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## THE BALLOON ERA

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## Each Flight an Adventure

Just over two centuries ago, in 1783, one of the first piloted flying machines left the ground. This balloon flight had an impact that is difficult for us to comprehend today. The first flight to the moon — its thirty-fifth anniversary was commemorated in 2004— doubtless comes close; however, significant as it was, the moon flight differs from the first balloon flight in that it was carefully planned, awaited, and publicized. But in 1783, who could have expected to see people up there, in the sky? The unexpectedness accounts for the impact, the shock, that this flight produced in France and then Europe. For the average person, it was utterly amazing.

A bold claim, perhaps, but quite defensible. As evidence, we have the paper on aerial navigation delivered in 1780 to the Académie des Sciences de Paris by the celebrated engineer and physicist Charles Augustin de

Coulomb and supported by two illustrious mathematicians, Gaspard Monge and the Marquis de Condorcet, the permanent secretary of the Académie des Sciences. Coulomb was categorical when he said “that no endeavour by man to rise into the air can succeed, and only fools would attempt it.”

Although no one noted Coulomb's initial reaction to the events of 1783, the number and extent of the accounts that have come down to us reveal the sense of wonder that took hold in France, Europe, and even North America.



## The First Ascents

Jacques Étienne Montgolfier, ca 1790.  
*Aérostation, Aviation, p. 13*



*Our story begins in the fourteenth century, at the height of the Middle Ages, when the first of a long line of Montgolfiers in France went into paper manufacturing.*

Joseph Michel Montgolfier, ca 1790.  
*Aérostation, Aviation, p. 13*



Our story begins in the fourteenth century, at the height of the Middle Ages, when the first of a long line of Montgolfiers in France went into paper manufacturing. The family business, modest at the outset, grew to one with a reputation that four hundred years later extended throughout all of Europe.

In the mid-1770s, the business was run by a talented administrator, Jacques Étienne Montgolfier, fifteenth of the sixteen children of Pierre Montgolfier. The technical operations were near Annonay in Vivarais, a lush region about seventy-five kilometres south of Lyon, the second largest city in France. These operations had recently been taken over by Jacques's brother Joseph Michel, the twelfth child, a skilled technician with a keen mind but who was more intuitive and timid than his younger brother. Their very differences made the two men an uncommonly successful team.

Even today and after much study, no one knows the details of how the two brothers came to invent their balloon, or “aerostatic globe.” The mystery has inspired a number of anecdotes, including one involving an undergarment belonging to Madame Montgolfier. After washing the elegant article, she hung it up by its lacing over a small stove. It filled with hot air and rose to the ceiling of the room, where it remained until

Monsieur Montgolfier, called to the rescue by his astonished wife, climbed onto a table and freed the captive garment. The intrigued Montgolfier then set about conceiving and inventing the hot-air balloon. A charming story, to be sure, but entirely untrue.

Nonetheless, after much reading and thinking, the Montgolfier brothers were conducting a few experiments in private as early as 1782. Encouraged by the results, they invited the whole of Annonay to an official demonstration. This first public balloon flight took place Wednesday, 4 June 1783. The balloon, made of panels of cotton packing cloth lined with paper and buttoned together, rose as expected, to the exclamations of the crowd. It floated gently back down nine-and-a-half minutes later after a flight of nearly two-and-a-half kilometres, coming to rest on a low stone wall near a vineyard at Pourrat, in the parish of Davézieux. There, it was destroyed by sparks from its fire. Peasants who witnessed the landing were so surprised, or frightened, that they did nothing to put out the flames.

Members of the Assemblée des États du Vivarais who had attended the event quickly wrote an account of the experiment and sent it to the Académie des Sciences de Paris. The news caused a stir in the capital’s scientific circles. Fully aware of the potential significance of the balloon’s invention, the Montgolfier family held a meeting to urge Étienne to go to Paris to organize a public flight.

Knowing nothing of this plan, Barthélémy Faujas de Saint-Fond, a volcano specialist at the Jardin du Roi (today’s Jardin des Plantes) started a fund drive to pay for work to begin immediately on a balloon. The elite of Paris contributed. Faujas de Saint-Fond, who was to become one of the leading chroniclers of the great adventure of ballooning, raised a sizable sum in a few days. Jacques Alexandre César Charles, Paris’s most popular lecturer and physicist and a man full of spirit and enthusiasm, was to oversee the project.

**The first public balloon flight, 4 June 1783.**

*Aérostation, Aviation, p. 19*



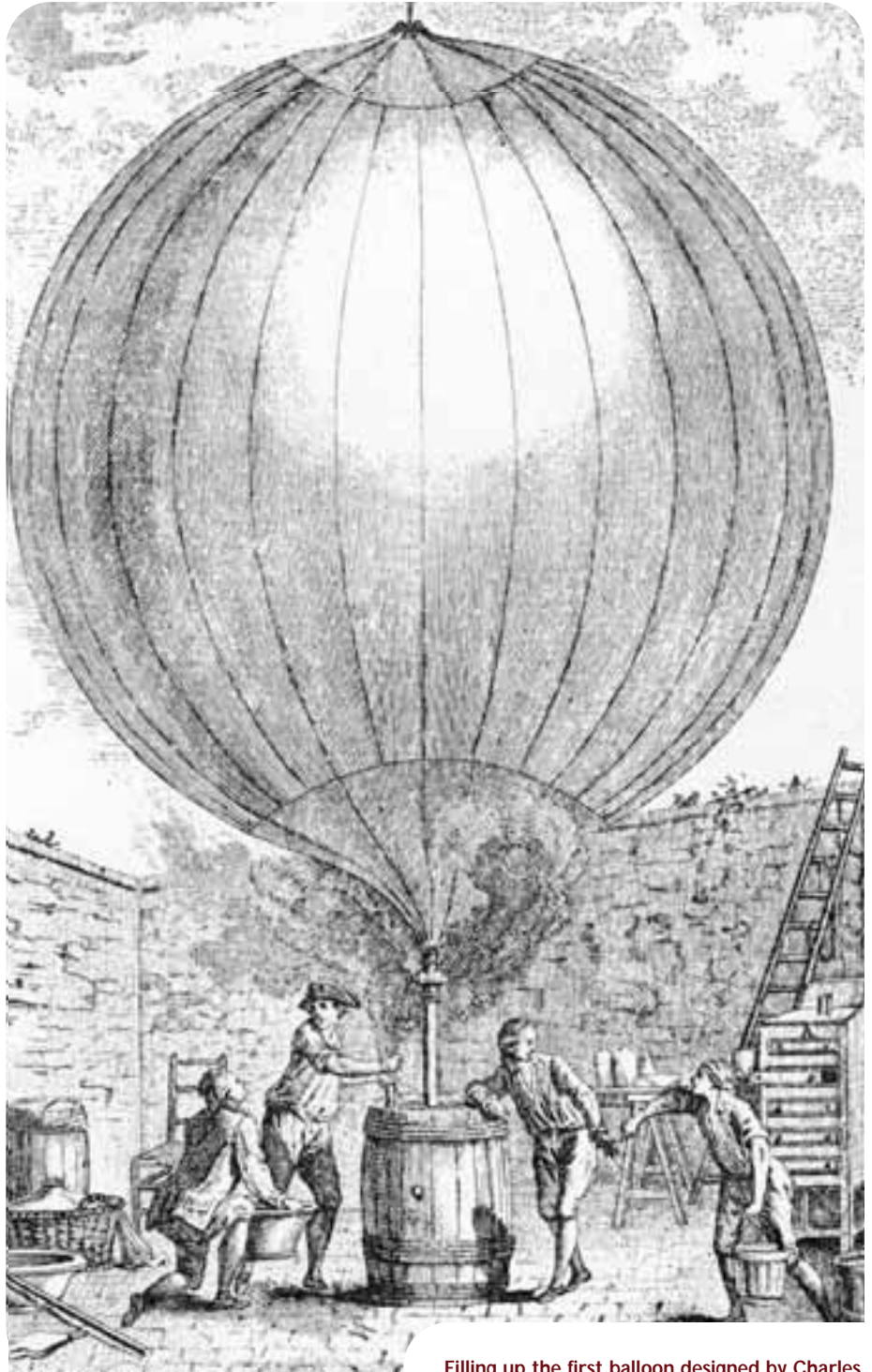


The first spectators began to appear in the early afternoon. People were everywhere in the area, lining both banks of the Seine and even the road to Versailles. Only ticket holders were allowed into the temporary enclosure around the balloon. The crowd was huge and rather impatient, and cries of discontent were soon heard. Finally, at about five in the afternoon, the balloon was released from its moorings and rose into the sky at a dizzying rate.

