

WINGS

ONE HUNDRED YEARS OF
BRITISH AERIAL WARFARE

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Chapter I

Pilots of the Purple Twilight

In the space of three generations flight has flooded and ebbed from the world's imagination. Aeroplanes are part of the backdrop of life and travelling in them has become mundane and usually tedious. Yet a hundred years ago the sight of a rickety contraption of wire and canvas, fluttering and swooping above the fields with a strangely clad figure perched precariously inside, was guaranteed to create great – even wild – excitement.

In June 1910, only twenty months after the first aeroplane made a paltry, 450 yard hop over British soil, *Flight* magazine reported that 'it is becoming the fashion to consider any open-air function quite incomplete unless there is an exhibition of flying to give tone to it'. The editorial was commenting on an incident that had taken place a few days before. At an agricultural show in the city of Worcester a Blériot monoplane 'ran amok'. At the controls was Mr Ernest Dartigan. He was assistant to a Captain Clayton, who had been due to give a

‘series of spectacular flights’ but had injured himself in a crash the previous day. Rather than disappoint the 14,000 people gathered at the showground, Dartigan had rolled the Blériot out to taxi up and down on the grass. The results were disastrous. Dartigan quickly lost control and the aeroplane charged into the crowd, killing a woman and injuring several others.

At the subsequent inquest, Clayton admitted that he was not a captain at all, but had adopted the title ‘for business purposes’. Neither he nor Dartigan possessed a certificate of competence from the Royal Aero Club. The pseudo-aviator did not shoulder the blame alone, however. A Worcestershire County Council official who witnessed the accident told the court that the ‘conduct of the crowd was foolhardy in the extreme. [They] insisted upon crowding around the aeroplane and badly hampered the movements of the man who was in control, in spite the efforts of police and officials to keep them back.’²¹

This little tragedy tells us quite a lot about those early days. It reveals the ad hoc nature of primitive aviation, glorious or foolhardy according to your point of view. Everything was necessarily innovatory and improvised. ‘Captain’ Clayton might have crocked himself in a prang, but the show went on nonetheless. The pressure that Dartigan felt to perform is also revealing. He seems to have considered himself duty bound to give the crowds what they came for. One suspects he also saw an opportunity to indulge his own fantasies. With Clayton indisposed, a splendid opportunity arose for his assistant to shine. From the outset, aviation was in the hands of those with

a tendency to show off – frequently with the same sad results as on this occasion.

And then there is the woman whose eagerness to get close to the action proved fatal. There were many more like her in the crowd. Photographs of early displays show broad-brimmed bonnets scattered abundantly among the flat hats and homburgs. Women did not want to just watch what was happening. They were eager to take part. Almost from the beginning adventurous females were clamouring to ‘go up’, despite the obvious dangers, first as passengers, then as pilots. At the same time as the Worcester air show, the first flying school was opening its doors at Brooklands motor-racing circuit in Weybridge, Surrey. Mrs Hilda Hewlett, a forty-six-year-old mother of two who was the first woman to gain a Royal Aero Club certificate, co-owned it with her French lover.

What was it that drew the crowds? In part they had come to witness what was manifestly a great step forward in the history of mankind. The skeletal monoplanes and biplanes, constructed from homely materials of wood, canvas and wire, had realized the ancient human dream of defying gravity. They were oddly beautiful and the men who flew them seemed to earthbound mortals like elevated beings.

The spectators also enjoyed the frisson of danger. Newspapers – then as now eager to create alarm – presented flying as a suicidal activity. Some claimed that the crowds went to air shows in the base hope that someone would come a cropper. The chances were high. Early aviators showed an almost insane disregard for risk.

Even in this company of daredevils Sam Cody, a naturalized American who was the first man to fly in Britain, stood out. In a routine accident in the spring of 1912, while instructing Lieutenant Fletcher in his biplane, nicknamed the 'Cathedral' on account of its comparatively impressive size, Cody was 'thrown out and fell a considerable distance, sustaining injuries to his head and legs'.² He continued in this nerveless fashion until he met his death in August 1913 over Laffan's Plain near Aldershot, in an accident apparently caused by a panicky passenger, who wrapped his arms around him so tightly that he was unable to operate the controls.

Pilots seemed to consider even the most basic safety measures unmanly. In August 1912 an Australian aviator called Lindsay Campbell was killed in a crash at Brooklands. Medical evidence at the inquest recorded he had fractured his skull. Campbell had not been wearing a helmet. A correspondent to *Flight* noted that 'aviators, and especially English aviators, have a constitutional objection to wearing helmets for the reason apparently that ... it is too much a concession to the idea of danger.'

