

reported that it is being used with success in Germany.

The possible use of rocket power is discussed by Roy Healy, president of the American Rocket Society (*Aviation*, Jan.). He and his organization have carried out tests with rockets as a propelling power. He is of the opinion that a battery of powerful powder rocket charges attached to the belly of the fuselage, and exploded by electric ignition in consecutive order during the run-off, would accelerate the speed sufficiently to permit an overload of as much as 3,000 pounds.

A simple rocket power motor has been designed weighing less than 25 pounds which uses liquid oxygen and an oil fuel. Ignition is by electric spark. The motor will give a 1,000 pound thrust, declares Mr. Healy. It produces a jet velocity of discharge of over 6,500 feet per second.

Twenty such motors, discharging in pairs at intervals of one second, would give a constant thrust of 2,000 pounds to the plane for 10 seconds during the take-off.

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## BOTANY

## Coffee Is Ancient Drink

**Caffein beverages have appealed to people in widely separated regions since prehistoric times. Shortage can be damaging to morale of public.**

► COFFEE and other caffein-containing beverages are not the discoveries of modern, civilized men at all. These drinks with a harmless "kick" in them have been made and used since prehistoric times by primitive peoples fortunate enough to have caffein-yielding plants growing in their neighborhood.

The importance of the caffein beverages was discussed by Prof. P. C. Mangelsdorf of Harvard University, in the course of a lecture on economic plants as weapons of war, given before the American Academy of Arts and Sciences.

"These caffein beverages, although of no nutritional value, have become so important, especially coffee to Americans and tea to the British, that they are regarded as essential to the maintenance of morale," Prof. Mangelsdorf stated. "Military needs take precedence over civilian desires and rationing is a necessary consequence. A plant product which was once a luxury has become a necessity and a factor in the winning of the war."

Besides familiar coffee and tea, the list of caffein-yielding plants used by various peoples includes the yaupon or cassine of our own Southeast and the yerba mate of South America. Both of these are smoot-leaved species of holly. Then there are guarana, made from the fruit of a tropical shrub, and yoco, prepared from the bark of a tropical vine. Cocoa also contains caffein, though its most characteristic stimulant is the related compound, theobromin.

If the lack of coffee and tea can be

damaging to morale, lack of other plant products can have even more devastating material results, the speaker pointed out. Germany, in desperate need for edible oils, was after the white oil of sunflowers as well as the black oil that comes out of the earth when her hordes drove into Russia—only now to be driven out of the sunflower fields as well as out of the Caucasian oil fields.

We ourselves have been hard hit by the Japs' seizure of the Philippines, whence we normally obtain the larger part of our coconut oil imports, used in soap as well as for food. We are meeting this lack by growing greatly increased acreages of soybeans and peanuts, both rich in good oils.

Almost too painful to be talked about is our loss of Far Eastern rubber and quinine sources. We have synthetic substitutes for both, but they are not complete substitutes, and we are driving hard to collect wild cinchona in the Andes, wild rubber all the way from the Amazon valley to northern Mexico, to meet our needs for natural plant products.

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## INVENTION

### Coffee Without Caffein Improved by New Process

► COFFEE without caffein, which many have come to like during recent years, can be better and more quickly manufactured by a new process in which organic solvents are eliminated and only hot water is used. The process is de-

scribed in U. S. patent 2,309,092, issued by the Patent Office to N. E. Berry of Summit, N. J., and R. H. Walters of Rutherford, N. J., assignors to Generals Foods Corporation.

The decaffeinating process hitherto in use involved soaking the green coffee beans in trichlorethylene or similar organic solvent, which removes the caffein but leaves the other water-solvent substances on which coffee flavor depends. However, this process required long steaming or soaking, the solvent was hard to get out completely, and it carried off also the coffee's natural wax which then had to be separated from the caffein if the latter were to be recovered.

All these difficulties are obviated in the Berry-Rutherford process, which flows green coffee beans through the apparatus in one direction, against a counter-current of hot water to which has already been added all it will hold of the water-soluble flavoring substances, lacking only caffein. The result is that the caffein comes out of the beans, while the other substances remain in them. After drying, the decaffeinated beans are processed in the usual way.

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## ZOOLOGY

### Wild Mice Share in Credit For Destroying Insects

► WILD MICE are entitled to a share in the credit for destroying insects that has become almost a monopoly of songbirds, according to Dr. Albert R. Shadle of the University of Buffalo. Other small rodents, like chipmunks, ground squirrels, also figure as insect destroyers.

Insect-eating habits of these small rodents were studied at the Allegany School of Natural History, where one family of deer-mice were permitted to keep for five years a home they had made in a desk drawer.

They made a specialty of moths. Frequently a deer-mouse could be seen dashing across a screen to catch moths attracted by the lights within. Captured deer-mice in a cage quickly learned to accept moths from the hands of their captors. They liked caterpillars, too.

Dr. Shadle points out that small rodents, hunting among small branches, and the undersides of tree limbs, are likely to find many inactive moths that are overlooked by most birds, besides quantities of insects in the larval and pupal stages.

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