



THE GUNAIRSTRUCTOR

THE GUNAIRSTRUCTOR, new fixed gunnery training device in operation at major naval air stations, has reached a high degree of success in training students the fine science of maneuvering aircraft through gunnery runs. Success of the device was further enhanced following inspection by Army Air Forces personnel who indicated a desire to immediately obtain quantities of the Gunairstructor for adaptation to the AAF gunnery training program.

The Gunairstructor is a mock-up of a fighter plane with cockpit, windshield, wing stubs, stick with trigger unit,

Though Not Solving All Problems Navy's Training Device Helps Make Combat Gunnery Real to Students

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dummy throttle, control rudder, and gun sights. Seated in the cockpit of the Gunairstructor, the student gunner views a seascape and sky on a screen. A plane, the silhouette of an enemy aircraft, is projected on the screen and it is the student's job to maneuver and follow

his target by operating the controls.

The instructor sits forward—tandem style in the fuselage—where the engine normally would be. His station is also fitted with control stick, rudder-pedals, a bank of control switches and a *hits* and *rounds fired* recorder.

In front of both student and instructor is a large rear-projection screen, behind which are located two projectors, the Fighter Projector and the Target Projector. Each projector throws an image forward where a large mirror reflects it back to the screen. (A light-tight housing encompasses the entire assembly.)

SIGHT AND SOUND OF GUNAIRSTRUCTOR CREATE THE ILLUSION OF COMBAT

WHEN THE Gunairstructor is put into operation, loud sounds simulate the plane's engine noise and the screen depicts a realistic scene, showing what might be seen from an airplane flying at an altitude of eight to ten thousand feet, the target plane being in full vision. By manipulation of his controls the instructor is able to fly his target plane in any direction to practice shots from full deflection around to no deflection. The pilot causes movements of the horizon and landscape in a manner creating the illusion of being in flight. The sound of the engine pouring into the cockpit from a loudspeaker is varied in relation to various maneuvers. When the trigger is pressed the sound of gunfire is also realistically simulated.

Various flight maneuvers of dive,

climb, bank, and turn can be simulated by movements of rudder and stick in the pilot's cockpit. Proper coordination of controls is necessary in order to create the correct illusion. A training gun-sight similar to the Mark VIII sight is mounted in the usual place, and the standard hand grip with trigger button is mounted on the control stick.

