

R A D A R

Radar.....mystery name of an even more mysterious weapon. Result of the inventive genius of the greatest body of physicists ever assembled in Britain. 2,400 men the R.A.F. called "Beffins." A miracle of electronics, radar revolutionized warfare. This story tells how radar works and what it can do. The heart of Radar is the cathode ray tube as used in television. It acts as a screen, registering radio short waves transmitted by the sender. When the waves strike an object, like a plane, they echo back and are picked up and recorded. The small upside-down V shows the distance the plane is from the transmitter. Its course and speed are registered and accurately measured.

Radar picks up waves echoed back by all planes. Watch the inverted V on the trace. Hostile aircraft give a constant, unvarying pattern. Allied planes are equipped with apparatus that varies the oscillation. Radar provided a protecting shield for Britain's cities and war factories, it was a major factor in the victory of the famous few in the Battle of Britain. Radar waves blanket the ether in every direction. "Little Sir Echo" draws a bead on an enemy plane, a hundred miles away.

When radar in the field picks up the first warning echo, the information is phoned straight to the plotting room. 4,000 W.A.A.F.s worked in Britain's radar service. Vital battle areas like Southern England and the French Coast became familiar to the girls who kept constant watch on the battle zones in the sky.

Radar detection gives defending fighter squadrons time to get aloft and provides the ack ack men with a spot-on target, with location, course, speed and altitude already calculated. Many people thought Radar was a sort of giant ear - in fact, it's more of a magic, electronic eye. And it's rough on the hostile plane that gets caught in the beam.

(GUNFIRE)

The Navy uses radar as a range finder. The reflection of radio waves is like the echo of your own voice. Everyone has shouted at a cliff face and heard the sound bounce back. Well, the Radar echo registers in the oscilloscope which shows actual wave forms of electric current and voltage. When the echo comes back more quickly, the V moves to the left. That tells you the range is decreasing. Not only ships and planes but islands and coastlines can be seen through Radar's magic eye. At the beginning of the war people said battleships were finished because they were too vulnerable to air attack. Radar gave them new eyes. Through storm-swept nights they went

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close inshore, (radio echoes pin-pointing the target), and bombarded the enemy coast in the darkness.

The Air Force used radar for practically everything. One reconnaissance plane can put the finger on every ship in an enemy fleet. The oscilloscope signals on the left side when objects to port reflect back the radar waves, on the right for targets to starboard. Clouds or fog, day or night, the electric Sherlock Holmes never fails. Islands and land masses come through unmistakably. It's hard to believe, but radar equipment light enough to go in planes produces power equal to a big radio transmitter. Radar can keep tabs on every ship in a convey. It can spot a submarine fifty miles away.

o Below is an enemy naval base and here's the radar picture as drawn by the instrument.

To aircraft in distress, radar has proved a magnificent life saver. Heading for home after a bombing mission, fire, the pilot's most dreaded enemy. Fire control equipment fails to check the blaze. The radar operator sends out the distress signal. The "Chain Home Low" station picks up the signal and the exact position of the flaming plane is charted on the map. Heading for a crash landing, radar is the crew's last lifeline.

As the airmen clamber to safety in the dinghys they know they'll be no necessity to hunt them over thousands of miles of ocean. The rescue plane heads for the exact spot.

Radar has proved one of flying's greatest boons. The magic electronic eye has made safe landings possible through the fog and in the night. Radar revised the text books of war and put the Allies "On the beam" to victory. In peace still greater benefits will come from this triumph of British genius.