



The Prairie Astronomer

September, 2010

Volume 51, Issue #9

The Official Newsletter of the Prairie Astronomy Club

September Program: The Antikythera Mechanism

More than a hundred years ago an extraordinary mechanism was found by sponge divers at the bottom of the sea near the island of Antikythera. It astonished the whole international community of experts on the ancient world.

For decades, scientific investigation failed to yield much light and relied more on imagination than the facts. However research over the last half century has begun to reveal its secrets. It dates from around the end of the 2nd century B.C. and is the most sophisticated mechanism known from the ancient world. Nothing as complex is known for the next thousand years. The Antikythera Mechanism is now understood to be dedicated to astronomical phenomena and operates as a complex mechanical "computer" which tracks the cycles of the Solar System.

Speaker: Steve Ingracia, Vice President, Olsson Associates

Steve Ingracia is a professional electrical engineer with 17 years of experience in process automation, telecommunications, security, and information management systems. After joining Olsson Associates,

Steve launched the Automation & Technology team to expand the firm's services into the technology and communications markets. This group specializes in



providing clients with computerized, networked solutions that improve operational efficiency. Steve is a charter member of the Intelligent Transportation Society—Heartland Chapter, and is also a member of the International Society of Pharmaceutical Engineers (ISPE); Association of Communications Engineers (ACE); and the Rural Telecommunications Congress. Steve graduated from the University of Missouri in 1993. He lives with his family in Lincoln, Nebraska.

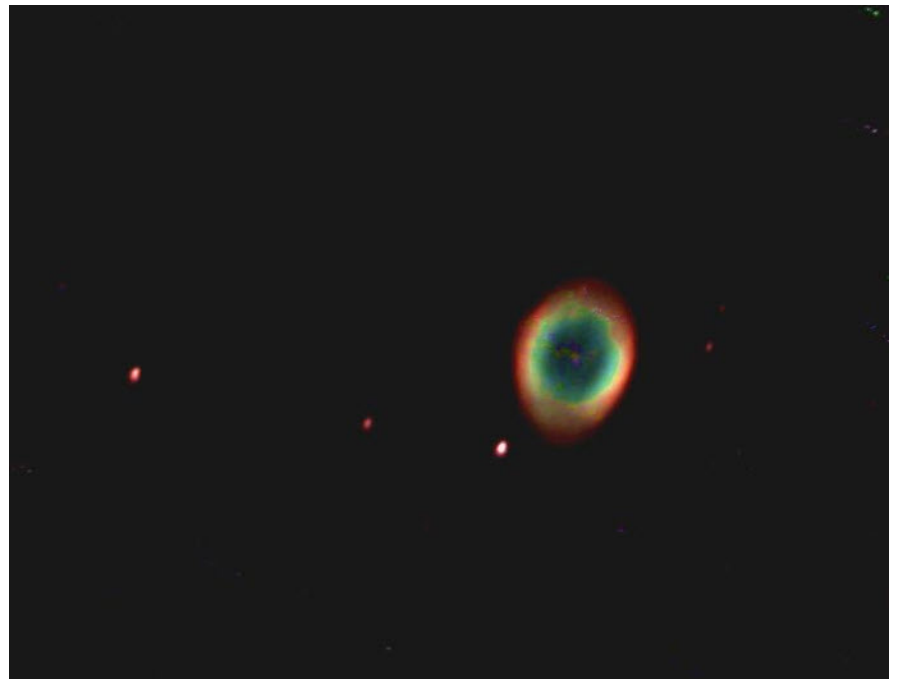
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The Ring Nebula
by Brett Boller.



Club Business

August 31st, 2010 PAC Meeting

Announcements:

Dan Delzell called the meeting to order.

The next PAC star parties will be on Sept 3rd and the 10th.

There will be a lunar party on September 17th.

The next PAC meeting will be Tuesday September 28th, 7:30 PM at Hyde.

Outreach upcoming events

Spring Creek/Prairie Twilight – Sept 18th.

Homestead Halloween – October 30th.

Hyde Saturday nights.

Observing Report

Star parties

Aug 6th - ?.

