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The Transit of Venus with Percival LOWELL's Six-inch Refractor

by

William P SHEEHAN

The six-inch Clark refractor was acquired by Percival Lowell by 1892, and accompanied him to Tokyo for his last trip to

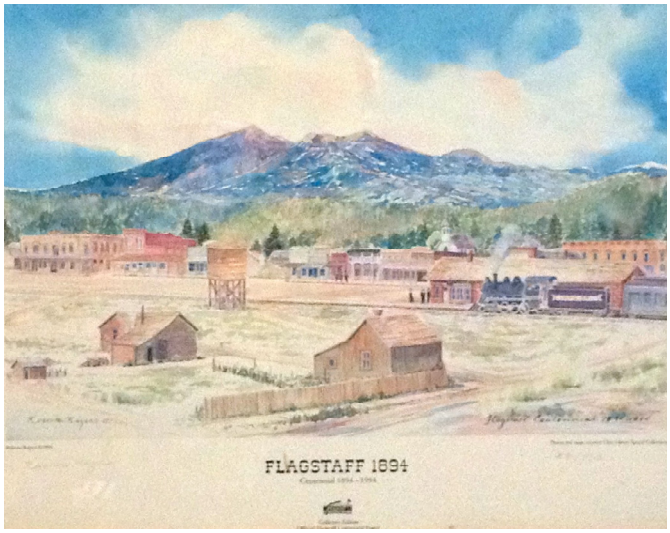
Japan. His brother Abbott mentions only that he used it to observe Saturn. It doesn't appear that as of this time Lowell had yet decided to throw his cap over the astronomical fence, so to speak-as late as October 1893, as he was preparing to leave Tokyo, he was writing to the wealthy artist Ralph Curtis of making a jaunt to Seville in the spring of 1894, so perhaps he did not pay much attention to Mars in the far south of the Tokyo skies.

Percival's passionate interest in Mars began with his receiving Camille Flammarion's 1892 magnum opus *La Planète Mars.* This volume was placed in his hands by his aunt (James Russell Lowell's sister) at Christmas 1893; the original book is at Lowell Observatory, and Lowell inscribes it with the word "Hurry." He certainly was in a hurry since in October of 1894 Mars would come to the last favorable opposition in many years. In January he met with W. H. Pickering, returned from observing Mars in Peru in 1892, at Harvard College Observatory, and togeth-

er they began laying plans for the temporary expedition to observe Mars. These plans would lead to the founding of Lowell Observatory.

The Clark refractor went out in March with Pickering's erewhile assistant A. E. Douglass, who was charged with scouting observing sites. Douglass arrived in Tombstone on March 9, then went to Tucson, Tempe, and Phoenix in southern Arizona, before veering north to Prescott and Ash Fork and finally Flagstaff.

(The train station where he arrived still stands, as does the hotel across the street where Douglass stayed on first arriving in Flagstaff. See also LtE.)



Lowell was impatient, and time was running short. Douglass found the results good in the "opening in the woods" (site 11) on the mesa west of town, but only marginally better than those he had obtained elsewhere; he wanted to do more tests, but Lowell's growing impatience led to one of the snap decisions for which he was famous, and so on April 16 Lowell decided that Flagstaff it would be. (If Douglass had started north and then moved south to Tucson, Lowell's gathering impatience might well have settled on Tucson rather than Flagstaff; the history of astronomy would have been different.)

Of course, Douglass's tests were one-offs; they did not meet the criterion of statistical validity. They only captured seeing on a few days and did not show what seeing was like at other times of the year. If Douglass had been in Flagstaff later in the spring he would have encountered gale-like winds, while July and August are typically the monsoon season. The winters are often cold with heavy snow. For all that, one can't wish that Lowell had placed the observatory anywhere else. Flagstaff is a geological and botanical wonderland; its vistas of volcanic cones and painted deserts would hold sway over Lowell's imagination, as he conjured up a dying desert-world in the swatches of salmon-pink and blue-green of the far-away disk. And long afterward, the Apollo astronauts would receive their own initiation into possible prospects of the world in the Moon when they trained here in the 1960s. To spend time in Flagstaff is to spend time in a place that is in these several senses portal to other worlds.

What happened to the six-inch Lowell refractor? For a long time it rode piggy-back on the 12-inch refractor (presumably the same that Lowell had borrowed, through Pickering, from Harvard) that bestrode the 24-inch Clark, and served in the capacity of a guide scope. Thus it was when I first observed with the grand instrument in 1982.

