

JUNE 2017

★ HOUSTON ASTRONOMICAL SOCIETY ★

GUIDESTAR

FOSTERING THE SCIENCE AND ART OF ASTRONOMY
THROUGH PROGRAMS THAT SERVE OUR MEMBERSHIP
AND THE COMMUNITY

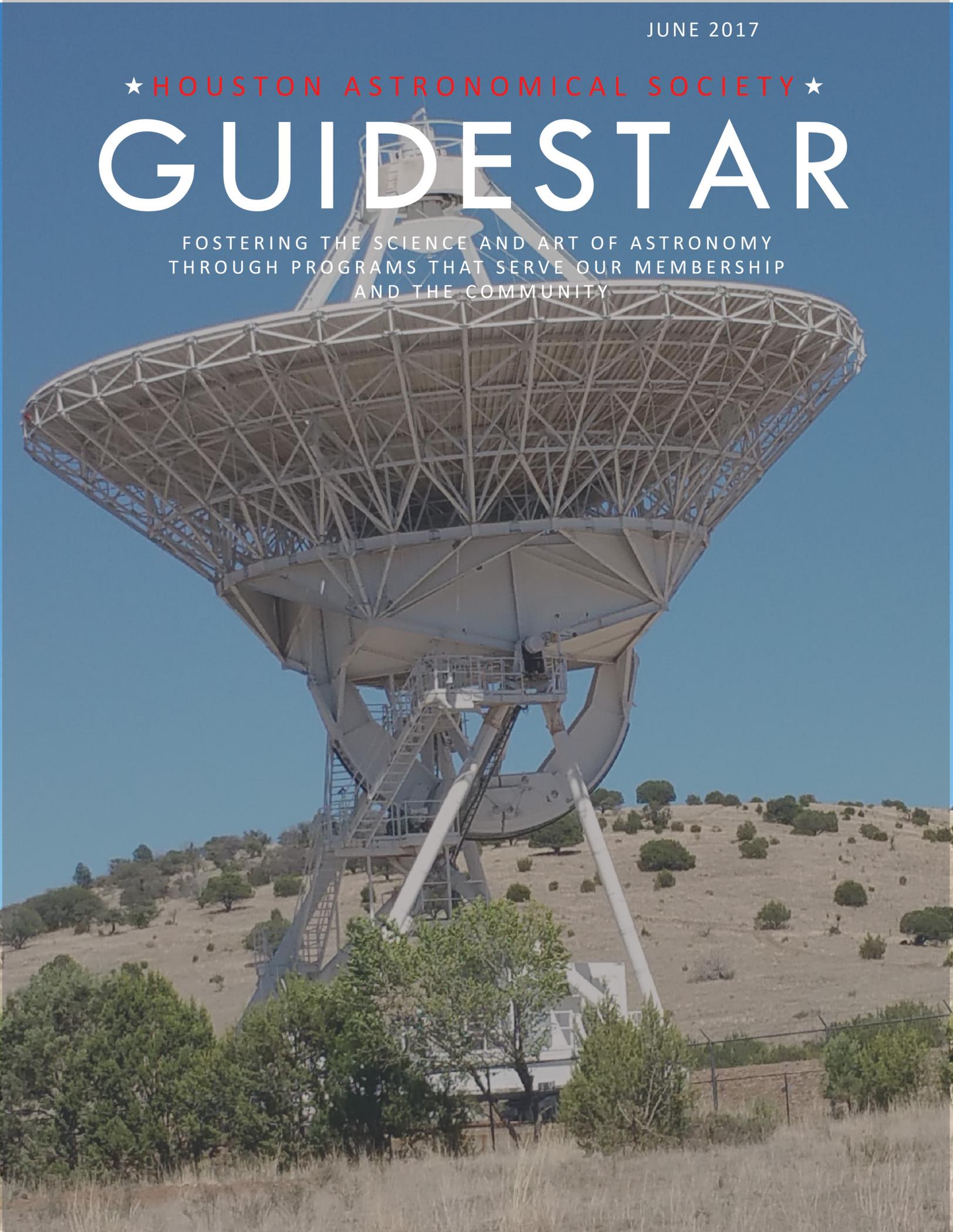


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ABOUT THE COVER

Photo by Rene Gedaly

While staying at the Sproul Ranch for this year's TSP (which is next to the Prude Ranch), she happened to be staying right next door to the Fort Davis node of the VLBA (Very Long Baseline Array). This was the view from her residence that week.

Precision astrometry is a VLBA science centerpiece. The relative astrometric accuracy of ~ 10 micro-arcseconds achievable with the VLBA is better than what the Gaia satellite is designed to achieve for most stars in its catalog.

