delevoryas H: 713-795-0808	

## ★★★★★ Additional Board Members ★★★★★★

Liaison responsibility

Jay Levy ..... 281-992-2708 .....  
 Bill Leach ..... 713-863-8335 .....  
 Bill Molinare ..... 713-664-3261 .....  
 Bill Pellerin ..... 713-880-8061 .....  
 Barbara Wilson ..... 281-933-1289 .....  
 Mike Dye ..... 281-498-1703 .....  
 Observatory Director

## ★★★★★ Committee Chairpersons ★★★★★★

Audit ..... Orv Wiens ..... 281-391-2995	Program ..... Scott Mitchell ..... 713-461-3020
Education ..... <open>	Publicity ..... Michael Cubstead ..... 713-307-0270
Field Tr./Obsg. .... Kenneth Drake ..... 281-367-1592	Telescope ..... Clayton Jeter ..... 281-383-1337
Novice ..... Sancho/Spore ..... 713-461-3020	Welcoming ..... Marg Nunez ..... 713-529-2549
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.

## ★★★★★ 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 & Telescopemag* \$27/year, *Astronomymag* \$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!**

Andrew P. Coleman, Liz Downing, Paul Downing, Melecio C. Franco, Veronica H. Garcia, John Lyndon Garland, Dale Gaudier, Emily Gaudier, Nicholas Giarra, Graden Harger, Jay McNeil, Jessica McNeil, Valerie Richard, Lisa Stir, Robert Stone

## **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

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## *The President's Message*



As we begin the last year of the millennium, we have a lot of positive things going for us. Our growth is strong and steady, we have several committees, notably Program, Telescope, Novice, Observatory and Welcoming that have really started the new year with some momentum. Already, we have some exciting programs scheduled, the new welcoming committee has initiated a new member welcoming process, and the telescope lending program has a greater variety of instruments for our newer members. At the site, we

have more telescopes available that at the beginning of any other year. This may also be the year that we add a large (30- inch class) telescope for our members. Finally, our finances are in a good, if not great condition.

Of course there is a downside, the most notable what I will call a rumor that a large parcel of the Oak Ridge Estates has been subdivided and that a potential builder is ready to build houses meaning light pollution to us. In the past we have communicated with them and essentially have received no response. That is not to say that they have not listened (and they might even have been sympathetic); it is just that we have not received, as a result of our requests, any assurance of the type of cooperation necessary to completely eliminate the threat of any light pollution from this development.

Here is what I would like in terms of feedback from you, the members. If our earlier, cordial efforts end with us experiencing visible light pollution from this project, what course of action would you favor taking?

I, personally, favor a hardball approach (provided we actually experience light pollution) based on my understanding of court cases in which observatories have forced light polluters to cease and desist. What say ye barristers out there?

Clear skies and le croissant lunaire

*Don Pearce*

# ***Houston Astronomical Society***

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***Meeting Notice  
For Friday, February 5, 1999***

***Chris Mendell  
..of The Boeing Company.  
“Long Baseline Optical  
Interferometry in the  
Search for Terrestrial  
Extra-Solar Planets”.***

***When we think of long baseline  
observations, the Very Large Array  
(VLA) comes to mind. However, Chris  
will talk about VERY large baseline  
work.***

**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.**

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

**General meeting: ..... 8:00 p.m.**

**See the inside back cover for more information.**

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# February Calendar:

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<i>Date</i>	<i>Time</i>	<i>Event</i>
<b>February</b>		
5		HAS Club Meeting
	7:00 p.m.	Novice Presentation - U of H
	8:00 p.m.	General Membership Meeting - U of H
6		Members Observatory Night-Columbus
8	6:00 a.m.	Third Quarter Moon
13		Prime Night-Columbus
16	12:41 a.m.	New Moon
	7:00 p.m.	Advanced SIG Mtg.-Rice Univ., contact Bill Flanagan, 713-699-8819
20	7:00 p.m.	HAS Banquet-Renaissance Houston Hotel, cash bar opens at 6:30. Speaker will be Dr. John H. Lienhard, contact Bill Molinare, 713-664-3261
22	8:45 p.m.	First Quarter Moon
23		Venus 0.15 degrees from Jupiter
<b>March</b>		
2	1:00 a.m.	Full Moon
5		HAS Club Meeting
	7:00 p.m.	Novice Presentation - U of H
	8:00 p.m.	General Membership Meeting - U of H
6		Members Observatory Night-Columbus
10	2:44 a.m.	Third Quarter Moon
13		Prime Night-Columbus
16	7:00 p.m.	Advanced SIG Mtg.-Rice Univ., contact Bill Flanagan, 713-699-8819
17	12:50 p.m.	New Moon
21	7:46 p.m.	Vernal Equinox, Spring begins
24	4:19 a.m.	First Quarter Moon
31	4:50 p.m.	Full Moon

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

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# ***The Whole Shebang: A State-of-the-Universe(s) Report***

by Timothy Ferris, 1997

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## ***Book review by Bill Leach***

Another book on the history of the universe; is it any different from the many others on the market? Any book that Timothy Ferris writes should be different. Timothy Ferris, a former editor of *Rolling Stone* magazine, has written over a hundred books and articles on astronomy but is probably most noted for his narration of the award winning 90-minute PBS special "The Creation of the Universe." Emeritus professor Ferris is currently at the University of California, Berkley.

