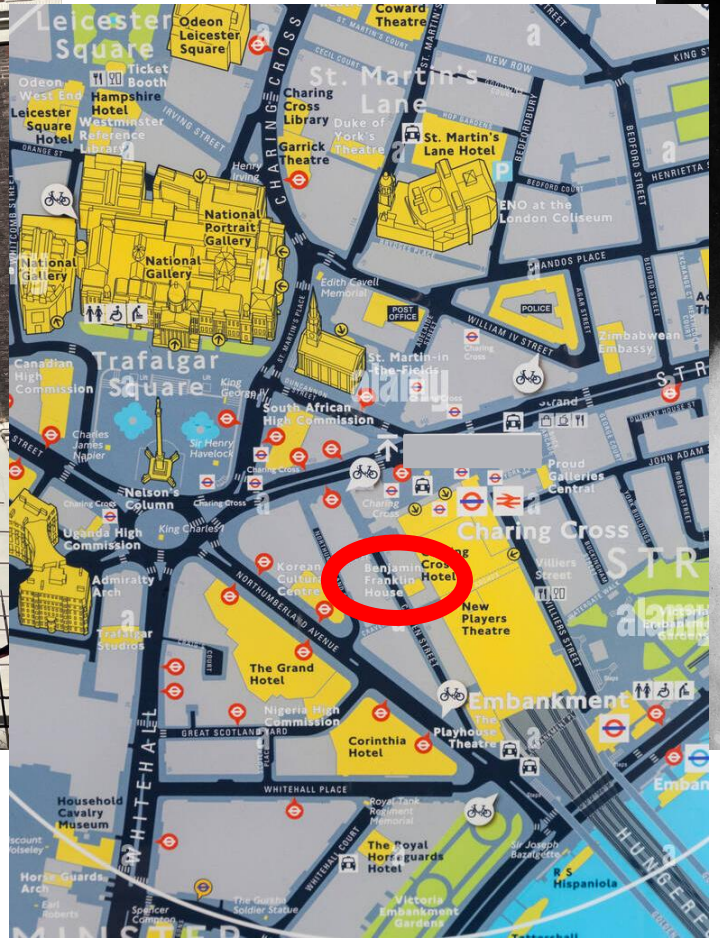
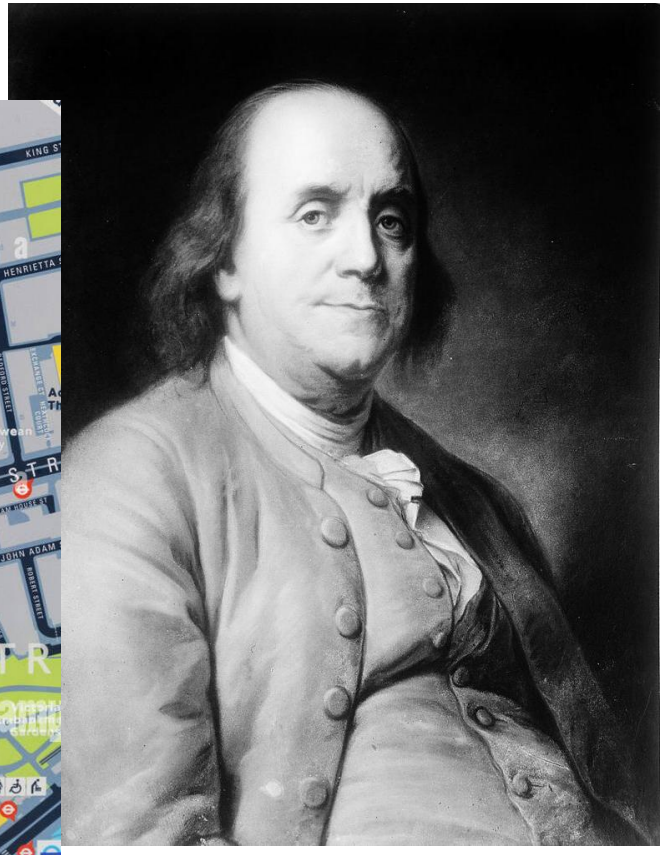
BENJAMIN FRANKLIN HOUSE
36 Craven Street, London

