



**July, 1999**

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*At the July 2 meeting...*

## ***The Dark Matter Problem***

***Dr. Lawrence Pinsky, HAS  
advisor will discuss the problem  
of missing mass in the universe.***

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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.

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★★★★★★ **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 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

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## The President's Message



One of the many pleasures of amateur astronomy is the simple appreciation of the night sky. As the seasons change, it seems like old friends, i.e., stars and constellations that I haven't observed in a while, reacquaint themselves. Of course, a number of years ago that reacquaintance time was shorter because I frequently stayed awake all night observing, and the "seasonal" changes occurred much more rapidly. Now that most of my

observing of the night sky happens before 2 a.m., I really appreciate the longer intervals between seeing old friends.

Frankly, for me, it is one of the reasons I have never become involved in observatory observing. I don't appreciate being cooped up in a building, with only a slit of sky visible, to do my astronomy. It is one of the advantages of our observatory building, that when the roof is retracted, you still have a feeling for being "out under the stars".

In fact, for me the perfect night of astronomy would go something like this: Setting-high desert, about 4000 feet above sea level, virtually no obstruction horizon to horizon, temperature about 65° F, crystal clear skies, location- Chile or some other southern hemisphere locale, 10% humidity and only a very light breeze, waiting to recover a famous comet or even accidentally discovering a comet. (note: I said accidentally because to purposefully hunt for comets is a long, tedious and somewhat boring experience), alternatively swapping real astronomical issues with UFO and other strange stories among a small group of observing friends, sub arc second seeing conditions, 7.0 magnitude stars visible naked eye, occasionally looking at some spectacular objects such as the Tarantula Nebula, Eta Carinae, and 47 Tucanae, observing a few 16<sup>th</sup> magnitude galaxies and other southern sky challenge objects, and then topping it off by observing about a 15 hour old crescent Moon just before dawn.

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# ***Houston Astronomical Society***

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***Meeting Notice  
For Friday, July 2, 1999***

## ***The Dark Matter Problem***

***Dr. Lawrence Pinsky, of the University of Houston, and an advisor to the Houston Astronomical Society will discuss the latest developments in the resolution of the 'missing' matter problem. The problem is that the motion of galaxies cannot be explained by the luminous matter we can see.***

**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.**

# July/August Calendar:



<i>Date</i>	<i>Time</i>	<i>Event</i>
<b>July</b>		
2		HAS Club Meeting
	7:00 p.m.	Novice Presentation - U of H
	8:00 p.m.	General Membership Meeting U of H
3		Members Observatory Night-Columbus
6	6:57 a.m.	Moon at Third Quarter
8	5:14 a.m.	Lunar Occultation of Mu Ceti (m4.3), see article this issue.
10		Prime Night-Columbus
12	9:24 p.m.	New Moon
13	7:30 p.m.	Advanced SIG Mtg. Rice Univ., contact Bill Flanagan, 713-699-8819
15	evening	Moon, Venus, and Regulus conjunction at sunset
17	9:07 p.m.	Lunar Occultation of 7 Virginis (m5.4), see article this issue.
20	3:59 a.m.	First Quarter Moon
28	5:22 a.m.	Lunar eclipse-partial, umbral phase begins
	6:25 a.m.	Full Moon
	6:34 a.m.	Mid eclipse (see January GS, p.7)
	6:40 a.m.	Moonset
<b>August</b>		
4	12:27 p.m.	Moon at Third Quarter
6		HAS Club Meeting
	7:00 p.m.	Novice Presentation - U of H
	8:00 p.m.	General Membership Meeting U of H
7		Prime Night-Columbus
		Uranus at opposition
10	8:55 p.m.	New Moon
11		Last Total Solar Eclipse of Millenium-visible from Europe
12	evening	Perseid meteors peak—watch through morning of 13th
17	7:30 p.m.	Advanced SIG Mtg. Rice Univ., contact Bill Flanagan, 713-699-8819
18	8:47 p.m.	First Quarter Moon
26	6:49 p.m.	Full Moon
28		Members Observatory Night-Columbus

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

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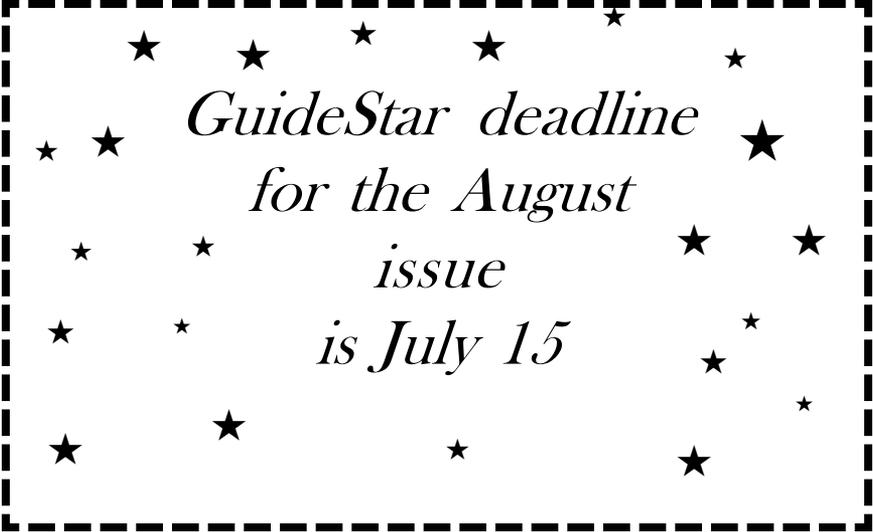
## ***President's Message... from Page 4***

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This is the season, weather permitting, to go out and observe, so go for it. This month, Dr. Pinsky of the Uof H will discuss the dark matter problem, involving missing mass, at the General Membership Meeting.

Clear skies and le croissant lunaire

*Don Pearce*



*GuideStar deadline  
for the August  
issue  
is July 15*

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# *Dew Heater Design*

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*By Jay Levy*



Heaters installed

I developed this heater after consultations with Ed Preston. I have him to thank for the basic circuit designs but I've taken his concepts a little further. I also wish to thank Ohm for his law, which made it all possible. I need to acquaint the reader with a few electrical concepts otherwise experimentation may cause expensive burned out circuits, which would ruin the enjoyment of the heater. Bare with me, I'll try to make it brief.

To begin, try to imagine the concept of electrical circuitry as being a water fountain on a wire. Consider the force of the water fountain pump to be equivalent to the voltage (V) or electromotive force (EMF) of the circuit. As the water flows through channels, rocks, etc. before returning back to the pump, so does the electron current (I) flows through resistors (R), capacitors (C), inductors (L), etc. as it flows through the circuit before returning to the source of the EMF or battery. For simplification we'll only deal with resistors. The water pump has a gravity gradient while the battery has a plus and minus (or ground) "top and bottom".

