

About anti-aircraft artillery

Introduction

When I wrote my article about Hungarian anti-aircraft artillery, I thought of a photocopy of an article from Folk og Värn, Nr. 4/1942, which I once got from my father. The article describes in an easy-to-understand way how anti-aircraft artillery works and some of the instruments used in connection with fire control.

The article is interesting today partly as a general description of the anti-aircraft artillery of the period, and partly as a description of the material that was part of the Danish anti-aircraft artillery until 29 August 1943. The material that was part of the anti-aircraft artillery of the individual countries is of course different, but basically, it will be material that performs the same functions as described in the article.

The article's orthography and spelling are adapted to contemporary usage; the set-up of the illustrations is adapted to the present presentation.

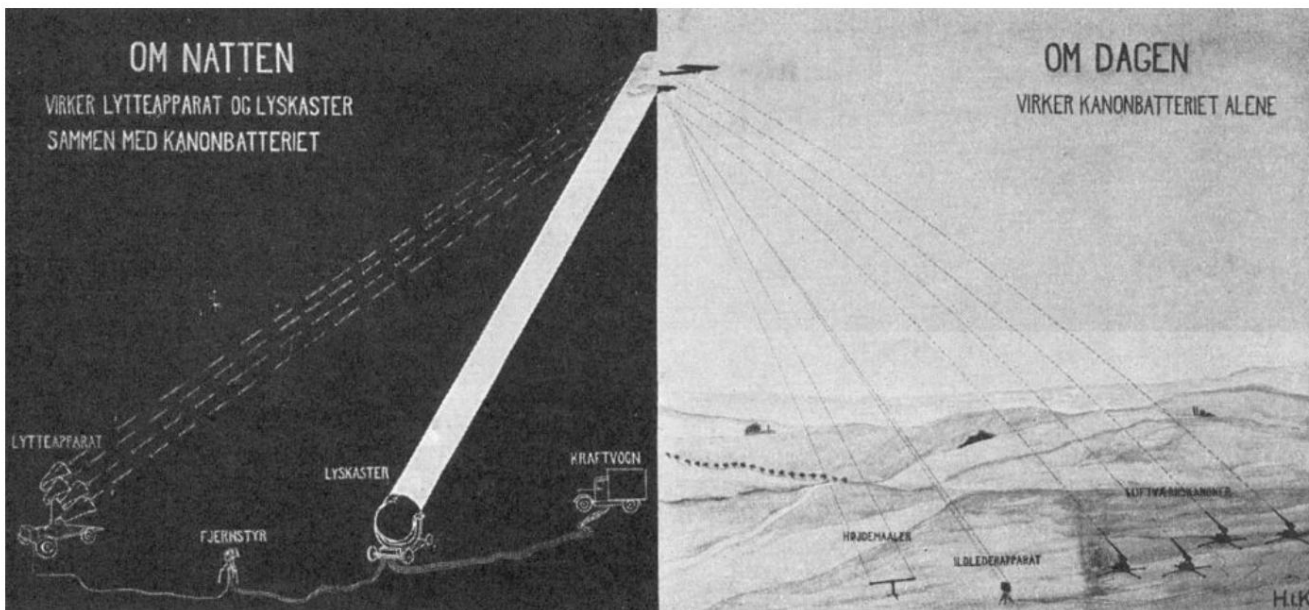
"The Air Defense Artillery and the Night Flyers"

by Captain Lieutenant E. Fisker

"The air-raid sirens start with their eerie, plaintive hoot, and the night is torn apart by the cutting beams of light from the searchlights. They seem to fly aimlessly across the sky, but suddenly they catch the machine. All the beam beams converge in one point. The pilot is as if caught in a luminous spider's web. And in the same second, the shooter engages.

The light anti-aircraft artillery hammers its frenzied, sharp thak-tak-tak into the night, while the luminous trails of the searchlights are drawn against the sky - a sight at once picturesque, eerie and apparently so confused.

But the confusion is also only apparent. The anti-aircraft artillerymen work with planning and care, which is the first condition for a successful outcome of his work. A study of the picture below will give a small idea of the whole intricate interplay that he must master.