Aug 13th - ?.

NSP was outstanding and from some accounts the best ever.

Evening planets in September include Venus, Mars, and Saturn

Night Planets in September include Jupiter, Uranus, and Neptune.

Upcoming Programs will be:

The Antikythera Mechanism in Spetember

Microgravity Team from UNL for the October meeting

How to buy a telescope in November

Social event for Families of Club members in December at Morrill Hall

Survey Results

19 responses

Overall the responses were satisfied with the Club on programs and outreach.

Results of what people wanted to see more of was community outreach, social events, and educational oppurtunities.

Brett Boller

Secretary

PAC Board Meeting Minutes–Brett Boller

PAC Board Meeting

Dan Delzell brought the meeting to order.

Results of the survey was discussed.

Plan to form a committee to look at possible observing sites.

Attempt to find 6 new volunteers for deck help on Saturday nights.

Upcoming programs were discussed.

How to increase membership

-astrophotography

- observing clubs

- 101 classes for during meeting for beginners

-101 class during lunar parties

- Ask what questions members have to help them out

New member classes to find out what everyone needs help on.

Cards that could be handed out

On the cards members that could help with

-Astrophotagraphy

-Deep Sky

- Lunar

-Messier

-Planetary

-Space Exploration

-Club Officers

Upcoming Programs will be

The Antikythera Mechanism in Spetember

Microgravity Team from UNL for the October meeting

How to buy a telescope in November

Social event for Families of Club members in December at Morrill Hall

Cabinets are ready to be built on Deck.

Club Events

Newsletter submission deadline, October 16, 2010

PAC Club Meeting

Tuesday, September 28, 2010 7:30pm @ Hyde Obsv.

The September Meeting program is The Antikythera Mechanism, the First Astronomical Computer. The speaker is Steve Ingracia.

PAC Club Meeting

Tuesday, October 26, 2010 7:30pm @ Hyde Obsv.

Program: The UNL Microgravity Research Team

Homestead Halloween – October 30th.

PAC Club Meeting

Tuesday, November 30, 2010 7:30pm @ Hyde Obsv.

Program: How to Buy a Telescope

PAC Club Meeting

Tuesday, December 28, 2010 7:30pm @ Mueller Planetarium

Program: Family pot-luck and Planetarium show at Mueller Planetarium on the UNL campus

PAC Club Meeting

Tuesday, January 25, 2011 7:30pm @ Hyde Obsv.

Program: How to use your telescope

PAC Club Meeting

Tuesday, February 22, 2011 7:30pm @ Hyde Obsv.

Program: Speaker John Rhienert, club member and engineer who was part of the Shuttle engine design team.

2010 PAC Star Party Dates

October	1 st & 8 th
November	Oct 29 th & 5 th
December	3 rd & 10 th

2010 PAC Lunar Party Dates

October 15th, November 12th

Volunteer Activities

Homestead National Monument Halloween on the Prairie – Sat. before Halloween

Hyde Observatory on Saturday nights

Additional volunteer events will occur when they are scheduled.

ON THE NET

PAC:

www.prairieastronomyclub.org

PAC E-Mail:

info@prairieastronomyclub.org

NSP:

www.nebraskastarparty.org

NSP E-Mail:

info@nebraskastarparty.org

OAS

www.OmahaAstro.com

Hyde Observatory

www.hydeobservatory.info

Panhandle Astronomy Club

Panhandleastronomyclub.com

PAC-LIST: You may subscribe to the PAC listserv by sending an e-mail message to:

mailsrv@prairieastronomyclub.org.

In the body of the message, write "Subscribe PAC-List your-email-address@your-domain.com"

For example:

Subscribe pac-list me@myISP.com

To post messages to the list, send to the address

pac-list@prairieastronomyclub.org

PAC can also be found on Twitter and Facebook.

Buy club apparel through the club website. Shirts, hats, mugs, mouse pads and more.



September Observing: What to View--Jim Kvasnicka

This is a partial list of objects visible for the upcoming month. Next Month: M27, M30, M56, M57, M71, M72, M73

Planets

Venus: Low in the evening twilight in its crescent phase.