Ohm's law states that the voltage across any circuit is equal to the current running through the circuit times the resistance of the circuit or in other words  $V=I*R$  where V is measured in Volts (V), I is measured in Amperes (A), and R is measured in Ohms ( $\Omega$ ). For example, a 12 Volt direct current system that needs to have one Amp of current flowing through it will require 12  $\Omega$ s of resistance or  $I=V/R \rightarrow I=12V/12 \Omega s = 1$  A.

Another important concept is that of Power (P) measured in Watts (W). In the case of electricity  $P=I*I*R$  or  $(V/R)*(V/R)*R=(V*V)/R$ . Power is an

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## ***Dew Heater Design... from previous page***

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indication of the heat generated by the circuit. The more Wattage, the more the potential of heat generated by the circuit (in this case at the point of the resistor). This excess heat is what we are looking for to make the heater work.

A final important electrical concept is that of series verses parallel. If two resistors (R1 and R2) are connected end to end then they are considered in series and their combined values are simply added together (R1+R2). If instead they are connected side by side then they are considered parallel with their combined value given by  $R1 * R2 / (R1 + R2)$ . For example if  $R1 = 2\Omega$  and  $R2 = 4\Omega$  then  $R_{series} = 2 + 4 = 6\Omega$ . For  $R_{parallel} = 2 * 4 / (2 + 4) = 8 / 6 = 1 \frac{1}{3} \Omega$ , a marked diminution! This concept is critical to adding several heating elements to the same power source. In other words, the more resistance that is added in parallel to the circuit, the lower the overall resistance becomes. I have been able to add several heaters to the same control box thanks to parallel circuitry.

The basic design follows. Most parts were bought from either Electronic Parts Outlet or Radio Shack.

Note: I generally used 12 volts direct current as a power supply from either a Radio Shack transformer or by using 8 D cell batteries in series contained in two attached (with duct tape) 1 1/4 inch diameter polyvinyl chloride tubes with wires attached to brass bolts sticking out of the capped ends which then fed into my control box.



Dew Heater

I learned this trick at the Texas Star Party when it was held at Alto Frio. On heavily dewy nights I switch to a longer couple of tubes that hold 10 D cells (15 volts) which I adjust using 5 K  $\Omega$  potentiometers.

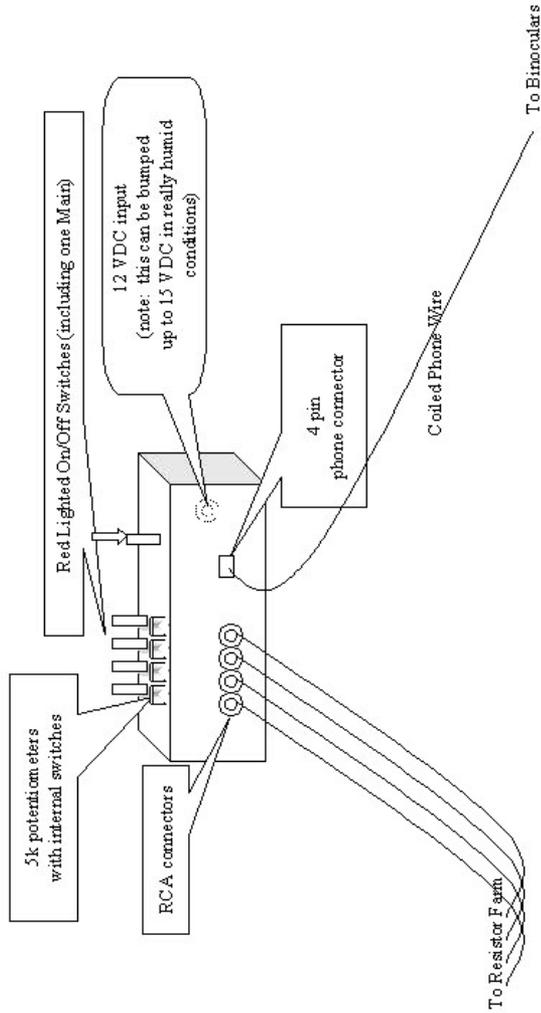
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## Dew Heater Design



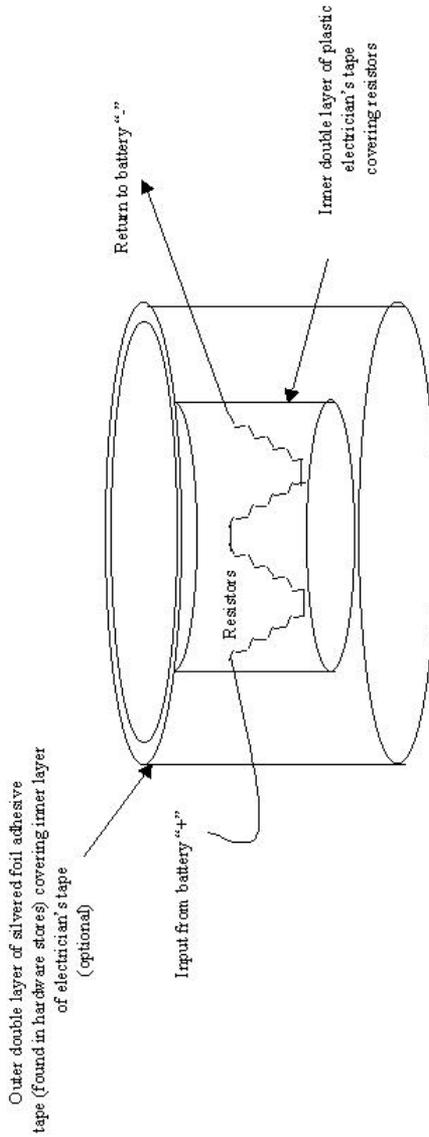
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# ***Dew Heater Design... from previous page***