HELLO, I'M HENRY

BENJAMIN FRANKLIN HOUSE MUSEUM





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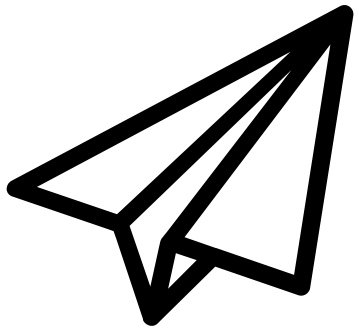
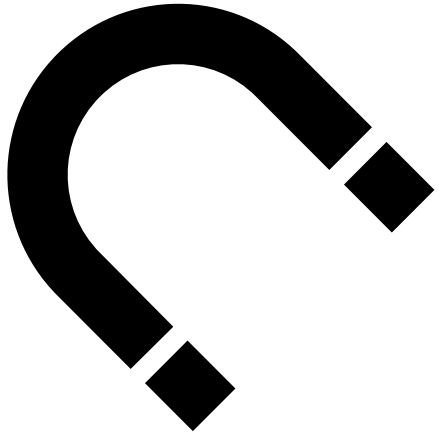
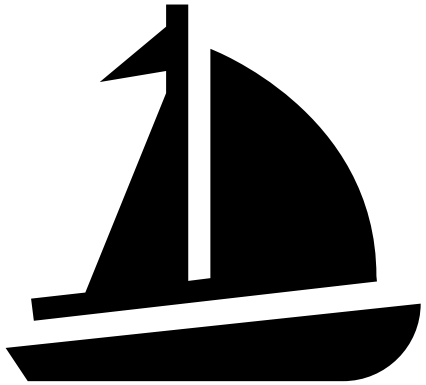


Benjamin Franklin and Forces





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Who was Benjamin Franklin?

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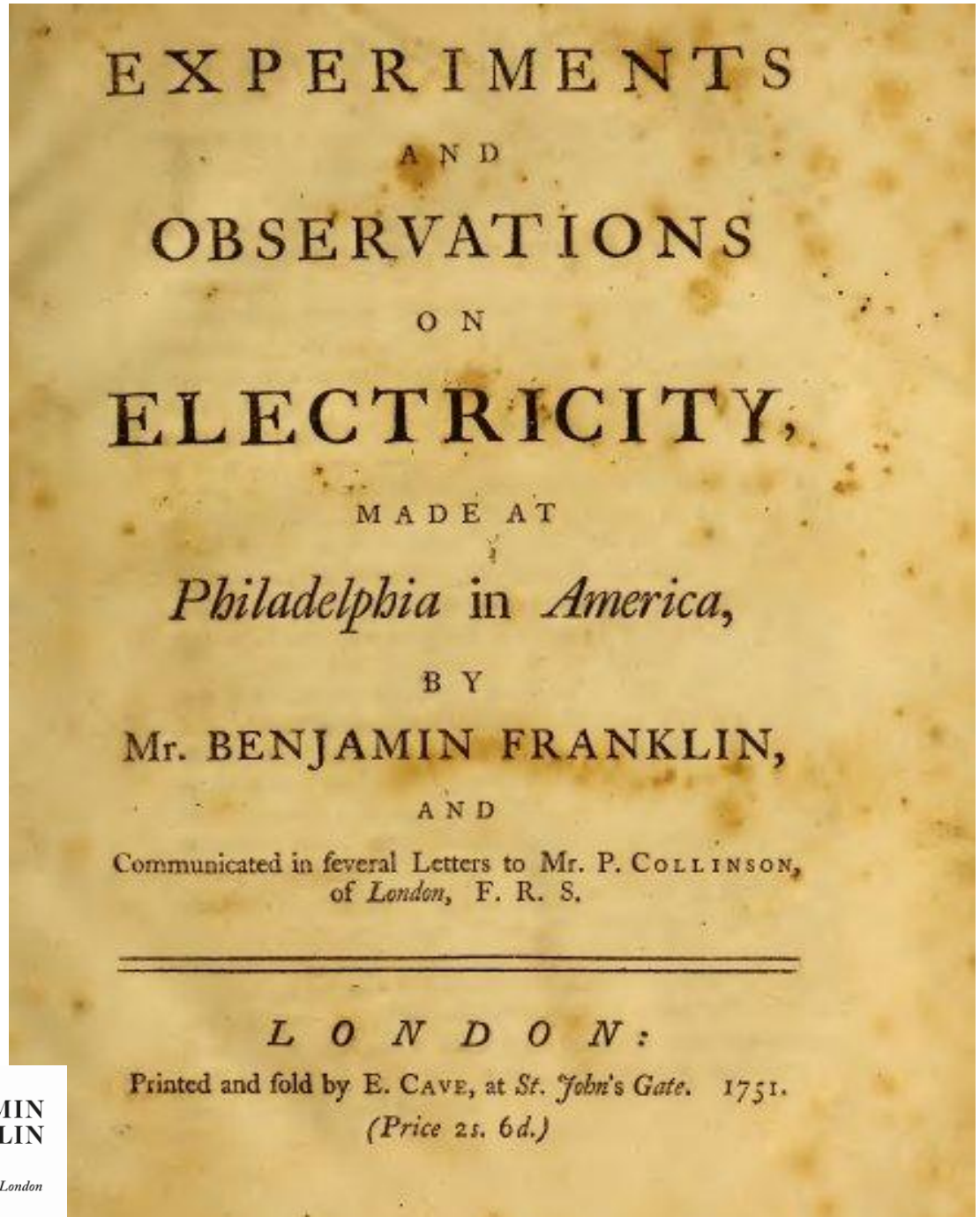
Who was Benjamin Franklin?

