

Štefánik's Expeditions to Mont Blanc (1905–1908): Challenges and Scientific Discoveries

Between 1905 and 1908, Milan Rastislav Štefánik, then a young astronomer at the Meudon Observatory, took part in a series of daring expeditions to the summit of Mont Blanc (4,808 metres). These missions were carried out in collaboration with French scientists such as François Gonnessiat and Gaston Millochau (an assistant to Jules Janssen) with the intention of studying the influence of altitude on astronomical observations and in particular the transmission of sunlight and atmospheric phenomena. This work was part of an effort to compare data collected in the plains, in Meudon, with that obtained in the high mountains where the air is purer and less disturbed by turbulence.



The 1905 Expedition: A Perilous First Ascent

In 1905, Štefánik and Millochau undertook their first scientific expedition to Mont Blanc. However, this mission was beset with major difficulties.

Firstly, extreme weather conditions made the ascent and measurements particularly arduous. Temperatures, often below zero, strong winds and sudden storms threatened both the safety of the scientists and the proper functioning of their instruments. Štefánik and Millochau had to transport fragile equipment, such as spectrometers and portable telescopes, in a hostile environment where every misstep could be fatal.

Secondly, logistics also proved to be a major challenge. Transporting the equipment to the summit required the help of experienced porters and a meticulous organisation. Once there, installing the instruments on the ice and snow was a delicate task, with the constant risk of the equipment freezing or becoming covered in frost which would have rendered the measurements unusable.

Finally, researchers had to contend with physical problems. Acute mountain sickness (headaches, nausea, shortness of breath) linked to the rarefaction of oxygen at high altitudes

complicated their work. Fatigue, accentuated by physical exertion in rarefied air, put their endurance to the test.

Despite these obstacles, Štefánik managed to collect valuable data on the diffraction of sunlight. His observations, published in the *Proceedings of the Academy of Sciences*, confirmed that measurements taken at high altitude made it possible to avoid certain atmospheric distortions present in Meudon. These results reinforced the scientific community's interest in mountain observatories, which would later become essential tools in astronomy.

Gaston Millochau (1874–1918) was a French astronomer and physicist who collaborated with Jules Janssen at the Meudon Observatory, where he contributed his expertise in spectroscopy and instrumentation for solar observations. He assisted Milan Rastislav Štefánik by adapting the instruments to extreme conditions so that they would be able to continue functioning well. Although less well known than Štefánik, his technical and logistical role was essential to the success of the scientific work of the time.

The Expeditions of 1906–1908: Extended Stays and Increased Risks

In the following years, Štefánik and his team, this time including François Gonnessiat, returned to Mont Blanc for extended observations. The aim was to refine spectral measurements and study variations in light intensity according to altitude. However, these new expeditions proved to be even more demanding than the first one had been.

The main challenge was camping for several days near the summit to carry out a series of measurements. The scientists had to manage limited resources (food, fuel for stoves, oxygen) while maintaining absolute scientific rigour. Isolation and unpredictable weather conditions were a source of additional pressure: a storm or a drop in temperature could compromise days of work.

The physical risks were also greater. Rockfalls and crevasses on the paths to the summit constantly threatened the team's safety. In the event of injury or illness, evacuation would have been long and perilous, and even impossible in bad weather. Furthermore, Štefánik and his colleagues had to justify each mission to the scientific community, as these expeditions were both costly and risky. Expectations were high: they had to report concrete results to maintain the support of their peers and the funding for their research.

Despite these challenges, the expeditions of 1906–1908 enabled Štefánik to make major discoveries. He confirmed that the solar corona is much more observable at high altitudes where atmospheric disturbances are reduced. His work also highlighted spectral variations related to air density which influenced astronomical observation methods for decades to come.

A Lasting Legacy

The Mont Blanc expeditions marked a turning point in Štefánik's career. They enabled him to develop physical and mental resilience that would prove invaluable later on, particularly during the First World War, when he served as a pilot and diplomat. On the scientific front, his work earned him the Jules Janssen Prize in 1907, the highest distinction awarded by the French Astronomical Society, which opened doors to the international astronomical community.

More broadly, these missions showed that high-altitude observations significantly improve the accuracy of astronomical data. They foreshadowed the future installation of mountain observatories, which would become indispensable tools for studying the Sun and the stars.



Sources :

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