The crowd was stunned. Overcome with emotion and enthusiasm, many spectators embraced each other, while others burst into tears. All eyes were fixed on the same point in the sky. Even a fierce downpour could not break the spell. Imagine, a flying machine made by human hands was travelling through the skies!

But the story does not end there. The balloon had been fully inflated before its ascent, and the pressure of the hydrogen against its walls increased as the balloon gained altitude. The upper part of the envelope finally gave way, allowing much of the gas to escape. Forty-five minutes after leaving the Champ-de-Mars, the balloon fell into the midst of a group of peasants from the village of Gonesse (about twenty kilometres north of Paris).

The peasants were stricken with terror, their first thought being that some foul-smelling monster had fallen on them. Confused, then furious, the group attacked, and in just a few minutes the balloon's envelope had been torn to shreds. The remnants were tied to the tail of a horse and dragged across the field to the village. As a result of this attack,



**Filling up the first balloon designed by Charles and the Robert brothers, August 1783.**

*La Navigation aérienne; Histoire documentaire et anecdotique, p. 36*



The landing of the first hydrogen balloon, at Gonesse, 27 August 1783. *La Navigation aérienne; Histoire documentaire et anecdotique*, p. 37

the government published a public notice stating that balloons were perfectly harmless. The notice was distributed throughout France in the latter months of 1783.

In the meantime, Étienne Montgolfier had been busy at work. A committee of the Académie des Sciences de Paris had promised to underwrite the cost of making a balloon, leaving him free of financial worry. Given the scope of the project, the ministry of finance was quick to assume control of the financing for the venture. Shortly thereafter, the general comptroller introduced Montgolfier to the upper echelons of the Court.

A demonstration was organized before the royal family at Versailles. King Louis XVI, who was very interested in things mechanical and technical, gave his consent to a flight that would take place 19 September 1783. The choice of date was no accident. It was to be an opportunity for the many diplomats who had come to Versailles to sign the peace

treaty between England and its former American colonies to admire this latest product of French ingenuity.

A first balloon, made in the workshops of the famous French wallpaper manufacturer Jean-Baptiste Réveillon, a longtime friend of Étienne Montgolfier, was destroyed by rain during ground tests on 12 September. Pressed for time, Montgolfier, Réveillon, and several friends worked day and night to construct another balloon of varnished taffeta. They completed the envelope, which was painted blue and ornamented in gold with the intertwined initials of King Louis XVI and classical symbols of Apollo, on the morning of 18 September.

The next day, Friday, 19 September 1783, the magnificent balloon arrived at the great courtyard of the Château de Versailles. It was set up on a huge wooden dais covered with canvas made especially for the occasion. For this flight, Montgolfier and his friends decided





The first flight of a hot-air balloon in Paris, 19 September 1783. *La Navigation aérienne: Histoire documentaire et anecdotique*, p. 39

to take a great leap forward—the balloon would carry the very first aeronauts: a sheep, a duck, and a rooster.

By ten that morning, the road from Paris to Versailles was jammed with carriages and with people arriving on foot. The crowd swarmed over the great courtyard, the Place d'Armes, and the surrounding avenues. Some even climbed onto the rooftops. The king himself

descended with his family to the dais, where Montgolfier answered their many questions.

The process of inflating the envelope began at about one in the afternoon, and then things started happening quickly. The balloon took shape, the lines holding it were cut, and it immediately rose, lifting skyward the wicker cage containing the three animals. The astounded crowd roared.

Shortly after lifting off from the dais, the balloon was caught by a gust of wind. The aerostat listed far to one side, allowing some of the hot air to escape. This, coupled with a tear, shortened the flight to just ten minutes. The machine landed three kilometres from Versailles, in the Vaucresson wood, its passengers safe and sound. Reports that the sheep, on the verge of panic, had broken the rooster's right wing,







gardens of the Tuileries. For this flight, Charles and the Robert brothers had made a larger balloon of rubberized silk panels painted alternately in yellow and red. Its blue and gold rococo gondola looked rather like a carriage. This magnificent balloon was the direct forerunner of all gas balloons constructed thereafter.

At 1:30 p.m., ignoring the king's decree, Charles and Marie-Noël Robert took their places in the basket. Charles, in a show of bravado, opened one of the bottles of champagne stowed on board. The two men toasted the crowd and emptied their glasses. Charles then gave the signal, the lines were released, and the balloon rose. From their basket, Charles and Robert waved two flags. Once again, the throng was so stunned that it failed to react.

Only after a few moments did the cheering, applause, and tears begin. The soldiers and officers drawn up around the compound saluted the intrepid passengers. One elderly spectator, the wife of the Maréchal de Villeroy, could not believe her eyes. With a mixture of rapture and regret, she cried, "They will eventually find the secret of eternal life. And by then I will be dead."

Charles and Robert travelled a distance of some thirty-five kilometres in just over two hours, coming to rest in the meadow at Nesle-la-Vallée. Nearby peasants held onto the basket to keep the balloon down. Charles, practical as always, immediately prepared a brief account and had it signed by witnesses, including the Duc de Chartres and the Duc de Fitz-James, great-grandson of King James II of England who had died in

**The balloon of Charles and Robert lifts off,  
1 December 1783. *La Navigation aérienne;*  
*Histoire documentaire et anecdotique***





The Ducs de Chartres and de Fitz-James sign the brief account of the flight. *La Navigation aérienne; Histoire documentaire et anecdotique*, p. 48

*Charles decided to return aloft on his own to conduct a few physics experiments at a higher altitude.*

exile in France. The two men had followed the balloon at a gallop from the capital.

This task completed, Charles decided to return aloft on his own to conduct a few physics experiments at a higher altitude. Robert climbed out, the balloon was again released, and Charles rose rapidly to an altitude of almost 3 300 metres. Deciding that he had done enough for one day, Charles landed again after a solo flight of just over half an hour, in open country near La Tour de Leys, five kilometres from his first landing site.

The details of this double flight caused a stir in Paris. The next day, 2 December, a huge crowd assembled outside Charles's home before his return. When he arrived, he was

greeted with an ovation. A visit to the Palais-Royal, where Charles thanked the Duc de Chartres, ended with another ovation. The crowd then carried him aloft in triumph from the steps to his carriage. The balloon was given similar treatment; its return to Paris was greeted with an amazing display of public celebration.

The rewards were not long in coming. The Académie des Sciences de Paris, for example, awarded the title of supernumerary associate to the four aeronauts: Pilâtre de Rozier, the Marquis d'Arlandes, Charles, and Robert. Joseph and Étienne Montgolfier became corresponding members of the illustrious institution, having been named by acclamation—a first. Their elderly father

received letters patent of nobility, his sons thus becoming Joseph and Étienne de Montgolfier. Years later, the Air Command of the Canadian Forces would adopt the family motto, "*Sic itur ad astra*," meaning roughly, "Such is the pathway to the stars."

Thus ended the first six months in the history of ballooning, an exhilarating period during which Paris was the Cape Canaveral of the eighteenth century.

## Balloonmania

Looking back two centuries, it is difficult to imagine the impact of these first flights in 1783. Overnight, a veritable "balloonmania" began to rage in France. This passion, if not madness, for things of the air gripped everyone everywhere. Rich and poor, nobleperson and commoner, courtier and countryperson, all were equally fascinated by these balloons that soared heavenward.

Balloonmania was manifested in a thousand and one ways. It swept through arts and literature, even everyday life. One had merely to claim that an object was "*au ballon*" (in the balloon style) for sales to increase. Ceramics are a perfect example. Often inexpensive, plates and teapots enabled people of all classes to own a tangible souvenir of the great invention; such ceramics could be found widely distributed throughout the countryside, where it seems to have been more for display than for use.

Rather curiously, these ceramics and a good many balloon objects dating from this time had as their motif the gas balloon, known as the *charlière*, or the *robertine*, aboard which Charles and Robert had made their famous flight of 1 December 1783. Objects depicting the hot-air balloon were much rarer.

