

ORDNANCE

Counter-Attack Rockets

May be defense against attack by jet-propelled missiles. Army to seek protective methods in experiments with German V-2's this summer.

► "COUNTER-ATTACK" rockets sent up to explode enemy jet-propelled missiles harmlessly in mid-air may be the answer to the problem of a defense against attacks from the sky in a future war, believe Army experts who will conduct tests of captured German V-2 weapons at the White Sands, N. Mex., proving grounds this summer.

Every known method of radar detection, including the now-famous "moon-radar" equipment, will be used to plot the course of the captured rockets as they are sent streaming into the sky during the tests. From these experiments, the Army hopes to develop methods of defense against jet-propelled attacks.

If radar devices can successfully chart the course of the 3,000 miles-per-hour missiles, the Army's experts say that it should be possible to explode enemy rockets in mid-air by a radar-controlled "counter-attack" rocket. With radar charting the course of a missile as it heads toward the country, they say that it may be possible to send rockets into the arc of flight of the enemy weapon to explode it high in the air.

The tests this summer will be conducted on a course 150 miles long and 50 miles wide with the Ordnance, Air Forces and Signal Corps of the Army

cooperating in the experiments. Officers and civilians from Air Technical Service Command laboratories and veterans from the European occupational air force will man radar devices for the AAF, while Army Ordnance experts fire the Nazi rockets.

"A means must be found to defend our country against a sudden enemy rocket attack," Brig. Gen. William L. Richardson, chief of the guided missiles division of the Air Staff, said.

"We want to develop a method whereby we can intercept enemy rockets in mid-air. We cannot hope to do this, however, until we discover a method of tracing their course through the sky and predetermining their arc of flight.

"Once we accomplish this," declares Gen. Richardson, "it will be possible to design a 'counter-attack' rocket which will be controlled by radar and will be capable of intercepting the enemy rocket at a predetermined point in its course."

Gen. Richardson said that the AAF has been working on a defense against rockets since the first German V-2 landed accidentally in Sweden in the autumn of 1943, and he pointed out that offensive as well as defensive developments are expected from the tests with the Nazi missiles.

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corrects the faults of that engine. It appears to have the best thermal efficiency of the German war-built locomotives.

A third, built in August, 1944, is a type 2-10-0 steam engine with a condenser arrangement embodied in the tender. Several claims were made for its performance, one of 12,000 miles without water replenishment. The better figure, and that supported by greater authority, is 700 miles, according to Army officers.

A diesel switch engine with interesting features was also exhibited, as well as an eight-cylinder axle-drive steam locomotive, built in 1941 and designed for high-speed passenger service. Interesting also is a narrow-gauge steam locomotive built for the German Army for use on the Eastern front where much of the track gauge is 29 $\frac{3}{8}$ inches or 750 millimeters.

The exhibit displayed at the Norfolk Army Base included also many items of captured German marine and other equipment including diesel engines for submarines, minesweepers, naval vessels, dirigibles and vehicles. The development of the diesel for dirigibles was instituted at the request of the Zeppelin Works, and its weight and size were kept within the limits of the corresponding gasoline engines. It is a V-type supercharged four-stroke cycle marine diesel, with individual cylinders of welded steel, and a crankcase of aluminum alloy. It was used on German "E" boats.

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ENGINEERING

Captive "Torpedo" Hunts Acoustic Mines

► A WARTIME invention still useful in clearing away some of the deadly remainders of war is covered by patent 2,395,862, issued to two government-employed civilians, H. B. Freeman and B. A. Wiener, both of Washington, D. C. It is a device for finding and exploding acoustic mines, many of which are still lurking in the world's seaways.

The device consists of a torpedo-shaped body, to be towed under water by a mine-sweeper. A propeller at the stern rotates a shaft within, on which are mounted a pair of flexible arms with metal balls on their ends. These strike rapidly against projections from the inner wall, producing a drumming or humming sound that is a good enough imitation of a ship's noise to set off acoustic mines.

The inventors have assigned their patent rights, royalty-free to the government.

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ENGINEERING

Index to Nazi Struggle

Germany's locomotives are indicative of her struggle during the war to save materials, cost and labor. 1,000 parts eliminated, 30 tons in weight saved.

► GERMAN WARTIME locomotives exhibited by the Army Transportation Corps Board are an index to Germany's struggle during the war to meet transportation needs and at the same time save cost, critical material and labor. In one, built in 1942, drop forgings were used, materially reducing its cost. In this model the designers eliminated a thousand component parts from the German Series "50" locomotives which it replaced.

Builders of this so-called standard-

type class "52" locomotive, for freight service, saved approximately 30 tons of materials required in the "50" locomotive, and eliminated 6,000 manhours of labor. In addition to the parts eliminated, 3,000 other parts were modified or altered in its design over the series "50" locomotive.

Another locomotive, built in 1944, embraces all savings in manhours and materials known in the production of the series "52" locomotive and in addition