

## ORDNANCE

# Gunsight For Planes

**Gyro instrument can be used in aerial combat at ranges of over 400 yards while both planes are speeding at 400 miles an hour.**

➤ A FAR CRY from the ordinary ring-and-bead sight used on both sportsmen's guns and aircraft weapons is the new British gyro gunsight. Air combat gunners may now open effective fire on their opponents with the speed of each plane around 400 miles an hour, at ranges of over 400 yards and angles of deflection which were considered impractical until a few months ago.

The gyro gunsight, designated the Mark 11-D, combines the best qualities of reflector and computer gunsight types. The new gunsight, like the T-1 bomb-sight, consists of a computer and a sighting head. It eliminates the need for lining up the gunner's eye, front and rear sights, and the target.

The sight itself actually projects an image of the enemy plane on a transparent glass screen or sight reflector, along with the aiming ring of six diamonds arranged in a movable circle around a center spot. This new aiming ring, instead of being fixed, can be made larger or smaller in diameter at the will of the gunner.

On going into attack, the aerial gunner adjusts the diameter of the aiming ring so that the wingspan of the enemy plane is contained within the diamond circle. By turning a lever on the computer he informs the sight of the type of aircraft he is attacking. By turning a twist grip on the computer he notifies the computer of the range at which he is attacking. This information is automatically fed to the sighting head by variable electric currents.

As he approaches the target, the gunner increases the size of the aiming ring. The sight is now correctly adjusted for the gunner to fire his guns and register hits.

Combat results, reports the British Air Commission, show that the fighter aircraft are now destroying nearly twice the number of Luftwaffe aircraft since the introduction of the new gunsight.

The Mark 11-D gunsight was conceived and developed at the Ministry of Aircraft Production Experimental Establishment in England.

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cathode ray tube and a means for observing the record on a screen. There is also a camera for photographing the screen, thus permitting a permanent visual record of the test.

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## INVENTION

## Ultra-Short Radio Waves Used for Sterilization

➤ VACCINES, serums and other medicinal materials are often supplied nowadays in ampoules made of plastics instead of glass. This imposes a problem in sterilization, for the customary heat treatment would soften and ruin some of the plastics.

The problem has been met by Rex E. Moule of Dayton, Ohio, by placing the ampoules between terminals sending out intense beams of ultra-short radio waves, on the order of 50,000 cycles a second. This effectually sterilizes the contents without affecting the plastic walls of the ampoules.

Rights in Mr. Moule's patent, No. 2,355,887, have been assigned to the General Motors Corporation.

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## METALLURGY

## Steel Mills Mining Own Slag for Scrap Metal

➤ STEEL FOR war is being mined from old slag heaps around smelting plants. These mountains of forbidding waste contain considerable quantities of good scrap metal, cast aside in the less efficient operation of earlier days but now capable of recovery and re-use.

A method and plant set-up for this purpose has been developed by Eric H. Heckett of Titusville, Pa., who has been awarded U. S. patent 2,352,712. The method is an improvement of his earlier technique.

Steel occurs as lumps or nuggets embedded in the matrix of the slag, like raisins in a cake. The slag is pounded loose by dropping ponderous weights on it and by other simple mechanical means. A magnetic separator lifts out the steel chunks, and the broken slag is hauled off for road-surfacing or other mass uses.

The recovered steel scrap is screened into two sizes. The smaller pieces, from an inch or so in diameter down, are fed into the blast furnaces; adhering slag simply becomes a part of the flux. Larger pieces are charged directly into open-hearth furnaces.

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## AERONAUTICS

# Flutter in Planes Recorded

➤ A NEW self-contained flight vibration recorder, so lightweight that it can be comfortably held on the lap of the observer, makes possible the rapid study of airplane vibration and flutter during flight. It can be installed and put into use within half a day, and can be used to check or supplement data secured with more elaborate equipment, weighing up to 500 pounds, that takes about two weeks to install.

The new recorder, designed like a cathode-ray oscillograph, was developed by the Technical Development Division of the Civil Aeronautics Administration, under the direction of Albert London, and is being manufactured commercially by the Brown Instrument Company of Philadelphia.

Flutter is an aeronautical engineer's way of referring to a vibration of any part of an airplane. It may occur periodically and be of indefinite duration. The

repeated blows to which an airplane in flight is subjected by air movements and disturbances creating an unsteady airflow over any part of the plane is a good example of flutter. It may also be caused by the improper functioning of a part of the plane's structure. If flutter cannot be corrected, it may cause serious damage.

Flutter can be, and in most cases is, avoided in designing planes. It rarely appears in the first model in any severe form, especially in large planes. Sometimes it appears in later models after months of use where it did not exist in the original model.

The new recorder can study flutter in many locations about the plane through pickups placed at many places throughout the structure, such as motor mounts, cowlings and small accessories.

The vibration recorder contains its own batteries, amplifier, electronic switch,