

Mars at its nearest: E. A. L. Attkins on Madeira, 1924

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A contribution from the Mars Section (Director: R. J. McKim)

Many astronomers have travelled south to view Mars at its best. This is the story of the expedition by BAA Mars Section member Ernest Attkins, who travelled to the island of Madeira to view the planet in 1924, during the closest opposition of the 20th century.

Introduction

For northern temperate astronomers generally, and for UK observers especially, the very closest oppositions of Mars are always a disappointment on account of the planet's extreme southern declination and consequent low altitude and poor seeing conditions. Such was the case with the recent perihelic opposition of 2001,¹ when most of the observations received by the Section were made in more southern latitudes. Indeed, in 1907 the planet's declination was so far south that no observations were contributed from the UK to the then Director, E. M. Antoniadi.

The only solution for British astronomers has been to 'go south'. In 1877 N. E. Green went to Madeira,² whilst in 1922 P. M. Ryves went to Tenerife,³ and in 1986 the writer visited Tenerife as well as the Pic du Midi Observatory.⁴ In 1924, for the closest opposition of the 20th century on August 23 (disk diameter 25.1 arcsec, minimum distance 0.37285 AU, declination $-17^{\circ} 41'$), E. A. L. Attkins decided to follow in Green's footsteps, with the prospect of Mars being 19° higher in the sky than when seen from London.



Figure 1. The former Monte Palace hotel and gardens photographed by the writer in 2002 July.

E. A. L. Attkins

Ernest Anthony Lonsdale Attkins was elected to BAA membership on 1896 March 25. At that time he lived at 16 Victoria Cottages, Archway Road, Highgate, North London and observed with a fine 165mm (6½-in.) reflector which could easily carry a power of $\times 480$.⁵ He was from the outset primarily a lunar and planetary observer who contributed to the work of several of the Sections. Antoniadi, Goodacre and Cottam valued his work in the 1890s and early 1900s. Antoniadi⁵ recognised Attkins as the independent discoverer of the martian 'lake' Euxinus Lacus in 1901. Goodacre reproduced a fine drawing by Attkins of the crater Messier and its environs in 1898 in a Lunar Section *Memoir*.⁶ Attkins published little of his work himself, tending to leave this task to the Section Directors, and this may have been on account of his modest opinion of his own work, which he once expressed in the *Journal*.⁷ By 1910 his membership had lapsed, but he rejoined on 1919 January 29 and once again became very active in the Mars and Jupiter Sections. Mars was his main interest, and after the early 1920s he seems to have observed only that planet.

By 1919 he had moved out of London to Squirrels Heath, near Romford, Essex, and he continued to observe into the 1930s (in 1919 his address was 2 Outred Villas, but the last decade of his life was spent at 459 Brentwood Road). He was a member of the Mars Section for many years, contributing data for 1899 (the first apparition he observed), 1901, '20, '24, '26, '31 and '35, his best work being done in 1924 and 1926. In 1927 he travelled north by train to watch the total solar eclipse.⁸ He often attended BAA meetings at Sion College, London, and sometimes spoke at those gatherings. His name still appeared in the 1938 December *List of Members* but his death occurred during the 1939/40 session. Oddly no Obituary was published, though many members must have known him. A photograph of him taken in 1924 suggests he was then about 60 years old, and in 1926 (from his letters) he was still working, his employment being in the London District Manager's department of the London and North Eastern Railway Company.⁹



Figure 2. E. A. L. Atkins with his telescope on the terrace of the Monte Palace hotel, 1924 August (*BAA Mars Section archives*).

The 1928–29 opposition of Mars was less favourable, and due to illness and the severe winter Atkins made no observations.²⁷ By 1935 he had become rather deaf, and he himself wrote in 1936¹⁰ that he had no chance of personally returning to Madeira (no doubt on account of age) to observe the next few oppositions when the declination of the planet would again be far to the south.

