

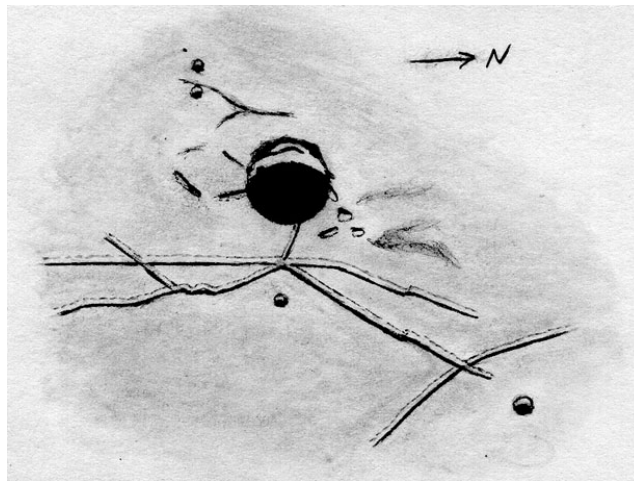


THE LUNAR OBSERVER

RECENT BACK ISSUES: http://www.zone-vx.com/tlo_back.html

A PUBLICATION OF THE LUNAR SECTION OF THE A.L.P.O.
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219 Old Bedford Pike (Elton) - Windber, PA 15963

FEATURE OF THE MONTH - JUNE 2006



TRIESNECKER

Sketch and text by Robert H. Hays, Jr. - Worth, Illinois, USA
February 6, 2006 - 02:35 to 03:07 UT
15cm Newtonian - 170x - Seeing 8/10

I sketched this crater and vicinity on the evening of Feb. 5/6, 2006 shortly before the moon hid 9 Tauri. This crater is in Mare Vaporum near the center of the visible disk. It is a fairly simple, round crater with some evidence of interior terracing. There are also some high points on its southwest and northwest rims. The small pits Triesnecker H and J lie to its southwest, and there is a variety of peaks, ridges and wrinkling nearby. Some of these features may form a ghost ring adjacent to Triesnecker's south rim. The most notable nearby features are the group of rilles just east of Triesnecker. There is a focal point where five of them converge near the pit Triesnecker F. A straight rille extends south from this junction, and a meandering rille is a short distance to its east. The LQ map labels these as Triesnecker V and I, respectively. A short rille connects these two. The rille Triesnecker II extends northeastward from the junction toward the crater Hyginus A. This rille is fairly straight except for a kink about halfway along its length. It crosses the rille Triesnecker III near Hyginus A. Rille II is straight on either side of this junction, but III bends noticeably there. Triesnecker VII extends northward from the five-way intersection, but this rille soon bends to become roughly parallel to 11. A very narrow rille covers the short distance between the main junction and Triesnecker.

AN INVITATION TO JOIN THE A.L.P.O.

The Lunar Observer is a publication of the Association of Lunar and Planetary Observers that is available for access and participation by non-members free of charge, but there is more to the A.L.P.O. than a monthly lunar newsletter. If you are a non-member you are invited to join our organization for its many other advantages.

We have sections devoted to the observation of all types of bodies found in our solar system. Section coordinators collect and study members' observations, correspond with observers, encourage beginners, and contribute reports to our Journal at appropriate intervals.

Our quarterly journal, **The Strolling Astronomer**, contains the results of the many observing programs which we sponsor including the drawings and images produced by individual amateurs. Several copies of recent journals can be found on-line at: <http://www.justfun.org/djalpo/> Look for the issues marked FREE, they are not password protected. Additional information about the A.L.P.O. can be found at our website: <http://www.lpl.arizona.edu/alpo/> Spend a few minutes browsing the Section Pages to learn more about the fine work being done by your fellow amateur astronomers.

To learn more about membership in the A.L.P.O. go to: <http://www.lpl.arizona.edu/~rhill/alpo/member.html> which now also provides links so that you can enroll and pay your membership dues online.

LUNAR CALENDAR - JUNE 2006 (UT)

03 23:06 First Quarter
04 02:00 Moon at Apogee (404,081 km - 251,084 miles)
08 16:00 Moon 4.4 Degrees SSW of Jupiter
11 18:04 Full Moon
15 23:00 Moon 3.1 Degrees SSE of Neptune
16 17:00 Moon at Perigee (368,920 km - 229,236 miles)
17 17:00 Moon 0.6 Degrees SE of Uranus
18 14:08 Last Quarter
23 00:00 Moon 6.0 Degrees NNW of Venus
25 16:06 New Moon (Start of Lunation 1033)
27 16:00 Moon 5.0 Degrees NNE of Mercury
28 13:00 Moon 3.0 Degrees NNE of Saturn
28 20:00 Moon 0.3 Degrees SSE of Vesta
28 23:00 Moon 2.2 Degrees NNE of Mars