Aviation was married to death from the start, but there was nothing morbid about the instant fascination felt by the public. The instinct that pulled in the air-show crowds and that swelled the ranks of aero-modelling clubs, inducing people to subscribe to a crop of aviation magazines, was optimistic and life-affirming. It was the sense of possibility, the feeling that the frontiers of existence were expanding, that gave them a thrill. They recognized, even if they did not understand, the

enormity of what was happening and accepted that for things to progress, risks would have to be taken. A great enterprise was worth sacrifices. Men would die, but not for nothing.

Few of those doing the flying had much idea of where aviation would lead. It was enough that humans could now take to the air. All most of them asked of an aeroplane was that it allowed them to get as close to the sensation of flight as the laws of nature allowed. In 1946, two years before his death, Orville Wright was guest of honour at a military conference in New York. The American air ace Eddie Rickenbacker hailed him as a visionary who had foreseen how aeroplanes would transform the twentieth century. But Wright told Rickenbacker that he was talking nonsense.

‘Wilbur and I had no idea aviation would take off in the way it has,’ he said. ‘We had no idea that there’d be thousands of aircraft flying around the world. We had no idea that aircraft would be dropping bombs. We were just a couple of kids with a bike shop who wanted to get this contraption up in the air.’³³

Poignantly, given what was to come, the Wright brothers believed that their invention might actually reduce the incidence of war. They cherished the thought that ‘governments would realize the impossibility of winning by surprise attacks . . . no country would enter into war with another of equal size when it knew that it would have to win by simply wearing out the enemy.’³⁴

The joy that aircraft excited was almost immediately matched by unease. Long before the Wright brothers got airborne, a great English poet had glimpsed one direction

in which the aeroplane would take us. In 1835 Alfred, Lord Tennyson, wrote a poem, *Locksley Hall*, in which the narrator tells how he

... dipt into the future far as human eye could see,
Saw the Vision of the world, and all the wonder that would be;

Saw the heavens fill with commerce, argosies of magic sails,
Pilots of the purple twilight, dropping down with costly bales ...

However, it was not this benign presentiment of celestial trade routes that would be remembered so much as the couplet that followed. For he also

Heard the heavens fill with shouting, and there rain'd a
ghastly dew
From the nations' airy navies grappling in the central blue.

This was a remarkable prophecy – that once the opportunity arose, the sky would become a battlefield. It would come to pass only eleven years after that first callow skip over the sands of Kitty Hawk. The yearning to fly was very old, but the itch to fight was older. Aviation's passage from innocence to experience was depressingly swift.

It was apparent immediately that the invention of the aeroplane raised important military possibilities. In terrestrial warfare possession of the high ground brought benefits, notably the ability to calculate the enemy's strength and work out

what he was up to. Hovering over the earth increased the purview dramatically. After hot-air balloons appeared in France in 1783 they were soon put to military purposes. Gasbags, tethered to the earth, were seen intermittently around battlefields throughout the nineteenth century. Spotters, equipped with spyglasses, yelled down to the ground details of what they could see of enemy movements and dispositions. Unlike balloons, aeroplanes could move about under their own power and seemed able to do the job of reconnaissance better.

Their arrival, however, provoked unease among a significant section of the British military establishment. The army was slow to accept change. Reconnaissance had always been the preserve of the elite cavalry regiments. This attitude was summed up in a story that their officers were concerned that noisy aeroplanes would ‘frighten the horses’.

Initially it seemed as if aircraft might turn out to be merely a passing craze. Early aero-engines were weak and unreliable, prone to chronic overheating. As performance improved, however, the realization grew that aeroplanes would shape the future – political, economic, social and military.

In July 1909 Louis Blériot flew across the Channel in a monoplane of his own design. It looked like a dragonfly, or a Leonardo da Vinci drawing. Wonder at this achievement was matched by apprehension. Leading the pessimists was H. G. Wells whose science-fiction novels had given him the standing of a seer. The day afterwards he judged Blériot’s feat to be a blow to British prestige. ‘We have fallen behind in the quality of our manhood,’ he wrote in the *Daily Mail*. ‘Within a year

we shall have – or rather they will have – aeroplanes capable of starting from Calais ... circling over London, dropping a hundredweight or so of explosive upon the printing machines of the *Daily Mail* and returning securely to Calais for another similar parcel.’⁵

The *Mail*'s proprietor Lord Rothermere was a noisy advocate of ‘air-mindedness’. It was he who had put up the £1,000 prize that inspired Blériot’s attempt. The fact that a Frenchman had won it seemed proof of his conviction – echoed by Wells – that national virility was drooping. Britain was lagging behind in the air race and an urgent effort was needed to catch up.

