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Night Thoughts of a Classical Mars Observer. Part I

By

William SHEEHAN

Recently, I enjoyed reading Russell McCormmach's 1982 book "*Night Thoughts of a Classical Physicist*," in which Victor Jakob, a fictional physics professor in a small German university, attempts in old age to come to terms with his life as a physicist. Frequently suicidal, he tries to cope both with the overthrow of the classical physics he had known during much of his career by the new theories of relativity and quantum physics, and with Germany's impending defeat in World War I.

I've had similar thoughts recently (though without the suicidality) as I've tried to come to terms with my own life as a Mars observer whose first observed opposition was that of March 1965. I am saddened, in a way, by the increased irrelevance of the classical visual telescopic studies of Mars in this ever-more hurtling era of reconnaissance orbiters and surface rovers.

Almost every year sees the passing of another of the great observers of the classical era. Among those I have known that have passed on have been Chick Capen, who died in 1986, Clyde Tombaugh in 1996, Leonard Martin in 1997, Tom Cave in 2003, Tom Back in 2007, and Audouin Dollfus in 2010.

I could not help reading with alarm in the latest issue of the CMO (no. 404, Nov. 25, 2012) of the faltering health of my good friends Masatsugu Minami and Takashi Nakajima, the two great Mars observers at the Fukui City Observatory who have been carrying on the legacy of the legendary Tsuneo Saheki in maintaining their careful and faithful visual study of the planet ever since 1954. This year, they were forced to retire from the telescope while Mars was still in good position - Nakajima because of exhaustion related to diabetes, Minami owing to complications, apparently, of Parkinson. Minami collapsed just after taking observations on 27 March (dispassionately, he gives the data for this last observation: λ=089°Ls, δ=12.9″). Even though their work this oppo-

sition was truncated by their illnesses, they managed to get close to 200 drawings of Mars each. We wish them a speedy recovery and the resumption of their beloved nightly vigils of Mars. But we also recognize that even these iron men of Mars cannot continue forever. Their generation (which is also mine) is inevitably and inexorably passing from the scene; we are nearing the end of a very productive era of visual observations of Mars. Where are their replacements? Can replacements even be found?

Though the visual Mars observer is largely overshadowed by CCD imagers, one can argue that there is still useful work to be done by the classical visual observer of the red planet. The essays of Minami in the C.M.O. and his B.A.A. equivalent Richard McKim in the J.B.A.A. are full of projects and data gleaned by observers at the telescope, still using the tried and true methods that their forefathers, Schiaparelli, Trouvelot, Barnard, Lowell, and Antoniadi, used. Necessarily, the contributions of visual obsevers using small telescopes are limited to the study at low-resolution Martian atmospheric phenomena and surface markings. On the planet which boasts the largest dust storms in the Solar System, visual observers can contribute observations that can be directly compared to and contrasted with those in the historical record----notably, McKim's catalog of historic dust storm observations has been an important contribution to the long-term understanding of what drives and causes variability in these significant Martian events.

What drives observers like Minami and Nakajima to continue their nightly vigils at the eyepiece, and to drive themselves to the point of collapse? Is it habit? Obsession? A supreme work-ethic? The desire to contribute to the understanding of the planet of their predilection. No one doubts that they are consummate students of Mars, who have recorded every large-scale meteorological event on Mars to within the terrestrial limits of observation; but it is also reasonable to ask whether they are a dying breed, and in some way as obsolete as the horse-drawn carriage in the age of the automobile.

What I am asking amount to *Night Thoughts of a Classical Mars Observer*? Is there still something useful to be done, after all, in the age of CCD and spacecraft in orbit around or rovers on the surface of our neighbor planet?

My take on the subject (and readers are invited to express their view) is that the most useful aspect of the work of visual observers like Minami and Nakajima lies in the fact that their records involve observations taken by the same observer using the same instrument over almost sixty years, so that any changes taking place can be reasonably attributed to changes on Mars rather than changes in the observer. In other words, the personal equation is eliminated (and even CCD imagers have their personal equations, do they not?). As Percival Lowell once remarked, if Mars is to be many, the observer must be one. (*)

The sheer length of the timeline gives value to these meticulously compiled records. Even as the time-line of observations from spacecraft increases, the visual observers' records

will continue to be potentially useful to scientists calibrating the nature of long-term changes in the broader Martian environment. In this respect, they resemble the temperature measures taken by 19th century meteorologists which have helped document the effects of increased carbon dioxide concentrations on climate change, visual estimates of star magnitudes that have led to estimates of changes of long-period cataclysmic variables, and ancient observations of naked-eye sunspots or meteors (in the latter case, cataloged by the great Japanese astronomer Ichiro Hasegawa).

As with the correspondence principle enunciated by Niels Bohr, according to which quantum mechanics must in the limit lead to the formulae obtained by classical physics, our new "quantum" view of the Martian phenomena obtained from orbiting spacecraft and rovers allows us to better interpret the historical record of observations by classically trained observers peering at the planet through telescopes.

