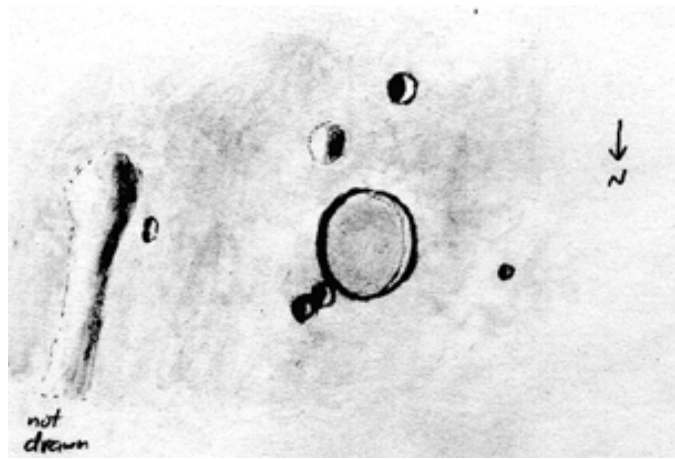


THE LUNAR OBSERVER

A PUBLICATION OF THE LUNAR SECTION OF
THE ASSOCIATION OF LUNAR AND PLANETARY OBSERVERS
EDITED BY: William M. Dembowski, F.R.A.S. - Elton Moonshine Observatory
219 Old Bedford Pike (Elton) - Windber, PA 15963 - dembowski@zone-vx.com

FEATURE OF THE MONTH - OCT. 2004



BEAUMONT A

Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA

February 27, 2004 - 02:28 to 02:42 UT

15cm Newtonian - 170x - Seeing 7/10

I drew this area on the evening of February 26/27, 2004 while timing three occultations. This was in response to the Lunar Challenge in the June 2003 TLO that asked if there is a central peak in that crater. No, I saw no central peak nor any other detail on the floor of Beaumont A. This is a shallow crater on the western shore of Mare Nectaris. The LQ map depicts it as a ruined crater, but I saw no breaks in its rim. The dot in this crater merely indicates that it has a letter designation. It does not indicate the presence of a central peak. The two craterlets northeast of Beaumont A looked as they did on the LQ map. They did indeed appear in contact with one of them on the rim of Beaumont A.

Beaumont N is the somewhat larger pit to the south, while a tiny pit not on the LQ map was noted to the west. A low, round hill, possibly a dome, lies between Beaumont A and N. The LQ map shows a fault to the east, but I saw a low ridge there. Near the southern end of this ridge was a depression that was either two overlapping pits or one elongated crater.

EDITOR: Beaumont A can be found on Map 57 of Rukl's Atlas of the Moon.

LUNAR TOPOGRAPHICAL STUDIES

Acting Coordinator – William M. Dembowski, FRAS

dembowski@zone-vx.com

OBSERVATIONS RECEIVED

MICHAEL AMATO - WEST HAVEN, CONNECTICUT, USA

Ray maps of Messier (4), Menelaus (3), Proclus (2), Kepler (3), Aristarchus (3)

DANIEL DEL VALLE - AGUADILLA, PUERTO RICO

Digital image of Bailly at sunset

COLIN EBDON - COLCHESTER, ESSEX, ENGLAND

Sketch of Boscovich, Region between Ross-Arago-Sabine, Plateau west of Maraldi D, Region east of Messala, Sunset on Messala

HOWARD ESKILDSEN - OCALA, FLORIDA, USA

Digital images of 15-day old Moon, Mare Humboldtianum, Sunrise on Mare Nectaris, Sunset on Mare Nectaris

PETER GREGO - REDNAL, BIRMINGHAM, ENGLAND

Sketches of Endymion, Janssen, Theophilus

Digital images of Theophilus chain (2)

RAFFAELLO LENA - ROME, ITALY

Digital images of Montes Alpes, area centered on Stofler

K. C. PAU - HONG KONG, CHINA

Digital images of Descartes, Maurolycus, Gemma Frisius, Dionysius, Wilkins, Rima Ariadaeus, Hyginus, Mare Tranquilitatis

Observations submitted should include the following:

Name and location of observer

Name of feature

Date and time (UT) of observation

Size and type of telescope used

Magnification (for sketches)

Medium employed (for photos and electronic images)