The perils of complacency were apparent across the water that Blériot had conquered. A few weeks after the historic flight a Grande Semaine d’Aviation was held at Reims. It was a heady event, watched by hundreds of thousands. Spectators drank the local champagne, dined in a 600-seat restaurant and cheered on the aviators, on occasion becoming so excited they swept through the barriers to mob their heroes. Fliers arrived from all over the world to take part in races offering lavish prize money. An American, Glenn Curtiss, whose receding hairline and chin made him look more like a bank clerk than a knight of the air, triumphed in the main event, a time-trial, beating Blériot with an average speed of less than 50 mph.

The show nonetheless established France’s dominance in the air. All but two of the twenty-two aviators were French. Most of the power plants in use were Gnome rotary engines, developed by the Paris-based Seguin brothers. These engines did what the name suggests, revolving around a fixed

crankshaft. The propeller was simply attached to the rotating engine. Despite the oddness of the concept to modern eyes, they were efficient and comparatively light. The Seguins used nickel-steel alloy, machined to give the optimum power-to-weight ratio, and the fact that air cooled the spinning cylinders removed the need for water jackets. Among the spectators was David Lloyd George, then Chancellor of the Exchequer. He left with the conviction that ‘flying machines are no longer toys and dreams ... they are an established fact.’⁶

Above all they were a military fact. By the end of that year the French army had 200 aircraft in service. The Germans – Britain’s rivals in a crippling naval arms race – were exploring another field of aviation. Count Ferdinand von Zeppelin, a southern German professional soldier, had seen military reconnaissance balloons in action while attached to the Union army during the American Civil War. Over the next four decades he advanced the concept, developing an airship constructed around a rigid aluminium frame covered with fabric, kept aloft by hydrogen cells, controlled from an underslung gondola and shaped like a cigar to provide aerodynamic efficiency. Zeppelin’s airship was intended as an instrument of war and the German military bought its first one in 1908. The following year they went into commercial service.

It wasn’t just the French and the Germans. The Italians had shown far greater energy and imagination than the British in their response to flight, establishing their own military aviation service, equipped with balloons, in 1884. In October 1911 they became the first to employ aeroplanes in war, flying bombing

sorties against the Turks during a colonial squabble in Libya, which, although of minimal effectiveness, produced wild projections from the growing clique of air-power advocates of what warplanes might achieve.

It was only in that year that the British government moved to make up for lost ground. In April 1911 an Air Battalion was formed inside the Royal Engineers. Until then military aeronautics had been confined to a small unit which experimented with balloons and man-lifting kites from headquarters at Farnborough, near the army's headquarters in Aldershot, Surrey. Its balloon factory produced small, non-rigid airships and from 1910 a handful of experimental aeroplanes. The chief designer – and test pilot – was Geoffrey de Havilland, a vicar's son and engineering maestro, who went on to become one of the great names of British aviation. The Aircraft Factory, as it became, was superintended by Mervyn O'Gorman, a dapper Irish civil engineer, described by a contemporary as a 'thruster, possessing brains, flamboyance, courage and imagination'.

The Air Battalion was staffed by mechanics drawn from the Royal Engineers. The task of piloting aircraft was deemed to be a job for officers. Initially there were no aeroplanes for the volunteers to fly. The quality of the early training was apparent in a report in *Flight* of 25 June 1910. 'At last an official start has been made with the instruction of British Army officers in the art of flying,' it ran. 'On Monday evening the Hon C. S. Rolls [of Rolls Royce fame] visited the balloon factory at Farnborough and explained to a number of officers ... the workings of his Short-Wright machine which has been at

the balloon factory for some time.’ However, ‘no attempt at flight was made.’ Instead ‘the motors were started up and the method of handling the machine was demonstrated.’

The Short-Wright was one of only a handful of assorted flying machines available, and if O’Gorman had his way the factory – despite its name – would not be making up the shortfall. He regarded his establishment as a research and design centre rather than a production line, so training craft had to be bought in from private aviation companies.

