

The Objective View

Newsletter of the Northern Colorado Astronomical Society

August 2006

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Next Meeting: August 3 7:30 PM
Astrophotography
Roger Appeldorn

NCAS Business at 7:15 PM

Meeting directions Discovery Science Center
703 East Prospect Rd, Fort Collins
<http://www.dcsm.org/index.html>

In Fort Collins, from the intersection of College Ave and Prospect Rd, head East about 1/2 mile. See the Discovery Center sign to the South. Enter the West Wing at the NE corner. From I-25, take Exit 268, West to Lemay Ave, continue West 1/2 mile, see Discovery Center on the left.

Note Prospect is closed at the Poudre River until Fall 2006.

NCAS Potluck Picnic Observatory Village
September 1 Dome open for observing Moon, Jupiter

Rocky Mtn Natl Park Starwatch, Upper Beaver Meadows
At dusk: Aug 4, 18

NCAS Public Starwatch
September 30 7 pm Discovery Science Center
October 27 6 pm Discovery Science Center
November 24 6 pm Observatory Village

Other Events

Little Thompson Observatory Star Night
Aug 18 7:00 pm
<http://www.starkids.org>

CSU Madison Macdonald Observatory Public Nights
On East Drive, north of Pitkin Street
Tuesday pm if clear, when class is in session

Cheyenne Astronomical Society, Cheyenne Botanical Garden
August 18 8 pm
<http://home.bresnan.net/~curranm/wuts.html>

Chamberlin Observatory Open House, dusk to 10 pm
Aug 5, Sep 30, Oct 28, Dec 2, Dec 30 303 871 5172
<http://www.du.edu/~rstencil/Chamberlin/>

Longmont Astronomical Society
Aug 17 7 pm FRCC, 2121 Miller Rd
<http://longmontastro.org/>

July 6 Program

Lunar 100, Part II

Lee Gregory, NCAS

Lee resumed our lunar tour with Catena Davy, a crater chain. It is comprised of 23 craters ranging from 1 to 3 km, and extends 47 km. It is attributed to an impact by a fragmented comet.



Apollo 12

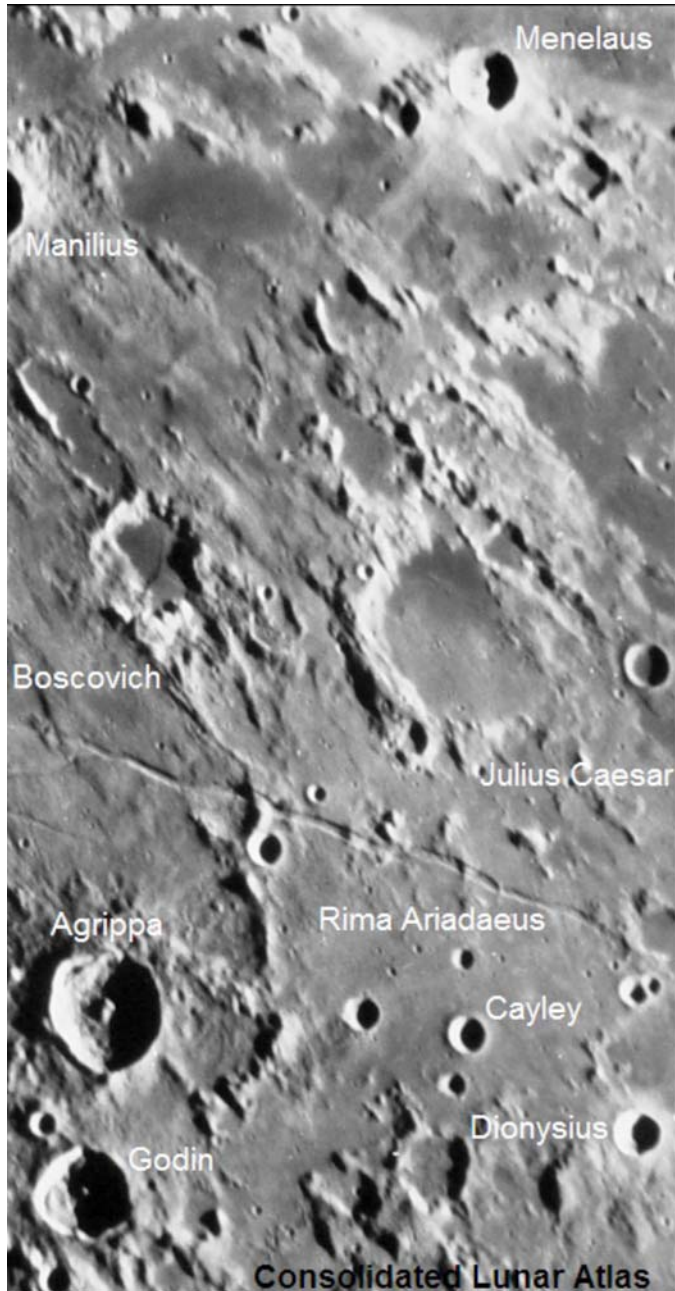
The structure of such an impactor was illustrated by Comet Shoemaker-Levy 9 and recently by the disintegration of Comet Schwassman Wachmann 3. The lack of ejecta covering adjacent craters argues for simultaneous formation.