Saturn: Low in the pre-dawn eastern sky.

Mars: Disappearing in the sunset glow. It won't be a naked eye object until spring.

Neptune: In Capricornus, look for a small blue disk.

Jupiter and Uranus: Jupiter shines at -2.9 and starts to pull away from Uranus. That distance will increase to 3° by the end of the month.

Mercury: Rises an hour before the sun in the east.

Comets

Hartley 2: Look for it just south of Cassiopeia to start October around 6th magnitude. On October 7th look for it less than 1° south of the Double Cluster. For a finder chart see the October issue of Sky and Telescope.

October Messier List

M11: The Wild Duck Cluster in Scutum.

M16: The Eagle Nebula in Serpens.

M17: The Swan or Omega Nebula in Sagittarius.

M18/M25: Open clusters in Sagittarius.

M24: Small Sagittarius Star Cloud.

M26: Open cluster in Scutum.

M55: Class XI globular cluster in Sagittarius.

M75: Class I globular cluster in Sagittarius.

Last Month: M13, M14, M22, M28, M54, M69, M70, M92

NGC and Other Deep Sky Objects

NGC 7009: The Saturn Nebula in Aquarius.

IC 1396: Open cluster south of Herschel's Garnet Star in Cepheus.

NGC 7331: Elongated galaxy in Pegasus.

Double Star Club List

8 Lacerta: Four white stars.

Beta Cephei: White primary with a blue secondary.

Struve 2816: White primary with two blue stars.

Xi Cephei: Yellow pair.

Delta Cephei: Yellow and pale blue stars.

Eta Persei: Bright yellow and light blue stars.

Struve 331: White primary with a blue-white secondary in Perseus.

Epsilon Pegasi: Yellow primary with blue secondary.

Challenge Object

NGC 1023: Elongated galaxy in Perseus. Look for a 5' x 1.5' halo E-W with a brighter core.

Observing Awards--Jim Kvasnicka

At the August PAC meeting the following members received observing awards from the Astronomical League.

Globular Cluster Club

Bob Kacvinsky.

Bob is the fourth PAC member to complete the Globular Cluster Club and this is Bob's fourth observing award that he has earned. Congratulations to Bob.

Focus On Constellations - Jim Kvasnicka

Pegasus

Pegasus the Winged Horse is upside down with only the front half of the horse appearing in the sky. The body of Pegasus is marked by the four stars of the Great Square of Pegasus making the constellation easy to find. The NE star of the Great Square, Alpheratz, is shared by Andromeda. Pegasus contains 1,121 square degrees making it the seventh largest constellation. Even though it is big it is rather poor in objects because it is off of the Milky Way. Pegasus contains one Messier object in M15, a bright globular cluster. Like most off the Milky Way constellations Pegasus has quite a few galaxies. Most of the galaxies are small and faint; requiring dark skies and moderate aperture to see. Pegasus is best seen in the month of October.

Mythology and History

Pegasus was the winged horse of Greek Mythology. When Perseus cut the head off of the Medusa some of the blood fell into the sea and mixed with the sea foam. From this mixture sprang Pegasus the Winged Horse. Because sea foam is always white Pegasus is always shown as being white. Perseus mounted the mighty Pegasus and was riding it when he rescued the princess Andromeda from the clutches of Cetus, the Sea Monster.

Objects Magnitude 12.0 and Brighter

Galaxies: NGC7331, NGC7217, NGC7814, NGC7479, NGC7332, NGC7619, NGC7626, NGC7177, NGC7457, NGC7741, NGC7743, NGC7448, NGC7817, NGC7454, NGC7678, NGC7753, NGC23, UGC12613

Open Clusters: NGC7686, NGC752, NGC956

Globular Clusters: M15

Planetary Nebula: NGC7094, PK104-29.1

Bright Nebulae:

SNREM:

Dark Nebulae:

Named Stars: Markab (Alpha), Scheat (Beta), Al Genib (Gamma), Enif (Epsilon),

Homam (Zeta), Matar (Eta)