***

A few years ago, I was sitting in the Director's office of the Slipher building (built in 1916) at Lowell Observatory, talking to then director Robert Millis. We reflected that ever since Percival Lowell founded the observatory in 1894, it had specialized in studies of Mars, and had always at least one specialist on the planet (beginning, of course, with the founder himself). Following Lowell's death, it was Earl C. Slipher, planetary photographer par excellence, and after Slipher retired, the role was assumed by Chick Capen, and beginning in the 1970s, by Leonard Martin, who was one of the greatest students of Martian dust storms and retired shortly after the observatory celebrated its centennial in 1994; he was suffering from heart trouble, and died soon afterwards. (His review for *Sky & Telescope* of my book *The Planet Mars* was the last writing about Mars he published.) When Martin retired, Millis decided not to hire another Mars expert at Lowell Observatory.

The reason he gave me: Mars was no longer the astronomers' concern. It had passed to the care of geologists and meteorologists. There was no longer a reason for an astronomical observatory to occupy itself with a planet which is under constant surveillance from orbiting spacecraft and being sampled by rovers on the surface.

Indeed, at the time I write this -November 2012- Mars is host to no fewer than five functioning spacecraft, of which three, Mars Odyssey, Mars Express, and Mars Reconnaissance Orbiter, are in orbit, and two, Mars Exploration Rover Opportunity and the Mars Science Laboratory Curiosity, remain active on the surface. In fact, the proper place to interpret the data streaming in from Mars is no longer Lowell Observatory but the USGS which has one of its field offices in Flagstaff.

Christophe Pellier, in his recent report on the *European Planetary Science Congress* in Madrid (cited in CMO no. 404) acknowledges that amateurs can still observe every large-scale meteorological event on Mars, under the terrestrial limits of observation (it is impossible from Earth to observe the planet for a full Martian year), but adds: "the

level of quality offered by the presence of long-lived orbiters above Mars for many years now does not really allow any opening for interesting amateur contributions to the study of the Martian climate, with the exception, probably, of terminator projections." Of course, there will always be, as I noted above, something to be gained from maintaining the consistency of the historical record that goes back to the time of Schiaparelli, Trouvelot, Lowell, Antoniadi and others, which requires that the planet be monitored with instruments and by means that they used. There may not be, unfortunately, many young observers captivated by this project, once the current generation of Mars observers who grew up in the era when Mars was a small, perennially mysterious, disk, whose subtle details had to be eked out with a fair amount of imagination. Mars has passed from the realm of romance into that of fact, and for some us the change has not come without regret.** (*To be continued*)

Editor's Notes: This article of Bill SHEEHAN has been translated into Japanese by Reiichi KONNAÏ (this issue of the CMO Japanese edition). On the occasion, KONNAÏ noticed that "the observer" (*) must have been "the draughtsman" as he remembers. Otherwise instead of "the change has not come without regret", SHEEHAN in the original version used the phrase "things will never be the same"(**) which might have come from the title "*Things Will Never Be The Same*" of the big hit of the Swedish rock duo Roxette as KONNAÏ pointed out. □

ISMO 11/12 Mars Note (7)

Bright Morning Radiation Fog inside Tharsis

Christophe PELLIER

The beauty of the Tharsis volcanoes poking through the morning mists is a highlight of aphelical apparitions,[1] and in 2012 this was well observed after opposition, in March/April. In this short note, we focus on the mists themselves; some particular features and facts can be picked up. In particular, a very bright morning cloud has been observed inside Tharsis after the opposition of early March 2012.

I - Meteorological conditions for morning fogs

Martian morning mists are no different from terrestrial mists. Several kinds of fogs have been classified; the ones we review here belong to the "radiation" kind. On the Earth, during a clear night in a cold season, the heat of the ground escapes (radiates) into the atmosphere. As a result, the air in contact with the ground gets colder and eventually sinks into deeper topographical terrains (it is also

Fig. 1: Nice terrestrial example of morning radiation fog. The photo has been taken by amateur astronomer Patrick Lecureuil in Gers, France.

called "valley fog"). The cold and dense air brings conditions that favour the condensation of water vapour, and fog can form; due to the particularity of the planet neither oceans nor precipitations, very little cloud), could the radiation fog be the only one observable on Mars?

In the first figure (Fig. 1 on the preceding page), you can see a very nice terrestrial example of morning radiation fog. The photo has been taken by amateur astronomer Patrick Lecureuil in Gers, France.

II - The Tharsis bright morning fog

While imaging Tharsis during the night of March 19 to 20 of this year, among the beautiful complexity of clouds already visible on the screen laptop in blue light, the author noticed a very bright area, much brighter than any other details but the cap - see Fig. 2 in violet light.