The navy had viewed the birth of aviation coolly. When the Wright brothers approached the Admiralty in 1907 with a view to selling them their invention they were told that ‘in their Lordships’ opinions aeroplanes would not be of any practical use to the naval service’*. Events made continued indifference impossible. It was obvious to the open-minded that aircraft had the potential to transform warfare at sea.

The navy’s preoccupation with the activities of their German rivals meant their attention was first focused on airships. Concern at the appearance of the Zeppelin had led to the Admiralty ordering a rigid airship of its own, *Naval Airship No. 1*, popularly known as the *Mayfly*, and built by Vickers at Barrow-in-Furness. The nickname would turn out to be tragically appropriate, given its ephemeral life span. The specifications kept changing as the navy sought to load it with more and more equipment. The framework, made from a new alloy, duralumin, was too weak to bear the extra weight. On 24

*To be fair to the navy, the War Office, and French and American governments also declined the offer.

September 1911, when the *Mayfly* was towed out of her shed, stern first, for what was supposed to be her maiden flight, she crumpled and sank, her back broken by three tons of surplus equipment.

The disaster ensured that for the time being, naval interest and expenditure was confined to aeroplanes. Experiments carried out by the American navy had given a glimpse of future possibilities. In November 1910, Eugene Ely flew a biplane designed by Glenn Curtiss, the American pilot who had been garlanded at the 1909 Reims air show and was now establishing himself as an aviation trailblazer. The machine took off from a wooden ramp, tacked onto the forecastle of the light cruiser USS *Birmingham*. The aeroplane clipped the water and Ely put down as soon as he could. The two-and-half-mile flight was nonetheless proclaimed by Curtiss to be an event of huge significance. He predicted that, henceforth, the great battleships, laden with armour and bristling with guns that dominated naval strategy, were heading for extinction.

‘The battles of the future will be fought in the air,’ he declared. Battleships, encumbered as they were with masts, towers and turrets, were not configured to launch air fighters and ‘without these to defend them . . . would be blown apart’. It was a bold assertion, but as events would prove, fundamentally correct. Curtiss tried to prove his point with demonstrations showing how aircraft could drop dummy bombs with a high degree of accuracy on a simulated large warship target.

Having taken off from a ship, Ely went on to achieve the far trickier task of landing on one, putting down a modified

Curtiss plane on a wooden platform constructed on the USS *Pennsylvania* in San Francisco Bay in January 1911. The cruiser was at anchor and the closing speed on landing had been dangerously fast. Ely arranged for twenty-two manila lines to be stretched across the deck, weighted with sandbags, to snag on hooks welded on the undercarriage of his aeroplane. Thus was born the transverse arrester, a system that in its essentials would last to modern times.

The navy's venture into the air was speeded up by the intervention of an outsider. Frank McClean, an engineer and amateur aviator, offered for pilot training the use of two of his Short biplanes, which he kept at the Royal Aero Club aerodrome in Eastchurch on the Isle of Sheppey (where the Short brothers who had switched from balloon to aircraft-making conveniently had a factory). Applications were invited from interested officers: they had to be unmarried and wealthy enough to pay their own instruction costs. Two hundred applied for the four places available and Eastchurch became the cradle of early naval aviation. The base began to fill up with mechanics – engine-room artificers, carpenters, shipwrights and wireless operators, all volunteers, to provide the vital expertise to support the men in the air.

The project had the blessing of the Admiralty's political master, Winston Churchill. In 1912 Churchill made his first flight and had instantly caught the benign contagion of air enthusiasm. 'I am bound to confess that my imagination supplied me at every moment with the most realistic anticipation of a crash,' he wrote afterwards. 'However, we descended

in due course with perfect safety ... having been thoroughly bitten, I continued to fly on every possible occasion when my duties permitted.' Fortunately, these were not too numerous. Churchill was keen but inept and his instructors came to dread his appearances.

Despite Ely's feats, operating aircraft from ships was a delicate operation, requiring optimum conditions of wind, weather and sea. While the experiments were going on Curtiss was already developing another concept: the 'hydroaeroplane', later shortened by Churchill to the handier 'seaplane'. This was one of Curtiss's standard aircraft – a 'pusher' with the propeller mounted behind the cockpit – fitted with a central wooden float instead of an undercarriage and two stabilizing floats under each wing-tip. On 17 February 1911 Curtiss took off from a shore base at North Island off San Diego, California, and flew out to the USS *Pennsylvania*, where he landed alongside. The aircraft was hoisted on-board, then placed back in the water. Curtiss took off and flew back to North Island without mishap. This provided a simple demonstration of how aviation could be of great practical use to navies. The Government provided funds, which resulted in a Curtiss amphibian machine that could operate with floats or wheels. Equipped with a 75-hp engine (also Curtiss-designed) it could carry an observer, had a range of sixty miles and could reach 1,000 feet, vastly increasing a commander's knowledge of what lay in the surrounding waters.

