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The Craters of Mars

By

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In November 1915, the First World War was raging in Europe. The Allies had started an offensive on the Western Front; the daily ravages of gales and illness were requiring three hundred men to be evacuated every day. Although America had not yet entered the war -- the sinking of the Lusitania was still months away -- it was exerting itself in Central America and the Caribbean, defying British tolls in the Panama canal zone and assuming a virtual protectorate over Haiti.

In Berlin, a pacifist professor of physics, Albert Einstein, completing work on the General Theory of Relativity, used the new theory of gravitation to produce a small correction to that of Newton explaining a hitherto unexplained excess in the precession of the perihelion of the planet Mercury.

As the war waged, the planet of war was still at a great distance from the Earth, working its way toward an unfavorable winter opposition in February 1916 (the worst opposition since 1901). Percival Lowell had just one more year to live. Though November is usually a miserable month for astronomy in the Midwestern United States, the Indian Summer was particularly balmy and protracted that year (according to records from the U. S. Department of Agriculture Weather Bureau), and a young assistant astronomer at Yerkes Observatory in Southern Wisconsin, John Edward Mellish (1886~1970), took advantage of the exceptional observing conditions to make one of the most remarkable observations of Mars ever made.

Mellish had been born on his maternal grandfather's farm three miles south of Cottage Grove, Wisconsin (near Madison). He had received four years of formal schooling, which was all the time he needed to finish the curriculum. At sixteen, he obtained a four dollar spyglass; it was unsatisfactory, but he saved enough money for a two-inch refractor, which was large enough to whet a burgeoning astronomical interest. "With it, I was able to see many new stars," he later recalled. "I tell you, I was happy then."

Five years later, he managed to build a six-inch reflector, and used it to discover a comet (independently discovered by a New Zealand astronomer, John Grigg (1838~1920); it proved to be a periodic comet, and had last been observed in 1742). E. E. Barnard (1857~1923) was then the most famous astronomer at Yerkes Observatory in southern Wisconsin as well as the second most prolific discoverer of comets alive [after only W. R. Brooks (1844~1921) of upstate New York]. As a young man

growing up in poverty, Barnard had become known for "building a house of comets" (or rather building a house with the prize money he received for finding them), and had an obvious affinity to the "boy astronomer of Cottage Grove." He sent a congratulatory note inviting Mellish to visit Yerkes, and Mellish did so in September that year. Meeting Barnard was a great inspiration for Mellish. While still farming he redoubled his efforts in his spare time searching for comets and building telescopes, including 9 ½-inch and 16-inch reflectors; the latter, finished in 1913, was declared by Albert Flint, an astronomer at the Washburn Observatory in nearby Madison, superior for lunar and planetary observations to its own 15 ½-inch Clark refractor.

He was burning the candle at both ends much of the time, and in a letter to Barnard in mid-1913 explained that a nearly two year hiatus in their correspondence was a result of sheer fatigue. "I grew tired and could not be up much after dark and it was nearly impossible for me to get up in the night…. I had to work more than I ought to make both ends meet."

In February 1915, a few days after Mellish discovered his third comet, Yerkes Observatory director Edwin Brant Frost (1866~1935) invited him to come to Williams Bay that spring or summer to work as an unpaid observer and learn astronomical photography from Barnard. Mellish declined. "I am having hard times," he wrote; "glass work is not bringing in much the last eight months, and I am really held here to attend to the place…. I will have things in shape to do something worthwhile if the money does not play out entirely. I cannot get money to build a house for my telescope, so it stands outdoors all the time, which does not make the clock run very well."

Frost persisted, and from a fund endowed by one-time University of Michigan and University of Wisconsin astronomer James Watson, was able to pay for a farmhand to take over his duties for six months as well as for temporary living expenses at Williams Bay. This time Mellish accepted; and added, "Economy in living suits me exactly. I would rather live without eating and buy books with that money if I could." But by the time Mellish arrived that fall, his life was considerably more complicated; he had become acquainted with Jessie Wood, a seventeen year old girl from Glencoe, Illinois, who on a dare from friends had published an advertisement for "a perfect husband" and from 2,000 letters had selected Mellish's. They had more or less run off together and, after a hastily arranged marriage, she was already expecting when they arrived at Yerkes.

Yerkes was in the doldrums into which he had begun to slide after its brilliant and mercurial founder, George Ellery Hale (1868~1938), had left for warmer weather and clearer skies on Mt. Wilson in California, taking with him the "first team" of Yerkes astronomers and leading to what Donald E. Osterbrock (1924~2007) has described as the observatory's "near-death." Frost, who replaced Hale as director, had been trained as a spectroscopist at Dartmouth; but he was congenitally myopic, and soon after Mellish arrived detached his retina while trying to observe with the 40-inch refractor. He later became completely blind. Barnard, though in his prime a demon observer, was suffering from the wasting and debilitating effects of diabetes, and on the advice of his physician had taken a year off his work with the 40-inch which he described as the greatest possible privation but which, according to Frost, he had borne "manfully." Another member of the staff was a young, physically imposing and athletic but personally aloof first-year graduate student from the University of Chicago, Edwin Hubble, three years Mellish's junior, who had taken up the neglected area of nebular studies. Soon after he arrived at Yerkes, Mellish swept up in the near-dawn sky what he and Frost had at first identified as his fourth comet; it turned out to be a previously recorded nebula, NGC 2261, but on studying it more closely Hubble found regular changes in its appearance; it is now known as "Hubble's Variable Nebula." Mellish garners at least a footnote in the history

of astrophysics.

