

## AIR DEFENCE IN THE GREAT WAR

### Introduction

**Slide 1.** Artillery has been queen of the battlefield since 1132 when a Chinese general, Han Shizhong, used it in the capture of a city in Fujian. And indirect fire probably dates from 1759 when the Russian artillery fired over the tops of trees at the Battle of Kay. So artillery and indirect fire were relatively mature concepts in the First World War.

**Slide 2.** In comparison the aircraft is was very modern invention. The Wright Brothers history-making flight occurred less than 11 years prior to the outbreak of the Great War, and although in that decade great strides were made in design, **Slide 3** the aircraft of 1914 were slow, flimsy machines which no general had really thought how to use. After all this was the first conflict in which aircraft played a significant part.

Consequently defence against air attack (other than by balloon) did not enter military consciousness until the War commenced. Air defence, starting from a zero base, had to advance probably more quickly than any other branch of military science. And the anti-aircraft gunners faced a novel problem for not only did their targets move at a rate considerably greater than anything previously encountered, but they could move in three dimensions all of which affected the gunnery solution. I have made this point because some of the techniques and equipment which I will discuss tonight could only be described by the most charitable of Gunners as quaint. So before you descend into gales of laughter, please remember how new this branch of gunnery was during the Great War.

### Gallipoli

Enemy air activity at Gallipoli was slight throughout the campaign but with such a small beachhead any enemy observation was dangerous and liable to bring down accurate fire from Turkish artillery and naval guns. **Slide 4.** Since the Anzac position had no AA guns at first, special emplacements were constructed to allow 18-pounders to shoot at aircraft. The method was simple: a hole was dug in the ground and the trail of the gun lowered into it so the muzzle pointed up in the air. In late August three 3-pounder Hotchkiss AA guns arrived. All the manuals were in Japanese but fortunately a Japanese-speaking digger was found to translate the manuals and produce range tables.

After being buzzed by a low flying German airplane on 9 September 1915, Major General Alexander Godley, Commander of the New Zealand and Australian Division, fired off a request to Sir Ian Hamilton for aircraft and guns to defend Anzac from aerial interlopers. Hamilton had no aircraft to spare but did send a 12-pounder naval AA gun. A coordinated AA defence with machine guns was organised. Each of the four divisions then holding the line around Anzac Cove designated two machine guns for AA use, emplacing them so as to cover the entire position. Despite the effort, no enemy aircraft were shot down by AA fire over Anzac.

## The Western Front

When the AIF arrived in France in 1916, defence against enemy aircraft was provided by AA units of other Allied forces. Despite this most Australian units had personnel nominated for AA duties. **Slide 5.** Australian Field Artillery batteries had two Lewis guns on a special tripod mounting for use against any enemy planes which might attack the battery position. In 1918 a famous German flyer met his doom at the hands of one of these gunners. Gunner Robert Buie, an AA gunner with 53<sup>rd</sup> Field Battery, was credited with being responsible for downing the famous German air ace the 'Red Baron'.

Several claimants have been credited with firing the fatal shot but Buie was given the credit at the inquiry immediately following the incident and his Battery Commander steadfastly maintained Buie and Evans were the gunners responsible for von Richthofen's downing. – Support your local sheriff!

Most of the AA defence for the AIF on the Western Front was undertaken by specialist British AA sections. Although the British Army had appeared to neglect the threat from aircraft before the war, **Slide 6** the Royal Navy had taken a keener interest in the subject after the spectacle of enthusiastic pilots flying at 1,000 feet over the battle fleet in home waters. Apart from establishing the Royal Naval Flying Service, it also investigated the provision of high angle armaments for warships. This resulted in the introduction of the 3-inch and 4-inch QF guns in 1913. When the war started in 1914, the Army took an interest in the 3-inch gun as its principal long term AA gun but wanted to adopt a modified version. This would have to take its place in the long list of items in the Government's production programme and thus would not be available for some time. **Slide 7.** To fill the gap, some 13-pounder QF guns of the Royal Horse Artillery and 18-pounder QF guns of the Field Artillery were modified and mounted on special high angle platforms. AA sections were formed in the Royal Artillery.