For more info:

<https://science.lbo.us/facilities/vlba>

MAY 5, 2017 GENERAL MEETING

GENERAL MEETING TOPICS

We're excited to bring you some great talks this Friday at the General Meeting from the HAS Awardees from the 2017 Science and Engineering Fair. Here are the names of the winners and their topics:

1ST PLACE SENIOR: KEVIN JUNG, ST. JOHN'S SCHOOL

Synthesis and Characterization of Multi-Walled Carbon Nanotubes and Application in a Solar Sail for Breakthrough Starshot

2ND PLACE SENIOR: WITTAKER SCHLAUCH, CLEAR BROOK HIGH SCHOOL

Cryogenic Thermosuit for Manned Mission to Titan

1ST PLACE NINTH GRADE: EMMA MROZ, TOMBALL MEMORIAL HS

Transit Photometry and Spectroscopy of Tabby's Star

1ST PLACE JUNIOR: JIMMY XIN, PERSHING MIDDLE SCHOOL

The Dark Side of the Cosmos: The Effects of Dark Energy on the Expansion of the Universe

2ND PLACE JUNIOR: SAHANA GANAPATHY,

LEAGUE CITY INTERMEDIATE SCHOOL

Eye in the Sky (computing Mars' position in the sky)

NOVICE MEETING – EXPLORING URSA MAJOR AND THE BIG DIPPER By Ed Fraini



Early summer is a time of the year that Ursa Major is prime for observing. Orion has set and we are waiting for Scorpio to rise and all the globular clusters to be in the evening sky. Ursa Major is oft over looked but is full of objects to treat the eye. Most are galaxies, Ursa Major has almost as many to observe as Virgo. There are

two major galaxy groups to be explored. They are not as notable as Virgo because they are not as compact to our view. In this presentation we will answer a number of questions. What's with the tail anyway? Did Ursa Major get cheated in the hand out of Messier Objects? What objects are easy and which are more difficult? How can I better my chances to detect some of the challenging objects? Let me introduce you to Ursa Major and share some visual observing tricks that will make you more proficient observer.

CALENDAR

- JUNE 1** 7:42 a.m. First Quarter Moon
JUNE 2 7:00 p.m. HAS Novice Meeting, U of H
 8:00 p.m. HAS General Meeting, U of H
JUNE 9 8:10 a.m. Full Moon
JUNE 15 5:00 a.m. Saturn at opposition
JUNE 17 6:11 a.m. Last Quarter Moon
JUNE 20 11:24 p.m. Summer Solstice
JUNE 21 7:00 p.m. VSIG Meeting, Mendenhall Community Center
JUNE 23 9:31 p.m. New Moon
JUNE 24 Prime Night, Columbus
JUNE 30 7:51 p.m. First Quarter Moon
- JULY 2** 8:00 a.m. Juno at opposition
JULY 7 7:00 p.m. HAS Novice Meeting, U of H
 8:00 p.m. HAS General Meeting, U of H
JULY 8 11:07 p.m. Full Moon
JULY 15 7:30 p.m. WSIG/TX45, Dark Site
JULY 16 2:26 p.m. Last Quarter Moon
JULY 19 7:00 p.m. VSIG Meeting, Mendenhall Community Center
JULY 22 Prime Night, Dark Site
JULY 23 4:46 a.m. New Moon
JULY 30 12:00 a.m. Mercury at greatest elongation E
 10:23 a.m. First Quarter Moon

SEND CALENDAR EVENTS TO DOUG MCCORMICK
 SKYGAZER10@SBCGLOBAL.NET FOR THE LATEST INFORMATION ON CLUB
 EVENTS, GO TO ASTRONOMYHOUSTON.ORG

OTHER MEETINGS

JOHNSON SPACE CENTER ASTRONOMICAL SOCIETY | jscas.net
 Meets in the the Lunar and Planetary Institute on the 2nd Friday of each month.

FORT BEND ASTRONOMY CLUB | fbac.org/club_meetings.htm.
 Meets the third Friday of the month at 8:00 p.m. at the Houston Community
 College Southwest Campus in Stafford, Texas.

NORTH HOUSTON ASTRONOMY CLUB | astronomyclub.org
 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.

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.

HAS MEETINGS

All meetings are at the University
 of Houston Science and Research
 building. See the last page for
 directions to the location and more
 information.

NOVICE MEETING

7:00 P.M. room 117 Science &
 Research 1 Bldg

GENERAL MEETING

8:00 P.M room 117 Science &
 Research 1 Bldg

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.