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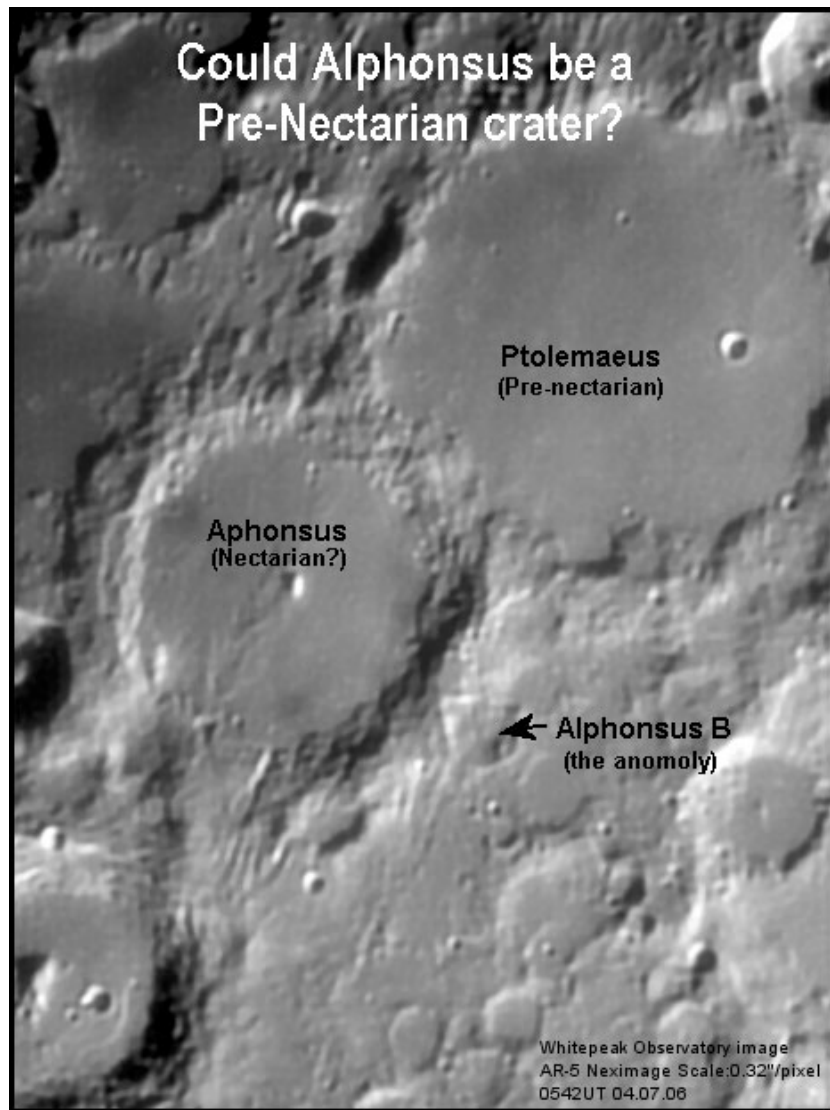
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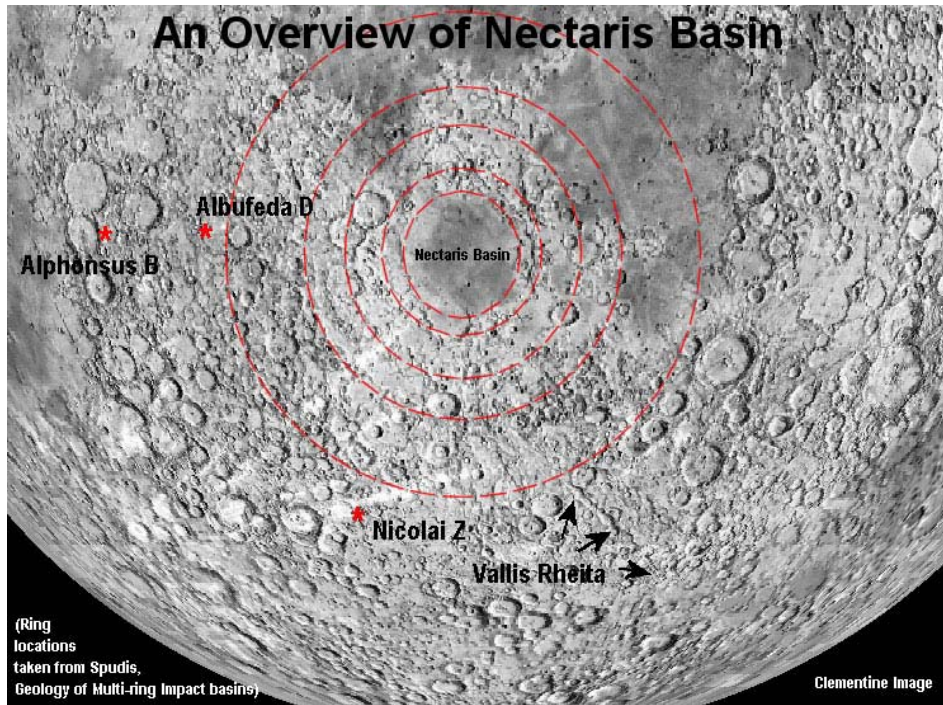
ALPHONSUS: Nectarian .. or Pre-Nectarian?

By Mardi Clark

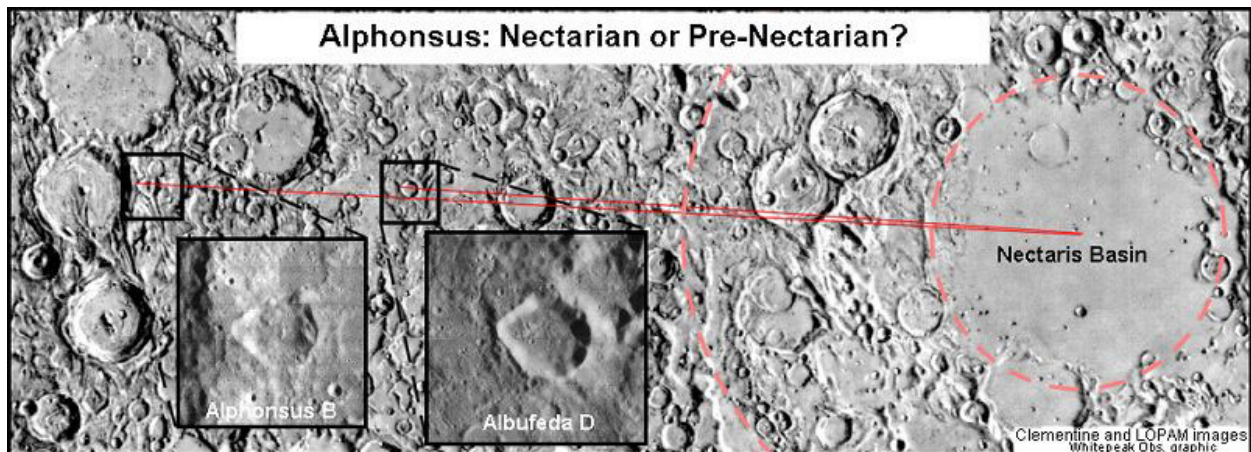
Whitepeak Lunar Observatory - Tacoma, Washington, USA