Perhaps 10 years ago, it was removed, and set it up in the Steele Visitor Center. The original mount, badly neglected, was discovered in the jumble of odds and ends in the attic of the Slipher building, and refurbished,

though it is still a bit shaky. In time for this late May's annular solar eclipse, Kevin Schindler, the Lowell Observatory's educational outreach director, used it to observe the eclipse, and with this precedent set for resuming the telescope's active observational life, it was set up for the transit of Venus in front of "Baronial Mansion II," Sole Trustee Bill Putnam's residence on Mars Hill.

Though I was quite preoccupied with observing the aureole with a coronagraph shipped to Mars Hill from the Cote d'Azur Observatory in Nice, the old Lowell refractor, with its beautiful gleaming brass tube and solid oak stand, was the loveliest and most evocative instrument used to observe the transit, and attracted a steady flow of the curious public. I had a few looks myself at the black disk, which appeared to be encircled with a slender ring of light as it traversed the disk of the Sun, and reflected on the fact that this was the first time that telescope had been used to observe Venus silhouetted against the Sun in its hundred twenty years of existence. The 1874 and 1882 transits took place before Percival Lowell acquired the telescope, and the 2004 transit was not visible, in whole or in part, from Flagstaff.

Percival's old refractor has had to wait a long time to see a transit of Venus, and will not have another chance for 105 ½ years. □

CMO/ISMO 2011/12 Mars Report #14

2011/2012 Mars Observations in August 2012

♂・・・・・This treats the Mars observations produced in August: The report is the 14th this season. The planet Mars was lower in the south-western sky, located in Virgo and passed Spica and Saturn. The Martian season λ proceeded from 148°Ls to 164°Ls, and the apparent diameter was small from 5.8" to 5.2". The tilt φ was 25°N to 20°N enough to see the npc area. The npc was checked to exist as described below. The phase angle ι decreased from 37° to 34° to be more roundish.

KONNAÏ, Reiichi *(Kn)* Ishikawa, Fukushima, JAPAN
4 Drawings (1, 3, 5 August 2012) 750×,600×30cm SCT

MELILLO, Frank J (*FMl*) Holtsville, NY, the USA
2 *Colour* Images (16, 23 August 2012) 25cm SCT with a ToUcam pro II

MORITA, Yukio (*Mo*) Hatsuka-ichi, Hiroshima, JAPAN
1 Set of *RGB* + 1 *LRGB Colour* + 1 *L* Images (16 August 2012) 25cm speculum with a Flea3

WILLEMS, Freddy *(FWl)* Waipahu, Hawaii, the USA
1 Set of *RGB* + 3 *Colour* + *1 IR* Images (6 August 2012) 36cm SCT with a DMK21AU04.AS

♂・・・・・On 1 August (λ=148°Ls), *Kn* observed at ω=065°W and 075°W under a preferable seeing and checked possible large markings, and captured the white small npc. On the morning side he also checked a lighter Tharsis area. However the next observation of the night the seeing turned too poor to catch any marking. On 3 August (λ=149°Ls) *Kn* also observed at ω=045°W, and caught the trace of M Acidalium

while the cloud was passing: The brightness of the npc area as well as the opposite area of Argyre were evident. The NE limb on the afternoon side was also light. On 5 August (λ=150°Ls, ι=36.9°) *Kn* observed at ω=030°W where M Acidalium was near the centre, while S Meridiani was obscure. The seeing was not so bad, and *Kn* saw the whitish bright npc. At the southern limb Argyre appears light, and the afternoon limb was also whitish light. On 6 August (λ=151°Ls) *FWl* at Hawaii took the picture at ω=320°W: Syrtis Mj and S Meridiani are evident while the northern hemisphere looks indefinite because of ghosts. At the afternoon limb, Hellas appears light but the brightness of the npc area is obscure.

No report reached until the mid-August. On 16 August (λ=156°Ls) *Mo* at Hiroshima took images at ω=298°W where Syrtis Mj and Utopia are seen as shadowy markings. Hellas is light. The area of the npc is obscure.

In the US, *FMl* took the pictures at (ω=122°W, 123°W). At the afternoon limb there is a whitish area, maybe Chryse. On 23 August (λ=160°Ls) at ω=048°W *FMl* produced a small image where a whitish area was captured on the afternoon limb. δ=5.3": This might be the last observation of this season.

Masami MURAKAMI & Masatsugu MINAMI

ISMO 11/12 Mars Note (4)

Appearance of Olympus Mons with Aureole

Masatsugu MINAMI

1) It is well known that Tharsis Montes (trio) and Olympus Mons frequently look point-wisely shadowy poking out from the morning mist. This was also observed as usual in this 2011/2012 apparition, while what we want to recommend in this essay is not the observations of such points. What we are more interested is the time that the area of Olympus Mons with aureole appears to be definitely detached from the following mist.