As was customary in those days for most serious amateur astronomers, Atkins was elected a Fellow of the Royal Astronomical Society (1926 February 12).⁹

Madeira and its weather

Madeira^{10,11} is a small island off the west coast of North Africa. The capital and port is Funchal (latitude 32° 38' north). The parish of Monte is situated in the hills above the capital, at an altitude of some 550 metres. The climate is mild throughout the year, a little less hot than Tenerife. The early mornings are generally clear in summer but light cloud often develops during the day, with the sky tending to clear in the evening. Monte is more affected by daytime cloud than Funchal. A recent book notes the following: 'Because of its altitude, this area [Monte] is subject to frequent bouts of fog from the autumn to spring, but in the sum-

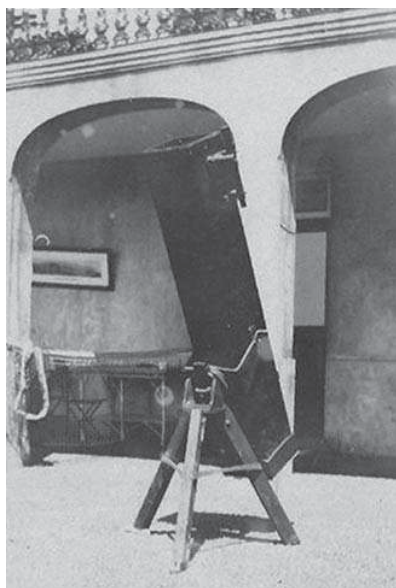


Figure 3. The 216mm fork-mounted telescope in close up (*BAA Mars Section Archives*).

mer its pleasant climate and exuberant vegetation make for a pleasant sojourn. For that reason, the parish of Monte, towards the end of the 18th Century, began to be sought by holiday-makers for visits, and by foreigners living in Madeira and opulent personages from Funchal as a site for summer houses.¹²

Atkins decided to stay at Monte rather than at sea level, and selected the Monte Palace Hotel as a site for his telescope (Figures 1–4).

The Monte Palace Hotel and gardens

This first-class hotel was opened in 1904, and had room for 40 guests. Set amidst luxurious gardens, the terrace commanded a spectacular view of the sea. Atkins could see shipping 45 miles away with the naked eye. The hotel had many famous guests over the years, including the President of the Spanish Republic, but it closed in World War II following the death of its owner Alfredo Guilherme Rodrigues.¹² In the 1980s its gardens were renovated and opened to the public.

In the summer of 2002 my wife and I visited the spot from where Atkins had observed, and admired the beautiful views and gardens. In 1924 Atkins could have arrived by the steam railway from Funchal which served the Monte hotels; today, visitors come by bus or the new cable car. Near the former hotel is the famous church with a side chapel containing the remains of the last Emperor of Austro-Hungary, and just below the church is the start of the famous Monte toboggan ride, an essential tourist trap.

The telescope

For most of his work, including that done on Madeira, Atkins used a 216mm Newtonian with a fine mirror by Slade. For the expedition he took the optics, together with a lightweight portable tube and equatorial fork mounting (Figures 2–3). At a later BAA meeting, William Porthouse said: 'Had



Figure 4. Guests, Atkins excluded (and staff?) at the Monte Palace Hotel in 1924 (*BAA Mars Section Archives*).

I known that Mr Atkins was taking an 8½-in. reflector to observe Mars in Madeira, I should have been glad to lend him the 13-in. reflector in my possession, which Mr N. E. Green took with him for the same purpose in 1877, also to Madeira.¹³ During his observing career Porthouse – an amateur based in Manchester – did a good deal of valuable lunar work for Walter Goodacre with Green’s telescope.¹⁴

The observations

Atkins was not the first UK observer to view Mars from Madeira. As mentioned earlier, in the epochal opposition of 1877 the English watercolourist and landscape painter N. E. Green¹⁵ had travelled to Funchal and observed from there with his 330mm (13-in.) reflector. Green was an accomplished amateur astronomer, and would later serve as BAA President.¹⁶ His beautiful drawings, lithographed in the RAS *Memoirs*,² are fine examples of classic planetary drawing. Analysis of his work by the writer has recently yielded information about previously uncatalogued dust storms.¹⁷

Atkins spoke about his experiences at a BAA meeting in 1924¹⁸ and wrote about his Mars work at greater length

in the *Journal* in 1936.¹⁹ He also wrote a detailed report with notes and drawings, several in colour (see the examples reproduced in Figure 5), for the then BAA Mars Section Director, W. H. Steavenson. Although Steavenson wrote no report on the work of the BAA team,²⁰ Atkins’s work still exists in the Section archives. In the 1920s few Sections used report forms for members’ observations, but in 1924 another Mars Section member, G. H. Lepper, produced a ‘questionnaire’ to be filled in for each night’s work. One example, completed by Atkins, is reproduced here as a novelty (Figure 6, which describes Figure 5F). Some of Atkins’ work did appear in print at the time, for he sent two sketches and several letters to the *English Mechanics* (full title: *English Mechanics and the World of Science*),^{21–24} and forwarded drawings (for 1920 and 1926) to W. H. Pickering for the latter to use to illustrate his Mars Reports in the now defunct journal *Popular Astronomy*.^{25–26}

