

## Mars in 2009–2010: an interim report

This February, the season on Mars is northern mid-spring. The planet came to opposition on 2010 Jan 29 at high north declination, minimal disk diameter (14 arcsec) and areocentric longitude (Ls) 44°. Aphelion will be reached in March, and N. summer solstice (Ls= 90°) on May 14. The small disk hinders high resolution, and by June will shrink below 6 arcsec, but nevertheless there have been plenty of contributors to the Section. 2010 is seasonally similar to 1995 (Ls= 58°).<sup>1</sup> Better accord is found for 1978 (Ls= 37°),<sup>2</sup> 1963 (50°),<sup>3</sup> 1946 (29°), 1931 (Ls= 42°, opposition Jan 27; the closest match (Figure 1)), 1916 (Ls= 56°) and 1899 (Ls= 35°).<sup>4</sup>

### Dust activity

Activity is at a minimum in early northern spring.<sup>4</sup> Northern summer can produce local or regional N. hemisphere or equatorial events, but little major activity is anticipated prior to S. spring equinox late in 2010, by which time the disk diameter will be tiny and the planet close to conjunction. Dust storms display movement, brightening in red light. Brief notes on early-apparition observations of southern Regional activity appeared in the 2008–2009 Council Report.<sup>5</sup>

### Polar regions

The decay of the south polar cap was observed in 2009; now it is the turn of the N. cap. The NPC was at maximum in 2009 Oct near N. spring equinox, when the dispersal of the hood (shown in Figure 2B) was taking

place. Seasonal phenomena associated with cap shrinkage are fully described in our reports for 1995,<sup>1</sup> 1997<sup>6</sup> and 1999.<sup>7</sup> Watch should be kept for interior rifts (particularly the annular dark rift discussed in the 1995 Report) and, later, detached parts. Good quality red images are needed for measurement and for recording interior details.

### White clouds

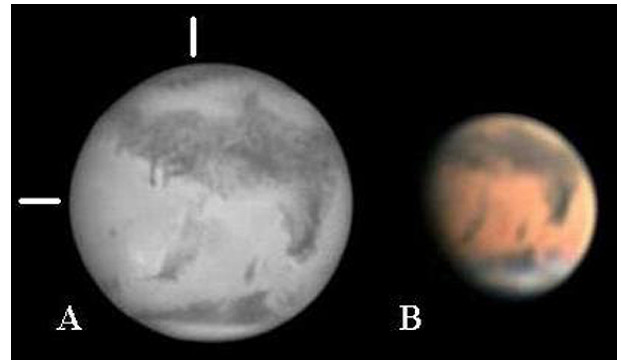
The equatorial cloud band is prominent during Ls= 50–145°, but its full extent across the disk is only clearly seen in blue light. At the limb the band gives rise (by optical thickening) to equatorial clouds (evident in white light) such as those observable over *Libya–Isidis Regio*, *Aeria*, etc. Discrete white clouds which rotate with the planet are observable in N. spring and summer over *Elysium* and the great volcanoes. Of the latter, *Arsia Mons* and *Olympus Mons* show slightly different seasonal behaviour: the best way to see such clouds is again through observing them in blue light on the afternoon or evening side of the disk (Figure 1C). Certainly it will be possible to catch the commencement of this seasonal activity in 2010.

*Hellas* is bright when covered by the S. polar hood, when it shows up best in blue

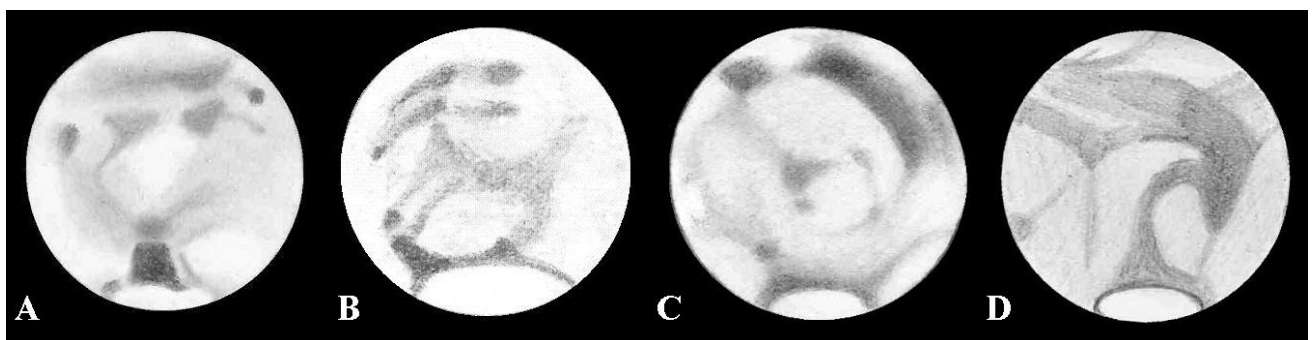
light. As the hood over *Hellas* disperses it leaves the basin floor frosted, when it will be brilliant at all wavelengths throughout the martian day. In 1997 it was observed like that between approximately Ls= 90–140°.