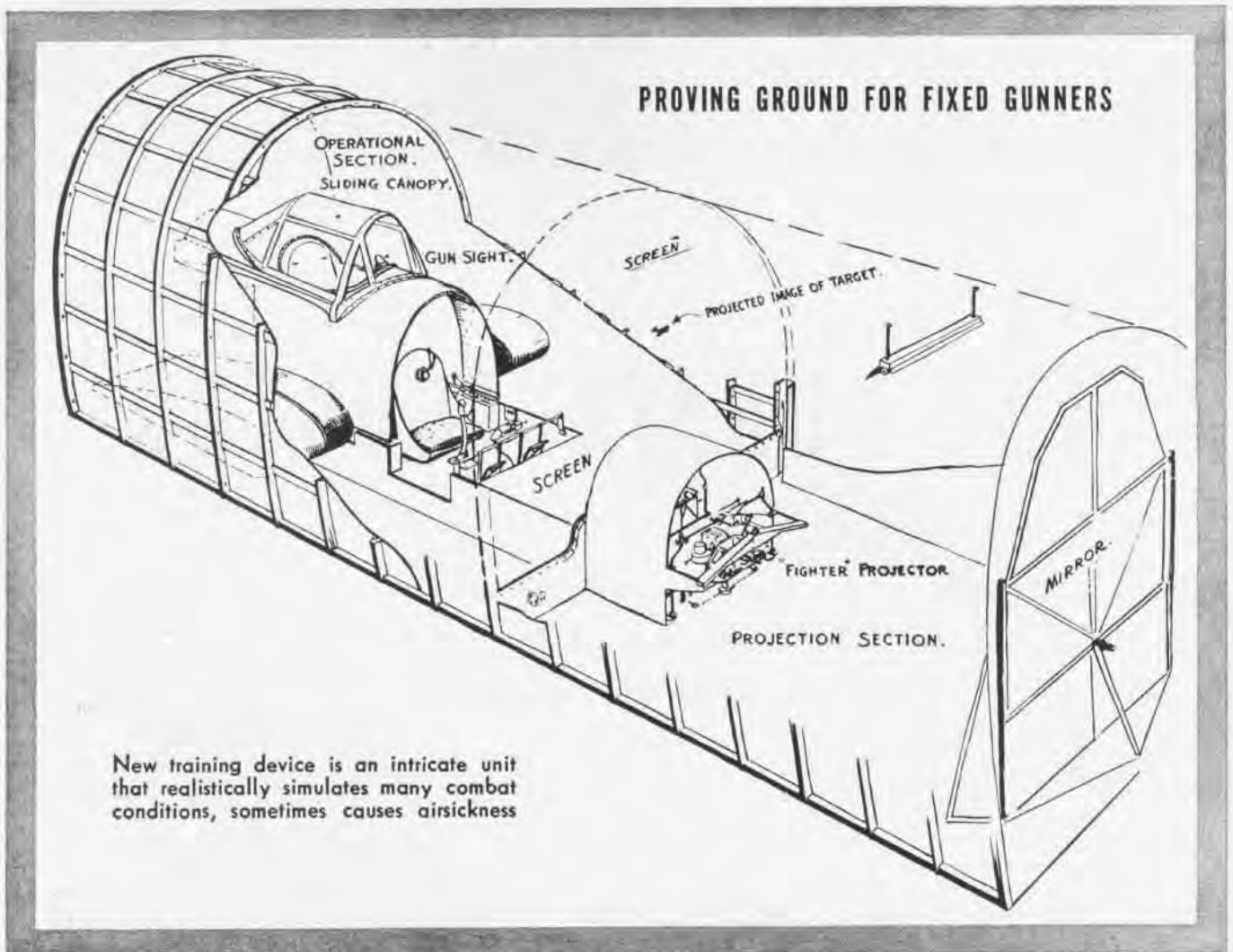
The target plane is projected on the screen against the background of seascape. This plane is flown both by the instructor and the student. Various maneuvers, dive, climb, bank, and turn are all controlled by rudder and stick movements of the instructor. Different attitudes of the target plane can be projected on the screen by a control switch which changes the frames of the 35 mm. film of the target in its projector. In this

manner, stern, quarter, and beam attitudes of the target plane can be presented to the pilot, so that range estimation and deflection are practiced.

Instructor Freezes Action at Will

Correct point of aim can be demonstrated by the instructor for each attitude of the target. He switches on a light which is projected on the screen whenever the trigger is pressed. This training feature helps the pilot learn estimation of correct point of aim. Whenever he makes a hit on the target, a red flash covers the target plane on the screen, indicating the hit, which is recorded in the counting device.

By means of a target maneuver switch the range may be altered, requiring the student to judge the range and hold his fire until the correct firing range has been reached. During a period of instruction, the instructor, by throwing off his projector motor switches, is able to freeze all action in order to analyze any situation which arises with his student.



New training device is an intricate unit that realistically simulates many combat conditions, sometimes causes airsickness



GUNAIRSTRUCTOR IS A TWO-MAN MECHANISM IN WHICH THE INSTRUCTOR ATTEMPTS TO OUTWIT HIS STUDENT BY MANEUVERING TARGET ON SCREEN

This is a very desirable feature in teaching range estimation, and the correct mil lead for a particular situation, as such instruction cannot be duplicated in actual flight. The switch turning on the "correct-point-of-aim-light" enables the student to compare estimated point of aim with indicated correct point.

Electrically operated, the Gunairstructor's power requirements are 220-110 volts, A. C., 60 cycle, 15 amps. or 110 volts, A. C., 30 amps. Gunair-

structor dimensions are: 35 ft. long, 11 ft. wide, 10 ft. high. The trainer can be placed in the hangar or some convenient place on the station.

Training of enlisted personnel for operation of the Gunairstructor is arranged through the Bureau of Aeronautics, Special Devices Division. The training period is one month. Those who wish to operate the Gunairstructor should have a knowledge of flying and link trainer experience. Maintenance

men should have radio, electrical, or mechanical experience.

It is felt that the Gunairstructor, with all its desirable features, does not solve all problems of the fixed gunner, namely the important problem of where and how to commence the approach. However, increased accuracy and better procedure in making approaches have been reported by all activities using this device in fixed gunnery training as one phase of a comprehensive curriculum.