

GuideStar



September, 2012
Volume 30, #9

At the September 7 Meeting

Archeoastronomy

Gordon Houston, HAS President

Archeoastronomy is the study of how ancient cultures incorporated astronomical practices into their culture and how that practice benefited the people and their adaptation to the environment.

Archeoastronomy is thought of as the anthropology of astronomy to distinguish it from the history of astronomy. The talk will be a general overview of archeoastronomy worldwide, incorporating personal visits to ancient sites of astronomical significance.



The Houston Astronomical Society is a member of the Astronomical League.

The *GuideStar* is the winner of the 2012 Astronomical League Mabel Sterns Newsletter award.

Highlights:

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HAS Web Page:

<http://www.AstronomyHouston.org>

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

Schedule of meeting activities:

All meetings are at the University of Houston Science and Research building. See the inside back page for directions to the location.

Novice meeting: 7:00 p.m.
Darren Lewin (Land Sea & Sky) —"An Introduction to Eyepieces and their Optical Properties"

General meeting: 8:00 p.m

See last page for directions and more information.

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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Directors at Large

Greg Barolak H:281-467-5780
 Mike Edstrom
 Mike Holdsworth H:713-478-4109
 Mike Rao 832-689-4584

Committee Chairpersons

Audit Scott Mitchell H:281-293-7818
 Education Debbie Moran
 Field Tr./Obsg Siobhan Saragusa H:713-376-5873
 Patricia Nadema
 Novice Justin McCollum H:409-212-2795
 Observatory Bob Rogers H:281-460-1573
 Program Brian Cudnik H:832-912-1244
 Publicity Mike Rao 832-689-4584
 Telescope John Haynes H:802-363-8123
 Welcoming Katy Keene
 katykeene@comcast.net
 Membership Steve Fast 713-898-2188

Ad-Hoc Committee Chairpersons

Texas Star Party ... Steve Goldberg H:713-721-5077
 AL Awards Amelia Goldberg H:713-721-5077
 GuideStar Bill Pellerin C:713-598-8543
 Outreach Alan Rossiter H:713-660-9503
 Webmaster Jeffery McLaughlin
 Email: webmaster@astronomyhouston.org
 By-Laws Review ... Scott Mitchell H:281-293-7818

Advisors

Dr. Reginald DuFour, Rice Univ.
 Dr. Lawrence Pinsky, U. of H.
 Dr. Lawrence Armendarez, U. of St. Thomas

Dues and Membership Information

Annual Dues:Regular\$36
 Associate\$6
 Sustaining\$50
 Student\$12
 Honorary N/C

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*. *The GuideStar*, the monthly publication of the Houston Astronomical Society is available on the web site. 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* and *Astronomy* magazines are available to members at a discount.

Membership Application: Send funds to address shown on last page 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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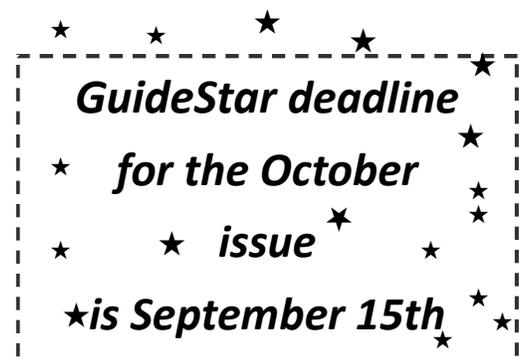
Other Meetings...

Johnson Space Center Astronomical Society meets in the the Lunar and Planetary Institute on the 2nd Friday of each month. Web site: www.jscas.net

Fort Bend Astronomy Club meets the third Friday of the month at 8:00 p.m. at the First Colony conference Center. Novice meeting begins at 7:00, regular meeting begins at 8:00. Web site: <http://www.fbac.org>

North Houston Astronomy Club meets at 7:30 p.m. on the 4th Friday of each month in the Teaching Theatre of the Student Center at Kingwood College. Call 281-312-1650 or E-mail bill.leach@nhmccd.edu. Web site: www.astronomyclub.org

Brazosport Astronomy Club meets the third Tuesday of each month at the Brazosport planetarium at 7:45 p.m. The Brazosport planetarium is located at 400 College Boulevard, Clute, TX, 77531. For more information call 979-265-3376



President's Message

by Gordon Houston, President

Hello HAS,

I don't want to glaze this over by over repetition, but I want to congratulate Bill Pellerin and Jeffery McLaughlin again for their



Bill Pellerin (left) receives the Mabel Sterns Newsletter Award and Jeffery MacLaughlin (right) receives the Astronomical League Web Site Award from HAS president Gordon Houston.

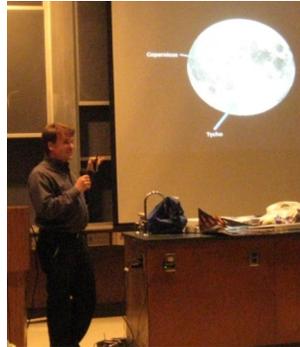
Photo: Mark Holdsworth

outstanding contributions to the Houston Astronomical Society. Following up on my observations of program and content, I must mention one of our greatest assets, besides the observatory, which is the loaner scope program. John Haynes has handled this the last few years and has recently accelerated upgrading the inventory. He has added three new Orion telescopes and sold others, with more to come. John was a novice when he took on the role, which has enhanced his own learning and understanding of telescope equipment, leading to his fine novice presentation last month. There is an old adage that you don't really learn something until you teach it, so getting involved in the club works both ways. Your knowledge and skills improve and the club benefits from your volunteer efforts. This leads me to the next subject.

Our nominating committee will be chaired by Vice President Bill Pellerin. The members are being identified and will be announced at the September 7th meeting. Their task is identifying at least one candidate for each position as outlined by the by-laws. This slate, as presented by the nominating committee, is by no means a fixed selection. Nominations for election will be taken from the floor at the November business meeting when the elections are held. I encourage each of you to consider joining the team and being proactive by contacting the nominating committee and putting your name in. Having competition for roles is the democratic method and is healthy for the club. Just a note, we do have one open committee position unfilled for this year, which is the Welcoming Chairman.

One of the ad hoc committees I set up, with the approval of the board, was the By-Laws review committee, chaired by Scott Mitchell. Time commitments have delayed the start, but it is now underway. I encourage each of you to go the website and download the by-laws and read them. There is a link to the current HAS By-Laws at the bottom of every page. Some of the ideas I have suggested are adding 1 or 2 more Vice Presidents positions, giving each more specific organizational responsibility. I would like to see the Welcoming Chair

become a formal membership chair position. We need to add a hospitality chair (I am always looking for volunteers right now to



Nathan Price shows us how to identify major features on the moon

Photo: Bill Pellerin

handle this responsibility now). An audio visual committee needs to be added. And finally, I would like to see all chairman positions have voting capability and formal members of the board. These are only suggestions, but part of my

direction is to involve more people so there are more experienced people to hold positions from year to year.

