Houston Astronomical Society

April, 2013

GuideStar

April, 2013

Volume 31, #4

At the April 5 Meeting

Late Heavy Bombardment of the Moon and Implications for the

Solar System

Dr. David Kring, Lunar & Planetary Institute

Analyses of samples collected by the Apollo astronauts, augmented with those of lunar meteorites, support an epoch of intense bombardment of the Earth-Moon system about 4 billion years ago. That data, plus a survey of the size distribution of impact craters in the ancient highlands of the Moon, suggest the source of the debris was the asteroid belt. The asteroids appear to have been dynamically excited by shifting orbits among the giant planets. This extraordinary event in the history of the solar system reshaped the surfaces of the terrestrial planets and, intriguingly, immediately preceded the earliest isotopic evidence of life on Earth.

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

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

Highlights:

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.

"Choosing and Using Binoculars and Telescopes".

See page 6 for more information

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.

Officers & Past President

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Education ..... Debbie Moran .....
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Program ..... Brian Cudnik..... H:832-912-1244
Publicity ..... Mike Rao 832-689-4584
Telescope..... John Haynes..... H:802-363-8123
Welcoming..... Vacant
Membership ..... Steve Fast..... 713-898-2188

Ad-Hoc Committee Chairpersons

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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 Houston Community College Southwest Campus in Stafford, Texas http://www.fbac.org/club_meetings.htm. Novice meeting begins at 7:00 p.m., regular meeting begins at 8:00 p.m. Website: 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-mailbill.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

GuideStar deadline for the May issue is April 15th (tax day)

President's Message

by Bill Pellerin, President

What's Going on with the HAS?

There is a lot going on with the HAS.

- **Urban Observing program** — The Urban Observing program needs a coordinator (you!). The coordinator will set up Urban Observing events at Bear Creek Park (or elsewhere) to introduce new members and visitors to observing the sky. The coordinator will determine the location and schedule for the events (at least one event every month). Please let me know if you are available to take this on.
- **The Zazzle.com HAS store** now has HAS branded merchandise on it. Check it out at http://zazzle.com/hasstore
- **The Messier Marathon** event was run on 3/16/13, but (as often happens) it was cloudy. Reports are that it was a lot of fun anyway with lots of folks and food. Thanks to everyone who put this together. See more results in this *GuideStar.*
- **The HAS recently received a check** from the Texas Star Party for $400. Many HAS members will be helping make the TSP the great event that it is and the TSP recognizes that contribution by sharing the wealth.
- **Pay your dues**, if you haven't already. The HAS is the best astronomy investment you'll make. For your membership you get access to the observatory site, loaner telescopes, full access to the HAS web site (astronomyhouston.org), and the knowledge that you're supporting the organization. I hope that you'll contribute your time, even a little of it — join us for a public star party, make a presentation at one of our meetings. There's a lot you can do to get involved.
- I will be at the April HAS meeting, but will be gone (to the Texas Star Party) on the night of the May meeting. Our VP, Mike Edstrom, will conduct the meeting on that night. Thanks to Mike for taking this on.

Parking — Read this…

The information that I have from the University of Houston is that we can continue to park in the lot across Cullen from the Science and Research Building. The spaces are marked 'Faculty'; don't park in any space marked 'Reserved'. Other options — you can park free in lot 16B (just south of Elgin) or pay to park in the parking garage near our usual spot. Last month I parked in the garage for $3.00. The visitor parking entrance is the one farthest from Cullen Boulevard.

My intention is to contact the UH Parking department prior to the April meeting and get some information about parking. Whatever I find out I'll put on the list server and forward to our webmaster for posting on the web site.

Bomber Field Star Party

On April 20, there's an event at the 'Bomber Field' near Monaville, TX. You'd be excused for not knowing where Monaville is (it's south of Hempstead and north of Brookshire). Before nightfall radio controlled model airplanes will fly around the field, and after nightfall we're asked bring telescopes and share the sky. This should be great fun. Plan to attend, and bring your telescope. I've signed up to be the coordinator on this one. Let me know if you can make it.

Thanks to Everyone who makes the HAS Work.

I can't say this often enough. There are a lot of good folks who make the HAS run from day to day. Most of their names are on page 2 of this *GuideStar*. Join me in showing appreciation for their efforts. None of us could do this by ourselves, but as a team, it works great.

See you at the April meeting!!

Cheers,

..Bill Pellerin

President HAS

April/May

Calendar

Date	Time	Event
April		
2	11:38 p.m.	Moon at last quarter
5	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
6		Prime Night, Columbus Site
10	4:38 a.m.	New Moon
	7:30 p.m.	Board Meeting HEB I-10 at Bunker Hill
18	7:31 a.m.	Moon at first quarter
22		Lyrid meteors peak
25	2:59 p.m.	Full Moon
28	3:00 a.m.	Saturn at Opposition
May		
2	6:16 a.m.	Moon at last quarter
3	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
9	7:31 p.m.	New Moon
11		Prime Night, Columbus Site
17	11:35 p.m.	Moon at first quarter
24	11:26 p.m.	Full Moon
31	1:59 p.m.	Moon at last quarter

Send calendar events to Doug McCormick - skygazer10@sbcglobal.net

For the latest information on club events, go to http://www.astronomyhouston.org/

Check the web site: www.astronomyhouston.org

The HAS website not only has news and information about our society, but also a variety of features to manage your membership and connect with other club members. Current members can post photos, trade gear, pay dues, manage discount magazine subscriptions, swap stories in the forum, and more.

Questions about the site? Need a hand to get your account set up?
Contact webmaster@astronomyhouston.org.

The HAS web site is the winner of the 2012 Astronomical League award for excellence.

Follow the *GuideStar* on Twitter at:

GuideStar_HAS

Join Facebook and look for:

Houston Astronomical Society

Starline

Call 832-go4-HAS0 (**832-464-4270**) for the latest information on the meeting and other information about activities within the HAS.

HAS Board Meeting

HAS Board meetings are scheduled regularly (see the calendar, above). All members are invited to attend these meetings, but only board members can vote on issues brought before the board.

Observations... of the editor

by Bill Pellerin, GuideStar Editor

Did you see Comet Panstarrs?

Most of us were able to get a glimpse at least of the comet Panstarrs that his been in the evening sky recently. I was able to see it from near my house about three miles from downtown Houston. I saw it two nights in a row — March 4 and March 5 — with a quite old pair of Oshmans binoculars (7x35). My sharp eyed wife, Lori, could see it without binoculars once she knew where to look.

If you're wondering where the name came from… 'Panstarrs' is an acronym for *Panoramic Survey Telescope and Rapid Response System* a set of survey telescopes used for photometry (brightness measurements) and astrometry (position measurements). The comet was discovered in an image from the Hawaiian Panstarrs telescope in mid 2011; the official name of the comet is C/2011 L4. The comet is believed to have originated in the Ort Cloud.