It is a quiet summer night, and the *listening device* (see far left) already picks up the enemy machine at a distance of half a dozen kilometers. It then adjusts its listening funnels in such a way that the sound is heard as clearly as possible, and thereby determines the exact direction to the still invisible machine. This

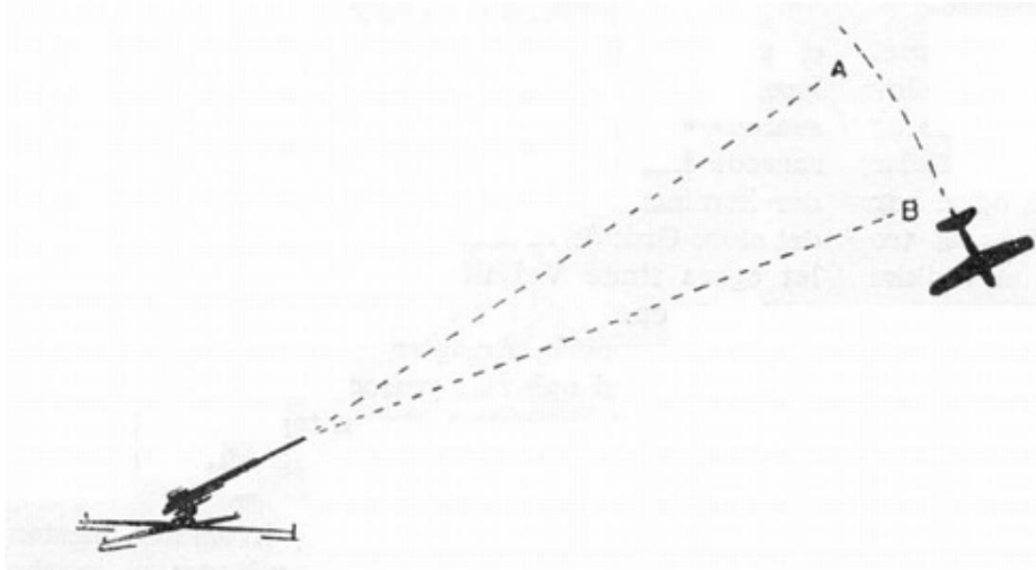
direction is transferred from the listening device to a spotlight using the so-called *remote control*.

This thus functions as a kind of command station that electrically transmits the listening device's commands, so that the still-darkened spotlight already now closely follows the listening device's movement.

Then the searchlight suddenly dims, and the machine's dark silhouette stands out in the light beam. Its range is approximately 10 to 14 kilometres, and it has a brightness of just over 800 million normal lights, which means the same as if the light from more than 10 million powerful electric bulbs were gathered in a bundle.

And now it's the guns' turn. The distance to the machine is managed by a very fine distance meter - the so-called stereo telemeter (called an altimeter in the picture below) - which is able to find the machine's distance and height above the ground up to 20 kilometers.

But then we come to the most difficult point of the matter: getting the guns aimed and getting them to follow the aeroplane, which is still rushing forward through the night.