Many earthenware factories, for example in Strasbourg, Moustiers, Lyon, Rouen, Lille, Marseille, and especially Nevers, produced a wide and varied range of objects. There were bowls and pots decorated with the bal-

loon motif, plates and pitchers, and even shaving mugs. The captions they bore were not always very imaginative: "*Au revoir*," "*Adieu*," and "*Bon voyage*." Some, however, were a little more sophisticated, if not outright bombastic or sarcastic: "*Sic itur ad astra*," "To immortality," "The folly of the century," and "To the folly of the day."

Quite often earthenware *au ballon* was produced to commemorate a specific ascent. In

more than one case, the compositions were copies of engravings of the time, while others quite simply exploited the fashion of the day, showing just a globe and a gondola and no background. For a more affluent public, the factories of Sèvres, Saint-Cloud, Paris, and Limoges also produced porcelain in the balloon style, though in rather smaller quantities. Everything was available, from cups to full sets of china. These pieces, handpainted in great detail, were often magnificent.



Some ceramic plates "*au ballon*." *Histoire des ballons et des aéronautes célèbres*





A caricature showing balloon-style clothing, ca 1785. *La Navigation aérienne; Histoire documentaire et anecdotique*, p. 59



This fashion was not the province of women alone. Gentlemen were also keen. Many wore elegant waistcoats embroidered with ballooning scenes. Depicted on their gloves were scenes of this or that flight. A balloon-hilted sword or globe-knobbed walking stick rounded out their toilette.

In upper-class dining rooms, guests might take a liqueur *au ballon*, such as a *crème aérienne* or *crème aérostatique*. If so inclined, they could use balloon-style playing cards or play games of trictrac, a game known in England as backgammon, with ivory tokens in the balloon motif. Later in the evening, dancers who were up on the fashion would do a Gonesse quadrille. Some hosts even served their guests a filet à *la Montgolfier*.

In the streets, those with the means could purchase miniature balloons about twenty centimetres in diameter and inflated with hydrogen. The first toy balloon seems to have taken to the air 10 September 1783, just two weeks after the first Paris flight of the unpiloted hydrogen-filled balloon of Charles and the Robert brothers. More enterprising manufacturers produced miniature balloons in the shape of nymphs or animals. A new industry was born.

The American government representative in France, Benjamin Franklin, bought one of these small balloons for his grandson and secretary, William. Some of the nobility were so taken with them, they offered miniature balloons as gifts at their functions.

Unfortunately, a number of people were injured following attempts to produce hydrogen at home, and the government was forced to ban the practice.

Knick-knacks and trinkets did not escape balloonmania. Its circular shape made the balloon a popular motif with makers of pocket watches, doorknobs, and small boxes of tortoiseshell, ivory, or gold used as snuff boxes and candy dishes (indeed, there is no better place for candies *au ballon*); such objects are still highly valued. Even small objects seemingly difficult to decorate were quickly swept along on the wave, such as the many buttons of burnished steel or the sets of silverware with graceful engraved handles that were produced. Even

more luxurious were rings, locket, and bracelets in the balloon style.

No doubt the most refined expression of this craze was glass beadwork embroidery involving incredible precision. These magnificent miniature scenes, often copies of period engravings, were made using minuscule beads of coloured glass. In some cases, one square centimetre contained close to two hundred beads. This beadwork embroidery provided wonderful adornment for a variety of luxury items: perfume bottles, small boxes, pocketbooks, writing cases, and hand screens.

As might be expected, furniture and home accessories quickly adopted the style of the day. People murmured sweetly to their pet

birds held captive in balloon-style cages. They bought barometers, wall calendars, and even wall clocks in the balloon style. Queen Marie-Antoinette, the wife of King Louis XVI, ordered such a clock for the Château du Petit Trianon, where she spent much of her time. The balloon craze also extended to furniture, with armchairs, beds, or worktables showing inlaid or carved balloons. Round-backed *montgolfière* chairs were all the rage in the *haut-monde*.

Nor were the walls of grand residences overlooked. Balloon madness was imprinted on wallpaper and *toile de Jouy*, printed fabric made in the Oberkampf factory near Versailles in the little town of Jouy-en-Josas. Many craftsmen produced gilt wooden frames *au ballon*, in which they placed mirrors or works of art, such as paintings or engravings.

These last deserve closer study. The number of engravings, serious and less serious, depicting balloon flight is astounding. Portraits of the principal aeronauts (a word invented in 1784), were also numerous. The beginnings of ballooning were a literal gold mine for engravers. One print cost the average Parisian a day's wages, so the ordinary folk had to make do with less expensive woodcuts. Thousands of works have survived until the present, and their number alone is an indication of the incredible popularity of prints *au ballon*.

The actual information value all of these works should, however, be assessed with some caution. A number of engravers produced their image of a flight before it had even taken place. This ploy, clearly aimed at profiting as much as possible from the

**A caricature pointing out that balloons are difficult to control.** *Histoire des ballons et des aéronautes célèbres*



impact of a flight, could prove costly and rather embarrassing if the balloon crashed or the flight were cancelled. Such mishaps often prompted engravers to produce quite vicious satirical works.

So widespread was the craze that bookbinders joined in, and not only where works about ballooning were concerned. Almanacs were embossed in the balloon style. The library of none other than Queen Marie-Antoinette included a magnificently ornate copy of a type of religious book known as a *Lecture du Matin*.

No doubt poets and chroniclers saw this conquest of the sky as glittering evidence of France's great genius. In the view of one politician and friend of the philosophers, Chrétien Guillaume de Lamoignon de Malesherbes, the conquest of the sky was far more important than victory at sea. France had got the better of England without spilling a single drop of blood. Despite this official rhetoric, the French people's remarkable gift for not taking themselves too seriously survived even balloonmania.

The following anonymous text by an author who envisioned an eventual Channel crossing is revealing:

If such a reckless venture fails, it may at least serve to depict the genius of the Nation. The exuberant, daring and carefree Frenchman, giving his imagination free rein, would want to soar at will in the sky, while the deeply pensive, thoughtful, methodical Englishman would walk gravely on the bottom of the sea.

This text might well have inspired the following quatrain:

*The English, a Nation too proud, Lay claim to the Empire of the Seas,  
The French, a Nation lighthearted,  
Lay hold of that of the Skies.*

Interestingly, some believe the author of this text was English.

This patriotic viewpoint was not the only one to inspire poets. The sense of wonder also inspired many authors who too often had more enthusiasm than talent. The following couplet is a patent example:

*Cook walks to the ends of the oceans.  
Montgolfier flies to the heavens;  
Open the gates of Hell to me,  
I will put out the fires!*

James Cook, an English navigator killed by Hawaiians a few years earlier, was known throughout Europe for his journeys of exploration in the Pacific Ocean.

The history of ballooning could almost be told using only these works, poems and songs. German author Christian Wieland was so taken with the wonder and excitement they expressed that he coined a new word: "*aéropétomanie*." Unfortunately, or perhaps fortunately, this word has passed into oblivion.

As might be expected, the English language contains terms still in use today that date from that time: "aerostation," "aerostat," "aeronaut" and "aerial navigation." Those who favoured the hydrogen balloon became known as "*charlistes*," while those who favoured the hot-air balloon were known as "*montgolfistes*." When the rivalry between these two groups heated up, they called each other "*gazistes*" and "*pailleux*" (for the gas and straw each used for flight).

The enthusiasm for flight boosted an already considerable interest in science, primarily physics. Among the wealthy, science was the passion of the day. Science meant power. For many philosophers, and for those who read them, it was through scientific knowledge that humanity would finally tame nature. According to some writers, the ruling class could even use this knowledge





limitless avenues of progress. Denis Diderot, one of the chief compilers of the famous *Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers*, said he was convinced that one day humankind would walk on the moon. There was no doubt that major technological change was on its way. Was this not true for society as a whole? For others, the idea was disquieting. A number of authors argued that the balloon was contrary to nature. It allowed humankind to reach a domain, the sky, where it had no business being:

*Let us leave to each its domain,  
God made the skies for the birds;  
To the fishes, He gave the waters.  
And to the humans, the Earth.  
Let us cultivate it, my dear friends.*

One evocative example of this idea is an electrifying event described in a supplement to the *Mercur de France, Le Journal politique de Bruxelles*. On 19 January 1784, as the *Flesselles* was lifting off with Pilâtre de Rozier and Joseph Montgolfier, as well as four young noblemen on board, a young Lyonnaise colleague of Montgolfier's named Fontaine jumped into the basket without warning. To all these distinguished people the young man said, "On Earth I respected you, but here we are equals."

