

PHYSICS

Study Thunderstorms

► AN EXPLANATION of some aircraft accidents while flying through thunderstorms has been found as the result of a study of thunderstorms carried out by the government.

Dr. Horace R. Byers, professor of meteorology at the University of Chicago, and a director of the thunderstorm project, pointed to the record of one flight through a thunderstorm as a clue to a cause of these accidents.

Inside the thunder cloud, the pilot encountered an updraft of about 38 feet per second. The pilot, highly experienced, instinctively put the airplane into a dive and reached a high airspeed before he corrected his mistake.

"From this," Dr. Byers says, "one sees

an explanation as to why even experienced pilots get into grave difficulties in thunderstorms. Strong drafts have strong gusts in them and the loads imposed upon an airplane by a gust depend upon the airspeed.

"Pilots who have discussed these results point out that the great stress on maintenance of altitude contained in the Civil Air Regulations causes a pilot to react against altitude changes in drafts. In the case of this and other flights of the Thunderstorm Project, such a procedure might prove disastrous if completely carried out."

Dr. Byers pointed out that the opposite corrective action is taken by a pilot on a downdraft and, if this is carried too far, a stall might result.

Science News Letter, August 9, 1952

ENGINEERING

Car Air Conditioning

► AIR CONDITIONING will be the latest addition to extra gadgets fitted to 1953 automobiles by manufacturers, along with radio, heater, and shift-free transmission.

Now that Cadillac and Oldsmobile have announced availability of an air-conditioning unit on their next models, other manufacturers are expected not to delay too long offering their devices.

The extra cost, as yet unannounced, is expected to be about \$500. The General Motors-Frigidaire version has undergone testing and development in Texas and the Southwest where there is greatest need for air-conditioned cars.

Even when the weather is not unbearably hot, the air conditioning device is reported to be desirable in dust or high wind because the car can be driven in any temperature with the windows closed.

Basic principle of auto air conditioning is the same as in units used in offices and on railroad trains. A rotary compressor is located on the engine in the General Motors version. A sealed refrigeration unit using nontoxic Freon is mounted on a shelf in the car's trunk compartment. A single control is placed on the dash and temperature is maintained by a thermostat setting.

Automobile air conditioning, due to limitations of space and weight, calls for careful engineering.

One kind of air conditioning equipment, installed in automobiles by a Fort Worth manufacturer, has been in use for several years. This compressor unit takes its power off the rear axle. Approximately a thousand of these units were provided at about \$700 each.

Cooling equipment for automobiles has been improvised in hot areas. Cakes of ordinary ice, placed on the front floor of a car, have long been used. Dry ice, solidified carbon dioxide, became available at gas sta-

tions in the Southwest a dozen or so years ago. It is more satisfactory as a car cooler because it does not increase the humidity inside the automobile.

An attachable cooler, somewhat similar to types widely used in low-humidity regions, is not uncommon in the Southwest. It is fitted into the front window on the right side of the car. Open to the front, it scoops in air as the car is driven. This air is cooled on its way into the car itself by passing through wet excelsior or a loosely woven fabric. The necessity of frequent replenishment of water to keep the fabric wet is one of its disadvantages.

Science News Letter, August 9, 1952

BIOCHEMISTRY

Sodium Ion Key In Nerve Impulse

► THE SODIUM ion, which you get in table salt, may be a key factor in the conduction of nerve impulses, it is suggested in new evidence uncovered by Dr. Frederick Crescitelli at the University of California at Los Angeles.

He reports two developments that underline the importance of sodium in nerve conduction.

(1) In one experiment it was shown that nerves in contact with solutions lacking sodium chloride, or salt, lost excitability and the ability to conduct impulses in a matter of minutes. Rapid recovery took place when these nerves were treated with another sodium solution.

(2) Another experiment involved the use of carbamates, nerve-blocking drugs. It was found that the nerve block brought on by the drug was quickly removed and conduction restored by an increase in sodium. This would seem to indicate that a sodium

mechanism acts as a key link in the nerve impulses, the zoologist said.

Dr. Crescitelli's studies were done with frog nerves, but have important implications in the functioning of human nerves. "Such experiments, while momentarily obscure to the layman, when added to other information, may some day furnish a complete picture of the functioning of the nervous system," he said.

Science News Letter, August 9, 1952

ENGINEERING

May Cut Housing Costs By Proper Roof Design

► THE QUESTION of snow on the roof is not worrying many Americans at this time of the year but roof load requirements are important to the builder at all times and the most important load is ordinarily the snow of the winter months. Valuable information for builders and architects on probable snow loads is now available in a government publication.

It is contained in Housing Research, a publication of the U. S. Housing and Home Finance Agency. It is in Housing Research Paper No. 19, which can be obtained from the Superintendent of Documents, Washington, D. C., for 30 cents. The article is based on research by the U. S. Weather Bureau, made under the sponsorship of the Housing Agency.

A study of snowfalls in different parts of the country for the past 50 years was made by the Weather Bureau to obtain data showing the possible maximum snow load roofs would be called upon to support.

Application of the information will permit a reduction in present building code requirements in many localities and eventually should result in lower building costs. Some southern cities now have snow-load requirements greater than many northern areas. Even in the north, requirements vary as much as 20 pounds per square foot.

Science News Letter, August 9, 1952

MEDICINE

Sunburn Rule: Double Faint-Pink Time

► A TIME schedule sun bathers can follow to avoid painful burns and blisters has been worked out by Dr. Lewis R. Koller of General Electric Research Laboratory. Here it is.

First, note the time it takes for the summer sun to make your skin a faint pink. Then limit your sun bathing to two or three times that period.

Five times that period can give you a painful burn and 10 times the pink-tinting period will result in blisters.

Science News Letter, August 9, 1952

The African *peacock* is the only true pheasant in Africa.

Chiggers are most often found in low, damp places well covered with vegetation.