

Why are the Blue Mountains blue?

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While holidaying in Sydney in 1900, Lady Audrey Tennyson, wife of the South Australian Governor, travelled over the Blue Mountains to visit Jenolan Caves. In a long letter written to her mother on her return to Adelaide, she recounted her experiences. Describing the return journey to Katoomba, where she and her husband spent the night at the "very comfortable tho' so cold" Carrington Hotel, she remarked on a phenomenon that has impressed and puzzled many visitors to the Mountains:

"The afternoon & evening were most beautiful & most wonderful lights & shadows. What struck us more than anything was the wonderfully brilliant blue of the distant hills. I have never seen anything to compare to it at all, the most gorgeous real sapphire blue, really transparent blue - it is impossible to give any idea of it. We wondered whether it was the effect of the gums, and our driver told us it used to be thought so but is an exploded idea, and he agreed with me it must be something in the atmosphere. I shall never forget it."

The blue haze that characterises the Mountains had been noted very early. During the first year of the colony's existence Governor Phillip had given the western mountains the names Carmarthen and Lansdowne. In popular conversation, however, these titles were soon abandoned, official declaration being insufficient to prevent the Mountains from being, as Judge-Advocate Collins observed, "commonly known in the colony by the name of the Blue Mountains."

What causes this blueness, the depth and intensity of which is often quite remarkable? In 1955 the Town Clerk of the City of Blue Mountains asked this question and being unable to give an assured answer, sought an explanation from Department of Physics at the University of Sydney. The Head of the Department at the time, Professor Harry Messel, replied in the following terms:

"It is quite certain that the haze which appears to surround any distant object is due to an optical phenomenon called 'Rayleigh scattering'. This effect which was first investigated theoretically by Lord Rayleigh causes the rays of light which impinge on small particles to scattered in various directions... Since the atmosphere is always laden with small dust particles, water droplets and the like and since even the air molecules themselves contributed to some extent to the scattering... if an observer looks at a distant object with the intervening atmosphere illuminated by sunlight eyes will receive the, blue scattered rays of sunlight to reflect the object itself. Therefore any distant object will always appear to display some shade of blue."

Professor Messel went on to explain that light is scattered most effectively off very small droplets of oil. He argued that the most plausible explanation of why the Blue Mountains are blue is to be found in the vegetation of the region. Fine oil droplets are dispersed into the atmosphere from such indigenous oil bearing trees as the eucalypts.

It would seem that the puzzled Lady Audrey Tennyson was on the right track in her thinking but despite the advances of science no complete answer can be given. In 1955 Professor Messel qualified his explanation with a word of caution at the end of his letter. "I must emphasise that this is merely a guess and that this possibility has to my knowledge no been investigated". In 1997 this would still seem to be the case.

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