

## MARS

No. 378

25 November 2010

## OBSERVATIONS

No.04

*Published by the International Society of the Mars Observers*

Obituary

## Audouin Charles DOLLFUS, 1924-2010

By

Richard McKIM

With the death of Audouin Dollfus (Figure 1), a few weeks prior to his 86<sup>th</sup> birthday, planetary astronomy has lost one of its greatest exponents.

He was born in Paris on 1924 November 12, son of famous balloonist and airship pilot Charles Dollfus. Later, Audouin would set several world records for balloon flights. At age 14 he made himself a small refractor, and by 1943 a 20 cm Newtonian reflector. Despite wartime restrictions he was also able to observe with the instruments of the observatory of the Société astronomique de France at the Sorbonne, where his mentor was Romanian amateur and fellow University student Jean Dragesco.

One day in the summer of 1943 there assembled a galaxy of French astronomers at the graveside of SAF founder Camille Flammarion, for the annual celebration of the life of that great populariser. Dollfus was in good company at Juvisy that day: within a



Fig. 1: Audouin DOLLFUS, in a photograph from the 1960s

few meters stood Gabrielle Flammarion, E-M. Antoniadi, F. Baldet, A. Danjon, G. de Vaucouleurs and many other planetary observers whose names have passed into history. Within a year the German occupation would be over. Fifty years later I stood in the same spot with Dollfus and Juvisy's curator Jacques Pernet when we inspected the preparations being made to preserve this famous but by then run-down estate. During his Presidency of the SAF in the 1980s, Dollfus had started the restoration ball rolling, and this year Flammarion's famous telescope will

finally be brought back into operation.

It was to be at Meudon where Dollfus would spend his professional career, entering the laboratory of optical genius and RAS gold medallist Bernard Lyot, in 1945, after graduating in Mathematical Sciences and Physics. With few staff at that time, this branch of the Paris observatory was then best known for its regular solar observations. Before the War, it had also been famous for the planetary work done by Antoniadi, Baldet and others with the 83 cm 'Grande Lunette': its lens was removed from the cellars and remounted in the tube in the autumn of 1945. Dollfus did his first planetary work at Pic du Midi in the same year, with such figures as Lyot, Henri Camichel and Marcel Gentili. In his logbook he would preface that first

mountain experience with the phrase 'Premier Ascent'. In those days, before Director Jean Rösch established the cable car service in 1947, everything had to be carried up on foot (or by ski) from the HQ at Bagnères. At the 1948 opposition, Dollfus studied Mars with the Pic's 60 cm folded refractor and enjoyed periods of super-seeing. This led to his first professional publication where he threw new light on the 'canal illusion'. (Figure 2) The Pic's astronomers also mapped Mercury, the large Jovian moons and Saturn's fine ring subdivisions, as well as taking many superb photographs.

A technique which Dollfus took up from the very start was visual polarimetry. In this he was following on from the whole-disk measurements of Lyot, who, back in the 20s had shown that when applied to Mars the technique could yield valuable information about veiling of markings by dust storms. But Dollfus went further and examined the polarisation of individual regions of the planet's

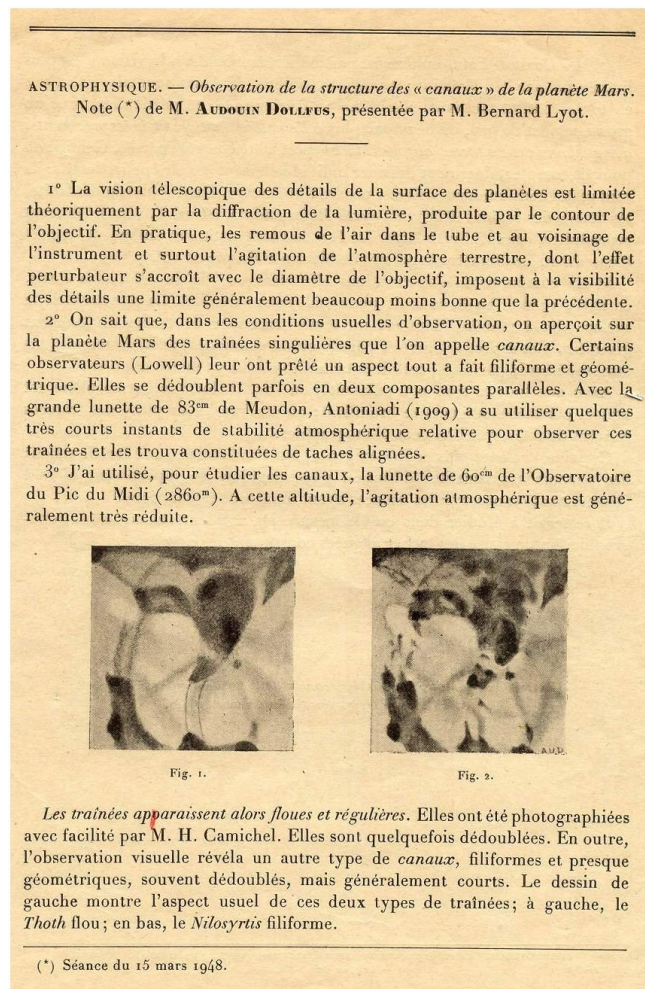


Fig. 2: DOLLFUS's paper published in the *Comtes Rendus* of the French Academy of Sciences, 1948