I was surprised by the press coverage, a bit. Accurate information about the comet was readily available via the internet (if you looked at reputable sources), but bad information was available too. I saw a picture on one of the local TV stations of what was supposed to be the comet taken in the morning sky even though it's not a morning sky object. It looked like an airplane's vapor trail to me. There are also sufficient resources available from obvious sources to get correct information. Any professional astronomer from University of Houston, Rice University, UT, Texas A&M or Prairie View A&M (I'm thinking about Brian Cudnik here) could have provided accurate information on how to see the comet. Many of us amateur observers had good information available as well.

Texas Star Party Coming Up, Soon

Shopping opportunities!!! With the Texas Star Party coming up in May (see www.texasstarparty.org) there will be vendors with stuff to buy and there will be a swap meet at which individuals can buy and sell stuff. Bring your checkbook.!

Beyond that, the TSP is an outstanding observer's event. If you've never observed under the really dark west Texas skies you owe it to yourself to try it. Check the web site for information about the event and about accommodations for the event.

The best sight at the TSP is the Milky Way, brighter than you've ever seen it, overhead, late at night. It's unforgettable.

Keeping Lists...

More than once I've saved myself the embarrassment of repeating a 'shallow sky' object of the month because I keep a list of the objects that I've used. As I was looking for an object for this month I thought about Arcturus, an interesting giant star, but I did that one in July, 2007. How about Castor, a very nice double star? Nope… done in May, 2007. How about Regulus? Oops, done in April, 2011. Algieba, April 2009.

Since I've written about Castor, perhaps its 'twin' Pollux would be interesting. I'm researching it.

So, the lesson learned — make lists and refer to them.

This month marks the 81st 'shallow sky' object and the 81st article (mostly interviews) from Clayton Jeter. Thanks, Clayton for your hard work and I hope that the readers enjoy his items and my 'shallow sky' object.

Until next time...

clear skies and new moons!

..Bill

Novice Presentation April, 2013

Choosing and Using Telescopes and Binoculars

By Debbie Moran

We are back to nuts and bolts for the April Novice presentation "Choosing and Using Telescopes and Binoculars." This presentation will be an introduction to telescopes and binoculars, how to choose the best equipment for your interests, the terminology describing the optical design, the advantages and disadvantages of various designs, and basic use. The May meeting will immediately precede the Texas Star Party and the speaker is to be determined. Bill Spizzirri has several ideas and may be able to present at that meeting. I would like to find people willing to present on computer aids to astronomy for the near future. There was an excellent suggestion to make this a multiple speaker session since many are especially familiar with just one or two programs or apps. Please let me know if you are interested in sharing your favorite computer astronomy programs.

Minutes of the General Meeting of the

Houston Astronomical Society

March 1, 2013

By Bill Pellerin, President (a poor substitute for Rene)

President Bill Pellerin welcomed new members and guests.

GuideStar Editor Bill Pellerin reviewed article highlights of the newsletter for March, available on the HAS web site.

Bill Pellerin announced the availability of the University of Texas Amateur Astronomers' Scholarship. (See this issue of the *GuideStar* for details.) Remember that the first $500 of contributions is matched!

Observatory Director Bob Rogers announced that the combination to the observing site will change March 2, 2013. He also reviewed upgrades to the bunkhouse at the site.

HAS Committee Chair for the Texas Star Party Steve Goldberg announced that anyone who wants to go and wants to stay on the ranch can be put on a standby list. Also, there is housing off the Prude Ranch site.

Steve Goldberg, acting in place of Amelia Goldberg, Astronomical League awards chair, presented Steve Fast with the Messier award.

Mike Rao announced the new HAS Store at www.zazzle.com/hasstore/ is now available for purchases. More merchandise will appear on the site soon.

Justin McCollum, aka Professor Comet, reviewed highlights of the comet report for the winter season.

Field Trip & Observing Chair Steve Fast announced that anyone who has not renewed his or her HAS membership will be removed from the active roster and that a club picnic and Messier Marathon would be held March 9, 2013 at the HAS observing site near Columbus.

Bram Weisman presented awards to Alan Rossiter and Debbie Moran for their work with outreach. These awards are through the Night Sky Network.

Alan Rossiter reviewed the list of outreach opportunities including three events on March 7 and the model airplane / astronomy event in Monaville, TX on April 20.

Novice Chair Debbie Moran announced that participation at the Science Fair by Richard Nugent and other HAS members was successful and that the winners have been invited to appear at a future HAS meeting to review their projects.

Director and Telescope Chair John Haynes reviewed the rules that govern the use of loaner telescopes and invited members to request a telescope.

Bill Pellerin presented a beautiful framed photograph from Don Taylor to Greg Barolak, winner of the March gift drawing.

Steve Goldberg, program co-chair, introduced speaker Debbie Moran who gave a presentation on "Traveling to See Solar Eclipses." Bill Spizzirri presented the novice meeting on "Nucleosynthesis" prior to the general meeting.

Support the Texas Amateur Astronomers' Scholarship at UT Austin

By Joel W. Barna, University of Texas

As the Development Manager for The University of Texas at Austin Department of Astronomy and McDonald Observatory, I write to salute Hunter Scott and to highlight what he is doing on behalf of astronomy education in Texas. Mr. Scott, who lives in Fredericksburg, is an avid amateur astronomer and a passionate advocate for the power of astronomy to engage young people with careers in science, technology, engineering, and mathematics — the STEM fields that our society needs to strengthen for a strong and prosperous future.

In 2010, acting on that passion, Mr. Scott created and started fundraising for an endowment to benefit The University of Texas at Austin Department of Astronomy, called the Texas Amateur Astronomers' Scholarship (TAAS). Many Central Texas astronomers, including members of the San Antonio League of Sidewalk Astronomers (SALSA), have joined Mr. Scott in contributing, along with members of the general public. Mr. Scott has also reached out to many astronomy groups throughout Texas. The endowment has a goal of $25,000, to be reached by January 2015. Currently, funding stands at $10,500 — just over 40 percent of the goal.

As Mr. Scott eloquently described the endowment in an article for "The Dark Side," the SALSA newsletter, in September 2010:

"The TAAS endowment bears a name reflecting the passion that amateur astronomers and astronomy clubs across the great State of Texas all share. There is strength in numbers, and there are thousands of amateur astronomers across this state. If we pool our efforts, we can reach the goal without breaking a sweat. The scholarship will belong to you. You will take pride in knowing that your individual or club donation helped defray the cost of a first-class education for a deserving student. This is the best way I can think of for amateurs to have a positive effect on the future of astronomy. The Astronomy Program at the University of Texas is a world-class program, supported by an equally world-class research facility, McDonald Observatory. What better place to focus a scholarship fund?"

"The scholarship will be awarded to a deserving astronomy student, male or female. The successful candidate must also be a legal resident of the United States, may be a freshman, sophomore, junior, or senior, and may receive the scholarship more than once. The Astronomy Department Faculty will decide which student receives the scholarship each year. I can tell you that Observatory Director David Lambert and Department Chair Neal Evans are pleased and honored to have Texas amateur astronomers providing such important support."

