

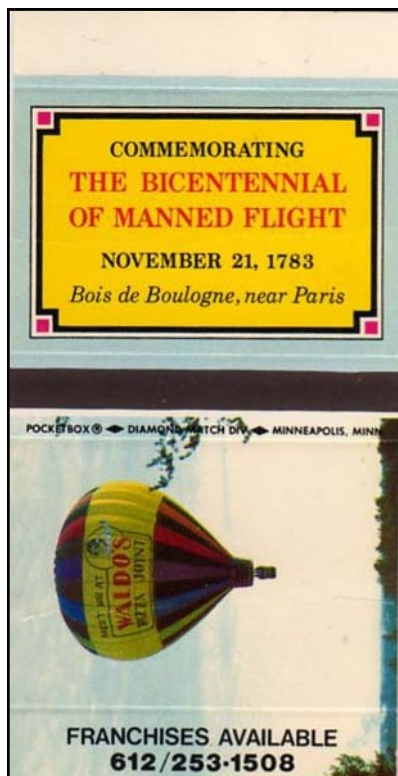
# Manned Flight

Yeah, yeah! The Wright Brothers...Kitty Hawk...blah, blah, blah. You're right! We already know that story...but, did you know that the Wright Brothers weren't the first ones in the air? No, hot air balloons preceded airplanes by some 120 years.

In 1670 Francesco Lana de Terzi published a work that suggested lighter than air flight would be possible by using copper foil spheres that, containing a vacuum, would be lighter than the displaced air to lift an airship. While theoretically sound, his design was not feasible: the pressure of the surrounding air would crush the spheres. The idea of using vacuum to produce lift is now known as vacuum airship but remains unfeasible with any current materials.

In 1709 Bartolomeu de Gusmão presented a petition to King John V of Portugal, begging for support for his invention of an airship, in which he expressed the greatest confidence. The public test of the machine, which was set for June 24, 1709, did not take place. According to contemporary reports, however, Gusmão appears to have made several less ambitious experiments with this machine, descending from eminences. It is certain that Gusmão was working on this principle at the public exhibition he gave before the Court on August 8, 1709, in the hall of the Casa da Índia in Lisbon, when he propelled a ball to the roof by combustion.

1783 was a watershed year for ballooning and aviation, between June 4 and December 1 five aviation firsts were achieved in France: On 4 June, the Montgolfier brothers demonstrated their unmanned hot air balloon at Annonay, France. On 27 August, Jacques Charles and the Robert brothers (Les Freres Robert) launched the world's first unmanned hydrogen-filled balloon, from the Champ de Mars, Paris. On 19 October, the Montgolfiers launched the first manned flight, a tethered balloon with humans on board, at the Folie Titon in Paris. The aviators were the scientist Jean-François Pilâtre de Rozier, the manufacture manager Jean-Baptiste Réveillon, and Giroud de Villette.



On 21 November, the Montgolfiers launched the first free flight with human passengers. King Louis XVI had originally decreed that condemned criminals would be the first pilots, but Jean-François Pilâtre de Rozier, along with the Marquis François d'Arlandes, successfully petitioned for the honor. They drifted 5.0 mi in a balloon powered by a wood fire.

On 1 December, Jacques Charles and the Nicolas-Louis Robert launched their manned hydrogen balloon from the Jardin des Tuileries in Paris, amid a crowd of 400,000. They ascended to a height of about 1,800 feet and landed at sunset in Nesles-la-Vallée after a flight of 2 hours and 5 minutes. After Robert alighted Charles decided to ascend alone. This time he ascended rapidly to an altitude of about 9,800 feet, where he saw the sun again, suffered extreme pain in his ears, and never flew again.

Ballooning became a major "rage" in Europe in the late 18th century, providing the first detailed understanding of the relationship between altitude and the atmosphere. [[https://en.wikipedia.org/wiki/History\\_of\\_aviation](https://en.wikipedia.org/wiki/History_of_aviation)]