The 13-pounder's light weight and simple construction suited it for mounting on a lorry chassis to give it mobility, but it needed revised recoil gear, a new mounting and AA sights for high angle fire. In this form it became the 13-pounder 6 cwt, or 13-pounder QF Mark 3. Issued in 1915, it had a poor ballistic performance. The 18-pounder was modified, its barrel calibre being reduced from 3½-inches to 3-inches, thus permitting a 13-pounder shell to be fired with a bigger charge without stress problems. This was designated the 13-pounder 9 cwt.

**Slide 8.** When the Army version of the 3-inch first appeared, it was designated as the 3-inch 20 cwt. It fired a 12½ lb shell at a muzzle velocity of 2,500 feet per second. In 1916 a 16-pound shell was adopted with the muzzle velocity reduced to 2,000 feet per second. For defence against low flying aircraft, Lewis guns mounted on special AA stands were used. When the war ended in 1918 there were in 225 AA sections with:

- 20 x 13-pounder 6 cwt guns,

- 306 x 13-pounder 9 cwt guns, and
- 373 x 3-inch 20 cwt guns.

Defence against low flying aircraft was undertaken at unit level. For example, an artillery battery had two Lewis guns mounted for AA protection.

**Slide 9.** A typical AA section organisation in the British Expeditionary Force in France in 1917 is shown on this slide.

### Fire Control Instruments

**Slide 10.** While the guns themselves showed considerable improvement, developments in the methods of directing their fire were relatively slow. By the end of the War most aircraft had a top speed well in excess of 100 mph. Against these fast-moving targets the gunners had, not only to confirm that the target was hostile, but also to know:

- the range to the target to allow the setting of the variable time fuse,
- the angle of sight for gun elevation, and
- the target's speed and direction of travel so that aim off could be applied.

**Slide 11.** Some equipment designed for other purposes, like the UB 2 rangefinder, was pressed into service and other rudimentary instruments designed. Apart from the machine guns there was little thought of directly hitting the target. The aim was simply to have a shell burst as close as possible to it and hope that fragments would do the rest.

But against targets whose speed could exceed 50 metres/second something better than guesswork was needed to estimate the direction and amount of aim off.

**Slide 12.** The Wilson-Dalby sight was introduced in late 1916 and was the first attempt at an AA predictor. It is described as a rudimentary electronic computer to provide tachymetric prediction. I stress the term rudimentary. It was first and foremost a tracking device with one for each gun. It was operated by two men: the first tracked the target through a sight – this provided tangent elevation and rate of traverse to the computer. The second man entered target range relayed from the rangefinder. This data resulted in corrections for direction and amount of aim off. This was read off by the second operator and passed to the gun by line and applied manually. Suffice to say an AA section CP was a busy place. **Slide 13.** The two Wilson-Dalby trackers are seen at left and right, the UB 2 rangefinder in the background whilst the IFF system is nearest the camera! Note that with only one rangefinder the two trackers and guns could only engage one target.

The accuracy of the resultant fire depended on the ability of each operator to do his job with great steadiness and accuracy.

Trying to acquire and track a speedy target through the two-metre long rangefinder must have been an interesting experience.

Few aircraft were actually directly shot down, each requiring an average 4,000 - 4,500 rounds, but guns were often employed in aerial barrages to deny an airspace to aircraft rather than to simply shoot down individually targeted planes. German fighters countered by attacking at low level. AA guns would continue to fire but the rounds would then explode above their targets. But it brought attacking aircraft within range of defensive machine guns.

## **Conclusion**

**Slide 14.** And so the First World War ended with the aircraft definitely in the ascendancy. Air defence had come a long way but there was still a large gap between desired and real capabilities. Like much of the post-war Australian Army, anti-aircraft defences were placed on the back burner and it was 1925 before the first AA battery in the Royal Australian Artillery was raised. It was not until the prospect of another world war arose, and the threat posed by the much more modern aircraft in existence then was appreciated, that resources were allocated to air defence.