Alpine Valley Rille Finally Tilled

Ron B[ee] - May 27, 2004

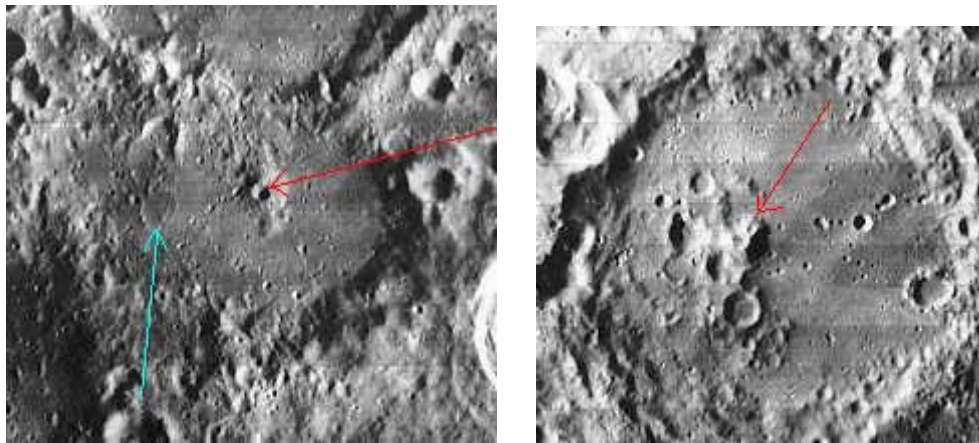
Ever since 2001 when I first learned of the Alpine Valley Rille, my 4-inch TV-102 Light Cup had been trying now and then (not all that hard mind you). Well, tonight, with imperfect but slow seeing (i.e. slow wave across the Moon instead of fast moving), my 8-inch Discovery PDHQ Dob and I tilled into the Alpine Valley Rille! Coincidentally, we weren't even planning to spend time on it and the real object tonight was just to "pan" the Moon for spilled "gold dust" discarded by the professionals when we stumbled upon Crater RegioMontanus and its small 6km diameter Crater RegioMontanus A, right smack on the summit of the central ridge!

I made a sketch of the Rille between 3:45UT - 4:15UT (05/28). I first noticed how well 300x (4mm TV Radian) worked on RegioMontanus A and slipped in my 3mm Radian yielding a "virtual lunar lander" at 400x! Notice how good the small summit crater looked, I quickly switched to the Rille and thought I could see part of it. After spending about 30 minutes sketching, indeed part of it could be seen! Yuppie - another happy lunartic tonight! The darker part shown in the sketch was quite easy while the lighter part of the rille sketch was very difficult and came and went with the seeing. Now I see why it's so difficult as the contrast was very *low* (unlike the high contrast image of the Rille we see on the internet). Now I'm extremely uncertain that my 4-incher would be able to grab on to the Rille, but it now gives my Light Cup some hope knowing now what to look for. Here's an excellent [image](#) I found that makes a good comparison (though the end part of the Valley in my sketch seems to have gain some fatty belly



We spent a little more time in the "400x Lunar Lander" and it's an awesome sight as I've not view the Moon in seriousness at 400x before! The Moon at this magnification while still yielding an acceptable 0.5mm exit pupil is a total different plane of experience than at 200x. Popping in my 2X Ultima barlow to an effective 800x made me wish for a 16-inch Dob. Gotcha - ain't no climbing no freaking ladder for me.

As exciting as being able to meet this "Modern Moon, A Personal View" challenge, the real scrutiny was actually RegioMontanus. While scanning the Moon, I stumbled upon this crater and noticed what looked so convincingly like a volcano (see red arrow in the left-hand Lunar Orbiter's image) at 200x! I mean its shape is so perfect at 400x! After consulting the Modern Moon book, I still can't help but feel like I belong to a new breed of lunar origin observer I just made up known as the "Impactovolcanist" ☺, sort of walking on the fence if you will. Surely Las Vegas style chance couldn't land an impact crater so perfectly on top on a central peak due to the larger impact of Crater RegioMontanus!



(Images courtesy of NASA)

Alas, my hope of RegioMontanus A as being unique was quite "impacted" when I noticed a very tiny craterlet on top of the central peak of impact Crater Walter (see red arrow in the right-hand image). Darned it! Now I wonder how many more small craters on top of central peak are there on the Moon?

