

## AERONAUTICS

# Flying Auto Foreseen

Car with wing, tail and other attachable parts to make it an air vehicle presents many problems not yet solved. It may be a true automobile.

► **SOME DAY** you may drive your automobile to the airport, hitch on wings, tail, propellers and a few other gadgets, and take to the air.

This will be possible with a proposed flying automobile. It is to be a true automobile, with attachments to permit it to fly. It is not what flying men call the roadable airplane. This is a plane with wings which can be folded or detached. In appearance, however, it is still a plane, and an odd sight on the road.

There are many difficulties to overcome before the flying automobile becomes a reality. Possibilities and difficulties were presented to the Institute of the Aeronautical Sciences meeting in Detroit by Joseph M. Gwinn of Gar Wood Industries, Inc., Detroit. The flying automobile is much to be preferred to the roadable plane, he said, because the combination vehicle will ordinarily be used far more on the road than in the air.

The flying automobile might be the conventional car with added structure and power to fly, or it might be a flying automobile designed entirely to aircraft weight standards. The second seems to be his preference. But it would be of normal car size and shape, with ride, speed and acceleration equal to those of a regular automobile. If a conventional car is to be used, wheel suspension, wheels, tires, brakes, chassis strength, attachment points, will all require major changes.

The special car suggested by Mr. Gwinn would have one engine only, but it would have to be of 250-horsepower. This presents one problem: how to use an engine of this power on the highway at low speeds. As an airplane, the center of gravity must be farther to the rear than it is in ordinary automobiles. This can be accomplished by structural changes and positioning of the load.

The wings would be attached slightly ahead of the rear wheels. Assuming the airplane is of conventional type, it will carry tail surfaces back of the wing, and a fuselage connecting wings and tail.

The propeller would be located to the rear, behind the rudder. It would be removable, with the flying structure in a single piece. Landing gear is another

problem. Special tires, shock absorbers and a swing rear axle, hinged on each side of the differential, were suggested. Other problems, and possible solutions, were presented.

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## AERONAUTICS

## Airplane Refueling Delay Cut by Underwing Valve

► **AIRPLANE DELAY** for refueling at way stations will be greatly lessened by the use of a new valve equipment which permits fueling at speeds four times greater than present methods.

The new device, designed by Parker Appliance Co., is for underwing fueling, a method used on some large transports. In this, the openings through which the gasoline is forced up and into the airplane's tanks are located on the under surface of the wings. One advantage is that ground attendants do not have to climb with ladders onto the wings carrying a hose to upper openings.

Air line companies are much concerned with ground delays whether caused by necessary reconditioning of the plane itself or with red-tape methods of ticketing and loading passengers or baggage, and are looking for shortcuts. In transcontinental trips, refueling en route considerably increases the elapsed time from terminal to terminal.

The new device permits the passage of 200 gallons of gasoline per minute, and it shuts off automatically when the tank is properly filled. The valve has two parts, one on the fuel tank and the other on the hose nozzle which is inserted in the plane's opening. Interlocking safety features make it necessary to lock the nozzle onto the tank unit before the nozzle and tank valves, working together as a unit, can be opened to permit flow.

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## NUTRITION

## Soybeans in Cereal

► **THE UBIQUITOUS** soy bean finds its way into shredded breakfast cereal in the formula on which W. P. Penty of Battle Creek, Mich., has obtained patent 2,421,216. The oil is first extracted, then the protein-rich residue, finely ground, is cooked and pressed into shreds along with ground grain. Patent rights are assigned to the Kellogg Company.

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**REFUELING VALVE**—Underwing valve cuts down refueling delays.