

for the best work on this size or more than \$6.45 when lower quality rubber and other materials are used. However, there are shops that will do the work for considerably under this price. Such savings do not pay. If a lower price is charged, much of the vital inspection, minor repair work and other steps to rebuilding the tire to original condition must be skipped.

Toward the middle of January the government issued an order requiring that all rubber used for passenger car treading be cheapened by using less crude

rubber and more reclaimed rubber, carbon black and other ingredients. Many shops have a supply of the former higher grades of rubber on hand which may last for a few weeks. However, shortly all passenger car owners will be getting the cheaper rubber. This will probably last less than half as long as the original tread.

This is just one of the many steps the government has taken to allow as many people as possible to tread their tires.

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ENGINEERING

Power For War Industries Will Be Increased

Considerable Saving of Critical Materials and Labor Possible by Making Existing Equipment Do More Work

MORE power to meet war's demands will be obtained out of existing electrical machinery, the American Institute of Electrical Engineers heard at their meeting in New York.

New plants and transmission lines will be needed to meet war's increasing demands for electrical energy, but a considerable saving of critical materials and of labor can be effected by making existing equipment do more work. This was pointed out by Philip Sporn of the American Gas and Electric Service Corporation, New York City.

Existing equipment is capable of a considerable overload. It is desirable to examine how much of this could be carried regularly with reasonable safety during the war time, H. P. St. Clair, also of the American Gas and Electric Service Corporation, declared.

In addition, there are devices, voltage regulators, capacitors and boosters, by which the capacity of a transmission line can be increased, or a saving of copper effected, Harold Cole of the Detroit Edison Company pointed out. Some rearrangement of the facilities for greater economy and efficiency would accomplish the same purpose.

Mobile Transformer

A MOBILE 2,500-kilowatt transformer substation that can be rushed on a truck to any spot where needed, was described by M. W. Reid of Ebasco Services. This transformer can draw

high-voltage current from any point along a power line and transform it to a lower voltage for further transmission along a temporary line, or to a still lower voltage for immediate domestic use. It can supply a town, a camp or a group of factories with the electricity they need and at any voltage they need, when through disaster of war their regular supply is cut off or deficient.

Prizes Awarded

THE Alfred Noble Prize for 1940-41 was presented to Robert F. Hays, Jr., of the Sperry Gyroscope Company's research laboratories, for his paper entitled "Development of the Glow Switch."

The Edison Medal, highest award of the A.I.E.E., was presented to Dr. J. B. Whitehead, professor of electrical engineering at Johns Hopkins University.

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RADIO

Saturday, February 14, 1:30 p.m., EST

On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

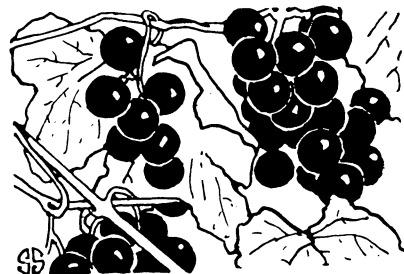
Lawrence Langner, New York patent attorney, who is one of the principal figures in the Theatre Guild and also a member of the National Inventors Council, will discuss how inventors can help win the war.

Listen in each Saturday.

Tuesday, February 10, 10:15 p.m., EST

Science Clubs of America programs over WRUL, Boston, on 6.04 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in high schools, throughout the Americas. Have your science group listen in at this time.



Bible Botany

THE BIBLE is filled with reference to plants, literally from cover to cover. It begins in the first chapter of Genesis, with the earth bringing forth "grass, the herb yielding seed, and the fruit tree yielding fruit after his kind;" and the last chapter in the Apocalypse of St. John tells of a mystical Tree of Life growing in the New Jerusalem. In between, many scores of species are mentioned. There is no book in The Book that does not have at least a little botany in it.

A recent book by Eleanor A. King (*Reviewed, SNL, this issue*) brings together the essential information about plants mentioned in the Scriptures, and tells how many of them can be made even more vividly familiar by actual cultivation in our own back yards.

Many of the plants are thoroughly familiar to us, some of them but little changed since the days when Abraham and Moses and Jesus beheld them, others vastly improved over the ancient forms through centuries of selection and breeding.