Number of Objects in Various Observing Clubs

Messier Club: 1 object

Double Star Club: 1 object

Herschel 400 Club: 5 objects

Globular Cluster Club: 1 object

Open Cluster Club: 0 objects

Planetary Nebula Club: 3 objects

Urban Club: 1 object

ANNUAL MEMBERSHIP

REGULAR MEMBER - \$30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - \$35.00 per year. Same as regular member except gets 2 votes at club meetings.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

Club Telescopes

To check out one of the club telescopes, contact **Jason Noelle**. If you keep a scope for more than a week, please check in with Jason once a week, to verify the location of the telescope and how long you plan to use it. The checkout time limit will be two weeks, but can be extended if no one else has requested use of a club scope.



Focus on Outreach–Dave Churilla

Not much to report for August. No Outreach activities although we are planning for Spring Creek’s Twilight on the Tallgrass in September and for Homestead National Monument’s Hollowing Halloween in October. We still need some help for both events.

Another area some of you might consider helping out is with our classes. We skipped them this year because of the extensive work most of us were involved with in holding the MSRAL Convention, but we are planning to hold the Astronomy 101 Field Class in 2011 as well as some training classes for new club members. If you think you’d like to give a talk at one of these let me know and I’ll keep your name listed for those helping out on the classes. I know, this seems early but if we want to hold the class in the spring we’ll need to get the word out early for the Park & Rec newsletters, which is where most people sign up from.

In addition to the public class we are also planning to hold informal “classes” for new Club Members who are interested in field observing. These classes will be structured very loosely so as to fit the needs of the members attending. We will be as basic or as advanced as each attendee wants us to be. The format will be very informal with the class being open to the members to ask questions they need answered and that will guide how we will run the class. While these will be open to all members it’s primarily meant for new Club members to help them get started and we’ll arrange the date and time to fit everyone’s availability.

Here’s what’s coming up for Outreach in the future. Remember that if for some reason you can’t make it to an event DON’T just assume we’ve got plenty of people and not show up. Please let someone know so the event organizer can be kept informed and if necessary find a replacement.

Hyde Observatory: *Saturday nights.* If you are not already volunteering, please consider doing so. It’s not hard and can be a lot of fun. Don’t worry, we won’t throw you to the wolves...Steve does a good job of training you and there’s a time period where you are teamed up with another experienced volunteer while you learn. But it’s really not that difficult – Joey and I began volunteering before we could even find the Moon...well, Joey could but I couldn’t! If you can’t yet find objects there is always an experienced volunteer there to help out – and in time that helps you learn how. So contact

Steve Lloyd today and start volunteering.

Spring Creek’s Twilight on the Tallgrass: *Saturday, September 18th from 5 pm to 8 pm.* By the time of the Newsletter, this event will have occurred. I’ll have to give you a report on it in the October Newsletter.

Homestead National Monument’s Howling Halloween: *Saturday, October 23rd 6 pm to 9 pm.* This is the Federal Park’s Open house and is geared toward kids and their parents and is usually held the Saturday before Halloween. So far I have 3 volunteers who have committed: Dan Delzell, Bob Kacvinsky and John Lammers – so we can use a couple of more people. While I haven’t heard back from the email I sent yet (Dave K is checking for me) the site shows that the event will be held on Saturday October 23rd (so that lets me out as that’s my anniversary – I KNOW my wife has devised a dozen ways to kill me if I try to do something astronomical on THAT night). This event attracts over 400 people but in small groups of 15 to 20 and is west of Beatrice with viewing from 6 pm – 9 pm and the full moon rises at 6:38 pm. We’ll usually gather about an hour ahead of time for this one so that we can fill out their volunteer forms then be led to the viewing area and set up. The Huskers play at OSU that day (Time TBA)

PAC Beginners Field Class: *To be determined – likely in the spring of 2011.* With the MSRAL Convention behind us we’ll once again be holding our Beginner’s Field Class next year, likely in the spring of 2011. This class is open to the public and if memory serves me right (and it probably does NOT) we try to hold it on two consecutive Friday’s at Hyde Observatory in hopes of getting a clear night on at least one evening. While we do try to cover some basic “classroom” astronomy, the emphasis is on field observing such as identifying constellations, how to use binoculars, how to read star charts, a basic introduction to equipment and an introduction to using telescopes. We can use lots of help such as speakers, setting up scopes for students to learn with, working with students outside, etc. We’ll be working with Jack to coordinate this class with Astronomy Day so they don’t conflict.