Reiner Gamma remains mysterious. It is an albedo feature

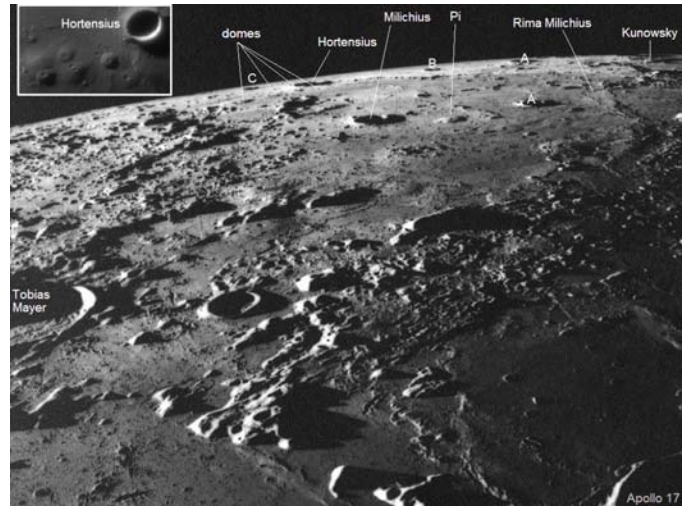


with no associated relief. There is a strong magnetic anomaly associated. The field may deflect the solar wind and impede its darkening effect. It is relatively young. Other swirls are antipodal to large impact basins, so convergence of ejecta dust or shock waves may be involved.

The Imbrium sculpture is light colored material blasted from the Imbrium impact 3.85 billion years ago. The craters Julius Caesar and Boscovich were heavily eroded. Lava-flooded troughs were believed formed by overlapping secondary impacts.



The Hortensius Domes are 6 shield volcanoes which are 6 to 10 km in diameter. In 1908, William Pickering correctly proposed their origin. Five of the domes have summit pits. Dome slopes are 1 degree to 8 degrees. To see any trace, look when the terminator is near. New dome discoveries continue.



Near the crater Pytheas, secondary craters within Copernicus' rays can be found. The rays extend almost 700 km. Secondary craters are irregularly shaped from low-speed impacts. Coarse, herringbone-shaped dunes were deposited from ejecta.

