Celestial Highlights

Jupiter

The Great Red Spot crosses the center of the disk at the following times this month:
Feb 4 7:18 pm
Feb 6 1:05 am and 8:56 pm
Feb 8 10:35 pm
Feb 9 6:26 pm
Feb 11 00:13 am and 8:04 pm
Feb 13 01:51 am and 9:43 pm
Feb 15 11:21 pm
Feb 16 7:12 pm
Feb 18 00:59 am and 8:51 pm
Feb 20 10:29 pm
Feb 21 6:20 pm
Feb 23 00:07 am and 7:59 pm
Feb 25 01:46 am and 9:37 pm
Feb 27 11:16 pm
Feb 28 7:07 pm

Jupiter is currently magnitude -2.6 in brightness and appears in the constellation Gemini.

Announcements from LAS President, Vern Raben

Special thanks to Lefty for making all the arrangements for the January meeting at Johnny Carinos!!

Thanks to Mike Fellows and Brian Kimball for making arrangements with the IHOP Restaurant to again host our monthly meetings. There were several reasons for the change such as close parking, larger and nicer meeting room, more time for the meetings, and the availability of food and drink. The FRCC vacation schedule interfered with 3 or 4 of our meetings each year and so we needed to find space for those meetings. If we had to rent from the City or elsewhere that space would cost $50 to $100 per meeting. We will continue our relationship with FRCC and their students will be invited to all our future meetings and events. I'll maintain contact with the science chair, Patrick Larabee, and with the astronomy instructor, John Minors.

The topic for the February 20th meeting is “Planetary Imaging: Equipment, Acquisition, and Processing Techniques”. I will review the ZWO Optical ASI120MM monochrome USB camera which was selected as one of Sky and Telescope Magazine’s “Hot Products of 2014”. I'll discuss the ZAGL Communications Ultra-thin filter wheel and Astronomik’s LRGB filters. I’ll give a tutorial on how to configure and use the “FireCapture” software for capturing planetary images. Alignment, stacking, and enhancement of the images using software tools will be discussed.

Gary Garzone will do a presentation on “The Constellation of the Month: Leo”. The meeting will be at the IHOP Restaurant, 2040 Ken Pratt Boulevard, Longmont, CO.

Please join us for dinner at the restaurant at 6 pm. The general meeting and presentations will begin at 7 pm.

Next month (March 20th) Stokes McMillan, chief systems engineer for the Sierra Nevada Corporation based in Louisville, CO, will talk about the fascinating history and design of their Dreamchaser space plane.

A total eclipse of the moon occurs on April 15 so it's time for us to begin planning for a public event. The partial eclipse begins at 11:57 pm MDT; totality begins at 1:56 am and ends at 2:25 am MDT.
Mars

Credit: Mars April 22, 2012 by Vern Raben

Mars rises in constellation Virgo around 11 pm at the beginning of the month and 9 pm by months end. It transits around 4 am early in the month and 2 am by months end. Mars will be at opposition with earth on April 5th.

Venus

Credit: Venus simulation on Feb 5 Stellarium

Venus is now visible low in the morning sky in constellation Virgo. It is currently visible in the southeast and is a dazzling -4.8 magnitude in brightness.

Saturn

Saturn rises around 1 am in constellation Libra. It is 0.5 magnitude in brightness. Best to view it would be just before dawn.

January Meeting Notes from LAS Secretary, Will Thornburg

The January LAS meeting was at Johnny Carinos in Longmont. This was our annual business meeting to elect officers for 2014 and to adopt changes to the LAS constitution and Bylaws.

Officers for 2014 are:
- Michael Fellows, Treasurer
- Gary Garzone, Vice President
- Brian Kimball, Board member-at-large
- Leigh Pearson Board member-at-large
- Vern Raben, President
- Bob Spohn, Board member-at-large
- Will Thornburg, Secretary

The LAS constitution and bylaws were amended to:
- make non-discrimination clause more explicit
- change secretary to be a separate position
- add three members-at-large to the board
- officers may be removed by majority vote a business meeting
- members may be removed by majority vote of board
- combined ALCOR position with Treasurer
- changed newsletter and webmaster to be appointed positions
- new section covering election, duties, and removal of board members
- new sections for indemnification of directors officers and severability of bylaws

You may view the revised by bylaws on the LAS website at: http://www.longmontastro.org/bylaws