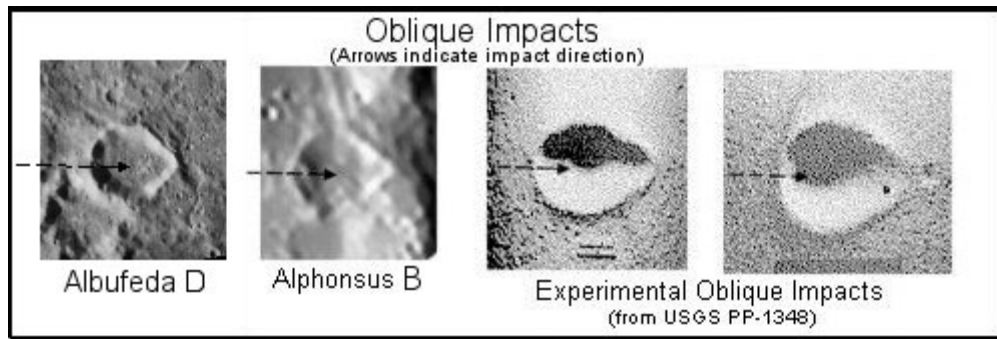
An irregularly shaped crater of a form typical to that caused by an oblique impact is located on the flank of the crater Alphonsus and designated Alphonsus B. An investigation into the possible origin of this crater resulted in the realization that its supposed direction of impact (impact axis) is oriented almost exactly radial to the center of the Nectaris basin; and that further two craters, of similar size and morphology, were also located and their impact axis found similarly aligned radially to the Nectaris basin. This raised the possibility that these represent secondary impacts to the Nectaris basin forming event. This relationship, if true, has the consequence of making a somewhat earlier relative formation period correct for the crater Alphonsus, as in accordance with the principle of superposition, the location of one of these Nectaris basin secondaries on the rim of the crater Alphonsus would necessarily limit it's age to that era preceding the Nectaris impact event, the Pre-Nectarian.



The event which delineates the beginning of the Nectarian era of lunar geologic history is the impact which formed the Nectaris basin. The area is shown in the graphic above. Also indicated are the locations of the three oblique impact craters examined, Alphonseus B, Albufeda D and Nicolai Z. Also indicated is Vallis Rheita, which is commonly attributed as a chain of secondaries radial to and formed as a result of the Nectaris basin forming impact. This valley gives some idea of the relative distance at which secondary craters of the 15-25km size range can be expected. Note also that all these possible secondaries lie outside the outermost ring of the multi-ring Nectaris basin, within the outlying zone of secondary impacts.



The above graphic sums up the radial relationship between two of these possible secondary oblique impact craters and the Nectaris basin. As can be seen, both craters exhibit very similar "beak-shaped" crater rims and are further oriented on their longer axis directly to the center of the basin. Further they are aligned in proper accordance to the purported direction of impact were they to have originated from the Nectaris basin forming impact.

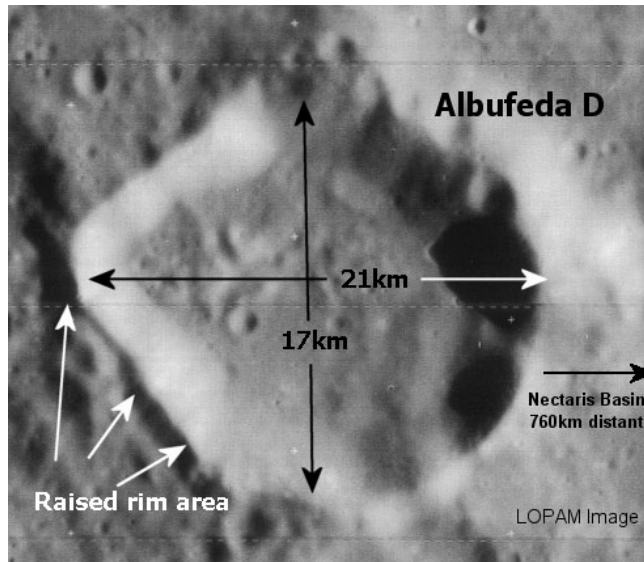


In the above graphic the relationship between morphology and direction from which the impactor arrived is expressed. Experimental impacts (Gault & Wedekind (1978) performed in the laboratory illustrate that such morphologies are possible and very specific as to direction of impactor arrival. This directional alignment is consistent with an impactor origin from the Nectaris basin formation event.

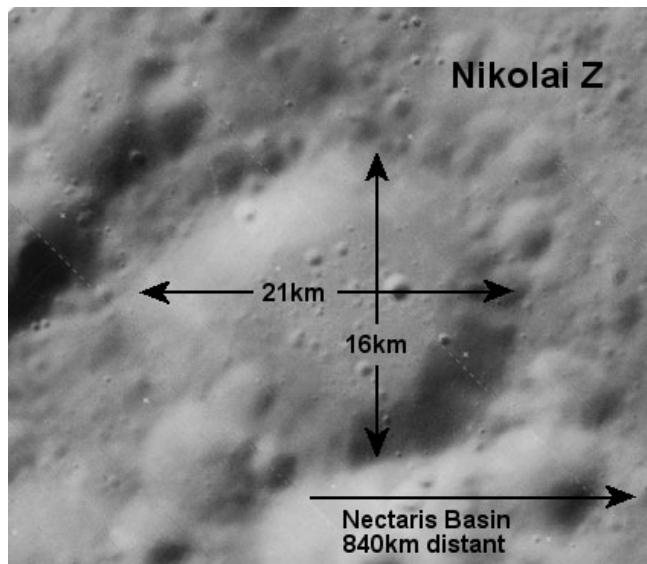
Since crater morphology, particularly rim morphology, can be shaped by other mechanisms than an oblique impactor, a closer examination of the individual craters is in order. One of the mechanisms that modifies the rims shapes of craters is mass wasting, commonly expressed through the form called 'scalloping'. This often can be seen to result in crater rims which vary from circularity to various polygonal shapes instead. Obviously, if the nature of these craters is to be determined as caused primarily from an oblique impact, any evidence of mass-wasting as an alternate rim-altering mechanism must be eliminated. First we'll examine Albufeda D:



The above image presents Albufeda D in a territorial setting. The crater is situated on an elevated landform with lobate edges, seen to the left of the crater proper. I found this particular crater associated with the Nectaris basin event by CJ Byrne (Lunar Orbiter Photographic Atlas of the Moon 2005) where, referring to Albufeda D in comments about LOPAM image IV-096-H2 he writes: "Between Burnham and Albufeda there is another irregular rim, surrounded by a flow with a lobate edge. These features may have been produced by the molten ejecta from the Nectaris basin."