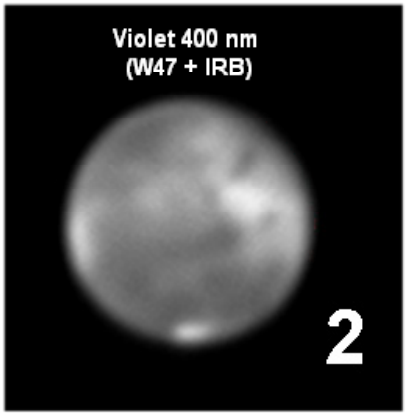


Fig. 2: a very bright cloud in Tharsis observed by the author on March 19th, 2012 (λ=086°Ls), in violet light.

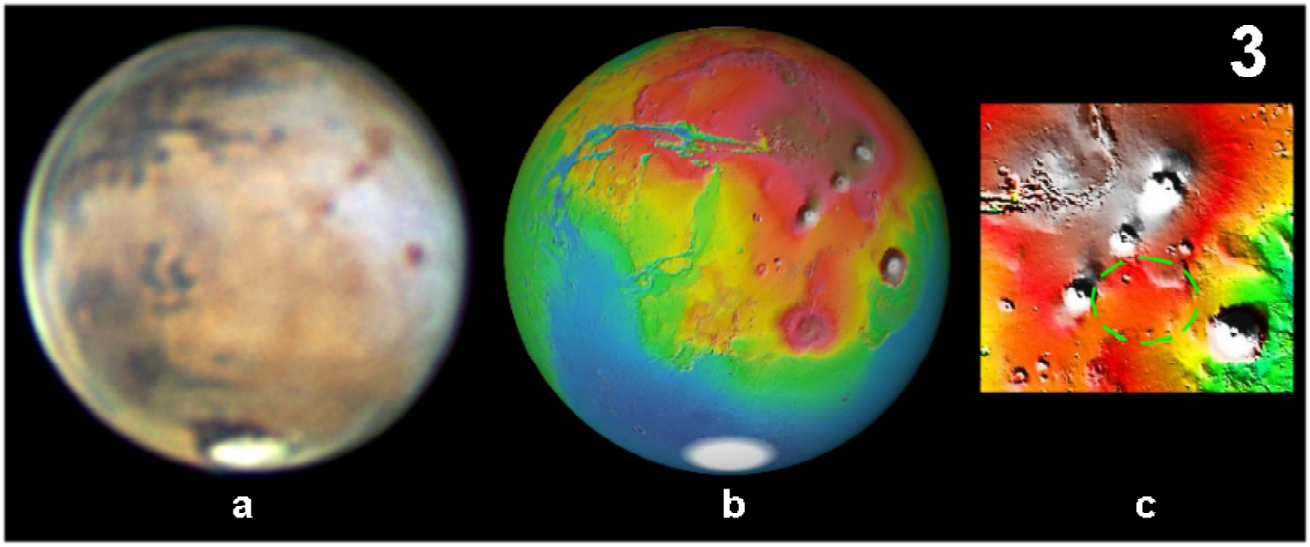


Fig. 3: The area of the bright cloud identified. Image taken by Manos Kardasis on 17th March 2012 (λ=085°Ls). A comparison with MOLA relief data at the same moment is provided.

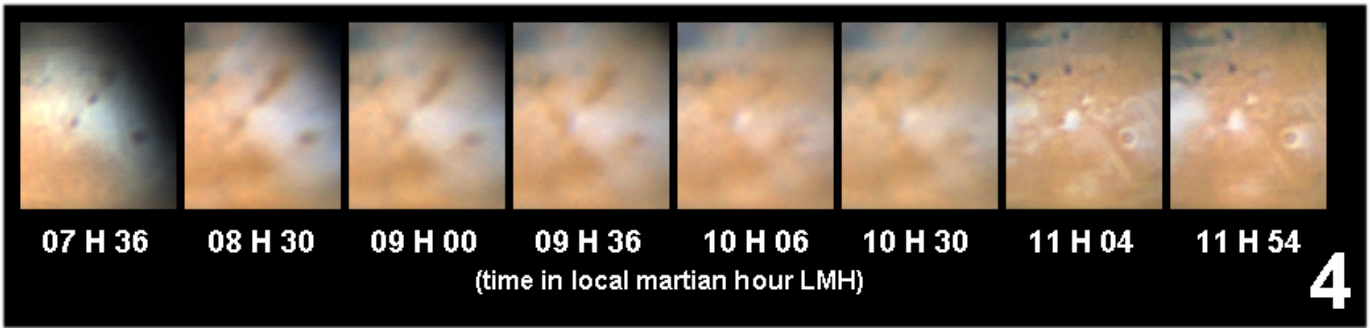
Where is that cloud located? On Fig. 3, a comparison made with an excellent image taken by Manos Kardasis two days before at same *local Martian hour* (around 9H LMH) and the MOLA relief map shows that the cloud forms inside what looks like to be a little basin between Olympus, Ascraeus and Pavonis. Also lower bulges are found at south-west and north-east.