Apart from comet-seeking, Mellish had been interested in the planets; and in November 1915 was regularly studying Mars to his heart's content with the observatory's 12-inch refractor. On the morning of November 13, 1915, he was able to avail himself of the 40-inch itself. It was then and still is the largest refractor in the world. The optics are excellent, though the seeing - especially in November - is often indifferent for planetary viewing. It is a fact that in a quarter century at Yerkes, Barnard never recorded as much planetary detail as he had done in six years with the 36-inch refractor at California's Lick Observatory. (Admittedly, he did not study the planets as carefully, and in later years, at least, his eyesight and his health were failing.)

That November southern Wisconsin enjoyed an unusually balmy "Indian Summer," with weather reports showing temperatures in the first part of the month running several degrees above normal.[1] The sun rose at 6:42 a.m. on November 13 -it was a brisk clear morning, with the temperature hovering near freezing (but well above the dew point) and without a breath of wind - and Mellish followed Mars, a small disk only 7".7 across (the CM was 61° at sunrise) as it stood at an altitude of some sixty degrees in the morning sky. As the indigo field of the eyepiece lightened to robin's egg blue and the planet's color faded from intense fire-opal to more muted rose or brown, the air became perfectly still and transparent, and Mellish was presented with a once-in-a-lifetime chance. With magnifying powers of 750 and even 1100X, Mars appeared to him like a glorious gibbous Moon as seen in 3-4X binoculars, and afforded a revelation-peep in that era of Lowellian canals that would be fifty years ahead of its time.

Near sunset and sunrise observers often enjoy conditions of exceptional atmospheric calm. Air turbulence decreases when the ground and air temperatures cross over, which occurs around these times. Mars was high in the sky, so the optical path-length through the atmosphere was lessened, and effectively Mellish was studying the planet under conditions similar to those adopted by Schiaparelli for daylight observations of Mercury and Venus but very seldom used for Mars mainly because of the low surface brightness of the planet at its much greater distance from the Sun. He got the best views of the planet an hour after sunrise when the CM was about 76°.

Mellish recounted on many occasions over the years what he claimed to have seen that morning. His first account was probably given later that same morning to Barnard. "After seeing all the wonders," Mellish later wrote to Walter Leight, Jr., a member of the Lehigh Valley Amateur Astronomical Society, "I went to Barnard and showed him my drawings and told him what I had seen":

> [Mars] is not flat but has many craters and cracks. I saw a lot of the craters and mountains … with the 40" and could hardly believe my eyes and that was after sun rise and mars was high in a splendid sky and I used a power of 750. [2]

Mellish told Barnard he had never heard of anything like that having been seen before. Barnard only laughed and told him he would show him his own drawings made at Lick in 1892 and 1894. Fetching them from an old trunk, he showed Mellish the drawings which Mellish described as "the most wonderful drawings that were ever made of mars." They showed:

> … mountain ranges and peaks and craters and other things both dark and light … no one knows what they were[.] I was thunderstruck and asked him why he had never published these and he said no one would believe him and would only make fun of it…. Barnard took whole nights to draw mars and would study an interesting section from early in the evening when it was just coming on the disk until morning when it was leaving and he made the drawings four and five inches in diameter and it is a shame were not published.
>
> I do not know as any one would be allowed

to even look at them now, they are at Yerkes and will stay buried I suppose.[3)]

Significantly, Barnard himself made a drawing of Mars a few mornings later with the 12-inch refrac tor -one of very few he ever made of the planet so far from opposition; though it shows very little detail, it is clear that Barnard's only reason for observing Mars at that time in and in that position was the interest stirred by Mellish's account, thus providing independent confirmation of the date on which Mellish made his observation.

Mellish clearly believed that he had made an important discovery; but he was only an unpaid assistant at Yerkes, and may have been reluctant to rush in where angels like the great E. E. Barnard feared to tread. He remained at Yerkes for fifteen months in all. When it became obvious that he would not be hired for the regular staff, he left in late 1916 for Leetonia, Ohio where he received a small salary to give public viewings through the 9-inch refractor of the observatory of industrialist Elmer Harrold (when soot from railroads and industry forced Harrold to close it in 1921, it went to Mt. Union Observatory where it was used by Walter Haas) and started a telescope-building business with a $200 loan from Barnard, which he completely repaid within a year.

But though Barnard refused to talk about the craters of Mars, Mellish was apparently voluble on the subject; he is said to have discussed them so often his family got sick of hearing about them. In addition to Leight, Mellish confided what he believed he had seen on Mars to Thomas Cave, Jr., a native of Hollywood, California, who visited his optical workshop (by then at Escondido, California) in 1940. Cave, a close personal friend of the author's, observed Mars from 1937 to 2001. Like Mellish, he later owned his own telescope-making business.