Houston
 Astronomical
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HAS BOARD MEETING

HAS Board meetings are scheduled regularly. All members are invited to attend these meetings, but only board members can vote on issues brought before the board. Meetings are held at the Trini Mendenhall Community Center (1414 Wirt Road) at 6:30 p.m. on the date specified the calendar.

Remarks made at the 2017 TSP awards

The Texas Star Party Omega Centauri Award is all about Outreach—and Outreach is fun.

I'm not so sure that's how most of us first think about Outreach. It wouldn't be so hard to get folks to volunteer if it were.

Scary. Scary's more like it.

See if you can relate:

- What if I can't find something to show the public in the urban sky? Between the clouds, and clouds, we know, are inevitable.
- What if I can't answer a question? We're the experts, after all.
- And it's one thing to wrangle a telescope in the privacy of one's own backyard. Quite another to do so in public.

Our Omega Centauri candidate has been changing those attitudes.

Before he became the new Outreach Guy at HAS, he had benefitted from the experience of the previous Outreach Chairperson, Bram Weisman. Our candidate valued how Outreach had helped him develop as an astronomer. And when Bram rotated off, he did not want that to end.

We've had some pretty amazing outreach events over the years. The school science nights and STEM events are part of it. So are youth groups and camps for special populations, star parties at museums and planetariums and arboretums and theaters.

Then there are the events off the beaten path.

- A star party at a Community Garden for those more used to Looking Down and digging in the earth. They asked us to help them Look Up.
- A star party on the grounds of the Texas Renaissance Fair for a music festival.
- And a favorite event. A star party in Downtown Houston on top of the Raven Tower Bar. Yeah, wish I'd gotten to that one.

But these fun events are not the only reason the candidate was considered.

It's because he found he could help overcome the natural fears of the budding astronomer while getting them much needed time out under the sky at the same time. Paired with more experienced volunteers, we do have novice astronomers come out and help. And they have fun doing it.

He knew firsthand that Outreach helps us learn. Outreach is not only a way to share our hobby, it's also a way to learn about our hobby—right along with the public. Close to home, in good enough weather.

I'm Rene Gedaly and it is my distinct honor as President of the Houston Astronomical Society to present the 2017 Omega Centauri Award to Joe Khalaf.

AL CORNER – MUSINGS FROM THE HAS ASTRONOMICAL LEAGUE COORDINATOR

By Doug McCormick

Greeting from your HAS Astronomical League Coordinator (ALCOR), and welcome to the first segment of what I intend to be a regular update on the Astronomical League (AL). In future articles, I'll be relating news from the League and discussing the various benefits of belonging to a member organization of the AL. In addition, I'll discuss the Astronomical League Observing Programs and recognize HAS members that have completed them.

If you've attended one of our meetings in the last couple of years, you've likely heard me say that one of the greatest benefits of league membership is the opportunity to participate in the League's numerous observing programs. These programs are very popular with the membership and the astronomical community across the country. In future segments, I'm going to reach back and recognize past awardees, but for now, here are the HAS League awards for the first quarter of 2017:

Rene Gedaly	Globular Cluster Award (Visual)
Stephen Jones	Deep Sky Binocular Club

Congratulations to Rene and Stephen, and my apologies to James King who would have received an award in the first quarter if our communications were better. We can look forward to Jim's award soon. If you're going to pursue one of the League programs, be sure to check the requirements for that program on the League's website, www.astroleague.org, to make sure you get off to a good start. For more information regarding the League, the League Observing Programs or to submit your observations for your award, you can email me at astroleague@astronomyhouston.org. I look forward to hearing from you, and keep turning those eyes and cameras to the sky.

GULF COAST WEATHER AND ASTRONOMY

By Stephen Jones

On multiple occasions, usually upon hearing how much observing I've been able to do in a relatively short time, people have asked me "how do you know it's going to be clear when you head out to the dark site?" To be honest, frequently I don't! Here on the Gulf Coast, our weather is notoriously volatile.

In the winter months though, usually clear skies are pretty predictable. Watch your local weather forecast for a cold front, look at when it's going to pass, and head to the site the next night (assuming there's not another front right behind it!).

Summer is a completely different beast, however. In summer, the parade of fronts that we see in the winter stays to the north of us,

and we are instead treated to a daily cycle of the sun heating the gulf, generating a bunch of storms which then drift over land and dump some rain on us. These storms are generally quite small in area and isolated. One time I distinctly remember driving less than a mile from my home to the store, and it wasn't raining either at my home or the store, but I drove through pouring down rain on the trip.



I've seen several people over the years decide whether or not to make a dark site trip that evening by going outside around noon and looking up. This is a TERRIBLE idea. For starters, many years this would probably result in you missing the whole summer. Think about it for a minute; if a summer storm can be so small it doesn't even cover my whole neighborhood, let alone the whole city, what does it mean for the weather 80 miles away at the dark site? The answer is: NOTHING. Storms also have a way of moving, so they're not going to be in the same place at night as they are in the afternoon. The weather in Houston in the daytime is simply not an indicator of the weather at the dark site at night.