Its hourly evolution also corresponds to the behaviour of morning radiation fog. Imaging the clouds every 30 mn shows that the cloud presents a regular behaviour of dissipation, as would a terrestrial ground fog do during the morning hours, as the Sun climbs higher in the sky.

III - Detailed description of the dissipation

The Tharsis bright morning fog has been observed already during past aphelic apparition - proving if needed that it is a passive, regular phenomenon of the martian aphelical climate. Ten years ago, some scientists published a study about the Tharsis clouds in *Astronomy & Astrophysics*.[2] The authors wrote "there is a particularly bright morning cloud between Olympus Mons and the three volcanoes of Tharsis Montes. Its centre is about 120°W and 10°N. We call this bright spot the "Tharsis morning cloud". (…) The Tharsis morning cloud disappears or its brightness reduces extremely in the early afternoon. As the morning

Fig. 4: Evolution of the Tharsis bright morning fog during several martian hours. Images by Wayne Jaeschke (frame 1; 28th March 2012 - λ=089°Ls), Christophe Pellier (frame 2 to 5; 19-20th March at λ=086°Ls), Damian Peach (frame 6 and 7, 14th March at λ=083°Ls). The LMH is calculated with the same reference point as the Akabane paper (120°W; 10°N).



cloud dissipates, small bright spots of clouds begin to appear over the large volcanoes". Followed a description of the behaviour of the cloud with the local martian hour over three images taken on 14th April 1995 at λ=094°Ls (a bit later than in the season observed this year) where the cloud appears exactly as it has been observed in 2012. 9H38 LMH: it's the brightest cloud and largest among the three images. 10H22 LMH: declines in brightness and dimensions. 11H25 LMH: the cloud can hardly be identified. Does this evolution differ in 2012? For 2012, Fig. 4 aligns 8 images of the Tharsis cloud for a complete evolution almost from sunrise to noon. The evolution is completely similar but as we have a better time coverage the evolution is clearer. The cloud is becoming translucent at 9H36 LMH (the slight pink hue proves that the ground is now visible through the fog), but the decline in brightness and dimensions has begun much earlier, as it is perceptible already on the 9H00 LMH frame. The dissipation of the cloud follows on and it looks safe to say that at martian noon, it is complete.

Note that fog is also visible in surrounding areas, but they are thinner, duller, and dissipate earlier. The Tharsis bright morning fog survives much longer showing how important it is.

Akabane et al titled their paper making a reference to the low latitude cloud belt (that we call today equatorial cloud belt or aphelion cloud belt). In the CMO#401 we wrote *"It is often noted that Tharsis belongs to the brightest part of the ACB.*

However, to the writer this statement is curious as at the very longitudes of the great volcanoes, no cloud belt is detected anymore. The visible clouds at noon and early afternoon belong to the orographic type; and this is a phenomenon completely different from the high altitude convection cloud belt. We would prefer to say that the ACB is interrupted over Tharsis".[3] The present study of the bright morning fog confirms this proposition: as a ground fog, such clouds do not belong either to the ACB, so even in the morning we do not observe the belt over Tharsis.

IV - When does the cloud appear?

The seasonal formation of the Tharsis bright morning fog is one last question. Taking a look at the 2009-10 CMO Gallery, the first images that show the cloud have been taken on 2 and 4 April (λ=072~073°Ls), from Damian Peach (*DPc*) and Bruce Kinglsey (*BKn)*, but it has a faint aspect. Later on 12th May, *DPc* took an excellent set at λ=090°Ls where the cloud is bright and thick - see Fig. 5 for

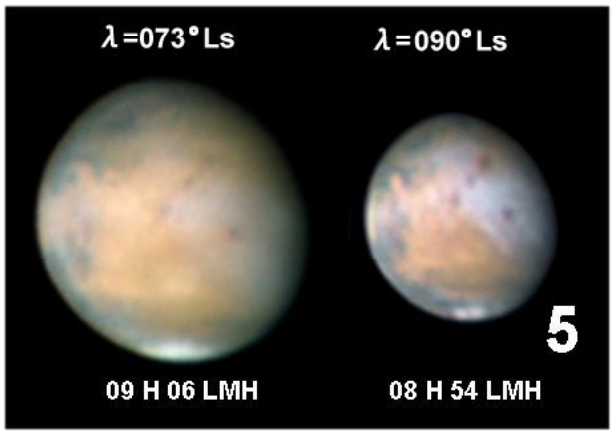


Fig. 5: The Tharsis bright morning fog is detected in 2010 from λ=073°Ls; but it's much fainter than near summer solstice. Images from *DPc*.

a comparison at similar LMH.

