

wind tunnel

The 30-foot wind tunnel circuit is a large steel shell which carries the air flow around four corners. The air is driven by a 9,000 horsepower electric motor and a fan with a 38-foot diameter. The largest part of the shell is the "Settling Chamber". This has an inside diameter of 82 feet. Here the air flow is brought to a predetermined temperature through a heat exchanger grid employing a water recirculation system. Here also, a pair of fine mesh wire screens are employed across the tunnel to smooth large eddies and reduce air turbulence to a minimum before the flow enters the test section.

The facility has two buildings. One houses the fan motor. The other is the four-storey laboratory building which provides space for the control room, three offices, maintenance shop, instrumentation laboratory, model preparation room, model servicing room, balance bay and storage rooms.

When a model arrives it is first assembled. Then a ten-ton rooftop crane lifts it to the top of the building. The roof of the test section slides to one side allowing the model to be lowered onto model support struts linked to a six-component mechanical balance. This balance separates the total load on the model under test into six parts. It measures lift, drag or thrust (if the power plant of the model is working) and side force caused by aircraft side-slip. It also measures yaw, pitch and roll.

These and other measurements including model attitude, power and pressures are made automatically and fed to a central computing facility. The computer converts raw data into results applicable to the fullscale aircraft design.

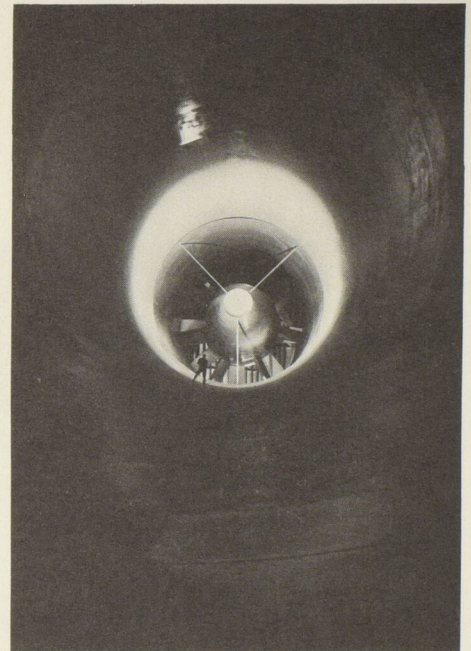
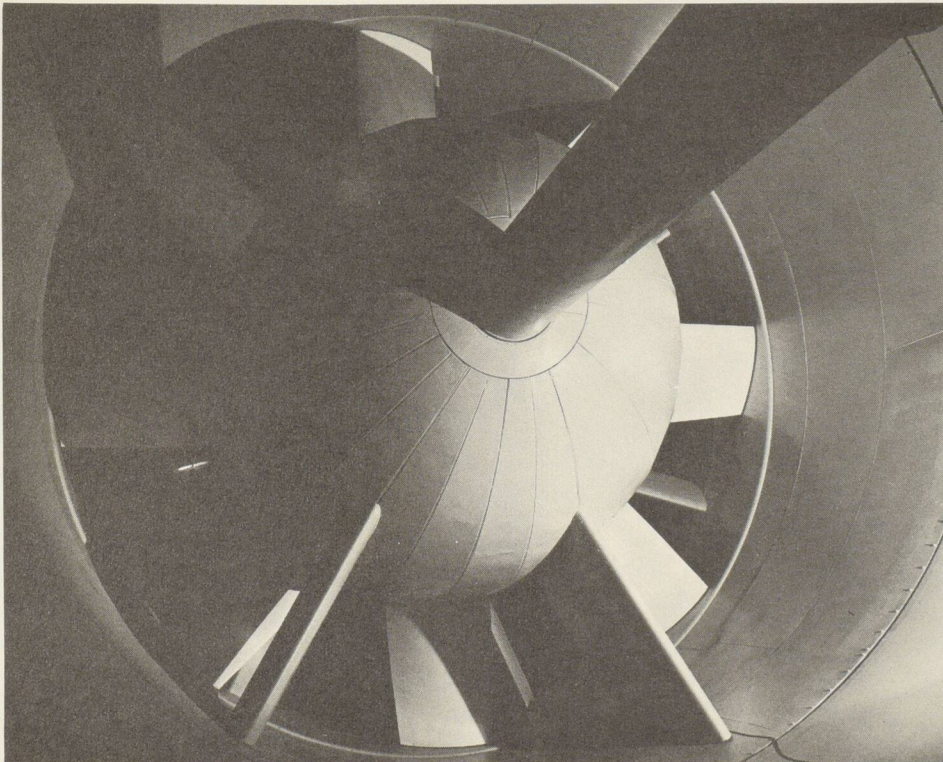
H. H. Kelland, Wind Tunnels Superintendent of the Low Speed Aerodynamics Section of NRC's Na-

tional Aeronautical Establishment, expects 1970, the first full year of operation, to be a busy one. Tunnel time is almost completely booked. Companies which will use the tunnel include DeHavilland Aircraft Limited, Canadair Limited and Douglas Aircraft Company of Canada Limited.

R. J. Templin, Head of NAE's Low Speed Aerodynamics Section, says "it is difficult to separate our section's contributions from those of the aircraft companies. We certainly haven't been responsible for any basically new aircraft inventions, but over the years we have done a considerable amount of background research that has proven of considerable value in V/STOL development. However, I feel our major effort has gone into the provision and operation of the experimental facilities and with this particular structure you might say we're pioneering a little bit." □

View of the huge driveshaft connected to the tunnel's 38-foot diameter fan.

Vue de l'arbre reliant le moteur au ventilateur de 38 pieds de diamètre.



The 30-foot tunnel's 38-foot diameter fan dwarfs technician standing in front of it.

Le ventilateur, de 38 pieds de diamètre (11.5m), de la soufflerie de 30 pieds (9m.)