Finally, I first want to recognize the Two Minute Drill observing tip presenters in August which were Lunar-Nathan Price, Planetary-Justin McCollum, and Deep Sky-Sanger Russell. I would like to point out that Nathan Price agreed to his presentation as a guest. He and his family joined in the month between and Sanger is a relatively new member, who volunteered a second month to do another TMD. All three presentations were short, with specific take away ideas, thus setting the standard for all future TMD teams. I look forward to hearing the September TMDs. Until then, keep observing and Clear Skies.

Ad astra,

..Gordon Houston

President HAS

Observations... of the editor

by Bill Pellerin, *GuideStar* Editor

The Dog Days...

I watch the news most nights in an attempt to keep up with what's going on in the world. Recently, they've been talking about the 'dog days of summer' without providing an explanation of the use of this phrase to describe the hottest, most sultry days of the year. This notion comes from the old belief that it was hotter in summer (northern hemisphere) because of the proximity of the sun with Sirius, the dog star.

I looked it up, and it turns out that the Sun has the same RA as Sirius on July 1 at 7:45 p.m. CDT (2000 coordinates). It's not that close to Sirius, however, in fact it's 39 degrees and 45 minutes away. The Sun, at this time is in the constellation Gemini and close to epsilon Gem, being just over 2 degrees south and a little east of that star. The Sun is at dec +23 degrees and Sirius is at dec -17 degrees.

This is the September *GuideStar*, and the 22nd of this month marks the beginning of fall, the autumnal equinox. Two benefits to us — longer nights and cooler nights.

Dogs are invoked in the winter too — someone might say, "It's a three dog night" (not referring to the rock band of the same name). The meaning here is that it's so cold that in order to keep warm you have to sleep with three dogs on the bed.

A Grammar Break

At the Astronomical League conference, David Eicher (Editor—*Astronomy Magazine*) said that we should not write "the Earth". According to David we should use the planet name 'Earth' like we use the name 'Mars', without the word 'the'. Someone in the audience pointed out that we say 'the Sun'. Grammar is inconsistent.

The other grammatical issue I have researched is when the name of our star (the Sun) should be capitalized and when it shouldn't. It seems that if we're referring to our star, the name should be capitalized, but if we're referring to the central star of another solar system, and talking about its sun, the word should not be capitalized.

This GuideStar

I'm pleased to have an article from our friend Larry Wadle and his observations of the 2004 and 2012 Venus transits of the Sun. In addition to just observing the events, Larry calculated the distance to the Sun based, in part, on data that he developed. As you may recall, some of the early Venus transit expeditions had the explicit mission to measure the timing of the transit and thereby the

distance from Earth to the Sun.

Also in this issue, Tom Williams, historian of the AAVSO introduces us to Mabel Sterns, the woman whose name is now attached to the Astronomical League Newsletter Award. Putting together a newsletter in the pre-computer days was something of a challenge and Ms Sterns was one of the early pioneers.

Clayton Jeter's interview this month is with Don Selle. Don has been contributing articles to the *GuideStar* and we're all looking forward to his next contribution.

Until next time...

clear skies and new moons!

..Bill

Mabel Sterns and the AL Award Named in Her Honor

—with kudo's to Bill Pellerin

By Tom Williams

The Houston Astronomical Society (HAS) has been honored this year by the Astronomical League's award for newsletter excellence, The Mabel Sterns Award, to Bill Pellerin, editor of the HAS newsletter *GuideStar*. HAS members may not appreciate how significant the honor of receiving the Mabel Sterns Award really is. Mabel Sterns (1909–1991) was one of the original founders of the Astronomical League. She did so, while also acting as the glue that held together the National Capital Astronomers club in Washington D.C. Those of us who have been around long enough recall seeing her name frequently in *The Reflector* as well as in *Sky & Telescope*, and other amateur astronomy publications. Together with Wilma Cherup, Grace Scholz, Helen Spence Federer, and a few other women, Sterns promoted feminine participation in amateur astronomy.



Mabel Sterns

Born in 1909 in Pennington Falls, Minnesota, Mabel Sterns graduated from high school there, and then apparently left to find her fortunes elsewhere. After traveling to Europe for some period of time, she returned from Rotterdam in September 1930, remaining in New York City through at least April, 1935 before migrating to Washington, D.C. There she was employed as a clerk in the U.S. Patent Office.¹

Sterns' earliest known involvement in amateur astronomy came shortly after her arrival in Washington when, as a member of the National Capital Astronomers, she participated in early efforts to organize a national association of amateur astronomers. Sterns aggressively publicized the Washington (third) meeting of the Amateur Astronomical League of America in both *The Sky* and in *Popular Astronomy* whereas the previous meeting of the fledgling organization in Pittsburgh had been largely ignored.² She remained active as a league organizer after World War II, and participated in the eventual incorporation of the Astronomical League with its corporate address at Science News Service in Washington, DC.³

Sterns' career as a technical writer would be difficult to trace, but her writing contributions to astronomy included the editing of *Star Dust*, the newsletter of the National Capital Astronomers, as well as serving as the first editor for the *Astronomical League Newsletter* (1948–1952).⁴ Working independently, Sterns collected and published in book form a directory of astronomical observatories in the United States that still serves as a useful reference for the study of US amateur astronomy in the period leading up to and including World War II.⁵ Later, as a volunteer working in the library of the Naval Observatory, Sterns assembled a marvelous bi-centennial history of amateur astronomy in the

United States, displayed at the U.S.N.O. during our nation's birth year celebrations in 1976.⁶

Thus, by electing to name its award for club newsletter editorial excellence in honor of Mabel Sterns, the Astronomical League recognized not only editorial excellence but also long term services to amateur astronomy as well as the League.

Bill Pellerin is only the second editor for the *GuideStar*, having taken over from its founding editor John Chauvin in 1988. Bill's selection by the Astronomical League to receive the Mabel Sterns award for 2012 therefore recognizes his long and excellent service as the *GuideStar* Editor, but also his years of other service not only to the HAS but also to the Astronomical League and the amateur astronomical community in general. It is a pleasure to add my congratulations to Bill as well as a hearty thank you for all those many years of faithful service.