New Club Member’s Instructional Class: *To be determined.* As mentioned above we hope to hold informal instructional “classes” for new members who are interested in field observing to help them get started

and to answer questions they have. More information to come.

What if you're contacted for Outreach? If you are contacted for an Outreach Activity and want to handle it yourself, that's great – I don't need (nor want) to be involved with every event that we do. I do, however, ask that you let me know about it and afterward send me information about the event so I can track and log it. I need:

Event Name
Event Location
Organization
Contact Name and Information (phone, email, etc)
Volunteers (and who organized)
Event Date & Time – include set up time – so we can track volunteer hours
What you did (i.e. Set up scopes, did presentation or a talk, etc.)



Recent Observations–Dave Knisely

DATE: August 25th, 2010, 0310 to 0730 hrs UTC.
LOCATION: Beatrice, Nebraska: 40.283N, 96.736W, 1322ft (403m) elev.
INSTRUMENTS: 9.25 inch f/10 SCT: 59x, 94x, 168x, 197x, 235x, 294x, 338x, 423x, 470x
CONDITIONS: Clear (15 day old moon), Temp. 64F (18C), wind Calm.
UNAIDED-EYE ZENITH LIMITING
MAGNITUDE: 5.0
SEEING (above 45 deg. altitude): 0.4 to 0.9 arc seconds (Antoniadi I to II)

OBJECTS OBSERVED: 15 Aquilae, Struve 2446, Struve 2489, M57, Otto Struve 525, Struve 2470-74 (2nd "double-double"), Rasalgethi (Alpha Her), NGC 6818, NGC 6543, Moon, Uranus, Jupiter!!!

OBSERVATIONS: After an evening of watching TV, John Lammers and I decided to break out the NexStar 9.25 and do some viewing from the driveway. Despite the nearly full-moon, the sky was beautifully clear, so out the scope came. I had intended to try some

astrophotography, but had discovered to my chagrin that the T-ring I had purchased from Orion was a 48mm one and not the smaller one needed for my Orion "universal" camera adapter. Needless to say, I wasn't a happy camper, but with the scope nicely aligned and tracking well, I pressed on to some double stars. A quick look during alignment had shown that the seeing was quite good, so I put in my Explore Scientific 100 degree field 14mm eyepiece and started things off. The true field of view with that eyepiece came out to be around 35.8 arc minutes, which is well within the pointing accuracy of the NexStar. The eyepiece is also very well corrected across the field, making it an ideal eyepiece for moderate power double star observation. I had Sissy Haas's book "Double Stars for Small Telescopes" at hand, so I decided that with Aquila fairly high, that would be my first area to look at.

The first double was 15 Aquilae, a nice fairly wide pair consisting of a 5th magnitude yellowish-white primary and a 7th magnitude companion that looked faintly orangish about 39 arc seconds away. Haas has had some

problems with the reports of color in some doubles, and that was again the case here, as she reports the companion as "bluish-turquoise". The companion is listed as spectral class K0, so it should be at least yellowish in color. My next double star target was Struve 2446, a nice pair magnitude 7.0 and 8.9 with a 9.4 arc second separation. Again, my color estimates differed from Sissy's. I had the primary as off-white and the companion being almost too faint to get a good color estimate (might also have been orangish). Following that, I went to Struve 2489, a nice 8.2 arc second pair of magnitude 5 and 9.3 stars. I could see the primary as a definite bluish-white color, but again, the companion was so faint that it was not easy to get any definitive color estimate (might have been off-white).