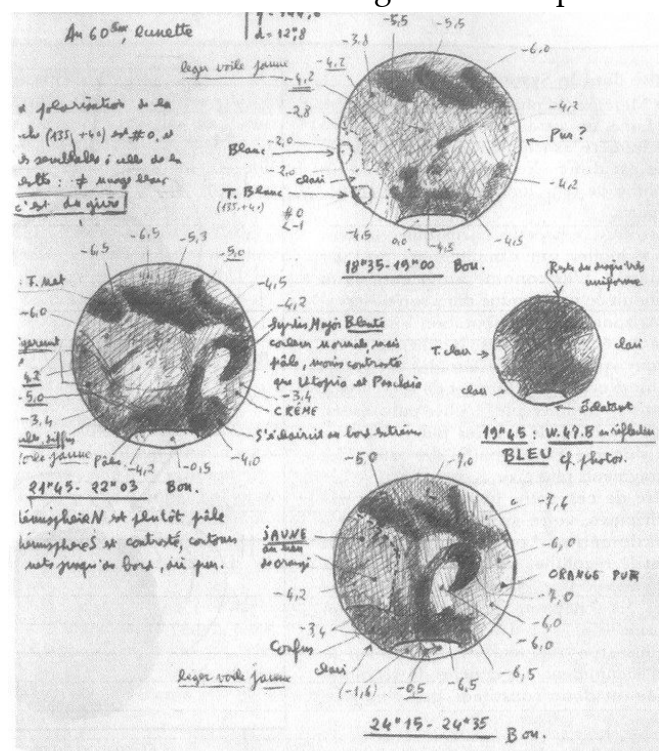


Fig. 3: A page of Audouin's logbook for 26 Feb 1963, showing polarisation measurements

disk. (Figure 3) Except near zero phase angle, the method can discriminate between bare ground and overlying dust or white cloud. In the Space Age, dust optical depths would be obtained from infrared observations made by onboard instruments, but for decades polarimetry would be the only certain method open to investigators of the less widespread martian dust storms. Dollfus once showed me the method of use of the visual fringe polarimeter, and it was immediately clear that great skill was needed for such measurements. For decades, Dollfus would collaborate with Shiro Ebisawa in Japan in this line of research, publishing many papers together in which they obtained likely values for the diameters of dust particles lofted during major storms. Dollfus also established high quality maps of the seasonal decline of the martian North polar cap, and published accurate recession curves for both polar regions. The use of the double-image micrometer was found to yield the best measurements of planetary latitudes.

Dollfus was also studying the polarisation of the Moon's surface in the 1950s. He concluded that fine-grained pulverised basalt covered the lunar surface, a valuable result for the future soft landings. Nicolas Biver of Meudon Observatory adds that NASA invited Dollfus to collaborate in the study of the Apollo 11 landing site and in the design of the astronauts' moon boots. Dollfus contributed to the analysis of the lunar samples returned by the *Apollo* program and to the studies of the Martian soil in preparation to the *Viking* mission. In addition to *Apollo*, he collaborated with NASA on the *Ranger* and the Venus *Mariner* programs, and with the

Russians on the Mars-5 mission in 1973. Some 20 years ago Dollfus began to successfully employ a video polarimeter. Routine observations of the lunar crater Langrenus revealed a transient cloud of suspended dust particles: a so-called 'Transient Lunar Phenomenon', and one of the very few for which there is objective evidence.

In the 1950s Dollfus had the chance to combine profession with hobby in a series of balloon ascents. In 1956 a flight to an altitude of 6,000 metres established (via high resolution photography of the solar granulation) that convection rather than turbulence was the mechanism by which energy escapes from the Sun. The most ambitious flight he made was in 1959 when Dollfus rode in a pressurised gondola, supported by 102 balloons, up to the staggering height of 14,000 metres (45,920 feet). In this mission he was able to detect by spectroscopy the existence of water vapour in the atmosphere of Mars. To this day, this ascent by Dollfus remains a French record. Biver adds: 'Talented mongolfière and balloon pilot, he held several world records for flight duration, distance, and altitude in free ballooning....historian of aeronautics, and member of the Aero-Club de France, he was still working prior to his passing at the creation of a City of Balloons and Dirigibles in the Y hangar at Meudon.'

All these programmes produced a massive volume of documentation, and between 1961 and 1980 Dollfus directed the Centre for Planetary Documentation at Meudon. This centre accumulated copies of planetary photographs from all over the world, particularly those taken at Pic du Midi during the systematic programme of 1941-1971. A similar

centre was set up at Lowell Observatory. In those days, really good professional planetary photos were rare: not until the decade of the 80s would a sensitive (and yet fine-grained) emulsion in the shape of Kodak's TP2415 become available, and of course CCD images were still some way in the future. The Pic du Midi photographs were (and today its images are) among the best in the world. One useful result from this international cooperation was the study of the rotation of the ultraviolet clouds of Venus. Hourly photographs could be combined into Mercator maps, and individual features studied for the first time. Mercury also received attention, and the accumulated data enabled Dollfus, together with UK astronomer J. B. Murray to make the best pre-*Mariner* telescopic albedo chart, only recently surpassed by the *Messenger* mission.

In addition to his routine work at Meudon and the Pic, Dollfus became chairman of IAU Commission 16 for the Physical Study of Planets and Satellites. He was instrumental in the compilation of a standard IAU map of Mars (drawn by G. de Mottoni) and a new rational system of nomenclature (1957). He coordinated measurements of the diameter of Mercury at its transit in 1960, making personal observations from the Eiffel tower.

Dollfus also studied Saturn. The North Temperate 'Great White Spot' of 1960 was followed by him for some months, leading to an accurate measurement of the atmospheric drift at that latitude, and he conducted routine measurements of the polarisation of the components of the planet's ring system. In 1966 he used Lyot's coronagraph at the Pic to conduct a photographic survey for new satel-

lites. This led to the discovery of a faint outer ring of the planet as well as a new satellite, Janus.

