| Date: 0200-0400 |  |
| :--- | :---: |
| Copilot | Pilot: Antarqui (small boy) |
| Passengers: |  |

## Earliest mythical manned flight

Said to have been sent up in the air to spy on the enemy Nazca culture

| Aerostat: Nazca |  |  | Hot Air Balloon | Volume: |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Distance: | miles | Duration: | h | min | Altitude: |
| Source: | Nazca, Journey to the sun |  |  |  |  |
| Uneters |  |  |  |  |  |


| Date: $\mathbf{1 6 2 5}$ | Pilot: Johann Baptista van Helmont ${ }^{1}$ | 1579-1644 Belgium |
| :--- | :---: | :---: |
| Copilot |  |  |

First description of hydrogen, first to use the word "gas". Founder of pneumatic chemistry.
Investigated and categorized hydrogen and several other gases.
Realised the difference between atmospheric air and gases.


| Date: 1709-08-08 |
| :--- | :---: | :---: |
| Copilot | Pilot: Bartholomeu Lourenço de Gusmão¹ $\quad$ 1686-1724 Brazil

## Earliest recorded model balloon flight


Date: 1731-11-17 Pilot: Mr. Kriakoutny
Copilot

First manned balloon flight according to Russian claims.
Flew from Ryazan town square.
Landed in church bell-tower. Beaten by Supersticious peasants and had to flee


## Repeated Helmont's discovery that different gases exist

Published "Experiments Upon Magnesia Alba, Quicklime, and Some Other Alkaline Substances", 1755
Aerostat: Volume: m3
Distance: km Miles Duration: h min Altitude: meters

Source: Weisstein: Scientific Biographies, Scientific American jan $1984 \quad$ Updated: 2002-06-16

| Date: 1766 | Pilot: Henry Cavendish |  |
| :--- | :---: | :--- |
| Copilot | Passengers: | 1731-1810 Great Britain |

## Discovered and isolated a gas, 11 times lighter than air

Investigated "Fixed Air" (carbon dioxide) and isolated "Inflammable Air" (hydrogen.
Published "On Fractious Air", 1766

Date: 1774-08-01 Pilot: Joseph Priestley ${ }^{1} \quad$ 1733-1804 Great Britain
Copilot

## Isolated and categorized hydrogen and seven other gases.

| Aerostat: Distance: | km | Miles | Duration: | h | min | Volum Altitude: |  | $\begin{array}{r} \text { m3 } \\ \text { meters } \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Source: | Scientfic American, jan 1984 |  |  |  |  |  | Updated: | 2002-06-16 |

## Discovered and produced oxygen

Showed before Priestley that air consists of oxygen and nitrogen

| Aerostat: |  |  |  | Volume:m3 <br> Distance: <br> Source: <br> Letter to Lavoisier |
| :--- | :--- | :--- | :--- | :--- |

Date: 1782-11-25/26 Pilot: Joseph-Michel Montgolfier ${ }^{1}$
Copilot

## First experiment by Montgolfier.

At 18, rue Saint-Etienne, Avignon
Fire made of paper


| Date: 1782-12- | Pilot: Joseph \& Étienne Montgolfier ${ }^{1}$ |
| :--- | :---: | :---: |
| Copilot | Passengers: |$\quad$ France

## First outdoor flight.

Paper factory garden in Vidalon-les-Annonay
Fire made of straw and humid wool.
Aerostat: Montgolfière No 2. Cylinder. Hot Air Balloon model Volume: 1 m 3

| Distance: | km | Miles | Duration: | 0 h | 1 min | Altitude: |  | 30 meters |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Source: | , Ica | de l'Ae | utique |  |  |  | Updated: | 1996 |


Date: 1783-04- Pilot: Joseph \& Étienne Montgolfier ${ }^{1} \quad$ France
Copilot

## Tethered experiments.

Château de Brogieux, Annonay
Fire made of straw and humid wool.

| Aerostat: Montgolfière No 4. Linen \& paper sphere. |  |  |  | Hot Air Balloon model Volume: |  |  |  | 800 m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | h | min | Altitude: |  | meters |
| Source: | Les Montgolfières, Icare 105, Histoire de l'Aeronautique |  |  | Updated: 1998-07-30 |  |  |  |  |

Date: 1783-04-25 Pilot: Joseph \& Étienne Montgolfier ${ }^{1}$ Passengers:
Copilot

## First free flight at night.

Château du Colombier, Annonay.
Fire made of straw and humid wool.