John was getting a little restless as I made my log entries by moonlight, so I sent the scope to the Ring Nebula to give him a little eye candy. Surprisingly, the scope put the Ring dead in the center of the field, and the 168x was just about right even without a filter and with the competing moonlight. Higher power revealed its shape somewhat better, but even at lower power, the ghostly ring was still easy to see, along with the 13th magnitude star that sits just off the nebula's eastern edge. With that covered, I went to the finderscope and slewed a degree almost straight north to a wonderful double star that *does* have nice color contrast: Otto Struve 525. This is a beautiful yellow-blue pair (6th and 7th magnitude) that is wide (45" arc) and easy. The primary is supposed to also be a very tight close double, but I didn't have the power very high so I did not notice a third member of the pair. It is a wonder that it isn't more prominently covered in many observing guides, especially given the closeness of M57. I also did another manual slew using the finderscope and gave John a look at the 2nd "Double-double" in Lyra: the pair Struve 2470-74. Both pairs are quite a bit wider than Epsilon Lyrae and not as bright, but they still make a pleasing quartet of stars to feast the moon-lit eyes on.

I had kicked up the power a little on the pretty double Rasalgethi (Alpha Her) and noted the brilliant orangish primary and pale bluish-white companion, but also saw that diffraction disks were easily visible on both stars at 235x. It looked like seeing was pretty good, so I gave the planetary NGC 6543 in Draco a look. The moonlight drowned out the faint outer shell, but high power easily revealed the oval inner shell with a little faint detail and the central star at 470x. Just for grins and giggles, without replacing the eyepiece, I punched in the "Little Gem" planetary NGC 6818 in Sagittarius, and this time, the scope nailed it almost dead-center in the

field. It appeared as a ghostly almost round ring with a dim glowing center.

After blinding John with a brief look at the nearly full moon, I tried out my new set of "transition" eyeglass lenses which I had just gotten from my optometrist after a lengthy visit (and a rejection of the first set of lenses due to a cylinder problem). Looking at Jupiter with just our unaided eyes, John and I were both surprised to see a tiny faint point of light some distance east from the bright spot of the planet.

That turned out to be Callisto, but I had first noted a spot of light a bit closer in, which turned out to be Ganymede! I could also occasionally get a hint of Europa on the other side, but it was kind of buried in a spiky part of Jupiter's "Mark-1 Eyeball" image. Gee, I guess these new glasses actually work! Once that was done, I sent the scope to Uranus to give John a quick look, and then on to Jupiter to finish the night. Well, my friends, all I can say is that for the next two solid hours, that scope stayed locked on the giant planet, as we got some of the most outstanding views I have seen in a very long time. At powers from 168x to 470x, the planet just hung there in the field with a level of detail that was staggering. After noting the quality of the view, I got the "wild hare" of getting out my Burgess Binoviewers. The view at 235x using the binoviewer was making us scream "HOLY COW!!", much of the time, and we went up in power from there. The planet turned from an out-of-round disk of light with nice detail into an almost three-dimensional world that slowly turned as we watched it. The northern polar region was a mass of faint mottled detail, and we could see anywhere from six to seven discreet belts on the disk with ease.

The greatest detail was in the north equatorial belt (NEB), where the reddish-brown threads and patches were incredible in contrast. A prominent white oval in the belt was followed by a narrow sinuous cream-colored ribbon that ran a short distance downstream in the middle of the NEB. The narrow belt just north of the NEB (the north temperate belt) had a nice dark spot in it followed by a smaller one that looked almost as dark as one of the shadows of the Galilean satellites. The South Equatorial Belt was quite faint, but was definitely there, made up of faint grayish streaks and patches. Indeed, a large dim festoon was seen arching up northward from the SEB. Down farther south, the Great Red Spot was just coming around the limb. As it came around, we could actually see detail *inside* the spot. Part of the GRS was a lighter patch surrounded by a sort of reddish-orange swirl. I noted a disturbance in the south temperate belt next to the spot, and the downstream portion of the STB was much darker, almost like an

overly-long "barge". As the Red Spot approached the middle of the planet, I could easily see the entire red-spot hollow, including the big inclusion it made into the south equatorial belt. We played with the powers almost continuously going up and down to find our favorite

powers (we used two Powermates and two Barlows at times). We finally broke it off when I noticed that it was 2:30 am. However, even with the fat moon in the sky, this had to be one of my best viewing sessions ever.

