Sunspot 1785 of the current cycle, imaged by LAS member Brian Kimball

Longmont Astronomy Society Newsletter
July 2013
From the President:
The July meeting of LAS is tomorrow evening. As usual, we will meet at the Front Range Community College, room C1154.

Our speaker is fellow member Lefty Harris. His talk will be about the production, and writing of his book about the moon from an idea to reality and everything in between.

Here is Lefty's Bio:

> I am Lefty, mild mannered pizza guy by day and super star gazer / loonie guy by night. I graduated in 1982 from Villanova with a BS in astronomy. I came to CU in the old AG Department in 1982. I've worked at LASP, CASA, AND JILA; I received my advanced degrees in 1990. I've worked on the VOYAGER, IUE, IRAS missions. I did something with Neptune's ring in 1982 and made the first study/discovery of 370 morphological and statistical features of Saturn's rings. Also I'm maker of OUT OF THIS WORLD PIZZA. I'm enjoying my 14” Meade Ritchey-Chretien time warping machine. Warping minds when allowed!

Please join us at 6 PM for a pre-meeting meal at Basil Flats on Hover.

[www.basilflats.com](http://www.basilflats.com)

Bill

**In the sky this month:**

Meteor Showers

**August 12: The Perseids** (and a couple days either side)

Almost every skywatcher knows about the Perseid meteor shower, because it offers up to 60 an hour under pleasant summer skies. Showtime usually begins as soon as the radiant (near the Double Cluster in Perseus) clears the horizon, an hour or so before midnight, and it climbs higher in the sky throughout the night. This should be a great year for the Perseids, because a fat crescent Moon should be setting just when the shower is revving up

**Planets: Aug 1, sunrise 5:58 A.M.**

- **Mercury:** morning star, rises 4:27, not bad right now!
- **Venus:** evening star, sets 9:45 and looking good
- **Mars:** morning vision, rises 3:44
- **Jupiter:** improving, rises 3:26
- **Saturn:** fading, sets at midnight – another month or two of good seeing
Introducing Kerberos and Styx

Astronomers have a long, colorful, and occasionally contentious history of naming objects in the solar system, as demonstrated by this 1930 communication concerning a newfound object beyond Neptune. But they don't have a monopoly on picking suitable monikers. So it's refreshing that the discovery team for the newest and smallest pair of Pluto's five moons have opted for names chosen by popular demand. The votes are in — nearly a half million of them, including some 30,000 write-ins — and the winners are Kerberos (for P4) and Styx (for P5). In Greek mythology, Styx is the river (and the goddess thereof) that separates Earth from the underworld. Kerberos is the three-headed guard dog who prevents the dead from escaping the underworld. The IAU picked this spelling over the variant Cerberus, which is already used for an asteroid. Actually, the top vote-getter was Vulcan. After all, that's the Roman god of volcanoes (a little-known fact), and Vulcan was the home planet of Mr. Spock in *Star Trek* (a better-known fact). But it's also been used for many decades in *astronomical* mythology, for a planet purported to circle the Sun well inside Mercury's orbit. 

Current Extra-solar Planet count:

**Current Exoplanets:**
879 confirmed, 3346 candidates = 4275 total

**Interesting Stars/Galaxies**

Comet of the Century: Hubble took some pictures of Comet ISON, then turned it into a time-lapse video at [http://hubblesite.org/newscenter/archive/releases/2013/24/video/a/](http://hubblesite.org/newscenter/archive/releases/2013/24/video/a/)

**Club Calendar:**

**July 17, 2013:** Consider it the first interplanetary photobomb. On July 19th, NASA's Cassini spacecraft will photograph Earth through the rings of Saturn—and NASA wants you to jump into the shot.

"Cassini has photographed Earth before, but this will be the first time Earthlings know in advance their picture will be taken from a billion miles away," says Linda Spilker, Cassini project scientist at NASA's Jet Propulsion Laboratory in Pasadena, CA. "We hope that people around the world will go outside to wave at Saturn while the photo-shoot is underway."