British naval aviators were heading in the same direction. Lieutenant Arthur Longmore, one of the original Eastchurch

trainees, managed to land, on improvised rubberized airbags, on the River Medway. In May 1912 his colleague Lieutenant Charles Samson took off from a platform built on the foredeck of a warship while she was underway. Later HMS *Hermes* was fitted out as a parent ship for seaplanes. They took off on wheels, set into their floats, and landed on the water to be collected and winched ashore.

The Short brothers came up with an innovation that helped to overcome a basic problem that arose from trying to marry aeroplanes to ships. They invented the Short Folder Seaplane with hinged wings which reduced the span from fifty-six feet to twelve. One of this type was on *Hermes* as part of the 'Red' force during the Fleet's 1913 manoeuvres. Equipped with a radio transmitter, it was able to send back valuable information on 'enemy' positions.

The army had already used aircraft in their manoeuvres the previous autumn. They opened on Monday, 16 September 1912 in the flatlands east of Cambridge. There were two divisions on either side. Red Force, under Sir Douglas Haig, was the attacker. Blue Force, under Sir James Grierson, defended. Both had aircraft to support them – a balloon and seven aeroplanes each. More had been intended, but summer had seen a spate of fatal accidents. Most of the crashes had involved monoplanes. The decision was made to drop single-wing aircraft, relatively quick and nimble though they were, in favour of more stable biplanes.

The afternoon before the war game began, the commander of Blue Force's cavalry element delivered some unwelcome

news to Grierson. He reported that, as the forces were positioned so far apart, his men would be unable to provide information about the enemy's whereabouts until at least twenty-four hours after the exercise began. Grierson turned to Major Robert Brooke-Popham, who had obtained his Royal Aero Club certificate only two months before, but was commanding the tiny air component.

'Do you think the aeroplanes could do anything?' he asked.

Brooke-Popham assured him they could.

The following day, at 6 a.m., his pilots and observers took off into clear blue skies. Three hours later they were back with 'complete, accurate and detailed information concerning the disposition of all the enemy troops'. From then on Grierson relied almost entirely on aircraft for reconnaissance. To the chagrin of the cavalrymen, aircraft were sometimes asked to verify information they had galloped hard to bring in. Blue Force won the war game.

The different needs of the army and navy sent their air arms in diverging directions, but in April 1912 an attempt was made to bring them together. The Committee of Imperial Defence announced the birth of a new formation, the Royal Flying Corps (RFC). It comprised a military wing and a naval wing, and a training centre, the Central Flying School, was founded at Upavon in Wiltshire. King George V granted the royal warrant. He also approved an inspiring motto, *Per Ardua ad Astra*.

Credit for the choice seems to lie with a young lieutenant of the Royal Engineers called J. S. Yule, who was attached

to the new corps. He was strolling across Laffan's Plain one evening in May 1912 with another subaltern. They were discussing the proposal of the RFC's commanding officer Major Frederick Skyes that the new service should have a motto. Yule had just been reading *The People of the Mist* (1894) by H. Rider Haggard. The second paragraph of the book describes the hero entering the stone gates of a mansion on which are carved 'coats of arms and banners inscribed with the device "Per Ardua ad Astra"'. Yule liked the sound of it and Sykes agreed.' The Latin is generally translated as 'Through struggle to the stars', though an authoritative translation has never been agreed.⁷

The RFC also had its own, suitably innovative new uniform. Officers and men wore a slate-blue, high-collared, double-breasted tunic which fastened on the inside so that there were no buttons showing to snag on wires. It was considered unattractive and soon became disparaged as the 'maternity jacket'. Those who could took advantage of a rule that allowed officers to wear the uniform of their parent regiment.

The military wing aimed at an establishment of 160 officers and 1,000 men. The naval wing target was only 50 officers and 500 men. The technical demands of modern warships meant there was a pool of skilled other ranks. The army had to struggle to find technicians and an appeal went out inviting civilians working as blacksmiths, carpenters and joiners, clerks, copersmiths, draughtsmen, electricians, fitters, harness-makers, instrument repairers, metal turners, painters, pattern makers, photographers and other trades to join up.