Endnotes

1. Social Security Death Index, US Federal Census data for 1910, 1920 and 1940, and passenger departure and arrival lists, all available via Ancestry.com.
2. Sterns, Mabel. "Notes on the Washington meeting." *The Sky*. 1941 Aug; 5(10):14–15; Sterns, Mabel. "Amateur astronomers hold third convention." *Popular Astronomy*. 1941 Nov; 49(9):505–507.
3. Allen, Chuck. "Beginnings: The League brought to life." *Reflector*. 1996 Nov; 49(1):12–13.
4. LoGuirato, June. "In Memoriam: Mabel Sterns, 1911-1991." *Reflector*. 1941 Feb; 44, (2): 11.
5. Sterns, Mabel. *Directory of astronomical observatories in the United States*. Ann Arbor, Michigan: J. W. Edwards; 1947.
6. LoGuirato, op. cit. and personal communication with Brenda Corbin, retired USNO Librarian.

A Tale of Two Transits

By Larry C. Wadle

Transit of Venus -- 2004

June 7, 2004

Brighton, England

My wife, Bessie, two grandsons, one granddaughter and I were staying in a hotel facing South on the rocky beach in downtown Brighton. I spent about 2 hours looking for the perfect place to observe the next day's Venus transit of the Sun. Brighton is a vacation spot for sun loving beach goers and dozens of hotels are adjacent to each other just like townhouses on a line running West to East. Just visualize the situation – walk out the hotel door and left and right as far as the eye can see are hotels and in front of you is beach composed of egg-sized rocks leading down to the cold, cold water. The only breaks are streets every so often but behind the hotels is just another line of high-rise apartment buildings and so on and on. I walked a mile or two along this line of hotels looking for a break in the group to see the sunrise point that would be behind the hotels. However, no luck, no way to see between the hotels! So, I walked out onto two different extremely long boardwalk piers that reached into the English Channel to try to see around the hotels, but again, no luck. I reluctantly returned to our hotel but just as I got there, I noticed there was a parking garage with 17 half-story floors to the open top floor and an elevator to get to the top. I went to the top and found I could see the Channel over the tops of the buildings at the exact spot the Sun would rise – perfect – this would be my observation location.

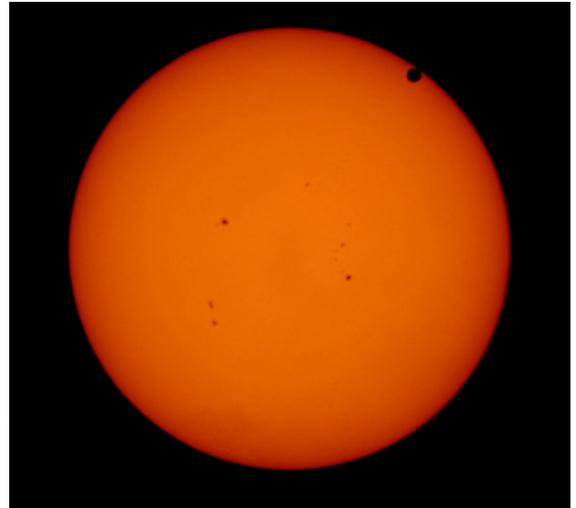
Transit Day – June 8, 2004

June 8, 2004

Brighton, England

I arose from bed at 4:30 am British Standard Time (BST) (3:30 am UT) and left for the parking garage with my small, cheap, hand held 8x23 binoculars. My goal was to time first contact (exterior ingress) and second contact (interior ingress) of Venus with the Sun. Then, at Greenwich as the transit ends, I wanted to time the third contact (interior egress) and fourth contact (exterior egress). If successful, I planned to calculate the distance to Venus using these observations.

I arrived at the top floor of the parking garage at 4:49am BST and watched the Sun rise over a hill between two buildings. The Sun was not too bright due to the thick atmosphere, the Mylar filter and the small binoculars. There were clear, blue skies with little wisps of cloud, no wind, no dew, low humidity and a temperature of 68 degrees. A



The 2012 Venus Transit of the Sun.

Photo: Bill Pellerin

security guard came up at 5:20am and asked me what I was doing. I told him and he left. Then, a small car came up at 5:40am and two tall policemen got out and asked me what I was doing. I told them and they became excited because they knew about the transit and were interested amateur astronomers and asked if they could stay and look at the transit with my binoculars. I agreed and showed them my binoculars with Mylar taped in front of the objective lenses and we continued to talk about general astronomy. A few minutes later one of the walkie talkies on their shoulders blasted out a loud question for them – quote – Have you found that man on top of the parking garage with the binoculars who is peeking into the windows of the adjacent apartment houses? Red faced and embarrassed, they answered the call that there was no peeper and everything was under control. They stayed with me until 6:05am and planned to stay until 6:20am when the transit was to begin. How-

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ever, they got an emergency call and had to leave without seeing the transit.

I could see Venus with no difficulty and timed the exterior ingress at 6:22:49am (5:22:49 UT) and the interior ingress at 6:40:02am (5:40:02 UT). By the way, I did not see the black drop effect nor the halo around Venus that were seen at some transits.

June 8, 2004

Greenwich, England

We left Brighton on a tour bus at 8:00am and arrived at Greenwich at 10am when I continued to watch the transit. There were about 3,000 people at Greenwich and many amateur telescopes for public viewing, either through the eyepiece or projections on white cardboard. I showed many of our 40 plus tour group the transit via my binoculars and pointed out Venus on the white cardboard projections. They were all interested and amazed that they happened to be in England where the entire 6-hour plus transit could be seen.

We had to board the tour bus before exterior egress so the last observation I made was at 12:04:26pm (11:04:26) UT at interior egress. The bus ride was too bumpy and my view of the Sun became difficult to see continuously due to tall buildings next to the road.

Results:

Since I had the timings at interior ingress and interior egress, I could use Delisle's method to compute the distance from Earth to the Sun. I selected the Johannesburg Observatory in Johannesburg, South Africa at a latitude of 26.20 degrees South and longitude of 28.0667 degrees East to be paired with Brighton, England at a latitude of 50.83 degrees North and longitude of 0.1556 degrees West for a difference of 77.03 degrees of latitude. I assumed their timing of interior ingress and their latitude and longitude were accurate. I also knew the latitude and longitude of Brighton accurately. Their interior ingress timing of 5:36:23 UT and my timing at Brighton of 5:40:02 UT yielded a parallax of 8.20" or a distance of Earth to the Sun of 88,015,049 miles which is 6,307,291 miles less than the actual distance of 94,322,340 miles on June 8, 2004 or in error by 6.687%.

In addition, I applied Delisle's method using my timing of the interior egress at Greenwich, England at a latitude of 51.466 degrees north and longitude of 0.001 degrees West to be paired with the Observatorio Astronomico de Minas, Uruguay at a latitude of 34.37 degrees South and longitude of 55.24 degrees East for a difference of 85.836 degrees. Their timing of interior egress was 11:13:25 UT. Given that the latitudes and longitudes of both locations were accurate, timing at Minas of 11:13:28 and Greenwich's of 11:04:26 yielded a parallax of 9.21" or a distance of Earth to the Sun of 98,822,019 miles which is 4,499,679 miles more than the actual distance of 94,322,340 on June 8, 2004 or in error by 4.771%.