| Aerostat: Montgolfière No 4. Linen \& paper sphere. |  |  |  | Hot Air Balloon model Volume: |  |  |  | 800 m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | $2,00 \mathrm{~km}$ | 1 Miles | Duration: | h | min | Altitude: |  | meters |
| Source: | Les Montgolfières, Icare 105, Histoire de l'Aeronautique |  |  | Updated: 1998-07-30 |  |  |  |  |

## Date: 1783-06-04 Pilot: Joseph \& Étienne Montgolfier ${ }^{1}$ <br> Copilot <br> Passengers:

## First public demonstration, free flight.

Place des Cordeliers, Annonay.
Fire made of straw and humid wool.

| Aerostat: Montgolfière No 4. Linen \& paper sphere. |  | Hot Air Balloon model Volume: | 800 m |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Distance: | $2,00 \mathrm{~km}$ | 1 Miles | Duration: | h | min | Altitude: |


| Date: 1783-08-27 | Pilot: Jacques Alexandre César Charles \& Robert | 1746-1823 France |
| :--- | :--- | :--- |
| brothers ${ }^{1}$ |  |  |
| Copilot | Passengers: |  |

## First Free flight by gas balloon.

Public demonstration. Champ de Mars, Paris - Gonesse 15 km NE Paris.
Balloon destroyed by scared villagers.
Aerostat: Charlière No 1. Rubberized silk sphere. Hydrogen. Gas Balloon model Volume: 35 m 3
Distance: $25,00 \mathrm{~km} 16$ Miles Duration: 0 h 45 min Altitude: meters
Source: Icare 105, Histoire de l'Aeronautique, Ballooning 1782-1872 Updated: 1998-07-30

| Date: 1783-08-30 Pilot: Louis XVI King of France ${ }^{1}$ | 1754-1793 France |
| :--- | ---: | ---: |
| Copilot | Passengers: |

## First aviation Royal decision

King Louis XVI agreed that first aeronauts be prisoners
Pilâtre de Rozier pursuaded the King that prisoners should not be honoured
Aerostat: $\quad$ Volume: m3
Distance: $\quad$ km Miles
Source: $\quad$ Stella, Lecornu: La Navigation Aérienne, 1902
Date: 1783-09-12 Pilot: Jacques-Étienne Montgolfier ${ }^{1}$
Copilot
Passengers:

## Tethered flight. Demonstration for Scientific commission.

Réveillon, Paris
Fire made of straw, humid wool and animal parts.

| Aerostat: Montgolfière No 5. Paper covered linen. Biconical |  |  |  | Hot Air Balloon |  | Volume: | 1000 m 3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | h | min | Altitude: | meters |
| Source: | Ic | l'Ae | tique |  |  |  | 1996-04-15 |

Date: 1783-09-19 Pilot: Jacques-Étienne Montgolfier ${ }^{1}$ Passengers: Sheep, duck and rooster
Copilot

## First free flight with animals.

From the Royal Court at Versailles to Vaucresson
Fire made of straw, humid wool and animal parts.
Aerostat: Montgolfière No 6. Painted cotton Hot Air Balloon Volume: 1400 m 3 Distance: $\quad 4,00 \mathrm{~km}$ Miles Duration: 0 h 8 min Altitude: 500 meters
Source: Les Montgolfières, Icare 105, Histoire de l'Aeronautique Updated: 1996-04-15
Date: 1783-10- Pilot: Jacques-Étienne Montgolfier ${ }^{1} \quad$ 1745-1799 France
Copilot

## Tethered flight.

Reveillon, Paris
Airborne heater fired by dried straw.

| Aerostat: Montgolfière No 7. Painted fire resistant cotton. |  |  |  | Hot Air Balloon |  | Volume: |  | 2200 m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | h | min | Altitude: |  | meters |
| Source: | Ica | I'A |  |  |  |  | Upd | 1996-04-15 |

Date: 1783-10-12 Pilot: Jean-François Pilâtre de Rozier
Copilot

## First tethered human flight.

Reveillon, Paris
Solo flight, weight used to keep equilibrium. Airborne heater fired by dried straw.

| Aerostat: Montgolfière No 7. Painted fire resistant cotton. |  |  |  | Hot Air Balloon |  | Volume: |  | 2200 m3 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | 0 h | 4 min | Altitude: |  |  | meters |
| Source: | Les Montgolfières, Ica | de l'Ae | utique |  |  |  | Upd |  | 996-04-15 |

