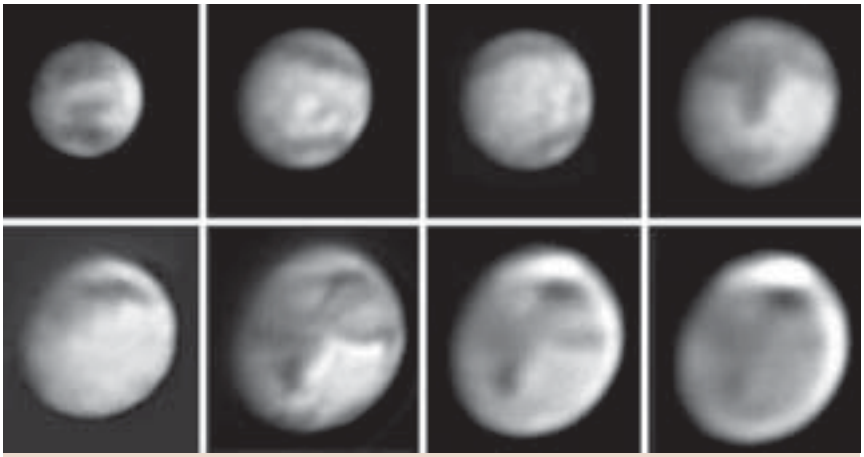
Mars Section

The great 2003 perihelic opposition of Mars has begun!

General

Mars was in conjunction with the Sun on 2002 August 10. Observations received since then cover the period 2002 October 7 (L_S= 78°, disk diameter (D)= 3".6, tilt = +26°N) until the date this report is being compiled, 2003 April 20 (L_S= 171°, D= 8".6, tilt = –14°S). Thus the end of the S. hemisphere autumn season on Mars (N. hemisphere spring) and most of S. winter (N. summer) have been covered so far.

Observations made in the UK were contributed by D. Gray, C. Proctor (CCD) and the Director. Overseas contributions – all CCD work apart from visual observations by M. Frassati (Italy) – came from P. Campbell (USA), T. Ikemura (Japan), D. C. Parker (USA), D. Peach (during a stay of several months on Tenerife), C. Pellier (France) and M. P. Valimberti (Australia). Bulletins detailing Japanese work were sent by the OAA. The Philips ToUcam Pro webcam seems to have become a popular tool for CCD imaging since the last apparition. In the following report only BAA work is described and illustrated, without reference (on this occasion) to ongoing work by active spacecraft in martian orbit.



Top row: Images by Damian Peach with 305mm Schmidt–Cass. at f/29 and ST-5c CCD camera. (South is uppermost in all images.)

Left to right: **2002 December 10**d 06h 39m UT, CML= 36°, infrared filter (800–1200nm). Mare Acidalium is prominent and the NPH is present. D = 4".2 (!)

2002 December 30d 07h 28m, CML= 213°, infrared filter. A bright Elysium fringed by a pale Cerberus and dark Propontis and Aetheria.

2003 January 2d 07h 02m, CML= 178°, infrared filter. Notice the bright Nix Olympica near the evening terminator.

2003 January 28d 07h 04m, CML= 286°, infrared filter. Syrtis Major broad. Hellas light. Tiny NPC.

Bottom row: Filter images by Don Parker with 420mm refl. at f/55 and ST9XE CCD camera. (Colour composites were also contributed by both observers.)

Left to right: **2003 March 30**d 10h 52m, CML= 111°, red light (RG610 filter; 610–1100nm). Dark band from Aonius Sinus to Mare Sirenum. Solis Lacus dark; Phasis imaged.

2003 April 16d 10h 20m, CML= 300°, red light (RG610 filter). Large, bright SPH. Many fine details around N. tip of Syrtis Major and around the dull Hellas.

2003 April 16d 10h 32m, CML= 303°, green light (531nm). Libya evening cloud.

2003 April 16d 10h 27m, CML= 302°, blue light (450nm) Strong 'blue clearing'.
D = 8".4 for this tricolour set.

Surface features

Following the planet-encircling dust storm in the 2001 apparition,[1] several albedo changes were noticed. The Solis Lacus became smaller, with the long axis differently oriented, and Nectar disappeared under dusty surface deposits. West of Solis Lacus the north–south curved streak named Phasis reappeared, resembling its form during 1877–'79. Syrtis Major appeared thinner, and a possible new albedo feature in Aethiopis was imaged by Peach in 2003 March. Which changes would persist into 2003?