He was a…

Scientist
Inventor
Diplomat
Writer
Politician
Founder
Founding Father

And more…!



EXPERIMENTS

AND

OBSERVATIONS

ON

ELECTRICITY,

MADE AT

Philadelphia in *America*,

BY

Mr. BENJAMIN FRANKLIN,

AND

Communicated in feveral Letters to Mr. P. COLLINSON, of *London*, F. R. S.

LONDON:

Printed and fold by E. CAVE, at *St. John's Gate*. 1751.

(Price 2s. 6d.)

BENJAMIN FRANKLIN HOUSE
36 Craven Street, London

Scientist

First to Chart the Gulf Stream.

Observations and Experiments on Electricity (1751)

Key and Kite Experiment (1752)

Coined the words 'battery' and 'conductor'

The first to use the words 'positive' and 'negative' in relation to electrical charge.

Experimented with forces involving water resistance.

Inventor

Swim fins (1717)

Franklin/Pennsylvania stove (1741)

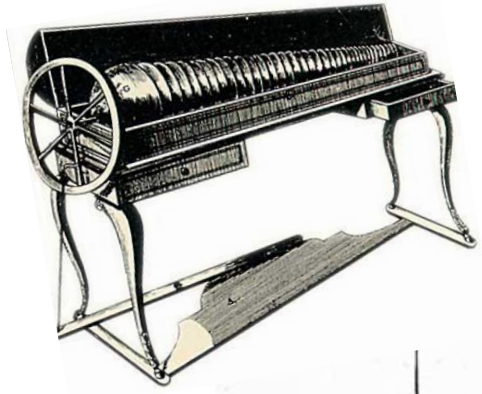
Lightning rod (1752)

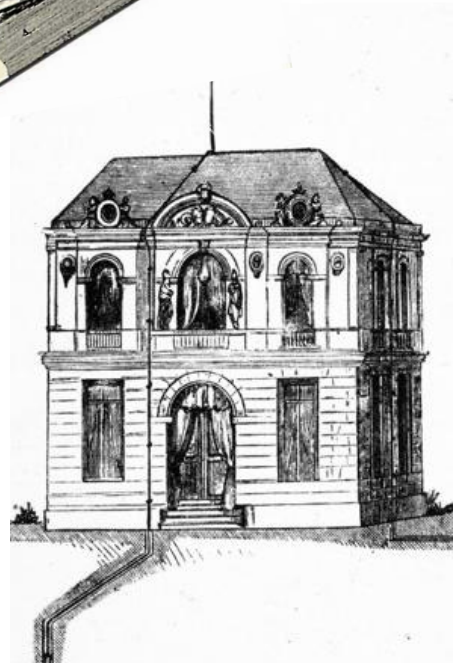
Flexible catheter (1752)

Glass armonica (1762)

Bifocals (1784)

Long arm (extension arm) to reach high books (1786)





