Associate Director

Head, 8-Foot Tunnels Branch,
Full-Scale Research Division

Reply to letter requesting information

REFERENCE: Letter dated Nov. 15, 1965, from Paul C. Proctor, Needham Heights, Massachusetts, requesting for information

In the reference letter, Mr. Paul Proctor of 9 Mercer Road, Needham Heights, Mass., asks for information about wind tunnels and aerodynamic drag. The following should provide the basis for an answer:

The subject of wind tunnels is covered quite well in any good encyclopedia such as Encyclopedia Britannica or Americana. The World Book Encyclopedia also has a fairly elementary discussion of wind tunnels. A more comprehensive discussion is presented in the book Wind Tunnel Testing by Allen Pope, published by John Wiley and Sons, New York. The discussion of wind tunnels in this book, however, is quite technical.

Methods for streamlining of airplanes are covered under the headings of aerodynamics in the encyclopedias mentioned above. However, the subject of streamlining of racing cars is not covered in these articles. Numerous wind-tunnel investigations of streamlining the bodies of racing cars have been made in the past. The results of these tests have shown that the top of the body must be shaped like a tear drop; and as you will notice, the bodies of most racing cars have such a shape. Particularly, the square back end must be streamlined. Once you streamline the upper part of the body, the remaining problem is to streamline the bottom of the auto. This is much more complex. However, if all the bumps of the body of the automobile are covered over with a streamlined surface, the maximum effect of streamlining should be obtained.

If your interest in streamlining pertains to the Soap Box Derby type racer, it should be pointed out that the aerodynamic drag at the speeds at which these small racers move is quite small; and streamlining will add relatively little to their speed.

A spoiler does exactly the opposite from streamlining; it increases rather than decreases the drag and is used to slow down airplanes.

Richard T. Whitcomb

RTWhitcomb: jic

Comments: raise.