

Do You Know?

Insects kill more trees annually than forest fires.

Julius Caesar used army *pigeons* as messengers nearly 2,000 years ago.

Pineapple production in Cuba in 1945 will be some 40% greater than in 1944, it is now estimated.

Very few of the *marine bacteria* plentiful in ocean waters cause diseases in the habitants of the sea and none cause diseases in man.

Rubber-lined iron pipe is used successfully in pumping water from coal mines when the water carries enough sulfur to corrode unprotected metal.

Sand containing calcium chloride is used on icy roads to prevent skidding; 50 pounds of the chemical to a cubic yard of the abrasive is the usual mix.

Spain produces annually approximately 80,000,000 *bottles* of all kinds; one-half are wine bottles and less than 1% milk bottles and fruit jars.

Postwar household *furniture* made of aluminum and magnesium will be so light that the housewife will be able to move it around without the help of her husband.

Diluted *lemon juice* completely loses its vitamin C potency after four days, but oxidation can be prevented by the addition of pyrophosphate so that 16% is present after 30 days.

Birds in perched nests usually are helpless for many days after being hatched, while the young of birds that nest on the ground are able to run and feed soon after hatching.

Airplane *cargoes* have now included a shipment of bees to Alaska, frogs from Argentina to U. S. sugarcane areas, baby chicks to the West Indies, and wasps from Cuba to Mexico to kill the Mexican black fly.

Apples are being stored experimentally under water in a Canadian lake; 200 tons of them are suspended 10 feet below the surface in nets under piers and will be used later for apple by-products if satisfactorily preserved.

MILITARY SCIENCE

Shooting Doesn't Hurt!

With the new frangible bullet, you can be shot at with live ammunition that will pierce armor plate, and you won't be hurt at all.

► YOU CAN now experience the feeling of being shot at by a machine gun, having live ammunition that will pierce ordinary armor plate fired at you, and you won't be hurt at all. The secret behind this dramatic experience is a new frangible bullet, that is, a bullet with a slug that is easily broken when it strikes special armor plate.

Developed for the use of Lt. Gen. Barton K. Yount's AAF Training Command, the frangible bullet now permits student gunners to shoot live ammunition from real B-17 and B-24 bombers in the air at specially built target fighter planes. These fighter planes, piloted by ex-combat men, duplicate every known maneuver of enemy fighters in hot aerial sham battles.

The frangible bullet is the result of research done at Duke University by Maj. Cameron Fairchild. It is made from a combination of lead and plastic material, hard enough to withstand being fired through a machine gun and able to pierce ordinary armor plate. But the slug will spatter harmlessly into fine powder, like salt, on contact with duraluminum alloy armor, especially treated, and mounted on target planes, which are a modification of the P-63 "Kingcobra."

Like a drop of water shooting through the air at high velocity, the slug of the frangible bullet disintegrates upon striking the target. Seated in a plane only 1,000 inches away from a standard machine gun, you can be shot at with frangible bullets. They spatter over the wings and even hit the bullet-proof glass windows around the cockpit. You hear only "pops" like those made when a cork is pulled out of a bottle. If you hold your finger up behind the glass, and have a bullet fired point blank at your finger, you only feel a slight sting when it touches the glass.

In practice aerial missions, when student gunners hit the target plane with frangible bullets, a beacon lamp flashes brightly in the nose, where the P-63's gun is usually located, to tell the gunner whether or not he scored a hit. Thus gunners develop the ability to recognize

the split-second opportunities they will get later on in real combat to kill an enemy plane.

Right from the start of his training, the gunner gets the feel of the weapons he will use later on. One of the first devices he encounters is the "Spotlight Trainer." A beam of light races along a circular wall, tracing a pattern that represents the speed and movement of an attacking enemy fighter. The trainer's hollow guns contain photoelectric cells. When the student lines up his sights he presses the trigger, exposing the photocell. If he has aimed correctly, the light rays from the spot on the wall register in the cell, and the student's hits are indicated on an automatic sounding and recording device. The average student increases from 350 to 850 hits per thousand shots during this phase of training.

Designed to bridge the gap between theory and actual combat, the Jam Handy trainer gives student gunners the "feel" of air warfare by letting them fire bursts of light instead of bullets at enemy airplanes on a movie screen. The trainer consists of a synthetic gun, two 16-millimeter movie projectors and an ordinary screen. Four gun positions are located in front of a cluster of five synchronized movie projectors. In front of them is a huge concave movie screen. The whole unit is designed to simulate actual flying conditions. Pictures of Jap and Nazi planes are thrown on the screen. The student must accurately compute the relative speed and apparent motion of the attacking plane so as to calculate the proper lead or deflection in placing of his sights in order to score a hit.

Following the training with synthetic devices, student gunners go out to gain practical experience with real guns onto firing ranges where they shoot at stationary and moving targets, and at moving targets when they too are moving on the deck of a truck.

The next step takes them into the air, for sham combat. Finally they graduate and go overseas with knowledge that surpasses that of any enemy gunner, knowledge that will help them to bring the war to a speedier conclusion.

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