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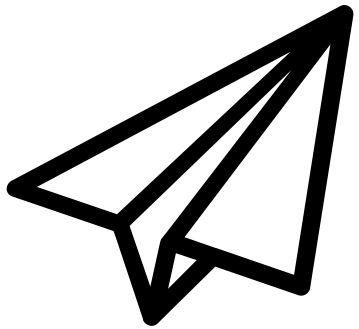
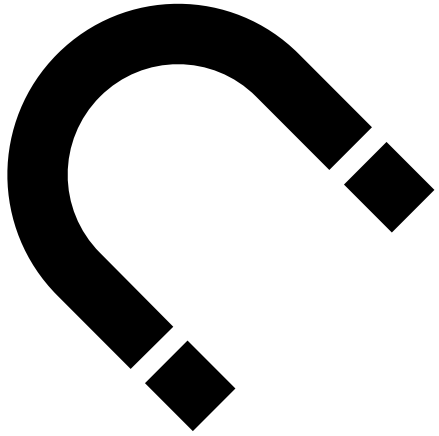
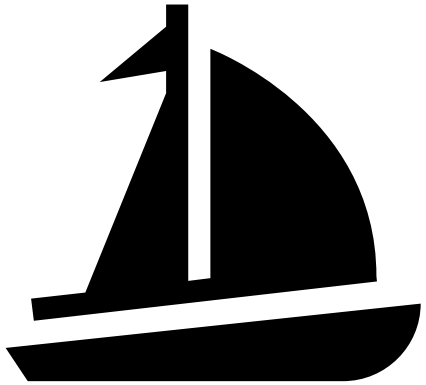


Benjamin Franklin and Forces





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What are forces?

A force can be a **push** or a **pull**.

We cannot see them, but we can see their effects:

- speed
- direction
- shape

Forces can be contact forces (where the objects have to touch each other) or non-contact forces:

- gravity
- magnetism
- forces due to static electricity

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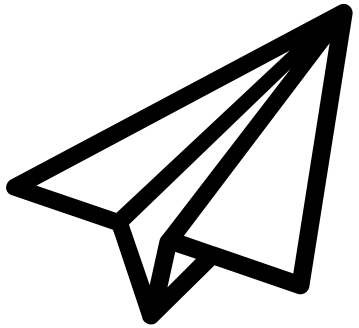
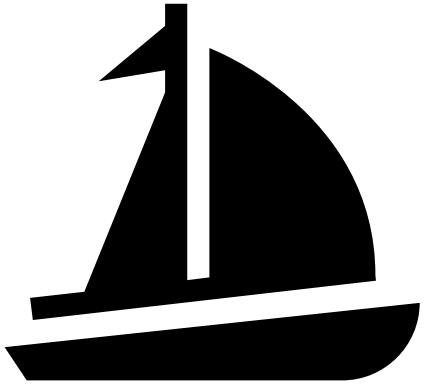
Frictional Forces

Whenever an object moves against another object, it feels **frictional forces**. These forces act in the **opposite** direction to the movement. Friction makes it more difficult for things to move.



Some examples of these forces are:

- Water resistance
- Air resistance



Vehicle designs are **streamlined** which helps counteract the effects of these frictional forces.

