

Figure 2a. Phased data plot for (218) Bianca. 0% phase JD=2453467.351082 (corrected for light-time). *Martin Crow & R. Dymock.*

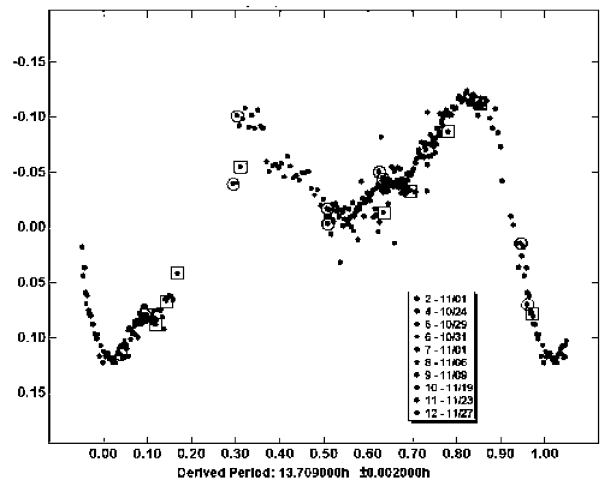


Figure 2b. Phased data plot for (554) Peraga. 0% phase JD=2454063.235435 (corrected for light-time). *Martin Crow & R. Dymock.*

considerable help from Terry Moseley an enhanced set of charts has been added to the Section's website ('What to observe', section 1.2.4, Pluto in 2007) at [http://homepage.ntlworld.com/roger.dymock/What to observe.htm](http://homepage.ntlworld.com/roger.dymock/What%20to%20observe.htm). Included are overview charts for the whole year and detailed charts for June, July and August.

(136199) Eris (2003 UB13)

On 2006 December 9 I made a successful attempt to image this newly designated dwarf planet (and Edgworth–Kuiper belt object). It is currently just past perihelion at approximately 96 AU (9 billion miles) from the Sun. At magnitude 18.6 this is

the faintest, and furthest, Solar System object I have imaged. In total I stacked 172 images, each of 30 seconds exposure time, using *Astrometrica* to obtain the image shown in Figure 1.

Roger Dymock, Director

Historical note

Milan Štefánik and the rotation period of Venus: a centenary for 2007

by **Richard McKim**

Exactly 100 years ago a paper about Venus appeared in the *Journal of the Royal Astronomical Society of Canada*. Its author was a young Slovak astronomer, Milan Rastislav Štefánik. From his studies of the planet from the Mont Blanc observatory he had deduced a rotation period for Venus of 23 hours and 20 to 25 minutes. This was entirely typical of the periods being quoted at that time: most astronomers opted for a synchronous rotation, or for one of about 24 hours. What was more remarkable was the extraordinarily diverse career the young astronomer followed.

Štefánik (Figures 1–2) was born in Košariská, Slovakia (within the then Austro-Hungarian empire) on 1880 July 21. He was educated at Charles University in Prague, following a mathematical sciences course. Štefánik happened to attend the lectures of philosophy professor Tomáš Garrigue Masaryk (the future first President of Czechoslovakia), and these inspired him to think of future cooperation between the Czechs and the Slovaks. In several political publications from that time, Štefánik drew attention to the

poor situation of the repressed Slovaks. He graduated in 1904 with a doctorate in astronomy, travelled to Paris and worked for a time at Meudon observatory under its Director, Pierre Jules Janssen. Štefánik prospered, and he soon became a co-director of the Mont Blanc observatories (altitude 4810m), which had been founded by Janssen. Writing in *Ríše Hvězd (The Realm of Stars)* in 1932, the Czech astronomer Rostislav Rajchl described Štefánik's work on Mont Blanc, and reproduced the drawings of Venus from 1906 (Figure 3), made during his third ascent. Venus was observed on August 31 and Septem-



Figure 1. M. R. Štefánik (1880–1919) as a French Army General.

ber 2, 3 and 4. A series of drawings was taken every day between about noon and 16:00 hours Paris time.

The features that stand out in these drawings are the somewhat exaggerated terminator profiles and the remarkable number of small bright spots. Nevertheless there is good accord between the (presumably independent) drawings of Štefánik and his companion, the Pulkovo astronomer Alexej Hanskij. Around local noon each day there were four bright spots clearly visible within the N. polar region, but towards 16:00 hrs only two were visible, and only with difficulty. An opposite change was observed in the S. polar region: around noon no bright spot was seen there, but towards 16:00 hrs two or three bright spots could be seen. The terminator profile around noon was considerably different from that around 16:00 hrs. All this seemed to imply rapid rotation. The configuration of markings on September 3 at 12:55 hrs seemed to be the same as on Sept 4 at 12:15 hrs. Likewise, Sept 3 13:10 hrs and Sept 4 12:35 hrs seemed to form a pair. Hence the deduced rotation period. Although



Figure 2. A modern photograph of the Štefánik statue at Petřín Observatory, Prague.

the daily sequences were in favour of the rapid rotation, seeing conditions at 16:00 hrs were inferior to those experienced near noon.