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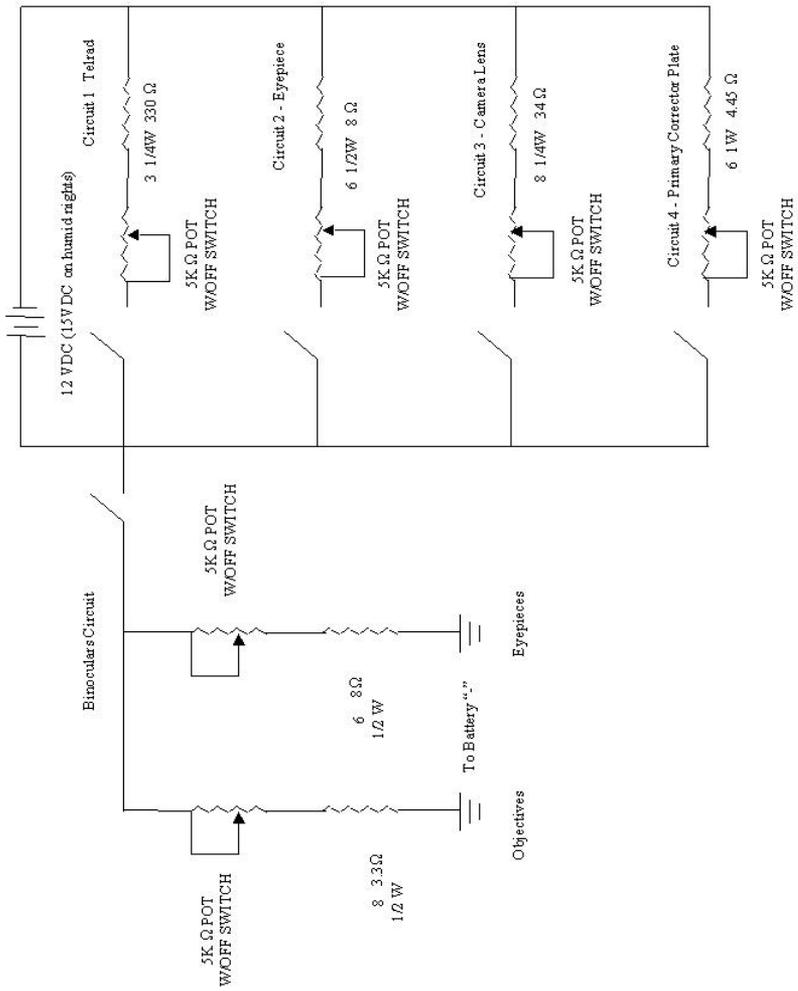
## **Typical Heater Configuration**



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# Dew Heater Design... from previous page

## Basic Circuit for Jay's Dew Heater



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# ***Opposing Crescent Record***

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*By Don Pearce, President*

## ***Background***

On January 27<sup>th</sup> and 28<sup>th</sup> of 1998, I observed the last old crescent Moon before lunation #929 and the first new crescent Moon of that same lunation, a double whammy that surpasses any I had ever done by far, and, perhaps, is the best ever. The total elapsed time between these binocular observations is 35 hours and 14 minutes (35.23 hours) and the circumstances involved with each observation are documented below.

The most interesting aspect of this is that, at the time, I was completely oblivious to the potential for closing in on a record. Since 1988 I have 80 documented attempts to observe thin crescent Moons, with 46 of these attempts being successful. Starting in 1995 I have observed quite a few last morning crescents ; however, I had never been able to observe opposing crescents. The best I was ever able to do, in regard to observing a last old and the following new crescent, was an unremarkable 58 hours and 56 minutes, which occurred on the 9<sup>th</sup> and then 11<sup>th</sup> of December of 1996. Previous to this, I had concentrated primarily on evening crescents, and for a while, on May 5, 1989, I thought I set a binocular record of 13 hours and 47 minutes, only to learn later that Robert Victor had observed that same crescent Moon from East Lansing, Michigan when it was 13 hours and 28 minutes old (S&T: Sept. 1989)

Returning to the situation on January 27<sup>th</sup> and 28<sup>th</sup>, the circumstances were extremely favorable for setting an opposing crescent Moon observing record. The Moon was passing about 2<sup>1/2</sup> degrees north of the Sun at new Moon (permitting it to stand almost directly over the Sun at sunset on the 28<sup>th</sup>), it was only a little over two days until perigee, it was winter in the northern hemisphere, thus the favorable ecliptic circumstances reduced the sunrise to opposite sunset timeframe, but most importantly there was a remarkable symmetry in the time of New Moon in the central United States, occurring at 2 minutes past midnight (CST) on the 28<sup>th</sup>, thus permitting around a 17 hour old crescent observation on the

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## ***Opposing Crescent Record... from previous page***

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morning of the 27<sup>th</sup>, and a slightly greater than 18 hour new crescent observation on the evening of the 28<sup>th</sup>. At that time, however, I was not aware of all of these favorable circumstances, (I was planning to observe the new crescent on the evening of the 28<sup>th</sup>) but I received a call from a friend and fellow Houston area amateur astronomer, Kenneth Drake, on Monday night the 26<sup>th</sup>, alerting me to the 17 hour old crescent Moon potential observation the next morning. As far as I have been able to determine, the previous best record for a binocular observation of opposing crescents is 35.7 hours by Stephen O' Meara on December 31<sup>st</sup> of 1994 and January 1<sup>st</sup> of 1995.

As a footnote, there seems to have been a slight decline in interest in observing thin crescents since the 12 hour 7 minute telescopic record set in Jan. 1996 from Arizona. Perhaps we Americans thrive mainly on competition and setting records. However, I have been "hooked" on observing thin crescents for 11 years and it continues.

### ***Observation of the old crescent Moon***

Tuesday morning, Jan. 27<sup>th</sup> 1998, I successfully observed a 17 hour and 2 minute old crescent Moon from the end of the playing field at the rear of Bellaire High School (on Ferris St.) in Bellaire, Texas (N29° 41' 31" by W95° 28' 19": Elev. approx. 15 meters).

John Blubaugh accompanied me as we arrived at the site about 6:35 a.m. (Moonrise was at 6:32 a.m.). It was about 6:38 when I set up the Fujinon 10x70 binoculars on a tripod. We were situated on the sidewalk adjacent to a hurricane fence enclosing the school grounds. The high school building presented about a 2 degree obstruction. I took a compass reading, but the fence caused the reading to be wildly in error, and I resorted to using Venus, and its angle to the Moon on my chart, as a guidepost to the Moon's location. The sky was perfectly clear and the air crisp.

From 6:40 to 6:54 I diligently scanned the horizon, and at about that time I was beginning to experience (as has happened so many times before) a sense of failure, as civil twilight began impinging on the sky. Then all

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## ***Opposing Crescent Record... from previous page***

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of a sudden, out of nowhere, the needle thin crescent appeared about one and a half degrees above the building. The crescent appeared thin, very fragile (due to the strong twilight), and only about 50-60 degrees of the illuminated arc was visible. The orientation of the "horns" ( in this case ends) was about 5:45 to 7:30, and the crescent appeared slightly brighter near the 7:30 end. I continuously observed it until 7:00 a.m.(CST), when it disappeared from view in the binoculars. It was 17 hours and 2 minutes from new. The Moon was not visible to the naked eye, but the fragile image was very esthetically pleasing in the binoculars.