Corn and oil and wine, that basic nutritional trilogy, are among those but little altered. "Corn," in the Bible, always means the common bread grain of the time; usually wheat, sometimes including barley. American corn, or maize, is of Indian origin and of course was unknown in ancient Palestine. "Oil" always means olive oil; and the cultivated olives of the Near East, grown mainly for the oil press, are essentially the same trees they were two and three thousand years ago. The vine that yielded Biblical wine is rather unlike the table-grape varieties of the eastern United States, but quite similar to the European type of wine-and-raisin grape grown in California, especially the small, dark "Mission" variety. (*Turn to page 91*)



CARRIER

Newest aircraft carrier in America's Navy is the U. S. S. Hornet. On the decks of this ship, nearly a hundred airplanes can take off and land. This type of vessel, although very effective, is expensive, slow to build, and vulnerable to torpedo attack. This is an official U. S. Navy photograph.

rine raiders. They can be equipped with sufficient armament to prey on cargo vessels.

Although obviously not calculated for any sort of mass bombing of cities like that practiced in the past on London, the seaplanes based on catapult ships could conduct a series of hit-run surprise raids which might destroy coastal oil supply bases, reservoirs and city water supply systems, power supply centers, transportation centers, and so on. Piloted by men already familiar with the lay of the land, the raids could be devastating.

Trusting to her ability at a quick get-away from one unmapped location to another, and to the difficulty of detecting a small boat on a mighty ocean, the mother ship might boldly summon her catapulted planes to the shelter of her decks by a radio homing device operated for brief intervals. Even though all the Coast Guard and Navy vessels on the sea should pick up her signals, they could not speed to her destruction fast enough, unless they happened to be in the immediate vicinity. Her only fear is from aircraft.

If Germany plans a surprise attack on the United States using these catapult

ships—apparently not yet sprung on her enemies in this World War—it is logical to suppose that the time she would pick would be in the early summer months when weather and water conditions are best for catapulting and retrieving seaplanes that have come down on the water.

Best protection against such an eventuality would seem to be in a superior use of the same weapon. The United States has the facilities to launch any number of such catapult ships. They could be stationed 300 to 400 miles from the coast. From their decks an air patrol could be on the constant lookout for enemy aircraft, enemy carriers or catapult ships, submarines or any other signs of enemy activity.

These "outer defenses" would stand a chance of spotting aircraft headed for our shores in time to take action to warn our coast defenses. They would be better placed for trapping catapult ships, surface raiders and submarines than would an air patrol that must return to shore for refueling or aid.

As an offensive weapon, the seaplane catapult ship team would be just as effective for the United States as for our enemies. For relatively little cost in money

and precious construction time, a whole fleet of such small ships could be placed at strategic points in the Pacific that would enable our airplanes to conduct the sort of paralyzing raids on Japanese island bases that Japan attempted on Pearl Harbor.

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GEOLOGY

Torrential Rains Held Responsible for Erosion

TORRENTIAL rains called "gully-washers" in some parts of the South are just that; they are largely responsible for the disastrous deepening and spreading of gullies in Southern fields. So Prof. Stephen S. Visher of Indiana University has concluded, after a study of data accumulated by the U. S. Soil Conservation Survey and the U. S. Weather Bureau (*Journal of Geology*, Jan.-Feb.).

Soil erosion, blamed in various quarters on slack farming, lack of permanent ground cover, etc., involves also one neglected factor—the intensity of individual rains, Prof. Visher believes. Total annual rainfall does not tell the whole story by any means: 50 inches of precipitation distributed as a hundred half-inch rains will not do a minute fraction of the mischief that would be caused by the same amount concentrated in ten five-inch downfalls. And the Gulf States, the present studies indicate, have heavier single rains, and more of them, than any part of the North with comparable annual precipitation.

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There are some plant names in the Bible that often lead modern readers into confusion. The "husks that the swine did eat" have nothing to do with our familiar corn-husks; they were the pods of a leguminous tree known as the carob. Coarse and tough to chew, they are nevertheless sweetish and really nutritious. So the Prodigal Son might have been worse off than he was, at that.

Sycamore does not mean the tree known by that name in this country. That tree is called the plane-tree in the Bible. The Biblical sycamore (properly sycamore) is a species of fig. The "lily of the field" was not a lily; Miss King says it was an anemone. "Mulberry," in I Chronicles, seems to be a mistranslation for quaking-aspen. There are other instances of this kind, where it is always interesting, and sometimes important, to have incorrect impressions set right.

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