In the year after Janssen's death in 1907, equipment was recovered from the summit, and Štefánik undertook astronomical and meteorological observations (mainly of solar eclipses) as well as political tasks in various countries. Štefánik became well-known for his spectral analysis of the Sun's atmosphere. In Tahiti he built an observatory and a meteorological network, and observed a total solar

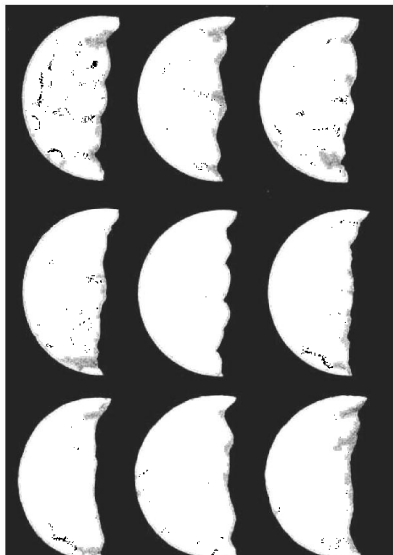


Figure 3. Venus drawings made on Mont Blanc by Štefánik (S) and Hanskij (H).
 Top row, left to right: 1906 Sept 3d 12h 30m (H), 12h 55m (S), 13h 10m (H);
 Middle row, left to right: 1906 Sept 3d 11h 53m (H), 12h 15m (S), Sept 4d 11h 35m (H);
 Bottom row, left to right: 1906 Sept 4d 10h 30m (S), 10h 45m (H), 11h 05m (S).

eclipse and Halley's Comet. He established contacts with leading scientific, artistic, political, diplomatic and business personalities. In 1912, he received French citizenship. Štefánik clearly understood that the defeat of Austria-Hungary (and Germany) in World War I could give the Slovaks and Czechs a chance at independence. Štefánik was trained as an aviator in the French army, was sent to Serbia to fly many missions over enemy territories, and returned to Paris at the end of 1915. There he became acquainted with Edvard Beneš and made contact with his former professor, Masaryk. In 1916, these three men founded the Czechoslovak National Council (the nucleus of Czecho-Slovak resistance abroad). Štefánik helped them to obtain the support of some of the most important figures among the Allies: he organized Masaryk's meeting with the French Prime Minister Aristide Briand. In 1916, Štefánik and the Czecho-Slovak resistance started to create army units or 'legions' that would fight against Austria-Hungary and Germany. For this purpose, Štefánik (as Minister of War of the Czechoslovak Government in exile, and now a French Army General: Figure 1) went to Russia and then to the USA. It was largely due to his personal diplomatic skills that the Allies recognized the Czechoslovak National Council as a de facto Government, and the legions as Allied forces.

In 1919 April we find Štefánik at the main Italian military base in Padua, arranging the dissolution of the Italian military mission in Czechoslovakia. Finally he decided to fly home to Slovakia direct from Italy in an Italian military plane: this would, however, turn out to be a fateful decision. On May 4 his plane tried to land in Bratislava (at the time being threatened by Hungarian troops), but was apparently shot down, and it crashed killing Štefánik along with two Italian officers. It seems that the plane's Italian tricolor had been mistaken for the Hungarian one.

In 1928 a fine public observatory was established on Petřín hill, above Prague, (Figure 4) and named after Štefánik. A bronze statue of the soldier-astronomer, dressed as an aviator, stands in its courtyard (Figure 2). In an internet interview marking the 125th anniversary of Štefánik's birth, historian Jan Kuklík from Charles University (Prague) said: 'I must say it's a great pity that Štefánik is sometimes a little bit forgotten... he was almost of the same importance as Masaryk regarding the establishment of the new Czechoslovak state.'

Štefánik was by no means the only astronomer to have failed to establish the

correct rotation period of the Venusian atmosphere, but he was certainly one of the most remarkable personalities ever to have addressed the question.

Acknowledgment

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Bibliography

- M. Štefánik, *J. Roy. Astron. Soc. Canada*, **2**, 7 (1907). (The paper about the Mont Blanc Venus observations, cited by Moore (see below).)
 R. Rajchl, 'Dr M. Štefánik jako hvízdář, *Ríše Hvízd*, **10**, 85 (1929). (A retrospective of Štefánik's astronomical work, ten years on.)
 R. Rajchl, 'M. R. Štefánik na observatorích



Figure 4. The domes of Prague's Štefánik Observatory seen against the city and the Vltava river, viewed from the observation tower on Petřín hill. (R. J. McKim)

montblancých', *Ríše Hvízd*, **13**, 77 (1932). (Concerns the scientific work done on Mont Blanc.)

Karel Ďápek, *President Masaryk Tells His Story*, Allen & Unwin, 1934

Vladimír Vand, 'Astronomy in Czechoslovakia', *J. Brit. Astron. Assoc.*, **56**, 86 (1945). (Also of interest.)

Hubert Slouka (ed.), *Astronomie v ěeskoslovensku od dob Nejstarších do Dneška (Astronomy in Czechoslovakia from its early beginning to present times)*, Osvi ta, Prague, 1952. (A beautifully illustrated book prepared by the Czechoslovak astronomical society.)

Patrick Moore, *The Planet Venus*, Faber & Faber, 1961, Appendix 2. (A useful source of 'historical' rotation periods.)

P. Najser, J. Soumar & J. Helebrant, *Praha Astronomická, Kartografie Praha*, a.s., 1996. (A useful leaflet and map for Prague's modern-day astronomical visitors.)

Emil Karol Kautský, *Kauza Štefánik – Legendy, fakty a otázky okolo vzniku ěesko-Slovenské republiky*, Matica Slovenská, Martin, 2004. (This modern biography is a source for some of the biographical data quoted above.)