Mars Section

Observing the 2013–'14 apparition of Mars

Mars will be at opposition on 2014 April 8 (with a seasonal date defined by Ls= 114°, corresponding to early summer in the martian northern hemisphere), with a diameter of 15.1 arcseconds,[1] bringing the planet a little nearer than in 2012. Closest approach occurs on April 14 and the declination will be around –5°. The planet's diameter is 6 seconds or greater between 2013 mid-December and 2014 October, so observations (if not yet begun) should start as soon as possible.

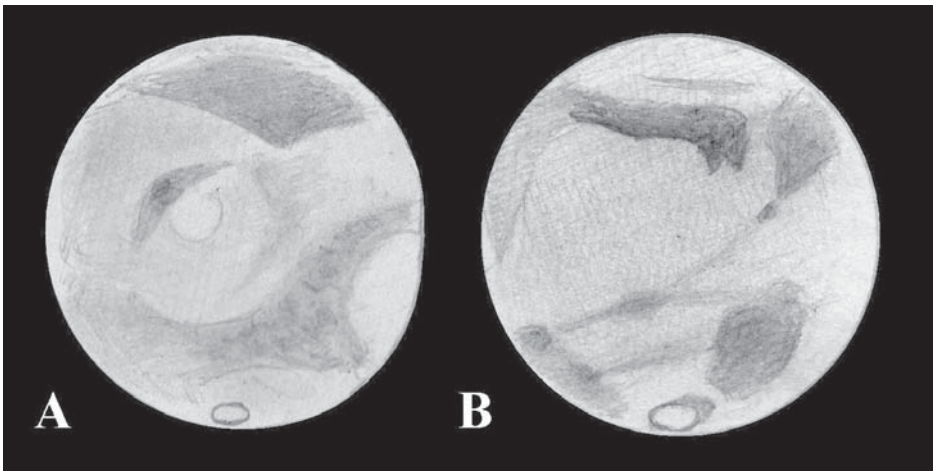
Figure 1. Edward Collinson at the 1978 BAA Exhibition Meeting. *Photo by Alan Heath.*

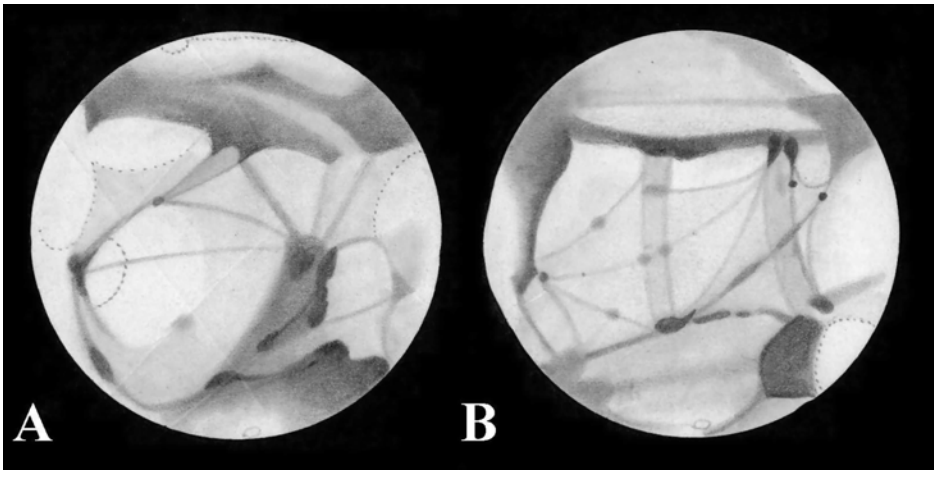
For seasonally comparable oppositions from the past, the 1950 and 1952 approaches (at Ls= 97° and 136° respectively) will serve us well in showing the planet close to the N. summer solstice and in N. midsummer, respectively.