Atkins sailed on the RMS *Kildonan Castle* on 1924 August 15, and by accident or design he arrived on August 19, the night of Green’s first Mars observation 37 years previously. His final night was September 2, for he had to pack up and be ready to catch the mail-boat home on Sept 4,

having used up all his annual leave. Upon returning home he could only observe the planet in a half-hour gap between houses,²⁷ a well-known problem for UK observers dealing with planets at far south declination. It will be best to let Atkins tell the story in his own words. As the *BAA Journals* are more accessible in libraries, I will quote mainly from his letters to the *English Mechanics*. Somewhat ironically, Atkins enjoyed his best ever view of Mars on 1926 November 22, when observing from home.

Atkins writes about his work on Madeira:

‘Acting on the advice of Mr P. M. Ryves I decided to take equatorial mounts and strong wooden tube... Two Wratten screens are being taken, one K filter, and one blue (toluidine)... it has been no light task to ‘wangle’ an instrument, heavy enough to be steady, yet not too heavy to be portable...’ [written August 2 and published in *English Mechanics* August 15]²¹

‘...I hoped to get the telescope erected day of arrival to start work same night. The Portuguese Customs had a word to say about that, and put the instrument into bond until duty – two-thirds value – was paid. The matter was left in the hands of... Mr Carlo Zino, who had been good enough to take an interest in the expedition... Telescope arrived at dusk and was put together next morning. Mars that night was poor ... few details made out. Next afternoon (August 21st) and evening ... heavy low clouds and thick misty rain.

BRITISH ASTRONOMICAL ASSOCIATION
(MARS SECTION).

Questionnaire to be answered by Observers as far as quality of seeing permits on each night of observation.

Name of Observer *Atkins* *C Madeira*
Date *1924 Aug Sep 2* Time (G.M.T.) *10h 11m* ω = (Central Meridian)
Diameter of planet in secs. of arc *28.24.50* ϕ = (Latitude of centre of disc) *-16°*
Aperture of Telescope (Refractor or Reflector) *8½" Reflector* Power *320 up to 50*
Quality of seeing *10 (Pickering)* Dark Markings, pale or dark? *Most S. half dark other light.*
Appearance (shape and colour of S. polar cap) *smaller - projection on disc or hill side.*
Are there any rifts, detached portions or abnormal features? *none*
Appearance of dark band around S. polar cap *faintly dark at edge of cap*
Colour and appearance of terminator
Colour and appearance of limb *bright as usual*
Any projections or depressions (give approx. position angle) *none*
Bright regions (state if brilliant or dull and whether white or yellowish) *Arcturus 5 and 6 white. Arctic very bright.*
Coloured regions (orange, yellow, etc.) *Arcturus 1 + 2 constellations deep orange.*
Are any bluish or green areas seen? *S. Maj. dark blue at apex. Arcturus 1 + 2 blue green.*
Any abnormal details
Mars in order of darkness (if possible on scale of 10; 10=black, 1=pale grey) *S. Maj. Arcturus 1 + 2. Arcturus 1 + 2.*
Canals and lakes in order of visibility and intensity
Special Remarks *Cerberus, Cyclops, Eumebos rather dark + strongly marked.*

Figure 5. An old Mars Section ‘questionnaire’ (report form) for 1924 September 2, in which Atkins describes the observation made in Figure 6F.

