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Letters

Wright on

I would like to respond to the letters (SN: 10/12/91, p.235) discussing the mathematics used by the Wright brothers ("Calculating the Wright stuff," SN: 7/20/91, p.47). I presented the paper from which the SCIENCE NEWS article was written.

In response to Mr. Engler's comments, it is true that the Wright brothers were unaware of "density altitude" (as was virtually everyone else in 1903) and that the Wright Flyer was a marginal flying machine. However, through their exhaustive tests and trial flights, they had determined what conditions were necessary for flight at Kitty Hawk, and they recognized that the conditions of Dec. 17, 1903, were acceptable for flight. That they achieved flight under these conditions was not, in my opinion, "incredible luck." Rather, it was the result of these tests. Perhaps all the Wright brothers proved in 1903 was that flight was possible on a cold and windy day in North Carolina, but that was enough!

In response to Mr. Warner's comments, it is

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Cover: For centuries, woodwind reeds have been made from the dried stems of the giant reed plant (*Arundo donax*). Clare Lawton, an oboist and botanist, took this photograph of the harvested stalks when she visited a cane plantation in southeastern France. Lawton is studying the anatomy of this grass, hoping to learn how growers can produce better-quality woodwind reeds.



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true that there were many attempts at flight before the Wrights, some of them partially successful. The Wright brothers, however, achieved *controlled and sustained* flight for the first time and are very deserving of their place in history.

Robert N. McCullough
Associate Professor of Mathematics
Ferris State University
Big Rapids, Mich.

The singular engineering contribution of the Wrights' discoveries was not how an aircraft can be made to take off and sustain flight, but rather how an aircraft can be made to turn. Indeed, this was the central problem confronting aeronautics at the turn of the century.

Their solution provided asymmetric lift from left and right wing panels by warping airfoils differently on each side. Different lift forces resulted in a bank, making turns possible.

Peter Stanek
San Francisco, Calif.

For those who see the Wright Brothers as unimportant to the invention of the airplane, I

suggest the following as a partial list of their accomplishments:

- They devised a simple and efficient structure for the airframe.
 - The power plant they built was superior in power-to-weight ratio to any other of that era.
 - They built the first efficient airscrew propeller based on aerodynamic principles.
 - They solved the problem of stability in rough air.
 - They devised a method for controlling the airplane about all three axes.
 - They were the first to learn the piloting techniques needed to maneuver the aircraft in flight.
 - They discovered early on that published airfoil data were wrong. To remedy this, they built the first wind tunnel for basic aerodynamic research.
 - They were the first to apply systematic engineering methods to aircraft design.
- Without question, the Wrights opened the door to the Air Age.

Virgil H. Soule
Rockville, Md.

DECEMBER 14, 1991

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