He sets the stage by asserting that the book is written in the context of the big bang theory. He is careful to point out that the theory is "not perfect or assuredly factual, much less 'true'." The book covers all the normal aspects of the big bang theory like relativity, quantum weirdness, dark matter, nucleogenesis, Hawking's black holes, particle physics, inflation theory and superstring theory. Some of these topics are treated, necessarily so, superficially, while other parts require prerequisite knowledge. Some of my favorite tidbits follow:

- He asserts that general relativity allows for the expansion of space itself at speeds faster than the speed of light while objects traveling in space are restricted to speeds under this limit.
- Kip Thorne is quoted as saying that time freezes at the event horizon of a black hole. Since time now has no coherent direction, inside the black hole the laws of quantum gravity atomize space into a spacefoam or random probabilistic froth.
- Seven astronomers known as the Seven Samurai (Alan Dressler, Sandra Faber, Donald Lyndon-Bell) suggest that our local group and thousand of local galaxies and the Virgo and Hydra-

*Continued...*

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## ***The Whole Shebang... from previous page***

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Centaurus galaxy clusters are moving towards The Great Attractor which has a mass equivalent to 50,000 galaxies, 200 million light years away, and is composed of 90% dark matter.

- The movie *Deep Impact* speaks of ELE's, extinction level events. Ferris says, "seven global dieouts have been found to coincide with the age-dated impacts of comets or asteroids."

The chapter on high-energy particle physics establishes the foundation of inflation theory, which leads to the multi-universe theory. It leaves the reader wanting to learn more about inflation theory.

The book ends with a quote from T. S. Elliot:

***We shall not cease from exploration  
And the end of all our exploring  
Will be to arrive where we started  
And know the place for the first time.***

Ferris asserts that "if this poem ended with the third line, it would rank among the dreariest of modern times. Science is too much trouble if its point is to bring us back to where we started. But the fourth line is cosmology's credo. For to find our place, we must know the place, cellar to ceiling, from the taproots to the stars, the whole shebang."



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# *Three Months of Total Occultations*

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*By Matt Delevoryas*

There are six particularly interesting occultations by the Moon through the first month of spring, the first two of which ought to be occurring as you just receive this issue. Here's the information for these events as seen from Houston (times are CST and CDT, as appropriate):

- **January 27:** Alpha Tauri (Aldebaran) (mag. 1.1) disappears behind the dark limb of the 77% illuminated waxing gibbous moon before 2:04 AM 51° clockwise from the south cusp, moon only 14° up, azimuth 281°. (Reappears after 2:51 AM 86° counterclockwise from south cusp, moon only 4° up, azimuth 287°.) Aldebaran has a close mag. 13.5 companion 31" away, and an 11.2/13.6 2" pair 122" away. (See also p. 9 of Leland Dolan's article in the January *GuideStar*.)
- **January 28:** 119 Tauri (mag. 4.4) disappears behind the dark limb of the 85% illuminated waxing gibbous moon after 12:21 AM 86° counterclockwise from the north cusp, moon 48° up, azimuth 265°. (Reappears after 1:31 AM 71° clockwise from north cusp, moon 34° up, azimuth 273°.)
- **February 3:** Sigma Leonis (mag. 4.0) disappears behind the dark limb of the 91% illuminated waxing crescent moon after 6:45 AM 79° clockwise from the north cusp, moon 30° up, azimuth 259°. (Reappears during daylight, after 7:51 AM 86° counterclockwise from south cusp, moon 16° up, azimuth 268°.)
- **March 11:** 16 Sagittarii (mag. 6.0) reappears from behind the dark limb of the 40% illuminated waning crescent moon during daylight, after 7:10 AM 40° counterclockwise from the south cusp, moon 40° up, azimuth 176°. It disappears on the bright limb during twilight, after 6:15 AM 27° clockwise from the south cusp, moon 38° up, azimuth 160°. This is a particularly faint star to be listed herein, but this occultation becomes a grazing occultation just north of Brownsville.

*Continued...*

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## ***Occultations... from previous page***

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- **March 22:** During the daytime, alpha Tauri (Aldebaran) (mag. 1.1) disappears behind the dark limb of the 31% illuminated waxing crescent moon after 10:34 AM 70° clockwise from the north cusp, moon only 3° up, azimuth 73°. (Reappears before 11:27 AM 89° clockwise from north cusp.)
- **April 19:** 119 Tauri (mag. 4.4) disappears behind the dark limb of the 21% illuminated waxing crescent moon after 8:33 PM 15° clockwise from the south cusp, moon 41° up, azimuth 270°. (Reappears before 8:51 PM 14° counterclockwise from south cusp, moon 37° up, azimuth 272°.)

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## ***∞ Want Ads ∞***

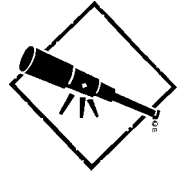
**Free** - Sky and Telescope magazine, complete issues 1971 thru 1998. If interested, send 25 words or less describing what you would do with this collection, and give your phone number. Winner must pick up magazines in Houston within one week of notification. 1971 thru 1996 two-hole bound in folders. Rob Peterson, 3738 Arnold Houston TX 77005

Want Ads are published free -- local, non-commercial advertising will be printed on a space-available basis. See the inside back cover for ways to submit your ad.

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# *Observatory Corner*

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*By Michael B. Dye Observatory Chairman*



As I stated in the November *GuideStar*, the Observatory Site now has an address. This address is for information only and at the moment does not (as yet) support mail service. The new address is for '911' calls only. Our new address is 1667 County Road #215. Please use this address if anyone requires Emergency service (medical) response at the Observatory Site. I will try and place a laminated sign to this effect at the telephone as soon as I can.