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The Houston Astronomical Society has a proud tradition stretching back nearly 60 years. I invite HAS members to join with other Texas astronomers in completing the Texas Amateur Astronomers' Scholarship endowment.

You can contribute by mail (form below); by phone (call Joel Barna at 512-471-6335) or online at the site listed below (use the first pull-down menu to select McDonald Observatory and the second pull-down menu to select the Texas Amateur Astronomers' Scholarship):

https://utdirect.utexas.edu/apps/utgiving/online/nlogon/?source=HPG

Thanks in advance for your support!

Your tax-deductible donations can be submitted by filling out the information block below and mail it to:

UT Austin Astronomy
ATTN: TAAS Endowment
1 University Station C1402
Austin, Texas 78712-0259

For any questions, contact the Scholarship creator, Mr. Hunter Scott at

catseye@beecreek.net or via telephone at (830) 992-0740

The University of Texas at Austin
McDonald Observatory
and Department of Astronomy

Donating to
The Texas Amateur Astronomers' Scholarship
at the University of Texas at Austin
Department of Astronomy

In perpetuity, this endowment will provide funds to support the academic work of undergraduate astronomy majors, chosen for their potential as scientific leaders.

YES, I want to shape the future of science by contributing to the Texas Amateur Astronomers' Scholarship Endowment.

Name _____ ‡
Address _____
City _____ **State** ____ **Zip** _____
Phone _____ **E-Mail** _____
Gift amount _____ ❍ Check enclosed* ❍ Cash Enclosed

* (Make checks payable to *The University of Texas at Austin.* UT Tax ID number is 74–6000203)

Credit Card ❍ VISA ❍ MasterCard ❍ Discover ❍ American Express

Credit card number _____

Name on card _____ Expiration date _____

‡ (Name and address information is required so that we can send you a gift receipt. If paying by credit card, please also make sure that you have filled in your zip code.)

Your Daily Dose of Astonishment

By Diane K . Fisher

NASA Space Place

As a person vitally interested in astronomy, you probably have the Astronomy Picture of the Day website at apod.nasa.gov set as favorite link. APOD has been around since practically the beginning of the web. The first APOD appeared unannounced on June 16, 1995. It got 15 hits. The next picture appeared June 20, 1995, and the site has not taken a day off since. Now daily traffic is more like one million hits.

Obviously, someone is responsible for picking, posting, and writing the detailed descriptions for these images. Is it a whole team of people? No. Surprisingly, it is only two men, the same ones who started it and have been doing it ever since.

Robert Nemiroff and Jerry Bonnell shared an office at NASA's Goddard Space Flight Center in the early-90s, when the term "World Wide Web" was unknown, but a software program called Mosaic could connect to and display specially coded content on other computers. The office mates thought "we should do something with this."

Thus was conceived the Astronomy Picture of the Day. Now, in addition to the wildly popular English version, over 25 mirror websites in other languages are maintained independently by volunteers. (See http://apod.nasa.gov/apod/lib/about_apod.html for links). An archive of every APOD ever published is at http://apod.nasa.gov/apod/archivepix.html. Dr. Nemiroff also maintains a discussion website at http://asterisk.apod.com/.

But how does it get done? Do these guys even have day jobs?

Dr. Nemiroff has since moved to Michigan Technological University in Houghton, Michigan, where he is professor of astrophysics, both teaching and doing research. Dr. Bonnell is still with NASA, an astrophysicist with the Compton Gamma Ray Observatory Science Support Center at Goddard. APOD is only a very small part of their responsibilities. They do not collaborate, but rather divide up the calendar, and each picks the image, writes the description, and includes the links for the days on his own list. The files are queued up for posting by a "robot" each day.

They use the same tools they used at the beginning: Raw HTML code written using the vi text editor in Linux. This simple format has now become such a part of the brand that they would upset all the people and websites and mobile apps that link to their feed if they were to change anything at this point.

Where do they find the images? Candidates are volunteered from large and small observatories, space telescopes (like the Hubble and Spitzer), and independent astronomers and astrophotographers. The good doctors receive ten images for every one they publish on APOD. But, as Dr. Nemiroff emphasizes, being picked or not picked is no reflection on the value of the image.

Some of the selections are picked for their quirkiness. Some are videos instead of images. Some have nothing to do with astronomy at all,

The January 20, 2013, Astronomy Picture of the Day is one that might fall into the "quirky" category. The object was found at the bottom of the sea aboard a Greek ship that sank in 80 BCE. It is an Antikythera mechanism, a mechanical computer of an accuracy thought impossible for that era. Its wheels and gears create a portable orrery of the sky that predicts star and planet locations as well as lunar and solar eclipses.

like the astonishing August 21, 2012, video of a replicating DNA molecule.

Among the many mobile apps taking advantage of the APOD feed is Space Place Prime, a NASA magazine that updates daily with the best of NASA. It's available free (in iOS only at this time) at the Apple Store.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Just Looking

A *GuideStar* Interview by Clayton L. Jeter

Steve Fast — Observing Chair

I first got to know Steve Fast at last year's "Okie Tex" star party. Both of our tents and scopes were set up close to one another so we shared views through our scopes. We had a great time working on faint objects together throughout the week. He is a very dedicated visual observer…he's a star-hopping SCT guy. Like me, he loves the challenge of working on an observing program with a lot of faint fuzzies. He will agree with me, it's all about the hunt.

Steve holds two important positions in our club…he works hard at organizing and distributing all the club members nametag badges during our monthly meetings. Steve is also our current Field Trip and Observing coordinator. He plans our club picnics, Messier marathons, and weekend star parties throughout the year. FYI, Steve also had input on selecting objects that were included in our new HAS "Texas 45" observing program.

I know you readers will enjoy this month's interview. I failed to mention that Stevie is quite humorous and is known to be somewhat of a prankster. Beware. Here's Steve…

The Steve Fast bio…

I grew up in the wide-open spaces of the very un-cloudy Oklahoma Panhandle where you just had to step out into the yard to see dark skies. My dad would always show me the Big Dipper when we went outside; and when I was in third grade, I found an old encyclopedia from my grandpa, the Lincoln Library of Essential Information, which had pictures of the then brand-new 200" Hale telescope and a breathless description of its wonders. My parents couldn't afford to buy me a telescope, and mowing lawns didn't provide nearly enough income for that either. So my amateur astronomy consisted of looking at telescope pictures and borrowing books from the public library and looking at the stars at night in wonder.

But as I got out of grade school, my interest in astronomy waned. I graduated from OU and got my master's from Harvard, and then I found a job for an oil company in Kazakstan. In 1997, one of our contractors asked who wanted to see Comet Hale-Bopp. Since we were working in a desert, the view through his binoculars was stunning. That comet rekindled my interest in astronomy.

I soon bought an 8" Meade LX10 and brought it back to Kazakstan with me as carry-on luggage (that was before the TSA treated all passengers as terrorists). I did some observing, but I couldn't find anyone over there to teach me anything, so I was very frustrated. Despite my frustrations, I got to see two unforgettable events. In 2004, I saw the transit of Venus from my backyard in Almati, Kazakstan; and in March 2006, I went to Atirau, Kazakstan, to see a total eclipse of the sun.