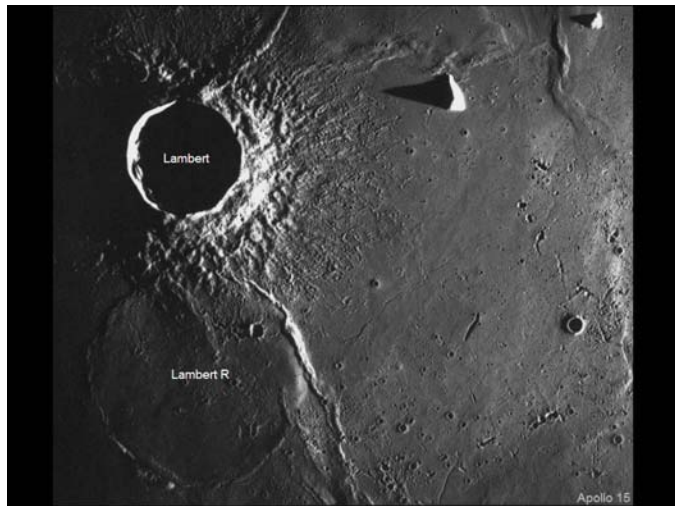


Copernicus H is a dark halo impact crater. The halo is likely



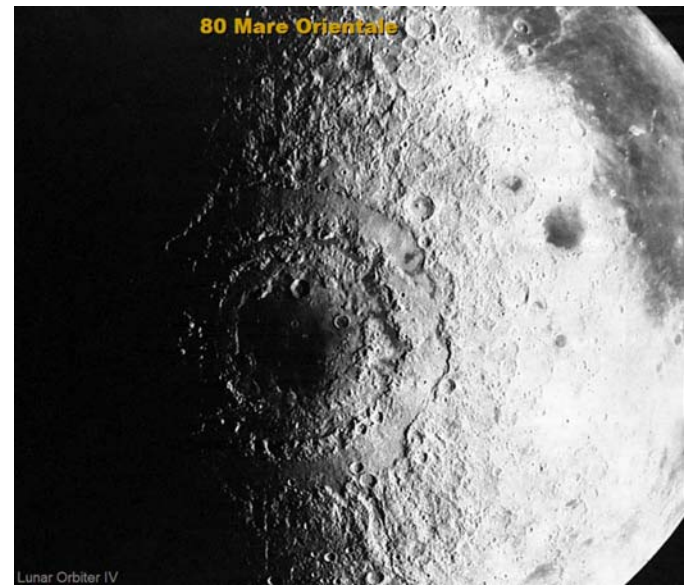
black, glassy beads which originated as quickly chilled drops of magma from gas-rich explosive eruptions. This material was excavated from beneath lighter-hued surface lavas.

Lambert R is a ghost crater. It was inundated by Imbrium lavas. There was less lava initially over the rim, so when the overflow compressed with degassing, the rim showed again.

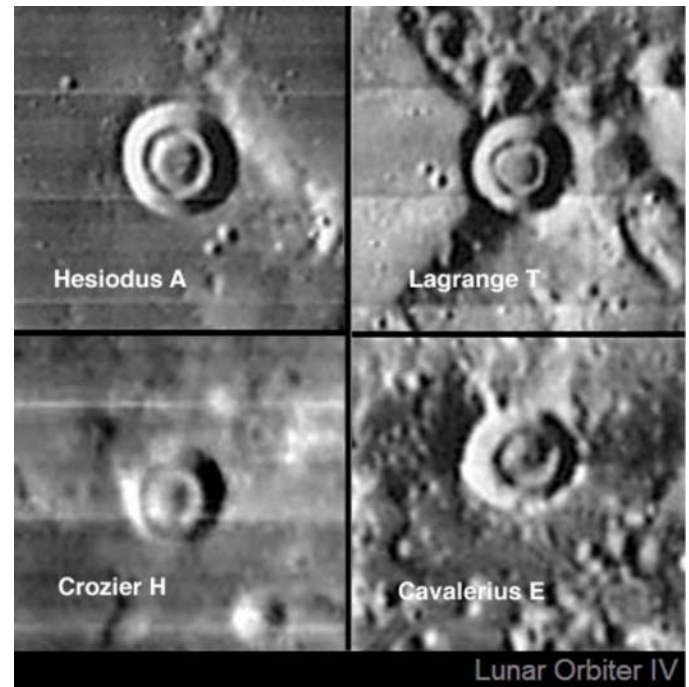


Mare Orientale is the youngest large impact basin. It is the best preserved in the solar system. It has 3 large rings. The Cordillera peaks rise 1.25 km above the exterior highlands. William Hartmann discovered the basin when he projected lunar photos on a globe to rectify them in 1962. Lunar Orbiter

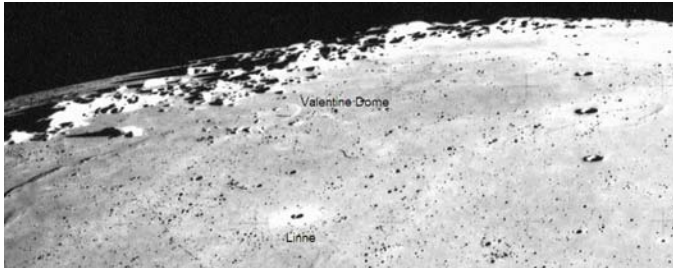
IV dramatically confirmed his discovery. Photoshop users can duplicate his perspective.