In 2012, the cloud looks to be detected at very early LMH on 21 and 22 February (several days before opposition) by respectively Peter Gorczynski (*PGc*) and Efrain Morales (*EMr*) (season was λ=072~073°Ls, exactly like the ones taken in 2010 by *DPc* and *BKn*), then by Tomio Akutsu (*Ak*) on 5 and 6 March (λ=079~080°Ls), but the cloud looks still faint despite the again early martian hour. See Fig. 6.

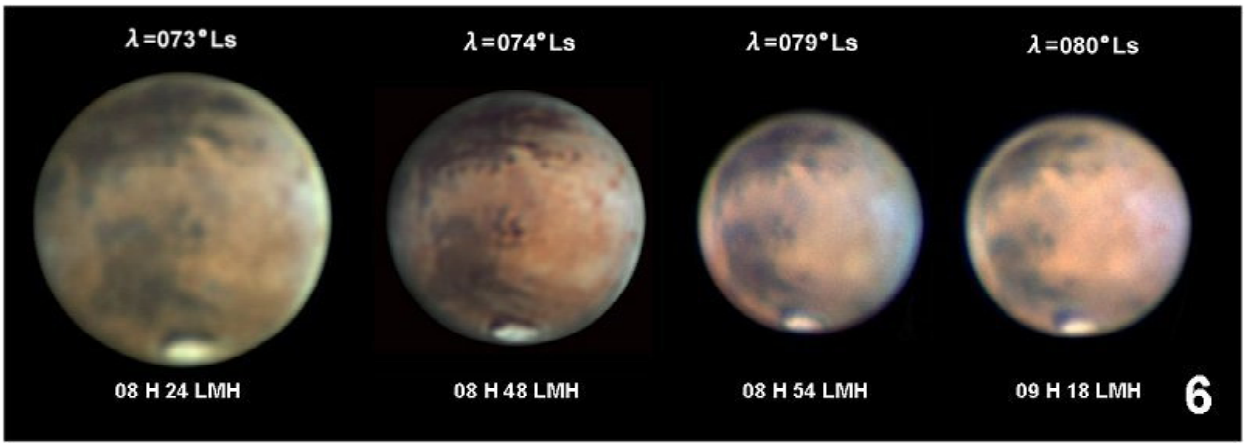


Fig. 6: Early detections of the Tharsis cloud in 2012. The images are interesting to compare with those presented in Fig. 4 at similar LMH; here the cloud is still faint. The evolution looks similar to that of the 2010 (Fig. 5). From left to right images *PGc*, *EMr*, *Ak*.

The cloud may be forming as early as λ=070°Ls, but should wait for around λ=080°Ls~085°Ls to reach its bright state. Before λ=070°Ls, the water vapour is still confined at higher latitudes (remember the first maximum of the Alba cloud, 30° of latitude higher (40°N) happens around λ=060°Ls).

[1] Read "*Shadowy Summits of Tharsis Montes and Olympus Mons Poking out from the Morning Mist*" in CMO #374, by M. Minami (9th Note of the 2009-2010 apparition).

[2] *Diurnal variation of Martian water-ice clouds in Tharsis region of the low latitude cloud belt: observations in 1995-1999 apparitions.* Akabane T., Nakakushi T., Iwasaki K., Larson S. M., *A&A*, 384, 678-688 (2002). Available at http://dx.doi.org/10.1051/0004-6361:20020030

[3] *The aphelion cloud belt during the 2012 apparition of Mars,* ISMO 11-12 Mars Note (3), Christophe Pellier, CMO #401. □

Letters to the Editor

●·····***Subject: FW: ESA: Nereidium Montes Helps Unlock Mars's Glacial Past***
Received; 4 November 2012 at 03:50 JST

--- Forwarded Message

From: "AAS Press Officer Dr. Rick Fienberg"
Date: Thu, 1 Nov 2012 09:24:48 -0400

THE FOLLOWING ITEM WAS ISSUED BY THE EUROPEAN SPACE AGENCY IN NOORDWIJK, THE NETHERLANDS, AND IS FORWARDED FOR YOUR INFORMATION. (FORWARDING DOES NOT IMPLY ENDORSEMENT BY THE AMERICAN ASTRONOMICAL SOCIETY).

1 November 2012

Text & Images:

http://www.esa.int/esaSC/SEMO3S52Q8H_index_0.html

NEREIDUM MONTES HELPS UNLOCK MARS' GLACIAL PAST

On 6 June, the high-resolution stereo camera on ESA's Mars Express revisited the Argyre basin as featured in our October release, but this time aiming at Nereidum Montes, some 380 km northeast of Hooke crater.

The stunning rugged terrain of Nereidum Montes marks the far northern extent of Argyre, one of the largest impact basins on Mars.

Nereidum Montes stretches almost 1150 km and was named by the noted Greek astronomer Eugène Michel Antoniadi (1870-1944).

Based on his extensive observations of Mars, Antoniadi famously concluded that the 'canals' on Mars reported by Percival Lowell were, in fact, just an optical illusion.