To the ordinary person, the philosophical discussions were of secondary importance. What people wanted most was to laugh and enjoy themselves. Each flight was a celebration, if not a symbol of escape. It was a time with a fondness for spectacle. Admission charge or not, no one could stop the poorest Parisian from admiring a balloon in full flight. It is not surprising, then, that the lighter-than-air machine made its way into theatre. Several playwrights began writing on the theme. One among them, Jean-François Cailhava d'Estendoux, clearly hoped that this balloon craze would boost his waning career as a writer of comedies.

Recognizing the extent of the public's passion for each flight, he reworked several of his plays. One of them was staged by the *Comédie Italienne* on 19 October 1783, the very day of the captive balloon flight by Pilâtre de Rozier and the Marquis d'Arlandes. A triumphant success at its premiere in 1770, *Le Cabriolet volant, ou Arlequin-Mahomet, drame philosophi-comi-tragi-extravagant en quatre actes et en prose* was a flop in 1783.

The story opens in Paris where an inventor, Musco, gives his good friend Arlequin a marvellous flying machine, the flying cabriolet of the title. Pursued by his creditors, Arlequin flees on board his machine to the eastern kingdom of King Bahaman. On arriving, he learns that a prince is preparing to lay siege to a tower in which a princess had recently shut herself away so that she would not have to marry him. Arlequin decides to use his machine to enter the tower. Passing himself off as the prophet Mohammed, he is worshipped by the besieged. In the final act, Arlequin manages to defeat the prince by smashing him on the head with a cooking pot.

According to the critics, the comic actor Corali, in the leading role of Arlequin, simply did not measure up to the part. Despite every effort, he did not have the talent of the late Carlin Bertinazzi, the play's inimitable Arlequin of the 1770 production. Moreover, the very basis of Cailhava d'Estendoux's parody was out of date. *Le Cabriolet volant* was originally conceived as a wicked satire — of the maudlin playwrights of the time as well as of those madmen who wanted to fly in machines that never got off the ground — but by 1783 it had been overtaken by circumstance. Human flight was no longer a dream to be mocked; it was a reality.

As early as 1784, several theatrical companies offered the people of Paris entirely novel plays that detailed the amorous and aerial adventures of fictitious aeronauts.



## The Balloon Outside Paris and Beyond France

As might be expected, the flight in Annonay in June 1783 aroused real interest. In late August, the intendant of Lyon, Jacques de Flesselles, managed to persuade Joseph Montgolfier to do a free flight there in a small balloon. Witnesses to this flight were so delighted that they started up a fund drive to pay for the construction of a large balloon. In the fall, news of the first piloted flights reached Lyon. As a result, Montgolfier found himself obliged to make the balloon larger to accommodate passengers. Pilâtre de Rozier, who had hurried to the site, proposed changes. Deadlines were extended, the four noblemen to whom Montgolfier had promised places on board grew restless, and skeptics became increasingly vociferous.

The envelope was assembled in January 1784 and was first inflated on a wooden dais erected near the city of Lyon, at the site known as Les Brotteaux. Montgolfier's worries were not over. The balloon was damaged during another inflation attempt, and then a snowfall soaked the envelope and one section caught fire during an attempt to dry it out. The local population was annoyed by these setbacks. On Monday, 19 January 1784, it was finally decided to risk an ascent. Spectators and friends of the passengers became worried and attempted to have this madness called off.

The four noble passengers—Prince Charles d'Arenberg (eldest son of the Prince de Ligne) and the Comtes de Laurencin, de Dampierre and de la Porte d'Anglefort—would hear nothing of it. They boarded the circular gallery around the base of the balloon, threatening to run through anyone who attempted to dislodge them. Pilâtre de Rozier suggested drawing the names of three individuals who would then take part in the flight. The four young men stood their ground and ordered the lines to be cut. Pilâtre de Rozier, who despite his fears did not wish to be left behind, got on board, followed by

Montgolfier. It was then that, seizing the opportunity, Montgolfier's young colleague Fontaine climbed in after him, becoming the first stowaway in aviation history.

Its load far too heavy, the balloon (christened the *Flesselles* by the intendant's wife) failed to rise, though Pilâtre de Rozier dumped ballast and three-quarters of the wood intended to fuel the fire. Pushed by the breeze and still held by two lines, the balloon dropped off the dais and drifted toward the crowd of nearly 100 000 people. Panic nearly broke out. Finally the lines were cut, and the *Flesselles* lifted off. The spectators gave vent to their joy: hats were flung into the air; women wept or fainted.

Just minutes later, the envelope tore near the top. Pilâtre de Rozier fed as much wood as he could into the burner, but the damage was too great. The *Flesselles* plummeted and crashed into the muddy ground near its starting point, slightly injuring two passengers. The flight had lasted just eighteen minutes. It would be the first and last flight for Joseph Montgolfier. The crowd's enthusiasm was, however, undampened. That same evening, at the Lyon opera house, the aeronauts were recognized and the audience gave them a lengthy ovation. In Paris, a rather vicious and highly popular quatrain mocked their attempt:

*You come from Lyon? Tell us plainly:  
Did the globe depart? Is it certain?  
– I saw it. – Tell us, did it travel full tilt?  
– Did it go! ... Oh! Sir, it went flat out!*

Certainly not all maiden flights of the era were as eventful. But one thing is true: Ballooning was in its infancy, and balloons were not very safe. But the potential risks did not deter the pioneers.

The balloon also began to gain popularity outside France. In February 1784, for example, a hot-air balloon flew close to Milan,

now a major city in northern Italy and then still ruled by the Hapsburgs. On board were Chevalier Paulo Andreani and the two brothers, Agostino and Carlo Gerli, who had made the craft.

Many women also succumbed to the flying craze. Initially, they had to be content with watching the scenery, as the piloting was reserved for men. On 20 May 1784, for example, the Marquise de Montalembert and three other ladies were the first women to take part in a captive flight over Paris on board a hot-air balloon.

The first woman to make a free flight took to the air in rather unusual circumstances. To mark the anniversary of the very first flight at Annonay, a group of merchants in Lyon financed the construction of a hot-air balloon, called the *Gustave* in honour of Sweden's King Gustave III who was visiting the region at the time. A young opera singer, Élisabeth Thible, née Estrieux, managed to persuade one of the balloon's designers, the Comte de Laurencin, who had been a passenger on the *Flesselles*, to give her his place on board.





The flight of the *Gustave*, 4 June 1784. *Histoire des ballons et des aéronautes célèbres*

*Thible was the first woman to fly in a free balloon and the second to be received into the Académie des Sciences de Lyon.*

On 4 June 1784, Thible and the balloon's other designer, a painter named Fleurant, lifted off from the same site used by the unlucky *Flesselles*. Thrilled by the experience, the two aeronauts burst into song. They landed after a flight of forty-five minutes on the Belmont rise, about four kilometres from their starting point.

Contrary to popular belief, Thible was not a mere coquette. Dressed in men's attire, she was as energetic as her companion in feeding straw into the fire that kept the balloon aloft. Thible was the first woman to fly in a free balloon and the second to be received into the *Académie des Sciences de Lyon*.

The history of ballooning in North America began soon after the flights by the Montgolfier brothers and their rivals, Charles and the Robert brothers, were reported in the newspapers. A small hot-air balloon of paper, made by

a Quaker physician, Dr John Foulke, took flight 10 May 1784 in Philadelphia, the capital of the young American republic. Three other balloons made brief flights in the days that followed.

Further south, Peter Carnes, a lawyer and tavern owner in Bladensburg, a small town in Maryland, became fascinated with lighter-than-air craft. He made small balloons out of paper and silk, and his demonstrations drew hundreds of spectators. Bolstered by these successes, Carnes announced in *The Maryland Journal* of 15 June 1784 that he would exhibit and fly a hot-air balloon in a field near Baltimore on Thursday, 24 June.

