

## ENGINEERING

## Jeep Gear Shift System Is Quickly Mastered

► AUTHORS of women-driver stories may want to modify this prediction, but nevertheless the jeep's eight-speed gear shift system can be mastered in two minutes by all post-war motorists, Dean A. Walters, director of service for Willys-Overland Motors, declares.

The jeep has three levers which control its unique gear-shift system, Mr. Walters pointed out. One is exactly the same as that in our regular passenger automobiles. The second controls the flow of power to the front wheels. The third lever controls the "super-low" ratio, similar to that of a tractor.

When pulling at full strength with the first lever in low, the second directing power to all four wheels, and the third in its super-low ratio, the little jeep can tow almost a ton in weight on dry pavement, scientific tests conducted by the U. S. Department of Agriculture recently proved.

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## ENTOMOLOGY

## Nicotine Bombs Slated For Warfare on Aphids

► BOMBS will go off in American greenhouses after the war.

But they won't shatter any glass; they'll kill only aphids—plant lice.

Research by U. S. Department of Agriculture entomologists has demonstrated that the aerosol method, used now against malaria mosquitoes on many American fighting fronts, is effective also in attacks on insect pests that damage plants growing in greenhouses and other closed spaces. The only difference is that whereas pyrethrum is the poison used in the mosquito-killing bombs, the standard munition in chemical warfare against aphids is nicotine.

The "bombs" used are small, grenade-shaped containers loaded with the insecticides dissolved in Freon, compound first brought out for the cooling coils of electric refrigerators. It is a gas at ordinary temperatures, but becomes a liquid under slight pressure. The bombs do not actually burst, but the sudden release of the internal pressure when they are opened sends the poison-loaded Freon vapor out into all corners of the room or tent that is being purged of its pests. Harmless to humans, the vapor is deadly to insects.

The tests showed that a given quantity

of nicotine released as an aerosol from a Freon bomb will kill the insects in twice as many cubic feet of greenhouse space as when burned for fumigation in the method now used, besides eliminating the fire hazard involved at present.

It is not expected that the new method will come into general use until after the war because of present difficulty in obtaining necessary materials. All Freon bombs that can now be produced are needed for the protection of troops and the "de-mosquitoing" of airplanes in malaria-infested regions.

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## MEDICINE

## Movie of Heart Disease Medical Teaching Aid

► A COMFORTABLE looking woman, considerably past middle age, wearing a pretty blue and white print dress, smiled pleasantly at the camera, then made 21 trips over a two-step staircase in about a minute and a half. At the end of the twenty-first trip she had to stop, face drawn with pain and fear, left hand and arm clutched tightly against her breast and held there by the other hand, as a suffocating paroxysm of pain gripped her.

This "textbook" picture she gave of angina pectoris, much-dreaded form of heart disease, is part of the opening sequence of a new medical teaching film in sound and color, which was shown to the public for the first time at a meeting of the Boston Scientific Film Society at Harvard College.

The film was produced by Dr. Joseph E. F. Riseman, Boston physician who teaches at both Harvard and Tufts Medical Schools and is on the staff of Beth Israel Hospital, Boston. The film is intended to serve as a clinic for teaching medical students and for giving busy physicians a chance to keep up to date on the latest knowledge about angina pectoris.

The stair-climbing of the opening sequence is no stunt but a method for studying objectively both the disease and the effects of various medicines, without having to rely on the patient's impressions of what brings on an attack, how long they last and how much or little better he feels after taking a particular medicine.

The balance of the film shows diagnostic signs, the physiology of the disease, the damage to the heart as seen in specimens after death, and methods of treatment.

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# IN SCIENCE

## NUTRITION

## Raw Brain in Diet Helps Relieve Skin Diseases

► A HIGH protein diet plus raw brain or liver helps to relieve eczema, psoriasis, scleroderma, keratoses and other skin diseases, Dr. Francis M. Pottenger, Jr., of Monrovia, Calif., reported at the Cincinnati meeting of the American Therapeutic Society.

The beneficial effects, it is believed, are due to diet factors, possibly a new vitamin, found especially abundantly in such lecithin-rich meats as brain, liver, heart muscle and fat and in solvent-processed soybean lecithin. The material is destroyed by normal cooking and, in dairy products, by the heat of pasteurization.

"These factors," Dr. Pottenger stated, "have profound nutritional effects on the body as a whole, including skeletal form (the development of the regular face of the animal or child), maintenance of neurological tone, reproduction and the prevention of allergic manifestations, to mention but a few."

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## PSYCHIATRY

## Post-War World Will Need Help in Selecting Leaders

► PSYCHIATRISTS were called on, at a meeting of the National Committee for Mental Hygiene in New York City, to help the post-war world by finding a method of selecting leaders that will prevent "ambitious moral morons and other unqualified individuals from acquiring positions of influence and power."

Society's need for such a method of selecting its leaders was stressed by Dr. Nolan D. C. Lewis, director of the New York State Psychiatric Institute and Hospital.

Abnormal fears, worry, boredom, indecision, sense of inferiority and oversensitivity that affect persons today are, Dr. Lewis declared, greater public enemies than gangsters and racketeers.

The coming generations, he believes, will suffer even more extensively from these public enemies than we do today unless efforts at improving mental health are increased and extended.

