

Oklahoma's only wind tunnel was constructed by students of mechanical engineering and members of Tau Omega under the direction of Professor Joseph Liston, new member of the school of mechanical engineering faculty. Below: Professor Liston

Oklahoma's only wind tunnel

BY JOSEPH LISTON

ONE of the first wind tunnels to be used in this country was a small experimental or model tunnel used by the Wright brothers. It was insignificant in comparison with modern tunnels of some of the larger technical schools and the immense tunnels of the National Advisory Committee for Aeronautics, one of which is big enough to test a full sized airplane. But this tunnel, though small enabled the inventors of the airplane to learn much of the principles of aerodynamics and certainly had a large bearing on the success of their experiments. Nor has this wind tunnel's early influence in aeronautics been lessened. Now-a-days with air transport striving for a sound economic base and military aviation finding steeper obstacles in the way of superior foreign military development, research for better aerodynamic form and improved design is imperative.

The wind tunnel has become the basic instrument for aerodynamic research. A very high percentage of the improvements in aviation is traceable directly to the wind tunnel. So important has aerodynamic research become that the Federal government maintains a large staff of technical experts who conduct investigations on the various phases of the subject. The result of this research work is published by the government printing office in Washington and made available at cost to the industry.

With the wind tunnel occupying this important position, it becomes desirable to give students in aeronautics at the University of Oklahoma some knowl-

edge of the operation of these instruments. With this point in mind the present installation in the new engineering building was designed and built by the school of mechanical engineering with the able assistance of Mr A. D. Oliver, graduate student, and various members of Tau Omega, honorary aeronautics fraternity.

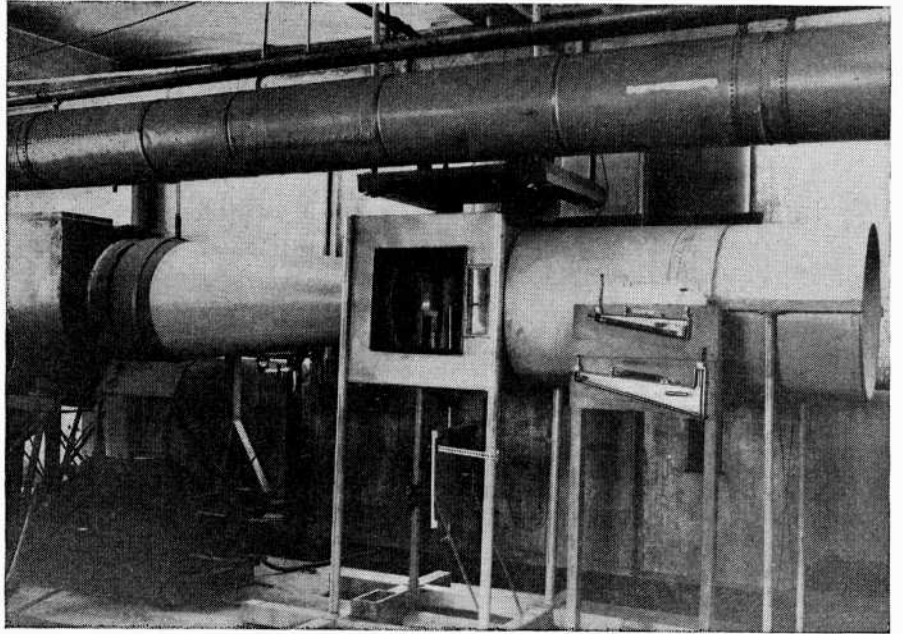
The installation in its present form consists of the tunnel proper, a large fan for drawing air through the tunnel and a six cylinder Continental engine for driving the fan.

The tunnel is closely comparable to a large venturi tube such as is used in fluid metering work. Air enters through the entrance cone shaped much like a trumpet. The diameter of the cone gradually decreases to a value of about twelve inches. Then the entering air passes through straightening vanes and a short cylindrical duct into and across the test chamber, then into the exit cone and out through the fan.

The model to be tested, usually a small airplane wing model or sometimes the entire model airplane is mounted on a wire balance in the air stream passing across the test chamber. The velocity of this air stream is regulated by the speed of the fan, and it is accurately measured by sensitive draft gages connected to a movable pitot tube in the tunnel. The forces acting on the model are transmitted to the supporting wire balance and then to sensitive weighing scales. From a knowledge of the forces acting, the size of the model and the ve-

locity of the air it is possible to calculate coefficients for the model. These coefficients can then be applied to determine the forces on full size airplanes.

Many other interesting studies are possible with the tunnel such as the testing of instruments, the effects of streamlining on motor cars, the flow of air about a model wing by coloring the air with smoke, etc. These investigations will be made by interested students enrolled in research courses. This will enable them to become familiar with wind tunnel testing as well as to obtain interesting data.



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