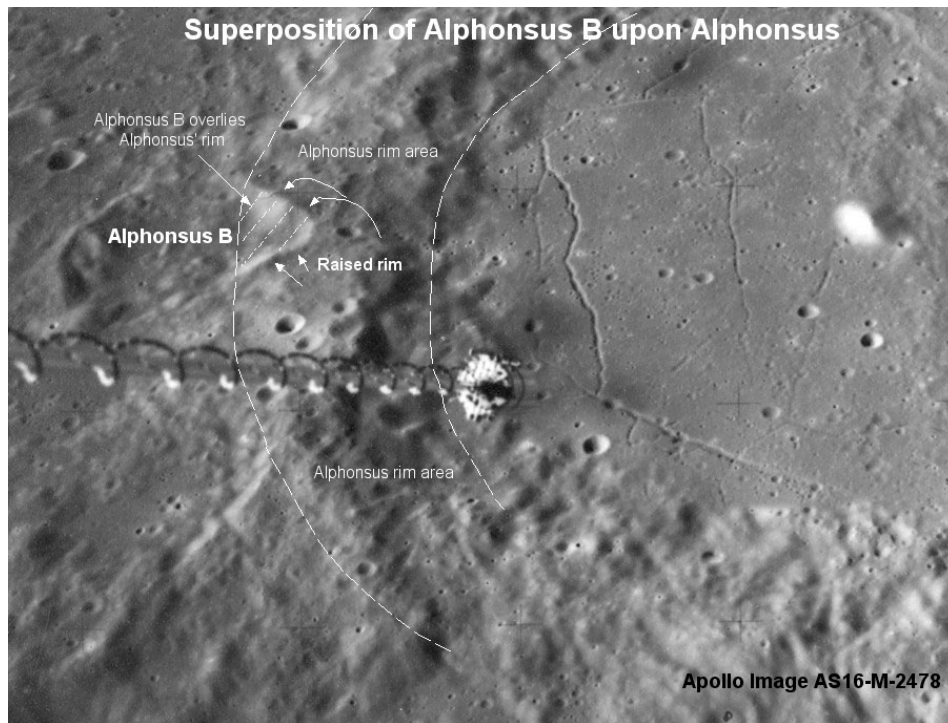
The above large scale image is provided with dimensional data and alignment to the center of the Nectaris basin. Arrows point to the presence of a defined rim still extant defining the 'beak-like' portion of the rim. Mass wasting (landslides) on such a scale as would be required to form such a large irregularity in the rim morphology of an originally circular crater would surely leave none of the original rim elevation intact in this area, so we can most likely eliminate mass wasting as a principle formative mechanism responsible for this portion of the craters rim outline. Other areas of the crater rim do show modification due to the actions of mass wasting (however irrelevant to the present examination) along the north edge near where the upper dimensional arrow points and as minor scalloping of the right side of the crater rim. The differences in morphology of rim modification by mass wasting and by direction of impact can so be seen to be quite plainly different. The state of preservation of this crater can be seen to be consistent with an early Nectarian age.



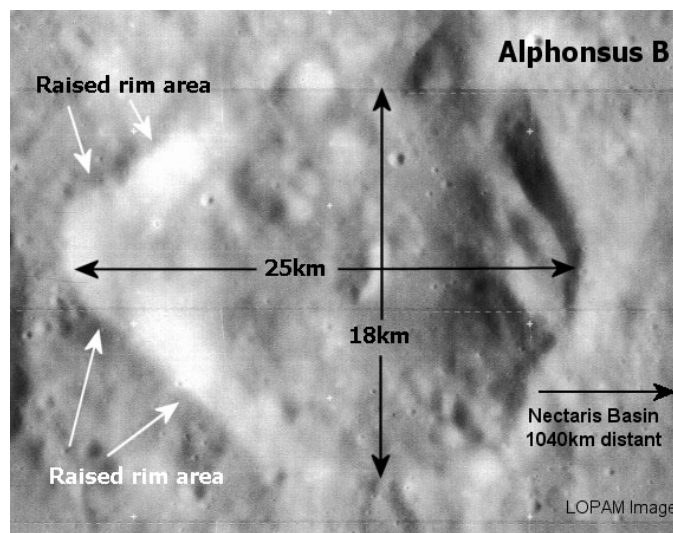
The next purported Nectaris basin secondary we'll examine is Nikolai Z shown above in a large scale image with it's linear relationship to the Nectaris basin and dimensionality indicated as before. Although its western rim (left) does not appear to have a pronounced rim remaining intact, there is no evidence upon its floor of the effects of the scale of mass wasting that would, again, be required to modify its rim so radically. Instead the floor follows the shape of the rim, having also an anomalous

extension beyond circularity. Also, a notable similarity in morphology can be seen when comparing this crater to Albufeda D; in size, in ratio of the long to short dimensions of both and in outline, the large slide on the north wall of the latter crater excepted.

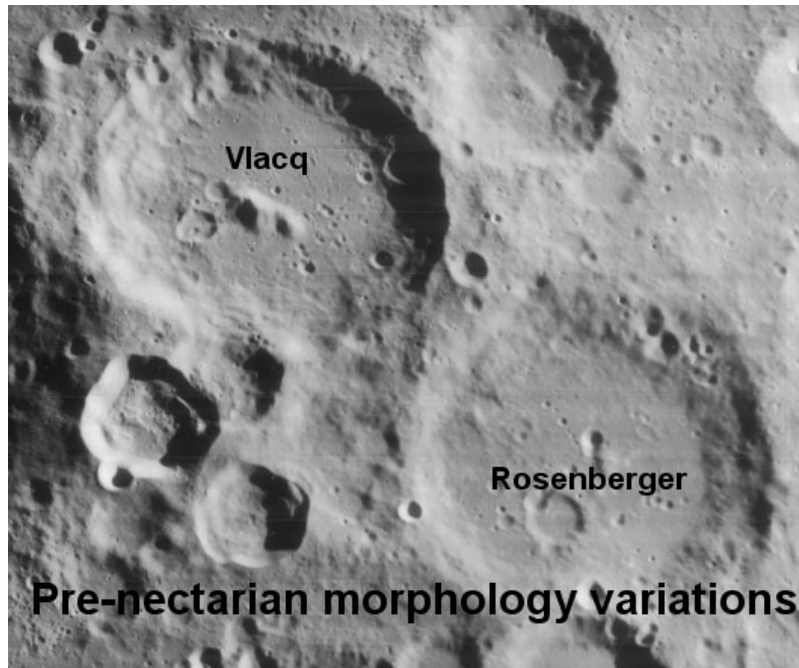
Finally we'll examine Alphonsus B the crater that started this little investigation:



Shown above is an Apollo image taken of Alphonsus and enlarged to show the area of interest. (The corkscrew object is a boom attached to the orbiter). Indicated by dashed lines is the gross rim area of Alphonsus and Alphonsus B is also labeled. In relation to the latter crater's superposition upon the former, the area of Alphonsus B which overlays Alphonsus is indicated by diagonal hashmarks. Two things are evident from this image: 1) that Alphonsus B overlays Alphonsus and therefore was created after Alphonsus was formed. 2) that Alphonsus B also has a well preserved rim including on the irregular "beak-like" portion which, as before, argues against this irregularity as having been the result of mass wasting.