Note first the image by Efrain MORALES (*EMr*) on 22 Feb 2012 (λ=074°Ls) at ω=063°W:

http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120222/EMr22Feb12.jpg

is an usual image on one hand with the shadowy dots of calderas among the morning mist. On the other hand Stefan BUDA (*SBd*)'s image on 23 Feb 2012 (λ=074°Ls) at ω=183°W:

http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120223/SBd23Feb12.jpg

shows the caldera of Olympus Mons inside the orographic cloud: These two examples prove a large difference of the aspect of the central part of Olympus Mons. We are sure there must be some intermediate aspects between the two terminal cases: That is, what we want to see in this column is how varies the situation between the two cases and to trace the characteristics of Olympus Mons.

2) In this respect, Don PARKER (*DPk*)'s image on 20 Feb 2012 (λ=073°Ls) at ω=094°W:

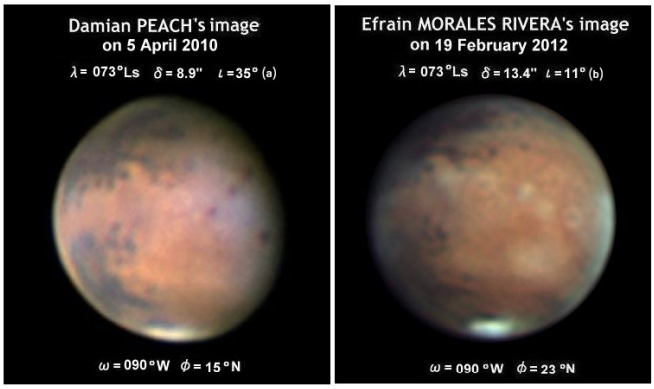
http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120220/DPk20Feb12.jpg

and *EMr*'s on 21 Feb 2012 (λ=073°Ls) at ω=088°W

http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120221/EMr21Feb12.jpg

are very suggestive: We should be attentive to the point we can see the shadowy caldera inside the aureole of Olympus Mons. The caldera and the aureoles are very common on the images which we shall pick out in the following, but we first point out the phase angle plays an important role to see the appearance of the area of Olympus Mons:

3) Here we shall show two images taken at the same season at λ=073°Ls with the same angle ω (ω=090°W), while as you see the image aspects look quite different depending on the difference of the



phase angles.

The first one is made by Damian PEACH (*DPc*) in 2010, and the other by *EMr* is an example made in 2012. Since the season is the same we are apt to consider that the markings should appear to us to be similar since the season and the angle are the same. This is not the case if the phase angle is different. In the case of *DPc* in 2010, the phase angle was ι=35°(*a*) [here *a* implies that the phase defect is the one after the opposition] while *EMr*'s case in 2010 is ι=11°(*b*) where *b* implies that it was taken before the opposition. Thus the difference of the both cases is 45° (3 hours). Montes are traced at the same ω(=090°W), while in the former case Olympus Mons is just separated from the dawn line by about 15° (just about one hour), on the other hand in the latter case the dawn line is away to the rear side by 11° so that Olympus Mons is separated from the dawn line by 55° (about 4 hours). In the former Olympus Mons is located near the morning terminator, while in the latter Olympus Mons is quite separated from the dawn line and during the time Olympus Mons has been separated from the morning mist but a remnant of aureole. This implies some particular object on Mars look differently if the phase angle is different. We should thus always pay attention to the phase angle.

4) Similar aspect of Olympus Mons was taken at that time as follows: (sorry we are never exhaustive).

DPk on 15 Feb (λ=071°Ls) at ω=130°W, ω=140°W
EMr on 16 Feb (λ=071°Ls) at ω=131°W,
PGc on 16 Feb (λ=071°Ls) at ω=128°W,

and then comes *EMr* on 19 Feb (λ=073°Ls) at ω=090°W as was cited. (Here *PGc* is the code of Peter GORCZYNSKI).

Next similar images were taken in Japan by

Km on 27 Feb (λ=076°Ls) at ω=137°W,
Km on 29 Feb (λ=077°Ls) at ω=126°W,
Mo on 29 Feb (λ=077°Ls) at ω=129°W, where *Km* is the code of Teruaki KUMAMORI and *Mo* the one of Yukio MORITA.