Date: 1783-10-14 Pilot: Jacques-Étienne Montgolfier 1745-1799 France

Copilot Passengers: Mayor Dillon, the Count of Chartres

## First tethered passenger flight.

Reveillon, Paris
Airborne heater fired by dried straw.

| Aerostat: Montgolfière No 7. Painted fire resistant cotton. |  |  |  | Hot Air Balloon |  | Volume: |  | 2200 m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | h | min | Altitude: |  | meters |
| Source: | Les Montgolfières, Icare 105, Histoire de l'Aeronautique, Comitee Annonay |  |  |  |  |  | Upd | 1996-04-15 |


| Date: 1783-10-15 | Pilot: Jean-François Pilâtre de Rozier |
| :--- | :---: | :---: |
| Copilot |  |

## Tethered human flight.

Reveillon, Paris
Airborne heater fired by dried straw.


| Date: 1783-10-17 | Pilot: Jean-François Pilâtre de Rozier |  |
| :--- | :---: | :---: |
| Copilot | Passengers: | 1757-1785 France |

## Tethered flight.

Reveillon, Paris
Airborne heater fired by dried straw.

| Aerostat: Montgolfière No 7. Painted fire resistant cotton. |  |  |  | Hot Air Balloon |  | Volume: | 2200 m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | 0 h | 8 min | Altitude: | 80 meters |
| Source: | , Ica | l'A | ique, Co |  |  |  | 1996-04-15 |

Date: 1783-10-19 Pilot: Jean-François Pilâtre de Rozier 1757-1785 France
Copilot Passengers: 1. André Giroud de Villette, 2. François Laurent, Marquis d'Arlandes

## Two tethered passenger flights.

Reveillon, Paris
Airborne heater fired by dried straw.


Date: 1783-10-19 Pilot: Jean-François Pilâtre de Rozier 1757-1785 France
Copilot Passengers: François Laurent, the Marquis d'Arlandes, (17421809)

## Tethered passenger flights.

## Reveillon, Paris

Airborne heater fired by dried straw.

Date: 1783-11-21 Pilot: Jean-François Pilâtre de Rozier
Copilot François Laurent, the Marquis d'Arlandes Passengers:

## First recorded manned flight.

From Château de la Muette to la Butte aux Cailles, Paris, France.
Takeoff at 13.54. Airborne heater fired by dried straw.
Aerostat: Montgolfière No 7. Painted fire resistant cotton. Hot Air Balloon Volume: 2200 m 3 Distance: $10,00 \mathrm{~km} \quad 6$ Miles Duration: 0 h 25 min Altitude: 1000 meters
Source: Les Montgolfières, Icare 105, Histoire de l'Aeronautique, Comitee Annonay
Updated: 1996-04-15
Date: 1783-12-01 Pilot: Jacques Alexandre César Charles
Copilot Marie-Noël Robert (Cadet = the younger) $\quad$ Passengers:

## First human flight in a gas balloon.

From "Le jardin des Tuileries", Paris to Nesle-La-Vallée.
Takeoff at 13.45. M-N Robert sometimes called "Cadet" meaning "the younger".

| Aerostat: Charlière No 2. Varnished silk. Hydrogen |  |  |  | Gas Balloon |  | Volume: | 380 m 3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | $36,00 \mathrm{~km}$ | 22 Miles | Duration: | 2 h | 5 min | Altitude: | 600 meters |
| Source: | Histoire d | e, Balloon | 982 |  |  |  | d: 1996-04-15 |

Date: 1783-12-01 Pilot: Jacques Alexandre César Charles 1746-1823 France
Copilot

## First human solo flight in a gas balloon.

Nesle-La-Vallée to Tour du Lay, Hedouville.

| Aerostat: Charlière No 2. Varnished silk. Hydrogen |  | Gas Balloon | Volume: | Miles | Duration: |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | 0 h | 35 min | Altitude: | 3500 meters |
| Source: | Icare 105, Histoire de l'Aeronautique, Ballooning | $1782-1982$ |  |  |  |

## First flight with more than 2 people



## First free balloon flight in Italy

Milano, Italy

Date: 1784-03-02 Pilot: Jean-Pierre Blanchard
Copilot $\quad$ 1753-1809 France

## First trial with a dirigible balloon.

Champ de Mars, Paris to Billancourt
Propulsion by oars.