By 2011, I was living in Houston, and I decided to join HAS. I still had my 8" LX10 and still couldn't find much with it. I was looking for a dark site close to Houston online, and I stumbled onto HAS. I found not just a dark site, but a great group of friends who taught me how to star-hop and showed what I should be looking for. I love going out in the clean air and the dark, quiet nights of Columbus and spending hours hunting down the beauties of creation. I've gotten to see the 2012 transit of Venus as well – probably not many people were lucky enough to see both this century, and I didn't have to travel for either one. I still have my 8" SCT that completely lacks any electronics and love using. I wonder if at some point I'll exhaust what I can see with it and need a bigger scope, but that hasn't happened yet.

The Steve Fast interview…

Clayton: Great to have you here with us for this month's catch in the *GuideStar*. Let's get right to it…

You seem to be quite happy with your 8" Schmidt Cassegrain LX-10. How did you come about choosing this telescope? Have you thought about installing digital setting circles to help you capture more objects in a given night?

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Steve: I wanted a scope that would be good for both planetary and deep sky – the SCT is reasonably good at both, although it's admittedly not ideal for either. An 8" scope is big enough to see a lot but small enough to be easily portable. In the days before the TSA turned us all into terrorists, I carried my OTA on the plane and traveled with it. I liked what I saw of digital setting circles, but I probably won't get them – for me the hunt is a lot of the fun. There's such a rush for me when you star-hop to something step by step, and then it pops into the field of view. But everyone should do it the way that is most fun for him – this is supposed to be fun after all. But the first 3-4 months of learning to star hop were really agony for me, but I had no choice since I didn't have a GOTO scope. Now I'm glad that I didn't.

Clayton: You hinted above that you might like a larger scope. Any ideas on what is larger?

Steve: 36" at least – until I look at my bank account. But seriously it seems that 12" could be a sweet spot. It's still reasonably portable, but it has 2.25X the light gathering power of an 8". But I'm also learning that using your eyes well is more important than having a bigger scope. I don't have eagle eyes like Stephen O'Meara, but you can train yourself to see more. I'm surprised at the detail I see in Jupiter's belts or in the Virgo galaxies that I didn't see a year ago. I thought that was baloney when I heard it early on, but it's true.

Clayton: I've observed with you at several different star parties…are there any others that you might like to attend?

Steve: Okie-Tex was my first star party, and the one where we met, and it got me hooked. This will be my first year at TSP, so I'm looking forward to that. I'm also hoping to go to El Dorado and some of the other small Texas parties. Sadly, if you want to get away from the light pollution, you have to drive.

Clayton: You seem to be very proactive in organizing star parties out at our Columbus dark site. How can we get more club members to come out and join us for some great observing?

Steve: Everyone should just come out whenever you can, regardless of how little or how much you know. There are plenty of people willing to help if you just send an e-mail or ask the guy next to you. Some people are terrified about violating the light rules – do your best to follow them, but no one will throw you off the property if you make a mistake at the beginning. If you do leak some light, just apologize and go on – we've all done it before.

Once you're there, the Texas 45 list is a great way for people to get started. There are some really fun objects on it, and it showcases things that we see in south Texas. So often we complain about observing on the Gulf Coast, but we forget about being able to see things that many people in northern states never can.

Another important thing is being flexible with your schedule. If you're just going observing on the one Saturday night a month at new moon, you'll never go because it's cloudy so much. If there's a clear night, make use of it. Find a dark empty lot close to your house. Go to Bear Creek Park. Observe from your driveway with GOTO or do the double star and planetary lists from your back yard. In winter, you can observe from 6:00 to 10:30 from Columbus and still be at home in bed by midnight and get up and go to work in the morning. Make it the thing you do together with your family or friends so you don't feel like you're stealing time from them by going observing alone.

Clayton: This year could be the year of the comet(s). Could this possibly be one of the answers for the question above?

Steve: A good comet would certainly help, and we're holding Professor Comet responsible for whatever happens. We got three times the usual new members before the Venus transit last year.

Clayton: A little bird told me that you were involved in the works of the HAS "Texas 45" observing program. What are your overall thoughts on this program? I've started this list too and have had great fun working on it. I like the idea of being able to only go out to the site on 4 nights…one night per season of the year, and logging all objects to receive a beautiful pin and certificate.

Steve: I really can't claim any credit for it. That was Rene and you and some others. But it is a fun program. I've done most of the fall and all the winter objects. I like it for several reasons – it focuses on things we can see here, it has a nice variety and a fair number of objects you don't see on other lists. And Rene really thought about why she wanted certain things on the list. For example, the winter list has a bunch of

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open clusters, and after I looked at several I was tired of open clusters. But I kept banging away at it, and I started to see differences in open clusters that I hadn't seen before. So in the end I enjoyed all the open clusters.

Clayton: What's your attraction to the night skies? Got a favorite object? Ever think about jumping into astrophotography? How about video?

Steve: I like the sense of accomplishment when I find something. I enjoy seeing the beauty of creation. And I'm a country boy at heart, so I like to get out in the fresh air away from the city noise.

Favorite object – More like a list. Omega Centauri makes M13, "the Great Hercules Globular," look like a sad, dim splotch, even though it peaks at only 13 degrees above the horizon. And most American observers never even get to see it because it's too far south for them. Then the Andromeda Galaxy and Orion Nebula because the more you look at them, the more detail you see. The Lagoon Nebula is because it contains an open cluster and some prominent dark nebulae as well. Jupiter because the satellites and cloud bands are always changing in subtle ways. The moon because the illumination of each object is changing every day. And the Reiner Gamma anomaly on the moon is the oddest thing I have ever seen.

Right now I don't think I'll get into imaging or video. From listening to Don Taylor, I've realized that there is actually a lot of artistry in processing the images, and I don't have an artistic bone in my body. I've thought about taking up sketching, but that requires even more artistry. I'm trying to focus on writing better log descriptions since that makes me use my eyes better. But as my eyes age, I may change my mind about imaging

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

Steve: I want to continue enjoying the beauties of creation and keep training my eyes to see more. I would like to travel south to finish the Caldwell list and to see the southern objects in their true glory. Also, I've mostly done deep sky objects since I joined HAS, but I would like to do a little more planetary and lunar, but I need to find some resources to help me understand that better.

Clayton: What star atlas (hard copy) or digital atlas do you use at the telescope? Do you use a nightly planner to help organize an evening under the stars?

Steve: I started out using Harvard Pennington's *Messier Marathon Field Guide*, and I would highly recommend it for anyone starting out because it has excellent charts and such practical advice. And you don't have to plan anything because for each month of the year he has a chart showing what to look at next. Pennington thought of everything. He was brilliant. Other than for Messiers, I've graduated on to *Sky Atlas 2000.0*. It's got enough detail for finding most of the NGCs. It's still my basic atlas, but I'm starting to get to dimmer stuff where I need more field stars to make sure I'm looking in the right place, so I broke down and got *SkyTools3*.