On 3 March the planet was at the opposition. If we further continue we have the images:

DTy on 12 Mar (λ=082°Ls) at ω=127°W
PEd on 12 Mar (λ=082°Ls) at ω=128°W
MDc on 12 Mar (λ=082°Ls) at ω=154°W (see IR)
JCt on 13 Mar (λ=083°Ls) at ω=139°W
JPp on 13 Mar (λ=083°Ls) at ω=145°W
DPc on 14/15 Mar (λ=083°Ls) at ω=116°W~152°W
PEd on 14 Mar (λ=083°Ls) at ω=124°W, 127°W
MLw on 14 Mar (λ=083°Ls) at ω=126°W
DTy on 14 Mar (λ=083°Ls) at ω=130°W
JPp on 14 Mar (λ=083°Ls) at ω=142°W (see R)
CPl on 15 Mar (λ=084°Ls) at ω=117°W
DPk on 17 Mar (λ=084°Ls) at ω=175°W
EMr on 18 Mar (λ=085°Ls) at ω=156°W,

where the additional codes imply the observer's names as follows: *DTy*: David TYLER, *PEd*: Peter EDWARDS, *MDc*: Marc DELCROIX, *JCt*: Jaume CASTELLÀ, *JPp*: Jean-Jacques POUPEAU, *MLw* : Martin LEWIS, *CPl*: Christophe PELLIER.

Around the days, the morning aspect of Olympus Mons began to be seen:

DTy on 18 Mar (λ=085°Ls) at ω=080°W
DPc on 18 Mar (λ=085°Ls) at ω=086°W
ISp on 18 Mar (λ=085°Ls) at ω=092°W
MLw on 18 Mar (λ=085°Ls) at ω=097°W
JPp on 19 Mar (λ=085°Ls) at ω=063°W
DPc on 19 Mar (λ=085°Ls) at ω=069°W
MLw on 19 Mar (λ=085°Ls) at ω=074°W
JWr on 19 Mar (λ=085°Ls) at ω=077°W
CPl on 19/20 Mar (λ=086°Ls) at ω=081°W~111°W
MLw on 20 Mar (λ=086°Ls) at ω=070°W
SKd on 20 Mar (λ=086°Ls) at ω=083°W,

where *ISp*: Ian SHARP, *JWr*: Johan WARELL, *SKd*: Simon KIDD.

Especially at the evening side it appears as:

EMr on 19 Mar (λ=085°Ls) at ω=151°W
DPk on 21 Mar (λ=086°Ls) at ω=146°W
EMr on 22 Mar (λ=086°Ls) at ω=148°W
DPk on 24 Mar (λ=087°Ls) at ω=112°W, 122°W
EMr on 24 Mar (λ=087°Ls) at ω=115°W

The following two observations by *WFl* and *EGr* on the same day critically captured Olympus Mons with an aureole near the centre:

WFl on 25 Mar (λ=088°Ls) at ω=133°W, ι=17°

EGf on 25 Mar (λ=088°Ls) at ω=138°W, ι=17°,

where *WFl* and *EGf* imply Bill FLANAGAN and Ed GRAFTON in TX respectively. These may suggest that Olympus Mons is detached from the morning mist while there seems a difference due to a 20 minute separation. Furthermore,

FWl on 2 Apr (λ=091°Ls) at ω=135°W,143°W

show it is independent, and the mist becomes rather the orographic cloud though on the images still inside the morning mist (need the B image) on the case: Here *FWl* implies Freddy WILLEMS: Also see

FWl on 4 Apr (λ=092°Ls) at ω=100°W,ι= 23°

On 7 Apr, *Mo* took but will be much better if he waited and see the coming of Olympus Mons:

Mo on 7 Apr (λ=094°Ls) at ω=109°W

The following is usual:

DPc on 21 Apr (λ=100°Ls) at ω=121°W

but it is quite good since the aureole of Olympus Mons: It is also seen vaguely on the image by

Mo on 12 May (λ=109°Ls) at ω=139°W, δ=9.1"

On *DPc*'s image:

DPc on 24 May (λ=115°Ls) at ω=162°W, ι=38°

it is difficult to judge whether it is the aureole or the orographic cloud, but since it does not reach the noon line it must be the aureole. Maybe it must be more evident on the morning side. In fact on

DPc on 27 May (λ=116°Ls) at ω=131°W

the aureole of Olympus Mons is clearly seen while on the image by

DPc on 28 May (λ=117°Ls) at ω=121°W,129°W

Montes appear very classical. ι=39°

To conclude, the poking-out is always seen though it is very dependent on the phase angle ι, and it is a great charm to capture Olympus Mons at the remote place from the dawn line. In this sense the shadowy poking out of Montes is less interesting: We prefer *DPc*'s image on 27 May to the one on 28 May: The faint Olympus Mons on 27 May is more charming than his on 28 May. □

Letters to the Editor

●·····***Subject: Mars Animation and Albedo Map***
Received; 2 August 2012 at 06:46 JST

Dear Mr Minami and Mr Murakami, I am just checking that you received a copy of my Mars albedo map which can be seen at

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

Also please see my Mars 2012 rotational animation which you can view at;

http://www.skyinspector.co.uk/Mars-Rotation-Animations%282369874%29.htm

I would be very happy if you put the map on the CMO website and a link to the rotational animation.

