



Here comes Mercury (bottom left; top left is Sunspot #923) Picture by Vern Raben



and Comet Swan (picture by Brian Kimball)
November 2006

Longmont Astronomical Society
November 2006

Current Events:

Nova (PBS) last week had a nice program that went through the evidence for the existence of a large black hole in the center of the Milky Way. More information is at the companion website at <http://www.pbs.org/wgbh/nova/blackhole/> The movie that shows the effects of the gravity in the center is at http://www.tcd.ie/Science/videos/milky_way_blackhole.mpg (Movie is in infrared – visible light won't make it through all the dust).

NASA's Cassini space probe of Saturn has photographed a "hurricane like" storm with a prominent eye (November 9). You can watch the movie at <http://saturn.jpl.nasa.gov/home/index.cfm>

The Leonids are this weekend, but predicted to be "lots, but dim" Details at http://science.nasa.gov/headlines/y2006/14nov_leonids.htm?list937934

From the President:

Hello Comet watchers, The Home Planet Stellar Views have been good to us this past month. November is the most cloudy month of year, according to the average. Somehow we were in the right place at the right times once again.

We always try to go to a dark sky place for the new moon weekend every month. I went to Crow Valley for the new moon weekend trip, but when I got there it was already a full campground with group of kids camping too. I was awakened to reality, this is not really our dark sky site, only in winter months when there are no campers around. I figured it was Oct. and who wants to camp out in cold, well lots of people I found out. I headed for our old Dark sky site Cactus Flats North once again. No interruptions from car lights or campfires or anything, true dark skies, which is becoming almost impossible to find. Well the weather looked pretty bad when Carol and I left for dark skies, it was blowing and snowing a little even, she thought I was crazy again. I checked out Clear clocks and it called for clearing so I took the chance once again. Well the winds quit and the clouds cleared and we were in dark sky heaven again. Cheyenne W showed up early evening and Vern R. drove up after the BASS meeting in Boulder to catch some of the Orionids meteor shower. Cheyenne just got a new ST4 auto guider and was taking some pictures thru the night. Vern and I looked at lots of old favorites before the Meteor shower started around 1am to 3 am when it clouded up again. It gets dark early this time of year so we got a long time viewing, maybe twice what we can do in short summer nights.

Vern and I were counting the meteors, at least 20 per hour. Orionids are the fastest of all the meteor showers, quick bright trails that last for quick second or two. Meteor showers are fun in dark sky places, they really get bright then. Nothing like the Leonids of several years ago, but well worth the drive to dark skies just for that. We viewed Comet Swan, found it right away with help from Cheyenne W who knew where to look. It was pretty darn good, with a very faint tail in dark skies with 30 scope. We have all been looking at it from our yards this past month, early evening then moon got in the way with it's bright light. Brian Kimball had the best picture of Comet Swan, Vern also did a few with stellar cam that were pretty good too, Cheyenne did some with Canon 20Da camera. Altona Middle school was cancelled because of clouds, we will be doing a few more schools soon. I am working out the dates now with Westminster school and Shaw

Heights Middle School . I will be looking for volunteers to help again. I will send off an e mail soon.

Mercury Transit was another amazing weather day. It was cloudy for the week before and the week after it seemed. Every day was looking not so good. For good Solar viewing it has to be totally clear for best views. Not only was it clear but for the entire afternoon with zero clouds, we lucked out again. Andrew Planck had 5 scopes to view the Mercury Transit at the Platt Middle school in Boulder, he had over 300 kids see the transit, Way to go Andrew, we just can not get those retired teachers to quit teaching I guess. Vern and Brian got a few good Mercury Transit pictures in also.

The Discovery channel had a film crew here at my yard with seven of the diehards from DAS, BASS and LAS clubs. Wayne Green, President of DAS got in touch with me and asked to do it in yard here. We got small group of Amateur Astronomers for them to film. They came over before dark and watched and filmed as we all set up several different kinds of scopes. Refractors, Cassegrains, Dobsons, Binoculars. They interviewed each person with their scopes. It was one of those spectacular sunsets that day so they went up to top of my yard and filmed it for a great sunset shot over the mountains- very cool. The crew was from London, so I served them some tea during breaks from the cold night. Thanks to Vern Raben ,Steve Hartung, Wayne Green, Cheyenne Wills, Pete Petersen, Brad from DAS , and myself. They just got in from filming LBT at MT Graham in Tucson, Arizona. They said it was a show on the Large Binocular Telescope, there, but they wanted to throw in an amateur side to it all, and we were once again in the right place at the right time . They will let us know when it airs. I will let you all know.