I'm finding that as you move past the "pre-packaged" lists such as Messier and Caldwell, you have to do more preparation. These less-traveled objects have multiple designations. Sometimes their locations are not clearly or correctly plotted in atlases. And there are more conflicting objects in the eyepiece so you need to have done your research ahead of time. For example, the AL double star list is supposed to be for beginners, but it has Struve designations that are not on common charts. And no one calls the Trapezium Theta1 Orionis as the list does. And sometimes you need to find the AC pair instead of the AB pair. After a couple nights trying to sort this out with a red flashlight, I realized that I have to do this ahead of time at home.

Clayton: It seems in recent years that the younger people are not that interested in amateur astronomy. You hand out our membership name badges, are we attaining any young club members?

Steve: We are getting more young members, so it's improving, but while this is a very rewarding hobby, it also has high barriers to entry (expensive equipment, lots of techniques to pick up, cloudy weather, etc.). But once young people get a taste, they seem to be hooked. We just need to be inviting, stop worrying about GOTO, patiently educate about light rules, have more fun events. And I think our club is doing all those things and we're starting to see good results. It seems that the excitement level has picked up.

Clayton: As the HAS "Field Trip and Observing" coordinator, is there anything new up your sleeve for our clubs get-togethers this year?

Steve: I'm planning to have an observing theme every month and help everyone who comes to Columbus to work on

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Science and Engineering Fair Results

Richard Nugent and Debbie Moran

The Houston Astronomical Society participated once again as a special awards presented at the 54th Anniversary Science Engineering Fair of Houston on March 1st at the George R. Brown Convention Center. Judges were headed by Richard Nugent and included Mark Holdsworth, Mike Rao and Anoop Rathod. We award in all three age categories. The winners will be invited to present at the June main membership meeting, so stand by for some interesting presentations. Here are this year's winners:

Senior Division

1st Place : David Nguyen, "Light Speed Lasers"

2nd Place: Alexander Whatley, "Did Newton Miss Something?"

Ninth Grade:

1st Place, Utkarsh Patel, "Solar Power – A Bright Idea"

2nd Place, Nicholas Chiu "Meteor Impacts"

Junior Division:

1st Place: Zivan Vasquez, "When Galaxies Collide"

2nd Place: Spencer Adams, "A Cosmic Convergence"

3rd Place: Jared Janek, "Hot or Cold – A Study on Electromagnetic Attraction"

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those. January and February got clouded out, but March's theme is Messier Marathon. Other themes could be observing globs in early summer and working through the Virgo cluster in midsummer. Also, I'd like to take the *Sky and Telescope* observing columns from one month and go through those. We could also take ten double stars or ten Caldwells and practice observing those. If only I could somehow have clear weather up my sleeve . . . .

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

Steve: My e-mail is steve.fast@post.harvard.edu. Don't hesitate to e-mail me – a lot of people have helped me get started in this hobby, and I want to pass the favor on.

Clayton: Thanks Steve for taking the time to share your interest and thoughts within our HAS newsletter, the *GuideStar*. We wish you luck with all of your astronomy interests. Thanks too, for all of the hard work that you provide for our society.

Steve: It's been great fun doing the interview. Thanks for inviting me. And I hope to see everyone out there observing and hear some great reports on NetSlyder.

Clayton: Clear skies always,

Steve: Thanks Clayton….that was fun.

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*Clayton L. Jeter is an avid SCT visual observer and a longtime member of the **H**ouston **A**stronomical **S**ociety. Contact*

A Tale of Two Catalogs

The Barnard Catalog of Dark Nebulae and the Trumpler Catalog of Open Custers, Part Two

by Don Selle

One of the true joys of observing from a very dark location (like the Prude Ranch where the Texas Star Party is held each spring) is looking up and tracing the path of the Milky Way overhead. When the skies are dark and steady, and you take the time to really observe it with binoculars, a low power rich field telescope or your unaided eyes, the structure of that ethereal glow begins to really stand out. With care and time spent observing, you may begin to see the Milky Way and the structure in it, as a very substantial, almost physical presence.

Robert Trumpler

The Milky Way has long been of great interest to mankind. Especially in the 50 years from about 1880 to 1930 much of the focus of the science of astronomy was on determining the overall structure of the Milky Way. For most of this period, what we now know as our own galaxy, one of many other such "island universes", was considered the entirety of the physical universe. So in this sense, by studying the large scale structure of the Milky Way, astronomers were attempting to unravel and understand the whole of creation.

At the same time, the United States was emerging as the world leader in astronomical sciences, as its booming economy supported the philanthropy needed to build ever larger telescopes and the instruments to use with them. But large telescopes have narrow fields of view. They are good at collecting enough light from faint distant stars so that their apparent brightness or spectra can be measured, but they tend to 'look through" larger structures. It was the genius of men like of E. E. Barnard to recognize this and champion the use of wide field observation and photography as a means to understanding the Milky Way.

After experiencing the Milky Way in all its glory, it was easy for me to identify with E. E. Barnard, one of the last of the great visual observers, whose career spanned this half century. Starting as a comet hunter, he ended his career working to understand the structure of the Milky Way. Barnard's *Photographic Atlas of Selected Regions of the Milky Way* inspired and helped others in their research.

The superb photographs in this atlas, (as well as many others taken when Barnard was at Lick observatory) were made using smaller wide field telescopes, and showed the large scale structure of the "universe" in a way that other astronomers could use and measure. Barnard's *Catalog of the Dark Markings of the Sky* (first published in 1919) was the first of its kind and led him to propose that these "dark nebulae" were clouds of obscuring matter occupying the space between the stars.

Catalogs of celestial objects are used by all astronomers to plan their observing, to record them, to document and help to organize the results of their researches, and to assist in communicating them to other astronomers. Some, like the *General Catalog*, compiled by John Herschel and published in 1864, (and later updated by John Dryer in 1888 to the *New General Catalog* NGC) are comprised of multiple types of objects discovered by more than one astronomer in all areas of the sky. Others, like Barnard's catalog of Dark Markings are comprised of very specific objects and are compiled for a very specific research objective.

The Trumpler catalog of open star clusters falls into the second category. R. J. Trumpler (1886 – 1956) compiled the catalog of 37 open clusters for a very specific purpose. He was interested in open star clusters, how they were created and evolved, and, like Bernard before him, Trumpler was also interested in the structure of the Milky Way, and especially what open star clusters could tell us about it.

Trumpler's catalog is a product of this research. It is also interesting to note that fully 14 of the 37 open clusters in the catalog came from the work of Barnard. They were either previously described but not cataloged by Barnard, or discovered by Trumpler in his study of Barnard's Photographic atlas.

Robert Julius Trumpler was born in Zurich Switzerland on October 2, 1886. After completing his basic education in Zurich city schools and Gymnasium, during which he became keenly interested in astronomy. After a short detour into the business world to please his father, it soon became clear he

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Degree of Concentration:

- **I.** Detached clusters with strong central concentration.
- **II.** Detached clusters with little central concentration.
- **III.** Detached cluster with no noticeable concentration.
- **IV.** Clusters not well detached, but has a strong field concentration

Range of Brightness

- **1.** Most of the cluster stars are nearly the same apparent brightness.
- **2.** A medium range of brightness between the stars in the cluster.
- **3.** Cluster is composed of bright and faint stars.