Above is a large-scale view of Alphonsus B. Again this indicates the presence of a raised rim all around the beak-like extension of the crater's rim. And again, although there is debris upon the floor in this area, there is debris and anomalous formations throughout the floor of this feature; and in no case is the amount of debris in the western portion of the floor sufficient to account for a mass wasting explanation for this crater's shape. On the contrary, when comparing the significant wasting that has occurred on the eastern rim of this crater (blocky landslips are evident) it is even more apparent that another mechanism than mass wasting must be what accounts for the anomalous shape of the western rim.



An examination of the morphological differences between the two craters shown in the graphic above illustrates the range of preservation possible within craters formed prior to the Nectaris basin forming event. Rosenberger is a typical pre-Nectarian age crater with subdued or absent central peak, heavily eroded walls with little or no evidence of terracing remaining, a very subdued rim and overall a thoroughly "weatherbeaten" look. While both Vlacq and Rosenberger are considered to be Pre-Nectarian, Vlacq is obviously the more recent of the two formations. In fact, Wilhelms referred to Vlacq at least once in his book (Geologic History of the Moon pp. 147) as "probably" a pre-Nectarian crater. This would imply a state of preservation consistent with either a very late pre-Nectarian age or a very early Nectarian age. This places Vlacq as probably formed during a similar timeframe as Alphonsus, which is usually considered a very early Nectarian formation. Indeed there are striking similarities in morphology between Vlacq and Alphonsus; they are in the same size class (Vlacq 92km, Alphonsus 121km), they both have elongated central peak complexes exposed and possess complete rims with evidence of terracing still remaining. Differences include but are not limited to the presence of Imbrium basin sculpture in Alphonsus and the longer central peak complex thought to be related to deep radial crustal fractures resultant from the Imbrium basin forming event. Vlacq is missing these characteristics as it is much more removed from the range of such Imbrium sourced mechanisms than is Alphonsus.

Discussion:

To sum up, evidence has been presented to support an origin for three irregular crater forms surrounding the Nectaris basin as oblique radial secondaries to the Nectaris basin forming event. This is based upon

crater morphology indicating a Nectarian age, the rim morphology indicating an origin from oblique impact, an alignment of their impact directional axis, in all cases, almost precisely radial to the center of the Nectaris basin and finally their common location within the zone of secondary impacts (beyond the outer rings) surrounding the Nectaris basin. One of these oblique Nectaris basin secondaries is situated on the flank of Alphonsus and based on this superpositional location indicates that Alphonsus would have to have been formed *prior* to the Nectaris basin event instead of shortly thereafter, as commonly asserted at the present time. Further, comparison of the gross morphology of Alphonsus itself with the morphologies consistent with either a late Pre-Nectarian age or an early Nectarian age crater (Vlacq) indicate that its morphology alone does not preclude a late Pre-Nectarian age for this crater.

I suspect that Alphonsus was rather routinely assigned a Nectarian age by researchers because of the presence of a central peak, a feature not usually associated with Pre-Nectarian craters and in consideration of its superimposition upon Ptolemaeus, a plainly Pre-Nectarian age crater. Any sculpture evident from the Nectaris basin impact which would have positively determined Alphonsus' age as Nectarian is in any case suppressed completely by the subsequent Imbrium event and its ejecta -- which later evidence at least proves beyond any doubt that Alphonsus pre-dates the Imbrium era.

So, is Alphonsus really datable as a pre-Nectarian crater simply by the presence of one anomalous crater, Alponus B, lying on its flank? Yes, but with an important proviso that being that an affirmative depends *entirely* on the origin of this small irregular crater. Oblique impacts do occur as primary impacts, certainly, and it is certainly also possible that this is one of them and that it has nothing to do with the Nectaris basin formation event and that Alphonsus, is, after all, properly classified. In fact this is what I would have assumed--had I not found first Albufeda D and then Nicloai Z, sharing almost identical form, age, morphology, presence in the secondary impact zone surrounding Nectaris basin and virtually exact radiality vis a vis the morphologically indicated direction of their impactors pointing straight back to the Nectaris basin! In sum, these commonalities could be coincidental, but to in my view they argue, together, for at least a modest probability otherwise. Certainly, locating and identifying other similar irregular craters possessing the same related characteristics within Nectaris' secondary zones would only further support this premise. In any case such investigations could only be seen as profitable (and fun!) to undertake. The Moon's geological history is not perfectly understood or interpreted on a 100% feature-by-feature basis-- even today, as any professional lunar geologist would certainly affirm.

When submitting observations to the A.L.P.O. Lunar Section

In addition to information specifically related to the observing program being addressed, the following data should always be included:

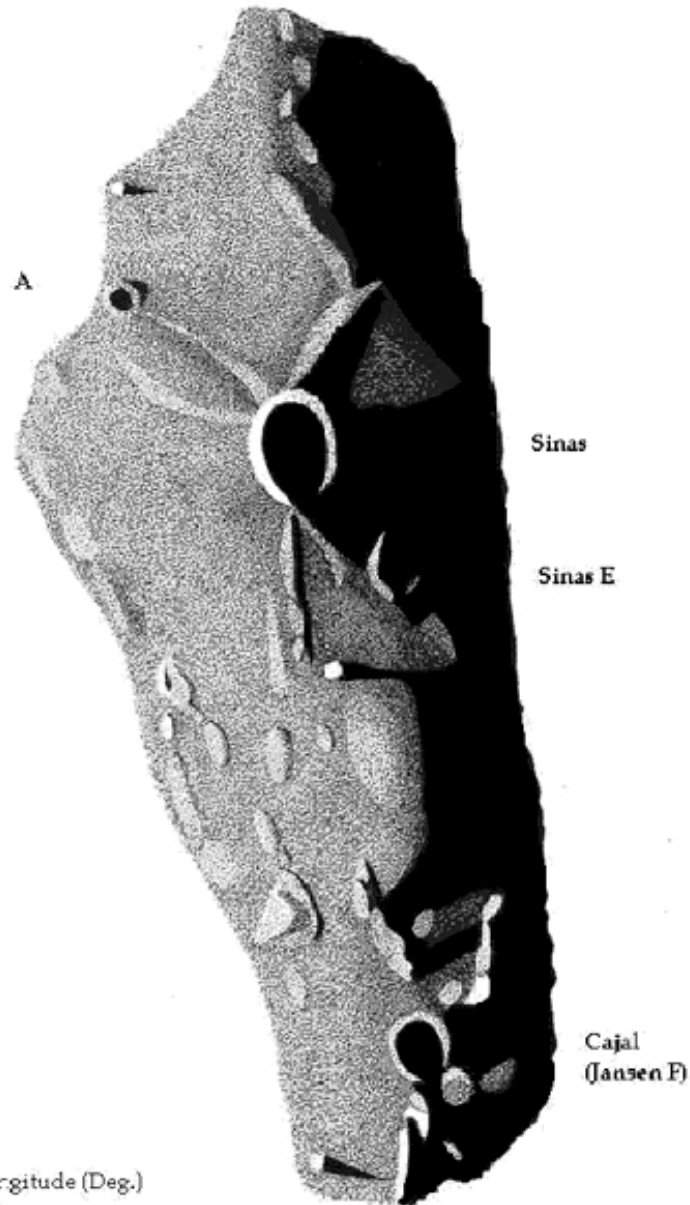
- Name and location of observer
- Name of feature
- Date and time (UT) of observation
- Size and type of telescope used
- Seeing: 1 to 10 (1-Worst 10-Best)
- Transparency: 1 to 6
- Magnification (for sketches)
- Medium employed (for photos and electronic images)

SINAS DOME FIELD

Colin Ebdon - Colchester, Essex, England

SINAS DOME FIELD

Observer: C.Ebdon
Date: 2006 January 4
Time: 17.45 to 18.30 UT
Seeing: All
Transparency: Very Good
7" f15 Maksutov-Cassegrain x225



Earth's Sel. Longitude (Deg.)
+3.89 to + 3.90
Earth's Sel. latitude:
+2.29 to +2.28
Sun's Sel. Colongitude:
229.66 to 329.66
Sun's Sel. Latitude: -1.50
Lunation:1026
Notes: See separate sheet

Notes on Observation of Sinas Dome Field

2006 January 4 - Colin Ebdon

Reference is made throughout to Plate 2 'The Dome Field' as designated in the article on the Sinas Dome Field by Nigel Longshaw in the Autumn 2003 edition of 'The New Moon', Volume 13, No1, and his numbering of features therein has been followed.

Features 1,2,4,5 and 6 were beyond the terminator in this current observation and not visible.

Feature 3. Previously noted by this observer as only an 'undulation in the Mare Floor', this feature was now clearly visible as the 'largish, low, ill-defined dome described by Jamieson, as confirmed in observations by Nigel Longshaw. No surface features could be seen upon it, even under the rather favourable seeing conditions and allowing for the fact that it was almost on the terminator.

7,8 and 9. In the current observation, 7 appeared to be a dome-like feature visible just inside the night side of the terminator. 8 and 9 appeared quite complex in this observation. 9 gave the impression of either being a double feature, or a small hill sitting atop either a dome, or a dome like feature which was part of a ridge, extending towards Jansen F (Cajal).

10. This proved to be the most controversial feature in the current observation. The observer would, on this occasion concur with Jamieson that this appeared as a 'strange dome of 'triangular shape', the latter part of the description being particularly pertinent. It seemed to emanate from a flat plateau-like feature which had a dark rim of shadow around its western edge. The brighter area appeared to gently peak, and its western border showed its own light shading; this was clearly separated from the black rim-shadow of the 'plateau' on which it seemed to lay. However, it was not possible to reveal two separate domes in this position as shown by Nigel Longshaw in his observation of 2000 May 8, and certainly no central pit was seen. NB: There appeared to be shallow domes immediately to the North and South of feature 10, the one to the south being the better defined of the two. Neither of these is shown in 'The Dome Field Chart'

11. This was seen as a featureless bright patch associated with a ridge running southwards to Jansen T, which itself may well have been confused in the current drawing as a sharply defined hill.

12 Now appeared considerably smaller than 13, which now appeared larger than 14, contrary to previous observations by the current observer. All appeared featureless on this occasion, but are clearly classical domes.

15 cannot really be accounted for at all in the current observation. What is assumed to be Sinas H appeared as an elongated 'cleft' atop a fairly sharply defined plateau area, which had a small offshoot running towards 14.

16 was clearly a distinct small hill, casting a long shadow in this observation, immediately adjacent to the northern end of a ridge like feature (itself in three parts) seen running from Sinas. This ridge is not shown in 'The Dome Field chart'.

Lastly a small, but apparently 'classical' dome like feature could be made out to the NE of Sinas A as shown. Again this is not revealed in the 'Dome Field' chart.

LUNAR TOPOGRAPHICAL STUDIES

Acting Coordinator - William M. Dembowski, FRAS

dembowski@zone-vx.com

OBSERVATIONS RECEIVED

ANTHONY AYIOMAMITUS - ATHENS, GREECE

Digital images of Bessel Ray (2)

WAYNE BAILEY - SEWELL, NEW JERSEY, USA

Digital image of Mare Serenitatis, Copernicus (2), Copernicus & Kepler & Aristarchus

COLIN EBDON - COLCHESTER, ESSEX, ENGLAND

Sketch of Sinas

ACHILLE GIARDANO - NAPLES, ITALY

Digital image of Mare Serenitatis

HOWARD ESKILDSEN - OCALA, FLORIDA, USA

Digital image of 4-day Moon

ROBERT H. HAYS, JR. - WORTH, ILLINOIS, USA

Sketches of Triesnecer, Parrot C & vicinity, Theita E

DONALD SPAIN - LOUSVILLE, KENTUCKY, USA

Digital images of Mare Serenitatis (2)

