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DISCUSSION

F. N. M. Brown[3]

Dr. Swanson's excellent paper has a single fault. His statement on page 469 of the preprint that "The circulation is then a consequence of the flow pattern as determined by the boundary layer behavior," is underemphasized. This conclusion is perhaps the most important one in the paper because it is a bold thought.

I will quote from the abstract of one of my own reports. (A Summary report on phase I, contract N-123(60530)5964 "Magnus Effect: A Visual Study of Separation Conditions in the Negative Lift Region") "The suggestion is made that the circulation is inherent in a flow pattern that is established by the differential separation associated with the energization of the boundary layers and cannot be the result of viscous shear transmitted to the body of fluid outside the boundary layer."

We were forced to this conclusion by two findings: First, the very existance of negative Magnus effect and second the results of a study of the periptery of axially situated (0 deg yaw) rotating, tangent-ogive nosed cylinders. We found that the flow field did not follow the rotating surface except within the transitioning and within the fully developed turbulent layer. The air outside the boundary layer had no tendency to follow the rotating surface, indicating that no viscous shear was transmitted to this portion of the flow pattern.

Dr. Swanson is to be congratulated for his independent reasoning in this matter.

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