Before I called it the night, I noticed there was a ghost crater inside Crater RegioMontanus (see blue arrow in left-hand image). All of sudden a huge question swelled inside me: how can a ghost crater exist inside an impact crater? Before you guys help with the answer (which I so desperately thirst), a ghost crater as little as I understand it, is caused by the rising lava/melt typically from an impact basin (right?). But Crater RegioMontanus was caused by an impact with something huge. Any existing crater (that was the ghost crater) would have been instantly obliterated. So how can a ghost crater exist under such a condition? What say you guys? Thanks in advance.

Ron B[ee]

PS - Are you an Impactist or Volcanist?

CLAVIUS: Lots of Features, but no Monoliths

Jack Kramer



About three decades ago, the crater Clavius burst into the public consciousness as the site of a lunar colony -- and monolith -- in the movie *2001: A space Odyssey*. For astronomers, it stands out in a jumble of other craters in an area of the Moon known as the “Southern Highlands”. With dimensions of 132 by 152 miles, it’s the second largest crater on the near side of the Moon. This size means that despite the fact that its walls rise to 16,000 ft., an astronaut standing in the center of the crater floor would see only a flat plain extending in all directions. The walls would be beyond the horizon due to the curvature of the Moon.

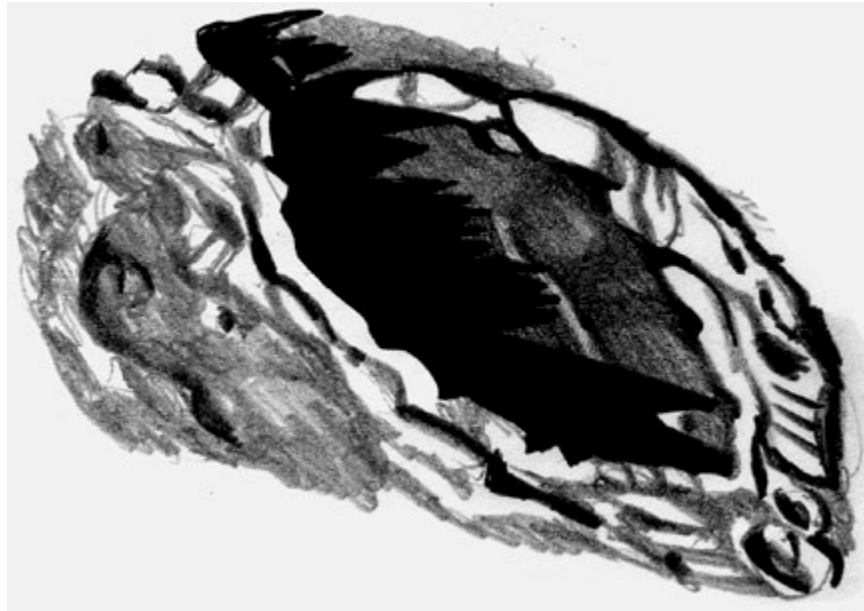
The floor of the crater is slightly higher in the center than at the edges. Thus if you catch the Moon with just the right angle of sunlight, you’ll see the floor brightly illuminated with a ring of shadow at the base of the east *and* west walls. This effect is accentuated by the high latitude of Clavius near the southern limb. It’s especially noticeable with Clavius on the terminator when the Moon is between 8 and 9 days old. (I managed to catch this effect in the image shown here.)

Superimposed on Clavius are a number of smaller craters, indicating that it has been around for awhile. The largest are Clavius B and Rutherford on the northeast and southeast walls, respectively; each is about 30 miles in diameter. As the angle of illumination becomes higher, these craters don’t stand out as well. An arc of progressively smaller craters lies on the floor of Clavius. The largest is Clavius D at 19 miles; the others have diameters of 14, 10, and 9 miles. Then there’s a small crater at the very end of the chain up against the crater wall. This chain of craters may be visible even in binoculars. They’re easy in a 4” refractor at about 150x, including the tiny one at the end of the chain. However, due to the shadow effect mentioned above, this little crater may be just barely illuminated. If you happen to observe when Clavius is at the terminator, over the space of just an hour you’ll see some major changes in light and shadow. A shaft of darkness covers the little crater for awhile; it appears to be the shadow of an outcropping part way up the wall above it.

Another way to determine the relative ages of lunar features is when the rays from a crater are overlaid on another, older feature. In this case, rays from the young crater Tycho cross the floor of Clavius. But the rays don’t really become visible until the moon is well into a gibbous phase. The rays that cross Clavius are also less prominent than others emanating from Tycho in other directions.