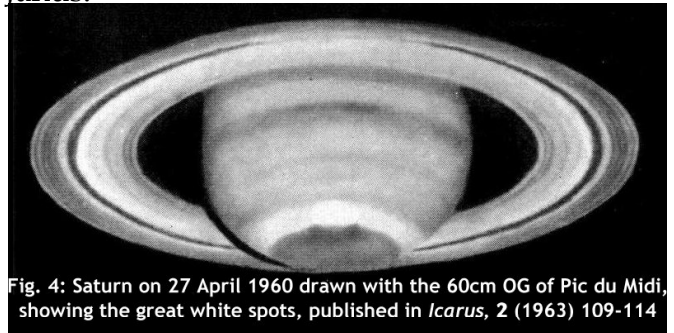


Fig. 4: Saturn on 27 April 1960 drawn with the 60cm OG of Pic du Midi, showing the great white spots, published in *Icarus*, 2 (1963) 109-114

During much of Dollfus's career it helped greatly if the planetary astronomer was also talented at sketching. His notebooks are filled with beautiful drawings. I met him many times over nearly 30 years in my capacity as Director of the BAA Mars Section and always enjoyed perusing them. Once, hoping for a tip, I asked him which pencil he preferred: 'Oh, just the one on my desk', he answered modestly. His drawing of the GWS on Saturn in 1960 (Figure 4) is a sufficient testament to his artistic skill. In the 1980s the Pic du Midi observatory acquired a new 2 metre telescope to continue the high resolution tradition. Dollfus tested it out upon Mars in 1982, and his fine drawings (Figure 5, below) and photographs show that his observing eye (for Dollfus had sight in only one) had lost none of its celebrated powers.

Dollfus published some 330 scientific papers and contributed to many books and conference proceedings. Let us single out his impressive chapters in the classic *Planets and Satellites* edited by Kuiper and Middlehurst (1961) as a testament to the skill of the French planetary observers at the Pic. In 2008 he published a richly illustrated popular book, *Les autres mondes: Visions d'astronome*, in which old and new observations are beautifully synthesised.

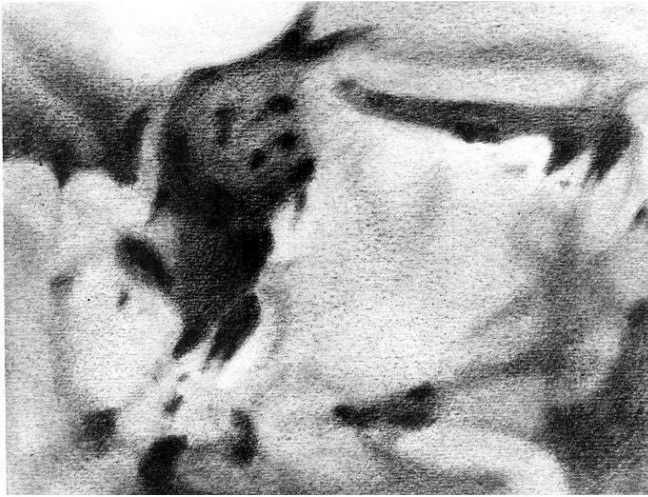


Fig. 5: Mars on 10 April 1982 drawn with the Pic du Midi's 2 metre reflector, x1000. I have chosen these Mars drawings in Figs. 2, 3, and 5 to show what DOLLFUS could do with the planet at its smallest size in several aphelic apparitions, and to compare the changes in the region of Syrtis Major and Nepenthes-Thoth.

Dollfus was enthusiastic about amateur astronomers too. He was for some years the President of the SAF's Planetary Surfaces Commission, publishing reports on amateur observations of Mars. In 1988 it was decided to have a special observing campaign for the close opposition of that year, and he invited me to make free use of the 83 cm Grande Lunette for several weeks. It was an offer I could hardly refuse. Recently brought back into use after repairs on the dome slit mechanism (and being repaired again as I write these lines), the instrument gave first-class views of the planet. I would return to Meudon several times to observe, often in company with local members of the SAF. Dollfus invited me to prepare a special seminar for the SAF about historical observations of Martian dust storms. I readily agreed and then he added, casually: "Of course, it will have to be in French."

Dollfus was keenly interested in historical topics. He often wrote about the history of planetary work, ballooning, Juvisy, Meudon, Paris Observatory, Pic du Midi, *etc.*, in the

SAF bulletin, *l'Astronomie*. When in 1993 I published a biography of E-M. Antoniadi in the *Journal* of the BAA, Dollfus (at his instigation) immediately translated it into French to be published in the SAF bulletin. We would help each other out with our native languages on several later occasions. Another project Dollfus completed was a major history of the Grande Lunette, a book richly illustrated with contemporary documents and photographs. The SAF marked its Centenary with a commemorative book, and again Dollfus made a significant literary contribution. In the 1990s the SAF had a project to rebuild one of the great 'aerial telescopes' from the time of Cassini. Dollfus took a full part in the design, and once it had been built he appeared dressed in authentic period costume to make sketches at the eyepiece! This was not the first time he would appear in such costume: see Figure 6 (below). There



La Muette (Paris) le 30 juin 1951 : reconstitution du premier vol humain. À gauche, en blanc le marquis d'Arlandes, à droite, en vert, Pilâtre de Rozier, figurés respectivement par Charles et Audouin Dollfus.

was also a strong sense of history, too, at the historic 'Maison Dollfus' at Chaville. It was a great treat to be invited to dinner there, where together with Madame Dollfus, one would be served a delicious meal upon ancient porcelain plates and dishes, always decorated with some balloon motif.

Dollfus never quite retired from Meudon, maintaining an office there well into his 80s. Many honours came his way. He was made Chevalier of the Legion of Honour in 1989. He received the highest award of the SAF, the Prix Janssen. In 1973 he received the Galabert Astronautical Prize, and in 1988 the Grand Prize of the French Academy of Sciences. In 1980, asteroid 2451 was named in his honour. In 1995 he celebrated 50 years as a professional astronomer, and a commemorative book *50 ans d'astronomie: comprendre l'Univers* was published consisting of a series of interviews upon various topics with which he had been intimately concerned. His name was known everywhere. In 1984 I committed the sin of turning up without a ticket at Paris Observatory for the monthly public tour. So I told the gatekeeper that I knew Professor Dollfus. The gate was flung open: "Professeur Dollfus: il est très célèbre. Entrez!" This greatly amused my old friend when he heard about it.

