AERONAUTICS

Bombsight Announced

Especially valuable for night operations and low-altitude bombing, the T-1 bombsight permits accurate hits while plane is maneuvered.

➤ FACTS ABOUT the T-1 bombsight designated by the British as the Mark XIV, until now one of the major military secrets of the war, have been released by the War Department and the British Air Ministry. This bombsight is a mechanical combination of a mathematician and a Kentucky long-rifle marksman, especially valuable for night operations and low-altitude bombing, since it permits accurate bombing while the plane is being maneuvered.

The bombsight consists of two units, the computer and the sighting head. The bombardier uses the sighting head, containing an optical telescopic mechanism, to find his target, and when the cross hairs in the sighting head line up with the target the bombs are released. All variables, wind velocity, wind direction, wind characteristics, and target height above ground, are instantaneously made by the computer and transmitted to the sighting head.

The T-1 bombsight, conceived by a group of English scientists before Pearl Harbor, is being manufactured in large quantities by AC Spark Plug division of General Motors, since manufacturing facilities were not sufficient for its production in England. It is being produced under joint supervision of British and American experts for use on the British Wellington bombers, as well as other British planes. The improvement and production of the T-1 in this country is a fine example of British and American scientific and industrial cooperation.

The American-built sight weighs 55 pounds and is made up of 4,212 pieces. A total of 1,589 drawings is required for its production. The bombsight's moving parts are operated by high air pressure and vacuum developed by special pumps connected to the plane's fuel system.

Like all other bombsights, the T-1 determines the correct point in space at which a specific type of bomb must be released to strike a selected target. As the plane nears the target, the bombardier sets the sight in operation. Then he feeds information into the mechanical mind of the bombsight.

The first information given the machine is height or altitude. The T-1 can be used accurately up to nearly four miles above sea level. Then comes air speed, followed by wind speed, wind direction, altitude of the plane. A gyroscope determines pitch and roll of the plane.

The bombardier directs the pilot of the bomber on how to steer the plane. Looking into the telescopic sighting head, with one eye the bombardier sees by means of the telescope the target on the ground, with the other eye he sees two lines of light forming the cross-hairs. When the cross-hairs appear to be on the target, the bombardier releases his bombs.

The T-1 bombsight permits the bombing plane to be flown in any manner—up, down, turn to the right or left, fast or slow. The T-1 has not been adopted to the exclusion of other sights, because it answers only one of many bombing problems, and like the other bombsights it has its own particular use and limitations.

Before being shipped to the Royal Air Forces, the T-1 bombsights are given exhaustive tests at the AC Spark Plug plant. One little error would nullify the bombardier's finest calibrations. One of these tests simulates actual altitude conditions from sea level to 23,000 feet above. The bombsight must withstand all temperatures between 60 degrees Fahrenheit below zero and 160 degrees Fahrenheit above.

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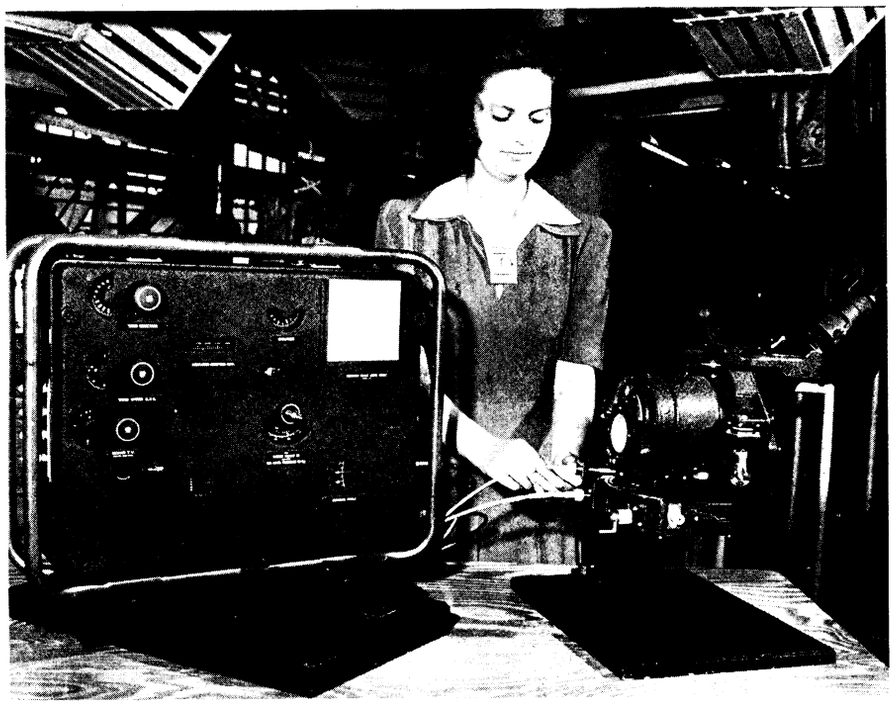

BRITISH BOMBSIGHT, made in America, consists of computer device (left) which automatically makes all calculations necessary for accurate, precision bombing, then transmits this information to the sighting head (right) through which the bombardier peers to see the target. Designated the Mark XIV, it is used on Royal Air Force planes.