On the subject of Lost and Found, a couple on months ago, I remarked in passing that a Nissan Hubcap was propped up against the East EXIT light pole and requested that the owner please claim his or her property. Well evidently the Nissan wheel cover got lonely and found a friend with the same problem because now there are two hub caps propped up against the East EXIT light pole. I would appreciate it if the owner or owners of the errant items would recover them. Also one of our members, a David Granadino, left a blue card table at the Observatory Site Observatory Parking lot on the November Prime Night. If you have salvaged said item please contact me and I will see to getting the card table back to its owner.

I received the Randalls Card results covering the months of July, August and September (1998) a while back. We haven't broken \$1,000.00 yet. If you use Randalls, please have your Randalls Card coded with the number 6618 (which can be done at the Courtesy Booth). Any money we get from this activity, will be split between the Houston Astronomical Society General Account and the Observatory Committee Account.

The Observatory Committee had its annual Kickoff meeting at the Observatory Site on January 9th, this year. The meeting was attended by Matt Delevoryas, Steve Goldberg, John Hiatt, Kirk Kendrick, Howard Leverenz, Logan Rimes, Robert Rogers and of course myself. We discussed the results of last years Observatory Committee's activities and worked out what we would be doing in 1999. One of the items we discussed, was a new lawn

*Continued on page 14..*

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# *H.A.S Annual Banquet*

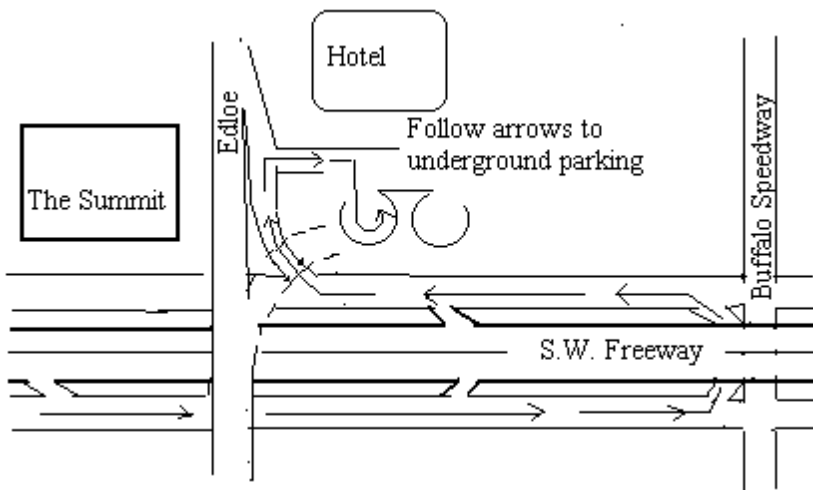
.....  
*by Bill Molinare & Leland Dolan*

The Houston Astronomical Society presents our annual banquet, to be held on the evening of Saturday, February 20, 1999 at the Renaissance Hotel "formerly Stouffer's". This hotel is centrally located along the Southwest Freeway (Hwy. 59) in Greenway Plaza next to The Summit (a.k.a. "Compaq Center"). Follow arrows on map to the underground parking for the Renaissance Hotel.

Accommodations will be in the Plaza Room on the 20<sup>th</sup> floor, which features floor-to-ceiling windows, offering a spectacular view of the city at night. Cocktails will be served at the adjacent "City Lights" lounge. The Renaissance is renowned for its fine cuisine.

The dinner fare offers the following choices:

1. Grilled Ribeye Steak with Cumin-Tomato Chili, and Rosemary Roasted New Potatoes.
2. Oven-Roasted Mahi Mahi, with Chili-Tamarind Sauce.



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Following the Dinner, our featured speaker will be Dr. John H. Lienhard, Professor of Engineering at the University of Houston. Dr. Lienhard is well known for his ability to explain technology in words that ordinary people can understand. His series "Engines of our Ingenuity" is carried on radio stations nationwide.

The price for the evening will be \$30\* per person.  
\* Including tax and gratuities.

Cash Bar opens at 6:30, followed by Dinner at 7:00.

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

.....

*Registration for the  
H.A.S. Banquet '99*

Name \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Phone \_\_\_\_\_

**Number of reservations:**

Grilled Ribeye Steak: \_\_\_\_\_

Mahi Mahi (fish): \_\_\_\_\_

Number of persons x \$30 = \_\_\_\_\_

Make check payable to Houston Astronomical Society and send to:

Bill Molinare

5905 Newcastle St.

Bellaire, TX 77401-3215

Or... give to Bill at the February meeting.

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## ***Observatory Corner... from page 11***

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tractor with a bush hog attachment to be used to mow the main cleared area of the Observatory Site in lieu of paying someone to do the job for us. Some discussion was had (without a conclusion) about who would be authorized to mow the grass with the as yet not procured lawn tractor. (about 24 to 35 hp)

Some discussion was had about building more storage space at the site to store a new Lawn Mower if we ever got one. No conclusion. Still open for discussion.

One member offered to donate a small riding lawn mower to be used to cut the grass in the picnic area. This offer took place late last year at one of our General Meeting. Unfortunately I forgot to write down his name and/or number, so if the member who made the offer would contact me again, I would appreciate it. E-mail is OK.

Some discussion was had about upgrading the (1) Observatory Telescope(s), (2) adding a new Observatory and (3) adding a new computer controlled telescope. Plans on those subjects are still being formulated. If any member has an opinion on this subject, I would appreciate that and any other opinion be E-mailed to me at [mbdye@aol.com](mailto:mbdye@aol.com). We also discussed changing the configuration of the Chart Room Furniture to include a Computer Table assembly. Again opinions or ideas are invited.