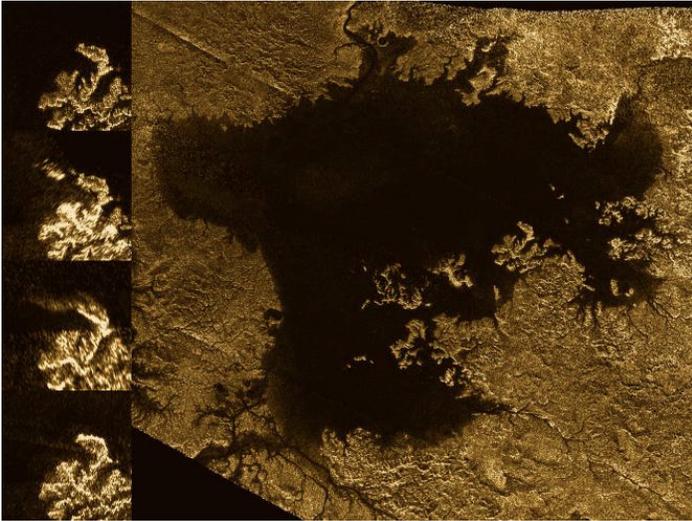
Furthermore, the puffy clouds of summer are very dependent on the sun for energy. On countless occasions, I have driven to the site under a full sky of cumulus, only to see them totally disappear prior to sunset. Sometimes, I've driven through rain on the way to the site, and still had a nice clear night for observing. On two occasions, it's even been raining AS I ARRIVED at the site, and I still had a nice clear night for observing.

If you want to observe the summer sky on the Gulf Coast, you just have to suck it up and go to the site. Do not let the daytime weather cause doubt to creep in. If it is a particularly bad night, the great astronomical weather resources like Clear Sky Clock ought to catch it for you. But if those forecasts are clear, and your sky looks like the photo here, it's time to pack up the scope and get going. Will this work 100% of the time? No. But over the course of the summer, you'll get a lot more observing in than if you stay home just because of cloudy afternoons. Hope to see a lot of you folks out at the site this summer. Clear Skies!



This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

THE FIZZY SEAS OF TITAN By Marcus Woo



Caption: Radar images from Cassini showed a strange island-like feature in one of Titan's hydrocarbon seas that appeared to change over time. One possible explanation for this "magic island" is bubbles. Image credits: NASA/JPL-Caltech/ASI/Cornell

With clouds, rain, seas, lakes and a nitrogen-filled atmosphere, Saturn's moon Titan appears to be one of the worlds most similar to Earth in the solar system. But it's still alien; its seas and lakes are full not of water but liquid methane and ethane.

At the temperatures and pressures found on Titan's surface, methane can evaporate and fall back down as rain, just like water on Earth. The methane rain flows into rivers and channels, filling lakes and seas.

Nitrogen makes up a larger portion of the atmosphere on Titan than on Earth. The gas also dissolves in methane, just like carbon dioxide in soda. And similar to when you shake an open soda bottle, disturbing a Titan lake can make the nitrogen bubble out.

But now it turns out the seas and lakes might be fizzier than previously thought. Researchers at NASA's Jet Propulsion Laboratory recently experimented with dissolved nitrogen in mixtures of liquid methane and ethane under a variety of temperatures and pressures that would exist on Titan. They measured how different conditions would trigger nitrogen bubbles. A fizzy lake, they found, would be a common sight.

On Titan, the liquid methane always contains dissolved nitrogen. So when it rains, a methane-nitrogen solution pours

into the seas and lakes, either directly from rain or via stream runoff. But if the lake also contains some ethane—which doesn't dissolve nitrogen as well as methane does—mixing the liquids will force some of the nitrogen out of solution, and the lake will effervesce.

"It will be a big frothy mess," says Michael Malaska of JPL. "It's neat because it makes Earth look really boring by comparison."

Bubbles could also arise from a lake that contains more ethane than methane. The two will normally mix, but a less-dense layer of methane with dissolved nitrogen—from a gentle rain, for example—could settle on top of an ethane layer.

In this case, any disturbance—even a breeze—could mix the methane with dissolved nitrogen and the ethane below. The nitrogen would become less soluble and bubbles of gas would fizz out.