ALEXANDER VANDENBOHEDE - GHENT, BELGIUM

Digital images of Humboldt (4), Mare Australe (4), Messier (4), Cauchy, Lacus Somniorum, Proclus, Janssen & Rheita Valley, Eastern Mare Nectaris, Northeastern limb (2), Aristarchus, Mons Guithuisen, Marius Hills, Mare Humorum & Gassendi, Mare Frigoris, Schickard & Schiller, South Polar Limb, Clavius (2)

ROBERT WLODARCZYK - CZESTOCHOWA, POLAND

Sketches of Purbach & Thebit, Clavius

RECENT TOPOGRAPHICAL OBSERVATIONS



COPERNICUS

Digital image by Wayne Bailey - Sewell, New Jersey, USA

June 17, 2005 - 02:58 UT

11 inch f/10 SCT - Schuler IR72 Filter - Philips Toucam



4-DAY MOON

Digital image by Howard Eskildsen - Ocala, Florida, USA

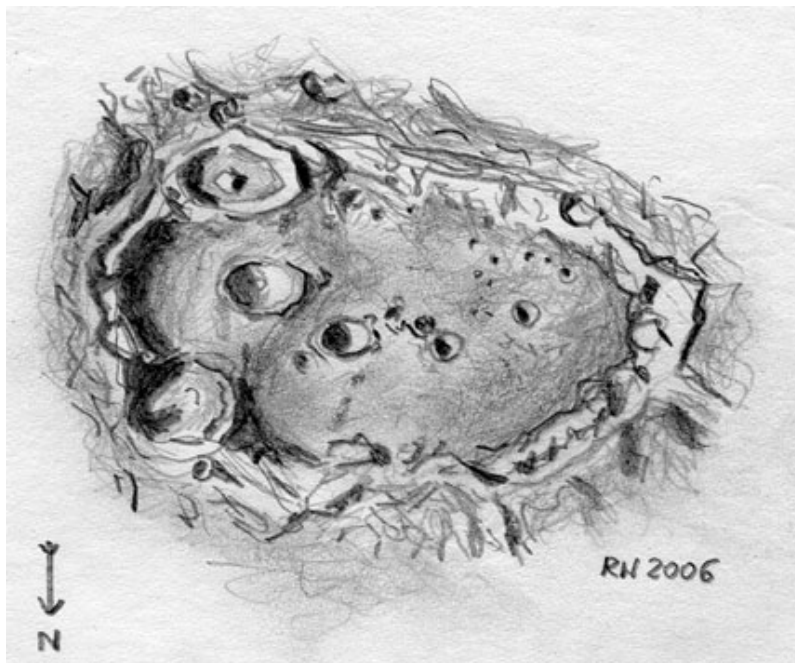
May 2, 2006 - 00:27 UT

6 inch f/8 Refractor - 2x Barlow - Nikon Coolpix 4300

RECENT TOPOGRAPHICAL OBSERVATIONS



LACUS SOMNIORUM
Digital image by
Alexander Vandenbohede
Ghent, Belgium
May 2, 2006 - 20:15 UT
20cm f/15 Refractor



CLAVIUS
Sketch by Robert Włodarczyk - Częstochowa, Poland
April 8, 2006 - 18:15 UT
15cm f/6 Newtonian - 225x

BRIGHT LUNAR RAYS PROJECT

Coordinator - William M. Dembowski, FRAS



MESSIER & MESSIER A

Digital images by Alexander Vandenbohede - Ghent, Belgium

(Dates and UT as indicated on each image)

20cm f/15 Refractor

OBSERVING NOTES:

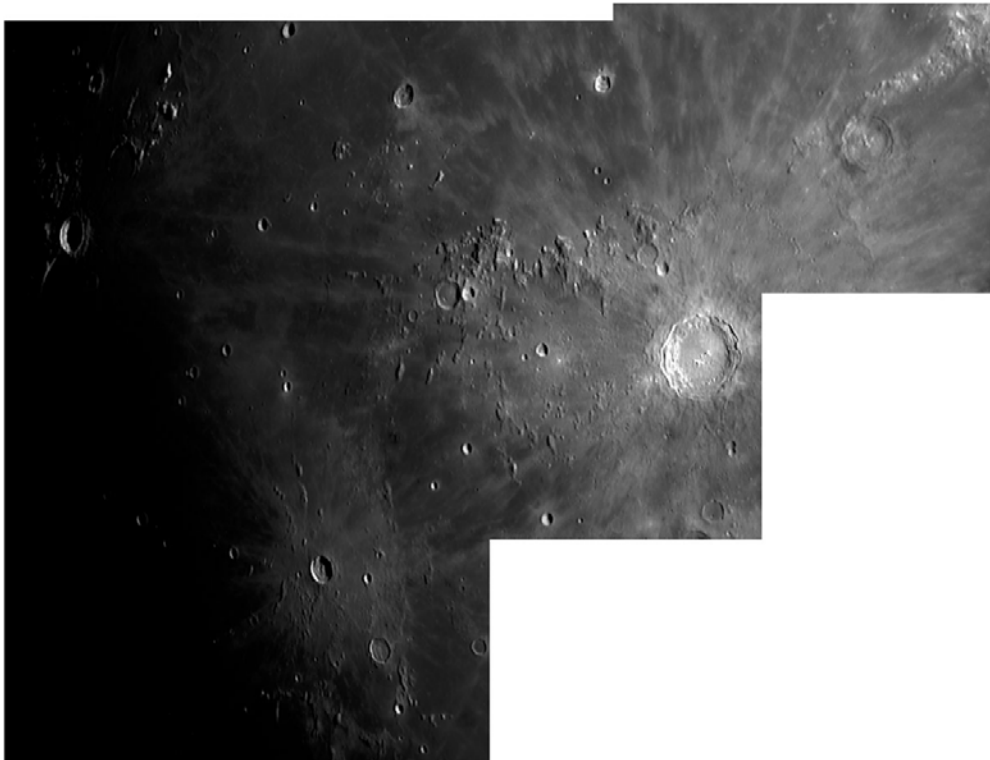
The Messier and Messier A images show some aspects of the changing appearance of the craters. It is also interesting to see how the brightness and appearance of the ejecta deposits of the crater twins changes with changing illumination. The colour image shows that the rays of Messier and Messier A are yellow and not blue like recent impacts on the southern highlands. This is due to the fact that they consist of basaltic material. Notice also on the 02/05/2006 image the domes east of the crater pair. There are also four very small domes on the wrinkle ridges west of Messier A, just above the comet tail ray. They seem to be sitting on a large swelling. I didn't find these on any map.