On the appointed day, much of the city's population headed north to the chosen site, Howard Park. In the morning, the silk balloon made a number of captive flights, but with no passengers aboard. Carnes seems to have realized that his excessive weight would pre-



**Count Francesco Zambecari, ca 1800.**

*Aérostation, Aviation, p. 92*

vent the balloon lifting off. If the crowd was disappointed, it showed no sign. By all accounts, the spectators were delighted.

In the afternoon, as the inventor was preparing for a final flight, a thirteen-year-old boy from Baltimore, Edward Warren, volunteered to go up. Taken aback, but thrilled, Carnes allowed him to get in. The young fellow was carried aloft to the exclamations of the crowd. After several minutes, he came back down. Spectators who had been impressed by his courage offered him a reward, which he gladly accepted before leaving. Thus, scarcely eight months after the first captive flight made in France, a human being had left the soil of the American continent.

**The balloon sent aloft by Count Zambecari on 25 November 1783.** *History of Aeronautics in Great Britain, facing p. 101*



Always thinking of publicity, Carnes decided to attempt a free flight from the large yard of the Philadelphia prison, using the same balloon with a few minor changes. This site would allow for crowd control and ensure that only ticket holders could attend the liftoff. The flight, set for the 4 July national holiday, had to be postponed. On 19 July, during takeoff, a gust of wind thrust the balloon into a wall, and Carnes was tossed to the ground. Free of his weight, the balloon quickly rose to a great height, and then burst into flames and crashed. Despite denials, many spectators firmly believed the aeronaut had perished. The inventor, shaken but unhurt, decided against a second attempt.



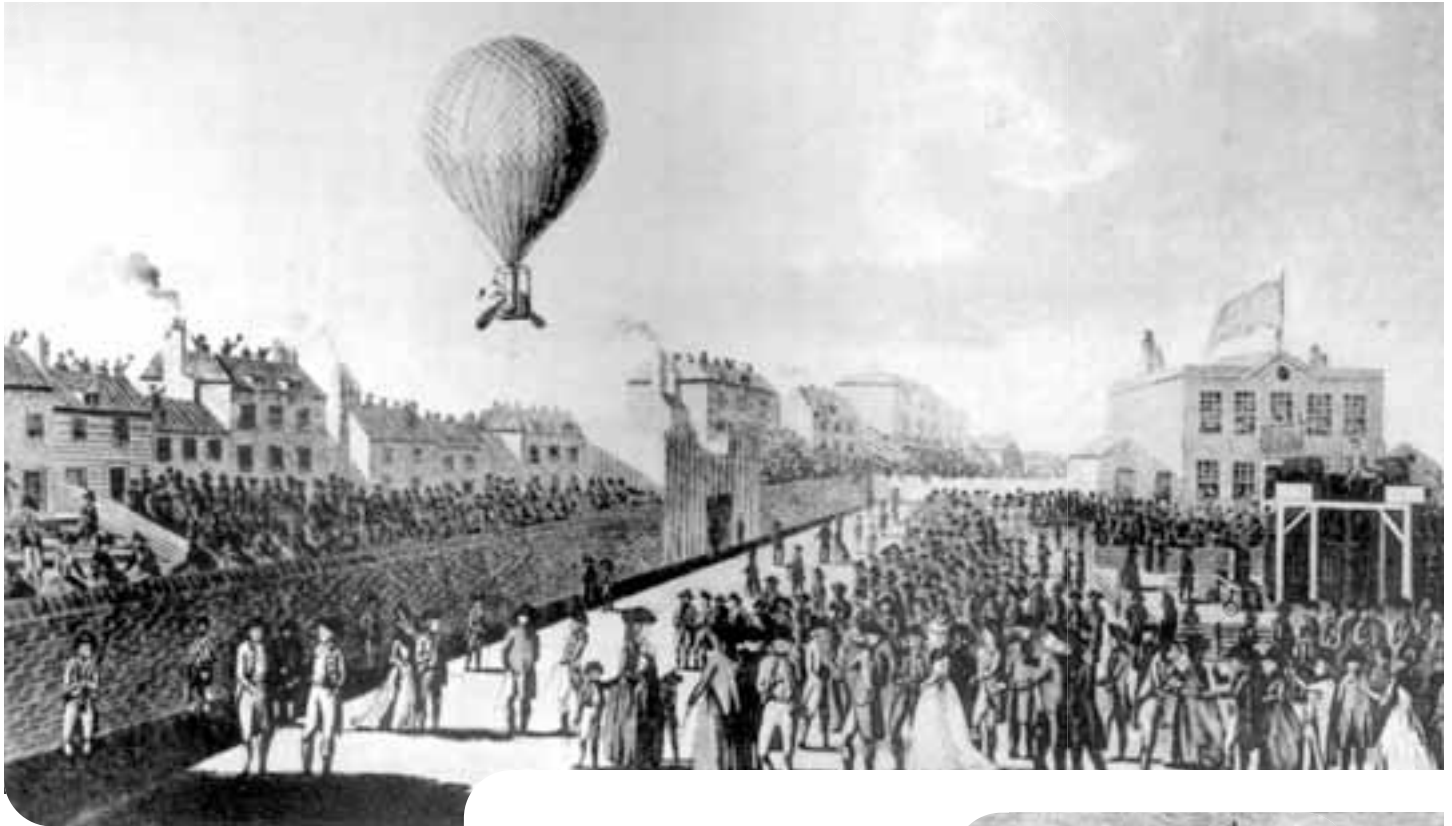
British North America, far less settled, was untouched by the fever for flight until the 1830s, and it was 1840 before an aeronaut made the first piloted flight. On 10 August 1840, an American aeronaut born in Guadeloupe, Louis Anselm Lauriat, lifted off from Saint John, New Brunswick. At age fifty-four, Lauriat was among the most widely known aeronauts in the northeastern United States. His hydrogen balloon, the *Star of the East*, landed just under thirty-five kilometres from the city. This was the first piloted flight in what would later become part of Canada.

In England, opinion was divided over ballooning. The Royal Society of London feigned indifference, but in fact many researchers were extremely disappointed to see France conquer the sky before *la blanche Albion*. The eighteenth-century writer Horace Walpole considered the balloon a mere toy, the same as a kite. Similarly, some newspapers, such as *The Morning Herald* of 27 December 1783, urged "all men to laugh this new folly out of practice as soon as possible."

This mixed reaction of disappointment and pique largely explains why foreigners were the first to take to the air in England. On 4 November 1783, without any prior publicity, Count Francesco Zambecari, an Italian sailor and adventurer, sent a small hydrogen balloon into the sky with the help of Michael Biaggini, an artificial flower maker. Three weeks later, a somewhat larger craft flew from the training field of an artillery unit at Moorfields, north of London. A large crowd witnessed the event. The balloon landed on a farm in Sussex, and the shrewd owner put the craft on display in his barn and charged a fee to those interested in seeing it.

In London, a young employee of the embassy of the kingdom of Naples announced his intention to take to the English skies in a balloon. A vain and attractive man of breeding, Vincenzo Lunardi was convinced that such a flight would add to his prestige. Well aware that he knew little about ballooning, he asked a friend, George Biggin, to back him. The preparations soon led to a number of problems. The fund drive for the balloon's





Vincenzo Lunardi's balloon a few moments after liftoff, 15 September 1784. *History of Aeronautics in Great Britain*, facing p. 122

Biggin and Lunardi held a war council and decided that Lunardi would fly solo.

Lunardi boarded just before 2 p.m. with a dog and a cat. The lines were untied, and the balloon rose. One of the two oars Lunardi intended to use to control his flight dropped to the ground. Following the example of the Prince of Wales, members of Parliament who had come to witness the liftoff (William Pitt and Edmund Burke among them) doffed their hats, fearing that they would never see poor Lunardi again.

The aeronaut, however, had little concern for what was going on below. Ecstatic with the flight, he had a bit to eat and drink and allowed the balloon to drift. After a while, Lunardi began to row with the remaining oar, with little success. He touched down at 3:30 p.m. in South Mimms, where he dumped

*The aeronaut, however, had little concern for what was going on below. Ecstatic with the flight, he had a bit to eat and drink and allowed the balloon to drift.*



A close-up of Lunardi's balloon. *Aeronautical Prints & Drawings*, plate 38

the cat and the rest of his ballast. Lunardi rose back into the air almost immediately and resumed rowing. At 3:55 p.m. he touched down a second time, at a farm near Ware, in Hertfordshire.