Dollfus was a warm individual who gave the impression of enormous industry. He was habitually busy but always willing to give up his time. Dollfus would insist upon fetching the coffee in the cafeteria after lunch there, and over tea in his laboratory (sugar was allowed, but never milk) he would relax with his students and colleagues, and there would flow friendly conversation, stories, or debate. One treasures those moments. If one arrived from England, Dollfus would insist upon collecting you from the local SNCF station to avoid the long drag up the hill to Meudon on foot. He was always well dressed in jacket and tie, accompanied in cold weather by a long raincoat and a beret. His trademark was

to wear his tie outside his pullover. He drove a modest car, and was a courageous motorist to drive in the Paris area. He disliked any form of bureaucracy or impediment to doing science, and gave free access to any documents in his possession. He was a great humanist, too, who embraced the true 'Egalité' of the French. He strongly discouraged smoking.

Dollfus was not well enough to attend the IWC MO meeting in Paris in 2009 September that celebrated the 100<sup>th</sup> anniversary of Antoniadi's ground-breaking Mars observations with the Grande Lunette. Later, I helped to publish in the *BAA Journal* an English translation of the paper he was to have presented. In late August this year he entered the hospital in Versailles for surgery upon his leg, and it was a shock to learn of his death there on 2010 October 1.

Audouin and Catherine had one son Jean-Tycho, and three daughters Ariane, Corinne and Fanny (the latter of whom died tragically a few years ago). Audouin was a remarkable individual whose personal qualities and whose devotion to solar system Astronomy, its documentation and history will long remain his monuments. Following his funeral in Versailles, he was buried in Lyons-la-Forêt. We extend our sympathies to Madame Dollfus and her family.

★ ★ ★

*(Editorial Note)* The last article of Professor Dollfus and his work as a balloonist are respectively in

[http://www.hida.kyoto-u.ac.jp/~cmo/cmomn5/2009Paris\\_Meudon\\_Talks\\_ADollfus2.htm](http://www.hida.kyoto-u.ac.jp/~cmo/cmomn5/2009Paris_Meudon_Talks_ADollfus2.htm)

[http://www.hida.kyoto-u.ac.jp/~cmo/cmomn5/2009Paris\\_Meudon\\_Talks\\_ADollfus.htm](http://www.hida.kyoto-u.ac.jp/~cmo/cmomn5/2009Paris_Meudon_Talks_ADollfus.htm)

As to Fig. 6, the photo shows a reconstruction in 1951 at the place called La Muette of the first (un)tethered balloon in 1783 of Jean-François Pilâtre de Rozier (1754 - 1785) and François Laurent le Vieux d'Arlandes (1742 - 1809): Audouin played the role of Pilâtre de Rozier (right, green) and his father Charles François d'Arlandes (left, white).

## CMO 09/10 Mars Note (6)

### *Why Was Olympus Mons Rather Silent in the 2010 Apparition*

Olympus Mons was very bright for example in 2005 when Mars was near at opposition (as was the case in 1879 when G SCHIAPARELLI detected it and gave a nomenclature Nix Olympica) from morning to evening (this phenomenon was pointed out in the CMO in the case of the observations in 1988). However everybody knows that at the opposition time of the 2010 apparition Olympus Mons looked quite dull. Why does such a difference occur?

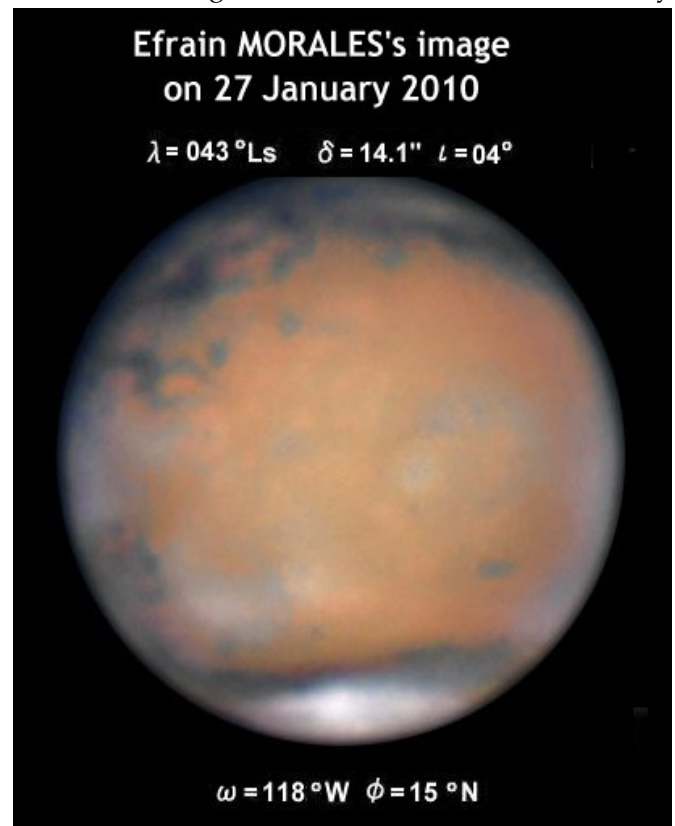
This time the planet was at opposition on 29 Jan ( $\lambda=044^\circ\text{Ls}$ ) at 19.5GMT. Note that already the opposition went passed the northern spring equinox.

On the other hand, the evening orographic cloud following Olympus Mons was clearly caught for instance by Pete LAWRENCE (*PLw*) on 17 Jan ( $\lambda=039^\circ\text{Ls}$ ,  $\iota=11^\circ$ ) at  $\omega=184^\circ\text{W}$  and so on (we here refrain from mentioning other images which show the orographic clouds since this is not the subject).

On the morning side, however, as shown on *PLw*'s images on 25 Jan ( $\lambda=043^\circ\text{Ls}$ ,  $\iota=05^\circ$ ) at  $\omega=110^\circ\text{W}$ , a rough glimpse of a fine structure of Olympus Mons is caught inside the aureole, but it never looks to shine. As the images which show the morning Olympus Mons, we may pick out several from such a set of images of Damian PEACH (*DPc*)'s on 23 Jan ( $\lambda=042^\circ\text{Ls}$ ,  $\iota=06^\circ$ ) at  $\omega=085^\circ\text{W}$  to the one of Paulo CASQUINHA (*PCq*) on 29 Jan ( $\lambda=044^\circ\text{Ls}$ ,  $\iota=03^\circ$ ) at  $\omega=053^\circ\text{W}$ , but there is none where Olympus Mons is shining.