The elongation from the Sun at first observation was  $9^{\circ} 14'$  and  $9^{\circ} 11'$  at last observation (Mooncalc 4.0). At midpoint during the 6 minute observation the Moon's altitude was  $4^{\circ} 4'$  and the Sun's was  $-4^{\circ} 16'$ . Sunrise was at 7:14 a.m. I want to thank Kenneth Drake for alerting me, late on Monday night, to this event, as I had completely overlooked this last morning crescent in preparing for the first evening crescent of lunation #929 on Wed. evening (28<sup>th</sup>). Unfortunately, the height of the fence prevented John Blubaugh from observing the crescent.

### ***Observation of the new crescent Moon***

On Wednesday, Jan. 28<sup>th</sup> 1998, I, along with Kenneth Drake and John Blubaugh, observed an 18 hour and 12 minute young crescent Moon from the Braes Bayou in Houston, Texas (N  $29^{\circ} 40' 41''$  by W  $95^{\circ} 28' 23''$ : Elev. approx. 15 meters).

Upon arrival at the site I was very discouraged, as it appeared that a fairly thick bank of cirrostratus clouds would preclude any successful observation. However, stranger things have happened, and I have learned throughout ten years of observing thin crescents that very low clouds can sometimes be your friend, increasing contrast to the sky above them. However, in this case, there was a solid bank of clouds to about 3-4 degrees and broken cirrostratus to about 8-10 degrees above the horizon. Nevertheless, after almost (mentally) giving up, the Moon was sighted at 6:14 p.m.(CST) by Kenneth Drake and by myself, independently, within about 15 seconds. This was a somewhat difficult observation through the fairly thick layers of cirrostratus; however, we were able

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## ***Opposing Crescent Record... from previous page***

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to observe the Moon through holes in the in the clouds on an intermittent basis. At the initial observation the crescent's thin and fragile image appeared for about a minute or two, with the orientation of the horns approximately 4:30 to 7 o'clock (about 70 degrees of the illuminated arc was visible). At 6:20 the Moon completely disappeared into a thick bank of clouds.

This was accomplished with optics only, in my case I was using 10x70 binoculars mounted on a tripod. At time of initial observation the Moon's solar elongation was  $9^{\circ} 24'$  and its altitude was  $5^{\circ} 3'$  (Mooncalc 4.0); altitude of Sun was  $-4^{\circ} 25'$ . Sunset was at 5:56 p.m.

Also present at the site was Art Ciampi, Bill Hand, and Charles Botkin. We do not believe, under the conditions present, that the Moon could have been observed with the naked eye.

### ***Letter to Sky and Telescope***

Dennis di Cicco  
Associate Editor  
Sky & Telescope, Sky Publishing Corp.  
P.O. Box 9111  
Belmont, MA 02178-9111

May 25,1999

Dear Dennis,

I want to thank you for all the assistance you provided to me the other day in researching past Sky & Telescope articles on thin crescent Moons. As a result,I was able to finish the enclosed articles, which I believe establishes a new record for observing opposing crescents. Speaking for the Houston Astronomical Society, we continue to appreciate the high quality of your magazine.

Sincerely,

*Don Pearce*

Don Pearce

President, Houston Astronomical Society

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# ***Third Quarter Total Occultations***

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*By Matt Delevoryas*

There are seven interesting occultations by the Moon during the third quarter of 1999. Here's the information for these events as seen from Houston (times are CDT):



- **July 8:** Mu Ceti (mag. 4.3) reappears from behind the dark limb of the 28% illuminated waning crescent moon after 5:45 AM 33° clockwise from the north cusp, moon 40° up, azimuth 103°. (Disappears before 5:14 AM 22° counterclockwise from north cusp, moon 33° up, azimuth 98°.) This star has been found in occultations to be binary, but (as of 1983) it has yet to be resolved by speckle interferometry.
- **July 17:** 7 Virginis (mag. 5.4) disappears behind the dark limb of the 52% illuminated waxing gibbous moon after 9:07 PM 30° counterclockwise from the north cusp, moon 34° up, azimuth 252°. (Reappears after 9:38 PM 21° clockwise from north cusp, moon 28° up, azimuth 257°.)
- **August 4** Xi<sup>2</sup> Ceti (mag. 4.3) reappears from behind the dark limb of the 54% illuminated waning gibbous moon before 4:47 AM 70° counterclockwise from the south cusp, moon 52° up, azimuth 117°. (Disappears after 3:35 AM 88° clockwise from south cusp, moon 38° up, azimuth 103°.)
- **August 6** Gamma Tauri (mag. 3.6, variable, amplitude 0.1) reappears from behind the dark limb of the 31% illuminated waning crescent moon before 3:26 AM 11° counterclockwise from the south cusp, moon 17° up, azimuth 81°. (Disappears before 3:09 AM 24° clockwise from south cusp, moon 13° up, azimuth 79°.)
- **August 18:** Gamma Librae (mag. 4.0) disappears behind the dark limb of the 50% illuminated waxing first quarter moon before 6:58 PM 46° clockwise from the south cusp, moon 46° up, azimuth 176°.

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

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Optical aid should be required for the disappearance. (Reappears before 8:20 PM 21° clockwise from north cusp, moon 28° up, azimuth 257°.) This star has been found, presumably in occultations, to be binary, but (as of the publication of the BSC5) it has yet to be resolved by speckle interferometry. The separation is 0.097". There is a companion, magnitude 11.2, 42" away.

- **September 4:** 64 Orionis (mag. 5.1) reappears from behind the dark limb of the 33% illuminated waning crescent moon before 3:27 AM 47° clockwise from the north cusp, moon 21° up, azimuth 79°. (Disappears before 2:53 AM 26° counterclockwise from north cusp, moon 14° up, azimuth 75°.) This star is triple, with components 6.3, 6.3, and 6.5, A and B components 0.0014" apart, unspecified angle, A and C 0.06" at 76°, as of 1976.
- **September 22** Iota Aquarii (mag. 4.3) disappears behind the dark limb of the 93% illuminated waxing gibbous moon after 5:58 AM 80° counterclockwise from the north cusp, moon only 1° up, azimuth 107°. The disappearance will probably be unobservable, but it sounds like a challenge with a telescope, given a clear sky and a flat horizon. (Reappears after 6:58 AM 55° clockwise from north cusp, moon 13° up, azimuth 114°, requiring telescopic aid.)