The images captured by Mars Express show a portion of the region, displaying multiple fluvial, glacial and wind-driven features.

Extensive dendritic drainage patterns, seen towards the north (lower right side) of the first and topographic images, were formed when liquid water drained into deeper regions within the area.

On the Earth, tree-like channels of this kind are usually formed by surface runoff after significant rainfall, or when snow or ice melts. Similar processes are thought to have occurred on Mars in the distant past, when scientists now know there to have been water on the surface of the Red Planet.

Several of the craters within the region, particularly in eastern parts (lower section) of the first image, show concentric crater fill, a distinctive Martian process marked by rings of surface fluctuations within a crater rim.

The ratios between the diameter and depth of the filled craters suggest that there may still be water ice, possibly in the form of ancient glaciers, present below the dry surface debris cover.

Scientists have estimated that the water-ice depth in these craters varies from several tens up to hundreds of meters.

The largest crater on the south western side (top-left half) of the first and topographic images appears to have spilled out a glacier-like formation towards lower-lying parts of the region (shown as blue in the topographic image).

A smooth area to the east of (below) the glacial feature appears to be the youngest within the image, evidenced by an almost complete lack of cratering.

Another indication of subsurface water is seen in the fluidized ejecta blanket surrounding the crater at the northern edge (right-hand side) of the first and topographic images. These ejecta structures can develop when a comet or asteroid hits a surface saturated with water or water ice.

Finally, throughout the images and often near the wind-sheltered sides of mounds and canyons, extensive rippling sand dune fields are seen to have formed.

In-depth studies of regions such as Nereidum Montes play an essential role in unlocking the geological past of our terrestrial neighbor, as well as helping to find exciting regions for future robotic and human explorers to visit.

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○·····***Subject: FW: ESA: Charitum Montes - A Cratered Winter Wonderland***
Received; 9 December 2012 at 00:04 JST

------ Forwarded Message

From: "AAS Press Officer Dr. Rick Fienberg" <rick.fienberg@aas.org>
Date: Thu, 6 Dec 2012 09:08:29 -0500
To: "AAS Press Officer Dr. Rick Fienberg"

THE FOLLOWING ITEM WAS ISSUED BY THE EUROPEAN SPACE AGENCY IN NOORDWIJK, THE NETHERLANDS, AND IS FORWARDED FOR YOUR INFORMATION. (FORWARDING DOES NOT IMPLY ENDORSEMENT BY THE AMERICAN ASTRONOMICAL SOCIETY).

6 December 2012

Images, captions and credits are available at:

http://www.esa.int/esaSC/SEMH7W2ABAH_index_0.html

CHARITUM MONTES: A CRATERED WINTER WONDERLAND

The high-resolution stereo camera on ESA's Mars Express imaged the Charitum Montes region of the Red Planet on 18 June, near to Gale crater and the Argyre basin featured in our October and November image releases.

The brighter features, giving the image an ethereal winter-like feel in the color images, are sur-

faces covered with seasonal carbon dioxide frost.

Charitum Montes are a large group of rugged mountains extending over almost 1000 km and bounding the southernmost rim of the Argyre impact basin. They can be seen from the Earth through larger telescopes and were named by Eugène Michel Antoniadi (1870-1944) in his 1929 work "*La Planète Mars*."

The images in this release all show the region's old and highly-sculpted terrain, pockmarked with many large craters, all of which have been substantially filled in. The whole region is dusted with brighter carbon dioxide frost.

Numerous smaller 'pedestal craters' can also be seen in the 3D and 2D images. These are impact craters where the ejecta have formed a higher relief above the surroundings. One striking example is visible on the smooth plain to the lower right in the annotated image (Box A).

The ejecta surrounding pedestal craters form erosion-resistant layers, meaning that the immediate vicinity around the crater erodes more slowly than the surrounding terrain. The resistant ejecta layer is largely untouched, forming the pedestal.

Another well-preserved example of a pedestal feature surrounding an impact crater can be seen within the large, old and heavily-degraded crater on the lower-left side of the annotated image (Box B).

In the center of the 2D images and dominating the perspective images is a crater some 50 km wide filled with thick sedimentary deposits.

These deposits appear to have been introduced through one of several breaches in the northern crater rim (Box C in the annotated image).

Dendritic channels appear to emanate from a completely filled-in crater in this region (Box D), at the periphery of the large crater's northern edge. Within the large crater, near to where the breach (C) in the crater wall occurred, though unconnected to this event, we can also see a small dune field (Box E).

A region of significant interest to scientists lies within the large crater towards the top left of the first image (Box F). This crater shows a diverse range of filling material, with layers of varying color and texture.

The uppermost layer appears to be bright and smooth, taking on the appearance of a relatively thin blanket with some impact craters.

This layer interfaces with the underlying darker layer via some very sharply defined edges, possibly as a result of erosion.