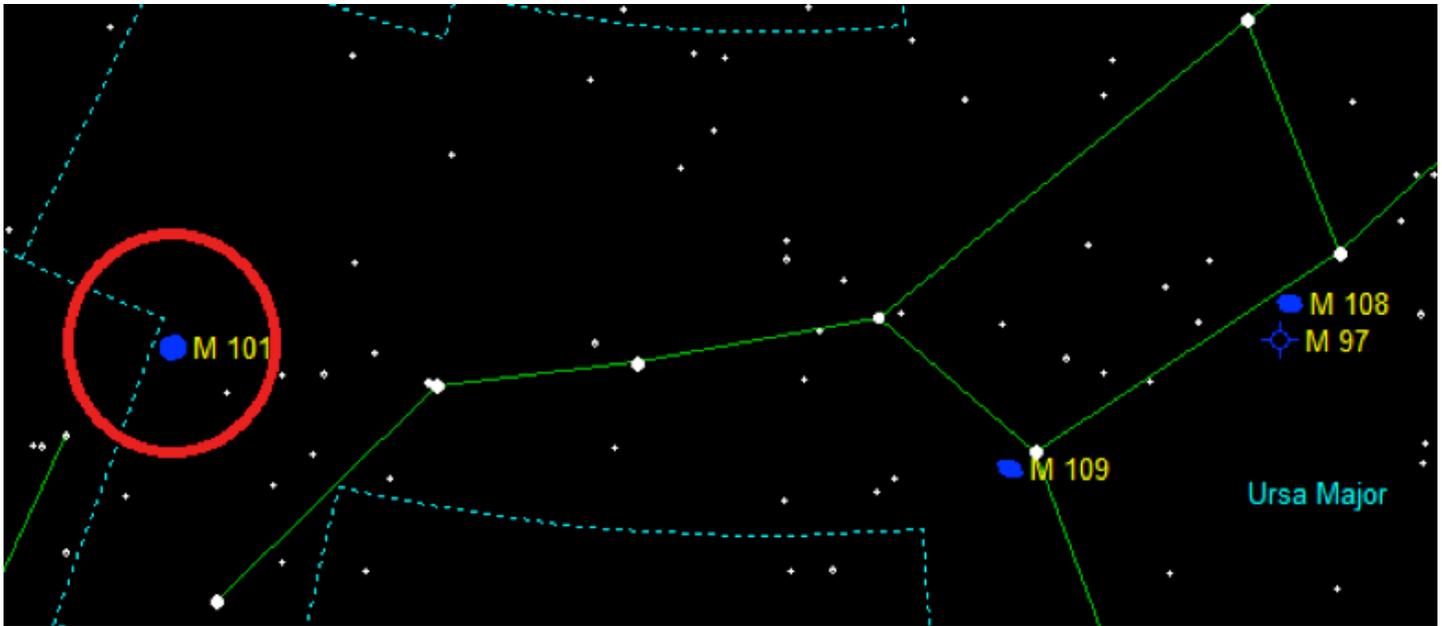
Heat, the researchers found, can also cause nitrogen to bubble out of solution while cold will coax more nitrogen to dissolve. As the seasons and climate change on Titan, the seas and lakes will inhale and exhale nitrogen.

But such warmth-induced bubbles could pose a challenge for future sea-faring spacecraft, which will have an energy source, and thus heat. "You may have this spacecraft sitting there, and it's just going to be fizzing the whole time," Malaska says. "That may actually be a problem for stability control or sampling."

Bubbles might also explain the so-called magic islands discovered by NASA's Cassini spacecraft in the last few years. Radar images revealed island-like features that appear and disappear over time. Scientists still aren't sure what the islands are, but nitrogen bubbles seem increasingly likely.

To know for sure, though, there will have to be a new mission. Cassini is entering its final phase, having finished its last flyby of Titan on April 21. Scientists are already sketching out potential spacecraft—maybe a buoy or even a submarine—to explore Titan's seas, bubbles and all.

To teach kids about the extreme conditions on Titan and other planets and moons, visit the NASA Space Place: <https://spaceplace.nasa.gov/planet-weather/>



OBJECT: M101

CONSTELLATION – URSA MAJOR

TYPE: Spiral Galaxy

MAGNITUDE: 7.9

DISCOVERER: Pierre Méchain, 1781

EQUIPMENT NECESSARY: For most observers, at least a 6-inch telescope.

Spiral structure in galaxies was first noted by Lord Rosse when he turned his massive telescopes on M51, the Whirlpool Galaxy; not long after this, he saw the same in M101. Face-on spirals like M51 and M101 can be among the most interesting galaxies to observe with medium-to-large sized amateur telescopes under a dark sky, as it is easiest to see the spiral arms when the galaxy has its face toward us.

