

MILITARY SCIENCE

New Bombing Technique

The Pathfinder method enables bombers to drop high explosives accurately on targets that cannot be seen with the naked eye. Smoke signals are used.

► **FACTS** about the Pathfinder bombing technique which enables bombers to drop their high explosives accurately on targets that cannot be seen with the naked eye have just been released.

This technique, originally developed by the Royal Air Force, was first used for night bombing on Aug. 18, 1942. Since then it has been used widely by both the British and Americans to put the Nazi war machine out of commission by repeated, deadly accurate bombing of targets through the clouds.

The equipment that makes this bombing possible consists of a Pathfinder device, and smoke signals, which are used to locate and mark the target.

The Pathfinder itself is one of the latest achievements of modern navigational science. It was invented by the Office of Scientific Research and Development. When a bomber is over the target it literally shouts to the bombardier, "Here's your target, drop your bombs." While further details of the actual operation of the instrument are still military secrets, it can be said that the Pathfinder gives the plane eyes to see through clouds and overcast from altitudes as high as 25,000 feet.

One plane, out of a formation of bombers, carries the special Pathfinder equipment, and a technically trained crew to operate it.

When the target is "sighted," the Pathfinder plane drops colored smoke bombs, if it is a daytime operation, or colored smoke flares, if at night. These planes leave a ring of colored smoke in the clouds marking out the target. Regular bombers that follow, release their bombs inside the colored smoke ring.

Two types of smoke bombs are now being used. The first type, known as the T. I. (for "target indicator,") was developed by the R.A.F. This bomb burns as it drops through the air, leaving a trail of colored smoke that will show up through all but the thickest cloud.

The other type of smoke bomb is the "Sky-Marker," developed by Lt. Col. Clarence H. Breedlove, Chemical Warfare Service, U. S. Army. The "Sky-Marker" is a special flare suspended from

a parachute. The parachute descends more slowly than a bomb, leaving a larger cloud of colored smoke at higher altitudes than the target indicator.

The "Sky-Marker" is now a "standing operating procedure" for the Eighth Air Force, and has eliminated the element of doubt and rough estimations made at the time of bomb release by other planes. It has also decreased the size of the group bomb pattern, thereby giving density to the target.

The colors of the flares and smoke are changed each day, so that enemy smoke signals cannot confuse United

Nations planes, and cause them to drop their bomb load on an open field instead of a military objective.

The Pathfinder technique is also used in the landing of paratroopers. Planes equipped with Pathfinder equipment go ahead of the troop carrier aircraft to select a suitable spot for the paratroopers to drop, beyond the range of enemy anti-aircraft fire. It marks this spot with a colored smoke bomb to guide the troop-carrying planes.

British Lancaster, Halifax, Mosquito, and Wellington bombers are equipped with Pathfinder devices. The only American planes, to date, to use this equipment are the B-17 Flying Fortress and the C-47 Skytrain.

It is known that Nazi scientists have been experimenting for a long time to develop a bombing technique similar to the Pathfinder system. However, there is no evidence that they have been able to duplicate it.

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AERONAUTICS

Super-Rockets "Fantastic"

► **THE IDEA** of super-rockets aimed at American cities and war industries from the coast of Europe is fantastic to anyone familiar with rockets and jet-propelled aircraft.

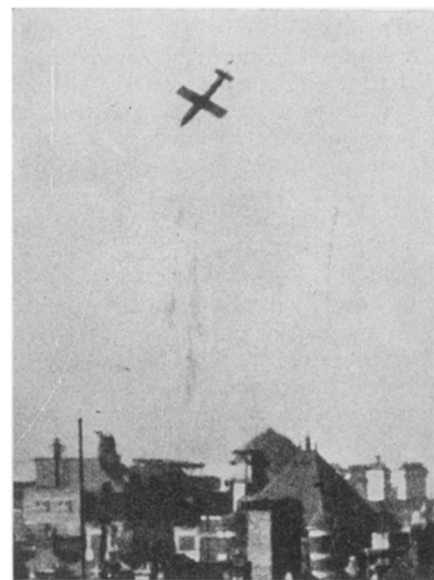
The haphazard way in which the robot bombs already launched against England are falling in and near London indicates that the Germans do not have exact control over the range or direction of these bombs.

This lack of control would seem to be the best evidence that the use of rocket bombs to terrorize the United States is impractical, to say the least.

If it were possible to launch rocket bombs from the French coast, have them span the Atlantic, and drop in the United States, they might land almost anywhere. If aimed at New York City, they probably would fall harmlessly in some pasture in Connecticut or New Jersey, doing nothing more than scaring a few cows.

Definite proof that transatlantic rocket bombs are impractical, if not altogether impossible, comes to light when we consider the question of weight. It would require 400 gallons of fuel an hour to carry a 12-ton bomb by jet propulsion across the Atlantic. The flight would take about 17 hours. The fuel weighs eight pounds a gallon. This means that it would take 3,200 pounds of fuel an

hour, or about 55,000 pounds of fuel for the trip. The weight of the fuel would be greater than the weight of the explosive charge. The fact that the weight of the craft as a whole decreases as the fuel is used up would have little or no



ROBOT PLANE—Flying over a city Somewhere in Southern England, a pilotless plane heads for its target.