The underlying darker material has a much rougher and mottled appearance, and planetary geologists are still studying possible causes. To the left of the crater interior, another layer of sediments clearly sets itself apart from the underlying strata, partly forming flat-topped structures (Box G).

The complexity and diversity of some areas in this winter wonderland would doubtless give Father Christmas a hard time in finding somewhere safe to land, but images like these are giving planetary geologists yet another fascinating region of the Red Planet to study.

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○·····***Subject: RE: article for next CMO/ISMO***
Received; 4 December 2012 at 23:31 JST

Dear Masatsugu, I have fond memories of Kyoto from my visit in 2004.

I spent yesterday doing exercise stress tests of my heart, and the results seemed favorable. I am now on Diltiazem, which seems to be successful; my heart rate is now back to normal, after over a year in which I was running Marathons by merely walking slowly. Best

○·····***Subject: patrick moore***
Received; 14 December 2012 at 01:55 JST

Dear Masatsugu, I assume that you will have heard by now of Patrick Moore's death. He passed away last Saturday. Everyone in the English-speaking world is trying to come to terms with his

legacy. For sixty years he was a dominant figure in amateur astronomy, as you will know.

Bill SHEEHAN (Willmar, MN, the USA)

●·····*Subject: e-mail*
Received; 26 November 2012 at 03:34 JST

Dear Masatsugu, ・・・I have an idea of a following of notes about the Tharsis clouds. The first one would be about morning fogs. I will try to send it to you by 15th of december is that ok ?

Best wishes,

Christophe PELLIER (Nantes, FRANCE)

●·····*Subject: Re: CMO #404 uploaded*
Received; 27 November 2012 at 09:00 JST

Dear Mr Murakami/Mr Minami

You may be interested a recent version of my 2012 Mars apparition map which I have labelled with the help of Richard McKim of the BAA. This is attached.

Also here is a link to more information about it;

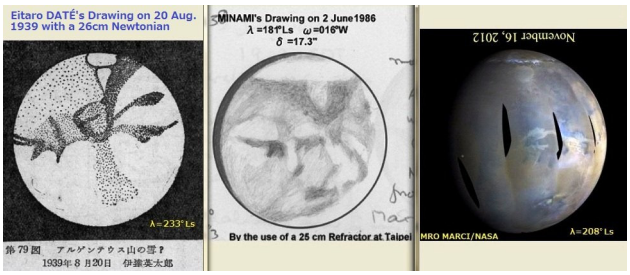
http://www.skyinspector.co.uk/Mars-Albedo-Maps%282376972%29.htm

Many thanks,

Martin LEWIS (St. Albans, Hertfordshire, the UK)

●·····*Subject: Mons Argenteus?*
Received; 28 November 2012 at 20:37 JST

Dear Dr. Minami, It's now the season of the possible "Mons Argenteus" discussed in 2001 Mars CMO Note #12 (CMO#266, 25 Nov. 2002). Attached here is a montage consists of the two drawings from the note, and an image in the *MRO MARCI Weekly Weather Report* released on 21 Nov. 2012. This MRO image on 16 Nov. 2012 shows Argyre Planitia just north off almost touching the SPC border. On this



image, probably frosty Argyre and the northern adjoining lower flatter area in Nereidum Montes collectively looks as a bright inverted triangular patch. Its shape and extent seem to be in very good accord with the "Mons Argenteus" in each of the two previous drawings taken in Japan and Taiwan respectively. Best Regards,

Reiichi KONNAÏ (Fukushima, JAPAN)

●·····*Subject: Festive greetings from Richard McKim & family*
Received; 15 December 2012 at 05:49 JST

Dear friend: I send you Seasonal greetings from the tiny village of Upper Benefield, in Northamptonshire, UK, where we have recently had sharp frosts, rain, fog and occasional observations of the planets!

As an antidote here is a picture from the summer.

With best regards,

Richard McKIM (Peterborough, the UK)

☆ ☆ ☆

TEN YEARS AGO (212)

---- *CMO #267 (25 December 2002) pp 3483~3510*----

http://www.hida.kyoto-u.ac.jp/~cmo/cmohk/cmo267/index.htm

The second "CMO 2003 Great Mars Report" dealt with the report of the Mars observations in the latter half of November 2002 and the first half of December 2002. During the period, the Martian season proceeded from λ=096°Ls to 109°Ls, and the apparent diameter went up from δ=3.9" to 4.3". The central latitude or tilt came back from φ=23°N to18°N. The phase angle became deep from ι=19° to 25° implying that the defect of illumination increased. From this period MORITA (*Mo*) joined, and we thus received from two domestic observers as well as two foreign observers. The planet Mars was at Vir near the planet Venus. FRASSATI (*MFr*) introduced Mars into his scope

after observing Venus. PEACH (*DPc*) observed at the Tenerife island which belongs to the Canary islands. MINAMI (*Mn*) at Fukui observed three times in the early morning, while the weather was poor.