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# CE FIELDS

## METEOROLOGY

### On Average, U. S. More Sunny Than Most of Europe

➤ CHANCES of our pilots in the Mediterranean region having clear flying weather are not as good as along our own Pacific coast, but much better than for many other regions of the United States.

A study of the sunshine and cloudiness in the Mediterranean basin for previous years by Dr. W. Gorczynski shows that on the average the United States is more sunny than western, central or northern Europe.

The zone in North Africa between 30 and 20 degrees north latitude was found to have the brightest, clearest skies, Dr. Gorczynski stated in a report to the American Meteorological Society. The Pacific coast came next, followed by the Mediterranean coast and islands.

Protection against cold and violent winter winds given by the surrounding mountains is largely responsible for the sunny and mild climate found on the Mediterranean coasts of Southern Europe.

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## ENGINEERING

### Tenth of 1943 Electrical Energy Used in Electronics

➤ A TENTH of all electrical energy generated in the nation during 1943 passed through electronic devices making the industrial electronics age "an accomplishment of today," not a post-war promise, Dr. L. A. Umansky, industrial manager of General Electric's industrial engineering division, said.

Electronic rectifiers to satisfy demands for direct current in war-expanded electro-chemical and light metal industries take the lead. But demonstrations of the latest devices have revealed that industry has been given a versatile tool.

"Electronics has taken its place as an equal partner, side by side with other electrical apparatus," Dr. Umansky said, "enhancing rather than superseding them."

Warning against industrial use of electronics just because it is fashionable, he declared that "nothing but harm will accrue to engineering progress . . . if

electronics is used without discrimination."

Electronics should improve the product, lower cost, or increase production. Use of electronics equipment is recommended, Dr. Umansky pointed out, for "the extension of our electrical senses" to amplify signals so weak that they would otherwise be lost, and to replace the human eye or touch with something much finer, faster and more reliable for a myriad of counting and inspection jobs.

Electronic equipment has the advantage of no moving parts. In converting alternating current to direct current by electronic rectifiers, less critical material is used than in comparable rotating equipment, and efficiency is higher.

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## NUTRITION

### Dehydrated Pork's Loss Of Thiamin Preventable

➤ LOSS of precious thiamin, or vitamin B<sub>1</sub>, from dehydrated pork during storage at the high temperatures of warehouses or docks can be prevented by adding to the dehydrated pork a cereal-milk-bone mixture, Dr. E. E. Rice, J. F. Beuk and Dr. H. E. Robinson, of the Swift and Company research laboratories, report. (*Science*)

A way to keep foods from being spoiled nutritionally, as they can now be kept from being spoiled through bacterial action and decay, may result.

The discovery was made in the course of studies of a food for pet animals. This pet food contained meat and meat by-products along with about 33% of a mixture of cereals, milk, tomato paste and bone meal. When cooked and dehydrated, this pet food kept most of its vitamin B<sub>1</sub> for several weeks at 120 degrees Fahrenheit, a temperature known to cause severe destruction of the vitamin in dehydrated meats or eggs.

Some foods, unlike meat and eggs, apparently do not lose thiamin when stored at high temperatures. The Chicago scientists reasoned that such foods in the cereal-bone-milk mixture were having a stabilizing influence on the thiamin in the meat, helping to prevent its destruction by the high storage temperature. Tests showed this to be the case.

The particular mixture they used is probably not specific for decreasing thiamin loss, they point out. It gives a starting point, however, for studying the nature of the loss and finding possible ways of minimizing it.

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## SEISMOLOGY

### Sharp Earthquake Recorded From Lake Maracaibo

➤ A SHARP earthquake shock rumbled the shores and disturbed the waters of Lake Maracaibo in northwestern Venezuela on Tuesday, Dec. 21, at 9:46 a.m., EWT, according to instrumental records from five American seismological observatories transmitted through Science Service and interpreted by scientists of the U. S. Coast and Geodetic Survey.

The epicenter was located in the region of 11 degrees north latitude, 69.5 degrees west longitude, somewhat to the west of the lake. On the opposite side of this wide, shallow body of water is one of the most important groups of oil fields in South America. Whether the disturbance was near enough, or intense enough, to cause damage to the wells has not yet been determined. There are some oil fields to the west of the lake also, but they are of less importance than the eastern-shore fields.

Observatories reporting were those of Georgetown University, St. Louis University, Spring Hill College at Mobile, Ala., and of the U. S. Coast and Geodetic Survey at Tucson, Ariz., and San Juan, P. R.

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## AERONAUTICS

### New Parachute Escape From Plane Invented

➤ A BETTER break for pilots of fast fighter planes, especially those of the pusher variety, is provided by the invention, granted patent No. 2,335,822, of H. L. Bowers of Kenmore, N. Y., assignor to the Bell Aircraft Corporation. Trying to make a conventional parachute escape from such a plane is almost as dangerous as "riding it down," for the flier stands a high chance of being struck and killed by either propeller or tail assembly.

In Mr. Bowers' invention, the plane's own rush through the air is made to supply power to lift the pilot out of the plane and literally catapult him (though not too violently) back over the tail. This is accomplished by suspending the seat from the top of the "greenhouse," which is hinged at its rear edge. The sloping front windshield is also hinged at its upper edge, so that when its lower edge is released by the pull of an emergency lever it catches the wind, flies up, admits the force of the wind to the whole under surface of the "greenhouse," and so tosses the pilot up, back and out.

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