Abstract

The Fastest Wings in Town

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Introduction

The thing that got me interested in this experiment about drag was actually the book on the desk of the student behind me. He was reading a book about pilots in World War 2, which got me to start thinking, “Wow, haven’t we improved in airplane technology since back then,” which led me to think about the ways we might have improved, which eventually lead me all the way here!

Now when I started this seemingly massive undertaking, I had almost no idea about aerodynamics. All I really knew was the names of the four fundamental forces, weight, lift, drag, and thrust, and the knowledge common sense can tell you based on those names. In other words, my experience in this field of science was truly next to nothing. I had no idea how those forces interact with each other or anything like that.

Of course, that all changed once I started my research. I learned all about how you have to balance all of the forces, lest they cause your ship to crash. In all of my research I came across a British inventor named George Cayley. Now, Mr. Cayley was a very important man in the history of aviation for one huge reason. This man was the one to discover the four fundamental forces of flight. He was also the one who proposed the airplane as a heavier-than-air flying machine. The reason I became interested in the idea of what plane wings cause the least amount of machine with fixed wings and separate systems for lift propulsion, and control, and he was the inventor of cambered wings. His discoveries were so important that he is sometimes called “the

father of aviation" and even the Wright brothers acknowledged his importance and the role he played in aviation.

Now, all this is well and good, you may be thinking, but why is this important? Well, I'm getting to it, I promise. You see, what I'm trying to do is to prove what type of plane wing is the most aerodynamic, specifically, which type has the least amount of drag.

While, at first, this question might seem meaningless, but my reasoning is, in this world where fuel is constantly running thinner and thinner and people are getting more and more impatient, the wing which conserves the most fuel and allows the plane to go the fastest would obviously be the best plane wing.

Of course, you can't just look at the plane wings and will yourself to know which is the most efficient. The information I need to obtain in order to determine this is how plane wings create drag, how to eliminate that drag, and what wing is the best at doing that.

Problem and Hypothesis

In my experiment, I wanted to test which plane wing design would create the least amount of drag. I hypothesized that wing design 2 would be the wing design with the least amount of drag.

Procedure

During the experiment, we hung the plane on a rack and let the wind blow it back while it was connected to the spring scale, and the one that registered the least amount of grams on the scale would be the one with the least drag.

Results

The results were that wing design 1 scored 23.33 grams of resistance, wing design 2 got 20 grams, wing design 3 scored 10 grams, wing design 4 was able to score 20 grams as well, and finally wing design 5 got 16.67 grams.

Conclusion

With that in mind, wing design 3, the wings which were thin and straight, were the wings with the least resistance.