A nearby group of men fled in panic when Lunardi asked them for help, but a woman by

the name of Elizabeth Brett, fascinated by the sight, went immediately to his aid. The men, feeling sheepish, turned back and went to lend a hand, and Lunardi was able to climb out of the basket. He had covered a total distance of nearly forty kilometres, completing the first air voyage in the British Isles and the first air voyage of any great distance.

Overnight, Lunardi became the darling of London. The newspapers trumpeted his name. Songs extolled his courage. Huge crowds went to see his balloon on display at the Pantheon. Encouraged by his first flight, Lunardi repeated the experience on 13 May 1785. On 29 June his backer, George Biggin, flew with the first female English aeronaut,

**Lunardi's second flight, 13 May 1785. *History of Aeronautics in Great Britain*, facing p. 125**





Below,  
George Biggin and the first English female  
aeronaut, Letitia Anne Sage, 29 June 1785. *History of  
Aeronautics in Great Britain*, facing p. 126



Left,  
Lunardi lifting off from Madrid, Spain, in 1792.  
*Aeronautical Prints & Drawings*, plate 63

Letitia Anne Sage. Also in 1785, Lunardi flew at Liverpool, Edinburgh, and Glasgow.

On 23 August 1786, in Newcastle-upon-Tyne, Lunardi's balloon escaped from the ground crew, taking with it a young man named Ralph Heron whose arm had become caught in the anchor rope. He fell as the horrified crowd looked on and died from his injuries a few

minutes later. Lunardi was forced to flee the menacing crowd. His name ruined, he left England soon after. Though deeply affected by the young man's death, Lunardi continued to fly in the Italian peninsula and then in Spain and Portugal, where he again found the adulation he so enjoyed. In about 1792, after a flight in Spain, peasants thought he must be a saint from Heaven and hoisted him onto their

shoulders in triumph. Even so, Lunardi died poor and forgotten in a convent near Lisbon, Portugal, in 1806.

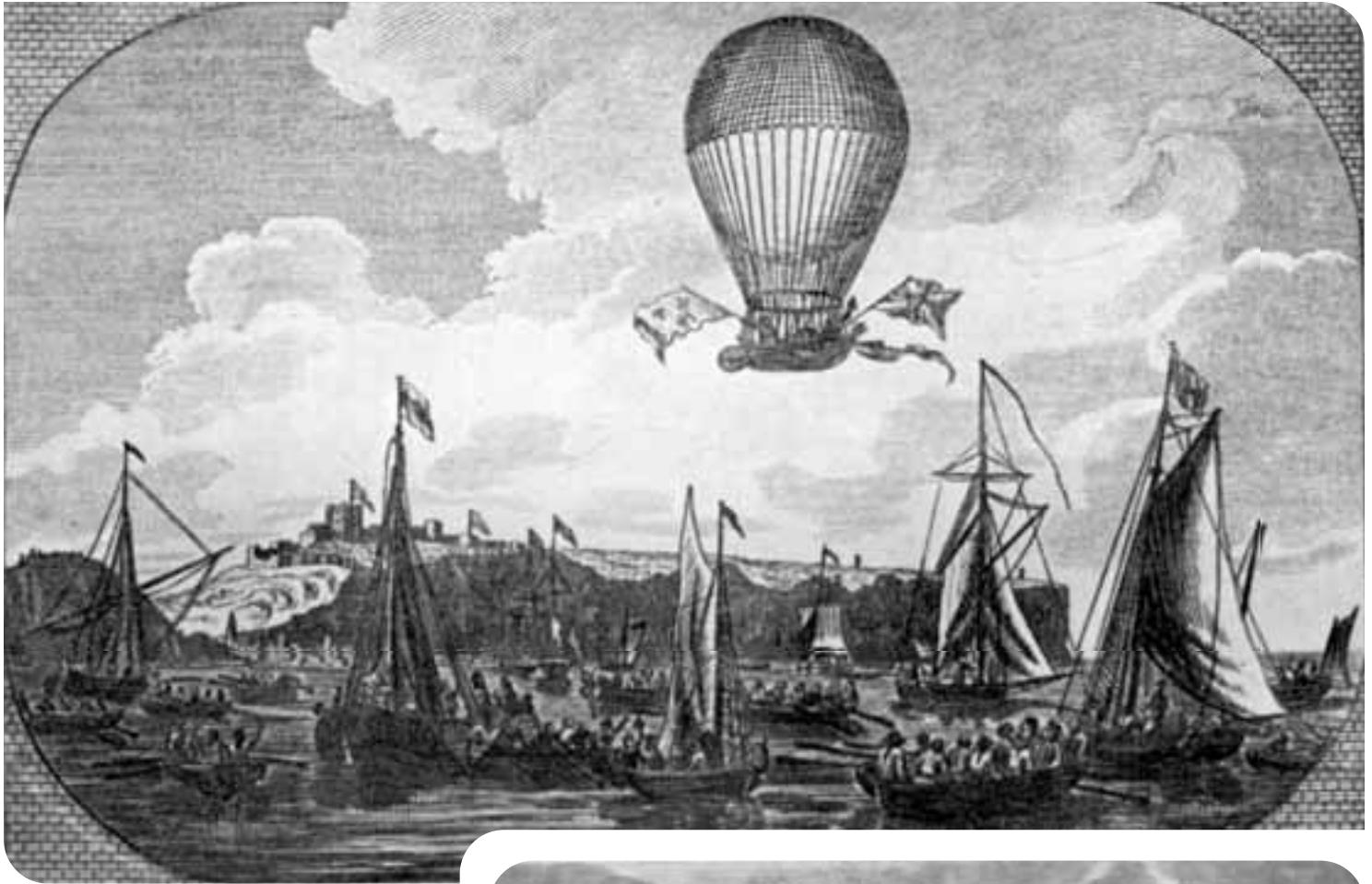
Noting the passion of the crowds, a number of individuals soon realized that ballooning could prove profitable. The first professional aeronauts started to appear. Lunardi was among this early group of great barnstormers.