Transit of Venus -- 2012

June 3, 2012

Waikiki Beach, Honolulu, Hawaii

I flew from Houston to Honolulu non-stop and arrived just after noon – a 7.5-hour flight. I arrived at the Ohana Waikiki Melia hotel at 2pm and found that it was surrounded by high rise hotels and office buildings. So much for observing the transit of Venus from my room!

June 4, 2012

Waikiki Beach, Honolulu, Hawaii

About 11am, I walked from my hotel to Waikiki Beach at the Sunset on the Beach location, about 1.5 miles from the hotel. I forgot to bring my compass to insure that I could observe the end of the transit from this location. The transit should end about 6:45pm at an azimuth of 288 degrees at an altitude of 5 degrees. So it appeared that the transit would end in clear view about 3 degrees over mountains in the West. I then did a little sightseeing and returned to my hotel about 3pm. But to confirm this location was good, I walked back to the Sunset on the Beach location and was there from 5pm to sunset around 6:45pm and determined it was fine. I got more confirmation when I read in the Honolulu newspaper that the Institute for Astronomy at the University of Hawaii was going to hold public viewing of the transit at this location.

Transit Day – June 5, 2012

June 5, 2012

Waikiki Beach, Honolulu, Hawaii

I arrived at the Sunset on the Beach location that is officially called Queen's Beach at 10am. I watched the University of Hawaii students and staff set up several 8" Celestron 8s, an 8" Sky Quest Orion telescope and a Coronado Personal Solar Telescope (PST) with H-Alpha filter. This was only one of four public viewing sites on Oahu where astronomy groups were setting up telescopes. In addition, they are distributing 25,000 free orange colored solar viewer filters to the

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public. Many were wearing Transit of Venus T-shirts but none were for sale. I spent my time on park benches reading or wandering around the telescopes and other exhibits of the U of H Institute for Astronomy. I met Kelly, a first year graduate student in astronomy, who received her undergraduate degree at Rice University under advisor Professor Chris Johns-Krull. Her specialty is galaxies and I met another student, John, whose field is asteroids and comets. Kelly had attached a spectroscope to a Questar 3.5" telescope and trained it on the Sun for people to view. There was an exhibit on astrobiology and a display on the transit made by a Girl Scout as a partial requirement for the Silver Award. There were also solar system and planetary exhibits as well as a demonstration model of how the Transit of Venus occurs. I estimated that about 1,000 people visited these exhibits and used the telescopes to view the black dot on the Sun. A very popular display was a continuous live webcast from a small telescope on Mauna Kea showing the transit on a large screen with Venus as a 5" black disk against a large Sun image. Everyone was interested and having a good time watching the transit. I met the exhibition leader, Dr. Roy Gal, Assistant Astronomer & Faculty Chair, Friends of the Institute for Astronomy, and discussed the transit and the Institutes activities in astronomy. I promised him that I would send the distance from Earth to the Sun that I calculated from my observations with 8 x 23 binoculars.

I had taped Mylar film across the objectives of my hand held 8 x 23 binoculars before I left my hotel room this morning and I tested them on the Sun. Clouds were everywhere but I was hoping for the best.

At 11:50am I laid down on the grass right next to the beach to observe the Sun that was at an altitude of 85 degrees in the North, so the bottom part of the Sun, where Venus will travel, is the Northern edge since I am at 21 degrees North latitude. Holding the binoculars almost straight up was very tiring and unsteady. The large, puffy, cumulus clouds were moving fast from northeast to southwest with large areas of blue sky between them. There would be an all white cloud, then a white cloud with a black bottom, and then I would feel 2 or 3 drops of rain. This cycle repeated all afternoon until sunset.

The sky was clear as I timed exterior ingress at 12:10:30 pm and interior ingress at 12:28:05 pm. I also saw Venus against the Sun shortly afterwards on the webcast screen and naked eye through my orange film light filter. Venus against the Sun with the orange filter was much easier to see than with the Mylar filter. The orange filter made the Sun look very orange whereas the Mylar filter made the Sun look white, its more natural color. I estimated that Venus's entry was about 45 degrees east of the north point of the Sun (actually 41 degrees) and was moving toward 70 degrees west of the north point of the Sun (actually 67 degrees). I took a few photos through the Mylar filter and captured a blurry Sun and Venus. Then I photographed the webcast screen and could easily see Venus and 4 sunspots while the Sun was observed through 2 different filters and downloaded to the projector.

At 1:50pm clouds covered about 60% of the sky and were moving fast toward the Southwest. The wind was about 15-20 miles per hour and

the temperature was 80 degrees with humidity low, maybe 50%. Venus was easy to see with binoculars or naked eye since it was now well away from the Sun's edge.

I took a break for a fast food lunch and returned to the beach at 3:25pm for the transit halfway point and observed it with the binoculars and naked eye. Shortly afterwards, the sky became overcast and black and a few drops of rain fell.

At 4:20 pm I could see Venus and one sunspot with the binoculars through thin cloud cover. Venus's black dot was very pronounced and the sunspot large but dim – it was smaller than Venus. It was getting cooler and windier. I changed the Mylar filters on the binoculars to the orange filters and Venus and sunspots were much sharper. However, I could not see the sunspots with the naked eye.

I could always see 20-30 birds continuously, mostly on the ground walking around and pecking at seeds. They pay you no mind and will walk right up to you. The park was spotless – people put their garbage in cans and attendants continually collect it on carts. Police do walking patrols – I could see four parked police cars and 3-4 policemen walking around. I read and relaxed while waiting for the interior egress around 6:26 pm.

Continuous monitoring of the Sun showed clouds covering and uncovering it while heavy wind gusts occurred. I saw Venus touch the Sun's limb at 6:26:30 pm for the interior egress timing and drew the Sun with Venus and the 4 sunspots. Then I timed exterior egress at 6:42:20 pm. I did not see the black drop effect nor the halo around Venus that were seen at some transits.

I celebrated the event with enjoying a conversation with two psychology graduate students from Sunomo College just north of San Francisco while soaking in the hotel's hot tub. Then I polished off the success with a large Supreme pizza and diet coke.

Results:

Since I timed all four contacts of exterior ingress, interior ingress, interior egress and exterior egress, I could use both Halley's and

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Highlights from the August Meeting of the Houston Astronomical Society

- HAS President, Gordon Houston, welcomed the new members and visitors present at the meeting.
- Bram Weisman announced that Jeffery McLaughlin won the 2012 AL Webmaster of the year award, and Gordon Houston presented him with the award. Congratulations Jeffery!
- Past HAS presidents came together to present Bill Pellerin the 2012 Mable Sterns Award for the best club newsletter. Congratulations Bill!
- The membership had cake in honor of Jeffery and Bill's achievements.
- Dr. Richard Schmude delivered his presentation, "Jupiter's Red and White Oval Storms in 2011-2012."