From 1950 we offer some previously unpublished sketches from the notebook of Edward Collinson, then living at Felixstowe, who went on to become Mars Section Director from 1956–1979. Collinson (Figure 1) experienced some spells of superb seeing in the spring of 1950 and, although the opposition was aphelic, he later told the writer that he did his best Mars work during that year (Figure 3).

The BAA's most prolific contributor at the next opposition of 1952 was Tsuneo Saheki (Figure 2),[2] who lived at the time in Osaka, Japan. We have many of his original pencil sketches, and some are reproduced for the first time in this *Journal* (Figure 4) to show some of the changeable features to look for in 2014. Saheki had a tendency to show small details in the form of streaks, whereas Collinson was more conservative, and Figures 3 and 4 can be directly compared. Both observers placed the markings accurately.

The martian albedo features vary considerably over time due to shifting dust deposits on the surface. In the 1950s the planet looked rather different from how it does today. The IAU albedo map by G. de Mottoni also dates from that epoch, being based upon photographs obtained between 1941 and 1952. There was the very prominent *Nepenthes* curving out of the E. (or *p*.) side of *Syrtis Major*, running as far north as *Thoth* (or *Nodus Alcyonius*, the latter in a slightly different position some 10° E. of where it is today).





Cerberus–Trivium Charontis was much more prominent than it is now: it has been faint since the mid-1980s.

Figure 2. Tsuneo Saheki observing Mars in 1956. *Oriental Astronomical Association.*

In the old drawings there is also marked a very large development just E. of *Utopia*, which was known as *Nodus Laocoöntis*. Though not illustrated here, the features around *Nilokeras* were also subtly different from today, and *Solis Lacus* was much smaller. Future dust storms could modify these markings at any time: the Director has been waiting for the reappearance of *Nepenthes* for forty years – so far without success!

Although we can never predict exactly how the surface markings will appear, we can certainly anticipate white cloud and polar cap behaviour rather accurately, and as illustrations we refer readers to the images taken at the opposition of 1999, 15 years earlier.[3] At opposition the planet will be experiencing early summer in the N. hemisphere (summer solstice being reached at Ls= 90°), and the decay of the N. polar cap will be well advanced. Look also for any rifts in the residual cap and outlying, recently detached parts.

There will be extensive white cloud activity, and it is an optimum time for imaging the equatorial cloud belt in blue light: telescopically, this begins to be prominent around Ls= 45°. Also expect to see several evening orographic clouds over the martian volcanoes.

Another interesting feature, described and il-

Figure 3 *(left).* Mars in 1950 drawn by E. H. Collinson (25cm Newtonian, ×350). *Mars Section Archives.*
A. 1950 Apr 6, 21:45UT, ω= 229°. *Cerberus–Trivium Charontis* is much more prominent than today, and a small orographic cloud over *Elysium* follows it. The great curve of *Nepenthes* was seen to be highly broadened and (together with *Casius*) spotty, under excellent seeing conditions.
B. 1950 Mar 24, 22:15UT, ω= 350°. *Ismenius Lacus* is rather prominent, much more so than in recent decades. Otherwise this face of Mars is very much as it is today. The *Syrtis Major* was faint and pale bluish-grey, affected by evening cloud. Much fine detail was detected in superb seeing.

Figure 4. Mars in 1952 by T. Saheki (20cm Newtonian). *Mars Section Archives.*
A. 1952 May 12, 11:00UT, ω= 244°, ×285. The temporary dark area known as *Nodus Laocoöntis*, east of *Nodus Alcyonius*, is dark and complex, having reached its peak area in the early 1950s. The *Syrtis Major* is covered by morning cloud except at its northern tip.
B. 1952 May 7, 15:00UT, ω= 348°, ×330, ×400. The 'canals' are rather strongly depicted here, and the NPC is considerably smaller than in March. An evening cloud projects slightly beyond the limb, and partly covers the *Syrtis Major*.

