

AERONAUTICS

New Inventions Add Greatly To Safety of the Aviator

Altimeter Showing Height Above Ground, Static Suppressor, Homing Device, Stall Warning Announced

FOUR new air safety devices, announced within a week of each other, have completely changed the aviation picture and have brought markedly nearer aviation's goal of railroad safety and dependability.

Apparent answers to most of the accidents which have marred the record of commercial aviation and to many of those which have plagued private and military flyers are provided by the echo altimeter, static suppressor, automatic homing device or direction finder and stall warning, enthusiastic but cautious airmen agree. The static suppressor is already being installed on planes, but it may be some months before all of them can be placed in general use.

Aviation's dream of something to tell the fogbound pilot when he is approaching mountain obstacles and similar menaces to safety appears to be achieving reality in the echo altimeter developed jointly by United Air Lines and the Western Electric Company.

All but five per cent. of the ear-choking static that blots out radio beacon, weather reports and instructions from the ground with dangerous impartiality is cut out by a small spring cartridge that shoots a five-foot wire out behind the plane. This is the new static suppressor, which achieves these results when used in conjunction with the standard anti-static loop antenna, its developers, United Air Lines, claim.

For "Homing"

The pilot who wanders off the radio beam, his invisible highway in the sky, will nevertheless not be lost if he is equipped with the newly-developed automatic direction finder. The product of research by the Sperry Gyroscope Company and the R.C.A. Manufacturing Company, the new device combines a direction finder and a continuously-reading instrument on whose face is an arrow that points continuously toward the ground station to which the radio direction finder is tuned. If tuned to the radio range transmitter and linked with the automatic pilot, it provides automatic blind flying.

Private flyers, whose relative lack of experience enables them to get more easily into stalls, in which their planes are temporarily out of control and drop sharply, and military flyers who must put their ships through ticklish maneuvers will receive help from the automatic stall warning. Developed by the National Advisory Committee for Aeronautics, government-supported aeronautics research institution, the device consists of a small "leading edge" for the wing that stalls just before the wing as a whole stalls, and an instrument to detect that preliminary stall. The detector is, of course, linked to a horn or other means of warning the pilot.

Mountain Detector

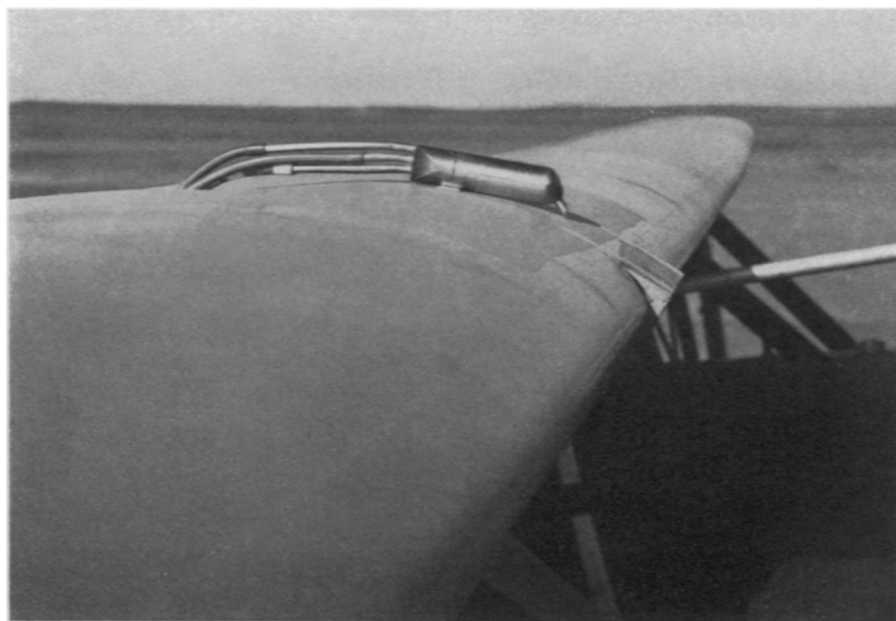
Half of the commercial airline disasters in the last few years have been crashes into mountainsides. Possession of the echo or absolute altimeter, which measures the time taken by a 500-mega-

cycle radio beam to travel earthward and back again to determine how far away the ground or water surface is, would have prevented them, in the opinion of competent authorities. The idea on which the system is based is not new, but it has been developed by Peter C. Sandretto of United and Russell Newhouse of Western Electric only during the last year and a half.

Discharges Static

Principle of the static suppressor is the fact that static electricity can be discharged from a fine point. The end of the wire is the fine point for static electricity gathered on the plane. The spring cartridge, the new feature of the device, is a simple means of pushing the wire out when static gets bad. The ordinary method, a wind-catching sleeve on the end of the wire, means the elimination of the sharp point at the end. A simple trailing wire can't be used because of the danger of fouling the tail surfaces and controls when the plane is not moving rapidly through the air.

Planes stall when the speed is so low or the climb is so steep (actually, when the angle of attack of the wings is so high) that smooth airflow over the wing, which provides the lift for the plane, is interrupted. When this occurs the pressure on an air-speed indicator type of device placed on the wing drops sharply; this pressure drop can be easily



WARNING

This little gadget warns a pilot his airplane is on the verge of stalling because the small section on the leading edge of the wing is so constructed that it goes into the stall first. This happening is immediately flashed to the pilot.



"HOMING"

When the air navigator once tunes this new Sperry-RCA automatic direction finder to a radio beacon station, it points continuously to that station. The pilot need pay no further attention to its operation. William H. Dum, (left) American Air Lines pilot, is discussing the device with J. G. Flynn, Jr. Superintendent of Communications. Linked with the automatic pilot, this device provides not only automatic flying, but automatic blind flying as well.

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detected. Planes that stall drop sharply 100 or more feet before the pilot can recover; when this occurs at low altitude, a crash is a frequent result. The stall warning was developed by F. L. Thompson in flight tests at the N. A. C. A.'s Langley Memorial Aeronautical Laboratory at Langley Field, Va. One Army and one Navy plane are also equipped with it. Since it is an unpatented government development, it is open to private manufacture without payment of royalty.

Science News Letter, October 22, 1938

ASTRONOMY

100,000-Mile Sunspot Crosses Face of Sun

See Front Cover

STORMY weather on earth, though it has laid whole states waste, is as nothing compared to what has been happening on the face of the sun during the past couple of weeks. The face of the sun was marked with an enormous sunspot, representing a pair of fiery tornadoes that darkened a strip of solar territory 100,000 or more miles long, and 50,000 miles wide at the widest part. Into that vast cloud a couple of dozen earths could be dropped at once, and still leave room for them to rattle around.

The spot was studied and photographed, since its first appearance on Oct. 5, by Mrs. L. T. Day, astronomer at the U. S. Naval Observatory. If it lasts through another rotation of the sun, it should reappear about Nov. 2. There is some suggestion that this spot was "budding" a month ago, Mrs. Day said. There was a small spot in about the same position on the sun's face on Sept. 16.

Sunspots are an indication of intense activity on the sun, which is often reflected here on earth by magnetic storms. These storms are unobserved by human beings, because our senses have no way of perceiving magnetic changes. But they do affect us just the same, because they seriously interrupt telegraphic and radio communication, and are frequently accompanied by flaring auroral outbursts.

Science News Letter, October 22, 1938

North Carolina will use cotton-and-rubber floor covering and cotton wall board in building its exhibit for the New York World's Fair.

Single women under 25 years old, who wish to work in offices and certain trades in Germany, are with a few exceptions required to work a year first in domestic service.