Hesiodus A is a concentric crater. It is 14.5 km across. There are 51 concentric craters logged by Charles Wood. They are all 2 to 20 km in diameter. They are proposed due to volcanic extrusion or volcanic extrusion, not sequential impacts.



Linne is another subject of mystery in the 19th century. It was thought to have disappeared. Proposed mechanisms were collapse, a lava flow, meteorite impact, or hoarfrost. It is now considered a typical small, simple crater about twice the size of Earth's Meteor Crater. The white surround is often easy to see, but the pit can be difficult especially at high sun.

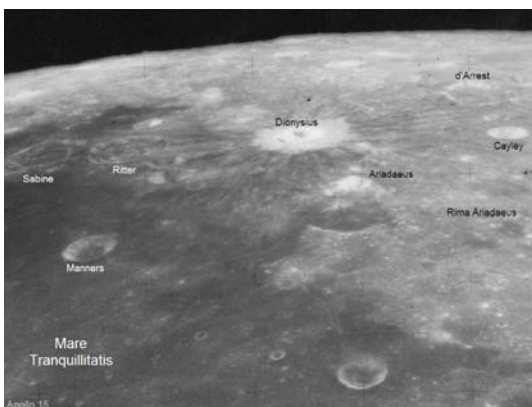


Apollo 17

The Prinz Rilles are channels and collapsed tubes made by flowing lava. Sinuous rilles range up to 300 km long. They are about 10x wider and longer than their terrestrial counterparts, a function of low lunar gravity and less viscous lavas on the Moon. Vera is the source of the longest Prinz Rille and its pit is barely visible in a 6 inch telescope.

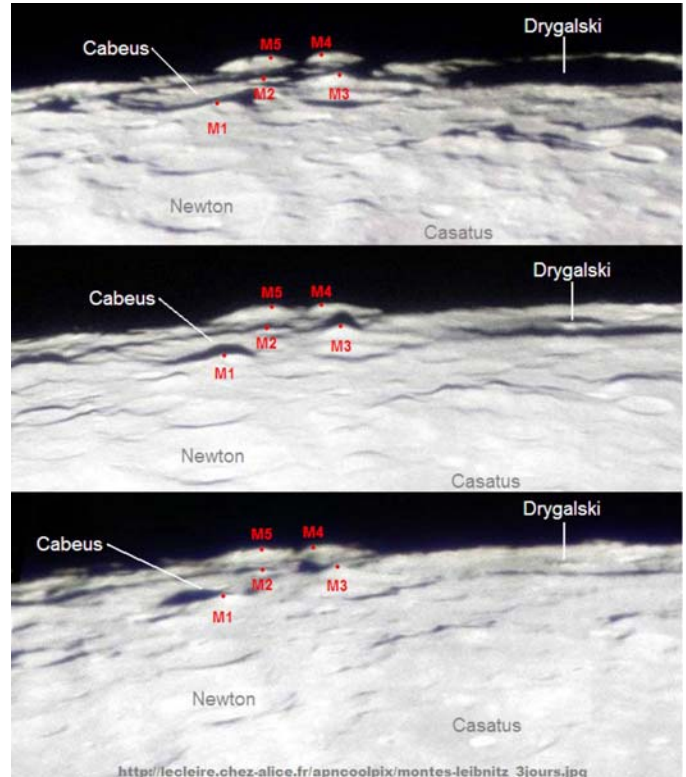


The Dionysius impact created the Moon's most usual rays. Dark basaltic mare fragments overly the surrounding bright plains. Dionysius is 18 km across.