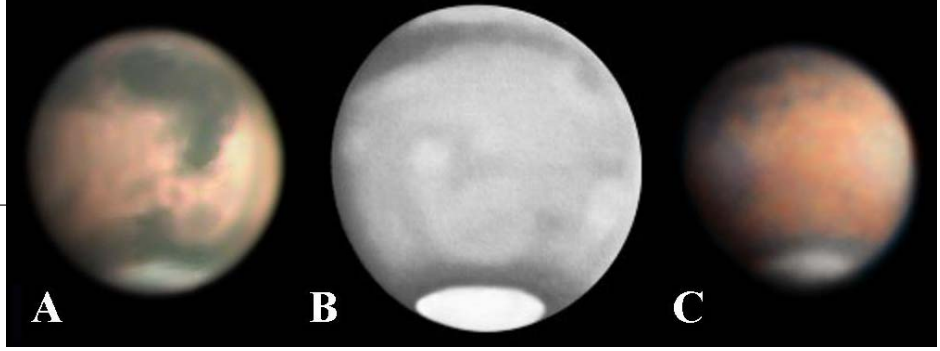


Figure 5. Images and drawings of Mars in 2013.
A. 2013 Sep 26, 10:49UT, ω= 267°, ASI 120MM RGB image with 40cm SCT, *D. C. Parker*. Despite the 4.3 arcsecond diameter, this image shows a new dark streak running NE from a rather faded *Nodus Alcyonius*, the small patch just below the disk centre (and NE of the tip of *Syrtis Major*). Fragments of *Nepenthes* may be visible. This change must be the result of recent dust activity, and similar detail was also shown there by Peach on Sep 20. Images from Oct–Nov (several observers) subsequently showed *Nodus Alcyonius* and the S. part of *Casius* considerably faded. *Nodus Alcyonius* had appeared strongly at each apparition since 1982, but in 1980 and for a few oppositions immediately beforehand it was faint: it acts as a useful 'litmus test' for dust deposition in the area. As of 2013 Nov the area more reminds the writer of the 1978 opposition.
B. 2013 Sep 30, 05:35UT, ω= 152°, drawing with 41cm DK Cass., ×365, ×535, *D. Gray*. *Elysium* is light on the morning limb and a bright patch marks the place of *Olympus Mons* just *p*. the CM.
C. 2013 Oct 6, 05:27UT, ω= 091°, RGB image with 36cm SCT, *D. A. Peach*. There are traces of the seasonal annular rift within the N. polar cap. *Solis Lacus* is conspicuous to the south, and equatorial evening cloud covers *Chryse–Xanthe*. It is still too early for the development of a conspicuous equatorial cloud belt.

lustrated in the second interim report on the 2011–'12 apparition[4] is the onset of cyclonic clouds over *Baltia* (NW of *Mare Acidalium*) at the edge of the NPC. The seasonal onset of the N. polar hood will be observable in 2014: it does not occur simultaneously at all longitudes, and it may dissipate and reform before becoming permanent. The time to watch is around Ls= 160° (2014 mid-July).

Small scale dust activity may be seen at almost any time, but large scale activity is not likely to be witnessed before the S. spring equinox at Ls= 180° (2014 mid-August). Any such event should be reported at once.

Map resources, references to books and past reports as well as to the current Section Programme are all posted at our website.[3]

Mars in 2013–'14: First interim report

Observations of Mars were commenced by some as early as the summer of 2013, and I thank P. Abel, M. Adachi, L. Aerts, T. Akutsu, K. N. L. Bailey, S. Ghomizadeh, D. Gray. R. Haddon, T. Ikemura, M. Kardasis, E. Morales, D. C. Parker, D. A. Peach, J. Sussenbach, G. Walker and K. Yunoki for their early-morning contributions up to the time of writing (2013 late November).

Rather than giving a detailed report here, I have picked out four observations and describe their significance in the captions to Figure 5. A recent change in the *Nodus Alcyonius* area is very significant, given that the feature had changed little in over 30 years.