Bob Spohn , Mark Wiley and myself went to look at huge 16 inch Meade equatorial scope. LAS is getting a 16 inch Meade scope donated to club. We need a home for it , so I was dreaming of setting it up permanently at site in a dark sky area. We can see about leasing a piece of land in Pawnee area and putting up a small shed dome for it . We could open it up to public on certain nights for first time ever scope in dome at real dark sky site instead of inside city like SBO, Chamberlin and LTO. Let's think outside the box or should I say outside the city limits. We need to start something good here. The LAS is 20 years old this January and Bob Spohn, myself and others feel pretty proud of that, lets keep it alive and maybe reach some new heights in the next 20 years.

Banquet is coming up. so lets make it a good one this year. I will send off info when it gets set in stone. Wayside inn is out (closed for remodel). We are going to rent a hall and get it catered right here in Longmont. I will send off full information and get a list of people started soon, Hope it is going well for all, see you in the dark, bye, Gary

From the treasurer:

If you have not yet renewed your annual membership, please do so before Dec 31st. The LAS roster will be updated and sent to Astroleague the first week in January 2007. You must be on the roster to receive the AAL Reflector magazine, to be eligible for magazine subscription and other discounts, and to be included on LAS email distribution lists.

A banquet invitation and menu order form will be sent to all members on Dec 15. Please return the form before Dec 31st so that we will have time to send the order to the caterer.

If you interested in receiving the "2007 Royal Astronomy of Canada's Observer Handbook" send an email note to treasurer@longmontastro.org to reserve a copy.
Vern Raben
LAS Treasurer

This coming month in the sky:

After passing in front of the Sun on November 8, Mercury will start to separate enough to be seen in the morning sky a week later (good luck seeing it that early...) It lies very close to the Moon on November 18 and 19 – Moon 11 degrees above Mercury on the 18th, 7 degrees below on the 19th. Greatest elongation on November 25th makes that the best chance to observe. If you're up early on the 19th for the Leonids, check out Mercury too.

Saturn rises about 11 tonight, and the rings are tilted 12 degrees or so, making it an excellent sight. By the end of December, it rises about 8 PM.

On December 10: Jupiter, Mercury, and Mars will be within a 1 degree square of the sky (can you say "Star of Bethlehem"? – that's one of the possibilities) Look about an hour before sunrise, very low in the East. If the day before and after are clear, it will be a good demonstration of planets moving. Use your fingers to measure the angular distances, and you'll be right up there with Archimedes!

The Moon will skim the Pleiades again on December 3rd, and again on the 31st.

Meteor showers: the Geminids are predicted to peak in the morning of Dec 14th. Predicted peak is about 4 AM MST, maybe 100/hour. The Ursids peak on Dec 22nd, with a predicted 10/hour and somewhat fainter. The radiant is Ursa Minor, so they are visible all night.

Then the Winter solstice occurs on Dec 21st at 5:22 PM MST. Celebrate!

Internet resources:

Moon pictures: a question was raised at the October meeting "Where did you (Andrew Planck) get the Moon pictures?" Here are a few sources: [Virtual Atlas of the Moon](#) (huge downloads, about 100 Meg in all, and a little quirky).

Nasa's World Wind lets you zoom from satellite altitude into any place on Earth. Leveraging Landsat satellite imagery and Shuttle Radar Topography Mission data, World Wind lets you experience Earth terrain in visually rich 3D, just as if you were really there.

Virtually visit any place in the world. Look across the Andes, into the Grand Canyon, over the Alps, or along the African Sahara. Download here: [NASA Worldwind Earth](#) and read the nifty details [here](#) (just picture zooming in on the Grand Canyon, for example). NASA later did this for the Moon, and you're going to be playing with this for hours! Download from [Worldwind Moon](#) **WARNING:** to best use these programs, you should have a 3D graphics card (which pretty much means a computer that's 2004 or newer, unless you added a card). It will work on Windows 2000 or newer.

Google Earth is a similar program, and you're familiar with it from the nightly news – CNN uses it all the time – last week, they showed where the North Koreans conducted their nuclear test by zooming in.

Most of the Worldwind Moon data comes from the Clementine mission to the Moon. You can access the images, download a lunar atlas, and a few other things at [the Clementine archive](#)

Also mentioned in Andrew's talk was a "libration movie on Wikipedia". You can access this at [Wikipedia](#). If you want to save that movie, just 'right click' on the movie after it's done loading, then 'save image as'. Store it in your astronomy movie section in My Documents. It's not actually a movie, but an animated gif – like the old 'flip the pictures to look like a movie' from when you were a kid. That Saturn hurricane 'movie' mentioned before is also an animated gif.

This month's field trip:

The mother lode of space science – Kennedy Space Center. You can check out the upcoming launch schedule at [Kennedy Space Center](#), and [reserve tours](#) for the center. Just like Johnson Space Center – take the expensive tour, and you'll get to see a lot more – the shuttle hangars, transport crawlers, etc. The visitor center has the standard batch of rockets, etc. In a little known fact: call your Representative / Senator a couple of months in advance, and they can get you tickets to sit onsite and watch the next launch. (It might take a few phone calls, now that the election is over – be persistent). If you are a teacher / educator of some type, check with me, and I'll tell you how to get in for free and come away with a shopping bag of material and videos. Next month: are we doomed?