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## ***HAS Logo Sales***

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*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

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# *Observatory Corner*

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*By Michael B. Dye Observatory Chairman*



The Monday of Memorial Day, I received a call from a frustrated member who was at the Observatory Site. It seems that his code would not work to get into the Observatory from the Chartroom. I gave him some troubleshooting instructions that he performed with negative results. I informed him that I would have to come out to the Observatory to troubleshoot the Corby System to figure out the problem. The following Thursday I did just that as Judy and I drove out to the Observatory Site. When we got there, extensive troubleshooting procedures were used to determine the problem. I established that the Corby System was nonfunctional to the extent that the Keypads were nonresponsive. After checking the input power voltages (which were OK), I tested the operation of the Request to Enter push-button (located in the Chartroom), which worked. This told me that the Corby System was functioning. I then connected the Observatory Computer to the Corby System and started communication with it. The first thing I did was check the system time. This was blank. I keyed in the correct time. I then checked the Date. Same problem, same fix action. I then tried to list the last 250 operations. Nothing in memory. (Not good) The last thing I did was to list out the Users (members with code numbers). No surprise, there was nothing in memory. From this, I deduced that the stored memory was kaput (to use a technical term). I couldn't remember how to restore the system, so we went home.

The next day was Friday, so I announced at the General Meeting that the Observatory access control system was down for memory problems and that I would be going out to fix it the following day (Saturday) to attempt to fix it, and to reprogram all 100 + users. Judy and I again went out to the Observatory Site on Saturday morning. I went into the Observatory and after some investigation, I found and eventually remembered how to use, the Backup we had made when we installed the last system upgrade back in 1994. A successful reinstall was accomplished to the extent that the system would now admit any member who had a code in 1994. This, while nice, was not good. I printed a lot of data to disk and went home

I spent the next few days collating information from my records and matching it to the data I brought back on Saturday. When I completed that activity, I

*Continued...*

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

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found that I only needed to input approximately 25 names. This was good. It was not as bad as I had thought. I went back the following Sunday (June 13th) and finished keying in the last 25 users. I also used that opportunity to delete users who were no longer active. I then BACKED THE SYSTEM UP. An activity, that had I performed the last time I changed the database, I would not be having to rebuild the system database now. The Corby Access Control System now works again. If nothing else, this proves why it is necessary to keep a current software and database backup. It also nice if one remembers how to use the software. I may write an instruction manual to cover this eventually

The next item I would like to share with the membership is a web site that I found with the help of Matt Delevoryas. It is the United States Naval Observatory. This is a great site to go if you need moon information (or just about any other observing data). The web site address is "<http://www.usno.navy.mil>". Good luck.

I am running an informal poll. If you have an opinion on whether the Society should provide some sort of computers for controlling the Observatory Telescopes and maybe for CCD processing. Also please give me any other ideas in the same category. Please contact me at [mbdye@aol.com](mailto:mbdye@aol.com) or 281-498-1703.

If you have a Randalls card, 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 rolls 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.

Please buy HAS Logo merchandise and help me get my den back. We have very nice HAS Logo thermal mugs, T-shirts and other nifty stuff (including some very nice pictures). All at very reasonable prices.

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

Prime Night for July is the 10th.

Members Observatory Night for July is the 3rd.

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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>

**Northside Astronomical Society** meets at 8:00 p.m. on the 4th Friday of each month in the Teaching Theatre of the Student Center at Kingwood College. Call 281-312-1650 or E-mail [bill.leach@nhmccd.edu](mailto:bill.leach@nhmccd.edu).

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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 July, August and September. 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.

**July supervisor ..... Matt Delevoryas ..... 713 795-0808**

Debbie Moran ..... Site  
Ben Negy, Jr. .... Members Observatory Night 07-03-99  
Johnny Norris ..... Members Observatory Night 07-03-99  
Richard Nugent ..... Members Observatory Night 07-03-99  
Ralph Overturf, Jr. .... Site  
Don C. Pearce ..... Site  
Michael D. Peters ..... Site  
Sim Picheloup ..... Site

**August supervisor ..... Dana Lambert ..... 281 399-4627**

Leonard W. Raif ..... Site  
Glen L. Ray ..... Members Observatory Night 08-14-99  
Mike Renolds ..... Members Observatory Night 08-14-99  
Henry Schneider ..... Site  
Carl Sexton ..... Site  
Steve Simpson ..... Site  
Larry C. Wadle ..... Site  
Mark R. Watson ..... Site Members Observatory Night 08-14-99

**August supervisor ..... Dana Lambert ..... 281 399-4627**

Margaret Nunez ..... Site  
Buster Wilson ..... Members Observatory Night 09-11-99  
Barbara Wilson ..... Members Observatory Night 09-11-99  
Warren Wundt ..... Members Observatory Night 09-11-99  
W. Charles Barnes ..... Site  
Don Bates ..... Site  
John Blubaugh ..... Site  
Ron Carman ..... 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.

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# ***Comet C/1999 H1 Lee***

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*By Matt Delevoryas*

Following is an ephemeris for Comet C/1999 H1 Lee, brought to you by the folks at Starline, with information provided by the IAU Circulars Committee. During the ephemeris, it moves from a bright low west-southwest evening object in Hydra entering Cancer to a brighter even lower west-northwest evening object approaching Gemini. The elements are from MPEC 1999- K10, and the magnitude follows MPEC 1999-H06 (and subsequent Circulars). 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<sup>h</sup> UTC.

