

Termeyer described the silk he collected as appearing like a mirror, or polished metal. He was convinced of its commercial possibility. He had solved the problems that Reaumur had listed – he kept his spiders on separate canes so they could not eat each other; they had a steady supply of food which was easy to provide and he had discovered that the silk they produced on his machine was stronger and more vibrant than that of the silk worm. He was now faced with the problem of how to spin the silk. It was too thin in its original form, so the strands had to be twisted together. Yet this led to the silk losing its lustre, looking more like white cotton than silk. In the end, he reverted to the tried and tested technique of boiling up the spiders' nests. He then spun the silk into pairs of stockings. Over the next 20 years, Termeyer sent these spiders' silk stockings to various monarchs, including Charles III of Spain, Catherine the Great and Archduke Ferdinand. He also sent some stockings to Napoleon and Josephine, in spite of the fact that his own house had been blown to pieces during the Napoleonic invasion of 1796.<sup>4</sup> Unfortunately, I have yet to find any record of what happened to any of these silk stockings.

104

Termeyer recorded his spider research in a small pamphlet, of which only one copy exists. It remained largely forgotten in a library in New York until 1866 when it was discovered by a US army surgeon.

But first, a quick stop somewhere closer to home – at 21 Friday Street, Cheapside, London, where in the autumn of 1829 Daniel Bransdon Rolt was struck by the beauty of the light on the spiders' webs in his garden.<sup>5</sup> He began to pull the silk from a spider, and was able to collect a few yards before the spider broke the thread with her legs. He proceeded to collect 100 of these garden spiders, and kept them in



4. M de Asúa, 'The experiments of Ramón M. Termeyer SJ on the electric eel in the River Plate region (c. 1760) and other early accounts of *Electrophorus electricus*.' *J Hist Neurosci*, 17 (2008), pp. 160-74.

5. Daniel B Rolt, 'Letter from Mr D Bransdon Rolt to the Royal Society of Arts, 29th November 1830', *Manuscript Transactions Vol 121 (1829-31) part 4 of 5, The Royal Society of Arts*.

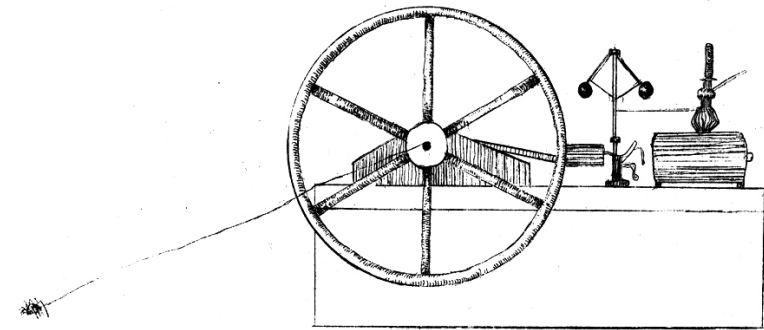


Fig.2 Daniel Bransdon Rolt's spider steam engine

separate boxes in his room to prevent any cannibalism. Underneath the boxes was a large drawer containing rotten meat. This attracted flies, some of which would fly through tiny holes into the spider's dens above. He was thereby able to keep a large number of spiders alive while he devised a way of collecting their silk. In the end, he attached the individual spider to a steam engine, which he had borrowed from the factory in which he worked (Fig.2). She was attached to a reel, which he turned at a rate of 150 feet per minute. Every 10 minutes he would change the spider for another. Over the course of two hours, he was able to collect 7,200 feet of silk. Rather than tying the spider down, as with Termeyer's machine, he simply let her crawl along the floor, or over his hands. Perhaps the rhythm and speed of the machine was such that the spider could not cut the thread with her legs.

105

Rolt submitted his findings, along with a scrap of silk and one of his spider houses, to the Royal Society of Arts, where he was presented with a silver medal in manufacturing, and praised for the novelty and ingenuity of his experiments.

I return now to the US Army Surgeon who found Abbé Termeyer's forgotten manuscript at the end of the American Civil War. His name was Dr Burt Green Wilder. In 1863 Wilder joined the 55<sup>th</sup>