Number of Stars in Cluster

- **p.** Poor clusters with less than 50 (fifty) stars.
- **m.** Medium rich cluster with 50-100 stars.
- **r.** Rich clusters with over 100 stars.

Trumpler's OC Classification System

was better suited for astronomy[1].

Trumpler completed his studies receiving a PhD in November 1910, and after a postdoctoral year at Gottingen, he joined the Swiss Geodetic Commission. In 1913 he was offered a position as an assistant at the Allegheny Observatory in the United States, but only started there in 1915, due to the outbreak of World War I. Trumpler would make his way to the Lick Observatory in 1918 on a fellowship, and end up staying on as a staff astronomer. Twenty years later, he would join the Astronomy Department at U.C. Berkeley where he taught until his retirement in 1951. [2]

Like Barnard, Trumpler was also an observational astronomer but of different type. Rather than try to prove his point by the visual or photographic evidence alone, Trumpler used measurements taken from these observations to find a physical correlation or to test the validity of his hypothesis. Trumpler would use mathematics (and in particular statistical techniques) based on measurements from the photographs to make his point.

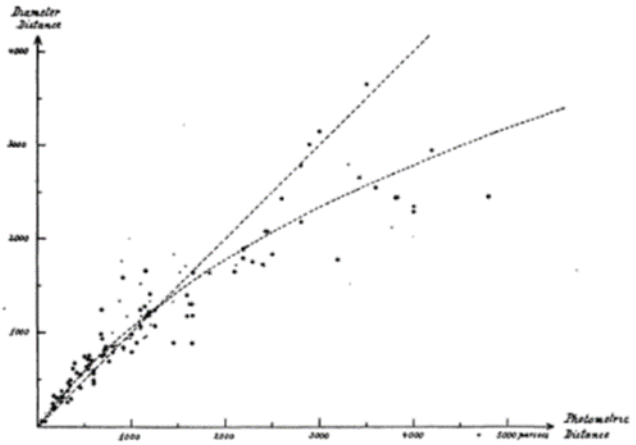
Trumpler was conducting research on open clusters and included these previously un-cataloged examples in his research to ensure that the group he was studying were good representatives of all open clusters found in the Milky Way. Keeping his sample representative was important since he hoped to limit the effects of systematic error by ensuring a good sample was used for his statistical analysis.

Using an initial group of 100 open clusters Trumpler hoped to find a reliable means to determine their distance from Earth for a large number of open clusters. Once that was accomplished, he hoped to understand their distribution within the Milky Way, thereby characterizing the size and shape of our galaxy. This was an extremely important undertaking according to professional astronomer Brent Archinal, co-author of the William Bell book "Star Clusters".

"Open clusters are of tremendous importance to the science of astronomy, if not to astrophysics and cosmology generally. Star clusters serve as the "laboratories" of astronomy, with stars now all at nearly the same distance and all created at essentially the same time. Each cluster thus is a running experiment, where we can observe the effects of composition, age, and environment. We are hobbled by seeing only a snapshot in time of each cluster, but taken collectively we can understand their evolution, and that of their included stars. These clusters are also important tracers of the Milky Way and other parent galaxies. They help us to understand their current structure and derive theories of the creation and evolution of galaxies. Just as importantly, starting from just the Hyades and the Pleiades, and then going to more distance clusters, open clusters serve to define the distance scale of the Milky Way, and from there all other galaxies and the entire universe."[3]

The Trumpler (Tr) catalog was compiled and published in 1930 as a table in a paper contained in the Lick Observatory Bulletin[4]. The paper is significant because in it, Trumpler published the initial results of his research. He also established a classification system for open clusters which was based on their actual physical features that were independent of the distance to the cluster. It is the same classification system which is one of the principal elements of the Astronomical Leagues Open Cluster observing award.

Trumpler's success depended much on the classification system he devised. Using this system, he was able to group clusters by like types, in order to facilitate their analysis by statistical techniques, an approach sometimes called "statistical astronomy" which Trumpler embraced and promoted throughout his career. With this approach, Trumpler



Comparison of distance by diameter and star brightness

was able to develop a formula which yielded a reliable means to determine both the size of an open cluster, and its distance from earth by measuring its diameter on a photograph.

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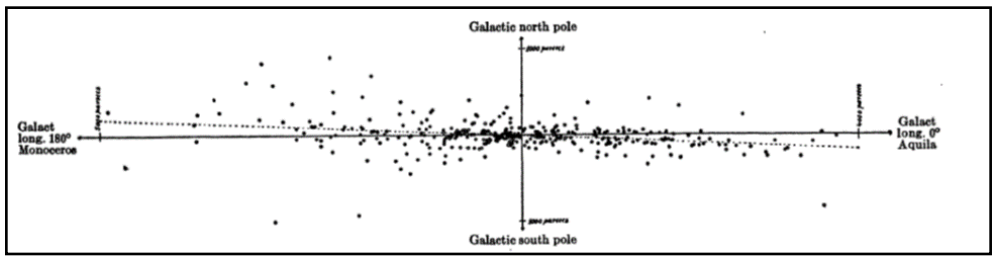

In the same paper, Trumpler compared his distance estimates based on the measured diameters of open clusters to distance estimates based on the apparent brightness of stars of known spectral class. The two compared well when the distances to the clusters were lower, but diverged as the distance increased, with the estimate based on stellar apparent magnitude (brightness) becoming larger as the distance increased.

It was clear that this effect was due to the action of some type of "obscuring matter" in the space between the stars. A similar reddening of stars of the same spectral (color) class had also been previously noted. Trumpler found this effect as well in his data. He was able to characterize both effects, and develop equations correcting for both.

By his analysis, Trumpler had clearly proven Barnard's conjecture that the dark structures of the Milky Way were in fact clouds of obscuring matter and by correlating this with the reddening effect, identified interstellar dust as the likely culprit. With this, Trumpler had resolved the mystery of "stellar voids" which had existed since William Herschel first noted these dark areas in the clouds of Milky Way stars.
Using his now calibrated and corrected method of determining distance based on the apparent diameter on a much larger group of open star clusters, Trumpler found they were distributed mostly in the plane of the Milky Way, in a band about 11,000 parsecs in diameter and 1,000 parsecs thick, though he did not use these figures to put a scale on our galaxy. While this is less than the currently accepted diameter of the Milky Way, it does correspond well with the part of our galaxy where (not surprisingly) the stars are the most dense.

Trumpler would continue his open cluster research, and promote his statistical analysis techniques for astronomy until his death in 1956. Due to the application of Relativity and Particle Physics to astronomy and cosmology, statistical astronomy would eventually loose favor, only to stage a comeback in the 1990s when large astronomical surveys came into being.