M101 is a large spiral galaxy of relatively low mass for its size, located about 27 million light years from Earth. It is the primary member of group of about 9 galaxies, some of which are also relatively easy to observe with amateur telescopes (though they are much smaller). M101 contains a lot of star-forming HII regions, many of which are relatively easily visible. Quite a few HII regions in M101 even ended up with their own NGC numbers, as the true nature of the object was not yet known when the NGC was published.

M101 is relatively easy to locate, as it makes something close to an equilateral triangle with Mizar (ζ Ursae Majoris) and Alkaid (η Ursae Majoris), the last two stars in the handle of the Big Dipper.

M101 is quite large as deep sky objects go, but its surface brightness is low, making it more difficult to detect than some other, brighter objects. In a small telescope or under non-optimal conditions, M101 looks like a large misty oval. Averted vision will increase your chances at detecting it. In medium-sized telescopes under dark skies, M101 shows a small round nucleus with a mottled outer halo, that in the best of conditions you may be able to trace out the spiral arms. With large telescopes and good seeing, the spiral arms are quite clear, and you may be able to identify some of the NGC-numbered HII regions.

ASTERISM: a grouping of stars that form a recognizable pattern.

CONSTELLATION: Cygnus

RIGHT ASCENSION: 20h 56m 00.0s

DECLINATION: + 43° 34' 00"

MAGNITUDE: 6 to 9

SIZE: about 1 degree

This asterism is composed of 7 stars that form a “little” constellation Orion. It is located near the star Deneb in Cygnus. Deneb is the “tail” of Cygnus the Swan.

The “Little Orion” is located on the edge of North American Nebula, NGC 7000, with “Betelgeuse” touching Florida. The “belt stars” point to the Gulf of Mexico. In really dark skies, the North American can be seen with the naked eye, and easily in binoculars. Make an attempt to see NGC 7000.



In this view with a 10” scope and 32mm eyepiece, you can see the 3 “belt stars” with 2 bright stars on either side representing Betelgeuse, Bellatrix, Rigel and Saiph.



As with many projects at the Columbus Dark Site this one was accomplished with help from so many people it is hard to list them all!! We hope to have an Open House in the Fall so everyone in HAS can admire the fine work that went into this project.

Now on the early summer we are experiencing. With the warm weather we have seen an early immersing of local habitat so when you visit the site please be aware of your surroundings, especially the fire ants around the field pads. Remember it is best to keep food and drink in your vehicle to prevent the ants from invading your food, they don't taste good and don't like being eaten. We are quickly getting into mosquito weather also so please use your Deep Woods Off and it also helps with ticks.

We hope you come out to the site soon to see all the changes and enjoy the dark skies

REMEMBER THIS PICTURE FROM JUNE 2016??



WE'LL LOOK AT IT NOW!!!



Maybe it's just a part of getting older, but over the last couple of years, I've started thinking about starting my lifetime bucket list – things to do, places and things to see, people I would like to meet. As I started to assemble my bucket list, I of course added observing a total eclipse. With August's eclipse rapidly approaching, I realized that (weather permitting) I'd soon be ticking one big item off my list – one I had tried and failed to complete in 2009.

Almost immediately after adding the eclipse to my list, I came to a rather startling realization. If I included all of the astronomical observations I hoped to make, astrophotos I want to take, and trips to astronomy related locations I have in mind - a very big part of my bucket list would be astronomy related. As I started writing the astronomy items down, in somewhat of a parody, I named them my "Light Bucket List".

Over the next few issues of the Guidestar, I hope to share with you some of what's on my Light Bucket List, and what's on the Light Bucket lists of some of our fellow HAS members. My hope is that by sharing some of these accomplished and dreamed of astronomy experiences, we can give you, the reader, something to think about for navigating your own astronomical journey.



Ok, I've already teased you about one Big item on my list, which I know many in HAS share. In August I plan to be with my family and several friends in Wyoming for the "Great American Eclipse". The location was chosen not only for its magnificent scenery and National Parks, but because of all the places to watch the eclipse on the path of totality, much of Wyoming has the highest likelihood (75-80%) of good weather for the eclipse. But I know only too well, that weather being what it is, there is absolutely no guarantee. My goal for telling you the following story is to slay the demon that

ruined my first total eclipse. I want to be certain that this eclipse will be a success for all. If not, I guess I will get the blame!

In 2009, I was working in Malaysia. The path of the total eclipse in July of that year would stretch from India through central Asia and China taking it across several Chinese cities including Shanghai. Its track through densely populated sections of Asia, would make this eclipse the one viewed by the most people ever. I hoped to be one of them as Shanghai was a mere five-hour flight away from Malaysia.