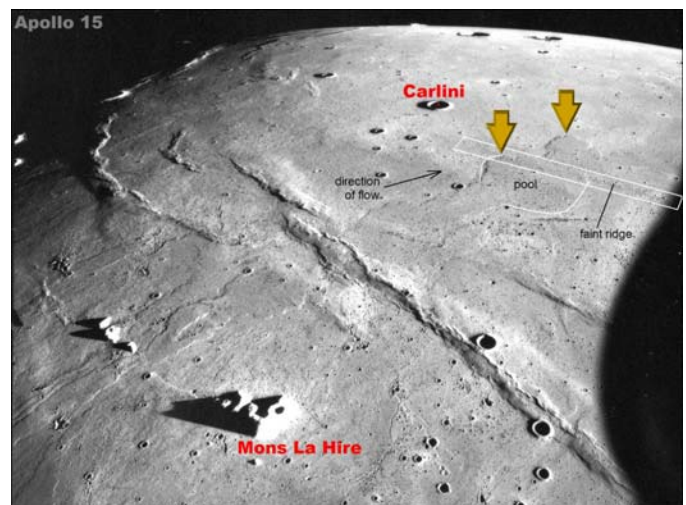


Apollo 15

The rim of the giant, far-side Aitken Basin is marked by the Leibnitz Mountains. M1 is 6 to 7.5 km high, M3 is 4.5 to 6 km. M4 and M5 (9 km) require a favorable libration to spot. Water ice may exist in the crater floors. The top of M5 stays in Sun, so could be a site for continuous solar energy generation.



Among Lee's favorite targets are the Imbrium Lava Flows. It originated near Euler. It is almost 600 km long, but only 35 m thick. Slope is 0.01 degrees. It must have been very fluid, and crossed the surface at many km/hr. The event is likely the most recent in the basin, 2.5 billion years old. With low Sun, vertical relief of 80 m can be detected by shadow.



Apollo 15

Ina was discovered during the Apollo program. It is a young d-shaped volcanic caldera, 3 km across, 48 m deep. It has recently been interpreted as a vent for outgassing from the lunar interior. Pete Schultz from Brown University proposed that it might be only a few million years old. It has no superimposed impact craters, floor has preserved small-scale roughness, and its spectral profile implies little bombardment with micrometeorites. Perhaps supporting a claim for lunar transient phenomena? At best a tough target from Earth.



Useful Resources:

Consolidated Atlas of the Moon
Free online
CD ROM \$10 at www.lpi.usra.edu

Lunar Astronautical Charts
Free online. www.lpi.usra.edu
CD ROM \$8 on E Bay

Times Atlas of the Moon
About \$100 used

The Clementine Atlas of the Moon
Charts free at
Astrogeology.usgs.gov/projects/map-a-planet
List \$80, \$63.45 Amazon.com; \$35 used

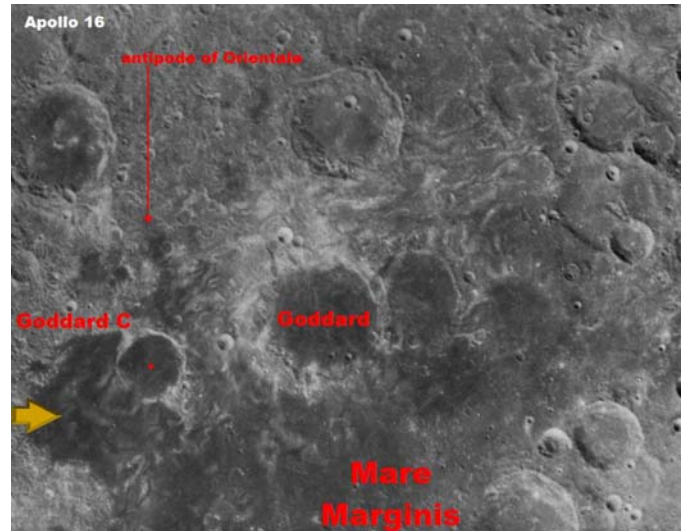
Lunar Orbiter Photographic Atlas of the Near Side of the Moon.
List \$79.95; \$47.49 at Buy.com

Lunar Orbiter Photographic Atlas of the Moon
Free online; \$10 DVD at
www.lpi.usra.edu
Book about \$300 used

The Modern Moon, Charles Wood. S&T, Amazon, Buy.com

Lunar 100 card
Field Map of the Moon, S&T

Atlas of the Moon, A. Rukl, revised by Gary Seronik
The Mare Marginus swirls share features with Reiner Gamma and a feature by Crater Van de Graaff. They have no associated topography. Mare Marginus is opposite Mare Orientale. All 3 have a strong magnetic anomaly. Formation theories include discoloration from volcanic gases, shielding from solar wind by the magnetic fields, cometary impact, convergence of ejecta dust or shock waves. Note Reiner Gamma lacks an antipodal feature. Mare Marginus is one of the oldest maria on the moon. Goddard and Goddard C are useful landmarks with good libration, especially by the breached rim of Goddard C.