The possibility that some of the round dark spots on Mars (known as "oases") might be craters went all the way back to a suggestion by W. H. Pickering in the 1890s. It was supported from time to time (Antoniadi, for instance, published an imaginary view of Mars in *l'Astronomie* in 1926 which seems to show craters; Ralph Baldwin (1912~2010), Clyde Tombaugh (1906~1997), and Donald P. Cyr in the 1950s all mentioned the likelihood that there were craters on Mars). H. P. Wilkins (1896~1960) even wrote of Mellish's observations in a 1956 book, *Mysteries of Time and Space*. At least a few astronomers were not as surprised as most of the rest of us were when in July 1965, the flyby Mariner 4 spacecraft showed, instead of a Lowellian idyll with canals and oases, the stark outlines of craters in its twenty-two paradigm-shifting images of the planet's surface. (I was eleven, and had been reared on Lowell's theories; and the only shock comparable to that produced by the Mariner 4 photographs had been the assassination of John F. Kennedy.)

When Mariner 4 flew by Mars, Mellish was almost eighty. He wrote a letter to *Sky & Telescope*, published in June 1966 (p. 339), in which he gave further details about the November 1915 observations:

> The Mariner photographs taken last July reminded me of some observations of Mars that I made with the 40-inch refractor at Yerkes Observatory…. Using a power of 1,100, I saw many small craters and one large one. The latter, estimated to be 200 miles in diameter, was in Martian latitude of -50°; north of it were many bright-rimmed small craters.

When I read this, I was all of twelve; unable to afford a subscription to *Sky & Telescope*, I occasionally looked up the copy at the local library, and this was one of the most evocative things I had ever seen. Henceforth Mellish and Barnard were numbered among my heroes of Martian observation.

In addition to an eleven-year old boy, a number of professional astronomers were also interested, including JPL's Edwin P. Martz (1916~1967), who designed the Mariner 4 TV camera and was actively pursuing Barnard's drawings at Yerkes (at the time, none was found), and Daniel Harris (1948~), a Yerkes photometric astronomer who calculated Mars ephemerides and worked out the observing

geometry for the November 1915 observation.

Mellish's own sectional drawings of Mars had been destroyed in a fire which ravaged his workshop a year before Mariner 4 arrived at Mars. Later, in 1966, he was traveling to Pasadena to meet Martz, but they never met; Martz was tragically killed in a housefire. Twice Mellish's quest to establish the Mars crater observations was derailed by fires.

I finally located Barnard's drawings at Yerkes in 1987, but Mellish's drawings have not yet resurfaced. Perhaps they never will. Most of those who read the 1966 letter assumed he had seen the craters as shadowed or frost-rimmed features along the terminator, rather like what Galileo saw on the Moon with his small telescope in 1609. But whereas the Moon is airless, Mars has an atmosphere; though it appears to have been remarkably clear in November 1915, it still would have diffused light along the terminator. The identity of the 200-mile crater at 50° latitude remained uncertain; candidates were Copernicus and Newton, which Harris's calculations had placed on the terminator at the time of Mellish's observation. Tom Cave produced, from memory, a drawing in which he attempted to reconstruct one of the drawings Mellish had shown him in 1940. It certainly showed the right part of the planet, but otherwise was inconclusive, if only because old memories are not always reliable. (On another occasion, Cave had claimed to have met Antoniadi at Meudon after the liberation of Paris; in fact Antoniadi had died months before the Americans had arrived. I never had the heart to mention that to Cave.)

Mellish died in 1970. In succeeding years, his claim to have seen the craters of Mars continued to be debated inconclusively, his cause being ably championed by Rodger W. Gordon; skeptics have included Richard McKim and myself. It seemed to be a case where the lack of the definitive record - Mellish's drawings - created a vacuum in which the imagination was free to elaborate in any way it cared to on the sparse materials. Whatever he had actually seen in November 1915 seemed unlikely to be ever known.

Though Mellish was eventually, and deservedly, honored with a crater named for him on Mars, Bradford A. Smith, the I.A.U. Mars Task Group Chairman, hedged in the citation: "I had to agree Mr. Mellish could not possibly have made positive morphological identification of any craters on Mars, but that he might well have seen small round features that were later shown by spacecraft imaging to be craters. Mr. Mellish's conclusion that such features were craters was probably an extrapolation from the physical appearance of the lunar surface and that it therefore seemed reasonable to me that such an early insight was worthy of his commemoration on Mars."[4)]

That was as much as could have been said on the subject until quite recently. But there is an O. Henry twist to this story; and it seems that Mellish can at last be vindicated.

In this respect, Rodger W. Gordon's persistence, which has verged on the monomaniacal, has been decisive; he has sifted the weather records for November 1915 and shown that the conditions were excellent during that Indian Summer, and in recalculating the ephemerides found that Harris had made a critical error - no doubt related to the difference between astronomical and astronautical conventions of expressing directions on maps of the planet. Harris interpreted Mellish's drawings with north at the top (the astronautical convention adopted by the IAU, not without opposition, in the 1ate 1960s) instead of with south at the top as is normally seen in an inverting telescope. Instead of being on the terminator, the craters Copernicus and Newton were on the limb side of the planet; at the terminator was rather the giant impact basin Argyre - the argent one, as Schiaparelli had called it, as it is often filled with frost; a six-hundred kilometer wide super-crater. Seen much foreshortened because of Mars's being well north of the celestial equator, Mellish had underestimated the diameter of this

grand feature. This, at last, was the large crater he had seen at 50º south latitude.