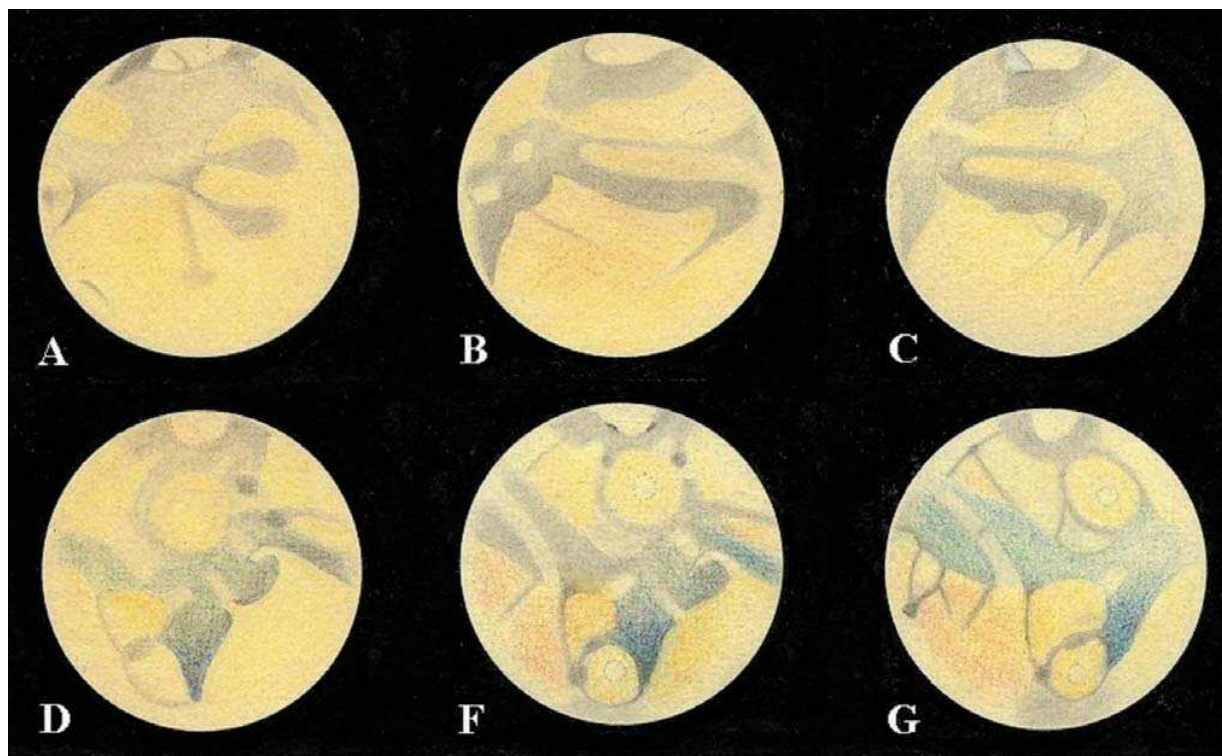


Figure 6. Selected coloured drawings of Mars observed from Madeira in 1924 by E. A. L. Atkins, 216mm refl., $\times 320$ and $\times 480$. These have never been previously published in colour. (Comments in [] by R. J. McKim.)
A. August 22, 01h 50m UT, CML = 58° . [Pallor of markings around Solis Lacus; rift and bright patches in SPC; darkness of Depressiones Hellesponticae p. the cap. This was the night before opposition.]
B. August 26, 23h 00m UT, CML = 331° . [Sinus Sabaeus wider and darker than Pandorae Fretum; light patches over Iapigia and Syrtis Major; evening white clouds.]

C. August 27, 00h 30m UT, CML = 353° . [Rift in Hellespontus; visibility of Edom; another rift in SPC.]

D. August 31, 22h 00m UT, CML = 273° . [Hints of white cloud in Libya (Sf); visibility of Nepenthes and Moeris Lacus; large size of Deltoton Sinus; nice impressions of colours.]

E. September 1, 22h 30m UT, CML = 277° . [Bright spots on Hellas and Neith Regio (Nix Atlantica); visibility of Amenthes.]

F. September 2, 22h 20m UT, CML = 260° . [Trivium Charontis, Cerberus and other streaky details N. of Mare Cimmerium.]

But at 12.30 G.M.T. sky cleared, and in the telescope Mars was a grand sight – almost perfectly steady with $320\times$ till 2.40 a.m. when clouds rolled up. Markings, however, were all rather faint except Hellespontus at south-east limb, attached to polar cap... Solis Lacus and Thethonius Lacus were large but ill-defined... Evidently there is haze in the Martian atmosphere veiling the surface. But the polar cap was electric in its brilliance. There was a faint rift north-west to south-east, dividing the cap... [written from Madeira and published in *English Mechanics* September 5.]²² (Figure 6A.)