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Delisle's methods to compute the distance from Earth to the Sun. I selected the timings at Wellington, New Zealand at a latitude of 41.25 degrees South and longitude of 174.75 degrees East to be paired with Waikiki Beach at a latitude of 21.27 degrees North and longitude of 157.82 degrees West for a difference of 62.52 degrees of latitude. I assumed Wellington's timings of all four contacts were fairly accurate and their latitude and longitude was accurate. I also knew the latitude and longitude of Waikiki Beach accurately. Their interior ingress timing of 22:33:45 UT and interior egress timing of 04:25:23 UT along with my ingress timing 22:28:05 UT and egress timing of 04:26:30 UT yielded a parallax of 8.326" or a distance of Earth to the Sun of 98,174,451 miles which is 3,817,742 miles more than the actual distance of 94,356,709 miles on June 5, 2012 or in error by 4.05%. Please note that I am making all calculations based on the actual distance of Earth to the Sun on June 5, 2012, not the accepted mean value of 92,955,888 miles.

In addition, I applied Delisle's method using my timing of the interior ingress and Wellington's timing and calculated a parallax of 8.397" for a distance to the Sun of 97,350,012 miles that is 2,993,303 miles larger or an error of 3.17%, the smallest error of all. The latitude difference was 62.52 degrees.

I also applied Delisle's method to my timing and Wellington's timing of interior egress and calculated a parallax of 7.995" for a distance to the Sun of 102,241,979 miles that is 7,885,270 miles more the actual distance or an error of 8.36%.

Finally, I applied Delisle's method using my timing of the interior egress and Verona, Italy's timing of interior egress and calculated a parallax of 8.964" for a distance to the Sun of 91,189,539 miles that is 3,167,170 miles smaller or an error of 3.36%. The latitude difference was only 24.18 degrees.

Conclusion:

Thus, my timings were somewhat better in 2012 at Waikiki Beach than in 2004, assuming that timings of all other locations were of the

same quality or better.

I think this was pretty good for hand held 8x23 binoculars, especially since Kepler estimated the parallax to be less than 59", Halley predicted it to be no greater than 12.5" and in 1639 Jeremiah Horrocks measured the parallax to be 15" which meant the distance to the Sun was 54,500,000 miles or an error of 42.2%. In 1761 the measured parallaxes varied from 8.28" to 10.60" that meant the distances varied from 77,100,000 to 98,700,000 miles. And in 1769 the parallaxes varied from 8.43" to 8.80" meaning the distances varied from 91,135,135 to 95,135,135 miles. However, Thomas Hornsby of Britain, using five different measurements from various locations in the world, calculated the parallax to be 8.78, very close to today's known value of 8.79". This yielded a distance of 93,726,900 miles, only 771,012 miles from today's accepted value of 92,955,888 miles.

August 7, 2012

Editor — for more information on the measurement methods employed in this article see:

<http://www.transitofvenus.nl/parallax.html>

Just Looking

A GuideStar Interview by Clayton L. Jeter

Don Selle—Writer, Astroimager



Don Selle and I have had many laughs together through the years. I think our humor runs parallel to each other's. We always try to outwit each other. It's always a real hoot when observing with Don at various star parties... though he keeps me laughing, he gets very serious when shooting through his telescope. His astrophotos are simply outstanding...true art. But wait, there's more...his astronomy articles in our HAS *GuideStar* newsletter



ter are wonderful too. I seem to always learn something new when reading his column.

I hope you enjoy this interview like I have. It's total fun rubbing elbows with this guy. Here's Don...

The Don Selle bio...

I have always had an interest in science and technology. When I was an undergraduate at the US Coast Guard Academy, I seriously considered majoring in physics, but decided instead on Ocean Engineering which has been the basis for my career in the offshore industry.

In order to graduate from the Coast Guard Academy, I had to pass two semesters of Marine Navigation, which started with celestial navigation. During the summer, I had to prove that I could put this "book knowledge" to practical use, which meant learning the bright stars, and how to use a sextant to plot the ships position. "Take the arc to Arcturus then spike to Spica".

When I finally got around to looking for a hobby, astronomy was high on the list. I figured I would get a small scope and try it out. I got the non goto version of the Meade ETX90 and using my knowledge of the bright stars I set out on my own to figure out astronomy. I predictably ran into problems and when stubborn determination got me only a little further along, I realized I needed some help.

I remembered that my neighbor Kirk Kendrick was into astronomy. When I let Kirk know about my interest in astronomy, and asked if he was still into himself, his first question to me was "are you doing anything Friday night, I'll pick you up at 6:00." It was only after we arrived on the U of H campus that Kirk told me he was the President of HAS and that I was about to attend my first meeting of the Houston Astronomical Society.

Little did I know then how fortunate I was and how much this would shape my "career" in astronomy. Within a couple of months Kirk got me out to the dark site in Columbus and shortly after that, arranged for Mike Dye to draft me onto the observatory committee. I have been on that committee ever since with only a break while I lived overseas in Malaysia. Kirk also encouraged me to attend TSP which I did for the first time in 2002. Shortly after that first TSP, I took up astrophotography and have been working to get better at it ever since.

When I first went to live in Kuala Lumpur (KL), I thought that the fact that it is 25 degrees further south of Houston would allow me to observe a good portion of the southern sky. Little did I anticipate that its latitude made it tropical, and that tropical locations are not so good for astronomy. It was cloudy there almost all of the time! While I did get a little observing in, the operative word is little.

(Continued on page 12)

(Continued from page 11)

To fuel my astronomy habit, I turned to reading astronomy books. Fortunately KL has a very large English language book store which has a very large science and technology section. Lots of astronomy books including text books and many of the recently published popular books about astronomy. I also arranged my home leave to coincide with TSP. For a couple of years, I flew into Houston in time to pick up my gear from a storage locker, pack the car and head west. I may not have been the person to travel the farthest to get to TSP, but I bet I'm pretty close.

At the first of the TSPs I attended when I was living in KL, I set up next to Al Kelly, a well known astrophotography pioneer and member of the JSCAS. He gave a talk that year outlining how to download astronomy data from the internet and turn it into astrophotos.

What a great idea and it fit my situation so well! Here was a way I could continue to progress my astrophotography skills, by using the downloaded data to practice my image processing skills. The internet speeds were slow enough that it even felt the same as taking the images. Come home from work and start to download the first subframe, wait for an hour till it completes – repeat at least three times. Process the results the next day.

