

NIGHTFALL

Huachuca Astronomy Club of Southeastern Arizona



HAC MEETING: Friday, July 10, 2009

7 pm, Cochise College, Sierra Vista, Rm. 305A/B

PLUS our monthly Show-N-Tells, upcoming event details, refreshments & **NEW** Exciting Door Prizes!

Speaker: Jonathan Lunine

Topic: Exploration of Titan, the once and future Earth.

STAR PARTY CORNER

Keith Mullen, Star Party Coordinator (520) 366-0049 email: repogazer@msn.com

Participation is the Lifblood of the Club!

HAC Star Party Gets Front Page Reviews



Rock Stars, a C.E.O. and Astronomers from as far as Chicago and the Midwest converged on RepoGazer Observatory for a history-making two-day Star Party.

C-Row Star B.Q. held Friday, June 19th and Saturday, June 20th was the first private event ever to feature such a collection of Astronomical Luminaries. In attendance were Celestron's C.E.O. and President, Joe Lupica, Jr.,

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STARIZONA
ADVENTURES IN ASTRONOMY & NATURE

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President's Perspective

Wayne Johnson

Where has the year gone? As I write this message, the year is nearly half over and the summer monsoons are beginning their annual visit. It's a slow time for observing, but don't get lulled into inactivity! Every once in awhile the sky will clear at night and be wonderfully transparent for those who are prepared. Summer is a good time to work on your equipment and get it ready for the fall skies. Time flies by too fast when you're trying to get everything ready for the seemingly rare opportunities to observe the wonders in the sky.

I'm sure Keith will give a full report, but I just wanted to congratulate the Mullens for putting on a wonderful event at their house. It's obvious that the C-Row Star Party took a lot of planning. Everything ran smoothly even though there were about 100 people in attendance. Can you imagine hosting that many people at your place? Thanks to all the HAC members who helped out as volunteers or were in attendance. If you didn't attend you missed your chance to experience a gathering like no other. I think I can speak for everyone in attendance when I say that a good time was had by all! The weather even cooperated nicely on Saturday night.

I'm excited to announce that our speaker for this month is Jonathan Lunine from the UofA's Lunar and Planetary Lab in Tucson. He is an excellent speaker and I hope we have excellent attendance, especially from our members in the Sonoita area, where Dr. Lunine currently resides. He will talk about Saturn's largest moon, Titan, a topic of current intensive research.

I'd like to congratulate HAC members, Dave Healy and Tom Kaye, for a nice article about their current search for extrasolar planets as reported in Tucson's Arizona Daily Star newspaper. There has never been an amateur discovery of an extrasolar planet, though there have been several observers who do follow-up work after the professional discovery was made. Let's hope that Dave and Tom are successful in their endeavor!

Remember, we are planning a tour of the Steward Observatory's Mirror Lab on Saturday, August 8th. Tentative time of departure from Sierra Vista will be about 8am so that we can arrive in time for a 10am tour of the lab. I hope that we can also go over to the Flandrau Planetarium while we're at the UofA campus. We plan to go to Starizona, too, for some astro-shopping while we're in Tucson. We can only have twenty people on the tour and some will want to rideshare to the big city. I think we have room for about 10 more.

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Huachuca Astronomy Club P.O. Box 922 Sierra Vista, AZ 85636 <http://hacastronomy.com> email: mrgalaxy@juno.com

Yearly Membership: Individual: \$25; Family: \$35; Military: \$20; Student:\$10 (with restrictions)

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This issue of Nightfall can also be found on-line at hacastronomy.com. Click 'Newsletter' link. There is much more information about astronomy and our HAC activities on our club web site. *To join the HAC-LIST, send an email to haclist-subscribe@yahoogroups.com .

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One final item, our September meeting will be a member's night, since we haven't had one in awhile. We need about three speakers to talk for about 15-20 minutes on any astronomical topic that they enjoy. I think I already have one volunteer. Please let me know if you're interested. We'll need a title, short synopsis and short biography in early August for planning and publicity purposes. Tell the rest of the club what you're doing! The talks are always interesting and fun!

Speaker Talk...

Exploration of Titan, the once and future Earth.