At the opposition time, the enhanced images of Don PARKER on 31 Jan ( $\lambda=045^\circ\text{Ls}$ ,  $\iota=03^\circ$ ) at  $\omega=100^\circ\text{W}$  seem to prove a slight opposition effect; but note that it is also seen in B. His image set on 3 Feb ( $\lambda=047^\circ\text{Ls}$ ,  $\iota=05^\circ$ ) at  $\omega=062^\circ\text{W}$  shows Olympus Mons to be rather shadowy inside the morning mist.

As a good example where Olympus Mons did not shine near the CM, we may cite Efrain MORALES (*EMr*)'s images on 27 Jan ( $\lambda=043^\circ\text{Ls}$ ,  $\iota=04^\circ$ ) at  $\omega=118^\circ\text{W}$  being well a candidate where clearly



Olympus Mons is covered by a thin cloud or a mist (apparent in B). On the same day Frank MELILLO (*FMI*) took at  $\omega=132^\circ\text{W}$ ,  $148^\circ\text{W}$ ,  $162^\circ\text{W}$  while Olym-



pus Mons is just light and does not show the structure, and the images are not accompanied by the B images. Fine structure of the aureole is faintly seen on Peter GORCZYNSKI (*PGc*)'s RRGB image on 28 Jan ( $\lambda=044^\circ\text{Ls}$ ,  $\iota=03^\circ$ ) at  $\omega=126^\circ\text{W}$ , or *EMr*'s on 29 Jan ( $\lambda=044^\circ\text{Ls}$ ,  $\iota=03^\circ$ )  $\omega=128^\circ\text{W}$ ; although it is not so explicit. In B we can easily see a thin cloud over there in B. Carlos HERNANDEZ (*Chr*)'s drawings on the day at  $\omega=131^\circ\text{W}$ ,  $139^\circ\text{W}$  stressed this thin cloud, while it cannot be said the opposition effect.

We may reason out as follows: After the northern spring equinox, in addition to the evening thick roll clouds, Olympus Mons begins already to be covered by the thin morning mist, and even near the CM it loses the brightness of the summit and flanks which were made of bright volcanic rocks. As was analysed in a previous Note that the summits of Tharsis Montes including Olympus Mons will look shadowy because the lower ground thick mist will prevail soon after, but we may consider that even when it is the case the summits including the flanks are covered by a thin mist at least after the phenomenon. Not only in 1988, but other years like in 2005 at the opposition time, however, the summits were not covered by such a mist even in the morning: Perhaps such rocks as feldspar on the flank which are made of the remnants of the volcanic lava as an aureole shined from morning to evening. After the northern spring equinox, however, they will be governed by a thin mist. Usually it has been stressed that the evening roll cloud is in the spotlight, but at least from around  $\lambda=200^\circ\text{Ls}$  to around  $\lambda=350^\circ\text{Ls}$ , Montes are free from the mist and Nix Olympica remains very explicit at opposition. Sometimes it sharply shines. Note that it does not necessarily shine any time from  $\lambda=200^\circ\text{Ls}$  to  $\lambda=350^\circ\text{Ls}$ : Just it shines when the planet is near at opposition. The angle is not so important: The angle is not necessarily at  $(De+Ds)/2$  where  $De=18^\circ\text{N}$  since the flank made of the volcanic aureole is so large that any angle can face towards us. ( $Ds$  is variable since the season of opposition is variable.)

On the other hand, after the northern spring equinox, even if the summits will be outside of the thick morning mist, they must be influenced by the thin covering mists. Few are conscious of this fact: The weaker mist over the summits on the morning side must be more watched though it is not so conspicuous as the evening one.

In the case of the 2007 apparition, the planet was at opposition on 24 December at 19.7GMT, and the season was  $\lambda=007^\circ\text{Ls}$  and so it was delicate. The image of Albedo BERDEJO (*ABd*) on 23 Dec ( $\lambda=007^\circ\text{Ls}$ ) at  $\omega=190^\circ\text{W}$  does not show well the orographic cloud. Ignacio ZURUTUZA (*NZr*)'s image on 26 Dec ( $\lambda=008^\circ\text{Ls}$ ) at  $\omega=156^\circ\text{W}$  is good



and shows a thin aureole surrounded by an escarpment near the CM (also near the evening). Unfortunately B image lacks but it looks like somewhat misty. Francisco José FERNÁNDEZ (*FFn*)'s image on the day at  $\omega=174^\circ\text{W}$  seems to show a thin cloud. Not yet the season for the thick orographic cloud.

Henceforth we will face the season when the Olympus Mons is vague except for the evening case, and hence we should be careful not to process excessively.

(Mn)



## *Letters to the Editor*

●..... **Subject:** *Foehn Phenomenon over Arsia Mons*  
**Received:** *Thu 14 Oct 2010 18:39:41 JST*

Dear Dr Minami, Thanks a lot for your prompt reply with notifying me of your intensive review/discussion in 2005 Mars Note (13) in CMO #330 (which I had missed!) on the strange dark spot near the eastern limb observed around the opposition day in 2005 apparition. Your proposition of Foehn phenomenon for the area is very persuasive. I remember some terrestrial weather satellites' images which showed rectangular cloudless areas between parallel cloud streaks (undulatus) caused by Foehn phenomena with record-breaking heat waves at the plains in east central Japan.

Jim Bell's expression for this dark-reddish patch "the divot" in his LtE in CMO#314 is most funny because it looks exactly like ones I often make with my bad shots at the golf courses in our town!

I also remember the "cold spots" I have noticed when I was checking the day to day images of the TES nighttime temperature movie (5th Apr. 1999 ~20th Aug. 2005) the other day. In some seasons they had repeatedly appeared on the "Foehn phenomenon area just west of Arsia Mons peaks" and on the slightly western "the Canon LAU Phenomenon area". I don't know at what local time the IR spectrophotometry had been carried out each night, but is it possible that the cold spots had been related to some kind of nighttime cloud activity?