Date	Julian	J2000.0				B1950.0				Mag	C-E	C-S
		RA	Dec	RA	Dec	RA	Dec	RA	Dec			
mm dd	Date	h m	deg mi	h m	deg mi	h m	deg mi	h m	deg mi			
May 27	2451325.5	8 40.2	-01 49	8 37.7	-01 38	7.5	0.98	1.13				
May 28	2451326.5	8 38.9	-00 35	8 36.3	-00 24	7.5	1.00	1.11				
May 29	2451327.5	8 37.6	+00 36	8 35.0	+00 47	7.4	1.02	1.10				
May 30	2451328.5	8 36.4	+01 45	8 33.8	+01 55	7.4	1.04	1.09				
May 31	2451329.5	8 35.2	+02 51	8 32.6	+03 01	7.4	1.05	1.07				
Jun 1	2451330.5	8 34.1	+03 54	8 31.5	+04 05	7.4	1.07	1.06				
Jun 2	2451331.5	8 33.1	+04 55	8 30.4	+05 06	7.4	1.09	1.05				
Jun 3	2451332.5	8 32.0	+05 54	8 29.4	+06 04	7.4	1.12	1.03				
Jun 4	2451333.5	8 31.1	+06 51	8 28.4	+07 01	7.4	1.14	1.02				
Jun 5	2451334.5	8 30.1	+07 46	8 27.4	+07 56	7.3	1.16	1.01				
Jun 6	2451335.5	8 29.2	+08 38	8 26.5	+08 49	7.3	1.18	0.99				
Jun 7	2451336.5	8 28.3	+09 30	8 25.6	+09 40	7.3	1.20	0.98				
Jun 8	2451337.5	8 27.4	+10 19	8 24.7	+10 29	7.3	1.22	0.97				
Jun 9	2451338.5	8 26.5	+11 07	8 23.8	+11 17	7.3	1.24	0.95				
Jun 10	2451339.5	8 25.7	+11 53	8 22.9	+12 03	7.2	1.26	0.94				
Jun 11	2451340.5	8 24.8	+12 38	8 22.1	+12 48	7.2	1.27	0.93				
Jun 12	2451341.5	8 24.0	+13 22	8 21.2	+13 32	7.2	1.29	0.92				
Jun 13	2451342.5	8 23.2	+14 04	8 20.4	+14 14	7.2	1.31	0.90				
Jun 14	2451343.5	8 22.4	+14 45	8 19.6	+14 55	7.1	1.33	0.89				
Jun 15	2451344.5	8 21.6	+15 26	8 18.8	+15 35	7.1	1.35	0.88				
Jun 16	2451345.5	8 20.8	+16 05	8 17.9	+16 14	7.1	1.37	0.87				
Jun 17	2451346.5	8 20.0	+16 43	8 17.1	+16 52	7.0	1.39	0.86				
Jun 18	2451347.5	8 19.1	+17 20	8 16.3	+17 30	7.0	1.41	0.85				
Jun 19	2451348.5	8 18.3	+17 57	8 15.5	+18 06	7.0	1.42	0.84				
Jun 20	2451349.5	8 17.5	+18 32	8 14.6	+18 42	7.0	1.44	0.83				

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# **Comet P/1998 U3 Jäger**

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*By Matt Delevoryas*

Following is an ephemeris for Comet P/1998 U3 Jäger, picking up 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 is a low and descending west evening object (July is the last possible chance to see it) moving from Hydra to Sextans on the 1st. The elements are from MPC 33650, and the magnitude follows IAU Circular 7040. 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<sup>h</sup> 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				
Jul 1	2451360.5	9 40.4	+02 45		9 37.8	+02 59	12.6	2.93	2.38	
Jul 11	2451370.5	9 58.1	+00 45		9 55.6	+01 00	12.8	3.04	2.42	
Jul 21	2451380.5	10 15.7	-01 17	10	13.2	-01 02	12.9	3.16	2.47	
Jul 31	2451390.5	10 33.1	-03 21	10	30.6	-03 05	13.1	3.27	2.51	
Aug 10	2451400.5	10 50.3	-05 26	10	47.8	-05 10	13.2	3.37	2.56	

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## **Comet C/1999 H1 Lee... from previous page**

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Jun 21	2451350.5	8 16.7	+19 07		8 13.8	+19 16	6.9	1.46	0.82
Jun 22	2451351.5	8 15.8	+19 41		8 12.9	+19 51	6.9	1.47	0.81
Jun 23	2451352.5	8 15.0	+20 15		8 12.0	+20 24	6.9	1.49	0.80
Jun 24	2451353.5	8 14.1	+20 48		8 11.2	+20 57	6.9	1.50	0.79
Jun 25	2451354.5	8 13.2	+21 20		8 10.3	+21 29	6.8	1.52	0.78
Jun 26	2451355.5	8 12.3	+21 51		8 09.4	+22 00	6.8	1.53	0.77
Jun 27	2451356.5	8 11.4	+22 23		8 08.4	+22 32	6.8	1.55	0.76
Jun 28	2451357.5	8 10.4	+22 53		8 07.5	+23 02	6.8	1.56	0.76
Jun 29	2451358.5	8 09.5	+23 23		8 06.5	+23 32	6.7	1.57	0.75
Jun 30	2451359.5	8 08.5	+23 53		8 05.5	+24 02	6.7	1.59	0.74
Jul 1	2451360.5	8 07.5	+24 22		8 04.6	+24 31	6.7	1.60	0.74

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# **Comet C/1998 T1 LINEAR**

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*By Matt Delevoryas*

Following is an ephemeris for Comet C/1998 T1 LINEAR, brought to you by the folks at Starline, with information provided by the IAU Circulares Committee. During the ephemeris, it moves from being a south-southeast morning object to southwest evening object, starting near Sagittarius and ending in Hydra, but spending time in nearly a dozen constellations. The elements are from MPC 33451, and the magnitude follows MPC 33131. 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<sup>h</sup> UTC.

Date	Julian	J2000.0			B1950.0			Mag	C-E	C-S
		RA	Dec	RA	Dec	RA	Dec			
mmm dd	Date	h m	deg mi	h m	deg mi	deg mi	deg mi			
Jun 26	2451355.5	21 27.6	-35 32	21 24.5	-35 46	8.4	0.55	1.47		
Jun 27	2451356.5	21 13.3	-37 29	21 10.1	-37 41	8.3	0.53	1.47		
Jun 28	2451357.5	20 57.2	-39 25	20 54.0	-39 36	8.2	0.52	1.47		
Jun 29	2451358.5	20 39.3	-41 17	20 36.0	-41 28	8.2	0.51	1.47		
Jun 30	2451359.5	20 19.5	-43 02	20 16.0	-43 11	8.2	0.50	1.47		
Jul 1	2451360.5	19 57.8	-44 36	19 54.3	-44 44	8.1	0.49	1.47		
Jul 2	2451361.5	19 34.5	-45 55	19 30.9	-46 01	8.1	0.49	1.47		
Jul 3	2451362.5	19 09.9	-46 55	19 06.2	-47 00	8.1	0.49	1.47		
Jul 4	2451363.5	18 44.6	-47 34	18 40.9	-47 37	8.1	0.49	1.47		
Jul 5	2451364.5	18 19.2	-47 51	18 15.4	-47 52	8.1	0.49	1.47		
Jul 6	2451365.5	17 54.3	-47 47	17 50.5	-47 46	8.2	0.50	1.48		
Jul 7	2451366.5	17 30.6	-47 24	17 26.8	-47 21	8.2	0.51	1.48		
Jul 8	2451367.5	17 08.4	-46 44	17 04.7	-46 40	8.3	0.52	1.48		
Jul 9	2451368.5	16 48.0	-45 51	16 44.4	-45 46	8.4	0.54	1.48		
Jul 10	2451369.5	16 29.5	-44 50	16 25.9	-44 43	8.4	0.56	1.48		
Jul 11	2451370.5	16 12.9	-43 42	16 09.4	-43 34	8.5	0.57	1.48		
Jul 12	2451371.5	15 58.1	-42 31	15 54.6	-42 22	8.6	0.60	1.49		
Jul 13	2451372.5	15 44.9	-41 18	15 41.5	-41 09	8.7	0.62	1.49		
Jul 14	2451373.5	15 33.2	-40 06	15 29.8	-39 56	8.8	0.64	1.49		
Jul 15	2451374.5	15 22.7	-38 55	15 19.5	-38 45	8.9	0.67	1.49		
Jul 16	2451375.5	15 13.5	-37 47	15 10.3	-37 36	9.0	0.69	1.50		
Jul 17	2451376.5	15 05.2	-36 42	15 02.0	-36 30	9.0	0.72	1.50		
Jul 18	2451377.5	14 57.8	-35 39	14 54.7	-35 27	9.1	0.75	1.50		
Jul 19	2451378.5	14 51.2	-34 40	14 48.1	-34 27	9.2	0.78	1.51		
Jul 20	2451379.5	14 45.3	-33 44	14 42.2	-33 31	9.3	0.81	1.51		
Jul 21	2451380.5	14 40.0	-32 51	14 36.9	-32 38	9.4	0.84	1.51		
Jul 22	2451381.5	14 35.2	-32 01	14 32.2	-31 48	9.5	0.87	1.52		