Best regards,

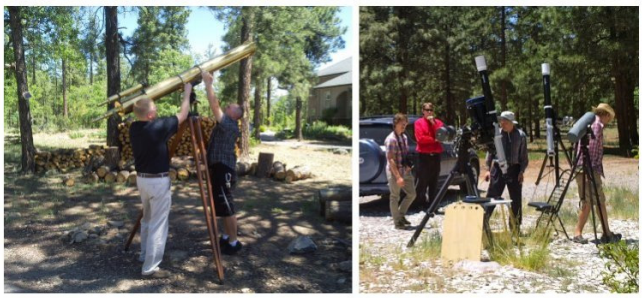
Martin LEWIS (St. Albans, Hertfordshire, the UK)

●·····***Subject: From bill sheehan***
Received; 2 August 2012 at 22:38 JST

Dear Masatsugu, I am hoping to see if I can find some Mars-related article for you to run — meanwhile, I got called just today by a reporter who wants to interview me on the eve of the Curiosity landing next week. I just got back from the Twin Cities where I presented a PowerPoint on neurodevelopmental disorders—it's great to have that out of the way.

Meanwhile, I thought you might like to see these

----one of two Lowell staff setting up Percival's 6-inch refractor (the one he brought with him to Japan) in the front yard of Baronial Mansion-II, where the Sole Trustee Bill Putnam lives, and the other of a group of us, including myself with the funny hat, posing with the coronagraphs used to observe the aureole. Paolo Tanga, who led the expedition (from the Cote d'Azur Observatory) isn't shown since he took the picture. Kind regards,



○····***Subject: FW: From bill sheehan: interview***
Received; 3 August 2012 at 23:40 JST

Dear Masatsugu, Bob,

Here's the story the reporter wrote based on her interview with me this AM:

http://www.livescience.com/22119-mars-cultural-fascination.html

This is only the meagerest sketch of what we discussed in 20 minutes. Should I write up a sketch for CMO/ISMO on the whole conversation? It included a number of interesting developments that this sketch doesn't touch on. Perhaps this would serve for the CMO/ISMO next issue?

Exciting the landing of Curiosity—its firsts pictures will be beamed back on August 6, the anniversary of the Hiroshima bombing. (Masatsugu: the tour we made, with Asada, of the Nagasaki bomb museum will never be forgotten, and I also reel still at the thought that the Peace Park, located where Fat Man exploded in 1945, is on St. Paul Avenue —just yesterday I was in St. Paul (a city in Minnesota).

○····***Subject: FW: UCLA Scientist Discovers Plate Tectonics on Mars***
Received; 12 August 2012 at 15:58 JST

From: "AAS Press Officer Dr. Rick Fienberg" <rick.fienberg@aas.org>
Date: Fri, 10 Aug 2012 18:11:22 -0400
To: "AAS Press Officer Dr. Rick Fienberg" <rick.fienberg@aas.org>
Subject: UCLA: Scientist Discovers Plate Tectonics on Mars

THE FOLLOWING ITEM WAS ISSUED BY THE UNIVERSITY OF CALIFORNIA, LOS ANGELES, AND IS FORWARDED FOR YOUR INFORMATION. FORWARDING DOES NOT IMPLY ENDORSEMENT BY THE AMERICAN ASTRONOMICAL SOCIETY.
9 August 2012
** Contact information appears below. **
Text, images, and video:
http://newsroom.ucla.edu/portal/ucla/ucla-scientist-discovers-plate-237303.aspx

UCLA SCIENTIST DISCOVERS PLATE TECTONICS ON MARS:

For years, many scientists had thought that plate tectonics existed nowhere in our solar system but on Earth. Now, a UCLA scientist has discovered that the geological phenomenon, which involves the movement of huge crustal plates beneath a planet's surface, also exists on Mars.

"Mars is at a primitive stage of plate tectonics. It gives us a glimpse of how the early Earth may have looked and may help us understand how plate tectonics began on the Earth," said An Yin, a UCLA professor of Earth and space sciences and the sole author of the new research.