MEDICINE

New Treatment Developed For "March Fractures"

➤ THE FAMOUS "What Do You Do In The Infantry" song might as a result of this war get a new middle line, "You break your metatarsal bones and get a special shoe," it appears from an announcement from the Office of the Surgeon General of the Army released by the War Department.

Fractures of the metatarsals and other bones of feet and legs, known medically as "march fractures" because they result apparently from prolonged marches, have been plaguing Army doctors since infantry training courses have been "toughened up." Several hundred cases have been included in formal reports of medical officers and it is estimated there is generally a high range of occurrence in the Army.

A new treatment for the condition when it affects the bones of the forward part of the arch of the foot has been developed by orthopedic surgeons at Camp Wolters, Texas. Instead of ordering the man to bed, these surgeons keep him on duty but build a thin, flat iron bar into the non-weight-bearing part of the sole of his shoe. Sometimes a felt or rubber pad is added to this "march bar." Because the bone is protected from strain, healing is rapid and many man-hours of training time are saved.

"March fractures" have long been a military medical problem, although not until the development of X-rays were they recognized as fractures. Even with X-rays, it is difficult to diagnose the condition because the broken bones are not displaced and the crack may not show.

The accepted theory is that these fractures occur when over-exertion produces extreme fatigue and complete exhaustion of the muscles, thus throwing all the stress directly on the bones. It occurs in otherwise healthy individuals of all ages and physical conditions. The bone is not broken by any heavy blow or specific injury or strain.

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ENTOMOLOGY

Gipsy Moth Wiped Out

D.D.T., used by the Army in combatting mosquitoes and typhus-carrying lice, has added another conquest to its string of triumphs.

➤ D.D.T., the deadly new insecticide used by the Army in combatting mosquitoes and ridding liberated populations of typhus-carrying lice, has added a new conquest to its string of triumphs over man's winged and many-legged foes. This time it is the gipsy-moth caterpillar, forest-stripping pest introduced many years ago from Europe and now one of the most devastating enemies of Eastern timbered areas. The Pennsylvania State Department of Agriculture tells of a spectacularly successful experimental attack on the gipsy-moth caterpillars on a 20-acre woodland tract near Scranton.

On May 3, a solution of D.D.T. was sprayed over the tract by airplane. Five pounds of the chemical was used per acre. Within the following week practically all of the gipsy-moth eggs in the area had hatched—and not one caterpillar survived. And this, despite the fact that there had been two rains over the treated area.

For good measure, the D.D.T. had also killed off all the mosquitoes and blood-sucking black flies in the test plot, as well as all leaf-feeding insects besides the gipsy-moth caterpillars. Yet birds have been observed in the test plot, and cattle grazing across the road from the timber tract have shown no signs of harm.

Shortly after mid-May, C. F. Campbell, senior entomologist in charge of gipsy-moth control work for Pennsylvania, offered a dollar apiece, out of his own pocket, for any gipsy-moth caterpillars found in the treated area. To date he has had no takers.

Since all D.D.T. now manufactured, except small lots assigned for experimental purposes, is being used by the armed forces, large-scale application of the insecticide to pest control cannot be made until after the war.

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STATISTICS

Diabetes Will Outrank T. B. as Cause of Death

➤ STARTING about the year 1950, diabetes will begin to outrank tuberculosis as a cause of death in this country, statisticians of the Metropolitan Life Insurance Company calculate.

Even though deaths from diabetes are progressively increasing, while those from tuberculosis decline, the outlook for a normal lifespan for diabetics is now better than ever.

The growing proportion of older people in the population plus the improvement in the fight against infectious diseases explains the change in rank as killers of diabetes and tuberculosis. In 1909, the statisticians recall, tuberculosis was the leading cause of death in this country, with diabetes ranking sixteenth. Now tuberculosis ranks seventh and diabetes ninth.

The increased longevity of persons with diabetes is the result of modern treatment of the disease. Thousands of diabetics in every walk of life are "contributing notably to the war effort," the statisticians report.

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