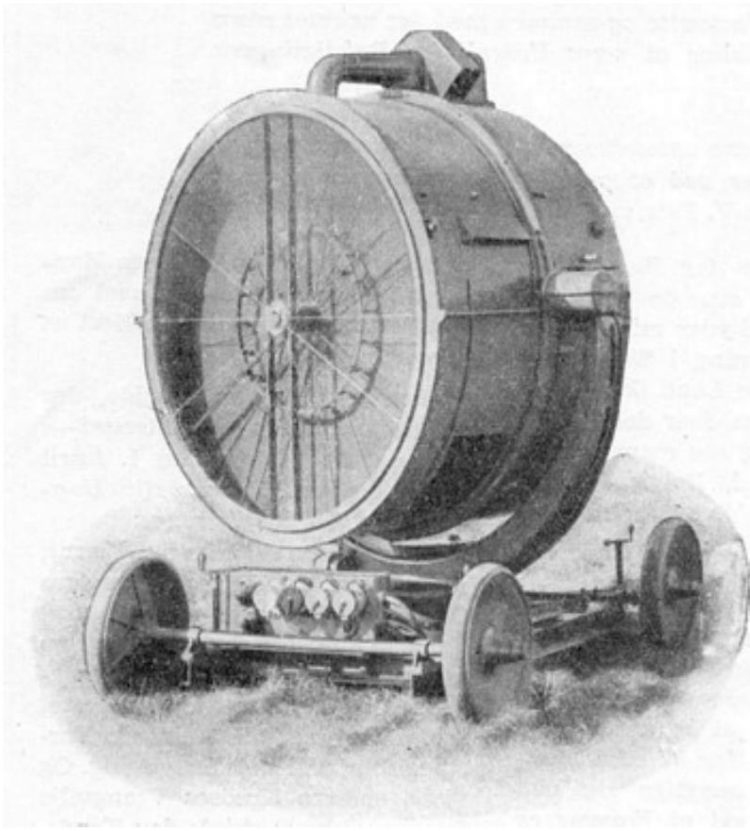


From the sketch, you will understand that if you fire the cannon at the machine without further ado while it is at point A, then the machine will be long gone when the grenade reaches it, as the machine during the grenade's flight time has managed to move to, for example point B. The artilleryman must therefore, in the same way as a hunter, keep a good distance ahead.

But this piece is not the same all the time. Both the changing speed, direction and height of the machine come into play, and when you also know that wind as well as barometric pressure and temperature are also involved, it is no small task to find out *how* far ahead of the machine at any time, to be held.

The gunner, however, calmly leaves this to the fire control instrument, the *corrector*, who must direct the guns. And the corrector does it cleverly: Either by purely mechanical means like the *Vickers* corrector or with *electrical* help like the *Gamma* corrector. Both types are part of the Danish army's armament.

Perhaps the best way to get a small idea of the complicated mechanics of such a calculator is when you hear that the *Vickers* proofreader has over 6,000 individual parts assembled in a box that is approximately 80 x 80 x 80 centimetres. In this respect, the *gamma* corrector is not significantly behind - and it even has over 30 small electric motors to pull the entire intricate mechanism.

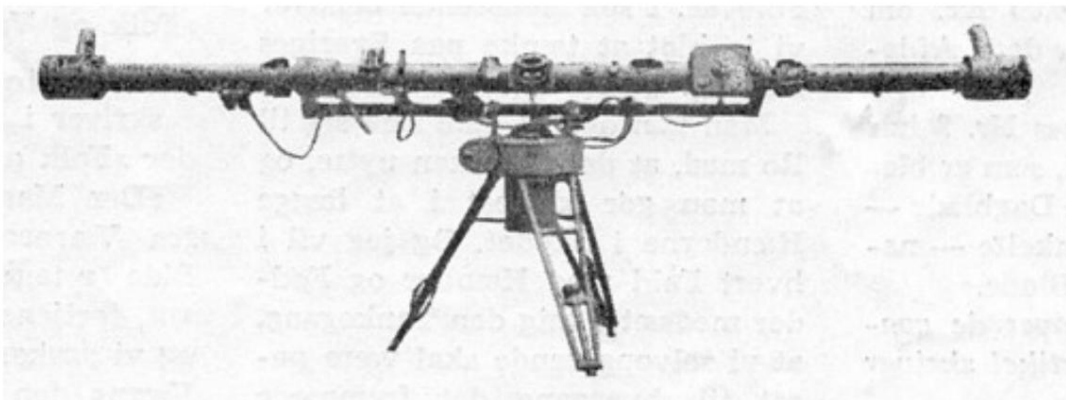


With the help of this fine machinery, the corrector accomplishes the task and sends his orders to the cannons, which they reach in the form of the movement of a number of hands on some directional clocks sitting on the cannon.

The gun's crew then only have to aim the gun in accordance with the instructions of these clocks, without worrying about the position of the aviator - and then, of course, "feed" the gun with the maximum number of cartridges possible. Such a 75 mm cannon can handle 20-25 shells in a minute, - and with just two minutes of firing, a battery can therefore send over a ton of steel towards the night fliers.

When the grenade reaches its destination, it is caused to explode by the impact of a firing pin into its cap. This is provided by a small clock built into the shell and which is carefully set before the cartridge enters the gun. Incidentally, this setting takes place with the help of a tempering machine.

Does the anti-aircraft gunner now have any chance of hitting? Yes, he has - and the development has progressed very rapidly.



Stereotelemeter M. 1935

In 1916, an average of 11,000 rounds were used to shoot down an aviator. In 1917 the rule was approximately 8,000 rounds; and today, significantly fewer shots can be counted on.

But: - More than 350 men are needed to operate the batteries mentioned here - cannons, searchlights, wagons, etc. -

and one will therefore understand that modern anti-aircraft artillery is a very complicated mechanism that makes the greatest demands on all its personnel and all its equipment.

It is therefore no unimportant matter that, for our part, the majority has been able to be manufactured from the Danish army's own workshops."

Per Finsted