

Dropping Death from the Skies

The bomb dropper and his murderous winged weapons which deal quick and ghastly death

By Carl Dienstbach

Photos © Kadel and Herbert

HARDLY had the airplane been adopted as a military weapon some four years before the outbreak of the great European war, when the possibilities of bomb dropping began to be considered. To the general public at least, it seemed easy to wipe out a fort, to demolish a bridge, or to blow up a battleship by the simple expedient of dropping on it a hundred pounds of high explosive. Engineers knew better. Long before the first Zeppelin flew over London, it was pointed out that it was hard to hit a target on the ground from an elevated platform moving at fifty miles an hour and more, because allowances had to be made for deflecting winds for the horizontal motion acquired by the bomb from the airplane. To hit a target the plane's height and speed over ground had to be known with almost impossible accuracy, and even if known, an infinitesimal hesitation in releasing the bomb would spoil the aim. A truly super-human sense of time was demanded. The difficulty, only vastly exaggerated, is the same as that which a hunter experiences in hitting running or flying game by aiming ahead of the target. Whether the target moves swiftly or the gun and the missile have a fast motion of their own, aiming ahead causes all the trouble.

On the whole, the public has been more

far-seeing than military engineers. It reckoned with moral effects in its own unreasoning way rather than with physical principles. Bomb-dropping has become an indispensable mode of attack. The civilians of all the warring powers protest against it in vain. Germans denounce the "baby killing" tactics of the Allied aviators as hotly as England denounces the German slaughter of defenseless woman and children. Whether or

not fortified places are bombed, civilians invariably suffer. A dozen bombs may be aimed at a munitions factory. One, perhaps, finds its mark. The rest are scattered over a residential quarter with an effect too ghastly to be described. Aim at a powder mill and you hit a hospital.

As the war progressed, bombing became more accurate, although the misses still far outnumbered the hits. The reason for this increased accuracy is revealed in the truly

remarkable photographs of French bombs which we publish herewith and which have been permitted to reach this country by a lenient censor.

The bombs pictured have been called "aerial torpedoes." They do bear an outward resemblance to the naval torpedo. For all that, the designation is incorrect. The internal construction bears little resemblance to that of a naval torpedo. The bomb shown is provided



Modern "fletched" airplane bomb. Note streamline form, size, and weight, as shown



A wonderful photograph taken from a French airplane while bombing a German factory in Lorraine. Seven bombs may be seen in the air, all released together by the same machine

with tail planes to make it fly straight—a tail which has the same effect on the bomb as the tail feathers have on an arrow. In addition there is a “propeller” to sensitize the percussion fuse during the bomb’s fall.

Particular attention is directed to the extraordinary photograph which shows seven bombs flying through the air after having been released nearly simultaneously. They do not drop. They liter-

ally rush through the air like naval torpedoes, thereby to a certain extent justifying their alias. Released from a machine which is traveling at a speed of ninety miles an hour, they necessarily have, for a time, the forward motion of that machine and actually travel horizontally. Realizing all this, their designers gave them an ideal streamline form. In the picture only the lowest bombs have begun to turn downward

visibly and to drop vertically. The uppermost one is seen gliding like an airplane itself in spite of its great weight, in spite of its comparatively small surface and in spite of the fact that it has only a belly in place of wings. The moment bombs drop from their tubes (one-third as slowly as they are swept ahead by the plane) they are swung by momentum and

air pressure on their tail planes into a nearly horizontal position. In that position their shape encounters practically no resistance from ahead but a great resistance in the direction of gravity, not only because in trying to fall they must cleave the air with their big broad sides, but chiefly because in dropping they are now opposed by the inertia of the air encountered in falling, and, in addition, the much greater amount of air encountered in moving ahead. As

long as momentum continues, falling is greatly retarded, and, with practically no head resistance, it is bound to continue indefinitely. But as soon as actual falling begins, the head dips a little, aided by the tail planes. In this position the fall itself will preserve and increase the horizontal speed, just as in coasting down hill in a sleigh. If the total surface of a correctly designed bomb were not so extremely small in proportion to its weight, it would seemingly never reach the ground.

Balloonists sometimes threw empty bottles from their baskets. They marvelled at the crazy antics performed by

the bottles and the long time they took in reaching the ground. It was the approximation of streamline form that delayed the bottles.

Bombing is like torpedoing. Bombs have assumed the shape of torpedoes not to prolong their fall, a thing in itself rather unfavorable, but because the lower winds have practically no influence

over a torpedo. Guided by its tail, the torpedo-shaped bomb simply turns its sharp nose against the wind and cleaves it without deflection.

That is why bomb-dropping is more accurate than it was at the outbreak of the war. Moreover, bombs are dropped on the shotgun or blunderbuss principle. In other words, they are released a half a dozen or more at a time. One at least will find its mark. By releasing bombs in quick succession,

errors in judging altitude and speed are readily corrected, because the bombs scatter principally along a line parallel with the path of the machine.

Are You Afraid to Look at Yourself in a Mirror?

Dr. Martiri has recently found that certain patients are afraid of mirrors, — a result of watching the change in appearance as emaciation progresses. When a dyspeptic is cured his horror of looking in a mirror persists. This is called *cattotrophobia*.



Slipping a bomb into an airplane. The tail is being inserted smoothly into the discharge tube