With all of the astronomy reading I did in KL, I couldn't help but learn a little. Lately, I decided to start writing an article a month for the Guidestar newsletter. Researching an article really focuses my study, and once in a while results in something that maybe will interest somebody else too. My hope is that maybe by catching their interest I can encourage them to explore astronomy a bit more, just like Kirk encouraged me.

The Don Selle interview...

Clayton: I'm really glad I got you to work on this interview with me. The interviews that I've completed in the past seven years are always fun to do and I learn so much about the amateur and what methods & tips & tricks that he uses.

What made you "give-in" to working on this interview with me?

Don: Actually Clayton it was because you told me you were desperate for someone to interview! Seriously though, thanks for asking me.

Clayton: Do you think that by becoming involved in astronomy, it has somehow changed a direction in your life?



NGC891—Don Selle Photo

Don: It has in a lot of ways. For instance before I got serious about astronomy I never really paid attention to the weather. Now, weather sites are second only to astronomy in my browser bookmarks. Not obsessive, but..

I also seem to plan my weekends differently now too!

Clayton: I really enjoy reading your astronomy articles in the *GuideStar*. Where do you get your ideas for your articles?

Don: Mainly from the astronomy reading I have done and from several internet sources too. Once I decided to do the articles, I started to keep a list of astronomy topics that caught my attention. I tend towards things that are a bit quirky or towards stories about astronomers (especially amateurs) who through tremendous dedication made a breakthrough.

Clayton: It seems you have become totally immersed in astrophotography. I've seen your work too...your photos are stunning. Tell us a bit about the equipment that you use.

Don: Probably the best investment I made was

(Continued on page 13)

(Continued from page 12)

in a quality mount. I acquired a used Tak EM200 and my images improved almost immediately. I no longer have that mount, it's been upgraded to an EM400. Over the past few years I have been fortunate to accumulate a number of OTAs which span from 300mm to 2400mm focal length. I also use both a CCD camera from SBIG and a modified Canon DSLR.

Clayton: I see you at TSP every year....are there others?

Don: It's great to be able to visit with friends I made at TSP from year to year, some of whom I see only on the Ranch. I've been to TSP every year since 2002, but so far only TSP.

I can guarantee you though; that I will attend several more star parties a year once I have retired.

Clayton: You spoke highly of Kirk Kendrick. Are you still neighbors? Was he your only mentor or were there others?

Don: Kirk encouraged me when I really needed it, when I was starting out, but he was not the only person. I have learned a lot from many different HAS members besides Kirk.

Many of the people who have helped me though have done so by creating excellent websites where they not only display their astrophotos, but post how-to articles tips and tricks. I never cease to be amazed at how much knowledge is shared by amateur astronomers and how good the internet is to make it possible.

Clayton: Have you ever wondered why you're so attracted to the night skies and faint fuzzy objects? Are you a galaxy kinda guy or like myself, you like them all?

Don: I like them all. I've been starting to focus on galaxies recently as they are challenging to image and I am finally feeling like I can do them justice.

Clayton: How would you like to see your own astronomy grow?

Don: I'd like to start capturing astronomical data, like variable star observing, asteroid photometry or who knows –maybe even exoplanet transits. All I need is more time!

Clayton: I know that you're a very helpful volunteer within our society. I see you at just about every HAS event. I also know you're a big help out at observatory near Columbus. What drives you to keep helping out?

Don: I learned a long time ago that the more you put into an activity or organization, the more you get out of the experience. This is very true about amateur astronomy. I've spent many happy hours and met many good friends.

Clayton: I know that you have owned several telescopes through the years. Which was your favorite...and why? Do you still own it?

Don: Favorite to me means most used so that would be the Orion ED80 refractor I just recently sold. I owned it for about 8 years. It had really decent optics and was reasonably priced. I shot more photos with it than any other OTA I owned.

Clayton: Do you have any helpful advice to pass on to observers just starting out in astronomy?

Don: Be stubborn and stick with it – you will soon master it, and don't be afraid to ask for help – amateur astronomers like to share!

Clayton: Is there an email address that you have that a Houston Astronomical Society member could contact you for an additional question or two?

Don: Sure – donselle@earthlink.net drop me a line and if you have an article idea let me know about it!

Clayton: Thanks Don for taking the time to share your interest and thoughts within our HAS newsletter, the *Guide Star*. We wish you luck with all of your astronomy interests.

Don: Thanks Clayton – hopefully I didn't sound too desperate!

Clayton: Clear skies always,

Don: You too, and if you keep looking up, be careful not to trip!

Clayton L. Jeter is an avid visual observer and a longtime member of the Houston Astronomical Society. Contact him at: stonebloke@gmail.com

A Brand New Age:

NASA Space Place

Queue Observing at Mt. Paranal

By Dr. Marc J. Kuchner

First a caravan of white observatory cars arrives, winding up the narrow road to the 2600-m- (~8500-foot-) high summit. Then the shutters around the domes open, and rays from the setting sun alight on colossal mirrors and metal struts. It's the beginning of another busy night at Mt. Paranal, Chile, where I am learning about new, more efficient ways of managing a modern observatory.

I stepped into the observatory's control room to soak up some of the new, unfamiliar culture. Here, under florescent lights and drop ceilings are banks of computer screens, one bank

to control each of the four big telescopes on the mountaintop and a few others too. At each bank sits two people, a telescope operator and an astronomer.

The layout of this workspace was not unfamiliar to me. But the way these Mt. Paranal astronomers work certainly was. When I was cutting my teeth at Mt. Palomar observatory in California, I would only go to the telescope to take my own data. In stark contrast, everyone observing at Mt. Paranal tonight is taking data for someone else.

The Mt. Paranal astronomers each spend 105 nights a year here on the mountain performing various duties, including taking data for other astronomers. The latter, they call "executing the queue." Headquarters in Germany decides what parts of the sky will have priority on any given night (the queue). Then the Mt. Paranal astronomers march up the mountain and carry out this program, choosing calibrators, filling the log books, and adapting to changing conditions. They send the data back to headquarters, and from

there it makes its way out to the wider astronomical community for study.