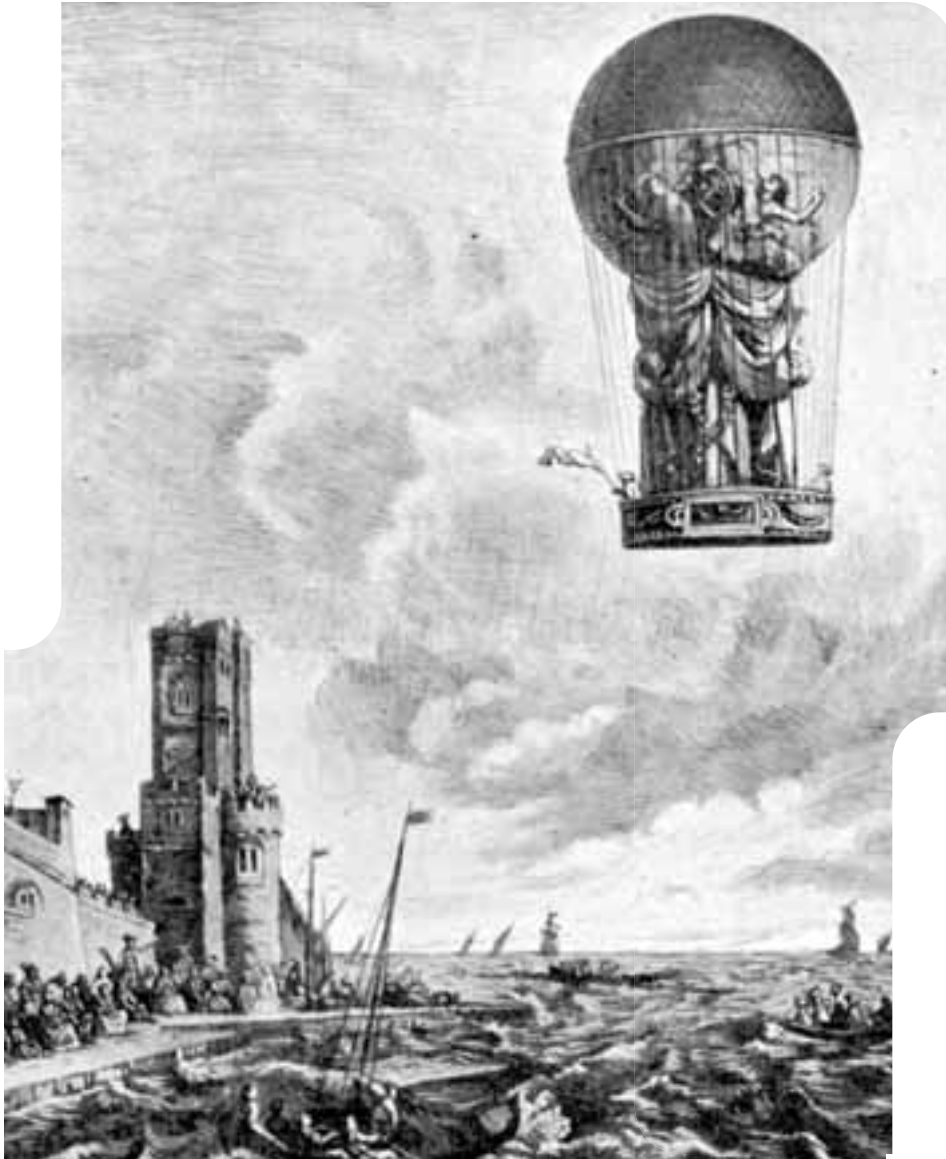


Two images showing the balloon flown across the Channel by Blanchard and Dr Jeffries on 7 January 1785. *Aeronautical Prints & Drawings*, plate 49

jacket with lead in the hopes that, during the weighing operation, Jeffries would feel that he had to let the Frenchman leave alone. The ploy was soon discovered.

As remarkable as it may seem, Jeffries appears not to have been offended by the scheming of the French pilot. Preparations continued, and at 1 p.m. on 7 January 1785, the hydrogen balloon, fitted with oars and a propeller and with the two men on board, left the ground and began to make its way over the white cliffs of Dover. Jeffries was enchanted by the sight. Unfortunately, the balloon began to lose altitude, and they had to start dumping ballast.





The *aéro-montgolfière* flown by Pilâtre de Rozier and Romain. *La Navigation aérienne; Histoire documentaire et anecdotique*, p. 64

Two-thirds of the way across, not a grain of sand remained on board, so Blanchard ordered that all non-essentials be cast over. Ornamentation, the propeller, the oars, the anchors—everything went. The pilot even removed his waistcoat and breeches. His astonished companion tossed his own waistcoat into the air. The lightened balloon rose back up. At 3 p.m., Blanchard and Jeffries, numb and delirious with joy, flew over the French coast. At about 3:30 p.m., they landed near Guînes, in a clearing of the Felmores forest, about twenty kilometres inland. They had conquered the Channel; England was no longer an island.

Blanchard and Jeffries, once found and more suitably dressed, were taken to Calais by horse-drawn carriage. They made a triumphant entrance. The two aeronauts then travelled to Paris where King Louis XVI gave his subject, Blanchard, a pension and a hefty reward. Jeffries had to make do with the unbounded admiration of the great ladies and gentlemen of Paris.

Though Pilâtre de Rozier congratulated the two men, he was deeply disappointed. He had been working for weeks on a state-funded project for a crossing of the Channel from France to England (against the prevailing

westerly winds). Quite likely, his interest was owing largely to the huge reward the French government was offering to the first person to accomplish the feat. Pilâtre de Rozier was sponsored by the Comte de Provence, brother of King Louis XVI and a patron of the museum he had established in Paris.

The aerostat developed by Pilâtre de Rozier was a strange hybrid that combined a spherical hydrogen balloon with a cylindrical hot-air balloon suspended below. The first section of this "*aéro-montgolfière*," built by a chemist and skilled craftsman, Pierre-Ange Romain, was to provide the lift for the whole craft; the second was to enable the pilot to control its altitude. The combination was a novelty, but some, including Charles, considered it dangerous.

On 4 January 1785, barely three days before the triumphant crossing of Blanchard and Jeffries, Pilâtre de Rozier and Romain set up at Wimereux, near Boulogne-sur-Mer. They were ready, but the wind stubbornly blew in the wrong direction. The weeks and months passed. Many songs and quatrains openly made fun of the setbacks of the two aeronauts. The press became increasingly nasty. Pilâtre de Rozier made the best of the long delay to travel to Paris and London. Finally, in June, the wind co-operated; it was now or never.

On 15 June 1785, Pilâtre de Rozier and Romain filled the top portion of their aerostat with hydrogen. They then lit the burner of the lower part. When the two sections of the vehicle had been attached together, the two men climbed aboard the circular gallery. The *aéro-montgolfière* took off just after seven in the morning and rose rapidly,



History's first aerial disaster.  
*Aérostation, Aviation, p. 51*

The wind, at first favourable, soon pushed them back toward France.

About twelve minutes after takeoff, the spectators, among them Pilâtre de Rozier's fiancée, a young Englishwoman named Susan Dyer, saw the burner of the hot-air balloon drop a little. Then a flame shot from the top of the hydrogen balloon. Horrified and helpless, the onlookers watched as the

craft plunged. There was a terrible crash, and Pilâtre de Rozier was killed on impact.

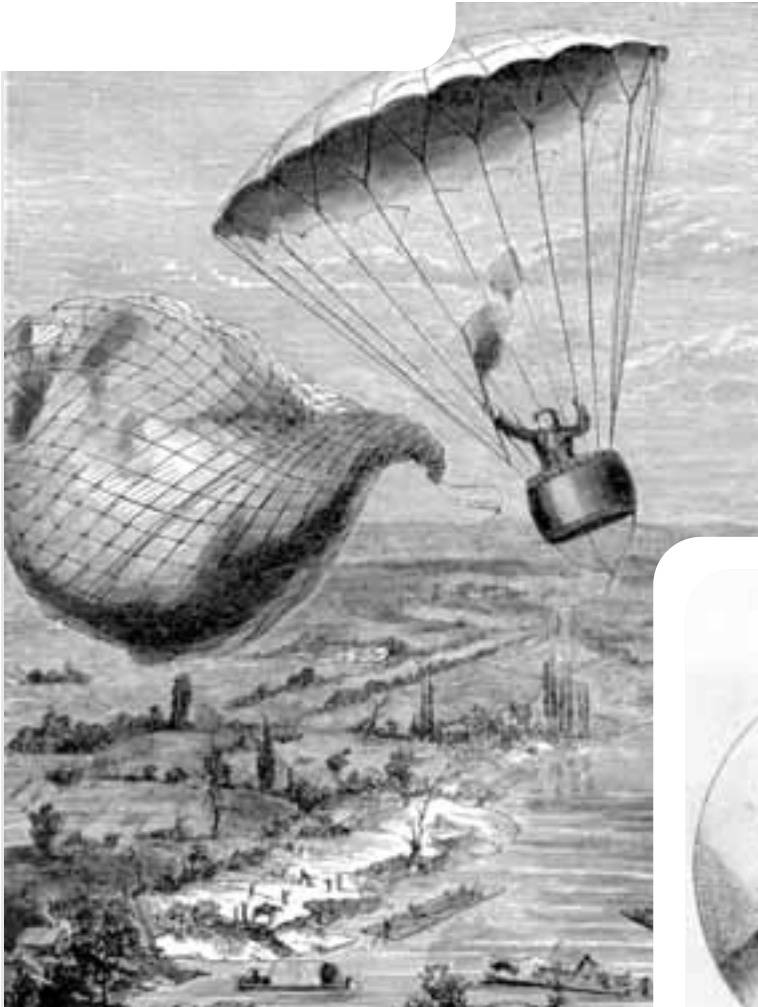
*His glory, alas! was but a dream  
Whose end proved with splendour  
That the moment that lifts us upward  
Is followed by the one that brings our ruin.*

Romain died in the arms of the first arrivals on the scene of the disaster. Dyer, overcome