Supernova 2014J in Messier 82

Credit: Supernova 2014J on Jan 26 by Gary Garzone

In Gary’s shot above, the supernova is the bright spot above the center of the galaxy. The type IA supernova was spotted on Jan 21st by astronomer Steve Fossey and four undergraduate students at the University College London. It peaked on Feb 2nd at magnitude 9.75.
**Moon**

First quarter: Feb 6 at 12:22 mst  
Full moon: Feb 14 at 16:53 mst  
Third quarter: Feb 22 10:15 mst  

**Sun**

There is a huge sunspot on the sun, Region 11967, which is currently 1580 millionth solar hemispheres in area (or approximately 1.83 billion square miles). Regions larger than about 800 millionth solar hemispheres are naked eye visible. The region has produced multiple “C” and “M” class flares. It will rotate around the west (right) limb on Feb 9th.

**Dark Sky**

At the beginning of the month astronomical darkness ends at 5:33 am and begins at 6:57 pm. At the end of this month astronomical dawn ends at 5:05 am and dusk begins at 7:21 pm.

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**Sundial Tech**

Contrary to what many of us were taught in elementary school, Christopher Columbus and other people in the middle ages did not believe the earth was flat. From about 300 B.C. onward it was widely accepted that the earth was round and even the approximate circumference was known. This insight was partly from observing ships leaving port and disappearing below the horizon but primarily it came from experience designing sundials. Observations of the length of the shadow cast by a sundial gnomon at spring and autumn solstices at different locations led the ancient Greeks to conclude that the shadow length was dependent on distance north to south. Further that geometrically this could only occur if the earth was round.

In 15 BC Roman architect and engineer Marcivius Vitruvius Polio wrote his book, “De architectura”, which is known today as “The Ten Books of Architecture”. It briefly outlined the mathematics and astronomy developed by the ancient Greeks. It described the duties of the architect and techniques to be used in design and construction of buildings, baths, streets, and other structures. One of his books provided instructions for laying out sundials by determining latitude of the location and how to calculate the length of shadows at various times of the year.

The Vitruvius books were widely used to design of cathedrals, palaces, and other large buildings in Europe throughout the middle ages.

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**Messier 45, The Pleiades**

Credit: Messier 45 by Mike Lewis
The Orion Nebula (also known as Messier 42, M42, or NGC 1976) is a diffuse nebula situated south of Orion's Belt in the constellation of Orion. It is one of the brightest nebulae, and is visible to the naked eye in the night sky. M42 is located at a distance of 1,344 ± 20 light years and is the closest region of massive star formation to Earth. The M42 nebula is estimated to be 24 light years across. It has a mass of about 2000 times the mass of the Sun. Older texts frequently refer to the Orion Nebula as the Great Nebula in Orion or the Great Orion Nebula.

The Orion Nebula is one of the most scrutinized and photographed objects in the night sky, and is among the most intensely studied celestial features. The nebula has revealed much about the process of how stars and planetary systems are formed from collapsing clouds of gas and dust. Astronomers have directly observed protoplanetary disks, brown dwarfs, intense and turbulent motions of the gas, and the photo-ionizing effects of massive nearby stars in the nebula. There are also supersonic “bullets” of gas piercing the hydrogen clouds of the Orion Nebula. Each bullet is ten times the diameter of Pluto’s orbit and tipped with iron atoms glowing bright blue. They were probably formed one thousand years ago from an unknown violent event.

This image of M42 consists of one hour exposures in each, (R,G,B) filters. Taken with the 10” RC and SBIG camera. Processed with CCDstack, Photomatix Pro, and Photoshop.

Brian Kimball
Herschel discovered NGC 1750 in 1785. 78 years later d'Arrest observed a nearby cluster, which was catalogued as NGC 1746. It is likely that both observed the same cluster, and simply recorded different positions; but there are differing interpretations -- (1) that NGC 1750 is only the southeastern portion of NGC 1746, or (2) that the two are the same cluster, and should have the same designation. Given Herschel's earlier observation, if (2) is correct both should be called NGC 1750; but common usage is to call them NGC 1746, which is backward from their order of discovery. There is also another cluster, NGC 1758, just to the northeast of NGC 1746/1750, but is physically unrelated to them (being about 500 light years more distant), and just happens to be in nearly the same direction. (Presuming that NGC 1750 is only part of NGC 1746, its apparent size is about 25 by 12 arcmin.)

Brian Kimball