With high hopes, I set off from Kuala Lumpur to Shanghai with the plan of going further inland to the "much drier" city of Wuhan. My research indicated that the weather prospects in Wuhan would be the best of anyplace on the path of totality except for Tibet – too far away for me to travel in the limited time I had.

When I set out toward Wuhan on a 3-hour bullet train ride, weather reports for Shanghai looked bad for eclipse day but were better for Wuhan. I felt like I had made the right decision to travel inland, even though getting to Wuhan on my own was challenging.

When I arrived at the hotel a day early for the eclipse, I knew I had made the right choice when I met people from three other organized eclipse tours staying at the hotel, too. I quizzed them on what they knew about the forecast, and found them to be optimistic that the weather would cooperate with us.

Eclipse day, dawned bright but this soon changed into heavy overcast. The weather just kept getting worse with heavy rain coming minutes before the eclipse was to begin.

Because of the rain, I had to retreat indoors and experienced my first eclipse sitting in my hotel room watching it happen on my laptop planetarium program. Ok it did get a bit darker during totality, but with the rain, it was hard to tell there was much difference. Photos were completely out of the question. I did get a chance to email a running commentary to friends and family back home, but it was just not anywhere close to the experience I had imagined it would be.

Well enough of me. I asked Amelia Goldberg to share a couple of her Light Bucket List items with you. If you spend any time at all out at the Columbus dark site, or attended an outreach event, I'm sure you've met her. She's hard to miss at outreach events, with her PINK telescope, ASTRAEA, the Star Maiden. Here is what's on her Light Bucket list.

My name is Amelia Goldberg and I became interested in astronomy over 50 years ago when I saw Saturn in a very small telescope for the first time. I could see the rings in that tiny image and I was totally hooked. I bought my first telescope in 1980, joined HAS and have been observing regularly ever since. I have earned the League's Master Observer award, one of 5 in the HAS.

Like Don, a total solar eclipse was on my Bucket List. I saw my first one in 1991 and I've seen 5 to date. We plan to be in Oregon for the August eclipse. There are no words to adequately describe the experience. No picture can capture the awe you experience during one. If you plan to see the August eclipse and this is your first one, forget the photography and look at it. That will be the fastest 2+ minutes of your life.

Another item on my Bucket List is seeing the aurora. We spent a week in Alaska in 2015, but it was cloudy every single night! Someday....



Seeing the spokes in Saturn's rings was on my Bucket List but I never dreamed that I'd be able to see them in my 15" telescope. Saturday, July 2, 2016 was one of those rare summer nights with really good seeing that is so great for observing the planets. We were at the HAS dark site in Columbus. Keith Rivich was set up next to us and mentioned

that he was getting glimpses of the Encke Gap in Saturn's rings. So around 9:30, I sat at my scope to try to see Encke, too. I did get very brief glimpses of it. While looking at the outer portion of the rings for Encke, I noticed that my eye kept going to the inner portion of the rings. It took me a few minutes to realize that I was seeing something there. I was totally surprised to find that I was seeing the spokes in the B ring. I had heard of them for years but had never seen them in any telescope. During moments of excellent seeing, they were easily seen as jagged finger-shaped shadows pointing away from the planet, going into the rings. They lasted only a fraction of a second and then were gone. What a thrill that was to actually see the spokes in my own telescope! I saw them many times and finally called Keith over to take a look. He confirmed what I was seeing. Several other people were called over to my scope to look and they were able to see the spokes when told exactly where to look. We also saw them in Keith's 25" scope.

Steve O'Meara first saw the spokes in 1976. He made many drawings of them and showed his drawings to his professional astronomer friends at ALPO (Association of Lunar and Planetary



Observers). However, those astronomers did not believe he had actually seen them even though they knew that he was an excellent observer. He had proven that to them by visually observing slight variations of brightness in Saturn's A ring. The astronomers had anticipated those variations and employed O'Meara to detect them. He did so and when his observations conformed to photoelectric photometry of the rings, his skill with the visual method was evident. Those astronomers did not anticipate spokes in the B ring. They expected that these objects did not exist and rather than take O'Meara's word, they claimed it to be an optical illusion induced by an unknown cause that deceived their otherwise trusted and skilled observer. Instead of arranging for independent confirmation of O'Meara's observations, they just let the matter drop. To them, the spokes were an optical illusion, nothing to observe so nothing to confirm.

In 1980 Voyager 1 did a fly-by and guess what? The pictures showed spokes in the rings. After 4 years, O'Meara's spoke observations were finally confirmed.

Steve O'Meara is a close friend and I've heard him talk about this many times. My seeing the spokes in my own telescope was very important to me because of our friendship. The day after I saw the spokes, I sent an email to O'Meara describing my observation. He appreciated me sharing it with him and said that it brought tears to his eyes.