With that breakthrough, the other features that Mellish had seen also fell into place, and Cave's drawing from memory was also vindicated. The mountains shining in the Sun were the frost-covered Nereidum Montes; the cracks were the Valles Marineris canyon system, which runs just north of Solis Planum and is a region of complex details that includes a number of dark circular spots suggestive of craters in Mellish's view; some of them *are* craters). It is also possible that he saw in profile along the limb the summits of the great Tharsis volcanoes. The low Sun angle would have enhanced these features which are not always easy to discern under the garish light of Full Mars near opposition.

The break-up of the Lowellian canal-threaded disk and its replacement with these eerie bright and dark spots, cracks, and slopes was a breathtaking revelation to Mellish. Whereas Lowell was still advancing a view of Mars as nearly a flat-lander's world, Mellish (like Barnard before him) saw indications of the actual rugged relief. Thus he exclaimed to Leight: "Mars was not the level place I always thought!" He wrote to another correspondent, optical engineer Eugene Cross, that he saw streaky features - the canals - in the 12-inch; his surviving montage of drawings from 1915-16 bear witness to this. But in the 40-inch they were replaced by other, more natural-appearing, forms.

As soon as I was correctly reoriented to the Mars that Mellish saw, with Argyre on the terminator, I realized that Gordon and I no longer needed to agree to disagree; we were in agreement, and Mellish seemed to be completely vindicated. It is now clear that, fifty years before Mariner 4, John E. Mellish observed craters on Mars and had an insight into the planet that no one before him had had, except possibly E. E. Barnard. Whether Mellish deserves to be regarded as the "discoverer" of the Martian craters is a more difficult question, and depends on what means by "discover."

On the whole, I think it is fair to say that he did. Perhaps I cast my vote from sentiment. Spacecraft and space telescopes are the steam-hammers of astronomy; observers like Mellish are John Henrys. But in this case, I believe John Henry defeated the steam-hammer.

It will certainly not diminish the reputation of Earth-based planetary astronomy to maintain that this difficult feat was accomplished by an alert observer, acting under exceptional conditions, fifty years before a flyby spacecraft zipped past the planet.

(Notes)

1) As is documented in the U.S. Department of Agriculture, Weather Bureau, Original Monthly Record of Observations, which were taken in nearby Milwaukee.

2) John E. Mellish to Walter Leight, Jr., January 18, 1935.

3) In fact, Barnard had published a few of them, in *Astronomy and Astrophysics* in 1892 and the *Astrophysical Journal* in 1903. Those seen by Mellish were rediscovered at Yerkes in 1987, and a number of others are found in Barnard's observing notebooks in the plate vault at Lick; but many have still not been published.

4) Bradford A. Smith; personal letter to Michael Anderer, June 6, 1993.

□

CMO 09/10 Mars Note (11)

Big Volcanoes on Mars Near the Terminator When the Phase Angle Is Large

Like Olympus Mons, Tharsis Montes all behave similarly, but here we pick out Olympus Mons as a representative. Olympus Mons shows the following aspects:

1) At opposition (time), it passes the CM shining brightly.

2) Sometimes at around the season λ=100°Ls it is seen poking out of the shallow morning mist.

3) In the evening at around λ=100°Ls its summit is shining covered by a white cloud just like a cotton ball.

4) The so-called orographic cloud disappears at

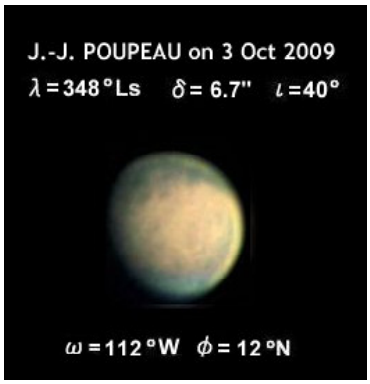
around λ=200°Ls until around the northern spring equinox, and hence its summit is visible shadowy if the Sun light slants: In order for the case to occur the phase angle ι should be large.

5) If the atmosphere is globally covered by the yellow cloud the usual season is broken down so that Olympus Mons can be seen dark always from the morning to the evening.

We should note that Arsia Mons somewhat differently behaves from Olympus Mon.

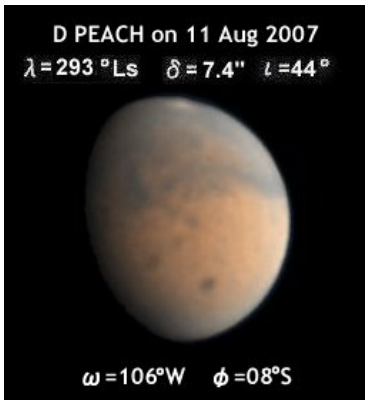
This time we pick out Case 4): Since the phase angle ι is large, the apparent diameter δ is relatively smaller: So the observation is not so easy but this is an interesting phenomenon.