You’ll note many additional craters superimposed on the wide and rugged walls of Clavius. But sad to say, there just aren’t any tall, black monoliths on the floor of this big crater...probably.

LUNAR CHALLENGE: Wrinkle Ridge in Endymion



ENDYMION

Sketch by Peter Grego - Rednal, Birmingham, England
23:50 (Sept. 1, 2004) to 00:25 (Sept. 2, 2004) UT
200mm SCT - 200x - Colongitude: 119.8 to 120.2

Peter Grego Observing Note: There was a distinct wrinkle ridge running N-S along the south central part of Endymion being approached by a harsh looking sawblade of a shadow.

Editor: Although not a new discovery, a search of the A.L.P.O. archives indicates that this fine feature is not one that is frequently recorded. Are there any corroborating observations out there? Or can you make a new one? Peter made this sketch two evenings after Full Moon so please add it to your observing list for the appropriate date.

UPCOMING FULL MOONS

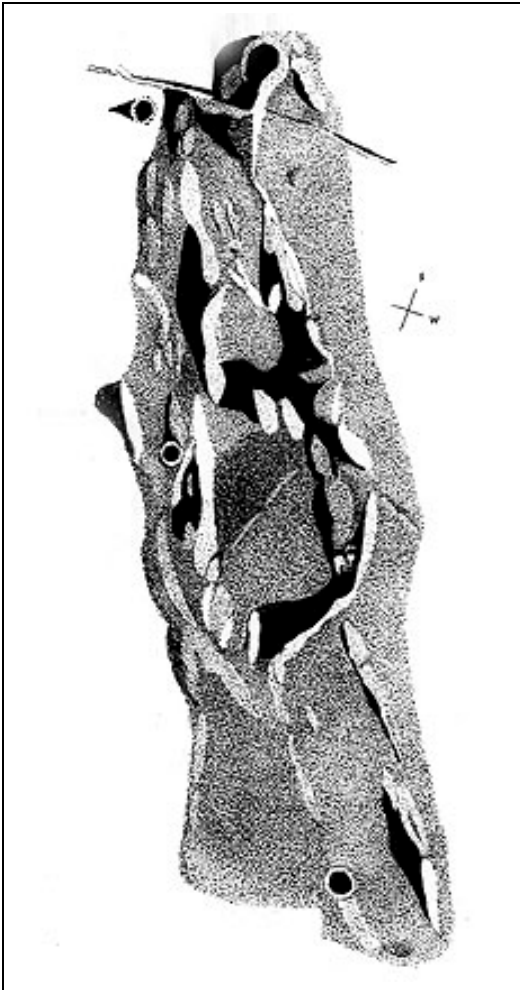
September 28, 2004 (13:08 UT)
October 28, 2004 (03:06 UT)
November 26, 2004 (20:07 UT)
December 26, 2004 (15:06 UT)

RECENT OBSERVATIONS



DESCARTES

Digital image by K.C. Pau - Hong Kong, China
September 4, 2004 - 21:39 UT - Colog: 156
250mm f/6 Newtonian w/5x Barlow



BOSCOVICH

Sketch by Colin Ebdon
Colchester, Essex, England
August 7, 2004 - 00:15 to 01:30 UT
7 inch Maksutov-Cassegrain
225x and 386x - Seeing: AII

RECENT OBSERVATIONS

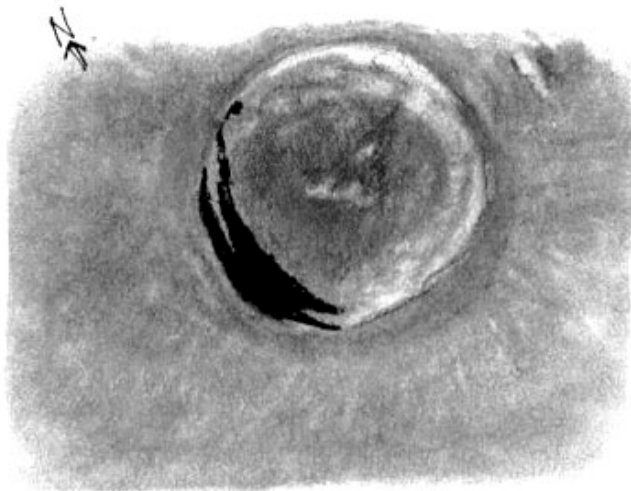


MARE NUBIUM (SUNSET)