A billion miles from the Sun lies a world shrouded in haze, where the winds blow organic grains into dunes and ripple the surfaces of vast seas of methane. Saturn's moon Titan is a lifeless laboratory of pre-biotic organic chemistry--or is it? We know nothing of the full range of possibilities for self-organizing chemistry--life- -and Titan might be a place where "weird life" exists. Titan's methane cycle is more an analog of the Earth's far future--when the brightening Sun strips water off our home world--than it is of the stable hydrosphere of today. Beyond the epic explorations of Cassini-Huygens, what will the space faring nations do to reveal this secrets of this distant and enigmatic world?

About the Speaker ...



Jonathan I. Lunine is Professor of Planetary Sciences and Physics and a Galileo Circle Faculty Fellow at the University of Arizona, Tucson. He is the David Baltimore Distinguished Visiting Scientist at NASA's Jet Propulsion Laboratory. His research interests center broadly on the formation and evolution of planets and planetary systems, the nature of organics in the outer solar system, and the processes that lead to the formation of habitable worlds. He is an interdisciplinary scientist on the Cassini mission to Saturn, and on the James Webb Space Telescope, as well as co-investigator on the Juno mission under development for launch to Jupiter. He serves on the US National Academy of Sciences Committee leading the Decadal Survey for Astronomy and Astrophysics. Dr. Lunine is the author of over 200 scientific papers and of the books *Earth: Evolution of a Habitable World* (Cambridge University Press, 1999), and *Astrobiology: A Multidisciplinary Approach* (Pearson Addison-Wesley, 2005). He is a fellow of the American Association for the Advancement of Science and of the American Geophysical Union, which awarded him the James B. Macelwane medal. Other awards include the Harold C. Urey Prize (American Astronomical Society) and Ya. B. Zeldovich Award of CO-SPAR's Commission B. He earned a B.S. in Physics and Astronomy from the University of Rochester in 1980, followed by M.S. (1983) and Ph.D. (1985) degrees in Planetary Science from the California Institute of Technology.

Travels on the Celestial Sphere

Sagittarius, the Archer

By Bob Kepple & Glen Sanner



The above image shows Reflection Nebulae NGC 6589, NGC 6590, and IC1283-84 (left to right). Open cluster Collinder 371 are the stars embedded in IC1283-84.

Sagittarius, the Archer, is a Centaur, a composite being with the body of a horse and the upper torso, arms, and head of a human. In Greco-Roman astromythology Sagittarius was the Archer-Centaur who slew the Scorpion than had killed Orion, the Hunter. Orion sets as the Scorpion rises with Sagittarius soon following over the SE horizon.

Sagittarius is located at the heart of our Milky Way Galaxy, the precise direction toward center is a spot about four degrees WNW of Gamma Sagittarii. The bulk of the dust that lies along the spiral plane of our Galaxy is also concentrated in Sagittarius. Many fine examples of these cool, dark, dusty clouds are viewable with a small telescope or binoculars: **M8**, the Lagoon Nebula; **M17**, the Swan Nebula, **Barnard 86**, the Ink Spot, **M20**, the Trifid

Nebula, and **M24**, the Small Sagittarius Star Cloud. Other showpiece object in Sagittarius include the fine globular cluster **M22** and open clusters **M18**, **M21**, **M23**, and **M25**. All of the deep-sky objects mentioned above make a good list of objects for small telescopes.

Listening to our talks, most of you may have picked up on the idea that we love telescopic views that offer more than one object in the same field of view. Here are a few for you to enjoy:

Barnard 83a, Dark Neb, Opacity 6, Dia. 4', RA 17^h45.3^m, Dec -20°00'

Barnard 84, Dark Neb, Opacity 6, Dia. 15', RA 17^h46.4^m, Dec -20°15'

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Space Place Partner Column

The Cool Chemistry of Alien Life

Alien life on distant worlds. What would it be like? For millennia people could only wonder, but now NASA's Spitzer Space Telescope is producing some hard data. It turns out that life around certain kinds of stars would likely be very different from life as we know it.

Using Spitzer, astronomers have discovered the organic chemical acetylene in the planet-forming discs surrounding 17 M-dwarf stars. It's the first time any chemical has been detected around one of these small, cool stars. However, scientists are more intrigued by what was *not* there: a chemical called hydrogen cyanide (HCN), an important building block for life as we know it.

"The fact that we do not detect hydrogen cyanide around cool stars suggests that that prebiotic chemistry may unfold differently on planets orbiting cool stars," says Ilaria Pascucci, lead scientist for the Spitzer observations and an astrophysicist at Johns Hopkins University in Baltimore, Maryland.