From the beginning the new service attracted adventurous men – and later women – from all levels of Britain’s multilayered society. Wealthy and well-educated young men were both excited and enchanted by aviation. It seemed to offer another dimension in which the ethos of the playing field could expand and thrive. Sir Walter Raleigh, official historian of the 1914 air war, wrote in 1922 that Britain’s scramble to catch up with her continental rivals was greatly helped by the presence of ‘a body of youth fitted by temperament for the work of the air, and educated, as if by design, to take risks with a light heart – the boys of the Public Schools of England’.⁸

Among them was Philip Joubert de la Ferté, who came from an upper-middle-class Anglo-French family. After Harrow and the Royal Military Academy at Woolwich he was commissioned into the Royal Field Artillery. On visits to his family home at Weybridge, he had been bewitched by the sight of the aeroplanes at nearby Brooklands aerodrome. The aviators he saw there, lurching into the skies aboard a ‘motley collection of stick and string kites’, seemed to him to be ‘giants, supermen, whom no ordinary mortal could hope to follow’. One day in 1912, while watching the flying near Farnborough with a colleague ‘one of the aircraft taxied close by and I recognized the pilot as someone who had been at the Military Academy with me. I turned to the Major and said, “If that chap can fly, so can I!”’ The next day he set about trying to join the newly formed RFC.

Before starting instruction at the Central Flying School, would-be pilots had to learn the basics and obtain a civilian

certificate from the Royal Aero Club at their own expense, though the £75 outlay was refunded later. Only officers were likely to have the money to do so. To qualify, candidates were required to carry out two flights, making five figures of eight, landing each time within fifty yards of a specified point. They also had to climb to 150 feet, cut the engine, then drift down to a controlled landing.

Strong winds were potentially fatal. Joubert found that he had to get up at dawn or hang around until twilight when there was more chance that the breeze would be gentle enough to allow a few circuits of the aerodrome. Even so, ‘tragedy came from time to time to remind the enthusiasts that they were adventuring along a perilous path.’⁹ Undeterred, Joubert joined the school in 1913.

The technical nature of aviation meant that it was not only the officer class who would be allowed into this magical new world. Cecil King, a wheelwright and coach builder by trade, was one who managed to penetrate it. In 1913 he was stuck in a dead-end job in a dreary, subterranean London workshop. He found it ‘very depressing ... I wanted to get into a more open-air life.’ One day he was strolling through Kingston-upon-Thames when he met two soldiers. ‘They had an unusual badge with the letters RFC on their shoulders. I got into conversation with them and they told me they were members of a new unit called the Royal Flying Corps, which had just started – and why didn’t I join?’

King had never heard of the new outfit. However, he was keen on the idea of flying. Two years before he had been

enthralled by the sight of Gustav Hamel performing at Hendon aerodrome. Despite his name, Hamel was British, educated at Westminster School. In 1910, at the age of twenty-one, he went to the Blériot aviation school at Pau in south-west France. A year afterwards he was performing pioneering feats, such as carrying out the first airmail delivery, flying a sack of letters and postcards the twenty-one miles from Hendon to Windsor. After his encounter with the airmen, Cecil King presented himself at Kingston barracks, where he volunteered for the RFC. A little later he found himself posted to Farnborough aerodrome and awoke each morning to the sound of trumpets and bugles. 'I was delighted,' he remembered. King was to serve as a rigger and never flew as a pilot.

Several tradesmen who entered the RFC in the early days went on to glorious careers in the air. James McCudden, a sergeant major's son from Kent, joined the Royal Engineers as a bugler in 1910, aged sixteen. Three years later he volunteered for the RFC and in 1914 he went with No. 3 Squadron to France as a mechanic. He was soon flying as an observer, then as a pilot. His exploits over the trenches shooting down German aircraft won him the Victoria Cross and he became, along with Major 'Mick' Mannock and Captain Albert Ball, one of the best-known British aviators of the war.