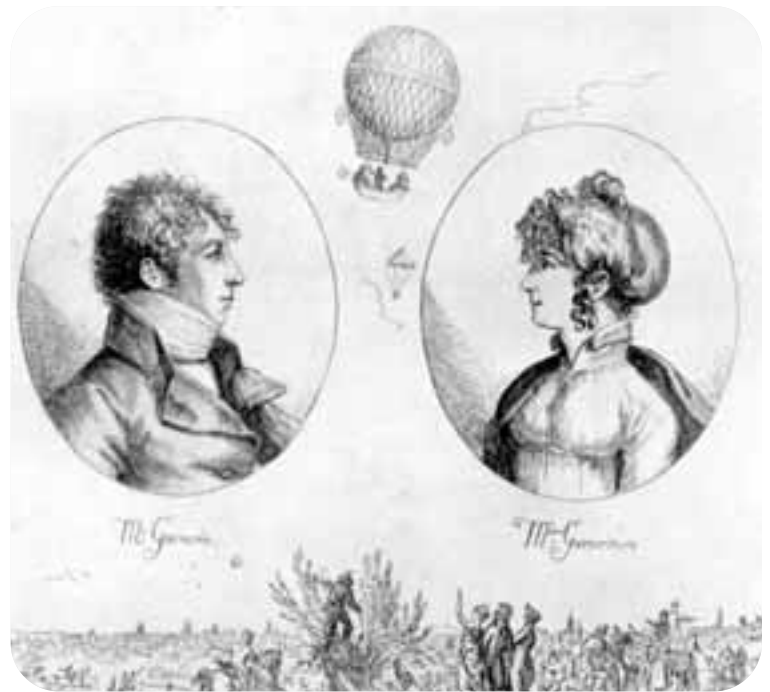
with grief, died shortly afterward. The conquest of the sky, which almost miraculously had thus far been without serious injury, had just claimed two victims.

Touched as he was by the death of his rival, Blanchard continued to fly, becoming the first aeronaut to tour several regions of Europe. In 1785, for example, the French aeronaut made flights from Frankfurt am





André Jacques Garnerin and his wife, Jeanne Labrosse, ca 1797. *Aeronautical Prints & Drawings*, plate 73



The first parachute jump, made by Garnerin on 22 October 1797. *Aérostation, Aviation*, p. 126

Not long after arriving in North America, Blanchard announced in a Philadelphia newspaper the first public flight in North America in nine years. Tickets went on sale for two and five dollars. On the appointed day, Wednesday, 9 January 1793, a fair-sized throng gathered at the chosen site, the yard of the city prison. Among the few privileged spectators who could afford the price of a ticket were George Washington and four future presidents of the United States: John Adams, Thomas Jefferson, James Madison, and James Monroe. Blanchard, sharply dressed as usual, wore a beautiful blue suit

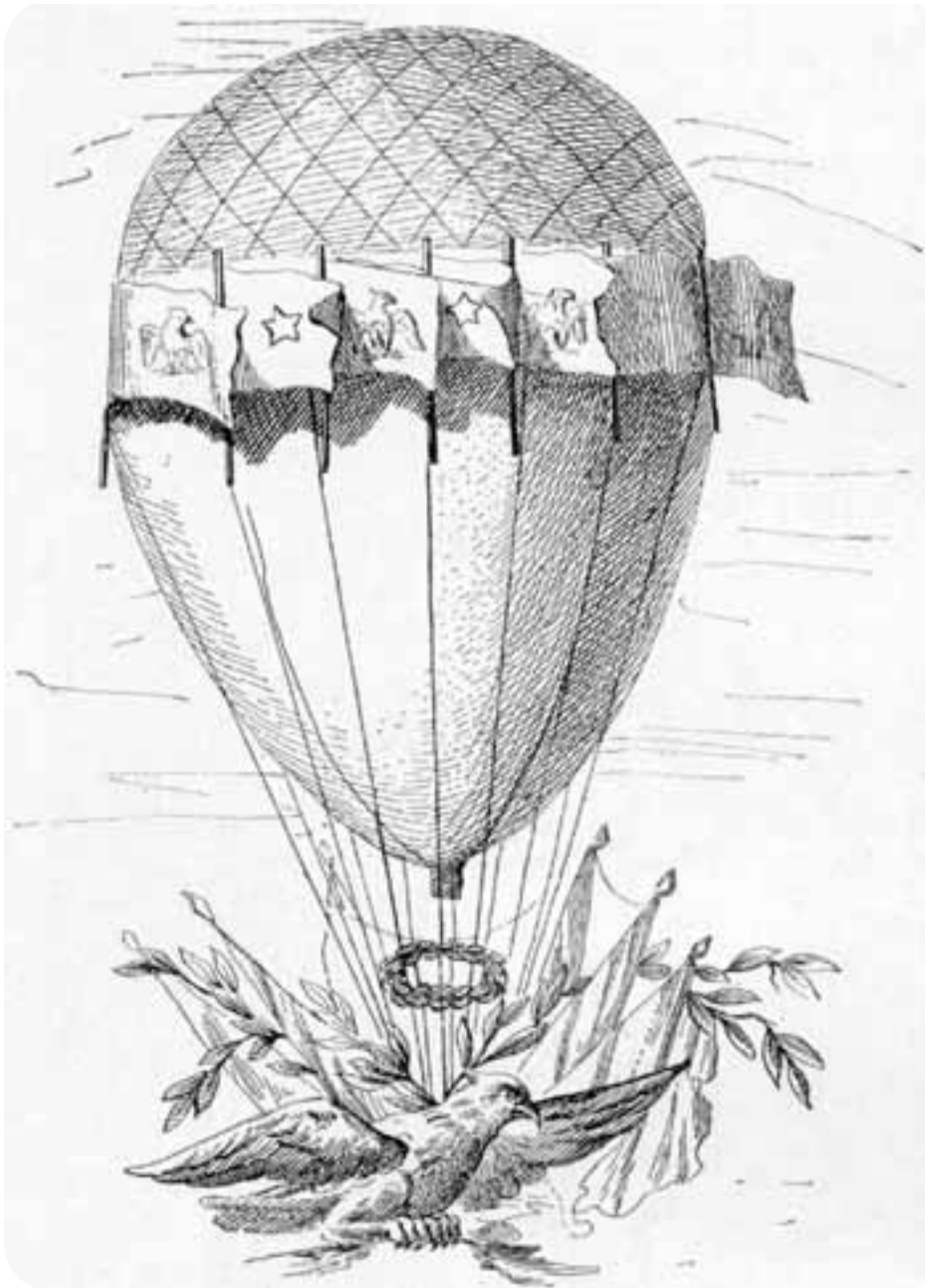
that nicely matched the blue of the basket. At 10:10 a.m. he lifted off. His hydrogen balloon travelled about twenty-five kilometres in forty-five minutes.

When he landed in New Jersey, Blanchard showed his *laissez-passer* signed by Washington. But the farmer he happened to encounter was illiterate and became suspicious. Not knowing what to do, Blanchard, who spoke no English, uncorked a bottle of wine. The farmer smiled. Successful as it had been, this maiden flight in America did not begin to pay for itself. Blanchard was only too

familiar with this problem. Pursued by bad luck and constantly short of funds, he left the United States in 1797.

Back in Europe, Blanchard continued to fly, but financial success still eluded him. In 1808, while in full flight, he suffered a heart attack. His long career as an aeronaut was well and truly over. Blanchard died in Paris in March 1809, at the dawn of a new era in ballooning.

After 1810, the occupation of pilot became somewhat more profitable. There was even more to be made if the pilot was a woman.



*Superstitious, like many authoritarian heads of state, Napoleon was not amused by this strange affair. Poor Garnerin soon fell into disfavour.*

The first professional female pilot—and the first female parachutist—appears to have been a Frenchwoman, Jeanne Labrosse, a pupil and the future wife of André Jacques Garnerin.

This man, the first person to attempt a parachute drop from a free balloon, accomplished the feat in Paris on 22 October 1797.

Eventually very popular in France, Garnerin suffered the wrath of Napoleon Bonaparte following an unpiloted flight he had organized on 16 December 1804 to commemorate the crowning of the French emperor by Pope Pius VII. By an almost incredible chance, the balloon arrived in Rome the next morning and grazed St Peter's cathedral. Part of a gilded crown attached below the envelope fell on the tomb of the Roman emperor Nero, a half-mad despot. Superstitious, like many authoritarian heads of state, Napoleon was not amused by this strange affair. Poor Garnerin soon fell into disfavour.

**The balloon launched on 16 December 1804 to celebrate Napoleon's coronation.**

*La Navigation aérienne; Histoire documentaire et anecdotique, p. 89*







