This paper discusses a historical process in which early aeronautical engineers examined the reliability of data from wind tunnels and their applicability to the prediction of the performance of full-scale aircraft. It specifically follows the case in 1910s Britain before and during the First World War. In the early 1910s, engineers at the National Physical Laboratory (NPL) constructed wind tunnels and checked their operability as scientific instruments. Based on this preliminary examination, wind tunnels were employed in experimental research on airplane stability. After the eruption of the war, however, the discrepancy became recognized between the predicted performance of airplanes designed on the basis of data from the NPL and their real performance in flight. This recognition led to the investigation of its possible sources and causes by representatives from the NPL as well from the Royal Aircraft Factory, where flight tests as well as wind tunnel experiments were actively conducted. Their investigative activity was controversial and confrontational, as is visible in the minutes and reports of the committee organized for this purpose. This paper traces the detailed process of this search for the source or cause of the discrepancies, which concluded with only a partial success in its investigation.
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**The Wind Tunnel and the Emergence of Aeronautical Research in Britain**

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キーワード

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Design of experiments is a series of tests in which purposeful changes are made to the input variables of a system or process and the effects on response variables are measured. Design of experiments is applicable to both physical processes and computer simulation models. Experimental design is an effective tool for maximizing the amount of information gained from a study while minimizing the amount of data to be collected. If data are collected from all of the vertices, the design is a full factorial, requiring $2^p$ runs. Since the total number of combinations increases exponentially with the number of factors studied, use of the simple additive model assumes independently on the response variable, which is not a very reasonable assumption. Wind tunnel modeling is accepted as a method for aiding in Green building design. For instance, the use of boundary layer wind tunnel modeling can be used as a credit for Leadership in Energy and Environmental Design (LEED) certification through the U.S. Green Building Council. Wind tunnel tests in a boundary layer wind tunnel allow for the natural drag of the earth's surface to be simulated. How it works. Six-element external balance below the Kirsten Wind Tunnel. The aerodynamic principles of the wind tunnel work equally well for watercraft, except the water is more viscous and so imposes a greater forces on the object being tested. A looping flume is typically used for underwater aquadynamic testing. Low-speed Oversize Liquid Testing. He discusses how experimenting on a mother is no less than experimenting on a dog.

B. Annotate the text for: I. Introduction A) Exordium – “The right to know is like the right to live.” B) Exposition – “The pains of life are more numerous and constant than its o pleasures, and that therefore we should all be better dead.” C) Proposition – “If you cannot attain to knowledge without torturing a dog, you must do without knowledge.” Therefore, they believe it is not true that animal experiments are responsible for reducing the number of wild animals on the planet. On the other hand, others feel that there are good arguments against this. First and foremost, animal experiments are unkind and cause animals a lot of pain.