NCAS Business, July 6 2006

President Greg Halac called the meeting to order. NCAS programs were announced, featuring Roger Appeldorn on Astrophotography in August. Dates for starwatching at Rocky Mountain National Park are July 14 and 28; August 4 and 18. The treasurer's report by Dave Chamness shows \$616 in our account. Members voted to order a Sky Quality Meter. Members may use the NCAS site for email and web space is available. More images are needed to illustrate the site. The Kansas Cosmosphere is holding Astro Camp, July 28-30.

From:
Daniel Laszlo
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Fort Collins CO 80526

TO:

Date	Mag	Starts			Max. <u>Altitude</u>			Ends		
		Time	<u>Alt.</u>	<u>Az.</u>	Time	<u>Alt.</u>	<u>Az.</u>	Time	<u>Alt.</u>	<u>Az.</u>
01 Aug	0.2	04:41:23	21	W	04:42:52	37	NNW	04:45:31	10	NE
02 Aug	1.2	03:31:39	27	ENE	03:31:39	27	ENE	03:33:09	10	ENE
02 Aug	1.4	05:03:32	10	WNW	05:05:37	18	NNW	05:07:42	10	NNE
03 Aug	0.4	03:53:12	37	NNW	03:53:12	37	NNW	03:55:36	10	NE
04 Aug	1.5	04:14:43	16	NW	04:15:37	18	NNW	04:17:44	10	NNE
05 Aug	2.3	03:04:50	16	NE	03:04:50	16	NE	03:05:34	10	NE
06 Aug	1.9	03:26:15	17	N	03:26:15	17	N	03:27:39	10	NNE
10 Aug	2.4	04:55:24	10	NNW	04:56:57	14	NNE	04:58:31	10	NE
11 Aug	1.6	05:17:13	10	NNW	05:19:37	23	NNE	05:22:01	10	E
12 Aug	-0.3	05:39:14	10	NW	05:42:02	60	NNE	05:44:53	10	ESE
13 Aug	1.7	04:26:45	10	NNW	04:29:08	23	NNE	04:31:30	10	E
14 Aug	-0.3	04:48:42	10	NW	04:51:26	56	NNE	04:54:20	10	ESE
15 Aug	1.9	03:39:11	20	NE	03:39:11	20	NE	03:40:52	10	E
15 Aug	-0.4	05:10:59	10	WNW	05:13:45	39	SW	05:16:23	10	SSE
15 Aug	1.8	21:35:26	10	SSW	21:35:40	12	SSW	21:35:40	12	SSW
16 Aug	1.6	04:02:48	18	ESE	04:02:48	18	ESE	04:03:42	10	ESE
16 Aug	1.2	20:24:13	10	SSE	20:25:34	13	SE	20:26:56	10	ESE
16 Aug	0.6	21:57:28	10	WSW	21:59:23	34	W	21:59:23	34	W
17 Aug	-0.4	20:44:44	10	SSW	20:47:27	39	SE	20:50:12	10	ENE
17 Aug	1.8	22:20:14	10	W	22:22:15	22	NW	22:22:15	22	NW
18 Aug	-0.3	21:06:40	10	WSW	21:09:32	58	NNW	21:12:23	10	NE
18 Aug	2.7	22:43:33	10	NW	22:44:25	13	NNW	22:44:25	13	NNW
19 Aug	1.6	21:29:21	10	W	21:31:46	23	NNW	21:34:10	10	NNE
20 Aug	-0.3	20:15:46	10	WSW	20:18:39	62	NNW	20:21:30	10	NE
21 Aug	1.5	20:38:22	10	W	20:40:48	24	NNW	20:43:15	10	NNE
28 Aug	1.7	21:39:21	10	NNW	21:40:53	17	N	21:40:53	17	N
29 Aug	2.1	22:00:46	10	NW	22:01:39	17	NNW	22:01:39	17	NNW