This new way of working allows the Mt. Paranal astronomers to specialize in just one or two telescope instruments each. Surely this plan is more efficient than the old-fashioned way,

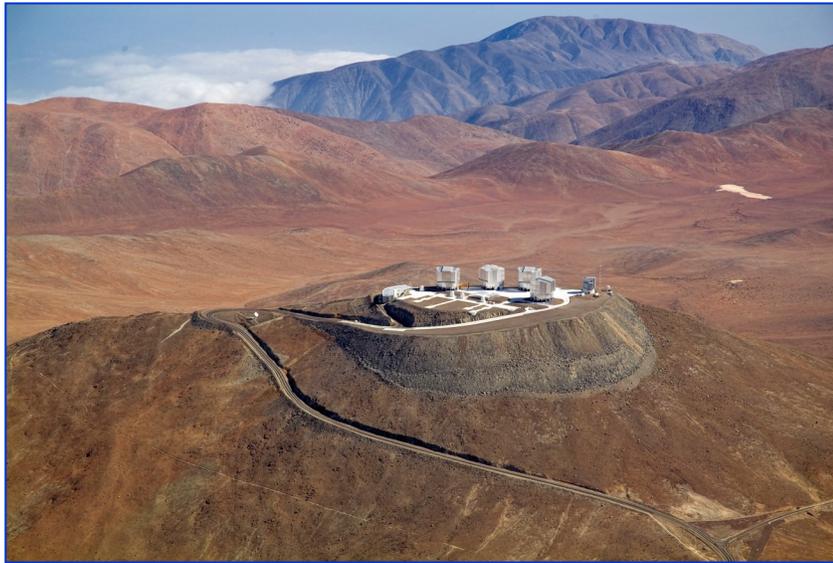
where each of us had to learn every instrument we used from scratch—sifting through manuals at 3:00 AM when the filter wheel got stuck or the cryogen ran out, watching precious observing time tick away. Here at Mt. Paranal, much of the work is done in a big room full of people, not off by yourself, reducing some dangers of the process. Also, queue observing cuts down on plane travel, an important step for cutting carbon emissions.

It's a brand new age, I thought as I watched the giant domes spin in the silent, cold Chilean night. And maybe with queue observing, some

of the romance is gone. Still, my colleagues and I couldn't help saying as we stared out across the moonlit mountains: I can't believe how lucky we are to be here.

Dr. Marc J. Kuchner is an astrophysicist at the Exoplanets and Stellar Astrophysics Laboratory at NASA's Goddard Space Flight Center. NASA's Astrophysics Division works on big questions about the origin and evolution of the universe, galaxies, and planetary systems. Explore more at <http://www.science.nasa.gov/astrophysics/>.

Kids can explore these topics at <http://spaceplace.nasa.gov/space>.



European Southern Observatory at Mt. Paranal, Chile.

Observatory Corner

By Bob Rogers, Observatory Chairman

Hello everyone:

Not much to report on the home front except it's HOT, HOT, HOT! The Mosquito business is in full operation with West Nile virus, so please, everyone make sure to use Mosquito Repellant when outside in the evening. If you think it's bad here, the folks in Dallas are really under the gun with an outbreak of WNV.

I would like to thank Allen Wilkerson for doing the mowing at the site in my absence due to a Kidney stone issue that lasted 3 weeks. It's amazing how far the technology has come to be able to relieve the pain and remove these things.

The Observatory Committee is working on a project that we will announce to the membership very soon. We, the Committee, think this project will benefit some of our membership. Stay tuned...

And the work goes on

I **do need** to remind everyone that we need to start filling out Log Reports at the site so I can give this information to the Fondren Foundation. The property is on a 99 year lease and part of the Lease agreement is that HAS needs to report every year to the Fondren Foundation that the Property is being used. The Log Reports are located in the box in the middle of the field. Just open the cover, fill out the report and then slide it into the slot that is in the inside of the cover and then close the box. It is very important that everyone fill out a Log Report so that we are showing that the Observing site is being used. Your help on this is very much appreciated.

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



year. So please link your Randalls card to the Houston Astronomical Society so that the society can benefit from this Randalls program. Our number is #6618. This is very easy to do, just go to the Courtesy Booth and tell the person there what you want to do.

If you have any suggestions or thoughts for the site, let me know.

Thanks,

Bob Rogers

Observatory Chairman
281-460-1573
siteworkerbob@hotmail.com

Trailer/RV spots available free for weekend use at the site.
Contact the Observatory Chairman, Bob Rogers siteworkerbob@hotmail.com for more information

Star Birth In the Scorpion

By Phil Plait, *Bad Astronomy*

<http://blogs.discovermagazine.com/badastronomy/>

We live in the outskirts of our disk-shaped galaxy, our Sun and planets located about halfway from the center to the edge. This is a bit like living a few kilometers away from a city, in the suburbs. From that distance, when you look toward the city, you see more buildings, more activity, just more stuff going on.

The same thing is true for us on Earth: the center of the galaxy (downtown) is located toward the constellations of Sagittarius and Scorpius, so when we look in that direction there's lots of fun things to see: more stars, more gas and dust, more clusters, more stellar nurseries.

And when you point the monster Very Large Telescopes ginormous 8 meter mirror in that direction you can see amazing details in that buzzing hubbub, like [this lovely shot of the nebula NGC 6357](#).

This piece is actually part of a much larger complex of gas and dust, but shows some nice features. The whole place is lousy with hydrogen gas, glowing rosy red due to energy pumped into it from young, massive, hot stars. Those stars are forming from that very gas, so they're lighting up their own nursery. Running right through the middle is a river of interstellar dust – not like the dust bunnies under your bed, this is actually more like soot, and made up of complex clumps of organic molecules. This dust absorbs and blocks light behind it, so it looks like it's splitting the gas cloud in half.

You can also see some structures in the dust, like the "fingers" of material at the top pointing to the center of the gas.

Those are actually dense clumps of material being slowly blasted away by the fierce, intense ultraviolet light from newborn stars. Think of them like sandbars in a river getting eaten away by the current. They point right at the stars doing the deed, a cosmic "*j'accuse!*"

Nebulae like this are among my favorite objects in the sky. They're beautiful, they're fascinating, and it's more than a little mind-blowing

to know that there are dozens, hundreds, maybe thousands of stars being born in these objects even as we watch. And it also gives me a bit of a shiver to know that

these objects are ephemeral, too: the stars being born really are slowly eating away at the material... and many of these stars will explode as supernovae someday, and that destruction won't be slow anymore! The onslaught of high-energy radiation and material moving outwards from those stellar blasts at thousands of kilometers per second will make short work of this nebula. So take a look while you can. In a million years or four, this whole thing will be gone.



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Kids Outreach & Public Star Parties, October - December 2012

Event: Fathers & Flashlights

Type: Urban Overnight Camp for Kids & Dads. Numerous organized activities.

Date: Saturday, 10/6/2012

Time: 8:00 PM - 9:30 PM (tentative)

Location: West University Little League Field (University Blvd @ Auden Street)

Event: Camp for All / Candlelighters

Type: Observing – Kids from MD Anderson and Texas Childrens'

Date: Friday, 10/12/2012

Time: 6:00 PM – 9:00 PM

Location: Camp for All near Brenham, TX

Event: Tinsley Elementary "The Great Reading Campout"

Type: Elementary School Literature & Science Night. Numerous organized activities.