In the case of the year **2009**, as far as we see the first image may be the one taken by Jean-Jacques POUPEAU (*JPp*) on 3 Oct 2009 (λ=348°Ls) at ω=112°W: δ was just 6.7" while ι was 40° so that we can barely see the shadows of Tharsis Montes in the evening. The season was quite near the northern spring. William FLANAGAN (*WFl*)'s images on 18 Oct (λ=356°Ls) at ω=077°W, 082°W when δ=7.3" also show the same Montes and Olympus Mons: ι=40° but at ω=082°W Olympus Mons must be before the noon, but already shadowy [because of 2) or 5)?]. We however do not see the existence of Argyre. Otherwise we also see the case on the image made by Teruaki KUMAMORI (*Km*) on 29 Oct (λ=002°Ls) at ω=101°W, when ι=40°. Edward GRAFTON (*EGf*)'s images on 23 Nov (λ=014°Ls) at ω=105°W also show where ι receded to 37° and δ increased upto 9.3".



Anthony WESLEY (*AWs*)'s image made on 6 Dec (λ=020°Ls) at ω=061°W when ι=33° matches the case of John E MELLISH: As far as the present writer (*Mn*) suspects MELLISH's case occurred on the time when ι=38°, ω=061°W, λ=018°Ls (see Appendix I): Note that Tharsis Montes are visible but Argyre is not known. Damian PEACH (*DPc*) produced images on 16 Dec (λ=024°Ls) at ω=122°W(125°W) but here already the white clouds are seen around Tharsis Montes. The dry season already ended.

In the case of the year **2007**, more apparent images were obtained because the season where the phase angle ι is large implied the season the orographic cloud does not appear. Already *DPc* showed Tharsis Montes and Olympus Mons on 6 June 2007 (λ=252°Ls) at ω=100°W, 108°W clearly. The tilt ϕ is 23°S while ι=39°, and the δ is only 5.9". Donald PARKER (*DPk*) also showed them on 13 July 2007 (λ=276°Ls) at ω=104°W(106°W), 112°W when ι=42° and δ=6.6". Furthermore Robert HEFFNER (*RHf*) caught them on 27 July 2007 (λ=285°Ls) at ω=108°W, 112°W, and on 28 July 2007 (λ=285°Ls) at ω=100°W; where ι=43° and δ=7.0". At these periods, the influence of the dust cloud in 2007 prevailed and hence Case 5) should be applied; even then they were caught in the evening. Especially *DPc*'s images on 10 Aug 2007 (λ=293°Ls) at ω=120°W, which shows Olympus Mons very clearly as a dark spot, but we may say apparently the remnant of the dust cloud quite affected. On 11 Aug 2007 (λ=293°Ls) δ=7.4" and ι=44°, Christophe PELLIER (*CPl*) observed at ω=102°W, David TYLER (*DTy*) at ω=097°W, 105°W, and *DPc* at ω=106°W(109°W), 111°W and detected Montes perhaps under the influences of the dust cloud.

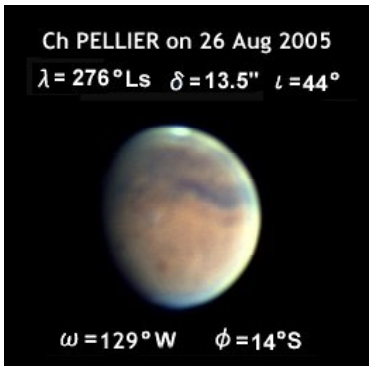


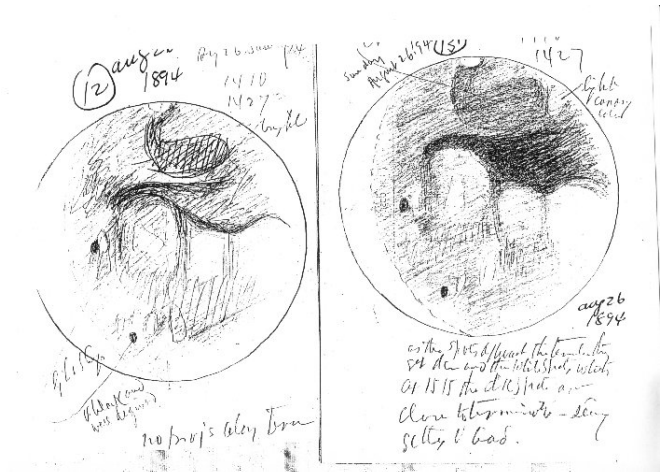
In the case of the year **2005**, there were obtained a lot of relevant images: As repeatedly reported, this year is comparable with the data in 1894 when Edward E BARNARD observed at Lick. In fact if we follow the method in

http://www.hida.kyoto-u.ac.jp/~cmo/cmomn2/Cahier03.htm

we can employ the 111 year recurrence, and then we know that the year 1894 is akin to the year 2005.

We therefore for example compared in a CMO the drawing of BARNARD with Isao MIYAZAKI (*My*)'s images on 13 Aug (λ=268°Ls). As another example we may pick out *EGf*'s images on 2 August 2005 (λ=261°Ls) at ω=122°W when ι=47°. Here we choose *CPl*'s image just on 26 Aug 2005, and we also again cite BARNARD's drawings on 26 Aug 1894 to compare. Note this case is quite different seasonally with the case in MELLISH since BARNARD's case is at λ=275°Ls and ϕ=14°S. At λ=275°Ls, Olympus Mons is not covered by any white cloud.