And so ends this "Tale of Two Catalogs". Both catalogs and their authors were very different in their approach, though both were dedicated to our understanding of our home galaxy. Of the two catalogs, amateurs will be more familiar with Barnard's. Objects from his catalog of dark nebula like the Horsehead Nebula (B-33) are some of the most beautiful and well known to us. Few amateurs, however, know of Trupler's catalog as only occasionally will a Tr open cluster find its way into an observing program. With only 37 clusters listed, it is easy to overlook.

So the next time you find yourself under dark steady skies, remember to look up and enjoy the Milky Way. It's hard not to get lost in its depths. And maybe as you study its folds and rifts, your knowing this "Tale of Two Catalogs" will help you see more clearly, more deeply into our universe.

Notes

1. Astronomical Society of the Pacific – Obituary, R.J. Trumpler – 1957 PASP 69 304W

2. Ibid.

3. Preface – Astronomical League Open Clusters Observing Program – Brent A. Archinal May 31, 2005 http://www.astroleague.org/al/obsclubs/opencluster/OC_Manual.pdf

4. R.J. Trumpler, 1930. Preliminary results on the distances, dimensions and space distribution of open star clusters. Lick Obs. Bull. Vol XIV, No. 420 (1930) 154-188 http://adsabs.harvard.edu/abs/1930LicOB..14..154T

The HAS Texas 45

Spring Objects for April – May – June
By Rene Gedaly

It's spring. The clocks are set forward, the days are getting longer, and it's time to start on the spring list of the Texas 45. You can get the list and logs and all the rules on the website, astronomyhouston.org/programs/has-texas-45. I also include the spring object list below.

Did you miss the winter list? Maybe not. You can still catch them, all of them, in early April. Messier 37, M35, the Eskimo Nebula, and M44, are still high in the sky. All four objects in Puppis: M46, M93, Collinder 165, and RS Puppis, are about as high as they ever get—look south around 30 degrees before midnight. Also at 30 degrees but in the north is M41 in Ursa Major. You may even be able to catch Hinds Crimson Star in Lepus, M42 and M78 in Orion, the Pleiades in Taurus and even H & Chi Persei from the autumn list. These winter and autumn objects are setting fast though. Start looking for them in evening twilight this month. And as always, observe these objects at the HAS dark site near Columbus, TX.

That makes the entire winter list save Omicron 2 Eridani, aka Keid. This triple star system, whose component B is a white dwarf, would be a very tough find at 15 degrees, its highest point occurring at 8:00 p.m. and setting completely by 9 p.m. Even so, if you catch it, that makes all 15 winter objects.

So by all means, spring forward. But remember, you can still look back. Happy hunting!

Rene

The Spring 15: Apr-May-June

- Observe at least 10 of these 15 objects to reach the program target of 45 total objects
- You can view these objects earlier or later in the year, but view at least 10 from this list

Cls	Primary ID	Alternate ID	Con	RA 2000	Dec 2000	Mag	Ur. 2	PSA	TLO
Gal	Spindle Galaxy	NGC 3115	Sex	10h05m14.0s	-07°43'07"	10.0	133	37	--
Pne	Ghost of Jupiter	NGC 3242	Hya	10h24m46.1s	-18°38'32"	8.6	151	37	98
Gal	M 105	NGC 3379	Leo	10h47m49.6s	+12°34'54"	10.2	92	34	102
PNe	Owl Nebula	M 97	UMa	11h14m47.7s	+55°01'09"	9.7	24	32	--
Doub	M 40	HD 238107	UMa	12h22m12.5s	+58°04'58"	9.6	24	43	--
Gal	NGC 4565	MCG 4-30-6	Com	12h36m20.8s	+25°59'15"	10.1	72	45	--
Gal	Sombrero Galaxy	M 104	Vir	12h39m59.3s	-11°37'22"	9.1	130	47	--
Gal	Black Eye Galaxy	M 64	Com	12h56m43.8s	+21°41'00"	9.3	71	45	110
Gal	Centaurus A	NGC 5128	Cen	13h25m27.7s	-43°01'07"	7.8	184	49	239
Glob	Omega Centauri	NGC 5139	Cen	13h26m46.0s	-47°28'36"	3.9	184	49	238
Gal	Whirlpool Galaxy	M 51	CVn	13h29m52.3s	+47°11'40"	8.7	37	43	204
Glob	M 5	NGC 5904	Ser	15h18m34.0s	+02°05'00"	5.7	108	55	124
Glob	M 4	NGC 6121	Sco	16h23m36.0s	-26°31'30"	5.4	147	57	152
Glob	Keystone Cluster	M 13	Her	16h41m41.0s	+36°27'36"	5.8	50	52	120
Glob	M 92	NGC 6341	Her	17h17m07.0s	+43°08'12"	6.5	34	52	122

***Ur.2**: page # in Uranometria 2nd ed.; **PSA**: page # in Pocket Sky Atlas; **TLO**: page # in Turn Left at Orion 4th ed.*

Kids Outreach & Public Star Parties

By Alan Rossiter, coordinator

Event: Tents in Town
Leader: Alan Rossiter
Type: Urban Overnight Camp for Kids & Parents. Numerous organized activities.
Date: Saturday, 4/06/2013
Time: 6:00 PM - 9:00 PM
Location: Zindler Park, 7008 South Rice, Bellaire, TX 77401

Event: Bomber Field "Space Exploration"
Leader: Bill Pellerin
Type: Remote control (RC) aircraft in the afternoon, stargazing in the evening!
Date: Saturday, 4/20/2013
Time: 4:00 pm to 11:55 pm
Location: Monaville, TX (near Hempstead)

Name: The Houston Arboretum BBQ Star Party
Leader: Bill Flanagan
Type: Mostly Adults – Arboretum Members. An evening at the Arboretum. Food & Drink!
Date: Saturday, 06/01/2013
Time: 6:00 PM – 10:00 PM (tentative)

Messier Marathon Results

By Steve Fast

Although the designated nights for the Messier Marathon were mostly clouded out a few intrepid observers attacked the Messier objects during the week. Chris Ober and Steve Fast each star-hopped to 109 missing only M30.

Using GOTO, Ralph Walker got 109 (missed M30), and Rob Torrey got 108 (missed M74 and M30).

Jeff Hartgerink imaged 17 before the clouds rolled in on the picnic night.

Observatory Site Themes

By Steve Fast

To encourage members to come out to the observing site there will be observing themes on the following schedule:

6 April - Theme will be Navigating the Virgo Galaxy Cluster

11 May - Conflict with TSP, so nothing formal will be organized, but I would encourage everyone who is not going to TSP to celebrate astronomy in Houston by working on the Texas 45 list.

8 June - Next club picnic

Observatory Corner

By Bob Rogers, Observatory Chairman

Hello everyone.

I wasn't able to make it to the Marathon because my truck decided it didn't want to go, so I asked Steve Fast to send me a report and Jeffery Hartgerink was kind to let me use his picture of the field with

Observing Field for Messier Marathon — Credit: Jeffery Hartegerink

all the scopes out there. Thanks Jeffery. I'm sorry that I missed a great event.