Date: Thursday, 11/29/2012

Time: 6:00 PM - 8:00 PM

Location: Tinsley Elementary, 11035 Bob White Dr., Houston, TX 77096 (southwest side of Houston, near Fondren @ West Bellfort)

Name: The Houston Arboretum Spring Star Party

Type: Mostly Adults – Arboretum Members. An evening at the Arboretum. Food & Drink!

Date: Saturday, 12/08/2012

Time: 7:00 PM – 9:00 PM (tentative)

Location: Houston Arboretum, 4501 Woodway Drive

Details – especially times – are subject to change

(Continued from page 18)

some software uses STT (don't know why) as the designator for these stars.

Since our computers don't usually have Greek keyboards, entering the sigma character is rather problematic.

Many stars have multiple names and one name might work in SkyTools, but not in your planetarium software or vice versa. SkyTools usually lists several alternate designations for an object in its database and is usually my go-to resource for determining other designations for stars. Struve 2470A (the brighter star of the double pair) has nine additional designations for the star including those from the Smithsonian Astrophysical Observatory (SAO) and the Hipparcos catalog (HIP).

This is a confusing and frustrating problem in astronomy, and it is all the more reason why you should carefully plan your observing session before you begin. Make sure you know the designations for the object

and which one of those designations appears on your map or in your software.

There is a more contemporary Otto Struve (1897-1963) as well. Not to be confused with his grandfather, the newer Otto was the director of the Yerkes and the McDonald Observatories.

Note: An earlier version of this article in the GuideStar confused the two Otto Struve astronomers. This is a corrected version.

Shallow Sky Object of the Month

Another Double-Double in Lyra

Object: Struve 2470 / 2474**Class:** Double, double star**Constellation:** Lyr**Magnitude:** (2470) 7.00 / 8.6 and (2474) 6.7 / 8.1**R.A.:** 19 h 08 m 56 s (appx midpoint between pairs)**Dec:** 34 deg 40 min 36 sec**Size/Spectral:**

10' 16.4" (main pair)

2470 — 13.4"

2474 — 16.0" (some uncertainty)

Optics needed: Small telescope and relatively dark skies.**Other names:**

2470 = SAO 67870

2474 = SAO 67879

Why this is interesting:

You probably know about the 'double-double' in Lyra (Epsilon Lyr). If you don't, check the September, 2009 *GuideStar* on the HAS web site. Epsilon Lyr is the 'Shallow Sky Object' in that issue.

This is a similar set of stars, four stars comprising two sets of double stars but there are differences. The stars comprising this double-double are dimmer, and the close pairs of stars that make up the end-points of the collection are not as close.

The inspiration for this object is from the book *A Year of the Stars* by Fred Schaff, purchased at a used book store for \$5.98. You never know what treasures you'll find at these stores.

The most significant difference between this set of four stars and Epsilon Lyr is the apparent space between the stars. For Epsilon Lyr the star pairs are separated by about 3.5 arc minutes; the 2470/2474 the star pairs are separated by 3 times that much.

For Epsilon Lyr the space between the tight pairs is about 2.4 arc seconds, but for 2470/2474, the space between the tight pairs is average of 14.7 arc seconds.

So, the 2470/2474 set of stars are easier to split, but much dimmer. If they were bright enough you could easily split the main pair with you unaided eyes. If you can find them with binoculars, you could split the main pair easily. I've not tried to observe this set of stars with binoculars, but I have looked at this set with a 4" telescope and I was able to see all the stars in the grouping easily.

Another significant difference is that the pairs formed at the end of the main pair are along parallel lines. For Epsilon Lyr the end-pairs are at right angles to each other.



Struve 2470 is in the one-degree circle to the left of the main stars of Lyra, and 2474 is just below it.

Star chart generated by TheSkyX © Software Bisque, Inc. All rights reserved. www.bisque.com

Why are these double stars called 'Struve' stars?

The catalog of over 4300 double stars in the sky was put together by Friedrich Georg Wilhelm von Struve (1793-1864). Not all planetarium software includes the Struve double stars. For example, To find a Struve double star in TheSky

you enter "Struve 2470" (for example). To find the same double star in SkyTools, you enter "STF 2470". SkyTools asks you to remember this designation as 'Struve The Father'.



Friedrich Struve

Photo in public domain (copyright expired)

Otto Wilhelm Struve (1819-1905) was the son of FGW Struve and part of a large family with astronomical interests.

Sometimes you'll see double stars designated as OΣ, which means that they are in a catalog of Otto Wilhelm Struve (543 double stars), and

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Houston Astronomical Society

P.O. Box 20332

Houston, TX 77225-0332

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 or a conflict with other events at the University of Houston.

Board of Directors Meeting

The Board of Directors Meeting is held on dates and at locations scheduled by the board. 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 available on the HAS web site to all members of H.A.S., and to persons interested in the organization's activities. Contributions to *GuideStar* by members are encouraged. Electronic submission is helpful. Submit the article in text, MS-Word format via email BillPellerin@sbcglobal.net. Copy must be received by the 15th of the month for inclusion in the issue to be available near the end of the same month. Or, bring copy to the General Membership Meeting and give it to the Editor, or phone to make special arrangements.

Editing & Production: Bill Pellerin,

713-880-8061

Email: BillPellerin@sbcglobal.net

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The Houston Astronomical Society welcomes you to our organization. The HAS is a group of dedicated amateur astronomers, most of whom are observers, but some are armchair astronomers.

The benefits of membership are:

- Access to our 18 acre observing site west of Houston -- a great place to observe the universe!
- A telescope loaner program -- borrow a HAS telescope and try observing for yourself!
- A monthly novice meeting, site orientation meeting, and general meeting with speakers of interest.
- Opportunities to participate in programs that promote astronomy to the general public (such as Star Parties at schools)
- A yearly all-clubs meeting for Houston area organizations
- Meet other amateurs and share experiences, learn techniques, and swap stories

You're invited to attend our next meeting.

You'll have a great time.

Houston Astronomical Society

Meeting on Friday, September 7, 2012

7:00 Novice Meeting, room 116 Science & Research 1 Bldg

8:00 General Meeting, room 117 Science & Research 1 Bldg

University of Houston

Directions to meeting:

From I-45 going south (from downtown)

- exit at Cullen Boulevard
- turn right on Cullen
- turn right into the parking lot (by the stadium)
- Science and Research is across the street (2nd building back)

From I-45 going north (from NASA/Galveston)

- exit at Cullen Boulevard
- turn left on Cullen
- turn right into the parking lot (by the stadium)
- Science and Research is across the street (2nd building back)

Parking:

There is Free Parking, **BUT DO NOT PARK IN ANY RESERVED PARKING SPACES AT ANY TIME.**

U of H parking enforcement will ticket your vehicle.

UPDATE — Due to construction in the stadium parking lot, use entrances 15D and 15F. You can park in this area, but NOT in a RESERVED space.