http://www.hida.kyoto-u.ac.jp/~cmo/cmohk/2003repo/02/02.html

The column "2001 Mars CMO Note (13)" was entitled "Visibility of Tharsis-Olympus Montes" where *Mn* picked out the brownish dusky aspect of the tops of the higher Montes when they were covered by the great dust storm in 2001: It was notable that the aspect was evident from the morning to the evening when the planet was covered by the dust storm. Though the summits of the mountains were clearly seen to be brownish dark, the higher atmosphere was still not so transparent; This was shown by the use of the MGS-MOC images.

http://www.hida.kyoto-u.ac.jp/~cmo/cmohk/267Note13/index.html

Next 2001 Mars CMO Note (14) was given with the title "Atmospheric Pressure and the Yellow Storm". Here the problem of the atmospheric pressure is taken up since the rapid occurrence of the dust storm must be related with the low pressure air which may produce an ascending air mass in the early morning area: rapid occurrence of the ascending air mass caused by the temperature difference at the cold front is necessary at the morning area. Here it is stated that the deep bottom of the Hellas basin and the Argyre basin are governed by the high pressure and hence at these places any dust occurrence is not expected. Even if a dust disturbance occurs at the basin bottom, the dust will not reach the upper atmosphere.

http://www.hida.kyoto-u.ac.jp/~cmo/cmohk/267Note14/index.html

Great 2003 Mars Coming (5) is entitled as "New Definition of Mars's Flattening". Several elements in "*The Astronomical Almanac*" have been changed since the 2003 edition: As to Mars, the Mean Equatorial Radius was detailed, and the Geometric Flattering was differently defined for the southern and northern hemispheres. Furthermore the Sidereal Period of Rotation of Mars was a bit altered so that the values of ω and φ were influenced. Because of the last alteration, the values of ω and φ were discontinuous when the 2002 values skipped to the 2003 values. See the following:

http://www.hida.kyoto-u.ac.jp/~cmo/cmohk/coming2003/05.html

As "Great 2003 Mars Coming (6)" Akinori NISHITA showed a table for "Ephemeris for the Observation of the 2003 Mars. II" (from January to March 2003).

http://www.hida.kyoto-u.ac.jp/~cmo/cmohk/coming2003/06.html

As LtE we received from Ed GRAFTON (TX, the USA), John W McANALLY (ALPO Jupiter Section, the USA), Don PARKER (FL, the USA), Damian PEACH (the UK), Mario FRASSATI (Italy), Clay SHERROD (AR, the USA), Mike MATTEI (NY, the USA), Brian COLVILLE (Canada), Bill SHEEHAN (MN, the USA), Tom DOBBINS (OH, the USA), Elisabeth SIEGEL (Denmark), Eric NG (Hong Kong), Carlos E HERNANDEZ (FL, the USA), Gianni QUARRA (Italy), W.-Y. LAI (Taiwan), Sam WHITBY (VA, the USA), David STRAUSS (MI, the USA).

We also received Season's Greetings from Daniel M TROIANI (IL, the USA), Richard

and Micahela McKIM (the UK), David GRAY (the UK), Alan and Joan HEATH (the UK), Randy TATUM (MN, the USA), Jeff and June BEISH (Fl, the USA), Bill SHEEHAN (MN, the USA). DOBBINS sent us a large photograph of Don PARKER when DPk was younger. Domestically we received from Reiko TAKANARI†(Toyama), Isao MIYAZAKI at Bangkok, Toshiaki HIKI (Nagano), Yukio MORITA (Hiroshima), Hiroshi ISHADOH (Okinawa).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As a column, MURAKAMI wrote about the winter solstice et al in "Saijiki-mura 7" where he explained about the Chinese 24 seasons. He also described a tasteful appearance of the area of his home at Yokohama in the winter season.

Finally MINAMI gave an essay under the title "18/365": His opinion was this: In various fields, out of all creative trials, just its 5% may be resulted successful, while the other 95% wasteful. This probability is also applied to the Mars Observations, and hence if we observe Mars for a year, we will be endowed with the fine seeings only for 18 days a year. If we observe every day, this percentage is sure as fate, and hence it implies ironically we should observe without fail by catching every occasion to cope with the 5%.

Toshiaki HIKI's TYA (88) reviewed CMO#125 (10 Dec 1992) and CMO#126 (25 Dec 1992) of 20 years ago. The former dealt with the report of the observations in the latter half of November 1992 and the latter those in the first half of December 1992. The apparent diameter was about δ=12", and the season λ=000°Ls visited 21 Nov 1992, and the observations chased the nph and the dark fringe which was seen through the nph. On 21～23 Nov, it was planned (and pursued) to observe every 40 minutes by the Japanese members. MINAMI wrote essays, one of which was about the rivers and seas without waters.

M MURAKAMI and M MINAMI

★ We sincerely thank Teruaki KUMAMORI (457) for his kind donation to CMO/ISMO. (*CMO Fukui*)

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