On your request I have started preparing my original paper for a future ISMO issue. But I don't have an idea for now of how long it will take to get it completed, so please bear with me while I am proceeding. Best Wishes !

○..... **Subject:** *A hot spring on Mars?*  
**Received:** *Sun 17 Oct 2010 00:25:42 JST*

Dear Dr. Minami, Last week I stumbled across an interesting book entitled "火星の生命と大地46億年" or "4.6 billion Years of Martian Life and Geology" (pubd.2008) (I guess you have already read it). This

is a coauthoring work by three Univ. of Arizona planetary geologists, Shigenori Maruyama, Victor R. Baker and James M. Dohm. Its first half is a sci-fi novel of the near future in which the astronauts discovered extinct volcanic fumaroles at the western foot of Olympus Mons. The fumaroles were above a persistent geothermal heat area where they found methane-generating anaerobic bacteria. This fictitious episode reminded me of your "prediction" of "Spa Gigantica Amazonica" as a possible cause of Canon LAU Phenomenon!

All my best wishes for your health,

**Reiichi KONNAI** (Ishikawa, Fukushima, Japan)

●..... **Subject:** *Audouin Dollfus article*  
**Received:** *Mon 01 Nov 2010 02:52:34 JST*

Dear Masatsugu, I attach around 2,500 words about Audouin Dollfus and six pictures. There is much else that I could have written, but I have used up about as much time as I realistically can spare for this project! A shorter version of the text, and one picture, will appear in the RAS journal Astronomy & Geophysics.

I would like to mention the 2007-8 Mars opposition again and to ask whether you would like to send me any of your drawings, perhaps from very early in the opposition and also for the dust storm time. Please let me know as I am in the process of selecting illustrations to go with the text.

With thanks and best wishes

○..... **Subject:** *RE: Audouin Dollfus article*  
**Received:** *Mon 01 Nov 2010 06:05:11 JST*

Dear Masatsugu, Good: I am glad you have these materials safely. About 2007-8, I am happy to have any other illustrations you care to send, either before or after the great storm. I have also to write something for the BAA Journal but it will necessarily be short and focussed upon Audouin's links with the BAA.

I am happy to send any extra Dollfus pictures if you like. I have many others of his Mars work.

This will have to be a brief email, for I return to work tomorrow morning after half term holidays

and nothing is yet prepared! With regards,

**Richard McKIM** (Peterborough, UK)  
Director, the BAA Mars Section

●..... *Subject: Re: Audouin Dollfus article*  
*Received: Mon 01 Nov 2010 15:48:43 JST*

---- Dear Masatsugu, Glad to see Richard has done something already. I will add a few personal rem-

## TEN YEARS AGO (183)

---CMO #237 (25 November 2000) pp2839~2856---

<http://www.hida.kyoto-u.ac.jp/~cmo/cmo/237/cmo237.html>

**N**ow the observation report in 2001 began from this issue. The first observations were made on 27 Oct 2000 ( $\lambda=068^\circ\text{Ls}$ ) by MINAMI (*Mn*) and NAKAJIMA (*Nj*), and then came reports from MORITA (*Mo*) and PARKER (*DPk*). The reports were treated until 15 Nov 2000 ( $\lambda=076^\circ\text{Ls}$ ). The apparent diameter  $\delta$  was as small as 4", but the npc was evident and the dark fringe was clearly caught:

<http://www.hida.kyoto-u.ac.jp/~cmo/cmo/sec01/01/f0101.html>

Next, as 1988/99 Mars CMO Note (15), "The South-Polar Hood in 1999" was picked out, and a rough aspect of the sph was described: In 1999 the central latitude  $\phi$  was northwards and hence it was not easy to judge in general but in association with the behaviour of Hellas, observations in Japan and *DPk*'s in April ( $\lambda=125^\circ\text{Ls}$ ) and May ( $\lambda=144^\circ\text{Ls}$ ) were referred: Conclusion was that the sph was largely developed in 1999 by  $\lambda=140^\circ\text{Ls}$ : See the images by *DPk* and *Mo* in

<http://www.hida.kyoto-u.ac.jp/~cmo/cmomn0/99Note15/index.htm>

Thirdly, "Forthcoming 2001 Mars" (3) came and "2001 Mars vs 1954, 1969, 1986 Mars" was described: The 2001 apparition whose opposition was on 13 June (closest on 21 June) was compared with those preceding similar apparitions in 1954, 1969 and 1986 concerning the apparent diameter, apparition of the spc etc. It was also pointed out that the connection of the spc with the sph is important to be compared at the similar local time.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmo/coming2001/0103/03.html>

The LtE was consisted of the emails from MORITA, TSUNEMACHI, OKANO and NAKAGAMI. In addition, it was planned to hold a Meeting at Okinawa in summer and there were correspondences between HIGA and ISHADOH. From abroad we had emails from Brian COLVILL, Todd GROSS, Frank J MELILLO, Sam WHITBY, André NIKOLAI, Don PARKER and Gianni QUARRA.

20 years ago TYA (63) treated CMO#096 (10 Nov 1990), CMO#097 (25 Nov 1990): Mars in 1980 was closest to the earth on 20 November ( $\lambda=336^\circ\text{Ls}$ ) with the maximal  $\delta=18.1''$ . It was a good apparition with a high altitude appearance and since the central latitude was near  $\phi=8^\circ\text{S}$  so that we could observe the both hemispheres. At the S hemisphere the smallest spc was seen and at the N hemisphere the nph was very active. At the beginning of November there was observed a local dust cloud at Chryse to Solis L in Europe, but no more in Japan when it turned around. However the area of Aonius S looked darker, and Phasis was also caught. There was observed a light belt to the west of Zea L in Hellas, and Tharsis Montes were trapped before the noon in B. The activity of nph was also well observed over M Acidalium. The observation reports were about 600 in this apparition.