Appendix I

The present writer (*Mn*) may believe in MELLISH if and only if MELLISH observed the dark Tharsis Montes and Olympus Mons even at δ=7.7", while *Mn* feels that dubious is the legend that MELLISH saw several craters on 13 November 1915. Since we have not the Ephemerides in 1915, we refer to the case in 1994 just 79 years after: The day when apparent diameter became to δ=7.7" is 16 Nov 1994 when the season was λ=018°Ls and ϕ=20°N. It is apparently difficult to observe the upper southern district at this tilt. If we add 15 to 1994, we obtain 2009, and hence the consideration in the above about the 2009 case will be instructive since it is not so far from the case of MELLISH.

Furthermore if the Newton crater was caught, since it is Caralis Fons, it must have been a dark spot and could not have been trapped as a clear crater having a rim. (It is foolish to refer to the coloured Google Map because it just shows the rise and fall difference. If one clicks the "visible" data the crater turns out to be a dark spot.) We also note that since the phase angle ι was around 38°, there might have been seen Tharsis Montes as shadowy spots, but near the terminator they must have been covered by clouds since it was after the spring equinox, and the aspect must have been quite different from the case of BARNARD at Lick: The drawings on 26 Aug 1894 above cited show the dark spots (according to Paul TOMPSON, BARNARD regarded them as "forests"). In the BARNARD case, δ=13.5" whereas ι=44°, but in the case of MELLISH except for the favourable conditions of the seeing and 102cm, other conditions look inferior. As to Argyre the condition must be poorer than the case in Lick, and there are no conspicuous craters to the north of Argyre though TOMPSON writes: "*What he[MELLISH] saw was a large crater about -50 or -60 degrees latitude in the southern hemisphere of Mars, about 200 miles in diameter and several miles deep. North of it were many bright-rimmed small craters. The high peaks on the rim of these craters were white on top, as if with snow or frost or perhaps lime or quartz.*" How could we believe?!

Barely the condition ι=38° is an occasion: SHEEHAN touched on the case of Tharsis Montes but how about the case of CAVE? If the "voluble" person did not touch on Tharsis Montes and Olympus Mons, there might have existed several misunderstandings. The following statements, perhaps made by TOMPSON or D H HARRIS are wrong conjectures judged from our consideration: "*Why was he able to observe relief on Mars when other astronomers at most saw round dark patches? An article in the March 3, 1967, issue of Science by D. H. Harris suggests that Mellish observed Mars at a particularly favorable time for seeing relief, when the planet was approaching opposition but was not yet at opposition and the sun was casting maximum shadow detail.*"

Appendix II

As to Tom CAVE, I once wrote about him in 1997 when he was still alive in CMO #198:

http://www.hida.kyoto-u.ac.jp/~cmo/cmo/198/cave.html

There are shown his several drawings, but my impression was that he lacked some exactness. I do not quite remember whether I saw any print of his montages of MELLISH's drawings, but at least I do not remember I was impressed.

MELLISH however, in addition to a "voluble" person, looks to be an interesting and natularistic person. According to TOMPSON *"He took his family on nature hikes at every opportunity. He liked to explore the mountains and desert of California and once, sleeping on the ground, woke up with a rattlesnake coiled next to him."*

Appendix III

Since MELLISH was voluble, he might have written down several copies of the true drawings. However, TOMPSON writes "*He wrote a letter to Sky and Telescope in 1966 in which he said that back in 1916 he had distributed some of his Mars drawings to interested observers and asked if any of the magazine's readers had any information concerning the whereabouts of those drawings. No one responded, and apparently they are lost."*

M MINAMI (*Mn*)

Letters to the Editor

●・・・・・***Subject: Re: Sorbonne or***
Received: Sat 12 Mar 2011 07:44:03 JST

Dear Masatsugu, Since this morning, we hear the terrible news concerning the situation in the north-east of Japan. At least, Yoko was told that nothing serious happened concerning her family and her friends. I hope all of you are also OK.

Thank you very much for proposing me to write a text on the observatories of ASF (Sorbonne and Juvisy). I think the best time for that will be after a few months, when Camille Flammarion observatory in Juvisy resumes its activities.

Actually, I have also been appointed as the administrator of that observatory. Anyway, my present work is not concerning yet the organization of the observations. Rather, I have to meet from time to time the architect and the representative of the city of Juvisy concerning the restorations of the cupola and the refractor. Also, I wrote the regulations of the observatory in cooperation with our Council and the "Juvisy Comitee".

Presently, I also have to think about the equipment of the observatory. ・・・・

Francis OGER (SAF, France)

●・・・・・***Subject: (no subject)***
Received: Sun 13 Mar 2011 22:04:24 JST

Dear Minami, After I heard the terrible news of the Earthquake and Tsunami, I thought I'd email you and check that you were OK? It is so impressive how the Japanese have managed cope with this disaster, and you are an example to us all. I'm sure I speak for many British Astronomers when I say that our thoughts are with you during this terrible time.