That's because HCN is the basic component for making adenine, one of the four information-carrying chemicals in DNA. All known life on Earth is based on DNA, but without adenine available, life in a dwarf-star solar system would have to make do without it. "You cannot make adenine in another way," Pascucci explains. "You need hydrogen cyanide."

M-dwarf and brown dwarf stars emit far less ultraviolet light than larger, hotter stars such as our sun. Pascucci thinks this difference could explain the lack of HCN around dwarf stars. For HCN to form, molecules of nitrogen must first be split into individual nitrogen atoms. But the triple bond holding molecular nitrogen together is very strong. High-energy ultraviolet photons can break this bond, but the lower-energy photons from M-dwarf stars cannot.

"Other nitrogen-bearing molecules are going to be affected by this same chemistry," Pascucci says, possibly including the precursors to amino acids and thus proteins.

To search for HCN, Pascucci's team looked at data from Spitzer, which observes the universe at infrared wavelengths. Planet-forming discs around M-dwarf stars have very faint infrared emissions, but Spitzer is sensitive enough to detect them.

HCN's distinctive 14-micron emission band was absent in the infrared spectra of the M-dwarf stars, but Spitzer did detect HCN in the spectra of 44 hotter, sun-like stars.

Infrared astronomy will be a powerful tool for studying other prebiotic chemicals in planet-forming discs, says Pascucci, and the Spitzer Space Telescope is at the forefront of the field. Spitzer can't yet draw us a picture of alien life forms, but it's beginning to tell us what they could—and could not—be made of. "That's pretty wonderful, too," says Pascucci.

For news of other discoveries based on Spitzer data, visit www.spitzer.caltech.edu. Kids can learn Spitzer astronomy words and concepts by playing the Spitzer "Sign Here!" game at spaceplace.nasa.gov/en/kids/spitzer/signs.



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

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NGC 6440, Glob. Cl, Class 5, Dia. 5.4', Mag. 9.1v, RA 17^h48.9^m, Dec -20°22'

NGC 6445, Pl. Neb, Type 3b+3, Dia. 34", Mag. 11.2v, RA 17^h49.2^m, Dec -20°01'

Although the objects above are listed by right ascension, small telescopes should start by finding the brightest object first, the globular cluster **NGC 6440**. It is a fairly obvious 5' diameter cotton ball which brightens to a small core. The edges are ragged, and less than a dozen stars may be seen around its periphery in small and medium-size telescopes. Lying 22' north of the globular cluster is the planetary nebula, **NGC 6445**. It is about half the size of and only slightly fainter than the globular cluster. NGC 6445 has a 34"x30" diameter disk elongated NNW-SSE with a pinch in the center, reminiscent of M27, the Dumbbell Nebula in Vulpecula although it is nowhere near as large. Once you find this object, you will want to use higher powers to see how much detail you may discern. Using a UHC filter with at least an 8-inch scope you should be able to see some of its outer shell as a faint haze and the pinch will be more visible. If you pan westward about half again as far away as the globular and planetary are separated you will come to **Barnard 84**, an irregular crescent-shaped dark nebula concave to the west. It is much larger, fainter, and more difficult than the other two objects, but this dark nebula should be visible as a starless patch of sky. Try a UHC or deep-sky filter if you have either of them; they should add a little contrast to help spot the dark nebula. Further west lies **Barnard 83a**, another dark nebula that is easier to spot. It is a small 4' circular spot that is much darker and more obvious than B84. There are many more starless patches of dark nebulae in the surrounding area and you will need a star chart such as Uranometria 2000 to sort them all out.

Objects for 12-inch & larger telescopes:

(If you have a smaller scope, try anyway, especially if you are viewing from a dark site)

NGC 6589, Reflection Neb, Dia. 5'x3', PhotoBr 1-5, RA 18^h16.9^m, Dec -19°47'

NGC 6590, Reflection Neb, Dia. 4'x3', PhotoBr 1-5, RA 18^h17.1^m, Dec -19°52'

Collinder 371, Open Cluster 30*, Dia. 20', Mag. 7.0, RA 18^h17.3^m, Dec 19°45'

IC 1283-84, E + R Neb, Dia. 17'x15', PhotoBr 2-5, RA 18^h17.8^m, Dec -19°40'

Here is another of our multiple object fields located just outside the southern edge of M24, the Small Sagittarius Star Cloud. Use a UHC filter rather than an O-III filter for these reflection nebulae. The O-III is designed to enhance emission nebulae and is ineffective when viewing reflection nebulae. If you don't have a UHC, a Deep-Sky filter will help but is not quite as good.

