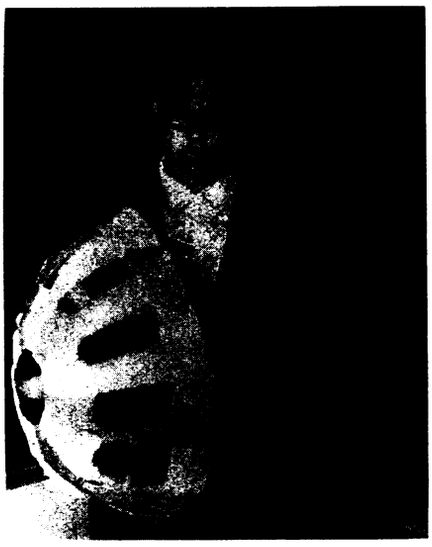

FABRIC WINDMILL—A small model of the new Rotafoil parachute developed by the Radioplane Company of Van Nuys, Calif., is demonstrated by its inventor, E. G. Ewing, using an electric fan. The parachute provides greatly increased drag and stability characteristics.

ENGINEERING

Truck Lane at Upgrades Relieves Road Congestion

➤ A COMMON sight on the highways is a truck crawling up a hill, followed like a mother duck by a brood of cars.

One way to remove this inconvenience to drivers, a special uphill lane for trucks, has been investigated in a new report by the Highway Research Board, Washington. Test strips have met universal acclaim by motorists and truck drivers who asked when more were going to be built. They relieved 65% to 70% of the congestion on a two-lane road and are believed to have reduced accidents.

A 1,000-foot side lane on a six percent grade theoretically should allow 14 cars to pass a crawling truck, but only nine passed in the tests.

The truck lane should extend over the crest of the hill, the researchers pointed out, to a point where truck speed comes close to that of autos.

At all locations where the extra lane was built, congestion was materially reduced.

Physically, the road must be made wider at pass-by points, with a single downhill lane marked by a double stripe and two uphill lanes separated by a dashed line. Signs well ahead of the lane inform trucks to keep right and a painted arrow on the road directs them into the proper lane.

The tests were reported by William E. Willey, engineer for the division of economics and statistics for the Arizona Highway Department.

Science News Letter, July 9, 1955

PSYCHOLOGY

Hints for Safe Driving

If you have not had an automobile accident recently, it is a good idea to be especially careful, statistics have shown, since over-confidence may cause collision.

➤ DRIVERS PREPARING to take a long auto trip over a weekend might well take some hints from an accident prevention report from Dr. Ross A. McFarland of Harvard School of Public Health, Boston.

If you have not been in an accident lately, be especially careful, is one warning from Dr. McFarland's report. Statistics show that the longer it has been since a driver's last collision, the more confident he gets of his own driving abilities, the more chances he takes, and the more likely he is to get into another one soon.

On long trips, take a break or change drivers every few hours. Do not trust yourself as a judge of your own fatigue, for it creeps up on you without your realizing it.

Tests have shown that while the fatigued driver is operating less skillfully, he thinks he is doing as well. He has less tendency to recognize or appreciate his errors, and there may be loss of insight into the seriousness of oncoming trouble.

Under extreme fatigue, drivers have been known to have hallucinations and swerve off the road to avoid non-existent obstacles.

A complex, skilled operation like driving deteriorates in characteristic ways over a prolonged time. One initial effect is bad timing. At first, it is likely that the right response is made, but at the wrong time. In later stages of driver fatigue, gross mistakes may appear.

As fatigue increases, the field to which the operator must react as a whole loses its integrated quality and the driver reacts to isolated parts of it. Some stimuli predominate, others are ignored. Important responses are sometimes omitted.

By all means do not even have "one for the road," since studies indicate that the likelihood of accidents increases even at low levels of alcohol in the blood. Higher levels of alcohol content are characterized by sharply increasing accident probability.

Keep the air circulating in the car. The discomfort of stuffiness adds to fatigue and to the possibility that small quantities of carbon monoxide vapors from the engine may affect your awareness.

A study at a toll station has shown that, after speeding on good highways, drivers lose their orientation to speed and sometimes approach at dangerous velocities.

Another study showed that, as a rule, critical situations develop very rapidly and are of short duration. The most important variables contributing to dangerous situations in a recent survey of near-accidents included: following too closely, following too closely while approaching to pass, operator inattention (or dozing at the wheel), vehicle running off the road, intersection errors, errors in passing, operating in wrong lane of traffic, leaving and entering roadway, and pedestrian errors.

Driving is considerably more hazardous at night, National Safety Council figures show. Based on the national average, three times as many accidents occur at night as during the day, and the danger is greater at night on rural roads than in the city.

Last year the fatality rate of motor traffic was 6.5 per 100,000,000 miles of travel, with approximately 36,000 deaths and over a million disabling injuries. It has been estimated on the basis of present trends that one person out of every ten in the United States may be killed or injured in a motor vehicle accident within a period of 15 years.

Dr. McFarland's report was made to the Society of Automotive Engineers.

Science News Letter, July 9, 1955

ENGINEERING

Increase Turbine Power Without Additional Fuel

➤ ENGINEERS MAY soon be able to squeeze as much as 50% more power from a gas-turbine engine without additional fuel.

A new experimental exhaust attachment with no moving parts makes this possible. A spray of water and a device called an aerothermopressor are used.

The system requires too much water for application in turbine engines in planes but initial experiments, reported in *Research Reviews* (June) by Ascher H. Shapiro of Massachusetts Institute of Technology, indicated it would improve larger engines used on land and on ships.

Its principal application may be to increase the power output of the less efficient gas turbines. For today's most efficient gas turbines, the system would produce a 20% increase in power with the same fuel consumption and same machinery size. For turbines with lower efficiencies, it would raise the power as much as 50%.

In a conventional gas-turbine engine, high pressure combustion gases, forced through the blades of a turbine, spin a wheel, much as the wind turns a pinwheel. The efficiency of the system would be increased if pressure beyond the blades could be lowered to give a greater pressure difference.

Injecting water into the turbine exhaust achieves this by cooling the gases. The cooler air then passes into the aerothermopressor, which increases the pressure again before the gases are exhausted into the atmosphere.

Science News Letter, July 9, 1955