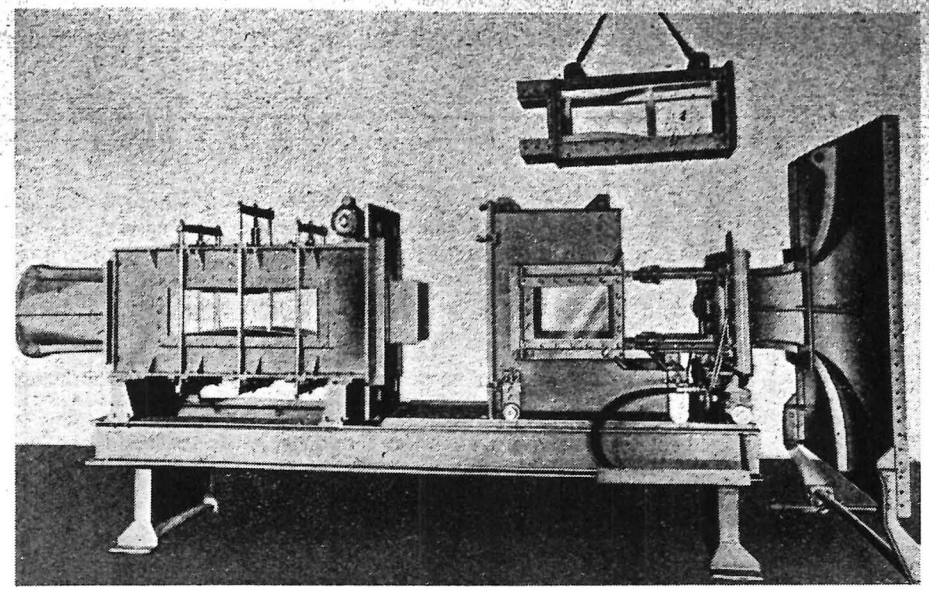
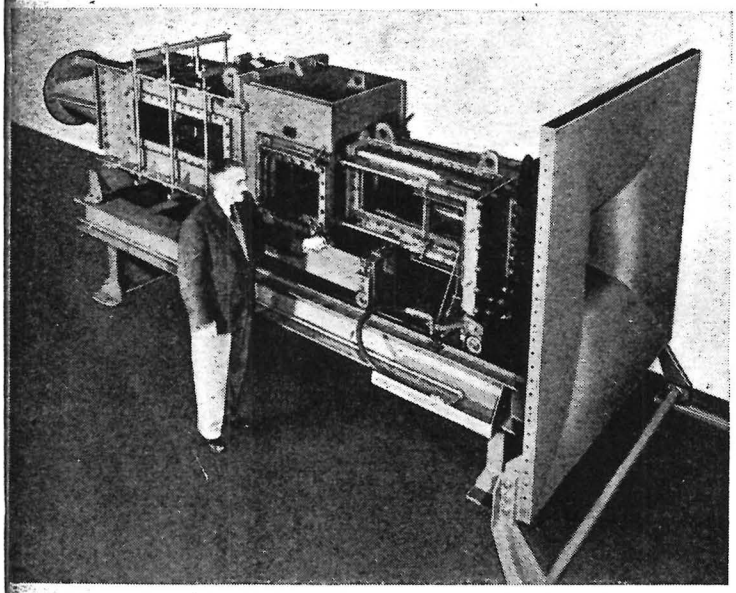
A High Speed Canadian Wind-tunnel





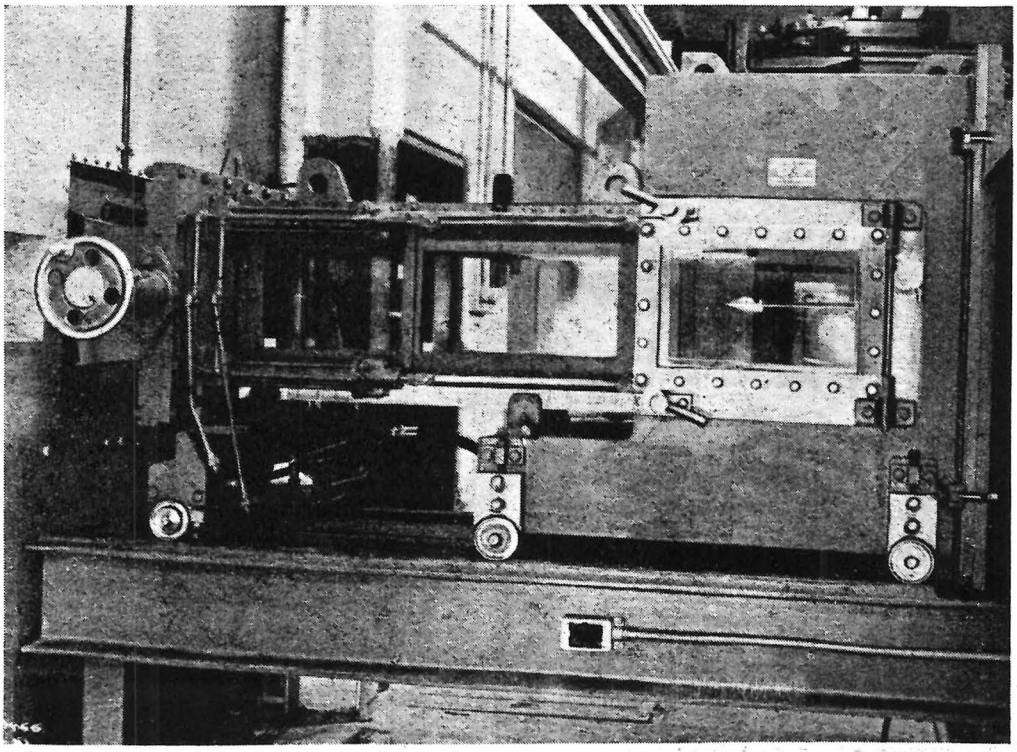
A SUPERSONIC WIND-TUNNEL has recently been completed for the National Research Council of Canada by the Dominion Bridge Co. This tunnel has a cross-section of 10 ins. square, and is provided with nine interchangeable venturi nozzle-boxes to give different speeds.

Only the first six venturis have so far been completed, giving speeds ranging from a Mach number of 1.4 to one of 3.47. The N.R.C. will build three more venturis, the fastest of which it is hoped will give an equivalent speed of 5,000 m.p.h. at sea-level.

This interesting tunnel works on the suction principle, air being drawn through the working section to fill a 35-ft. diameter vacuum sphere, which has previously been evacuated. Both the venturi section and the balance box, in which the test section is mounted, have optical glass windows through which it is possible to watch progress of the test, or to take photographs using a Schlieren apparatus.

Downstream from the balance box is an adjustable throat, where the roof and floor of the section consist of flexible aluminium plates which can be flexed by means of a system of screw jacks to give varying tunnel heights. This provides for adjustment of the pressure inside the balance box.

Aft of the adjustable throat again is a transition piece which transforms the section from a rectangle to a circle; to this is attached a 15-in. diameter globe valve, from which a conical diffuser leads to the vacuum sphere.



Top, side-view showing nozzle-box removed and balance-box moved forward. Middle, general view. Bottom, the equipment in use at the N.R.C. laboratory with a model in the working section.

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