## First aviation law

Requirement that balloons carrying fire aloft must be inspected before flight
Reason was that authorities considered balloons could cause fires in Paris

| Aerostat: |  |  |  |  |  | Volum |  | m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | h | min | Altitude: |  | meters |
| Source: |  |  |  |  |  |  | Updated: | 2000-04-12 |

Date: 1784-06-04 Pilot: Mr. Fleurant
Copilot

First flight with a female passenger. Mme Elisabeth Thible

## Lyon.

Witnessed by Gustav III, King of Sweden. Balloon named in his honour

| Aerostat: Laurencin/Fleurant, "Le Gustave". Linen \& paper. |  | Hot Air Balloon | Volume: |  |
| :--- | :--- | :--- | :--- | :--- |
| Distance: | km | Miles | Duration: | 0 h 45 min | | Altitude: |
| :---: |
| Source: |


| Date: 1784-06-14 Pilot: Coustard de Massy |
| :--- |
| Copilot R. P. Mouchel, Luynes |

## First attempt to make scientific observations.

## Nantes.

Aerostat: de Massy, "Le Suffren". Hydrogen. Gas Balloon Volume: 450 m 3
Distance: $\quad 36,00 \mathrm{~km}$
Source: $\quad$ Icare 105, Histoire de l'Aeronautique, Ballooning $1782-1982$

## Date: 1784-06-23 Pilot: Jean-François Pilâtre de Rozier 1757-1785 France <br> Copilot <br> Passengers: L. J. Proust

## First flight over 50 km distance.

## Versailles to Chantilly

Heater fired with straw, fir wood and wine-shoots soaked in oil and turpentine
Aerostat: Montgolfière "La Marie Antionette". Cotton and sheep skins. Hot Air Balloon Volume: 5000 m 3
Distance: $52,00 \mathrm{~km}$
Source:

| Date: 1784-06-24 Pilot: Edward Warren |  | 1771-? | United States |
| :--- | :--- | :--- | :--- |
| Copilot |  |  |  |

## First free balloon flight in USA.

Baltimore
Pilot 13 years old

| Aerostat: |  |  |  |  |  | Volum |  | m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | h | min | Altitude: |  | meters |
| Source: FAI 120 |  |  |  |  |  |  | Updated: | 1998-07-30 |

Date: 1784-07-07
Pilot: J. G. Stuwer
Unknown
Copilot

## First flight in Austria

Vienna

| Aerostat: |  |  |  |  | Volume: | m3 |  |
| :--- | ---: | :--- | :--- | :--- | :--- | :--- | :--- |
| Distance: | $0,00 \mathrm{~km}$ | 0 | Miles | Duration: | 0 h | 0 min | Altitude: |
| Source: | Ballooning | $1782-1972$ |  |  |  |  |  |

Date: 1784-07-15 Pilot: Marie-Noël Robert, (the younger) 1760?-182 France
Copilot Anne-Jean Robert, 1758-1820. ( Ainé = the e Passengers: The Count of Chartres and Collin-Hullin

## First flight with an elongated balloon with ballonet.

Trials to control direction. St. Cloud to Meudon
No valve fitted. The duke slashed the ballonet to prevent rupture
Aerostat: Hydrogen. "La Caroline" Gas Balloon Volume: m3
Distance: $\quad$ km Diles Duration: 0 h 45 min Altitude: 4500 meters

Source: Histoire de l'Aeronautique, Dream Machine, Icare 105, Ballooning 1782-1972, Who's Who B Updated: 2003-03-27
Date: 1784-08-25 Pilot: James Tytler
Copilot

## First hot air balloon flight in Great Britain

Edinburgh
No basket and no heat source carried aloft
Aerostat: Hot air envelope Hot Air Balloon Volume: m3

| Distance: $\quad 0,00 \mathrm{~km}$ | 0 Miles | Duration: 0 h 0 min | Altitude: | 150 meters |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Source: | History of Aeronautics in Great Britain, Balloon Tytler, Ballooning | $1782-1972$ |  | Updated: $2003-03-27$ |

Date: 1784-09-15 Pilot: Vincent Lunardi
1759-1806 Italy
Copilot A dog and a cat
Passengers:
First flight with a gas balloon in Great Britain


Date: 1784-09-19 Pilot: Marie-Noël Robert, (the younger) 1760?-182 France
Copilot Anne-Jean Robert, 1758-1820. (Ainé = the e Passengers: Collin-Hullin