This will be the first time Earthlings have had advance notice that their picture will be taken from interplanetary distances. To learn more about how to participate, [click here](http://hubblesite.org/newscenter/archive/releases/2013/24/video/a/).

Cassini's cameras will be trained on Earth during a 15 minute interval that begins at 2:27 p.m. PDT (5:27 p.m. EDT or 21:27 UTC).

**Fiske Planetarium:** Admission costs $3.50 for kids and seniors and $6 for adults closed for remodeling; open in the fall

**Internet Resources:**
R144 in the LMC (Tarantula Nebula) is a binary – the two stars are 170 and 200 Solar masses. Remember when that was thought to be impossible? In the Monthly Notices of the Royal Astronomical Society.

This month’s field trip:

Upcoming Space Missions:

NASA launches satellite to study how Sun’s atmosphere is energized

IRIS will help scientists understand the mysterious and energetic interface between the surface and corona of the Sun.
IRIS is a NASA Explorer Mission to observe how solar material moves, gathers energy, and heats up as it travels through a little-understood region in the Sun’s lower atmosphere. This interface region between the Sun’s photosphere and corona powers its dynamic million-degree atmosphere and drives the solar wind. The interface region also is where most of the Sun’s ultraviolet emission is generated. These emissions impact the near-Earth space environment and Earth’s climate. http://iris.gsfc.nasa.gov/ is the mission page – the satellite is still being activated and checked.

Current Space Missions:

Hubble: July 11, 2013: Hubble has identified the true visible-light color of a giant Jupiter-sized planet located 63 light-years away. The planet has a cobalt blue color. It has torrential 4,500-mile-per-hour winds that are so hot they melt silicates into raindrops of molten glass. And that's where the cobalt-blue hue comes from, not oceans. The glass droplets scatter blue light more readily than green or red light.
The planet's color provides unique clues to the atmosphere and weather on a truly alien world that orbits much closer to its star than the innermost planet Mercury is to our Sun.

According to Heavens-above, this is a poor time for viewing the ISS.

Earth's Gold May Come From Collisions of Dead Stars

The origin of the universe's gold is mysterious, since it's not formed within stars like lighter elements such as carbon and iron. But the mystery may now be solved, as a new study posits that the collision of two neutron stars — the tiny, incredibly dense cores of exploded stars — could catalyze the creation of the valuable metal.
"We estimate that the amount of gold produced and ejected during the merger of the two neutron stars may be as large as 10 moon masses — quite a lot of bling!" lead author Edo Berger, of the Harvard-Smithsonian Center for Astrophysics (CfA), said in a statement.
"To paraphrase Carl Sagan, we are all star stuff, and our jewelry is colliding-star stuff."
**Venus Express:** Now two independent research groups have found that the Venus atmosphere's winds have been gradually speeding up for years. In 2006 the average velocity of the planet’s cloudtops at low latitudes was about 180 miles per hour (80 m per second). But by 2012 it had risen to 250 mph (110 m/s) — a jump of more than a third in just 6 years. Mission page for the Venus Express probe is at [http://sci.esa.int/venus-express/47115-fact-sheet/](http://sci.esa.int/venus-express/47115-fact-sheet/) and there are links to multimedia there.

**Kepler:** A note to update you on the latest news from [planethunters.org](http://planethunters.org). At the end of May, the Kepler spacecraft suffered a mechanical failure that has potentially ended its exoplanet hunting days. While the Kepler mission may be over, our work has just begun. Planet Hunters has barely scratched the surface, and there are nearly 2 years of Kepler observations yet to be searched on the site. Who knows how many more worlds are left to discover! Help us with the search for planets today at [planethunters.org](http://planethunters.org)

**Mars Rovers:** July 1, 2013: When NASA's Mars rover Opportunity blasted off from Cape Canaveral in 2003, many onlookers expected a relatively short mission. Landing on Mars is risky business. The Red Planet has a long history of destroying spacecraft that attempt to visit it. Even if Opportunity did land safely, it was only designed for a 3-month mission on the hostile Martian surface.