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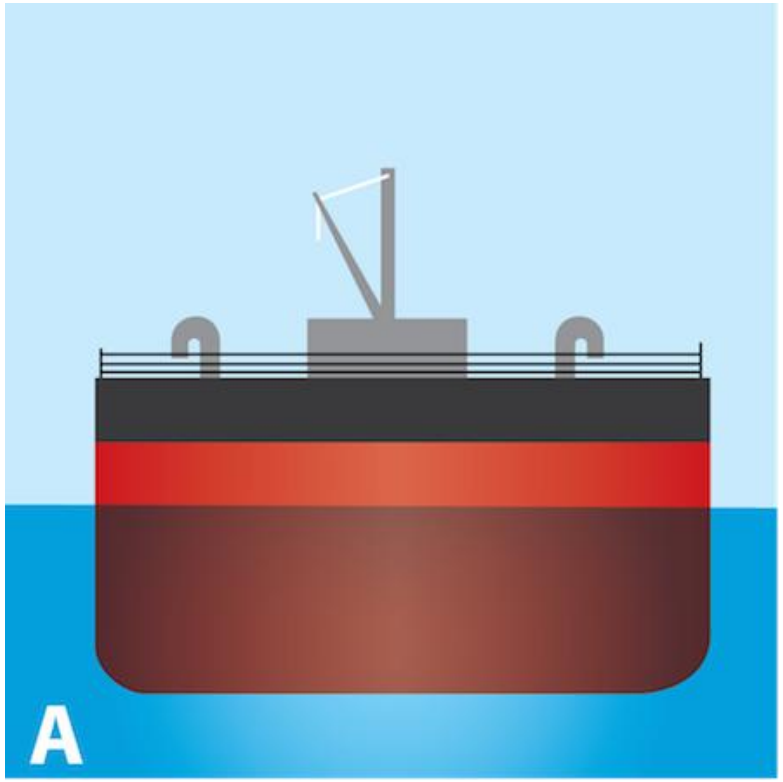
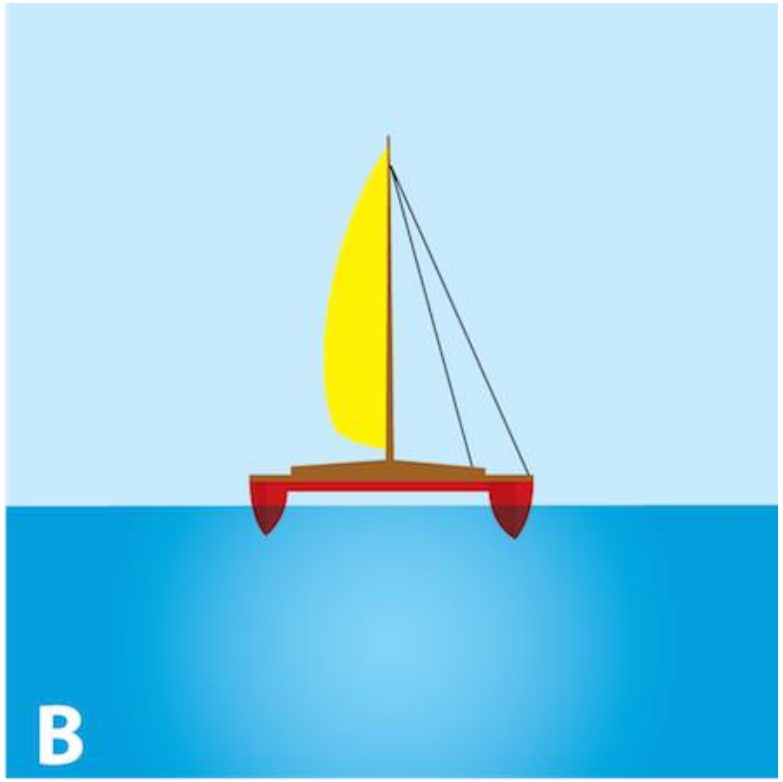
Water Resistance

Vehicle designs are **streamlined** which helps counteract the effects of these frictional forces.

Which boat will be affected by water resistance the **most**?





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Water Resistance

Vehicle designs are **streamlined** which helps counteract the effects of these frictional forces.

What do these boats have in common about their design?