### Surface features

Several changes resulted from the planet-encircling dust storm of 2007. In 2007–'08 there was a dark streak running N–S across *Aethiopsis*, and this still persists in 2009–'10.<sup>8</sup> *Solis Lacus* changed its orientation from E–W to SE to NW (Figure 3A), somewhat like its appearance during 1926–'29, but is now returning to normal (Figure 3B).



**Figure 2.** The *Elysium* region in 2007–'08 and 2009–'10. The N–S streak over *Aethiopsis* (indicated) appears as a southward extension of the elongated *Aetheria* development at the NW corner of *Elysium* in both apparitions. (A) 2007 Dec 22d 00h 04m, CML= 247°, 24cm Schmidt–Cass., red filter image, *D. A. Peach* (UK). (B) 2009 Oct 28d 04h 53m, CML= 250°, 35cm Cass., L(R)RGB composite, *J.–J. Popeau* (France). Note the NPH, especially on the morning side.



**Figure 1.** Previously unpublished BAA drawings from 1931 for comparison with 2010. (A) 1931 Jan 30d 23h 45m, CML= 041°, 31cm refl., *B. M. Peek*. *Mare Acidalium* is followed by the double streak of *Nilokeras*. (B) 1931 Jan 29d 00h 30m, CML= 070°, 45cm refl. & 20cm OG (Headley Observa-

tory), *R. L. Waterfield*. *Solis Lacus*, typically, is elongated E–W. (C) 1931 Feb 19d 22h 30m, CML= 207°, 45cm refl. (Headley Observatory), *F. J. Hargreaves*. Note the large size of *Trivium Charontis* and the lack of shading in *Aetheria*, in contrast to the last two decades. Bright

evening cloud over *Olympus Mons*. (D) 1931 Feb 12d 21h 40m, CML= 257°, 25cm OG (Orwell Park Observatory), *E. H. Collinson*. Witness the strong *Nepenthes* curve (absent since the early 1970s), plus an earlier instance of a dark streak crossing *Aethiopsis* (see also (C)).

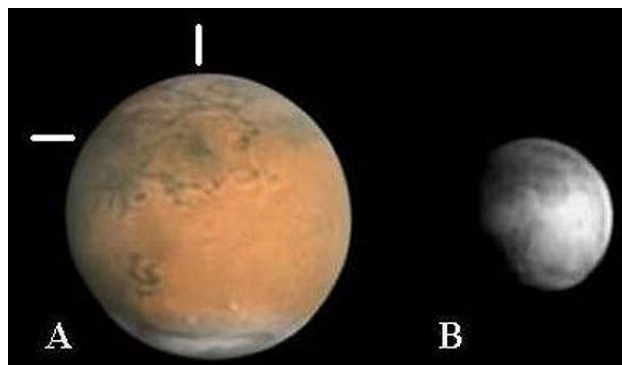
### International conference on a century of Mars observations

This memorable event, organised by Nicolas Biver, was held in Paris to commemorate the 100th anniversary of the ground-breaking observations of Mars by E.-M. Antoniadi at Meudon. My illustrated talk about his life may be viewed online.<sup>9</sup> The Director also lectured about dust activity in 1909 and 1911 compared with 2001 and 2003. One major discovery made in the Paris Observatory archives during the conference – namely that E. L. Trouvelot had witnessed a planet-encircling dust storm in 1877 May–July – was described in a Letter to the Editor in the previous *Journal*.<sup>10</sup>

**Richard McKim**, Director

#### References

- 1 R. J. McKim, *J. Brit. Astron. Assoc.*, **115**, 313–333 (2005)
- 2 E. H. Collinson, *ibid.*, **90**, 560–564 (1980)
- 3 E. H. Collinson, *ibid.*, **75**, 171–178 (1965)



**Figure 3.** The *Solis Lacus* region in 2007–'08 and 2009–'10. *Solis Lacus* (indicated) had an abnormal orientation in 2007–'08, but is now returning to normal.

(A) 2007 Dec 6d 04h 09m, CML= 088°, 24cm Schmidt–Cass., RGB composite, *D. A. Peach* (from Barbados).

(B) 2009 Sep 24d 19h 17m, CML= 067°, 38cm refl., TouCam red channel image, *T. Ikemura* (Japan).

- 4 E.-M. Antoniadi, *Mem. Brit. Astron. Assoc.*, **9**, pt 3 (1901)
- 5 R. J. McKim, *J. Brit. Astron. Assoc.*, **119**, 266–267 (2009)
- 6 R. J. McKim, *ibid.*, **116**, 169–186 (2006)
- 7 R. J. McKim, *ibid.*, **117**, 314–330 (2007)
- 8 Dark streaks across *Aethiopsis* were observed in the 18th century and in 1931–1933: see R. J. McKim, *Mem. Brit. Astron. Assoc.*, **44** (1999).
- 9 [http://www.hida.kyoto-u.ac.jp/~cmo/cmomn5/2009Paris\\_Meudon\\_Talks\\_RMk.htm](http://www.hida.kyoto-u.ac.jp/~cmo/cmomn5/2009Paris_Meudon_Talks_RMk.htm)
- 10 R. J. McKim, W. P. Sheehan & R. Rosenfield, *J. Brit. Astron. Assoc.*, **119**, 349–350 (2009)