Few, if any, imagined that Opportunity would still be roving the red sands of Mars--and still making discoveries--ten years later.

On July 7, 2013, Opportunity celebrates the 10th anniversary of its launch and more than 9 years on Mars.


**Humor Dept:** We're all doomed #7: [http://science.nasa.gov/science-news/science-at-nasa/2013/24jun_permmafrost/](http://science.nasa.gov/science-news/science-at-nasa/2013/24jun_permmafrost/)

Zero-gravity coffee cup demo: [http://www.youtube.com/watch?v=pk7LcugO3zg](http://www.youtube.com/watch?v=pk7LcugO3zg)

**FYI:**

Hello, I thought you might be interested in a project that I’m working on - PocketSpacecraft.com: Mission to the Moon.

This project will give thousands of people the opportunity to design, build and launch personalised spacecraft that are smaller than a CD and as thin as a piece of paper, and send them to the moon. You will be able to write software, customise the hardware, and personalise your spacecraft by adding a picture or customising the message it transmits.

If you’d like more detailed information or have any questions please have a
FYI2:
Today we launch a new Zooniverse project in association with the Medical Research Council and the Medical Research Foundation: Worm Watch Lab.

We need the public's help in observing the behaviour of tiny nematode worms. When you classify on wormwatchlab.org you're shown a video of a worm wriggling around. The aim of the game is to watch and wait for the worm to lay eggs, and to hit the 'z' key when they do. It's very simple and strangely addictive. By watching these worms lay eggs, you're helping to collect valuable data about genetics that will assist medical research.

With your classifications we can understand how the brain works and how genes affect behaviour. The idea is that if a gene is involved in a visible behaviour, then mutations that break that gene might lead to detectable behavioural changes. The type of change gives us a hint about what the affected gene might be doing. Although it is small and has far fewer cells than we do, the worm used in these studies (called C. elegans) has almost as many genes as we do! We share a common ancestor with these worms, so many of their genes are closely related to human genes. This presents us with the opportunity to study the function of genes that are important for human brain function in an animal that is easier to handle, great for microscopy and genetics, and has a generation time of only a few days. It's all quite amazing!

To get started visit www.wormwatchlab.org and follow the tutorial.

In the magazines:
Astronomy:
Nice article on testing your visual acuity yet another way with a binary.
Good article (with pictures) on enhancing the colors of imaged stars – look for the pictures submitted by members to improve.
Since this is the 40th anniversary issue, there’s a nice article on the 40 greatest astronomical discoveries – make your list, then read theirs. Get 'em all?
Followed by the 40 greatest mysteries still out there – make that list and try it out, too.
And then “where will astronomy be in 40 more years?” Excellent coverage and explanation of the telescopes in the design and construction phases. And 40 years of amateur astronomy – medium. And a summary of the 40 year history of the magazine. If they would have written all these articles like this one, it never would have made the first anniversary. And for the Deep Sky Rangers – a challenge: 40 targets in Sagittarius!

Sky and Telescope:
Amateur observations on T Pyx established that it’s a white dwarf binary that is losing mass. That’ll make it hard to go nova.... Decent article on Exoplanets and how common they are, with NASA and ESA’s plans for a Kepler follow-up. Video interview with the author at: http://skypub.com/seagerinterview History article on the Women who created Modern Astronomy – decent. Video on the Harvard project to scan in the glass slides is at http://skypub.com/DASCH Great picture showing the spectra of the stellar classes. Helpful article on the social media, virtual star parties (nice and warm inside, handy bathroom, selection of drinks, better music...)

Now – pics from the membership. Good selection this month!

Matching picture of sunspot 1785 by Brian Kimball
Lefty Harris is getting some definitions on the craters

Gary Garzone got some nice colors in the Viel Nebula