Yin made the discovery during his analysis of satellite images from THEMIS (Thermal Emission Imaging System), an instrument on board the Mars Odyssey spacecraft, and from the HIRISE (High Resolution Imaging Science Experiment) camera on NASA's Mars Reconnaissance Orbiter. He analyzed about 100 satellite images -- approximately a dozen were revealing of plate tectonics.

Yin has conducted geologic research in the Himalayas and Tibet, where two of the Earth's seven major plates divide.

"When I studied the satellite images from Mars, many of the features looked very much like fault systems I have seen in the Himalayas and Tibet, and in California as well, including the geomorphology," said Yin, a planetary geologist.

For example, he saw a very smooth, flat side of a canyon wall, which can be generated only by a fault, and a steep cliff, comparable to cliffs in California's Death Valley, which also are generated by a fault. Mars has a linear volcanic zone, which Yin said is a typical product of plate tectonics.

"You don't see these features anywhere else on other planets in our solar system, other than Earth and Mars," said Yin, whose research is featured as the cover story in the August issue of the journal Lithosphere.

The surface of Mars contains the longest and deepest system of canyons in our solar system, known as Valles

Marineris (Latin for Mariner Valleys and named for the Mariner 9 Mars orbiter of 1971-72, which discovered it). It is nearly 2,500 miles long -- about nine times longer than the Earth's Grand Canyon. Scientists have wondered for four decades how it formed. Was it a big crack in Mars' shell that opened up?

"In the beginning, I did not expect plate tectonics, but the more I studied it, the more I realized Mars is so different from what other scientists anticipated," Yin said. "I saw that the idea that it is just a big crack that opened up is incorrect. It is really a plate boundary, with horizontal motion. That is kind of shocking, but the evidence is quite clear.

"The shell is broken and is moving horizontally over a long distance. It is very similar to the Earth's Dead Sea fault system, which has also opened up and is moving horizontally."

The two plates divided by Mars' Valles Marineris have moved approximately 93 miles horizontally relative to each other, Yin said. California's San Andreas Fault, which is over the intersection of two plates, has moved about twice as much -- but the Earth is about twice the size of Mars, so Yin said they are comparable.

Yin, whose research is partly funded by the National Science Foundation, calls the two plates on Mars the Valles Marineris North and the Valles Marineris South.

"Earth has a very broken 'egg shell,' so its surface has many plates; Mars' is slightly broken and may be on the way to becoming very broken, except its pace is very slow due to its small size and, thus, less thermal energy to drive it," Yin said. "This may be the reason Mars has fewer plates than on Earth."

Mars has landslides, and Yin said a fault is shifting the landslides, moving them from their source.

Does Yin think there are Mars-quakes?

"I think so," he said. "I think the fault is probably still active, but not every day. It wakes up every once in a while, over a very long duration -- perhaps every million years or more."

Yin is very confident in his findings, but mysteries remain, he said, including how far beneath the surface the plates are located. "I don't quite understand why the plates are moving with such a large magnitude or what the rate of movement is; maybe Mars has a different form of plate tectonics," Yin said. "The rate is much slower than on Earth."

The Earth has a broken shell with seven major plates; pieces of the shell move, and one plate may move over another. Yin is doubtful that Mars has more than two plates.

"We have been able to identify only the two plates," he said. "For the other areas on Mars, I think the chances are very, very small. I don't see any other major crack."

Did the movement of Valles Marineris North and Valles Marineris South create the enormous canyons on Mars? What led to the creation of plate tectonics on the Earth?

Yin, who will continue to study plate tectonics on Mars, will answer those questions in a follow-up paper that he also plans to publish in the journal Lithosphere.

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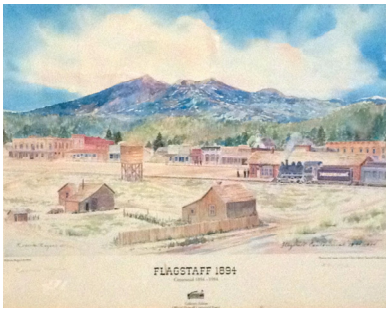
UCLA is California's largest university, with an enrollment of nearly 38,000 undergraduate and graduate students. The UCLA College of Letters and Science and the university's 11 professional schools feature renowned faculty and offer 337 degree programs and majors. UCLA is a national and international leader in the breadth and quality of its academic, research, health care, cultural, continuing education and athletic programs. Six alumni and five faculty have been awarded the Nobel Prize.