In #096, there was reported a large white oval on Saturn in 1990. In #097 it was announced that *Nj* became newly accountant of the CMO.

(Mk & Mn)

ISSN 0917-7388

COMMUNICATIONS IN 東亞天文學會「火星通信」since 1986

# MARS

No. **237**  
25 November 2000

OBSERVATIONS Published by the OAA Mars Section

CMO 2001 Mars Report # 01 OAA Mars Section

●.....火星が東天に戻ってきた。色々2001年火星シーズン開始である。福井では中島幸(Nj)氏と筆者(Mn)が準備の上、27 Octに初観測を済ませた。森田行雄(Mo)氏も十月末に東陵にCCDで開始された。次いで唐部・派翁(DPk)氏から十一月の第二土曜日の観測が送られてきた。既に好く見えており、北極冠の増大など良像である。

今回からこの欄を再開する。従来毎月15日を観測日切として、前月16日から15日までの一ヶ月の観測について詳述した報告をレギュラーする(次号参照)。

27 Oct 2000で火星の視直径は4.40"であった。季節は068°Ls、中央緯度は26°N、位相角 $\iota$ は22°であった。季節は1995年三月初旬(11Feb1995)に最近、1997年一月下旬(20Mar1997)に最近に相当する。15 Nov 2000には視直径は $\delta=4.3''$ 、季節は076°Lsに進み、 $\phi=25^\circ\text{N}$ 、 $\iota=25^\circ$ となった。 $\phi$ は来年四月に向けて南の方に降りてゆく。一方、位相角は年末から来年二月末にかけて更に大きくなる。

THE planet Mars has come back in the morning sky, and thus the season of the 2001 Mars has begun. At Fukui, Takashi NAKAJIMA (Nj) and the present writer (Mn) started their routine observation from 27 October 2000, and Yukio MORITA (Mo) at Hiroshima began to shoot the planet from 30 October through ST-5C. We then received from Don PARKER (DPk) in Florida an excellent CCD image for this season as well as his first drawing of Mars made on 11 November.

We resume this column to review the observations submitted to the CMO every month. The deal line each month of observations is the 15', and so this column treats the one-month period from the 16' day through the next 15' for the time being.

The apparent diameter  $\delta$  was 4.0 seconds of arc on 27 October 2000. The season was 068°Ls, the central latitude  $\phi$  was 26°N and the phase angle  $\iota$  was 22°. The season corresponded to the one we met at the beginning of March 1995 (Mars at opposition on 12 Feb 1995) or at the end of January 1997 (opposition on 17 Mar 1997). On 15 November 2000, the  $\delta$  increased to 4.3" arc, the season proceeded to 076°Ls, the  $\phi$  was down to 25°N, and the  $\iota$  was up to 25°. The tilt  $\phi$  will come further down to the south until April 2001, and the phase  $\iota$  will increase toward the end of February 2001.

●.....今回詳述した報告の観測次第は次の様である。

2 8 3 9

inisciences in a future issue.

I am currently in Vienna, and am winding back to Milan and am eager to return to the U.S. (wearing down a bit with the strenuous nature of travel; no Minami or Asada to help me along the way!!). There are many Japanese in Milan at present. I believe they are all in love with Mozart! Best,

○ · · · · · **Subject: FW: Audouin Dollfus article**  
**Received: Mon 08 Nov 2010 04:47:17 JST**

Dear Masatsugu and Richard, I am just back from my travels. I was glad to receive Richard's reminiscences of Audouin Dollfus--it summarizes a remarkable career. What emerges consistently is his accessibility--and interest in what amateurs were doing. We all can relate such experiences with him. He took a strong interest in my work since 1989, when he wrote a very favorable review of "Planets & Perception" for *l'Astronomie* -- you can well imagine that I was over the Moon with that! I had no idea that it would even be reviewed in French -- and I had a chance to observe planets with him at the Pic in 1992. I will write a few reminiscences about him for next month.

There seemed to be many Japanese especially in Milan and even more so in Vienna. I was surrounded by them at a Mozart concert given at the Golden Hall in Vienna. I suppose it is especially a love of classical music that brought them to these venues.

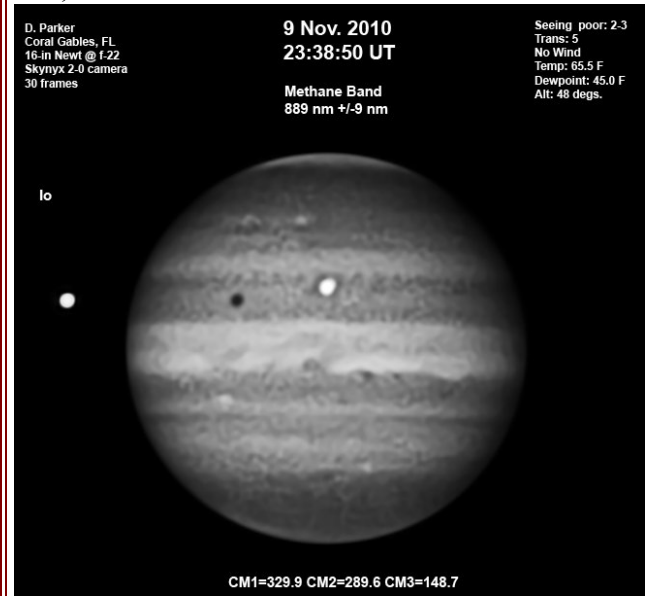
I will have a great deal to say about Schiaparelli, and also had many other astronomical experiences during my three weeks in Europe. (And Richard, thank you for your tips on Tycho and Kepler sites in Prague; I saw all of them mentioned, and found Prague itself the most exotic of all the places I visited. Though Prague of course is booming with tourism, the other areas of the Czech Republic through which we passed definitely still had the feel of the old Iron Curtain country days, even the train onto which we switched in traveling from Munich; while many of the people seemed a bit sad and weary--still.) Best,