At the conclusion of the group discussion phase of the meeting we retired to the outside for an impromptu walking tour of the Observatory Site. The major item of discussion was some newly discovered paths through the West woods from the cleared center area to the fence line. Collectively, we have know idea who made them. If the maker of the paths would contact me by E-mail, again I would appreciate it.

One thing I have noticed is that some members don't fill out Pad Log Forms because they don't remember the forms until they are already at the EXIT gate. At that point, the member is positioned to leave and not interested in walking all the way back to the Log Box to fill one out. I have come up with a solution which may work, a new Log Box located at the Bathroom. Again I would like some opinions on this subject.

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

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# *Comet Reflections*

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*By John Blubaugh*

Some people wait a lifetime to witness the celestial event that happened two years ago. The chance to observe two Great Comets is a once-in-a-generation event, but to do so in consecutive years is very rare. It's been two years since Comet Hale-Bopp's morning apparition in our skies, and nearly three years since Comet Hyakutake swung past the earth.

I'll never forget the experience of watching Hyakutake in March 1996 from the observatory site in the comfort of a lawn chair. A late-night comet, Hyakutake was near the zenith and sported a very long electric-blue plasma gas tail and a mint-green coma. A rather normal comet intrinsically, Comet Hyakutake's splendor was mostly due to its close approach to earth at a mere 9 million miles.

One year later from a site near Fort Davis, Hale-Bopp's apparition was even more spectacular. Its ion tail faded into the thousands of stars that make up the Milky Way, while its bright dust tail stood out starkly against the velvety black sky. At high magnifications, the shock-waves sunward of the pseudo-nucleus were spectacular, and had the appearance of water flung in a spiral pattern from a garden sprinkler or ripples in a pond. As spectacular as Hale-Bopp was, it might have been much better. Speaking recently at the Lunar & Planetary Institute, comet researcher Dr. Humberto Campins of Tucson stated that if the earth was more favorably placed in its orbit, the comet would have shone as brightly as the moon. That's about magnitude -11 to -13, depending on lunar phase. It would have been bright enough to be seen in the daytime.

Both comets reminded me of the accounts my grandfather told about the Great Comet of 1910 appearing when he was a boy in Sicily. This comet was easily visible during the day, along with its tail, as close as four degrees from the sun.

Perhaps we will again see such a comet, but before then we can reflect on the two Great Comets Hyakutake and Hale-Bopp as they graced our skies in the span of two years.

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## *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>

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## *HAS Web Page*

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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](mailto: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.



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# ***Observatory Duty Roster***

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by Michael B. Dye, *Observatory Chairman*

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

**For February supervisor ..... Robert Rogers ..... 281 997-9682**  
Carl Sexton ..... Site  
Steve Simpson ..... Site  
Larry C. Wadle ..... Site  
Mark R. Watson ..... Members Observatory Night 02-06-99  
Tom Williams ..... Site  
Barbara Wilson ..... Members Observatory Night 02-06-99  
Buster Wilson ..... Members Observatory Night 02-06-99  
Warren Wundt ..... Site

**For March supervisor ..... Robert Rogers ..... 281 997-9682**  
W. Charles Barns ..... Members Observatory Night 03-06-99  
Don Bates ..... Site  
John Blubaugh ..... Site  
Ken Carey ..... Members Observatory Night 03-06-99  
Ronald R. Carman ..... Site  
John Chauvin ..... Site  
Art Ciampi ..... Members Observatory Night 03-06-99  
Mickey Davis ..... Site

**For April supervisor ..... Howard Leverenz ..... 713 957-8667**  
Kenneth Drake ..... Site  
Mark Egan ..... Site  
Jean-Marc Follini ..... Site  
Fred Garcia ..... Members Observatory Night 04-17-99  
John Garza III ..... Site  
Clifton Goldman ..... Members Observatory Night 04-17-99  
David Granadino ..... Members Observatory Night 04-17-99  
Michael Gumler ..... Site

Please excuse the mistake that I made last month when I pulled the dates for the Members Observatory Night from the Prime Night column. I have rechecked these dates and I am almost sure that these dates are correct.

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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# Current Comets

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by *Kenneth Drake*

I have provided information on the location of the currently brightest comets in the sky visible from Texas with information from the IAU and calculated positions by MegaStar version 4. I made an attempt to view some of these on Jan. 16/17. One not included here I did observe was comet 68P Klemola. I had been on a quest to observe this comet since the early summer and had failed under prestine conditions. This last Saturday night at Columbus was an extremely variable night with cirrus and mid level fog moving across the sky. It took about 30 minutes to finally see the allusive smudge under the erratic skies. I was using the 24 incher at 175 power. I estimated it as a mag 14.9 15 arc second round soft glow with no central condensation. My observation was confirmed by Matt Delevoryas, Larry Mitchell and Cynthia G. from the Fort Bend Astronomy Club. Larry commented that it was easier to see than the last time he observed it in 1987.

A note about Harrington-Abell: It is in outburst and is about mag 10.8 now, not the indicated predicted magnitude.

The columns indicate local time, universal time, right aascension, declination, predicted magnitude, Earth distance, Sun distance, both in Astronomical Units, and elongation in degrees from the Sun.