○····***Subject: Re***

Received; 28 August 2012 at 22:45 JST



Dear Masatsugu, I thought you might find this of interest -- it's a painting I saw in a Flagstaff restaurant, and shows the town as it looked when Douglass arrived in April (and Lowell at the end of May) 1894; the train station is still there, as is the hotel across the street where Douglass stayed for two nights while awaiting the arrival of his gear.

Bill SHEEHAN (Willmar, MN)

●·····*Subject: August 06, 2012 - poor seeing*
Received; 13 August 2012 at 09:28 JST

Mars last MARS, didn't even try to process it nicely. Conditions were really poor.

http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120806/FWl06Aug12.jpg

Freddy WILLEMS (Waipahu, HI)

●·····*Subject: August 16, 2012*
Received; 18 August 2012 at 15:46 JST

Hi - I have attached my latest image of Mars August 16, 2012 at 23:51 UT to be posted. Thanks,

http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120816/FMl16Aug12.jpg

○····*Subject: Mars: August 23, 2012*
Received; 24 August 2012 at 07:33 JST

Hi - I have attached my latest image of Mars August 23, 2012 at 23:26 UT to be posted. Thanks,

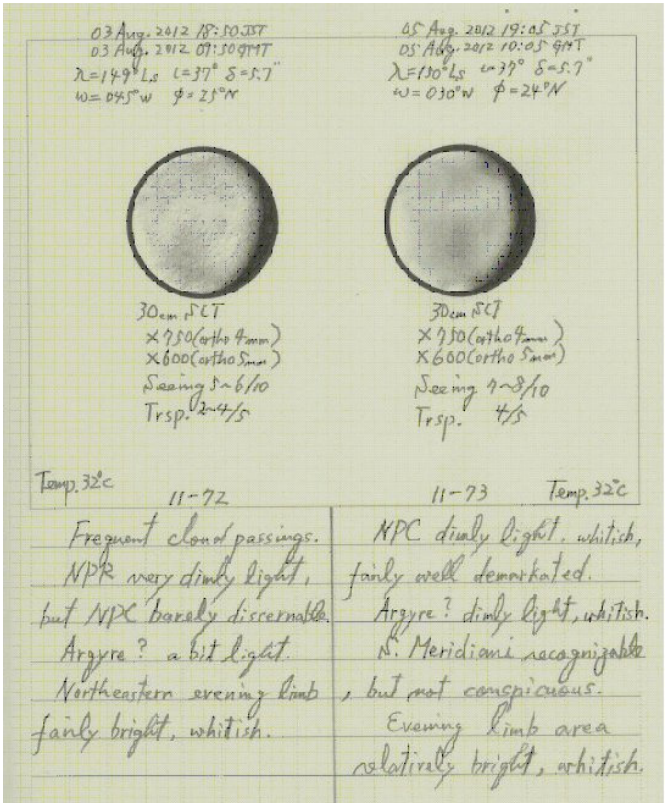
http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120823/FMl23Aug12.jpg

Frank J MELILLO (Holtsville, NY)

●·····*Subject: Drawings of Mar*
Received; 19 August 2012 at 01:08 JST

Dear Dr. Minami, Sorry to be late in submitting my observations. Here I am attaching my latest drawings of Mars. The weather here hasn't been cooperative at all in this August. By the time I finish my work in the evening lately, Mars is just hiding behind the southwestern mountain range, so I have to admit my observation in this apparition is closing soon. Best Regards,

http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120731/Kn31July12.jpg
http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120801/Kn01Aug12.jpg
http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120803/Kn03Aug12.jpg
http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120805/Kn05Aug12.jpg



PS: I have already started translating Christophe's essay for CMO#401 Japanese version.

Reiichi KONNAÏ (Fukushima, JAPAN)

☆ ☆ ☆

TEN YEARS AGO (209)

-----CMO #264 (25 September 2002) pp3423~3442---

http://www.hida.kyoto-u.ac.jp/~cmo/cmomn1/cmo264/index.htm

Now the 2003 apparition was around the corner, we started the series "Great 2003 Mars Coming" and the first article "Mars in 2003" appeared: This was based on the talk by N NISHITA on the occasion of the 10th CMO Mars Observer Meeting held in August 2002 at Ina, Nagano Prefecture (related with Percival LOWELL:): "CMO Ina Meeting Report (1)" was written by *Mn*, see the following:

http://www.hida.kyoto-u.ac.jp/~cmo/cmohk/coming2003/01.html

As 2001 Mars CMO Note (10), "The North Polar Hood during the Dust Clouded Period. III. the Period from 24 June to 2 July" appeared: In 1973, the nph was weak by 20 days after the occurrence of the dust storm, while in 2001, the nph was contrarily very active during the first 20 days period in mid-July in 2001. The aspect of the nph before mid-July was compared by picking out the same ω: Especially two windows at ω=245°W and ω=265°W were compared every day: There was no big change in the nph and rather weaker than the

activity during the latter period from 10 July. The detail is found in http://www.hida.kyoto-u.ac.jp/~cmo/cmohk/Note10/index.htm