Best wishes,

Paul ABEL (Leicester, The UK)

●・・・・・***Subject: M9.0 Earthquake!***
Received: Mon 14 Mar 2011 00:06:31 JST

Dear Dr.Minami, All lifelines are secured for now in our town which is on a firm bedrock, whereas in the neighboring towns on fragile grounds a lot of people fell victim to the landslides. ・・・・

This afternoon I could have finally inspected my observatory on a hill five minutes' by car. I drove there preparing myself for the worst…seeing my telescope toppled down to the floor. But I felt much relieved to find my C-14/Pentax MS-5 equatorial mounting standing seemingly sound amongst a terrible mess in my dome. I guess my telescope was doing a five minutes tap-dancing during the massive earthquake because it's now located at full one meter north of its original position, and its polar axis points to the northeast!

Just putting a well-self-balanced heavier telescope on the base unsecured, I think, may be the safest

way when it's exposed to a severe earthquake; ・・・

Best wishes for your health,

○・・・・・***Subject: Beautiful day!***
Received: Fri 10 Mar 2011 16:47:32 JST

Dear Dr. Minami, It's a beautiful day today, Zephyrus is swaying the leaves of the trees, caressing my cheeks too…Good wind, as the damaged Fukushima Dai-ichi Nuclear Power Plant is by the Pacific Coast some 60km away (not very far at all) east from our town.

Several days ago two correspondents for BBC News dropped by at a *sushi* shop nearby when we were preparing foods and drinks for the evacuated people staying in our town. They were on their way back from the two nuclear plants and to trying to enter northern more dangerous area. They told us the situation seemed to be not so devastating as Chernobyl, but was highly possibly becoming worse than the Three Mile Island accident. Best Wishes,

○・・・・・***Subject: The Exodus***
Received: Sun 27 Mar 2011 18:26:28 JST

Dear Dr. Minami, We are very much relieved to learn that the examination results on your biopsy tissues were all good (not malignant)!

Things around the stricken nuclear power plant don't seem to be getting better at all now. Many inhabitants are leaving this area at a constant rate every day, feels like the Exodus. After the world-wide reports on the terrible accident of the Fukushima nuclear complex, several governments have been advising their nationals to not only leave the quake zone but also depart Japan. …That's quite understandable. A seismologist commented on the TV the other day that "*The 3.11 Great Earthquake was so unprecedentedly huge that whole the Japanese Archipelago was geologically significantly distorted three-dimensionally. And the isostatic adjustment reactions might go on stimulating/activating faults and volcanoes elsewhere in Japan for over a full one year.*"…In this sense, I think, seismologically 100% safe place is nowhere to be found in this country now, and to make matters worse, we still have many other nuclear power plants along the whole coastal line surrounding the Japanese Islands.

Our local Dentists' Association possesses a very accurate radiation survey meter (expensive!…mainly for checking radiation leakage of X-ray imaging apparatuses of the members' clinics and hospitals). We measure background radioactivity value every day, which have been in good accordance with the government's results appeared daily on the TV and the Web. I myself think that the current radioactivity problem around here is far more serious than the residents feel because, in terms of the long-term influence upon a living body, no threshold level exists for the intensity of radiation as is well-known. Every person except with very special reasons to stay here, I feel, should leave this area at once.

Anyway, some dentists including me have to stay around, standing by for the request of the Fukushima Prefectural Police to enter with them the disaster coastal area along the crippled nuclear reactors where still many unidentified bodies are left. Quite often the oral inspection of the dentition, state of the fillings and artificial crowns have been the only way to identify the severely damaged body of a disaster victim or of a crime. We had been trained to perform the procedure properly. Will keep you informed, best wishes for your health,

Rei-ichi KON-NAÏ (Fukushima, Japan)

●・・・・・***Subject: Re:Japanese earthquake and tsunami***
Received: Mon 14 Mar 2011 00:53:37 JST

Good! I am relieved to hear that. Take care.

Richard McKIM (Peterborough, The UK)

●・・・・・***Subject: Terrible Earthquake and Tsunami***
Received: Mon 14 Mar 2011 09:11:24 JST

I hope Japan survives this Earthquake and Tsunami. Hope all our Japanese astronomy friends and their families are alright. Earthquakes are not new to Japan, but this one was the worst that I know about. Stay safe and reply when you have time.

Jeff BEISH (Lake Placid, FL, The USA)

●・・・・***Subject: Earthquake....***
Received: Mon 14 Mar 2011 13:49:49 JST

Hi Mr. Minami - I am wishing you and all of your members and their families are safe and sound. I

don't know what part of Japan most guys live but I am hoping it is not anywhere near the epicenter.

We are looking forward for the 2011-2012 Mars apparition! We are going to be here!

Frank J MELILLO (Holtsville, NY, The USA)

●・・・・・***Subject: Re: Earthquake***
Received: Wed 16 Mar 2011 06:28:19 JST

Thank you, Masatsugu. We are glad to hear that you are all safe! Best,

Don PARKER (Miami, FL, The USA)

●・・・・・***Subject: Disasters***
Received: Thu 17 Mar 2011 19:10:39 JST

Dear Masatsugu, Please allow me to express my deepest sympathy, my shock and horror at the disasters that have befallen your country. I am not a truly religious person, but nevertheless you should know that I pray for you and for everyone in Japan these days. Who knows, maybe someone DOES listen to prayers after all. Most sincerely yours,

○・・・・・***Subject: RE: Re: Disasters***
Received: Fri 18 Mar 2011 06:30:51 JST

Dear Masatsugu, Thank you so much for your quick answer. I know about the critical situation at the nuclear power plants on your east coast, it was included in the 'disasters' I talked about. I am very glad to know that neither you nor anyone of your closest loved ones were in the affected area, though.