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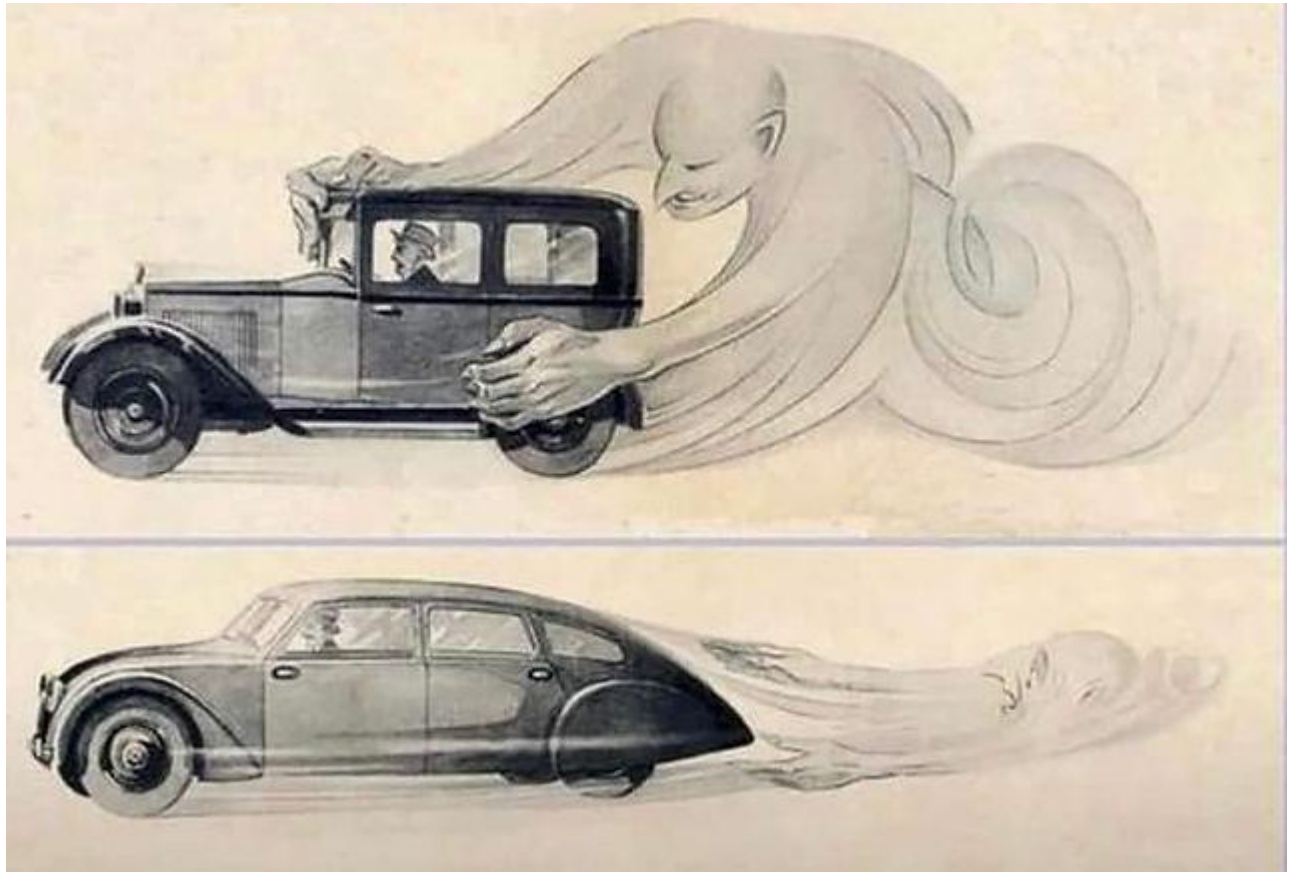
Air Resistance

Vehicle designs are **streamlined** which helps counteract the effects of these frictional forces.

What does this cartoon tell us about the design of the two cars?



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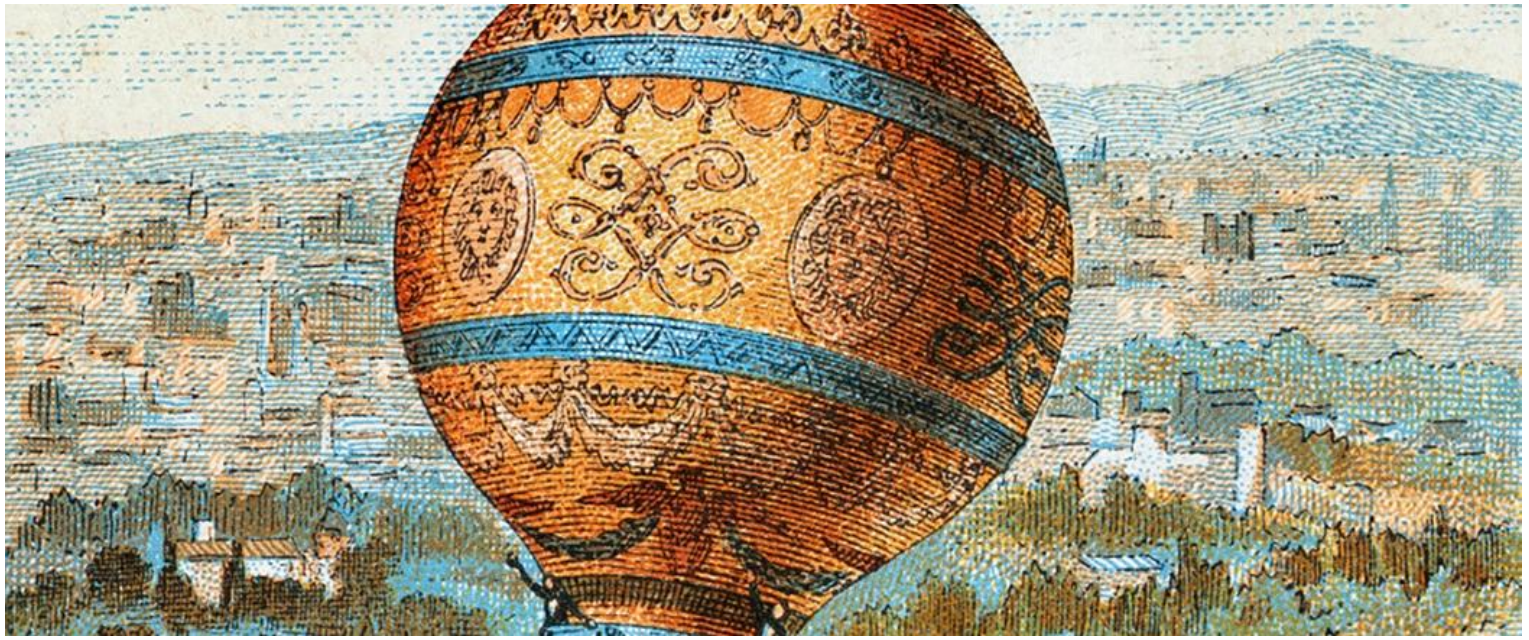
Air Resistance