"CMO Ina Meeting Report (2)" was originally summerised by Tohru IWASAKI under the title "MINAMI's Talk at the Ina Meeting on the Morning of 3 August 2002." It is interesting but written in Japanese only:

"CMO Ina Meeting Report (3)" was written by *Mk* about "The Shiwojiri Toge and the Inn at Shiwojiri" where P LOWELL visited.

LtE contains those from Damian PEACH (the UK), Tom DOBBINS (the USA), Clay SHERROD (AR, the USA), David GRAHAM (the UK), Giovanni QUARRA (ITALY, in Kyoto), Ed GRAFTON (the USA). Domestically those from Tomio AKUTSU, Akinori NISHITA, Takeshi SATO, Tohru IWASAKI and so on were cited.

"Click CMO<=>CMO Clicks (22)" informed the opening of the LOWELL Page in the CMO WebPage: this was for the coming LOWELL conference at Anamidzu to be held in May 2004: The Preface by William SHEEHAN was first cited here: See also http://www.hida.kyoto-u.ac.jp/~cmo/cmomn3/LP_HP/index.htm

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OBSERVATIONS Published by the OAA Mars Section

♂Great 2003 Mars Coming (1)

CMO Ina Meeting Report (1)

2003年大接近の火星

Mars in 2003

南 政次、村上 昌己、西田 昭徳 M MINAMI, M MURAKAMI & A NISHITA

The following is a summary by M MINAMI of the talks made by M MURAKAMI and A NISHITA on the forthcoming 2003 Mars on the occasion of the 2001 CMO Meeting at Ina.

THE planet Mars was at conjunction with the Sun on 12 August 2002, as was really checked by the SoHO/LASCO (Large Angle and Spectrometric Coronagraph Experiment), and now shines in the morning sky. We will find Mars at the morning *Libra* at the end of 2002.

In 2003, the planet will be closest to the Earth at *Aquarius* on 27 August at 10h GMT up to a distance of 55.76 million km. The maximal angular disk diameter on the day will rise up to 25.11 seconds of arc, the greatest in history. The planet will be at opposition on 28 August at 18h GMT along the ecliptic and on 30 August at 21h GMT along the RA. This large difference by two days must be caused because it moves backward at opposition when the orbit makes a loop

The greatest opposition in the preceding century occurred in 1924, 79 years before counted from 2003, while the least distance between Mars and the Earth was still more remote by 20 thousand km than in 2003, and according to Jeff BEISH the maximal apparent diam-

Mars Diary for 2003

Western quadrature ····· 01 May 2003 21h*
Southern vernal equinox ····· 05 May 2003
Stationary ····· 30 July 2003 22h
Mars closest to the Earth on 27 Aug 2003 at 10h
Ls 249° Le
Central latitude $\beta = 19°S$
Apparent diameter $\delta = 25.1''$
Magnitude -2.9
Least distance 0.3727 au
55.76 million km
Position (RA22h39m, Dec[−15.7°)
Opposition (along the zodiac)* ··· 28 Aug 2003 18h
Ls 258° Le
Opposition (along the RA) ··· 30 Aug 2003 21h
Ls 251° Le
Stationary ····· 29 Sept 2003 14h
Southern summer solstice ··· 30 Sept 2003
Eastern quadrature ····· 27 Dec 2003 19h*

3 4 2 3

TYA#085 was written by Toshiaki HIKI who wrote about CMO#121 (25 September 1992): Twenty years ago the planet Mars was located at the morning Tau. The diameter reached 7 arcsecs. The Martian season λ was 306°Ls to 324°Ls. The image was small but Hellas as well as the haze at the southern limb could be caught. Otherwise as 1990 OAA Mars Section NOTE (8) "Atmospheric Behaviour near the South Polar Region at 295°~360°Ls in 1990" was written. (Mk & Mn)

International Society of the Mars Observers (ISMO)

Advisory Board: Donald PARKER, Christophe PELLIER, William SHEEHAN, and Tadashi ASADA, Reiichi KONNAÏ, Masatsugu MINAMI

Bulletin: Kasei-Tsûshin CMO (http://www.mars.dti.ne.jp/~cmo/ISMO.html)

CMO #402/ ISMO #28 (25 September 2012)

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