As for myself, I cannot say that I'm well. Being multihandicapped is no great fun; worst of all are my speech problems (articulation difficulties, NOT language problems as such) and the fact that I've lost fine motor control in both hands, especially the left one (I am left-handed). I used to be a writer (a novelist), and the most important thing in my life has always been writing (I started writing short stories when I was just 9 years old.) This is now impossible, as I can only write CREATIVELY by hand (not computer), and for a writer it's necessary to be able to write quite fast and effortlessly - to keep up with one's thoughts. Now I almost have to D-R-A-W each letter. In this way, it's not possible to be a writer. That's also why you haven't received any hand-written greeting cards from me for the last three years; I apologize! I can type on the computer, as you can see. Not as fast as I used to, but that is not one of my biggest problems.

I am very sorry to hear that your health hasn't improved. ・・・ Needless to say, I certainly hope that the suspicion of you having cancer will turn out to be unfounded, too.

When one is struck down by Fate, one has to re-invent oneself somehow. Sometimes this is easier said than done, however.

It was good to hear from you. I wish you all the best - both for you personally, and for your country during these hard times. Sincerely,

Elisabeth SIEGEL (Malling, Denmark)

●・・・・・***Subject: thank you***
Received: Mon 28 Mar 2011 08:54:05 JST

Dear Masatsugu and Masami, I am very pleased to hear you are all ok after the disasters. You and the people of Japan have been in my thoughts and I pray for your nation's recovery. I was a relieved to see a new CMO, but should not be surprised as this speaks of your dedication. ・・・・

My interest in Astronomy goes back to 1966 (third grade) and will never wane. A sincere thank you for the CMOs through the years! Best wishes,

Randy TATUM (Henrico, VA, The USA)

●・・・・・***Subject: DPS-EPSC 2011 - OA6 session:***
Received: Tue 29 Mar 2011 13:26:56 JST

Dears, The planetary American and European congresses DPS and EPSC will be held in a common congress in October this year in *Nantes*, France. In particular the OA6 session will be dedicated to Amateur Astronomy Contribution to Planetary Sciences. For more information please visit:

http://meetingorganizer.copernicus.org/EPSC-DPS2011/provisionalprogramme/OA

I invite you to actively participate to this session, to meet other amateur and professional astronomers studying small and large Solar System bodies. If you are interested to give a presentation (oral or poster), please fill in the abstract submission form that you will easily find at the web page above (abstract deadline: 31 May 2011).

Please diffuse this message to people around you that could be interested in the event. Sincerely,

Marc DELCROIX (Tournefeuille, France)
SAF planetary observations commission

●・・・・・***Subject:*** *Corrected: Special Session announcement--HAD (AAS) meeting*
Received: *Wed 30 Mar 2011 03:02:56 JST*

SPECIAL SESSION for HAD, Austin Texas, January 2012: Transits of Venus: looking forward, looking back. *Co-chairs: Prof. Jay M. Pasachoff, Field Memorial Professor of Astronomy and Director, Hopkins Observatory, Williams College and William Sheehan, Independent Scholar*

The June 6, 2012 transit of Venus, completing the pair that began on 8 June 2004, will represent the last chance to observe one of these rare events from Earth until the next pair, December 11, 2117 and December 8, 2125. This year's transit will be extremely advantageous as almost all of the most populated areas of the Earth will be able to view at least some of the transit: the only land masses excluded will be the tip of the Iberian peninsula, the western part of Africa, the eastern part of South America, and Antarctica.

This session is devoted to some aspects of the history of transits, but especially those transit of phenomena significant for currently vital astronomical and astrophysical research.

Historically, the transits of Venus were singular important both in astronomy and in the geographical exploration of the Earth. This importance was reflected in the massive preparations and far flung expeditions in the Eighteenth Century in pursuit of the Halleyan project of determining the solar parallax. Also, the nineteenth century transits also played out against a background of rivalries among the great European world empires (England, Russia, France, and the U.S.) which were then at their height but sliding imperceptibly but ineluctably toward the Great War of 1914-1918. The 2012 transit offers an opportunity to revisit the important expeditions of the past—many of which have been catalogued and some noted by historical markers or even restored—and to engage in "experimental archaeology," the reconstruction of past observations, including of the Black Drop and luminous aureole produced by refraction by the atmosphere of Venus, to the extent possible using historical instruments and techniques and/or observing from the same locations used by earlier observers.

However, the main topic of this session is to review through the history of the transits a number of critical problems that remain relevant and can be addressed by modern high-resolution observations from Earth and space. One of these is the detailed profiling of the atmosphere of Venus. Another is the unique opportunity transits of Venus (and Mercury) afford as local analogues to exoplanet transits across their parent stars, which is the focus of many contemporary astrophysical investigations and space missions whose goals are to understand the prevalence and structure of planetary systems very different from our own solar system. In short, though often said to be of strictly historical interest owing to the fact that the Halleyan solar parallax method has long since been superseded, we hope to show that transits of Venus continue to be of great importance to astronomers and astrophysicists working at the cutting edge of important problems of our own day.

William SHEEHAN (Willmar, MN, The USA)

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