AERONAUTICS

# Stall-Warning Devices

➤ THE NEED for stall-warning devices on light planes such as used in private flying is emphasized again by the National Advisory Committee for Aeronautics in a report which summarizes the devices now available.

Stall in aviation is a term in general use to indicate the condition that occurs when a plane becomes uncontrollable due to lack of speed or headway. Every plane has a certain flying speed at which the lift is sufficient to keep it safely along its path.

In rising to higher altitudes or dropping for a landing, its angle of attack, the angle between the chord of the plane and the relative wind, is apt to become such that the plane loses its lift. More accidents of private planes occurred from stalling than from any other cause up until the last quarter of 1951 when stall-spin accidents decreased.

The report, prepared at the NACA Aeronautical Laboratory, Langley Field, Va., by John A. Zalovcik, discusses a variety of stall-warning devices now available. The purpose of the paper is to describe the principles involved in several types of special stall-sensing devices and angle-of-attack sensing devices and point out some conditions under which difficulty may be experienced.

Stall-sensing devices usually operate on flow characteristics associated with the movement of the stagnation point or with flow separation on the wing. Those based on the movement of the stagnation point make use of the large change in pressure or the 180-degree change in flow direction as the stagnation point moves past a given position on the leading edge of the wing.

An angle-of-attack-sensing device measures the angle of local flow relative to an arbitrary reference line. An instrument of this type may consist of a vane pivoted in such a way as to align itself with the local flow.

Both sensing devices must have means of transmitting the warning to the pilot. These may be based on sight, hearing or feel. The "feel" method sets up vibrations in a rudder-pedal shaker or a stick shaker which the pilot can distinguish from ordinary airplane vibrations.

Science News Letter, July 5, 1952

MEDICINE

## Bronchial Tubes Cleansed by Aerosol

➤ GOOD RESULTS with aerosol cleansing of bronchial tubes in patients with lung and bronchial diseases, including tuberculosis, are reported by Drs. Carl R. Limber, Howard G. Reiser, L. Chandler Roettig and George M. Curtis of Ohio State University, Columbus, in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (June 28).

The aerosol, which the patients breathe through a nasal mask, contains trypsin. This is an enzyme, or ferment, which digests protein. When breathed into the bronchial tubes, it digests the thick sputum and mucus sufficiently so that patients can cough it up easily.

For a few hours after a treatment, patients cough more, but it is not the hard, dry, racking cough that formerly tired them. Then after this period of increased but easier coughing, they do not cough for a few hours, probably because all the material has been "flushed" out of the bronchial tubes. Patients sleep better, their appetites improve and they gain weight.

In a few cases, patients with tuberculosis had negative sputums for several weeks after the bronchial cleansing treatment. The Ohio State doctors do not have any evidence yet that the treatment interferes with the growth of the tuberculosis germs. Sputums became positive again. But the cleansing results in a more normal state in the bronchial tubes which presumably is helpful.

The Ohio State doctors have given a total of 251 treatments to 33 patients with tuberculosis, bronchiectasis, atelectasis, pneumonia, pneumonitis and bronchitis.

Science News Letter, July 5, 1952

# Question Box

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**Photographs:** Cover, New York Zoological Society; p. 3, Westinghouse Electric Corporation; p. 5, United States Line Company; p. 7, Westinghouse Air Brake Company.

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