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# **Comet C/1998 M5 LINEAR**

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*By Matt Delevoryas*

Following is an ephemeris for Comet C/1998 M5 LINEAR, picking up 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 moves from being a low west-northwest evening object to an unobservably low and faint west-northwest evening object (last chance to see it), in Leo. The elements are from MPC 34126, and the magnitude follows MPC 32356. 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<sup>h</sup> UTC.

Date	Julian	J2000.0			B1950.0			Mag	C-E	C-S
		RA	Dec		RA	Dec				
mmm dd	Date	h m	deg mi		h m	deg mi				
Jul 1	2451360.5	9 29.7	+21 14		9 26.9	+21 27	12.8	3.32	2.62	
Jul 6	2451365.5	9 34.2	+19 44		9 31.4	+19 58	12.9	3.42	2.67	
<u>Jul 11</u>	<u>2451370.5</u>	<u>9 38.7</u>	<u>+18 18</u>		<u>9 35.9</u>	<u>+18 32</u>	<u>13.1</u>	<u>3.51</u>	<u>2.71</u>	
Jul 16	2451375.5	9 43.1	+16 55		9 40.4	+17 09	13.2	3.59	2.75	
Jul 21	2451380.5	9 47.5	+15 34		9 44.8	+15 48	13.3	3.68	2.80	
Jul 26	2451385.5	9 51.8	+14 16		9 49.1	+14 30	13.4	3.75	2.84	
Jul 31	2451390.5	9 56.0	+13 00		9 53.4	+13 15	13.5	3.83	2.89	
Aug 5	2451395.5	10 00.2	+11 46		9 57.5	+12 01	13.6	3.90	2.93	

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## **Comet C/1998 T1 LINEAR... from previous page**

Jul 23	2451382.5	14 30.8	-31 14		14 27.8	-31 01	9.6	0.90	1.52	
Jul 24	2451383.5	14 26.9	-30 30		14 23.9	-30 17	9.7	0.93	1.52	
<u>Jul 25</u>	<u>2451384.5</u>	<u>14 23.3</u>	<u>-29 49</u>		<u>14 20.3</u>	<u>-29 35</u>	<u>9.7</u>	<u>0.96</u>	<u>1.53</u>	
Jul 26	2451385.5	14 20.0	-29 10		14 17.1	-28 56	9.8	0.99	1.53	
Jul 27	2451386.5	14 17.1	-28 33		14 14.2	-28 20	9.9	1.02	1.54	
Jul 28	2451387.5	14 14.3	-27 59		14 11.5	-27 45	10.0	1.05	1.54	
Jul 29	2451388.5	14 11.9	-27 27		14 09.0	-27 13	10.1	1.09	1.54	
<u>Jul 30</u>	<u>2451389.5</u>	<u>14 09.6</u>	<u>-26 57</u>		<u>14 06.7</u>	<u>-26 42</u>	<u>10.1</u>	<u>1.12</u>	<u>1.55</u>	
Jul 31	2451390.5	14 07.5	-26 28		14 04.6	-26 14	10.2	1.15	1.55	
Aug 1	2451391.5	14 05.6	-26 01		14 02.7	-25 47	10.3	1.18	1.56	
Aug 2	2451392.5	14 03.8	-25 36		14 01.0	-25 21	10.4	1.22	1.56	
Aug 3	2451393.5	14 02.2	-25 12		13 59.4	-24 57	10.4	1.25	1.57	
<u>Aug 4</u>	<u>2451394.5</u>	<u>14 00.7</u>	<u>-24 49</u>		<u>13 57.9</u>	<u>-24 35</u>	<u>10.5</u>	<u>1.28</u>	<u>1.57</u>	
Aug 5	2451395.5	13 59.4	-24 28		13 56.6	-24 13	10.6	1.31	1.58	

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

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*by Matt Delevoryas*



Brian Skiff, of Lowell Observatory, is a friend of many Society members. He was also a fixture at the Texas Star Party for a while, but of late, there has always been one excuse or another why he couldn't attend. This year, Brian had to scrape the bottom of the barrel for excuses. The excuse, a particularly lame one, was that he was busy discovering Comet C/1999 J2 (Skiff) back home at the observatory. IAU Circular 7165 on May 13th (the Thursday of the 1999 TSP), reported that early that morning, Brian was doing work as part of the Lowell Observatory Near-Earth Object Search (LONEOS). He took three CCD images with the LONEOS 23" Schmidt which showed a magnitude 16 comet in Draco. The CCD images showed a quarter degree of coma and two-thirds of a degree of tail. The same Circular gives three additional observations from Klet, almost certainly made because of a report from Lowell. A little over four days later, Minor Planet Electronic Circular 1999-K08 (condensed in IAUC 7171) reported many more astrometric observations, and "very preliminary parabolic orbital elements" calculated by Brian Marsden. Eventually, in early June, MPEC 1999-L12 gave many more astrometric observations, and some less uncertain orbital elements calculated by Gareth Williams. These orbital elements are a little surprising. The comet makes its closest approach to the sun April Fool's Day 2000. (Remember C/1995 O1 Hale-Bopp and April Fool's Day 1997?) When it does this, it is 7.12 astronomical units from the Sun! This comet was discovered between Jupiter and Saturn and will never be as close as Jupiter. The formula being used for its brightness uses an "absolute magnitude" (assumed brightness when 1 a.u. from both Earth and Sun) of 2.0, suggesting that this comet, while not quite the size of Hale-Bopp, is still much larger than most of the comets we ever see.