Good luck and good hunting,

**Kenneth Drake**, Field Trip and Observing Chairman and Chairman of the Comet Special Interest Group.

Jager P/1998 U3

	Local Time	U.T.	RA	Dec	Mag	E.D.	S.D.	E
1999 Feb 5	18:00	Feb 6 0:00	06 18 26.4	+29 45 12	10.5	1.3279	2.1558	137
1999 Feb 6	18:00	Feb 7 0:00	06 18 28.1	+29 30 48	10.5	1.3338	2.1545	136
1999 Feb 7	18:00	Feb 8 0:00	06 18 32.1	+29 16 28	10.5	1.3399	2.1532	135
1999 Feb 8	18:00	Feb 9 0:00	06 18 38.2	+29 02 12	10.5	1.3461	2.1520	134
1999 Feb 9	18:00	Feb 10 0:00	06 18 46.6	+28 48 00	10.5	1.3525	2.1508	133
1999 Feb 10	18:00	Feb 11 0:00	06 18 57.0	+28 33 52	10.5	1.3591	2.1496	132
1999 Feb 11	18:00	Feb 12 0:00	06 19 9.7	+28 19 48	10.5	1.3658	2.1485	131
1999 Feb 12	18:00	Feb 13 0:00	06 19 24.5	+28 05 50	10.5	1.3727	2.1475	130
1999 Feb 13	18:00	Feb 14 0:00	06 19 41.4	+27 51 57	10.5	1.3798	2.1464	129
1999 Feb 14	18:00	Feb 15 0:00	06 20 0.5	+27 38 09	10.5	1.3870	2.1455	128
1999 Feb 15	18:00	Feb 16 0:00	06 20 21.6	+27 24 26	10.5	1.3944	2.1445	128

*Continued...*

# Current Comets... from previous page

1999 Feb 16 18:00	Feb 17 0:00	06 20 44.8	+27 10 49 10.5	1.4019	2.1436	127
1999 Feb 17 18:00	Feb 18 0:00	06 21 10.1	+26 57 18 10.6	1.4096	2.1428	126
1999 Feb 18 18:00	Feb 19 0:00	06 21 37.5	+26 43 53 10.6	1.4174	2.1419	125
1999 Feb 19 18:00	Feb 20 0:00	06 22 6.8	+26 30 34 10.6	1.4254	2.1412	124
1999 Feb 20 18:00	Feb 21 0:00	06 22 38.2	+26 17 21 10.6	1.4335	2.1404	123
1999 Feb 21 18:00	Feb 22 0:00	06 23 11.5	+26 04 14 10.6	1.4417	2.1397	122
1999 Feb 22 18:00	Feb 23 0:00	06 23 46.8	+25 51 13 10.6	1.4501	2.1391	121
1999 Feb 23 18:00	Feb 24 0:00	06 24 23.9	+25 38 19 10.6	1.4586	2.1385	121

## Giacobini-Zinner 21P

Local Time	U.T.	RA	Dec	Mag	E.D.	S.D.	E
1999 Feb 5 18:00	Feb 6 0:00	02 35 49.2	-17 56 18 12.1	1.3515	1.4632	76	
1999 Feb 6 18:00	Feb 7 0:00	02 39 7.5	-17 42 01 12.2	1.3637	1.4719	76	
1999 Feb 7 18:00	Feb 8 0:00	02 42 23.9	-17 27 39 12.3	1.3759	1.4807	76	
1999 Feb 8 18:00	Feb 9 0:00	02 45 38.4	-17 13 15 12.3	1.3883	1.4896	76	
1999 Feb 9 18:00	Feb 10 0:00	02 48 51.1	-16 58 49 12.4	1.4008	1.4984	76	
1999 Feb 10 18:00	Feb 11 0:00	02 52 2.0	-16 44 21 12.4	1.4133	1.5073	75	
1999 Feb 11 18:00	Feb 12 0:00	02 55 11.1	-16 29 51 12.5	1.4260	1.5162	75	
1999 Feb 12 18:00	Feb 13 0:00	02 58 18.5	-16 15 21 12.5	1.4388	1.5251	75	
1999 Feb 13 18:00	Feb 14 0:00	03 01 24.3	-16 00 51 12.6	1.4516	1.5340	75	
1999 Feb 14 18:00	Feb 15 0:00	03 04 28.4	-15 46 21 12.7	1.4646	1.5430	75	
1999 Feb 15 18:00	Feb 16 0:00	03 07 31.0	-15 31 51 12.7	1.4776	1.5519	75	
1999 Feb 16 18:00	Feb 17 0:00	03 10 31.9	-15 17 23 12.8	1.4907	1.5609	75	
1999 Feb 17 18:00	Feb 18 0:00	03 13 31.4	-15 02 56 12.8	1.5039	1.5699	75	
1999 Feb 18 18:00	Feb 19 0:00	03 16 29.4	-14 48 32 12.9	1.5172	1.5789	75	
1999 Feb 19 18:00	Feb 20 0:00	03 19 25.9	-14 34 10 12.9	1.5306	1.5880	75	
1999 Feb 20 18:00	Feb 21 0:00	03 22 21.0	-14 19 51 13.0	1.5441	1.5970	75	
1999 Feb 21 18:00	Feb 22 0:00	03 25 14.7	-14 05 35 13.0	1.5577	1.6061	74	
1999 Feb 22 18:00	Feb 23 0:00	03 28 7.0	-13 51 23 13.1	1.5713	1.6151	74	
1999 Feb 23 18:00	Feb 24 0:00	03 30 58.0	-13 37 15 13.2	1.5850	1.6242	74	