This Planet Smells Funny

Giant planet GJ 436b in the constellation Leo is missing something. Would you believe swamp gas?

To the surprise of astronomers who have been studying the Neptune-sized planet using NASA's Spitzer Space Telescope, GJ 436b has very little methane (CH₄).

"Methane should be abundant on a planet of this temperature and size, but we found 7000 times less methane than what the models predict," says Kevin Stevenson of the University of Central Florida (UCF). Stevenson was lead author of a paper reporting the result in the April 22, 2010, issue of Nature.

The methane deficit is surprising because in our own solar system all gas giants are methane-rich. Hydrogen and carbon are abundant in the atmospheres of Jupiter, Saturn, Uranus and Neptune. These atoms naturally get together to form the simplest hydrocarbon, CH₄.

The example of our local gas giants shaped expectations when Stevenson and colleagues pointed Spitzer in the direction of GJ 436b, only 33 light-years away. Finding methane was a foregone conclusion. But when the researchers analyzed the planet's spectrum, they found little of it. Instead, the atmosphere was rich in carbon monoxide.

"Actually, it blew our minds," says principal investigator and co-author Joseph Harrington, also of UCF.

Where did all the methane go? One possibility: it's being broken apart. "UV radiation from the planet's star could be converting the methane into polymers like ethylene," says Harrington. "If you put plastic wrap out in the sun, the UV radiation breaks down the carbon bonds in the plastic, causing it to deteriorate as the long carbon chains break. We propose a similar process on GJ 436b, but there hydrogen atoms split off from methane and let the remnants stick together to make ethylene (C₂H₄)."

Also, they speculate, strong vertical winds in the planet's atmosphere might be sweeping up material from deep hot layers where carbon monoxide is abundant. CO thus replaces CH₄.

Or it could be something else entirely.

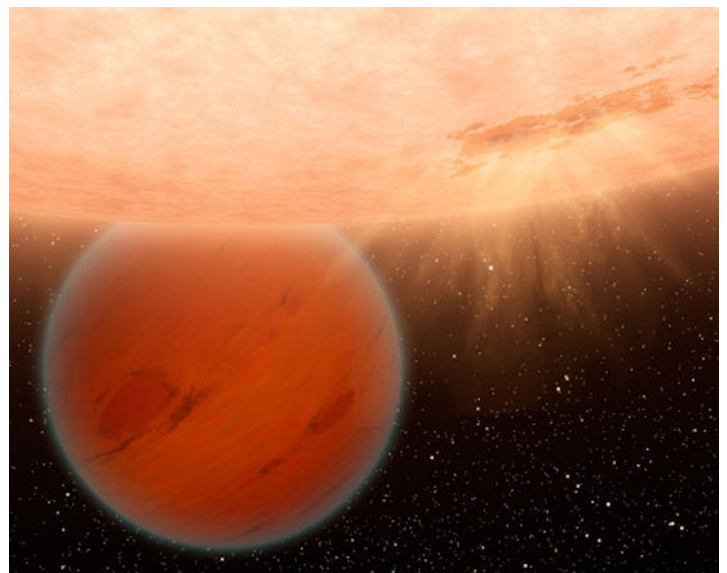
"This planet's atmosphere could have some sort of alien chemistry going on," says Harrington. "We just don't know yet."

Giant planets aren't the only worlds with methane. CH₄ is fairly common on Earth, too. Methane forms in the stomachs of cows and goats. It also bubbles up from the bottom of swamps, a byproduct of organic matter decaying in deep mud. On gas giants, methane is just common chemistry, but on our planet, it is a sign of life.

For this reason, researchers have long planned to look for methane in the atmospheres of distant Earth-sized planets. NASA's Kepler mission is expected to discover many Earth-sized planets over the next few years, so the scientists will have plenty of promising targets to pursue. Methane floating alongside oxygen could be compelling evidence of biological activity.

But what if planetary atmospheres don't always follow the rules of our own Solar System? GJ 436b certainly doesn't. Investigators might have to go back to the drawing board and re-figure their chemistry.