RECENT RAY OBSERVATIONS



RAY AT BESSEL

Digital image by
Anthony Ayiomamitis
Athens, Greece
October 22, 2005 - 02:53 UT
AP160 f/7.5 Refractor
Baader UV/IR-Cut Filter
Philips Toucam



KEPLER & COPERNICUS

Digital image (mosaic) by Wayne Bailey - Sewell, New Jersey, USA
April 10, 2006 - 03:36 & 03:57 UT
11 inch SCT - Schuler IR72 Filter - Philips Toucam

LUNAR TRANSIENT PHENOMENA

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

Assistant Coordinator – David O. Darling - DOD121252@aol.com

LTP NEWSLETTER - JUNE 2006

Dr. Anthony Cook - Coordinator

Observations for April were received from: Michael Amato (USA), Clive Brook (UK), Achille Giordano (UAI, Italy), Antonio Marino (Italy, UAI) Gerald North (UK), Brendan Shaw (UK) and myself. April was a quiet month with no LTP reports being received, but instead a lot of useful routine observations, some of which can help to disprove past LTP. My thanks also go to David Darling who has been receiving observations too via his web site and submits these to me in batches at appropriate intervals.

This newsletter will be short due to academic pressure of work. Fortunately the students will be going off on their summer vacation and graduating soon and I hope to get back to normal! The great thing about students in a Computer Science department is that one can get them to do interesting projects like simulating ray traced views of the lunar surface using Monte Carlo modeling or impact flash detection software. The students seem to enjoy this sort of thing and I get some useful software out at the end.

I also hope to report in the near future on some work on a couple of robotic telescopes that I have installed here at Nottingham University. I have had first light on these with the Moon and hope to have some more impressive images in the next few months once I have ironed out hardware bugs and telescope control issues. Although not intended for LTP work, undoubtedly they could easily be scheduled to observe the Moon systematically through different filters for LTP when nobody else is utilizing them.

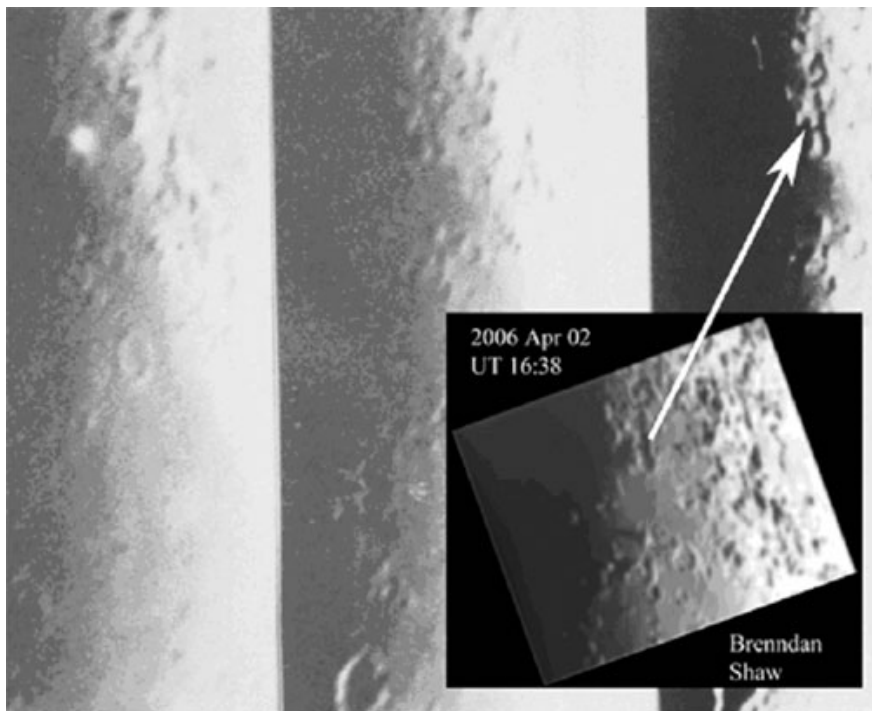


Fig 1. In the background are enlargements of the Kolovos Proclus C photographs (each is of a different exposure). Inset is Brendan Shaw's image that matches the same illumination. The arrow shows matching features.

On April 2nd Brendan Shaw and UAI (Italy) observer Achille Giordano, managed to secure some images of the Proclus C area under very similar illumination to the George Kolovos flash event back in 1985. This event was attributed to some sort of surface event, but later doubt was cast in that some thought that the photographed flash was sun glint from a satellite that was passing by within a few tens of seconds of the original photograph. Unfortunately the satellite theory does not fully explain why such a short flash was photographed without a significant trail. This could only happen if the satellite was rotating very fast and had very polished and very flat solar panels. Anyway to check up on the relative location of the original flash the above two observers very kindly supplied the requested observations. The Achille image is at much higher resolution and can be used to study the illumination conditions inside the Proclus C crater. The images, taken by CCD will also allow a photometric correction to be performed on the photographic images in order to linearize out the log sensitivity of the film.

Thanks for those of you who have expressed an interest in the SMART-1 impact event – I will post new details in due course.

Predictions, including the more numerous illumination only events can be found on the following web site: <http://www.lpl.arizona.edu/~rhill/alpo/lunarstuff/ltp.html>. For members who do not have access to the internet, please drop me a line and I will post predictions to you. If you would like to join the LTP telephone alert team, please let me know your phone No. and how late you wish to be contacted. If in the unlikely event you see a LTP, please give me a call on my cell phone: +44 (0)798 505 5681 and I will alert other observers. Note when telephoning from outside the UK you must not use the (0). When phoning from within the UK please do not use the +44!

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

THE MOON IN THE NEWS

(ESA) SMART-1: Close-up of Zucchius crater

http://www.esa.int/esaCP/SEMVQM9ATME_index_0.html

(ESA) SMART-1 View of Crater Hopmann

http://www.esa.int/SPECIALS/SMART-1/SEM1PPOFGLE_0.html

(NASA) Astrobiology Magazine interview with Harrison Schmitt on revisiting the Moon:

<http://www.astrobio.net/news/index.php>

(NASA) Astrobiology Magazine: Shaking off Moon dust:

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