## LINEAR C/1998 U5

Local Time	U.T.	RA	Dec	Mag	E.D.	S.D.	E
1999 Feb 5 18:00	Feb 6 0:00	21 06 55.4	+13 44 15 11.2	2.1910	1.4205	30	
1999 Feb 6 18:00	Feb 7 0:00	21 06 53.4	+13 42 19 11.3	2.2022	1.4279	29	
1999 Feb 7 18:00	Feb 8 0:00	21 06 51.3	+13 40 32 11.3	2.2131	1.4353	29	
1999 Feb 8 18:00	Feb 9 0:00	21 06 49.1	+13 38 56 11.3	2.2235	1.4429	29	
1999 Feb 9 18:00	Feb 10 0:00	21 06 46.8	+13 37 30 11.4	2.2336	1.4505	29	
1999 Feb 10 18:00	Feb 11 0:00	21 06 44.5	+13 36 14 11.4	2.2432	1.4583	29	
1999 Feb 11 18:00	Feb 12 0:00	21 06 42.0	+13 35 07 11.4	2.2525	1.4661	29	
1999 Feb 12 18:00	Feb 13 0:00	21 06 39.3	+13 34 10 11.5	2.2614	1.4741	29	
1999 Feb 13 18:00	Feb 14 0:00	21 06 36.4	+13 33 22 11.5	2.2698	1.4821	29	
1999 Feb 14 18:00	Feb 15 0:00	21 06 33.3	+13 32 43 11.5	2.2779	1.4902	29	
1999 Feb 15 18:00	Feb 16 0:00	21 06 30.0	+13 32 13 11.6	2.2856	1.4984	29	
1999 Feb 16 18:00	Feb 17 0:00	21 06 26.5	+13 31 52 11.6	2.2928	1.5067	29	
1999 Feb 17 18:00	Feb 18 0:00	21 06 22.6	+13 31 40 11.6	2.2997	1.5151	29	
1999 Feb 18 18:00	Feb 19 0:00	21 06 18.4	+13 31 35 11.6	2.3062	1.5235	29	
1999 Feb 19 18:00	Feb 20 0:00	21 06 13.9	+13 31 39 11.7	2.3123	1.5321	30	
1999 Feb 20 18:00	Feb 21 0:00	21 06 9.1	+13 31 51 11.7	2.3181	1.5407	30	
1999 Feb 21 18:00	Feb 22 0:00	21 06 3.8	+13 32 11 11.7	2.3234	1.5494	30	

Continued...

# Current Comets... from previous page

1999 Feb 22 18:00	Feb 23 0:00	21 05 58.2	+13 32 38	11.8	2.3284	1.5581	30
1999 Feb 23 18:00	Feb 24 0:00	21 05 52.1	+13 33 13	11.8	2.3330	1.5669	31

## LINEAR C/1998 M5

Local Time	U.T.	RA	Dec	Mag	E.D.	S.D.	E
1999 Feb 5 18:00	Feb 6 0:00	19 20 41.0	+57 11 59	9.6	1.6860	1.7497	77
1999 Feb 6 18:00	Feb 7 0:00	19 21 28.4	+57 51 16	9.6	1.6780	1.7509	77
1999 Feb 7 18:00	Feb 8 0:00	19 22 16.1	+58 31 21	9.5	1.6701	1.7523	78
1999 Feb 8 18:00	Feb 9 0:00	19 23 4.2	+59 12 13	9.5	1.6624	1.7537	78
1999 Feb 9 18:00	Feb 10 0:00	19 23 52.7	+59 53 54	9.5	1.6547	1.7552	79
1999 Feb 10 18:00	Feb 11 0:00	19 24 41.5	+60 36 22	9.5	1.6471	1.7568	79
1999 Feb 11 18:00	Feb 12 0:00	19 25 30.8	+61 19 40	9.5	1.6397	1.7586	80
1999 Feb 12 18:00	Feb 13 0:00	19 26 20.4	+62 03 46	9.5	1.6323	1.7604	80
1999 Feb 13 18:00	Feb 14 0:00	19 27 10.4	+62 48 40	9.5	1.6252	1.7623	81
1999 Feb 14 18:00	Feb 15 0:00	19 28 0.9	+63 34 23	9.5	1.6182	1.7643	81
1999 Feb 15 18:00	Feb 16 0:00	19 28 51.7	+64 20 54	9.5	1.6113	1.7664	82
1999 Feb 16 18:00	Feb 17 0:00	19 29 43.0	+65 08 14	9.5	1.6047	1.7686	82
1999 Feb 17 18:00	Feb 18 0:00	19 30 34.7	+65 56 21	9.5	1.5982	1.7708	83
1999 Feb 18 18:00	Feb 19 0:00	19 31 26.9	+66 45 16	9.5	1.5920	1.7732	83
1999 Feb 19 18:00	Feb 20 0:00	19 32 19.5	+67 34 58	9.5	1.5860	1.7757	84
1999 Feb 20 18:00	Feb 21 0:00	19 33 12.7	+68 25 26	9.5	1.5802	1.7782	84
1999 Feb 21 18:00	Feb 22 0:00	19 34 6.4	+69 16 40	9.5	1.5746	1.7808	85
1999 Feb 22 18:00	Feb 23 0:00	19 35 0.7	+70 08 39	9.5	1.5693	1.7836	85
1999 Feb 23 18:00	Feb 24 0:00	19 35 55.7	+71 01 23	9.5	1.5642	1.7864	86