‘Observations have been made each possible night, and five nights have given first-class images... The Syrtis Major region has yielded much interesting detail. The Syrtis itself at its end is dark blue, further south a greenish blue. Several half-tones are visible... Lacus Moeris is dark oval, and with Amenthes, Nepenthes–Thoth and Nubis Lacus forms a very striking area... A bright spot visible on Isidis R. is probably Nix Atlantica... There is a persistent light bridge uniting Noachis (N.E. end) and Hellas... Hellas is very indefinite to south-east; is a bright yellow with brighter centre. Sinus Sabaeus is, I think, the darkest marking seen and is indigo in colour... On the last night telescope was used, Sept. 2 (it had to be packed and sent to Customs next morning) at about 10.0 G.M.T., the definition was exceedingly good... and at first glance I was greatly surprised to see close to the p. limb the Trivium Charontis as a dark triangle, with Cerberus, Cyclops, and Eunostos and Laestrygon all very dark and intense...’ [written from Madeira on September 4 and published in *English Mechanics* September 19.]²³ (Figures 6B–F.)

‘On the whole, the five first class nights justified the effort in taking the trip; but why did not someone follow on to get that

last 90 degrees of circumference and another rotation? It was a fine opportunity thrown away, and especially as a most delightful and novel holiday was to be had.’ [published in *English Mechanics* 26 September.]²⁴

‘The scene at night surpassed anything I had ever seen. The dark woods at the back, the lights of the town far below, the lights of the fishing fleet far out at sea, and the magnificent sky above, with the Milky Way a blaze of light and with many bright stars in Scorpius and Sagittarius[sic], all dominated by the splendour of the brilliant planet Mars, these left an indelible picture on my mind.’ [from the *BAA Journal*, 46, 191 (1936)]¹⁹

‘The observing conditions were really delightful as even between 2 and 3 a.m. only a thin overcoat was necessary... Mosquitoes were a little troublesome, but more so were the very many visitors who came to view the planet through the telescope and would not be denied.’ [from Atkins’ notes in the BAA Mars Section Archives.]²⁷ (Figure 4.)

Comments on the observations

Atkins was evidently not aware that Mars was recovering from a large regional dust storm in 1924 August, but he correctly attributed the reduced contrast he noticed at some longitudes, as well as the bright patches spotted in Hellas, to effects of the martian atmosphere. His drawings are beautifully executed and seem very accurate. The colours of the dark markings he described are typical, and we now know

that such colours are at least partly real (but the presence of cloud and subjective colour contrast also play a part).

By 1924 few European astronomers believed in the reality of the 'canals', but most very reasonably thought that the subtle seasonal colour changes in the martian maria were due to the growth and decay of vegetation.

Attkins was able to observe rifts in the shrinking S. polar cap which agreed well with the work of E. M. Antoniadi,²⁸ G. Fournier, G. H. Hamilton, M. Maggini, W. H. Pickering, E. C. Slipher and other contemporaries. Amongst the features described by Attkins, Trivium Charontis was indeed prominent in 1924, as was Cerberus. In the 1980s and '90s these features gradually faded away so that by 2001 they were hard to see or to image.¹

Attkins was neither an advocate of the 'canals' nor a 'soft-pencil' artist. Rather, he was a fine example of the typical British amateur; an honest and painstaking observer who did his best to accurately portray what he saw. Years after his trip, when the nature of the markings was still being debated, he wrote that he hoped others would travel south for 1937 and 1939: 'I suggest two observers, one with a soft and the other with a hard pencil. They will find that they are both wrong.'¹⁹

Conclusion

British observers will never see Mars at its nearest under ideal conditions by staying at home. The 2003 martian opposition will be best observed from more southerly latitudes than the UK, even though Mars will at least be higher in our skies than in 2001. The disk diameter at maximum will actually be the largest for many centuries to come.²⁹

In this age of cheap air travel, package holidays and more leisure hours, let us take a moment to salute those like Nathaniel Green and Ernest Attkins who were the pioneers, and try a little harder to follow in their footsteps.

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Monte is: *Madeira: Ilha de sonho (island of dream)*, Francisco Ribeiro & Filhos, Lda., Funchal, 2000

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- 28 Antoniadi E. M., *La Planète Mars*, Paris, 1930. Antoniadi's classic book gives an excellent summary of our knowledge of Mars as viewed from the epoch of the 1920s, and also drawings from 1924 with which the work of Attkins compares favourably.
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