"GJ 436b is telling us something important," says Harrington: "We're not in Kansas anymore."



An artist's concept of GJ 436b peeking out from behind its parent star, an M-dwarf much cooler than the sun. Credit NASA JPL

Observatory Update, Sharpless 115 – Rick Johnson

Sharpless 115 is a very large emission nebula in the constellation of Cygnus the Swan, about as far west of Deneb as the North American Nebula is east of it. It is thought to be about 7,500 light years distant and contain enough gas to make 4400 stars the size of our sun. It covers several times the area of sky that I can fit into my field of view. The nebula likely formed the star cluster Berkeley 90 toward the upper left of center in my image. The illuminating star, the one whose ultraviolet light causes the hydrogen gas to glow, is a member of the cluster and one of the brightest and most massive stars known. It is classed as O6. Find the cluster and note there are two brighter stars diagonally across opposite sides of the cluster from 7 O'clock to 1 O'clock. The one at 7 O'clock is the illuminating star. It is known as LS III +46 12. It appears dim compared to other stars in my image because most of its light is emitted as ultra violet light. That is mostly blocked by our atmosphere and what little does get through is blocked by my filters since it is outside the visual range of our eyes. The nebula itself is about 100 light years across. For a star to light up gas 50 light years from it is quite a feat and shows how bright it really is! But for that it will pay dearly. It will live only a couple million years before going supernova while our sun with less than 1/10th the mass will live over 10 billion years.

I've processed this for high contrast. Doing so caused much of the faint nebulosity to be lost. The entire field shows nebulosity in the raw data but if I processed it for that then most of the detail would be lost. Computer monitors can reproduce only 255 brightness levels plus black while the original data has about 4000 different levels. This means I have to pick and choose what to show you and what to leave out or allow to get lost due to low contrast. Just one of many decisions I have to make when processing these images. This is why you will rarely see two images of the same object that look the same. Each imager has to decide what compromises best show the object the way the imager want's it shown.

Processing was made even more difficult because the color data was taken on a much colder night than the L and Ha data. That meant it was taken at a different image scale. Then the Blue was taken several hours after Red and Green during which time the temperature fell even further again changing the image scale. Thank goodness for Registar. It corrected for all this and more.

14" LX200R @ f/10, L=3x10+HA3x30',
R=2x10'x3+HA3x30'*80%, G=2x10'x3,
B=2x10'x3+HA3x30'*20%, HA blended using lighten
mode in all cases, STL-11000XM, Paramount ME



Astronaut Clay Anderson at Hyde Observatory

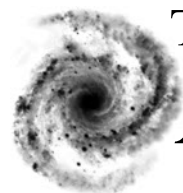
About 200 people came out to Hyde Observatory to see Astronaut Clay Anderson on August 16th.

Nebraska's first astronaut, NASA Astronaut Clayton Anderson joined the International Space Station Expedition 15 crew Sunday, June 10, 2007, replacing Flight Engineer Suni Williams. Anderson arrived at the station as a member of Space Shuttle Atlantis' STS-117

crew. Atlantis docked to the station at 3:36 p.m. EDT. He and Williams officially swapped crews when his custom-made seat liner was swapped out in the Soyuz spacecraft docked to the station. Anderson returned to Earth on November 7, 2007, having logged 152 days in space and over 18 EVA hours in 3 spacewalks. Anderson also flew on STS-131, one of the final space shuttle missions, that launched on April 5th, 2010.



Left: Mark Dahmke, Robert Manthey, Brian Sivill, Clay Anderson, Cassie Etmund, Schuyler Geery-Zink, Jack Dunn, Erik Hubl.



THE *Prairie* *Astronomy* *Club*

Amateur Astronomy --
A Hobby as Big as the Universe

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular \$30/yr, Family \$35/yr.** Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585.** For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: **Mark Dahmke, PO Box 80266, Lincoln, NE 68501 or mark@dahmke.com,** no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.

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Next PAC Meeting
TUESDAY
September 28, 2010
7:30 PM
Hyde Observatory