Comet C/1999 J2 is not the only comet discovery credited to Brian Skiff. His name also appears on 114P/Wiseman-Skiff, P/Skiff-Kosai, and P/Bowell-Skiff. Incidentally, last December 28th, IAUC 7076 announced the recovery of Bowell-Skiff by LINEAR. According to the Circular, the

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

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actual recovery was by Gareth Williams, at his desk at the Minor Planet Center (not someone with LINEAR), by recognizing one purportedly asteroidal object in a batch of submitted LINEAR data to match the expected position and motion of *Bowell-Skiff*.

The IAU Circulars, very many of them, have reported on a conspicuous nova, which was discovered on May 22nd by two independent observers. The nova, which has since faded considerably, was easily visible to the naked eye, about magnitude 3. However, Murphy's Law does apply to astronomy. While, technically, *Nova Velorum 1999*, now named *V382 Velorum*, is only 52° south, its Right Ascension was too close to that of the sun to allow Houstonians a clear view without twilight. A trip to the southern hemisphere would fix that, but, in accord with Murphy's Law, the nova was found about when airlines were going through a round of price increases!

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## ***Boy Scout Star Party***

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*By Marg Nunez*

Star Party Volunteers Needed for a Boy Scout star party on **July 10th at 8:00 pm** at **Jowell Elementary**. This school address is 6355 Greenhouse Road, Katy Tx 77449. You can get to Greenhouse Road by taking Fry Road, turning east on West Little York or taking Barker Cypress, turning west on West Little York. Take I-10 west, turning north on Fry Road, or north on Barker Cypress. You can also take 290 west and turn south on Barker Cypress. We hope will will have 60 to 100 people there. Please contact Marg. at 713 529 2549 or Email at [Marg10@flash.net](mailto:Marg10@flash.net).

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# ***SETI on Your PC***

*By Bill Pellerin, GuideStar Editor*

Want to analyze SETI data on your PC? I am, and you can. The SETI program (Search for Extraterrestrial Intelligence) is acquiring data from radio telescopes at a very high rate. This data *may* contain radio signals from civilizations on planets orbiting stars far from us. The problem is that the SETI program doesn't have enough computer processing power to analyze the data.

They came up with an idea, now called SETI@home to take advantage of computers that are connected to the internet. Here's how it works. I download and install a SETI screen saver (really the data analysis program) and then download a 'chunk' of SETI data (250k). ('My' data 'chunk', from the Arecibo Radio Observatory, is centered at 10<sup>h</sup> 32<sup>m</sup> 45", +20° 12' 35" (in the constellation Leo).) When my PC is otherwise idle, the screensaver (analysis program) kicks in and processes the data. There's an explanation of the methods used to analyze the data on the web site, but basically, the processing is using Fourier transforms to identify signals that are buried in the data.

When my computer has finished the analysis, the results are uploaded and a new 'chunk' of data is downloaded for analysis. I have used about 82 hours of processing time, and I'm about 40% through with the processing of this 'chunk'. Needless to say, the analysis takes considerable processor time.

So far, about 650,000 folks have signed up to analyze data for this project, so the project has been able to take advantage of the power of ~650,000 personal computers. That's a lot of power.

The easy URL to remember is **www.seti.org**. There's a link on that site to the SETI@home project. There's no fee to participate, and there's no payment to you for your efforts (more accurately, your computer's efforts), but you will get the satisfaction of knowing that you're participating in **real** research and that you just might have the chunk of data that contains a radio signal from outer space. Pretty exciting stuff, huh?

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## Book Review

# Nightfall

by Isaac Asimov and Robert Silverberg



*Reviewed by: Bill Pellerin, GuideStar Editor*

David Levy, at this year's Texas Star Party mentioned a short story by Isaac Asimov called *Nightfall* (written in 1941) that showed the effect of a human-like civilization living on a planet that was in a cluster of stars. The planet orbits one star, the brightest, but five other stars that are nearby assure that there is never darkness on the planet.

Note: I could not find the short story at my favorite book store, but I did find the novel, of the same name, which expands on the short story. (Published by Bantam Books, 339 pages, \$6.99 list)

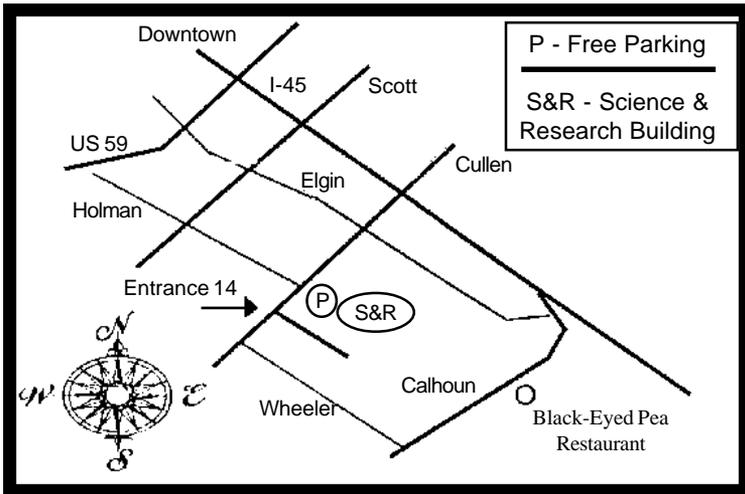
Every 2500 years an arrangement of the suns and planets is such that there is an eclipse that blocks out the primary sun (while the other suns are not up). Needless to say, this (nightfall event) represents a significant event to the people of the planet. As the astronomers try to warn the populace of the coming nightfall, a religious cult tries to take advantage of the event to gain converts. Meanwhile the newspaper discounts the likelihood of the event and assures its readers that nothing is going to happen.

If nothing really happened, it'd be a short book, but, of course, nightfall *does* happen and the planet is thrown into chaos. What happens in the aftermath is most interesting as various groups attempt to establish order and control over the populace, and the final resolution of the story remains a mystery until the last few pages.

I don't read Science Fiction novels, so I have a limited basis for comparison, but this was a good story, well told (although some parts of the book dragged somewhat) and it should be of interest to HAS members.

I'll bring my copy to the July meeting (for a door prize), so if you're interested in having it, come to the meeting.

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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

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