From the beginning the air force was to act in part as a machine of social transformation, elevating likely young men from the lower classes and making them officers – if not, as army and navy snobs maintained, quite gentlemen. The novelty of the air force made the traditionalists, who were

abundant in the ranks of the military, suspicious. Philip Joubert recalled how ‘the criticisms and contempt of brother officers’ that he and his fellow volunteers for the RFC encountered ‘was another trial we had to bear’. One officer, a few years ahead of him, ‘took pleasure in stating that it was only those officers for whom their Commanders had no use whatsoever who were allowed to go into the Flying Corps’. Joubert had the satisfaction of finding himself, two years later, ‘considerably further advanced in seniority than the man who had stuck to the horse as a means of locomotion’.¹⁰ Scorn for the ‘arrivistes’ of the new service persisted until well into the Second World War, at least among the likes of the novelist Evelyn Waugh. In his *Sword of Honour* trilogy the RAF is personified by a pompous senior officer who takes cover under the billiard table of Bellamy’s club during an air raid, while the army types display the correct *élan* by remaining upright with drinks in hand.

In reality the RFC was filling up with some of the most effective and interesting warriors of the new century, many of whom would rise to lead the air force through the two cataclysmic conflicts that lay ahead. It attracted the adventurous, the unconventional and a fair sprinkling of the frustrated, who turned to it in the hope it might provide satisfactions that had been denied to them elsewhere. Into this category fell Hugh Montague Trenchard, who combined nineteenth-century mores with a twentieth-century appreciation of the new. He was the son of a West Country soldier turned solicitor who went bankrupt, and Hugh’s education had been dependent

on the charity of relations. In his youth he displayed little sign of intelligence or charm. He eventually scraped into the army where he served in India and South and West Africa. In October 1900 he was badly wounded fighting the Boers and was lucky to survive. He went on to spend six years in the interior of Nigeria surveying, mapping and subduing the natives. His exertions brought little reward. In 1910 he was back with his old regiment, the Royal Scots Fusiliers, in the backwater of Ulster. He was nearly forty, a mere company commander, disliked by his CO and unpopular with his fellow officers who found his teetotalism and long silences, interspersed with awkward utterances in a booming voice, a trial.

Trenchard's great strength was his tenacity. When Captain Eustace Loraine, a comrade who had served under him in Nigeria, wrote from Larkhill, a military camp on Salisbury Plain which had become the site of the first army aerodrome, describing the excitements of his new life as an RFC pilot, Trenchard set about trying to join him. Like everything in his life so far, this was not easy. Forty was the upper age limit for pilots. He couldn't fly and his physique – six foot three and heavily built – counted strongly against him. He wangled three months' leave and set off for Tommy Sopwith's flying school at Brooklands in Surrey to obtain the certificate he needed to enrol as a pupil at the RFC's Central Flying School. He did so after one hour and four minutes flying time. He arrived at Upavon in August. His friend Loraine was dead, killed in a crash in a Nieuport monoplane. For once,

Trenchard's enthusiasm and efficiency were fully appreciated by authority. He was soon second-in-command of the school, the start of a rapid ascent up the ladder of the RFC hierarchy.

He was nurtured by the man who oversaw the birth and first steps of the new force. Brigadier-General Sir David Henderson was an expert in reconnaissance when he was put in charge of the Directorate of Military Aeronautics, formed at the same time as the RFC. He was unusually intelligent and far-sighted, and was blessed with handsome, classical features that seemed to reflect his noble character. They contrasted with the ferrety demeanour of the first commander of the RFC's military (as opposed to naval) wing, who was to go to France as Henderson's deputy. Frederick Sykes was bright, sharp, ambitious and seemed to engender instant mistrust in all who encountered him. 'He never really gained the confidence of his command,' was Joubert's diplomatic verdict. Inevitably, scheming Sykes and trenchant Trenchard fell out.¹¹

The men they commanded, pilots, mechanics and administrators, on the whole seem more enterprising, more intelligent and more ambitious than their contemporaries. The thin ranks of the first few squadrons are stuffed with names that would be famous later on. Hugh Dowding, who led Fighter Command through the Battle of Britain, is there, along with Wilfred Freeman, the overseer of the re-equipment programme that provided the Hurricanes and Spitfires. The foundation force includes the Salmond brothers, John and Geoffrey, both of whom would command the Royal Air Force,

Edgar Ludlow-Hewitt, a future leader of Bomber Command, and a host of others whose exploits would inspire the airmen that followed.