Vehicle designs are **streamlined** which helps counteract the effects of these frictional forces.

Which car will be affected by air resistance the **most**?

A

B



Franklin and Forces

During his time at 36 Craven Street, Franklin went on holiday to Holland and remarked that the canal boats travelled more slowly in shallow water. This inspired an experiment which explored **water resistance**.

After living in London, Franklin spent several years in Paris as the first American Ambassador to France. Here, he witnessed the first manned ascent in the Montgolfier brothers' hot air balloon. A feat which had to take into consideration the effects of **air resistance**.

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Benjamin Franklin in Paris (1776-1785)

Franklin's reception at the court of France, 1778 by Anton Hohenstein, *Library of Congress*

First public demonstration of Montgolfier balloon on June 4, 1783, at the marketplace in Annonay

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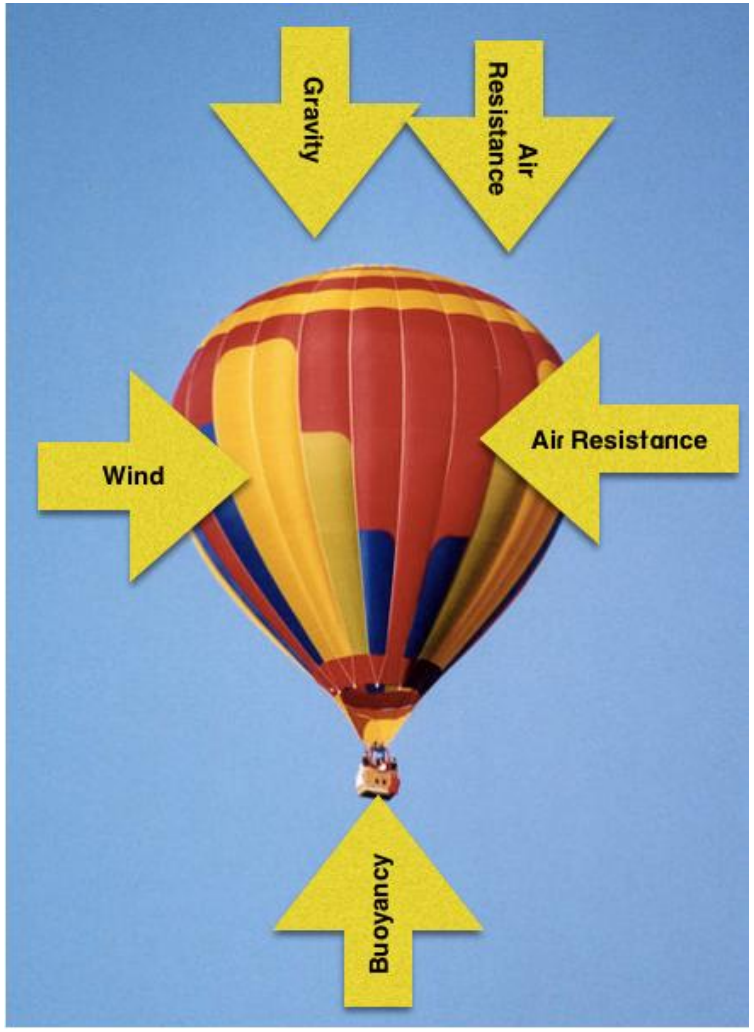
Forces and flight



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