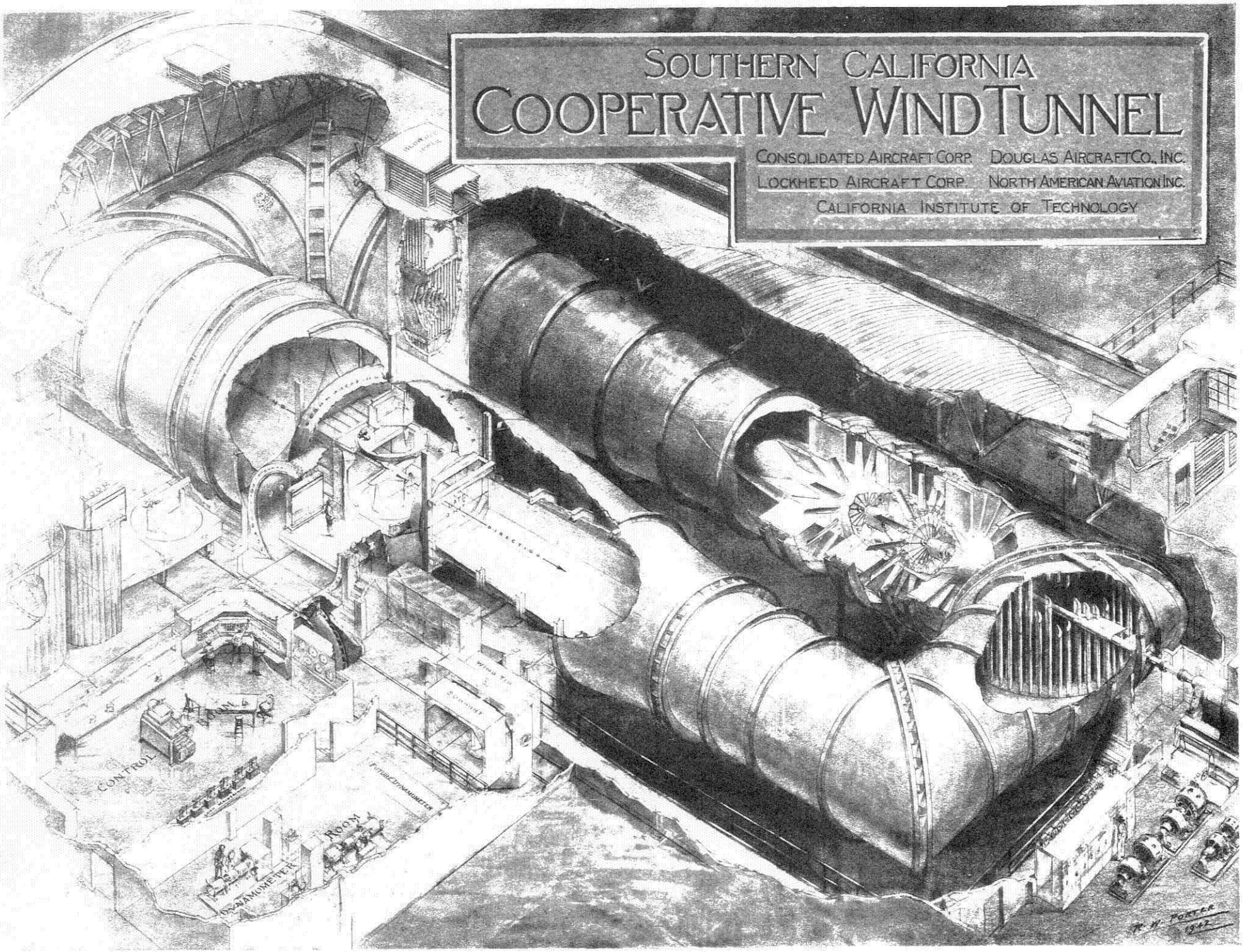
SOUTHERN CALIFORNIA
COOPERATIVE WIND TUNNEL
CONSOLIDATED AIRCRAFT CORP.
DOUGLAS AIRCRAFT CO., INC.
LOCKHEED AIRCRAFT CORP.
NORTH AMERICAN AVIATION INC.
CALIFORNIA INSTITUTE OF TECHNOLOGY
CONTROL
ROOM
DYNAMOMETER
R. H. PORTER
1942

World's Finest Privately-Owned Wind Tunnel At Halfway Mark

The most advanced, privately-owned wind tunnel in the world is at the halfway construction point.