## First flight over $\mathbf{1 0 0} \mathbf{~ k m ~ ( 1 8 6 ~ k m ~ s t r a i g h t ~ l i n e ) . ~}$

Paris to Beuvry near Bethune
Straight line distance about 190 km. A-J Robert sometimes called "Ainé", meaning "the elder"
Aerostat: Hydrogen balloon. Gas Balloon Volume: m3
Distance: $186,00 \mathrm{~km} 116$ Miles Duration: 6 h 40 min Altitude: meters

Source: Histoire de l'Aeronautique, Dream Machine, Icare 105, Ballooning 1782-1972, Who's Who B Updated: 1998-06-10

| Date: 1785-01-07 | Pilot: Jean-Pierre Blanchard |
| :--- | :---: |
| Copilot Dr John Jeffries | Passengers: |

## First crossing of the Channel. First international air letter.

Dover to Forèt de Guines, Calais

| Aerostat: Blanchard. Hydrogen balloon. |  |  |  | Gas Balloon | Volume: |  | m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | 1 h 30 min | Altitude: |  | meters |
| Source: | e de | Balloon | 782-1982 |  |  | Updated: | 1996-04-15 |

Date: 1785-01-19 Pilot: Richard Crosbie
1755-1800 Ireland
Copilot
Passengers:

## First ascent in Ireland

From Ranelagh, near Dublin to the coast

| Aerostat: Crosbie hydrogen balloon |  |  |  |  | Gas Balloon |  | Volume: |  | m3 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | 0,00 km | 0 | Miles | Duration: | 0 h | 0 min | Altitude: |  |  | meters |
| Source: | History of Aeronautics in Great Britain, Ballooning 1782.1972 |  |  |  |  |  | Updated: 2003-03-27 |  |  |  |

Date: 1785-06-15 Pilot: Jean-François Pilâtre de Rozier
Cosilot

## First fatality.

First attempt to cross from France to England
Balloon burst in flames

Date: 1785-06-29 Pilot: George Biggin $\quad$ Passengers: Mrs Letitia A. Sage

| Copilot |
| :--- |

First English woman to ascend. Passenger Mrs Letitia A. Sage
London (Saint George's field) to Harrow Common


Date: 1785-07-11 Pilot: Jean-Pierre Blanchard 1753-1809 France
Copilot Passengers:

## First ascent in Holland

The Hague

| Aerostat: Blanchard, hydrogen |  |  |  | Gas Balloon |  | Volume: |  | m3 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | $0,00 \mathrm{~km}$ | 0 Miles | Duration: | 0 h | 0 min | Altitude: |  |  | meters |
| Source: | Histoire de l'Aeronautique, Ballooning 1782-1972 |  |  |  |  | Updated: 2003-03-28 |  |  |  |

Date: 1785-08-26 Pilot: Jean-Pierre Blanchard
Copilot
Passengers: Chevalier de Lepinard

## First flight over $\mathbf{2 0 0}$ km distance.

Lille to Servon (St-Menehould or Melun)
Probably first flight over 200 km straight line.

| Aerostat: Blanchard. Hydrogen balloon. |  |  |  | Gas Balloon |  | Volume: |  | m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | 252,00 km | 157 Miles | Duration: | 7 h | 0 min | Altitude: |  | meters |
| Source: Icare 105, Histoire de l'Aeronautique, Ballooning 1782-1982, Romance of Ballooning Updated: 1996-04-15 |  |  |  |  |  |  |  |  |
| Date: 1785-09-08 Pilot: Thomas Baldwin |  |  |  |  |  | 1750?-181 Great Britain |  |  |
| Copilot Passengers |  |  |  |  |  |  |  |  |

## First Aerial view published, trail rope first described

Solo flight by Thomas Baldwin.
Described in "Airopaidia" 1786.

| Aerostat: Lunardi |  |  |  | Gas Balloon |  | Volume: |  | m3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance: | km | Miles | Duration: | h | min | Altitude: |  | meters |
| Source: History | History of Aeronautics in GB, Who's Who B |  |  |  |  | Updated: 1998-07-30 |  |  |

Date: 1785-10-03 Pilot: Jean-Pierre Blanchard
Copilot

## First free balloon flight in Germany

Frankfurt am Main

Date: 1785-10-20 Pilot: Jean-Pierre Blanchard 1753-1809 France

Copilot
Passengers:

## First balloon flight in Belgium

Ghent, Belgium

| Aerostat: Blanchard. Hydrogen balloon. |  |  | Gas Balloon | Volume: <br> Distance: <br> Source: <br> SAI 120, Ballooning 1782-1972 |
| :--- | :---: | :---: | :---: | :---: |