**Bill SHEEHAN** (Willmar, MN, USA)

## News: Disturbance at the SEB on Jupiter

● · · · · · **Subject: SEB Revival in Methane Band**  
**Received: Wed 10 Nov 2010 12:06:57 JST**

Hi All, Following up on Chris Go's discovery yesterday of a possible SEB revival, I have attached two CH4 images of Jupiter taken on 9-10 November. Chris was indeed right! The new disturbance is brilliant in methane. Although the seeing was quite poor, it showed up well in RGB, UV and NIR images. These will follow. Best,



○ · · · · · **Subject: SEB Revival in UV and NIR**  
**Received: Wed 10 Nov 2010 15:09:20 JST**

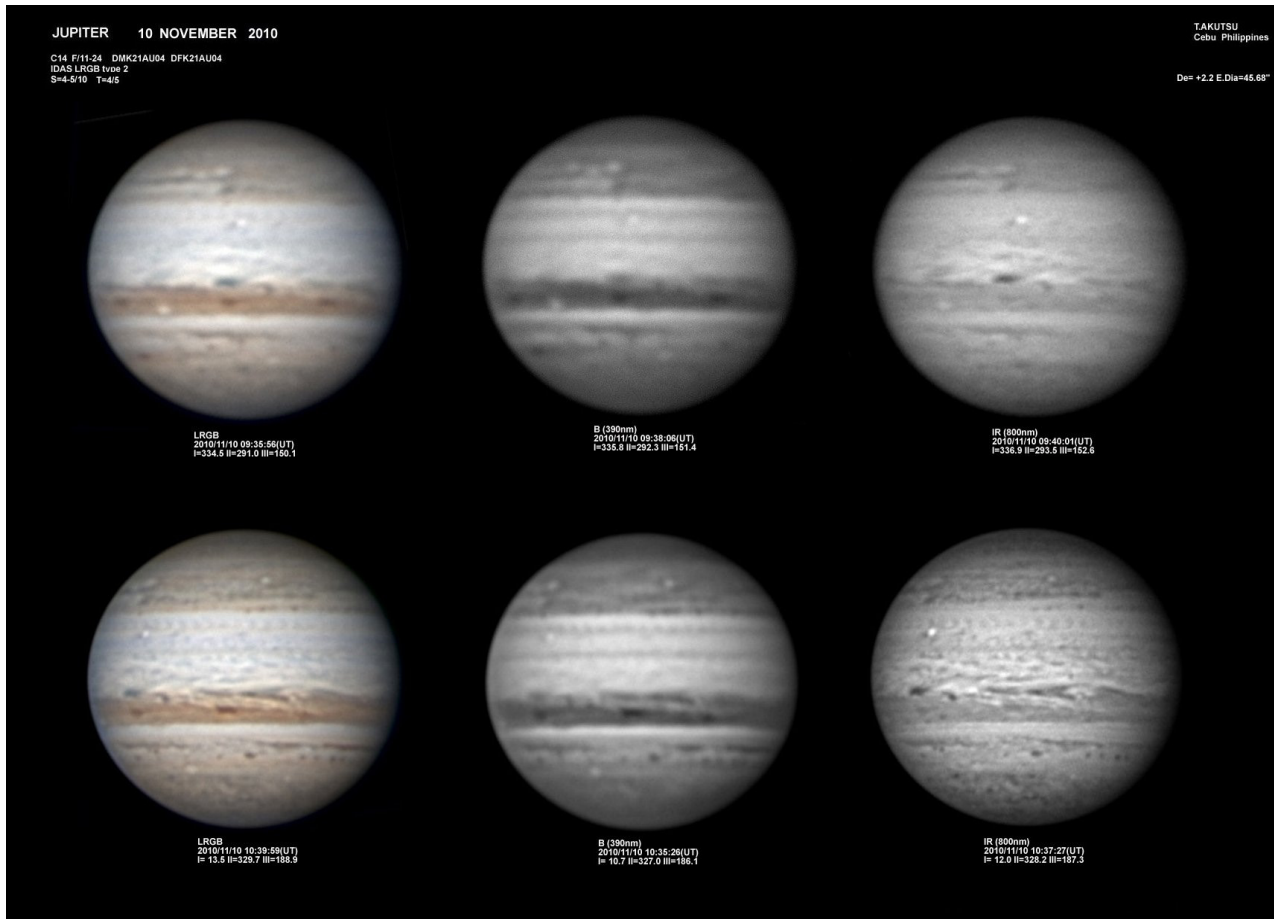
Hi All, I have attached UV and NIR Jupiter images from 10 November. The SEB revival is bright in both wavelengths. It appears larger in UV, but this may be due to seeing effects. Best,

○ · · · · · **Subject: SEB Revival in RGB, 10 November**  
**Received: Wed 10 Nov 2010 16:56:06 JST**



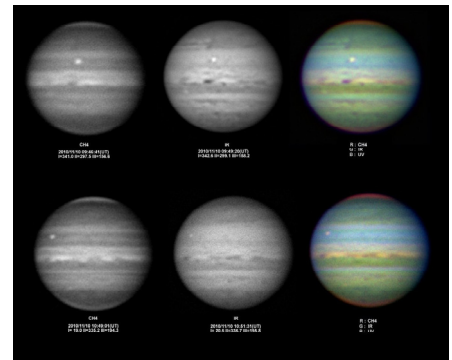
Hi All, I have attached an RGB Jupiter image from 10 November showing the SEB revival as a bright spot in the SEBs. Best,

**Don PARKER** (Miami, FL, USA)



●... The above and right images are edited from those images obtained by **Tomio AKUTSU** at Cebu on 10 November 2010 concerning the SEB revival spot. (He stayed home in Japan from 2 to 8 November.) The LRGB images are shot around 9:36 and 10:40 (he also took at 10:04 GMT). His images thereafter (until 19 November) are all found in the Japanese LtE corner in the following CMO/OAA Web:

<http://www.hida.kyoto-u.ac.jp/~cmo/cmo/378/LtE378.htm>



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**CMO #378/ ISMO #04 (25 November 2010)**

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