Digital image by Howard Eskildsen - Ocala, Florida, USA

September 3, 2004 - 10:49 UT

5 inch Maksutov - Nikon Coolpix 4300



ARISTILLUS

Sketch by Daniel del Valle - Aguadilla, Puerto Rico

July 26, 2004 - 02:11 to 02:39 UT

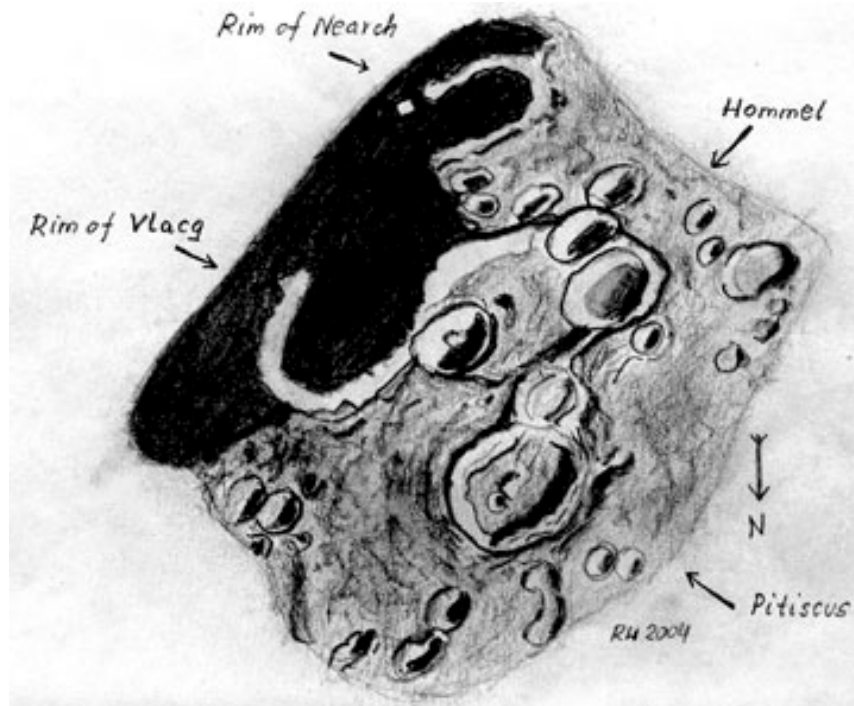
120mm Refractor - 222x & 333x - Seeing 6/10

RECENT OBSERVATIONS



AREA CENTERED ON STOFLER

Digital image by Raffaello Lena - Rome, Italy
10cm f/15 Refractor - Olympus C310



HOMMEL & PITISCUS

Sketch by Robert Wlodarczyk - Czestochowa, Poland
August 4, 2004 - 22:30 UT
18cm Newtonian Reflector - 150x - Seeing AII

INTERNATIONAL BRIGHT LUNAR RAYS PROJECT

Below is a listing of all observers who have contributed to the International Bright Lunar Rays Project to date. For a complete progress report of the Project go to: http://www.zone-vx.com/RaysReport_2004.pdf