Recent images by Parker show that Phasis remains visible, although it is fainter than after the 2001 dust event. Syrtis Major had already returned to normal width by the start of the apparition. Solis Lacus looks normal, large and dark, but more observations of these longitudes are needed. The small albedo feature in Aethiopis has not been recovered. Several long-standing albedo anomalies, such as the Aetheria darkening, and the pattern of the markings in the Casius–Nodus Alcyonius area, remain well visible. Cerberus remains faint.

Further changes since the end of the last apparition are also evident in the present appearance of the area between Mare Sirenum and Aonius Sinus. This appears as a continuous dark belt, actually a characteristic feature of late southern spring on the planet. A similar appearance was noticed in 1939 and 1986, for example. Another current feature is the great breadth and darkness of Depressiones Hellesponticae adjoining the bright S. polar hood. Hellespontus and Yaonis Fretum are dark streaks marking the western edge of Hellas.

Atmospheric activity

Many records of white clouds are to hand. For instance, as early as 2002 October 24 under CML= 133°, Gray described Nix Olympica as 'sparkling' and bright, and Peach imaged it as a bright patch at the evening terminator on 2003 January 2. On November 18 Gray found Hellas to be light on the morning side, while on December 18 it appeared bright to him in the afternoon. Frassati shows it bright on the morning side on 2003 February 1. Further examples in this incomplete listing: 2003 January 7, the Director found Elysium bright at the morning limb, and on January 18 Argyre looked bright to Frassati. Other bright clouds were seen over Candor, Chryse–Xanthe, Libya, etc., etc., from time to time. Parker recently imaged strong surface features in blue-violet light: a 'blue clearing' of order 2, on April 16 in the longitude region of Syrtis Major–Sinus Sabaeus.

No current dust storm activity is evident in the Section's observations, and Hellas is currently dull. But a very careful watch should now be kept for major dust activity through till the end of the apparition. The 2001 planet-encircling event began at an unusually early time in the martian year, at L_S= 185°, just after the S. spring equinox (corresponding to 2003 mid-May in the present apparition). Any positive observations should be reported at once.

The polar regions

Circumstances prevented all but the closing stages of the NPC recession from being observed. In the earliest observations the N. polar cap was still visible, but very good seeing was needed to make it out on the tiny disk. A CCD image by Peach on 2003 January 28 (L_S= 129°) shows a small ground

cap (having reached the static summer remnant by that stage), and the NPC may also feature as a tiny spot on an image by Parker on April 11 (L_S= 166°). In the late northern summer the polar area was often covered by a whitish hood. In the 1982 and 1984 apparitions, according to BAA data, the hood appeared to mask the NPC from about L_S= 152–161°.

At present the S. polar hood is a large brilliant area covering the southern limb. BAA data show the SPC to have been hood-free by about L_S= 172° at the 1988 opposition, though not all longitudes were uncovered simultaneously.

The Mars Section website

At the November meeting of the Council, the Director asked Mr R. A. Marriott – also the Association's Curator of Instruments – to manage a new Section webpage. We thank Prof Jim Bell of Cornell University, USA, for hosting the site from 1997. The switchover to the new site will take place in early June as this issue of the *Journal* is being published, and the site will be linked from the main BAA home page.

Recommended reading

A new guidebook for the Red Planet has been written by Meteor Section Director Neil Bone (*Philip's Mars Observer's Guide*, Philip's, 2003) and recently published. It will be of interest to all Section members and to intending observers. The Director contributed some illustrations and the Foreword. New observers should also familiarise themselves with past Reports of the Mars Section to appreciate the type of work that can be accomplished with different apertures. For martian nomenclature see the general map in the April *Journal* (page 70),[2] and the standard maps reproduced in the Director's *Memoir* on martian dust storms, available from the BAA office.[3]

Finally, Prof Colin Pillinger in a recent letter informs me that he and his wife Judith are writing a book comparing the voyage of *Beagle II* with that of the original *Beagle* of Captain Fitzroy and Charles Darwin.

Richard McKim, *Director*

References

1 McKim R. J., *J. Brit. Astron. Assoc.*, **112**(3), 119–121 and 123 (2002); see also the images reproduced in the report of the BAA Ordinary Meeting of 2002 September 21, *ibid.*, **113**(2), 112 (2003)

2 McKim R. J., *J. Brit. Astron. Assoc.*, **113**(2), 70–71 (2003)

3 McKim R. J., 'Telescopic martian dust storms: a narrative and catalogue', *Mem. Brit. Astron. Assoc.*, **44** (1999)