## Williams C/1998 P1

Local Time	U.T.	RA	Dec	Mag	E.D.	S.D.	E
1999 Feb 5 18:00	Feb 6 0:00	10 26 48.2	+29 09 28	10.7	1.0755	2.0274	159
1999 Feb 6 18:00	Feb 7 0:00	10 20 56.1	+30 03 21	10.8	1.0840	2.0386	160
1999 Feb 7 18:00	Feb 8 0:00	10 15 2.5	+30 55 10	10.8	1.0934	2.0499	161
1999 Feb 8 18:00	Feb 9 0:00	10 09 8.3	+31 44 51	10.9	1.1039	2.0612	161
1999 Feb 9 18:00	Feb 10 0:00	10 03 14.3	+32 32 19	10.9	1.1153	2.0725	161
1999 Feb 10 18:00	Feb 11 0:00	09 57 21.1	+33 17 30	10.9	1.1277	2.0837	160
1999 Feb 11 18:00	Feb 12 0:00	09 51 29.7	+34 00 24	11.0	1.1409	2.0951	160
1999 Feb 12 18:00	Feb 13 0:00	09 45 40.8	+34 40 58	11.0	1.1551	2.1064	159
1999 Feb 13 18:00	Feb 14 0:00	09 39 55.1	+35 19 13	11.1	1.1702	2.1177	158
1999 Feb 14 18:00	Feb 15 0:00	09 34 13.4	+35 55 10	11.2	1.1861	2.1290	157
1999 Feb 15 18:00	Feb 16 0:00	09 28 36.4	+36 28 52	11.2	1.2028	2.1403	155
1999 Feb 16 18:00	Feb 17 0:00	09 23 4.6	+37 00 21	11.3	1.2203	2.1516	154
1999 Feb 17 18:00	Feb 18 0:00	09 17 38.7	+37 29 40	11.3	1.2385	2.1630	152
1999 Feb 18 18:00	Feb 19 0:00	09 12 19.2	+37 56 55	11.4	1.2575	2.1743	151
1999 Feb 19 18:00	Feb 20 0:00	09 07 6.5	+38 22 09	11.4	1.2771	2.1857	149
1999 Feb 20 18:00	Feb 21 0:00	09 02 1.1	+38 45 27	11.5	1.2974	2.1970	148
1999 Feb 21 18:00	Feb 22 0:00	08 57 3.3	+39 06 55	11.5	1.3184	2.2083	146
1999 Feb 22 18:00	Feb 23 0:00	08 52 13.5	+39 26 38	11.6	1.3399	2.2197	144

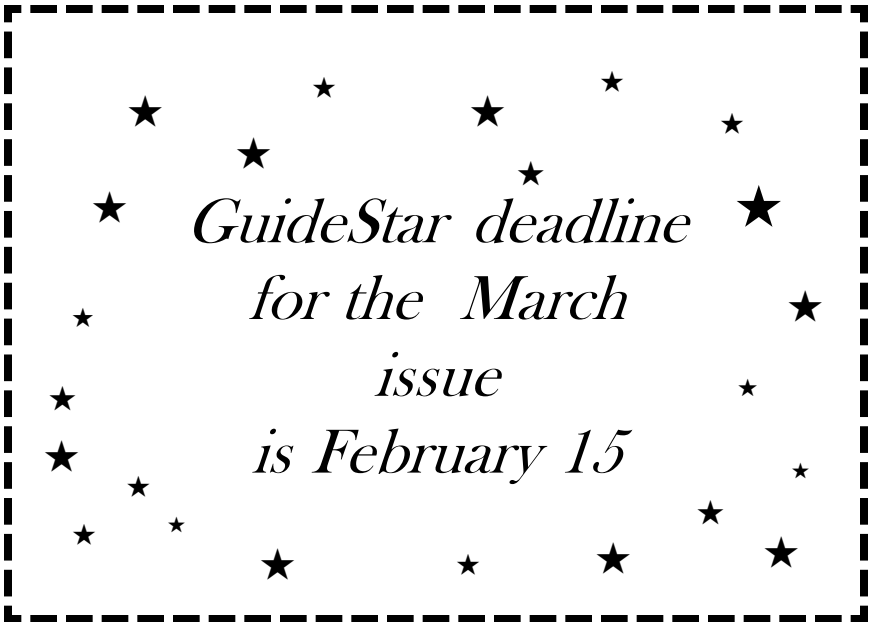
Continued...

