



## SUBMARINE DESTROYERS

### A new use for motor boats

SKIPPERS sleep peacefully in their berths on the freighters lying in the Thames near London in spite of submarine warfare. Freight from America and other countries, munitions of war and food supplies, arrive there in such quantities that the boats cannot be unloaded immediately, but they are just as safe in the mouth of the Thames as they would be in New York harbor. For that, England has America and Russia to thank. Some enterprising Russian must have seen Flyaway III winning races in American waters; there is the secret of the safety of commerce in the mouth of the Thames.

What keeps the German submarine away is the huge fleet of pert, saucy, little American launches. All of them were developed from the lines of Flyaway III, one of the few new engines of war for which America is responsible. Each boat is sixty feet long and is driven thirty miles an hour by gasoline engines. "Submarine swatters," the boys down

on Long Island, New York, nicknamed them before they were shipped. With supplies of food and fuel for several days' cruise these boats spread fanlike from the mouth of the Thames, and from other shipping centers in England and Russia on the lookout for the wily submarine whose evil eye trails a tail of oil and bubbles behind it. In the deck house of the submarine swatter is a three-pound quick firer, capable of knocking the periscope clean off, or mortally wounding the submarine before it can come to the surface and get into action against the little American launches. No submarine can sail any waters where these fleets are located for half a day without being spotted, trailed, and destroyed. As was said before, the skippers of the freighters in the mouth of the Thames, waiting for a chance to unload, sleep peacefully on.

A trial order of these submarine swatters was given to a Greenport, L. I., construction company late last year, and



The motor-boat, up to this year considered insignificant in warfare, is proving to be the submarine's liveliest foe. Its powerful engine gives it speed and a wide radius of action



It looks like a peaceful, dumpy affair, but it can squirt death

shortly afterward six were shipped to Archangel, before that Russian port closed for the winter. Great secrecy was maintained as to the details, but after the second order was given, proving in the only way possible that the boats were successful, general specifications were admitted.

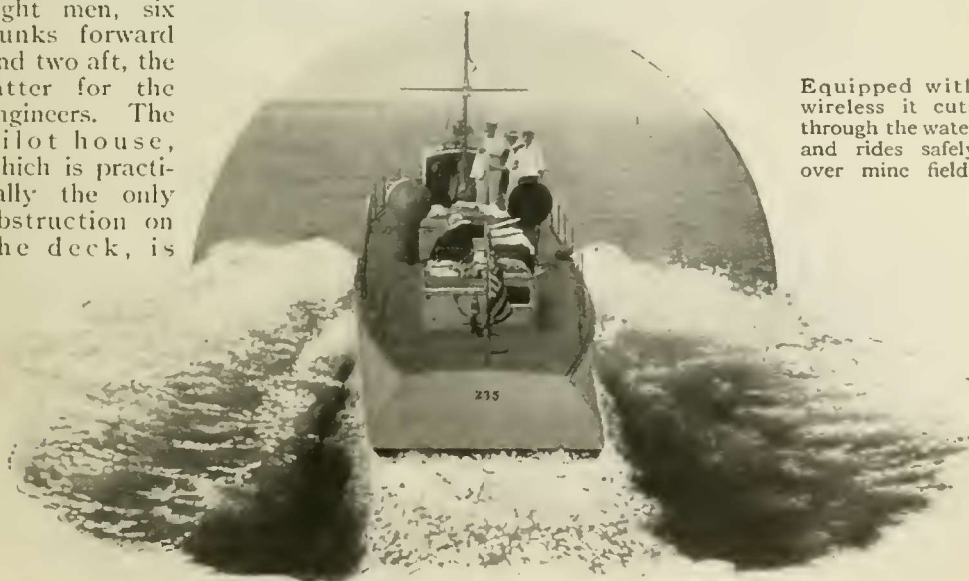
Each boat carries three 175-horsepower engines, giving a total of 525 horsepower to drive the load. The speed called for was twenty-six miles an hour, but the average, on the trials which could be held, was over thirty miles. The boats are sixty feet long, ten feet beam, and two feet ten inches draft. They weigh twenty-eight thousand pounds. There are accommodations for eight men, six bunks forward and two aft, the latter for the engineers. The pilot house, which is practically the only obstruction on the deck, is

armored and has room for a quick firer, which of course was not mounted before the boats were shipped to Russia.

