



A QUESTION OF CALIBRE

WHY DID THE RAF PERSIST WITH THE 0.303in MACHINE-GUN?

In response to Greg Baughen's article in *TAH32* on the RAF's readiness for war in 1940, reader Richard Davis asked a very good question — "why did we go to war with pop guns?" — i.e. 0.303in-calibre rather than 0.50in machine-guns? *TAH's* armament specialist **MARK RUSSELL** explains the rationale behind the RAF sticking with the ubiquitous 0.303in



THE QUESTION OF why the RAF stuck with the 0.303in-calibre machine-gun during the inter-war period — and even well into the Second World War — instead of using the 0.50in-calibre, as used by the USAAF (the Luftwaffe also opted for larger-calibre machine-guns as standard) has long been discussed. This article takes a look at why the RAF chose to standardise on 0.303in guns and assesses if this was a reasonable decision; and considers the armament of both fighters and bombers.

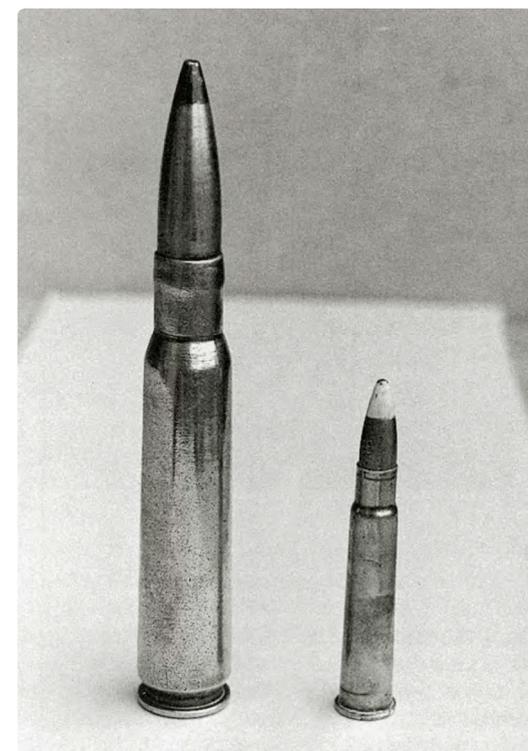
THE HERITAGE OF THE 0.303in GUN

Ammunition of 0.303in-calibre had been the British military's choice since it began using the machine-gun, and the Royal Flying Corps (RFC), as part of the regular British Army, therefore adopted the same proven designs during the First World War. The 0.303in was also entirely fit for purpose in terms of its ability to destroy aircraft of the time; and, while the RFC/RAF experimented with heavier-calibre guns for attacking Zeppelins during the First World War, and continued these experiments during the inter-war period [see the author's *Bring out the Big Guns in TAH28 — Ed.*], these heavier-calibre guns were only ever envisaged as being used in specialist aircraft focused on the bomber-destroyer role. The machine-gun was still seen as the key air-to-air weapon for both fighters and bombers.

The RAF had thus to an extent "inherited" the 0.303in machine-gun and, given that it had proved to be effective in the First World War, it is understandable why the air arm persisted with it into the 1930s; until the advent of metal-framed, and ultimately all-metal aircraft, there was no reason to see it as being unable to do the job in future. Having said that, towards the end of the First World War the Germans had begun to introduce armour into aircraft, and so the RAF started to think that a 0.50in-calibre gun would need to be the standard aircraft weapon to cope with aircraft armoured in this way.

The RAF chose performance over armour, however, so in the 1920s and into the 1930s the RAF did not armour its aircraft. Wartime armament specialist G.F. Wallace believed that this led the RAF to sideline the 0.50in gun. In addition, it was felt that the extra power of the 0.50in round was not needed on aircraft structures at that time, since they were not armoured.

Yet the 0.50in gun was not wholly dismissed. The RAF and Air Ministry continued to consider whether a Vickers gun of this calibre could replace the standard Vickers 0.303in gun, but in



ABOVE The Browning 0.50in rimless round (left) and a British rimmed 0.303in round side by side, illustrating the considerable difference in size between the two. As the British Army used 0.303in rimmed ammunition for its rifles and machine-guns, it was thought that it would be wise for the RAF to standardise on the same, despite rimless rounds being better for machine-guns.

1928 finally decided that the 0.50in gun "had no sufficient advantage over the 0.303in weapon".¹ There were also considerations of economy at play; the RAF had large stocks of 0.303in guns and were expected to use the same ammunition as the Army (which used cordite as the propellant), both factors which militated against any attempt by the RAF to go its own way.² The nitro-glycerine-based cordite was less than ideal as a propellant for various reasons, one of which was that it could "cook off" in the breech and explode, unlike the more stable nitro-cellulose propellants used by other nations.³ For aircraft this required guns to be redesigned so they did not have a round left in the breech once they had finished firing, which took time and expense. Also the ammunition used by the RAF had to have rimmed cartridges so it could be transferred to the Army if necessary. Most other machine-gun

LEFT In common with its RAF fighter and bomber contemporaries, the Fairey Battle light bomber was fitted with 0.303in-calibre machine-guns — a fixed forward-firing Browning in the starboard wing and a Vickers K on a Fairey high-speed mounting in the rear of the cockpit, which, curiously, in this case is fitted with a 0.303in Lewis gun.