# *Current Comets... from previous page*

1999 Feb 23 18:00 Feb 24 0:00 08 47 31.8 +39 44 42 11.7 1.3620 2.2310 143

## Harrington-Abell 52P

Local Time	U.T.	RA	Dec	Mag	E.D.	S.D.	E
1999 Feb 5 18:00	Feb 6 0:00	07 03 49.3	+35 07 02	16.8	0.8592	1.7582	145
1999 Feb 6 18:00	Feb 7 0:00	07 03 57.4	+34 53 28	16.9	0.8639	1.7587	144
1999 Feb 7 18:00	Feb 8 0:00	07 04 7.9	+34 39 49	16.9	0.8687	1.7592	143
1999 Feb 8 18:00	Feb 9 0:00	07 04 20.9	+34 26 06	16.9	0.8737	1.7598	142
1999 Feb 9 18:00	Feb 10 0:00	07 04 36.3	+34 12 18	16.9	0.8789	1.7605	141
1999 Feb 10 18:00	Feb 11 0:00	07 04 54.2	+33 58 27	16.9	0.8843	1.7612	140
1999 Feb 11 18:00	Feb 12 0:00	07 05 14.6	+33 44 33	16.9	0.8898	1.7619	140
1999 Feb 12 18:00	Feb 13 0:00	07 05 37.4	+33 30 36	17.0	0.8954	1.7627	139
1999 Feb 13 18:00	Feb 14 0:00	07 06 2.6	+33 16 37	17.0	0.9013	1.7636	138
1999 Feb 14 18:00	Feb 15 0:00	07 06 30.2	+33 02 36	17.0	0.9072	1.7645	137
1999 Feb 15 18:00	Feb 16 0:00	07 07 0.2	+32 48 34	17.0	0.9134	1.7655	136
1999 Feb 16 18:00	Feb 17 0:00	07 07 32.7	+32 34 32	17.0	0.9197	1.7665	136
1999 Feb 17 18:00	Feb 18 0:00	07 08 7.4	+32 20 28	17.0	0.9261	1.7675	135
1999 Feb 18 18:00	Feb 19 0:00	07 08 44.5	+32 06 25	17.1	0.9327	1.7687	134
1999 Feb 19 18:00	Feb 20 0:00	07 09 23.8	+31 52 22	17.1	0.9394	1.7698	133
1999 Feb 20 18:00	Feb 21 0:00	07 10 5.4	+31 38 19	17.1	0.9463	1.7710	132
1999 Feb 21 18:00	Feb 22 0:00	07 10 49.3	+31 24 17	17.1	0.9533	1.7723	132
1999 Feb 22 18:00	Feb 23 0:00	07 11 35.3	+31 10 16	17.1	0.9605	1.7736	131
1999 Feb 23 18:00	Feb 24 0:00	07 12 23.5	+30 56 17	17.2	0.9678	1.7750	130



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# ***B&Ps from the IAUCs***

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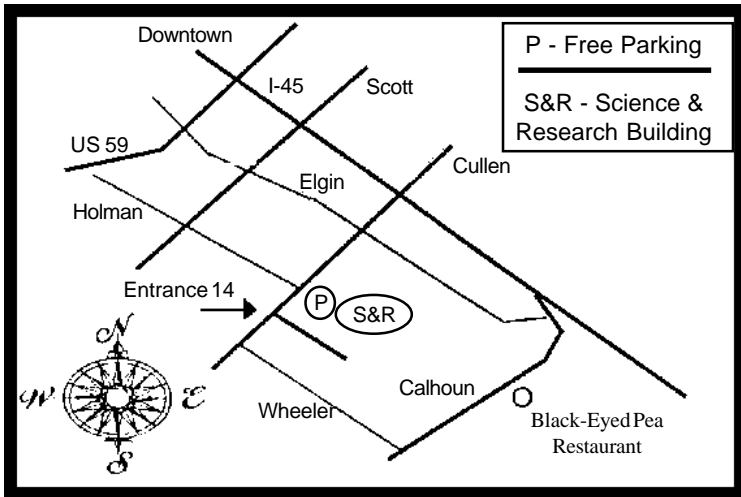
*by Matt Delevoryas*



A lot of the IAU Circulars topics, and most of the topics of the Minor Planet Electronic Circulars, are non-main-belt asteroids. The past month follows suit, including a dozen earth crossing asteroids (three of them the formerly rare Atens). It seems that deliberate efforts to find asteroids inside the main belt are paying off. One group of non-main-belt asteroids, though, is not being discovered at an accelerating pace: trans-Neptunian objects (Kupier belt comets). These have been found steadily since first discovered, but this month there has been some unusual news. A new object was discovered this month (1998 WA<sub>31</sub>), but the old objects 1997 SZ<sub>10</sub> and 1996 TR<sub>66</sub> have had interesting new orbit determinations.

The orbital mechanics of such objects are of substantial interest. While there is no reason why an object cannot exist — for a while — in practically any orbit, an object in an orbit which causes it to pass by a major planet will find itself perturbed into a significantly different orbit, perhaps even being expelled to the Oort cloud. So, we ought not to discover trans-Neptunian objects in orbits which pass by Neptune (or Uranus), since such a body wouldn't still be in that orbit. Any body which passes near Neptune's orbit ought sooner or later to be there when Neptune is there too, and be perturbed. Such orbits should be rare now. But, there is one way to manage it — a motion which is commensurate with Neptune's, so there are a limited number of repeating configurations when the object is near Neptune's orbit, and in none of these is Neptune nearby. 1997 SZ<sub>10</sub> and 1996 TR<sub>66</sub> are the first two such objects which have ("almost certainly") been determined to be in a 1:2 resonance with Neptune. (Actually, not exactly, but rather a sort of a dance oscillating around perfect 1:2 orbits.) Every two Neptunian years such an object passes by Neptune's orbit, but Neptune is always in the same far away place in its orbit. Theoretical investigations suggest that these particular objects will remain in these dances around 1:2 orbits avoiding Neptune for a billion years.

Last month's article (pp. 16-17) reported that R Coronae Borealis had begun to brighten, returning to normal. The IAUCs have continued to be silent, but other reports have not. There is much scatter in the reported magnitudes, but the general trend appears to be a plateau between magnitudes 8.0 and 8.5 until mid-November, then a climb of about a magnitude every six weeks. At this rate, and based on previous behavior, as February ends its climb should slack off as it approaches its normal magnitude 6. Listen to Starline for any deviations from this. See the December article for information about charts, go to [http://charts.aavso.org/charts/CRB/R\\_CRB/](http://charts.aavso.org/charts/CRB/R_CRB/), or contact this author.



### 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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