Mission to Pluto: A presentation by Dr. S.Alan Stern
By: Dick Mallot, LAS ALCOR

I was fortunate to be able to attend the presentation on the mission to Pluto on October 19 (the same night as our last LAS meeting) at Ball Aerospace. The meeting was sponsored by the AIAA, which generously opens its meetings to the public.

The presenter was given by the Principal Investigator, Dr. Alan Stern. He has both a Masters degree in Aerospace Engineering and a PhD in Astronomy from CU. He currently is the *Executive Director, Space Science and Engineering Division, Southwest Research Institute.*

The title of the presentation was: "The New Horizons Mission: A First Reconnaissance of the Sun's Third Zone". This planetary mission is the first voyage to an unexplored planet since 1977.

Our solar system contains three zones: the inner, rocky planets; the gas giant planets; and the Kuiper Belt. Pluto is the largest body of the icy, "third zone" of our solar system. The National Academy of Sciences placed the exploration of the third zone in general - and Pluto-Charon in particular - among its highest priority planetary mission rankings for this decade. New Horizons is NASA's mission to fulfill this objective.

Pluto, in this definition, is in the third zone of the sun, and this New Horizon's mission is aimed at Pluto first, and then on into the third zone of the sun. Pluto and Charon - a "double planet"-- is the last planet in our solar system to be visited by a spacecraft.

New Horizons blasted off from the earth on Jan.19, 2006 from the Cape and was the fastest spacecraft ever to escape the gravity of the earth. It went supersonic in 24 seconds, and hit 13Gs at the time of the burnout of the last stage. It was a relatively small spacecraft powered by an Atlas booster with extra boosters attached. The spacecraft will arrive at the Pluto/Charon double planet on July 14, 2015. It will be easily the fastest trip for a spacecraft to leave the solar system ever.

Dr. Stern gave a little history of Pluto as part of his talk. Discovered by Clyde Tombaugh in 1930, little more was discovered about Pluto until 1978 when it was discovered that it was a double planet. Charon is not considered a moon of Pluto since the center of gravity of the two objects lies outside the diameter of Pluto. All other moons of planets in the solar system have the center of gravity inside of the larger body. In the case of Pluto/Charon, that is not the case.

While Charon is 1200 km in diameter, and Pluto is 2274 km in diameter., Pluto is smaller than seven of the solar system's moons (the [Moon](#), [Io](#), [Europa](#), [Ganymede](#), [Callisto](#), [Titan](#) and [Triton](#)). Pluto has two other small moons that were provisionally designated S/2005 P1 and S/2005 P2, they are now known as Nix and Hydra. They are estimated to be between 60 and 200 kilometers in diameter. Since Pluto was demoted as a planet by the IAU, Pluto has been assigned number 134340 in the minor planet catalog.

Pluto has a rocky core, but a heavy coat of "ice" over it, mostly made up on nitrogen. Nitrogen is 10- times more prevalent than any other gas. It also has a very spotty surface, making it vary considerably in brightness, causing lots of contrast.

We now know that there are many ice planets out beyond Pluto. It is believed that there are at least 500 objects in the Kuiper belt large enough to rounded by gravity, one of the parameters for defining an object as a dwarf planet. The New Horizons mission will be going on past Pluto to approach one or more of these newly discovered Kuiper belt objects. Exactly which one will not be determined for years, and will most likely be one that has not even been discovered yet.

Dr Stern talked about how the mission was proposed back in 1989 by others. But it was cancelled in 2000 after hundreds of millions were spent on it. All that was gotten for the millions were some PowerPoint slides and graphs.

A study later in 2000 put a Pluto mission at the top of the list for planetary research. When Dr. Stern proposed a mission, it was approved and cancelled several more times.

Want to know more and track the mission? Go the [New Horizons website](#)

Dr. Stern was both a very interesting and humorous presenter to the AIAA. It was a pleasure to attend the meeting.

20th Annual LAS Banquet

Saturday, January 6th, 2006

Izaak Walton park Clubhouse, 18 South Sunset St., Longmont

Doors open at 4:30

5:00 Dinner

\$15.00 Per Person

This year's banquet will be held at the City of Longmont's Izaak Walton Park Clubhouse on Sunset St., and will be catered by The Rib House by Chef Extraordinaire.

Menu: Smoked sausage, BBQ brisket and pork, cheesy corn bake, cole slaw, potato salad, iced tea, lemonade, coffee, chocolate cake. Sorry, no alcohol allowed on the premises.

*** Please have reservations and payment to me by December 23rd *
Bring a guest(s) and have fun at our big social event of the year!**

Bob Spohn
1342 Garden Pl
Longmont, CO 80501
303-772-1470

Include your name and number in your party, and total you are paying

Name **Number Attending** **Total**

