

AVIATION

# New Aviation Trend is Now Toward Simpler Flying

"SMART airplanes for dumb pilots" is the newest trend in aviation reported to the meeting of the Society of Automotive Engineers.

That is the blunt title of the report delivered by Assistant Professor Otto C. Koppen of Massachusetts Institute of Technology.

"Everyman's Airplane, a Development toward Simpler Flying" is a less drastic title of the paper on the same trend by Fred. E. Weick, senior aeronautical engineer of the National Advisory Committee for Aeronautics.

"There are two ways of looking at the question of flying characteristics; the first is to train the pilot to fly the airplane in spite of the way it flies, and the second is to design the airplane to avoid the difficulties of the novice pilot. The first method has been in vogue for the past twenty years but the second is slowly gaining momentum largely through the efforts of the Bureau of Air Commerce and interested airplane manufacturers," declared Prof. Koppen.

The novice pilot, Prof. Koppen pointed out, has to combat, by suitable control movements, the three types of motion which any plane possesses; longitudinal and lateral oscillation and lateral divergence.

Depending on flying skill, there is a lag in making the control motions needed to overcome these three movements.

If the plane has rapid oscillation and the pilot a large personal lag it is not impossible that the controlling movements will be so timed that they increase, rather than diminish, the plane's oscillations.

The new trend in airplane construction is to reduce the effect of the pilot's errors of judgment and of control motion.

This last point of error in control motion is practically always in the direction of over-control. Damping devices on the controls could be used, said Prof. Koppen. They would not limit the controllability of the plane but rather the rate at which the controlling force can be applied.

If, in the motor car, as an imaginary example, the machine turned over on its nose when the brakes were applied too rapidly (as can happen with an airplane) there probably would be com-

parable damping devices to prevent the brake over-control.

The National Advisory Committee for Aeronautics, revealed Mr. Weick, has made extensive tests on the experimental plane known as W-1A—for use by the average man—which have demonstrated that three-wheel landing gear makes possible satisfactory landings almost regardless of the wind direction, the air speed at contact or the manner in which the plane is flared or guided to the ground.

ENGINEERING

# Future Motor Car Features Rear Drive, Air Conditioning

THE MOTOR car of the future will be air-conditioned, shaped like a teardrop, have self-inflating tires and individual movable seats, declared Austin M. Wolf, automotive consultant in an address before the meeting of the Society of Automotive Engineers. Project yourself ten years ahead in time.

Time—Summer of 1946.

Place—A cross-country super-highway. A motor car speeds by.

The car is compact but shaped like a teardrop traveling large end forward. Its five passengers sit in individual movable seats in air conditioned comfort despite the sweltering day. Their luggage is concealed in the bulbous front end. They sit three in front and two in the rear, just ahead of the motor.

The car has six tires, two in front and four in the rear where the power is applied. But the car's occupants have no worries about those tires. They are self-inflating and if a blowout occurs they will not collapse.

Despite the heat there are no worries about the battery running dry. It is self-filling. And six months from now in the cold winter the car's owner will have no sleepless nights worrying about starting in the frosty morning. He knows his car has two fuel tanks. In cold weather it starts with a light volatile fuel and then, when hot enough, switches over automatically to the ordinary variety.

When it is realized that practically the entire time of dual instruction before solo flight is devoted to making landings, and more than half of all aviation accidents are the result of either bad or forced landings, the importance of just the single item of fool-proof landings can be appreciated.

Moreover the new W-1A plane, declares Mr. Weick, uses glide-control flaps, very helpful in determining, for the novice pilot, the right angle of landing approach. Most new pilots try landing at too steep angles with respect to the ground. With such flaps, the N.A.C.A. expert states, "the unskilled pilot can make contact with the ground at a desired point with greater accuracy than a good pilot with the conventional plane."

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Moreover, the old troubles back in 1936 about cooling the engine and the brakes are ended. The air-conditioning system is used to cool both of them, in addition to making the car interior comfortable in all ranges of temperature and humidity. The front styling fad of 1936 fortunately has disappeared and the radiators have adequate cooling surfaces so that the drain on the air-conditioning system is almost negligible, except on a torrid day like the present.

On the dashboard only two instruments are calibrated; the speedometer and the gasoline gauge. The oil pressure, ampere charging or discharging rate, and the engine temperature indicator consist only of red and green lights, with the red flashing when something is wrong.

The trend started in 1936, when the brake lever went up on the instrument board, has been followed by putting the gear shift in the same place. There is plenty of leg room for all occupants.

Back in the factory the car was stamped out of two great pieces of metal at one operation and then welded lengthwise down the middle. The old bus is pretty good but what the driver really wants is one of those new styles with the molded plastic body over a light but strong alloy frame. Those plastic ashtrays and gadgets of 1936 have come a long way in the last ten years.

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