If you've got something on your Observing Bucket List, don't ever let anyone tell you that you will never see it in your scope. If it interests you, try for it, over and over again. Don't give up. I've seen many things that I never expected to see in my telescope. It may take some time, but usually, sooner or later, the sky will deliver.

I'd be interested in hearing and sharing your favorite astronomy dreams and experiences. Please feel free to email me at edonselle@gmail.com and let me know what's on your Light Bucket List.

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, unformatted MS-Word format via email GuideStar@astronomyhouston.org. 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. **Contact the editor for writing guidelines.**

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THE GUIDESTAR IS THE
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 NEWSLETTER AWARD

MEMBER PROJECTS SPOTLIGHT



Image courtesy of wikimedia.org

We want to spotlight the astronomical projects and observations that you are working on.

Send us an email at GUIDESTAR@ASTRONOMYHOUSTON.ORG and tell us. Whether it be a specific research project in astronomy that you're working on, an astro league observing program, an astrophotography project, or something else, let us know so we can let the rest of the society know.

GUIDESTAR ADVERTISING POLICIES

PERSONAL ADVERTISEMENTS

- Members in good standing of the Houston Astronomical Society (HAS) may request that an ad be placed in the GuideStar for personal items (for sale or wanted).
- Items offered for sale must be of interest to amateur astronomers.
- No more than two telescopes may be advertised within any calendar year.
- Ads will not run for more than 3 consecutive months
- Ads will be run on a space-available basis.
- Ads must be provided to the editor in electronic format (email, text file) by the 15th of the month preceding the month-of-issue.

COMMERCIAL ADVERTISEMENTS

- Advertisement sizes:
 - o Full page = 6.875" w x 9" h
 - o Half page = 6.875" w x 4.25" h
 - o Quarter page = 3.31" w x 4.25" h (allows for column gutter)
- Commercial advertisements will be run in the GuideStar at the following fee schedule:

Size	One time	One quarter (3 consecutive months)
Full page	\$100.00	\$250.00
Half page	\$50.00	\$125.00
Quarter page	\$25.00	\$62.50

- Artwork provided must be in electronic format (image file, PDF, etc.) and must be in the correct proportions to fit the space provided. Contact editor with questions.
- Artwork may be in color or in black and white.
- Items or services advertised must be of interest to amateur astronomers
- Payment for advertisements must be done in advance (pay to the 'Houston Astronomical Society')

HOUSTON ASTRONOMICAL SOCIETY

P.O. Box 800564
Houston, TX 77280-0564

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.

CHECK THE WEBSITE 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

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. Access to meeting videos on the HAS web site.
- 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!

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

You can join (or renew at the organization web site, www.astronomyhouston.org. Click the 'Join HAS' Tab. 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.

EVENT NOTIFICATION OR CANCELLATION

HAS uses RAINEDOUT.NET to communicate late breaking updates about our various events. . Message delivery is via text messaging and e-mail. There are several ways to subscribe. If you would like to receive these notices via text messaging directly to your phone, subscribe to any of the sub-groups which interest you.

RainedOut notices will also automatically be sent to our e-mail list. Note that regular e-mail list conversations are not part of RainedOut communications and will not be sent to your phone as part of this service. Instructions to sign up for the e-mail list (a great way to keep your finger on the pulse of the club) are found here: <http://www.astronomyhouston.org/about/email-list>.

To receive text messages, send any or all of the following (one at a time) to 84483

OUTREACH Public Outreach Events
STARPARTY Members only star Parties
URBAN Urban Observing Events
MEETINGS HAS Meetings

You will receive a confirmation message back for each successful enrollment. For more information, please visit www.RainedOut.net.

DIRECTIONS TO MEETING

From I-45 going south (from downtown)

- exit at Cullen Boulevard
- turn right on Cullen
- turn right on Holman Street; the parking lot is past the Hoffeinz Pavilion
- 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 on Holman Street; the parking lot is past the Hoffeinz Pavilion
- Science and Research is across the street (2nd building back)

PARKING AT THE UNIVERSITY OF HOUSTON MAIN CAMPUS

For the monthly Houston Astronomical Society Meeting

The map below shows the location of the 15C parking lot, west of Cullen Boulevard on Holman Street.

The map is from the University of Houston web site and identifies the lot that is available for parking while attending the Houston Astronomical Society monthly meeting. This parking is available from 6:30 p.m. until 10:00 p.m. on the Friday night of the HAS meeting (usually the first Friday of the month).

This parking is free. If you get a notice from the UH campus police on the night of the meeting, call the UH Security office and let them know that this area has been made available on HAS meeting night by the Parking Department.