Please send me your work regularly and help to make this another memorable opposition!

Richard McKim, *Director*

References & notes

1 BAA *Handbook* for 2014
2 According to M. Minami (in the Oriental Astronomical Association's *Communications in Mars Observations*, No. 175 (1996)), Saheki was born (as Tsuneo Watanabé) on 1916 Oct 3. His main telescope was a 22cm Newtonian. He took the name Saheki upon his marriage in 1942, and from 1946 onwards he directed the OAA Mars Section with much energy until his retirement in 1990. He often wrote reports in the OAA's Journal, *The Heavens*, of which he was once editor.
One of his particular interests was the development of the feature *Nodus Laocoöntis* from 1946 onwards (See the Letter to the Editor entitled '*Nodus Laocoöntis* and A. W. Wilkinson's map of 1948' by Takeshi Sato, together with the Director's comments, in *J. Brit. Astron. Assoc*., **96**, 8–9 (1985)), as well as the study of short-term brightenings or 'flashes' on the planet's surface. (See the BAA 2001 final report for reproductions of Saheki's 1954 observations: R. J. McKim, *J. Brit. Astron. Assoc*., **119**, 123–143 and 205–211 (2009).)
Saheki was President of the OAA, 1990–'93 and died on 1996 Feb 22 aged 79. His BAA contributions were limited to the 1950s; it is a pity that our Mars Section at that time (directed by P. M. Ryves, 1942–'56) was much less active, and did not publish his work.
3 R. J. McKim, *J. Brit. Astron. Assoc*., **117**(6), 314–330 (2007). This report from 1999 is available at the Section website: **http://www.britastro.org/mars**
4 R. J. McKim, *ibid*., **123**(1), 6–7 (2013)

National Astronomy Week 2014

The next National Astronomy Week will be held on 2014 March 01–08, Saturday to Saturday. The BAA is supporting NAW 2014 both financially and organisationally, and encourages affiliated societies and others to organise observing events designed to bring practical astronomy to a wide public.

NAW has taken place every few years since the first week in 1981, which was organised to celebrate the bicentenary of the discovery of Uranus by William Herschel from Bath. The 1990 NAW celebrated the centenary of the BAA. NAW has always been organised by a committee representative of grass-roots amateur astronomy in the UK (in contrast to some other promotional events), with representatives from the BAA, Society for Popular Astronomy, Federation of Astronomical Societies, and Royal Astronomical Society taking part. It is run on a small budget mainly contributed by these organisations, though on this occasion support has been secured also from the Science, Technology and Facilities Council, which has enabled the employment of a part-time coordinator (Laurie Marsden, working from the Observatory Science Centre, Herstmonceux), and *Astronomy Now* magazine is providing free publicity.

The theme for NAW 2014 is 'Target Jupiter', with the planet at its most northerly apparition in its 12-year orbital cycle, and hence optimally placed for UK observation in the evenings from February to April. The waxing crescent Moon will also be high in the sky and a good object for public observation during the first week in March. It will be out of the way later in the night, allowing observation of setting winter deep sky objects such as M42, and both Mars and Saturn will be observable late in the evenings.

The NAW website is **www.astronomyweek.org.uk**. Those organising events in the week should enter them on the site, a process that has been made as user-friendly as possible. The site will show a map of the location of all the events across the country, and we are working to get the address distributed widely by the national media in the weeks leading up to March. The site contains various other resources relevant to observing Jupiter and doing amateur astronomy, directed towards the public and schools, such as instructions for a project to repeat Rømer's 1656 determination of the speed of light from observations of Jupiter's moons, and details of another star-count to survey light pollution, coordinated by the Campaign for the Protection of Rural England and the BAA CfDS over the same period.

We hope as many members as possible will be involved in NAW 2014 and will be organising events across the country to introduce new people to the wonders of the sky, as has been done at each NAW since 1981. This will also be an opportunity to promote the Association, and encourage new observers to join.

David Arditti