BIOCHEMISTRY

Fight Shock Death by Shock Conditioning

➤ AN ELECTRIC SHOCK a day for several days can prove life-saving, conditioning the body to resist otherwise fatal injury, at least in the case of laboratory rats.

After this conditioning, only 25% of the rats succumbed to injury that ordinarily can kill as many as 75%, Dr. Robert L. Griswold, Walter Reed Army Medical Center, Washington, reported at the American Chemical Society meeting in Atlantic City.

The electric shock given the rats is similar to that given to treat some mentally sick patients.

The rat experiments have not yet reached the stage of testing in human beings. However, Dr. Griswold hopes to learn from these studies a method that might condition humans to withstand better the shock of serious injuries in war or peacetime accidents.

Besides the electric shocks, a series of small, non-fatal injuries also proved capable of helping the rats resist ordinarily fatal injuries.

The conditioning apparently tones down the activity of the sympathetic nervous system so that it does not react too violently. This nervous system, which is without conscious control, responds to injury or the threat of danger by changing heart function, blood pressure, blood flow to various organs, and the output from the adrenal glands of the hormones, adrenaline and noradrenaline.

These changes get the body ready for "flight or fight." A prolonged high level of activity of this sort, however, similar to that in shock, can be harmful and hasten death instead of preventing it.

Dr. Griswold's studies are aimed at finding a method of keeping sympathetic nervous system activity from going that far in cases of shock.

Science News Letter, September 29, 1956

PHYSICS

Soap Bubble "Atoms" Show Matter's Structure

See Front Cover

➤ SOAP BUBBLES are being used to illustrate how atoms group themselves into orderly arrangements, or crystal structures, at the Westinghouse Research Laboratories, Pittsburgh.

Because soap bubbles have a tendency to join and balance in much the same way as atoms do, this technique simulates actual atomic crystal structures of metals.

In the photograph on the cover of this week's SCIENCE NEWS LETTER, Dr. William Mullins is showing how research scientists can thus "see" and investigate on a vastly larger scale the patterns and defects of atoms. If the soap bubbles were atoms in an actual crystal, the space would be a six-millionth that between the bubbles.

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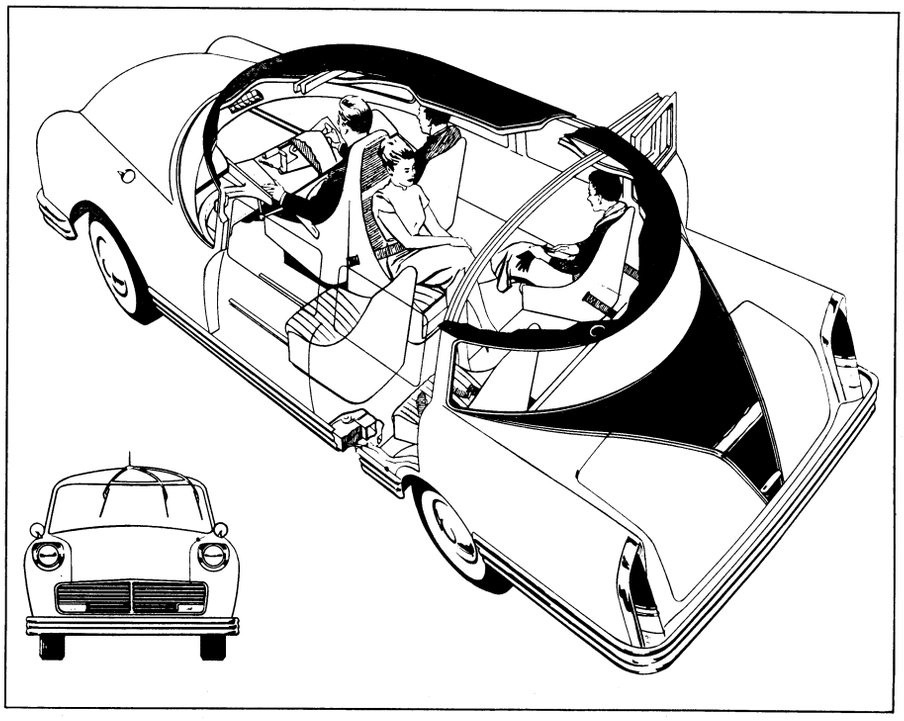

PACKAGED PASSENGER—Prototype of the safety automobile shows how the passenger can be given maximum protection against collision injuries. Safety principles incorporated in the design are the result of a joint study undertaken by the Cornell Aeronautical Laboratory and the Liberty Mutual Insurance Company. The cutaway drawing shows its main features, including recessed headlights and a cockpit-type windshield.

ENGINEERING

"Crash-Proof" Automobile

➤ A "CRASH-PROOF" CAR is being built whose safety innovations could cut the death rate on the nation's highways in half. Passengers in the rolling safety package could emerge uninjured from a head-on collision at 50 miles per hour.

Details of the prototype safety car were made known by F. J. Crandall, vice-president of the Liberty Mutual Insurance Company, and E. R. Dye, head of the safety design research department of the Cornell Aeronautical Laboratory, joint participants in the report.

Externally, the "crash-proof" car looks just like any four-door sedan. Inside, however, the safety car has been radically changed.

Although the prototype car being built is not for mass production, it is expected to aid designers in producing safer automobiles.

This is what the car looks like on the inside:

1. The steering wheel has been eliminated and replaced by a hydraulic, two-handled lever-type control system set parallel to the floor.

2. The steering device is covered with a chest cushion and beneath the chest protector is a body-restraining U-shaped webbing yoke.

3. Passengers and driver sit in bucket seats. The passenger seats are to the rear of the driver and lower. The seat directly behind the driver faces to the rear, giving a club-car-like appearance.

4. The passengers, like the driver, are protected by similar webbing yokes and chest pads.

5. Each door has two sections hinged at the center and to the rear body post. Doors are on rollers and move rearward, folding outward, like a single accordion pleat.

6. Metal stiffeners are built into the roof and are similar to "roll bars" on stock cars.

7. The wrap-around windshield provides undistorted visibility.

8. Other safety features include wrap-around front and rear bumpers that are spring-mounted; shock absorber material between the bumpers and body frame; air scoop on the roof to minimize exhaust gases coming into the car from other vehicles; color coded instrument panels; roof padding throughout, and safety seat belts.

The car is the result of four years of research.

Science News Letter, September 29, 1956