The boats are of the V-type, a design which is but a year or two old in American motor-boats. The bow is sharp, but a few feet back is a shoulder on each side of the hull, which performs the same duty as the steps on a hydroplane, and lifts the hull partly

out of the water. The first large boat of this design which was completely successful was the famous champion racing cruiser Flyaway III, which is still champion. Were the new Russian submarine swatters to compete with Flyaway, a new winner would probably be announced. They are much larger, faster boats, in fact, the largest V-type ever constructed, and it is the success of this development which has so interested Americans.

As fighters, these motor-boats should be efficacious against submarines. They draw so little water that they can ride safely over the ordinary mine-fields without exploding the mines. They are equipped with two rudders so that they



Equipped with wireless it cuts through the water and rides safely over mine fields

can turn completely around in a little more than their own length, and hence can steer a violent zig-zag course. A submarine attempting to torpedo such a boat, traveling thirty miles an hour with so little hull to shoot at, would be attempting almost the impossible.

In realizing the tremendous advance of the motor-boat it must be remembered that these vessels can travel at high speeds, in almost any seaway, carrying eight men for long distances, and that they are armed in addition. A few years ago motor-boats did not travel so fast with one man, for a mile only, even on quiet, inland waters. And yet they are small enough to be placed on the deck of a warship. This is evidenced by the fact that each is equipped with cleats, bolted to the keel, by which it can be lifted from the water. This is the reason England has placed a very large order for duplicates of this American design.

#### Hitching the Mower to the Farm Automobile

A CALIFORNIA ranchman (James M. Berry, Sacramento) found that pea vines came up so thickly in a grain field that it was impossible to cut the grain. He decided therefore to cut it for hay. Because of the shortage of horses he tried hitching the mower behind the ranch automobile. The plan worked so successfully that about twenty acres were cut each day, the car drawing the mower at such speed that the mower readily cleared itself. When horses were



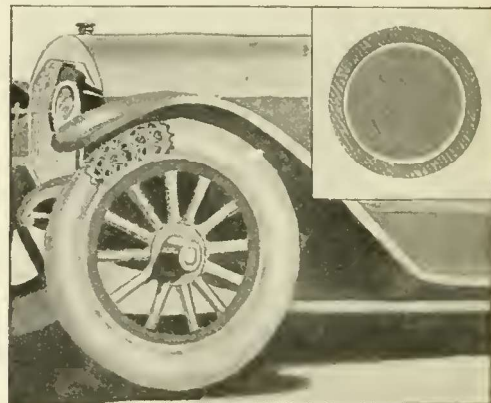
The farm automobile took the place of horses and did the big job better and in less time

used, the blade frequently clogged itself.

The hay was raked by the same method. In the fall the automobile was used to run a stacker. The lift rope of the stacker was attached to the front axle of the car and when the operator desired to raise the load of hay he would back the automobile until the stacker had cleared itself. Then it would be lowered by reversing the machine, letting it down gently, whereas horses would jerk the stacker and let it down abruptly, with a bump.

#### The Reinforced Concrete Principle Applied to Automobile Tires

A NEW tire has been patented which combines elasticity with great durability. The principle is similar to that employed in reinforced concrete; a



A portion of the tire with the "shoe" cut away, showing the reed woven into a network of strands

woven fabric is embedded in a body of elastic composition.

Vegetable reed, preferably "Spanish cane," is woven into a network of circular and longitudinal strands. There may be one or several tube-like arrangements, or a spiral effect may be used. The spans between the fibers are filled with a substance which can be poured in when hot and allowed to solidify. This composition is highly elastic and yet is strong enough to resist road bruises.

Its main advantage over the solid rubber tire is its elasticity and durability. No road is too rough for it and it will bear up under the hardest service. The "Spanish cane" adds greatly to its wearing qualities in all sorts of weather.