

AERONAUTICS

Preventing Plane Crashes

Pilot errors of unavoidable misjudgment cause majority of crashes. Instruments can take out some of the guesswork.

► **PILOT ERRORS**, the cause of the majority of the major airplane crashes in the past year, might be responsible for fewer accidents if all commercial transports were equipped with more of the automatic controls recently developed to aid the human being at the controls.

Pilot errors are not due to carelessness but to what might be called a type of misjudgment. Trained pilots seldom knowingly take chances. Headwinds and tailwinds can cause them to misjudge onward speed. Hazy atmosphere may create optical illusions. Radio static can prevent good radio reception.

Even a radar scope requires a moment to interpret and another moment for the pilot to act. This may be too long a delay in a fast-moving plane.

Other Causes

Not all airplane crashes in the past year were due to pilot errors. The U. S. Civil Aeronautics Administration states that they were the cause of the majority, however. Other causes include structural defects, engine trouble and fires. But even these might have been harmless if the planes were equipped with automatic devices which would have given the pilot early warning.

Many instruments to make flying safer have been developed during the war and following years. Most of them are still in an experimental stage. Their use, however, need not await perfection. Their installation is costly. Their use might cut down pay-load capacity and even require extra crew members. But human life is at stake.

If airplane companies cannot finance the installations the government perhaps should aid them.

A great forward step has already been taken by the government in the installation of very high frequency (VHF) radio equipment at airports under the control of the Civil Aeronautics Administration. This is static-free. The CAA also is converting its radio ranges, the so-called radio beams on which commercial transports fly, to a very high frequency type. It gives a reliable beam in all types of weather. When a plane

follows the beam, it is relatively safe from collisions with stationary objects such as mountains.

Radar, hailed during the war as the cure-all for civilian flying in postwar days, has as yet not been widely installed in transports. The war-type equipment was thought too heavy, too bulky and to require too many extra members of the crew to operate. However, lightweight radar equipment has now been developed. The Army announced a 125-pound set about nine months ago.

Howard Hughes, of aircraft fame, has recently produced what he calls a radar-altimeter that flashes a light and sounds a horn when a plane comes within 2,000 feet of an obstacle.

Automatic electronic pilots give great promise of increasing safety in planes. They will hold a plane on the radio beam in cross-country flights and on the glider beam in landing. They respond to the waves in the beam. A human pilot is still necessary, but his job is to watch the equipment and see that it is working properly.

Automatic controls are said to handle engines, flight, navigation and even traffic control better than humans and with-

out fatigue or error. They are not subject to the "panel panic" that sometimes overwhelms the human pilot in a crisis. This is due to the bewildering array of indicators and gages, switches and levers on the present panel board. These autopilots make flight control easier, assist direction control, trim, altitude selection, constant speed and even bad weather landings.

A few other instruments of improved types are needed. A pilot needs to know wind direction and velocity. He needs to know outside temperature. At high altitudes, ice may form on propellers or wings. Electricity in the atmosphere may interfere with electric equipment in the plane. De-icers and static dischargers are important.

Then a plane should be equipped with automatic devices that warn a pilot of imperfect engine functioning and of internal vibrations that might result in structural failure.

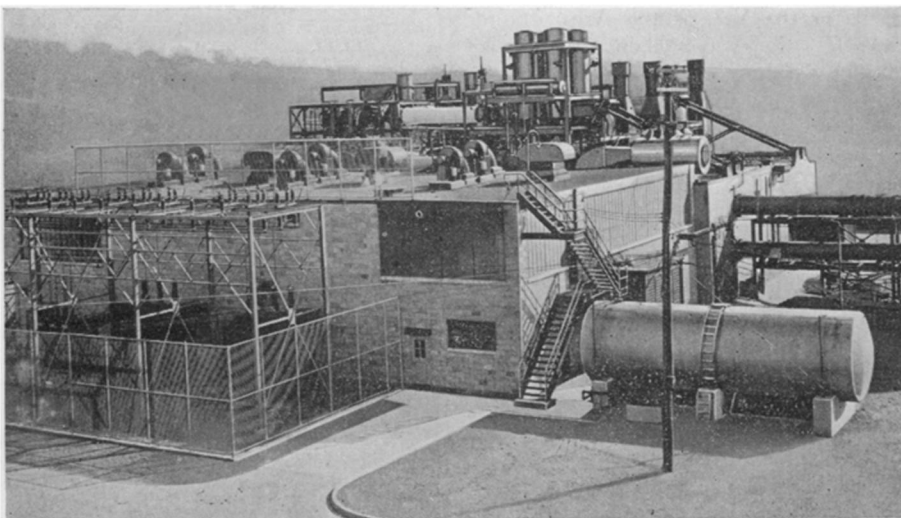
Science News Letter, June 28, 1947

INVENTION

Air Conditioning Cleaner

► **AN AIR-CONDITIONER** for railway passenger cars that incorporates an electrical air-cleaner is the invention on which E. H. R. Pegg of Cranford, N. J., has received patent 2,422,563. A series of electrically charged plates attracts and holds dust from outside air, and even tobacco-smoke particles from the car itself. They are subsequently washed off and discarded. Patent rights are assigned to Westinghouse Electric Corporation.

Science News Letter, June 28, 1947



TURBINE TESTING—This equipment in the new gas turbine development laboratory, to be used for Army Air Forces engine research, can absorb and measure as much as 20,000 horsepower.