The laboratory buildings for the $2,100,000 Southern California Cooperative Wind Tunnel are now completed and the construction of the steel tunnel itself is well under way.

Sometime in September, 1943, the tunnel will be ready to serve as the world's most advanced testing ground for the developments now making American airplane performance set new records in speed, altitude, armament, and maneuverability.

The tunnel, financed by Consolidated, Douglas, Lockheed and North American —Aircraft War Production Council members—is constructed and operated under the supervision of Dr. Clark B. Millikan, by the California Institute of Technology, though it is not located on the Institute grounds.

The Cal-Tech tunnel has an identical twin on the East Coast—at Buffalo, New York—being constructed under the supervision of Dr. Norton B. Moore, of Crutiss-Wright.

Design of both tunnels was in process for many months, under the general direction of Dr. Millikan and Dr. Moore. Collaborating were engineers of the four Southern California companies, Caltech and Curtiss-Wright.

Importance of the wind tunnel in the development of better aircraft lies in the fact that much of a new plane's flying data(probable top speed, landing speed, rate of climb, stability, controllability, number of required take-off feet) can be accurately determined in the wind tunnel before the proposed plane is built.

Aircraft manufacturers expect to build planes in the next few years that will have diving speeds exceeding 9/10 the speed of sound (approximately 741 miles per hour).

Airplanes of the future may be designed to dive at a rate of more than 700 miles an hour. The new tunnel will be equipped to test such speeds.

Most existing tunnels have a maximum testing speed for less than this, and only a few are capable of testing at speeds exceeding 500 miles an hour.

Aircraft engineers and designers point to difficulties already experienced at speeds well below the velocity of sound as indication that careful aerodynamic investigations should be made on every airplane model which is to be operated at these high speeds.

In the development of high performance military aircraft, problems requiring immediate wind tunnel testing almost always occur in the design phase and particularly during the flight test period when immediate access to a wind tunnel is of vital importance.

Wind tunnels operate on the principle of the Venturi tube, which was devised in 1800 by Giovanni Venturi, an Italian physicist, for measuring the flow of water through a pipe. Venturi discovered that the rate of flow of water through a pipe increased as the water passed through a narrower section of the pipe.

Substituting wind for water, air is moved by a huge propeller in a section of large diameter. From there it is blown into a much smaller section, the "throat." When the wind in the large section of the tunnel reaches the "throat" it gains in speed.

By placing an exact scale model of an airplane in the "tunnel," tests can be made which will show what the actual plane will do when it is in the air at similar speeds. Reactions of the model (placed on supports resting on highly sensitive balances) are measured mechanically, electrically or hydraulically. Readings are taken for every attitude of the model in the tunnel and the recorded information is immediately plotted on a graph. Engineers are then able to list accurate flying characteristics of the future airplane.

Existing wind tunnels in Southern California, all smaller than the Cal-Tech project, are owned by Lockheed, North American, Northrop and Vultee aircraft companies. As members of the Aircraft War Production Council, they have been making their tunnels available to the other member companies. When the new cooperative tunnel is completed, it also will be available to all the Council companies — Boeing, Consolidated Vultee, Douglas, Lockheed, North American, Northrop, Ryan and Vega.

Under the Council system of *industrial teamwork,* all member companies pool their facilities and research in the interests of producing more planes and still more planes—the best in the world—to speed victory for the United Nations.

Alumni Businessand Professional Guide

EDWARD E. TUTTLE
'28
ATTORNEY-AT-LAW
GENERAL PRACTICE
411 West Fifth Street — Los Angeles
MAdison 7837

LYLE H. CHENEY, '25
NEW YORK LIFE
INSURANCE COMPANY
SY 2-7141
RY 1-6191
CURITY BLDG.
PASADENA

POMEROY & ASSOCIATES
Chemists - Engineers
117 E. Colorado St. — Pasadena, Calif.
General Consultation Work — Industrial Waste Treatment
Sewerage & Sewage Disposal — Water Supply & Treatment
Chemical & Bacteriological Analysis
Richard D. Pomeroy, Ph.D. — H. Darwin Kirschman, Ph.D.
James M. Montgomery, C.E.
Telephone Sycamore 3-7723