Would a Falling Bullet Kill You?

It Might Give You a Headache, Says Army Captain Who Describes First Scientific Tests Revealing What Happens When a Bullet Is Shot Straight Upward

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Conducting the world's first scientific tests to determine exactly what happens when a rifle bullet is shot straight upward, Capt. Edward C. Crossman discovered astonishing new facts about the rise and fall of the regulation army rifle bullet shown at right, revealing that a falling bullet, if it hit you, probably wouldn't cause anything more serious than a headache

ON THE shelter platform, above our heads, the Browning machine gun remarked 10 times, staccato: "Tat-tat-tat-tat," while three stop watches clicked with the first shot, and commenced their busy ticking. Above us two machine gunners ducked under the cover of their extemporized steel shelf, while we stood in security beneath half an inch of armor plate covering the 10-foot-square platform of the observation tower.

The first burst of shots in the first scientific attempt ever made to find out exactly what happens when you fire rifle cartridges straight upward into the air, had just gone, and we waited to see what would happen.

This 175-grain boattail bullet remained in the air 67 seconds; yet others of the same type, discharged at the same instant, stayed aloft 107 seconds, or 40 seconds longer

Around our tower—four piles driven into the mud of a Florida lagoon, with platforms built over the piling—there stretched open water for hundreds of yards, all quiet, except for the little ripples stirred by breezes.

We stood perfectly quiet, ears alert for the splash of the returning bullets if the machine gun volley should return within earshot. Then, when the hands of the stop watches had just crossed the 50-second mark, there came a queer whirring whistle. A hundred yards or more away, something was throwing up sharp splashes on the quiet water. The 10 shots from the Browning were returning. The time from first to last shot was about four seconds.

So began a remarkable series of tests that proved conclusively that not one of the several types of rifle bullets has power enough, on its return trip to earth, to bury itself more than two thirds of its length in firm sand; nor could it inflict a serious wound if it should strike a man's head incased in any fairly firm headgear — in fact, it probably could do no more damage than to cause a headache.

Another volley from the Browning, and this time greater luck was with us. Although the bullets in this burst projected probably 9000 feet into the air, and traveled for about one minute up and one down, they fell all about the tower. And as they fell there came a yell of exultation from the machine gunners above, following a heavy "clang" and a splash of water.

"I caught it in me bucket! How's that for shootin'?" yowled a machine gunner. Sure enough, one of the returning bullets had struck fairly in a galvanized pail of water on the platform near the gun! It had merely made a dent in the bottom of the pail. Another bullet struck the pine boards of the platform where they extended slightly beyond the armor covering, making a dent about a third of an inch deep, with the diameter of a lead pencil; but the bullet did not even stick in the indentation.

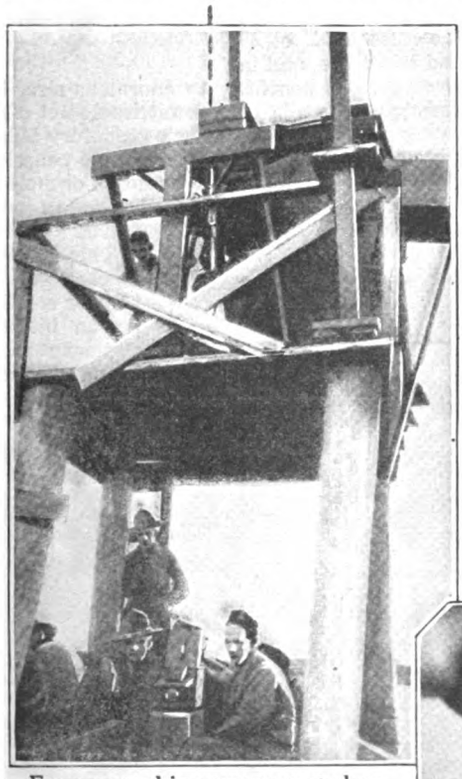
In these tests we used the standard infantry and machine gun cartridge of the American service, bullet of 150 grains, velocity 2700 feet. But when we tried out the 175-grain boattail bullets—a remarkable new type with tapering tail that doubles the range of a rifle—some of us nearly came to grief. After a minute and seven seconds there came the bullet whirr, louder than that of the service bullet, and then the usual splashes on the surface of the lagoon. Then the splashes ceased, although not all of the bullets had been accounted for. Some of the gunners had stepped out of their shelter, and the watches had been stopped—when suddenly—certainly half a minute after the burst had landed, there came again the bullet whirr. Machine gunners ducked for shelter — and down whirred eight or 10 more shots.

This 150-grain army service bullet went up nearly two miles and was gone 49 seconds before it returned, tail downward, to dig itself into the sand as shown below

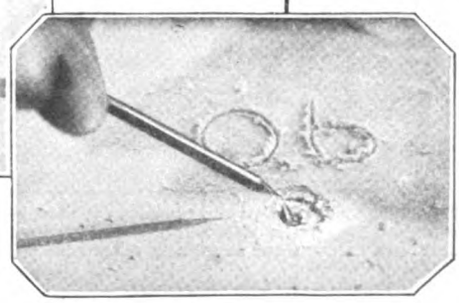
Whereupon we discovered an astonishing fact—that when fired from a machine gun, boattail bullets vary widely in their time of flight. In the next burst we found that the bullets returned in a cluster in about 67 or 68 seconds, while a second group returned fully 40 seconds later. Later we repeated this sort of firing on the hard sands of Daytona Beach, Fla., and found that the boattail bullets were as likely to return to earth sideways as to fall as most bullets do — base first. This led to the conjecture that the time discrepancy is due to the way they turn and travel on their return flight (a sidewise flight resulting in increased air resistance), and that the variations may be due in part to vibrations in the machine gun.

Normally, when fired vertically, a bullet of any sort returns in the position in which it went up. If you fire it normally, point first, it returns with the point still upward and the base downward. If you invert it in the shell and fire it with the point down and the flat base up, it returns point down and base up, but in much shorter time than the bullet normally fired.

We tried out various types of guns and bullets in this vertical firing. The results showed that almost any bullet fired into the air remained away 30 seconds or more. The little .22 long rifle, with its 1000 or 1100 feet a second velocity, took 35 seconds. The large, slow .45 automatic pistol bullet took 39 seconds. The .30-30 bullet took 50 seconds, or nearly as long as the service sharp point. The Remington .35 auto-loader bullet, 200 grains at 2000 feet a second, took 58 seconds. The quickest trip recorded was that of the 175-grain boattail, which was loaded inverted. It returned in 21 seconds, as compared with 67 to 107 seconds when fired normally.



From a machine gun mounted on the top platform of this tower, bullets were fired straight upward. Half-inch armor plate covering the lower platform protected observers from returning missiles



Not one of the rifle bullets tested returned to earth with power enough to bury itself more than two thirds of its length in the sand