NAME	CITY	STATE	COUNTRY
Amato, Michael A.	West Haven	Connecticut	USA
Anway, Patrick	Munising	Michigan	USA
Ayiomamitis, Anthony			Greece
Badalotti, Francesco	Cremona		Italy
Battaglia, Paola	Milano		Italy
Benavides, Rafael	Posadas, Cordoba		Spain
Bly, Natasha	Boise	Idaho	USA
Burley, Kailani	Boise	Idaho	USA
Chiarini, Massimo	Rovertto		Italy
Coute, Gerard	Chateaugay		France
Crandall, Ed	Winston-Salem	North Carolina	USA
Del Valle, Daniel	Aguadilla		Puerto Rico
Dembowski, William	Elton	Pennsylvania	USA
Devriese, Wilfried	Brugge		Belgium
Douglass, Eric	Mechanicsville	Virginia	USA
Ebdon, Colin	Colchester, Essex		England
Ellis, Bryan	Fallon	Nevada	USA
Elsbury, William	Mason City	Iowa	USA
Eskildsen, Howard	Ocala	Florida	USA
Ferri, Fernando	Anzio		Italy
Fogarty, Matt	Warren	Michigan	USA
Foromolo, Justin	Boise	Idaho	USA
Gossett, Rick	Roseville	Michigan	USA
Gray, Robin	Winnemucca	Nevada	USA
Grego, Peter	Rednal, Birmingham		England
Hansen, Doug	San Diego	California	USA
Hays, Robert H. Jr.	Worth	Illinois	USA
Heath, Alan	Long Eaton, Nottingham		England
Hill, Harold	Orrell, Lancashire		England
Jamieson, Harry	Cheyenne	Wyoming	USA
Johnson, Fred	Boise	Idaho	USA
Kramer, Jack	St. Charles	Illinois	USA
Lena, Raffaello	Rome		Italy
Lubcke, Gilbert	Middleton	Wisconsin	USA
O'Connell, William	Whitman	Massachusetts	USA
Pau, K. C.	Hong Kong		China
Pulley, Harry	Guelph, Ontario		Canada
Sanford, John	Springville	California	USA
Santacana, Guido	San Juan		Puerto Rico
Scott, Will	Boise	Idaho	USA
Shaw, Brendan			England
Shirk, Charles	Vandalia	Ohio	USA
Sikic, Zivko			Croatia
Slauson, Doug	Swisher	Iowa	USA
Sorrentino, Giuseppe	Roma		Italy
Vandenbohede, Alexander			Belgium
Venable, Roger	Augusta	Georgia	USA
Viegas, Rodrigo	Montevideo		Uruguay
Wallis, Kellen	Boise	Idaho	USA
Wheatly, Grahame	Long Eaton, Nottingham		England
Wlodarczyk, Robert	Czestochowa		Poland
Zampatori, Davide	Anzio		Italy

TRANSIENT LUNAR PHENOMENA

Coordinator – Dr. Anthony Cook – acc@cs.nott.ac.uk

Assistant Coordinator – David O. Darling – DOD121252@AOL.COM

Observations for August have been received from: Clive Brook (UK), Marie Cook (Mundesley, UK), Robin Gray (Winnemucca, USA), and Brendan Shaw (UK). So far few observations have been received for the September's spurious color study, but some images were submitted by Martin Mobberley and a visual report by Marie Cook. On 2004 Aug 31 Clive Brook was observing Gassendi and reported "*a slight chestnut brown coloration in the dark area on the crater floor to the north of the central mountain leading to Gassendi A – the effect lasted for about two minutes between 22:30 and 22:35UT*" – was anybody else observing around this time? Clive phoned me later but the effect had gone – I put out a limited alert to a couple of observers in the USA but results so far have been negative.

Last month we talked about spurious color - this month I will discuss true permanent color on the lunar surface. Now this is not easy because the Moon for most people is a very grey object. However there are some regions that can be seen visually to have a faint hint of color when viewed through wide field, low magnification eyepieces. 1) Aristarchus has a blue tinge, 2) "Wood's Spot" is a plateau area on the NW of Aristarchus that has a slight reddish hue, 3) in the past permanent subtle hints of red have been seen on the floors of Fracastorius and Bullialdus craters, 4) the vast mare areas have faint shades of greens, browns, purples and other colors, 5) most geologically recent craters or landslips on steep walls are slightly bluish due to the fact that space weathering has had less time to shallow out mineral absorption bands. For those of you interested in seeing colored areas on the Moon, the following web site shows a medium resolution global mosaic of the colors at 415nm (blue), 750nm (green), and 950nm (red). Note this is not quite natural light, but as close as we can obtain from the Clementine spacecraft... http://cps.earth.northwestern.edu/MOON/clem_color.html.

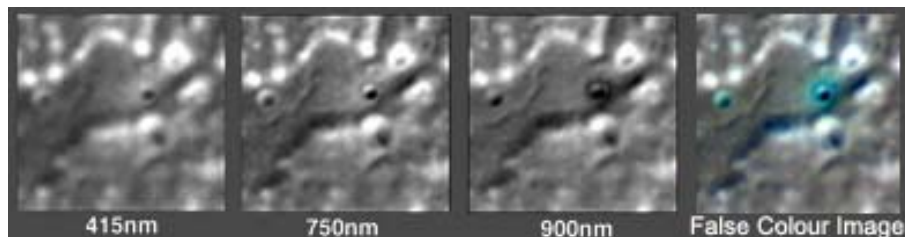


Figure 1: Clementine UUVIS images of the far NE end of the Alpine Valley – north is at the top. Far left image at 415 nm (blue light), left image at 750nm (red light), right image at 900nm (in the near IR), far right image is a false color composite: blue=415nm, green=750nm, red=near IR. The individual color channels have been calibrated by least-squares fit stretching in brightness and contrast to give an overall background grey color.