The westernmost object, **NGC 6589** is a small, faint glow surrounding a 9.6 magnitude star. **NGC 6590**, lying 6' SSE of NGC 6589, is another faint glow surrounding a pair of 10th magnitude stars separated by 20". This double is listed as HJ 2827 (John Herschel Catalog). To the NW lies a larger 15' diameter haze of faint nebulosity listed as **IC1283/84**. It is centered on a 7.6 magnitude star which is actually a very close 0.5" pair (BU 246) which will pose a challenge even for very large instruments. The densest part of the nebulosity is centered around this 7.6 star. **Collinder 371** (which Megastar also indicates as being NGC 6595) is a 20' diameter group of some 30 stars embedded in the nebulosity of IC1283/84 most of them are scattered along the southern portion of the nebula.

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plus a number of vice presidents and department managers including Celestron's entire service department. Kevin Kawai, the newly-crowned "Face of Celestron" and Public Relations Coordinator has worked with me on this idea for several years now. Marketing Manager Michelle Meskill was my contact person and the coordinator inside Celestron for this event. On the astronomy side we had David Levy, Kim Rogalski, Bob Gent and Steve Coe as guest speakers. Also in attendance were presidents and vice presidents from several other astronomy clubs, all interested in who Celestron might pick as a recipient of next year's C-Row Star B.Q. event. I've heard that there could be as many as 4 awarded by the Celestron hierarchy-- time will tell.

Out on C-Row, we counted as many as 57 Celestron telescopes set up at one time. Of course there were other makes and models set up at different locations behind the Observatory. Del Gordon has taken some good pictures from the roof of the house that can be found on the HAC website home page. The weather wasn't too good for the Friday night serious Observers' night, but cleared up nicely for Saturday. Swanee secured from Ft. Huachuca a monster BBQ on wheels and we all had a fun time cooking our steaks while Hans Clahsen supervised the BBQ area. During dinner we were treated to a surprise duet by two stars in the world of rock -- Carlos Rios (who is Stevie Nicks' lead guitarist) and Gigi Mackenzie (who has played with Christopher Cross and has sung with several major touring stars). We had a truck load of raffle and door prizes donated by event sponsors Celestron, Starizona, Infinitees and Far-Point Astronomical. Celestron C.E.O. Joe Lupica, Jr., officiated at the raffle with the first prize Celestron CPC 800 Telescope going to HAC member Robert Hebert. Congratulations, Bob. Door prizes were so plentiful that before he handed out the last prize, Joe couldn't find the remaining red tickets in the squirrel cage and just started asking who hadn't received a prize yet. This event has been on my dream "to do" list for years. Thanks to all of you that helped make it happen!

July Star Party Schedule

Saturday, July 18--Member Star Party will be at Bob and Barb Kepple's Desert Starlight Observatory. Barb may be gone but Bob says come on over.

Friday, July 24--Public /Member Star Party will be at JBO. Dave will notify us that afternoon whether it's a go or no go, so stay tuned.

C-Row Star-B-Q

T-Shirts & Zipper/Hooded Sweat Shirts are still available. They will be for sale at the meeting at greatly reduced prices. Let's help Dirk and clear the table!

T-Shirt \$8.50 Zip/hooded Sweatshirts \$16.00

Large—17

Large— 2

X-Large - 3

XXL - 2



C-Row surprise guests Carlos Rios & Gigi Mackenzie



Mark Your Calendars for ALCon 2010



The Tucson Amateur Astronomy Association, the International Dark-Sky Association, and the Astronomical League will be jointly hosting the annual convention of the League from June 24 until 26, 2010 at the Tucson Hilton East in Southern Arizona.

Noted astronomer and comet discoverer, David Levy will be one of the many outstanding speakers. With Kitt Peak National Observatory and other world class destinations, there will be many exciting tour opportunities.



The League will be holding its annual awards banquet, and it will present major national awards during the conference. Among others prestigious awards, the National Young Astronomer Award will be presented.

In addition, astronomy vendors from across the USA will display their latest products. We also expect leaders in IDA's dark sky movement to participate. Keith

Schlottman, VP of TAAA, and Bob Gent, Past president of the Astronomical League, are the event's co-chairs. Please mark your calendars and stay tuned for additional updates.