The report from Steve Fast - There were about 65 people and 40 telescopes, so almost all the pads were full and it was a great event. We started with a picnic of hamburgers, hot dogs, beans, and salad. Mike Edstrom did a great job cooking and there were lots of compliments on the food. Rene did a great job with the hot drinks, and there was a good crew in the observatory. Allen Wilkerson did a great job making sure everything is was ready. We had some good volunteers who helped with setting up and cleaning. And there were a lot more people who helped in one way or another to make it happen. Thanks to all the people who helped to make it happen.

A few people saw the PANSTARRS comet, but there were quite a few clouds in that direction at the wrong time, so it was very hard to see. I did some theoretical training in star-hopping and we had a constellation tour. There were 30-40% clouds, but we got in an hour of complete darkness and were able to see some Messier objects. But then it clouded over permanently, so we had a light window and most people left. Nonetheless, I know of at least a couple people who saw 17 Messiers, so that was a great result, given the clouds. Jeff Hartgerink got started on a photographic marathon and posted some nice pictures on the internet.

Here is his link - http://triplehelix.rice.edu/~jeff/astronomy/short_MM/

Overall, I think the party was a lot of fun and a good success.

Thanks Steve for the update.

I want to thank Allen Wilkerson, John Haynes and the great Bill Flanagan for working the observatory. Much appreciated guys. I also heard that several members took the Site Orientation class too. Congrats and hope to see you at the site observing.

Credit: Chris Ober

A note from Allen Wilkerson - Chris Ober's wife runs a sign shop and made the darksite new signs. Chris, Bill K., and I installed them – they look really nice. Bill also cleared the brush around the exit road so the signs are easily visible. This debris was hauled to the new burn pile. Thanks Chris for the new signs (see pictures).

Credit: Chris Ober

I gave a short presentation to the membership at the January meeting for those that are interested in the Private Observatory Pro-

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ject. Update: So far, I now have 3 signed contracts with 2 more seriously thinking about it. Folks, this is a great way to have your on Private Observatory for some serious imaging or for just regular observations. You don't have to come out, set up, wait for darkness for polar alignment, observe and then tear everything down, pack it up just to do it all over again later when you can already have 95% already done and know that you have your own spot already available. The Observatory Committee will be providing a 12' x 12' or an 8' x 8' piece of land for leasing for a member to install a private Observatory. The planning, design, and layout of the Observatory will be approved by the Observatory Committee along with a site User Agreement to be signed by the User, Observatory Committee Chairman and the President of HAS. The Observatory Committee will be providing a 10amp power supply for each Private Observatory. The rates are set at $350.00 a year or $1,000.00 for a 3 year lease. The idea of this is not only to raise funds for the Observatory Committee and the upkeep of the facilities, but to also provide a way for members to leave their scopes out in their Observatories already Polar aligned and ready to use. If you have questions about this, you can contact me at observatory@astronomyhouston.org.

If you are interested in making a donation to the Observatory, please do so when making you dues payment and let either Steve Fast or Don Selle know that you are donating to the Observatory so the donation goes to the right place.

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.

Bob Rogers

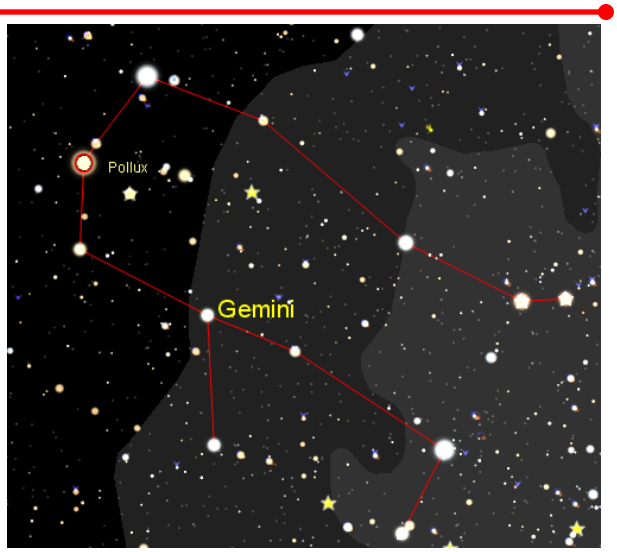
Observatory Chairman
281-460-1573
siteworkerbob@hotmail.com

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

Shallow Sky Object of the Month

Pollux—One of the Twins

Object: Pollux
Class: Star
Constallation: Gemini
Magnitude: 1.1
R.A.: 7 h 45 m 18 s
Dec: 28 deg 1 min 34 sec
Size/Spectral: K class (orange)
Distance: 33.7 ly
Optics needed: Unaided eye



Gemini with Pollux at northeast —north is up

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

Why this object is interesting

I've written about Castor, the other star at the head of the twins in the May, 2007 issue of the *GuideStar*. So, it's time to look at Pollux and understand its place in the constellation.

I sometimes get Castor and Pollux mixed up. There are several ways to tell the difference. Castor is the more northern of the two; Castor is white and an easy to resolve double star, Pollux is orange, if you're looking at the constellation with the twins' heads up Pollux is on the left.

Let's take a quick look at Pollux this month. Pollux is a low mass star, at about 2 solar masses. It is about 7.8 million miles in diameter. The star is an evolved K class (orange) star.

This star is also called Beta Gem, which *should* mean that it's the second brightest star in the constellation, but it's actually the brightest star in the constellation. Castor is the Alpha star, so it should be the brightest star, but it's not. In fact, Pollux is about .4 magnitude brighter than Pollux so it should have been easy for early observers to determine that **it** should have been the alpha star. It's unclear why this error happened, but it has been common over time to say Castor and Pollux when we talk about these two stars and because of this convention Castor was put in line in front of Pollux.

Pollux is an evolved star having used up most of its hydrogen. What color was the star when it was on the main sequence? It is believed that it was an A (white) star. Because it's an evolved star it has consumed most of its original hydrogen by fusing it into helium. So, now it's now in the process of fusing the helium into carbon and oxygen. What happens when the helium is used up? Will the star move on to fusing the carbon? No, it won't, because it isn't massive enough and it won't get hot enough to do initiate helium fusion.

So, this star gets out of the fusion business. The final stage of a star like this is a white dwarf with, perhaps, a planetary nebula.

That's not all. Castor has been found to have a planet. It's one of the planets called a "hot Jupiter" meaning that it's a planet close to the star (it's hot) and it's a high mass planet (like Jupiter). These kinds of planets are relatively easy to find; they are big enough and close enough to move the star as they rotate around the star and this movement of the star can be detected as the spectrum of the star changes from slightly more red-shifted to slightly more blue-shifted.

Pollux is the 17th brightest star in the sky but the brightest star in the sky known to have a planet.

Houston Astronomical Society

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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 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.

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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, April 5, 2013

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 — Use entrances 15D and 15F. You can park in this area, but NOT in a RESERVED space. If spaces are full, park in 16B lot near Elgin