For those of you equipped with high resolution CCD cameras with filters, figure 1 presents a challenge in terms of high resolution imaging and color. Figure 1 shows an apparent a 1 km diameter craterlet with a strongly colored 2 km diameter halo. The latter, at 1" diameter, should just about be detectable under the best seeing conditions close to Full Moon when there is minimal shadow from the walls - but probably only if your CCD camera can selectively image in the visible and in the near IR. There is a very slight chance that it may have a hint of color for visual observers too, but probably this is pushing at the limits of detectability. To the west (left) of this crater is a slightly smaller craterlet with color confined to its interior. Possibly what has happened here is that underneath the present floor, at this end of the Alpine valley, lies some material that is reflective in the visible but dark in the near IR. The impact from the larger of the two craters was deep enough to penetrate into this layer and distribute the material over it's ejecta blanket. The second craterlet is slightly smaller/shallower and either did not excavate enough of this layer, or perhaps the layer is deeper or less extensive to the west? Just to ensure that this was not a LTP I checked the same area again on Clementine images from orbits on three

different months and it was present on all three. There are other similar colored halo craterlets elsewhere on the Moon that can probably be detected using high-resolution color CCD imaging from Earth using narrowband filters in the visible and near-infrared.

At least two observers have been attempting color imaging: Both Brendan Shaw and Martin Mobberley have sent me some excellent examples in recent months and these are illustrated on the “observations received” web site. Also Rik Hill (ALPO, Tucson) has emailed me some high resolution images taken through a 665nm filter. As for tips and advice in taking color images: 1) Infrared blocking filters are essential when using filters down the visual end of the spectrum as traditional geletin filters such as Kodak Wratten 15 etc leak near IR. 2) refocus in each filter if you have glass transmission optics anywhere in the camera or telescope system, 3) monochrome images through three separate narrow band filters are better than a single color CCD camera as the latter has a lower effective resolution, 4) when taking images through each of the filters try to keep the image window on the same part of the Moon with minimal displacement, 5) register the images together manually – the Moon may have moved slightly in between the exposures – for precise alignment you can enlarge the images by 2-3x, register the color components together precisely and then resample (shrink) the image back to it’s original size, 6) there can sometimes be internal reflections and scattered light from the filters – so try taking a second 3-filter set of images with the image displaced should help determine what colors may be from glare and which are real – also it is a good way to confirm local color changes that maybe LTP! 7) Once you have registered your 3 filter images together use the histogram of each channel to adjust the brightness and contrast so that the image mostly appears grey when viewed in color e.g. do a contrast stretch in each channel between +/-3 standard deviations on the mean brightness.

For predictions of repeat illumination/libration for past LTP, see the following web site:
<http://www.lpl.arizona.edu/~rhill/alpo/lunarstuff/ltp.html>.

Dr Anthony Cook, School of Computer Science & IT, Nottingham University, Jubilee Campus, Wollaton Road, Nottingham, NG6 1BB, UNITED KINGDOM. Email: acc@cs.nott.ac.uk

TOTAL LUNAR ECLIPSE - OCT. 27/28

**This is a reminder of the upcoming total lunar eclipse.
For more information on this event, check out the following websites:**

A.L.P.O. Eclipse Section Page
<http://www.lpl.arizona.edu/~rhill/alpo/eclipse.html>

October’s Ideal Lunar Eclipse (Sky & Telescope)
http://skyandtelescope.com/observing/objects/eclipses/article_1340_1.asp

Observing and Photographing Lunar Eclipses (Sky & Telescope)
http://skyandtelescope.com/observing/objects/eclipses/article_89_1.asp

Lunar Eclipses for Beginners (Fred Espenak)
<http://www.mreclipse.com/Special/LEprimer.html>

Observations should be forwarded to A.L.P.O. Eclipse Coordinator:
Dr. Michael D. Reynolds - 2347 Foxhaven Dr. West - Jacksonville, FL 32224-2011
astrogator90@aol.com