In the short time between coming into existence and going off to war, the RFC developed a robust *esprit de corps* that was felt at all levels. Cecil King noted that ‘everyone who joined the Royal Flying Corps in the other ranks held some trade or other, whereas the men in the general regiments – they might be anyone ... therefore we considered ourselves a bit superior to the infantry and cavalry, who may have come from any walk of life. We also got more pay than they did, and when they found that out they were a little bit jealous.’¹²

Similarly, those who gravitated towards the naval air service were often the cream of the Fleet. What the other ranks shared with the officer volunteers was a modern outlook and a taste for the new. It is reflected in early photographs. Pictures of soldiers and civilians of the period tend to have a stiff, formal air. The subjects fix the camera with a suspicious stare, their faces set in an expressionless mask, guarding their dignity and affirming their status. The airmen look more confident and comfortable in their skins. Sometimes there is even a smile.

One photograph from 1913 shows pilots of ‘B’ Flight, 3 Squadron in their mess at Larkhill aerodrome. The two in the foreground are hunched over a chess board. Behind them, another is placing a disc on a wind-up gramophone. Three more are reading magazines and someone is sitting cross-legged on a couch, smoking a pipe, a banjo propped against

the wall next to him. The whole effect is relaxed, stylish and slightly bohemian.

To outsiders the air force gave the impression of being more free-and-easy than the army and navy. On joining, they found that this was something of an illusion. Flying was new, but traditional discipline was imposed on the new recruits arriving from Civvy Street to join the military wing. Sykes agreed to a transfer of some Guards drill officers, whose roars soon echoed around the Aldershot barracks where the recruits were housed. Joubert noted approvingly that ‘in the end the RFC became an extremely smart and highly efficient corps ... there is no doubt in my mind that the meticulous disciplinary training to which our mechanics were subjected made them more thorough and more reliable in their technical duties.’¹³

Nonetheless, fitting, rigging and repairing aircraft and maintaining the engines that powered them was an empirical process. Everything was new. Progress was largely achieved and problems solved by trial and error. It was found that the copper pipes that fed oil and petrol to the engines cracked easily. The constant vibration hastened metal fatigue and regular annealing was required to stop them splitting and catching fire. Eventually, rubber hoses were substituted, but the rubber had a tendency to perish and block the flow.

The principles of flying were still only barely understood. In 1912 very little was known of the science of aerodynamics. Biplanes were more stable than monoplanes, but they were still subject to erratic and inexplicable behaviour, and even

relatively experienced pilots still worried about stalling, spinning and nose-diving.

Attempts were made to codify flying drills. Major Charles James Burke, a stout Irishman known behind his back as Pregnant Percy, was the commander of 2 Squadron, which with 3 Squadron formed the first two aeroplane units of the RFC (No. 1 was a balloon squadron). Burke had served in the ranks in the Boer War before joining the Royal Irish Regiment. According to Raleigh, he ‘was not a good pilot and was most famous for his crashes. He was not a popular officer. He was not what would be called a clever man. But he was single-minded, brave and determined, careless alike of danger and of ridicule.’

Burke approached his work with missionary zeal, spreading the word through papers with titles like ‘Aeroplanes of Today and their Use in War’ and recording his thoughts in a booklet of ‘Maxims’. These included such musings as ‘nothing is ever as good or as bad as it seems,’ but also practical observations. ‘Waiting about on an aerodrome has spoilt more pilots than everything else put together,’ he noted. Thirty years later the pilots of the Battle of Britain would agree that it was waiting at dispersal for the ring of the telephone and the order to scramble that jangled their nerves almost as much as actual combat.

The most pressing task facing those in charge of the new service was to find aeroplanes that were tolerably safe, reasonably reliable and relatively easy to fly. At its birth the RFC had only eleven serviceable aircraft. They were primitive machines

capable of climbing only a few hundred feet and travelling at no more than sixty miles an hour. In August 1912 trials were held on Salisbury Plain to find a higher-quality machine with which to equip the service. The contestants were to demonstrate that their machines could carry out simple manoeuvres, including landing and taking off from a ploughed field. The prize was won by Sam Cody who seems to have benefited from being last in the order, so that by the time he had to perform, the field had been nicely flattened out. His machine, though, was never adopted: the 'Cathedral' was neurotically sensitive, particularly on the forward and aft control, and needed its master's touch to stay airborne. After two pilots used to less unstable machines crashed, it was dropped and the RFC adopted instead the BE2, which was already in development at the Royal Aircraft Factory. The letters stood for 'Blériot Experimental', in recognition of the fact that it was an adaptation of a design by the French pioneer. The modifications were largely the work of Geoffrey de Havilland.

The BE2 certainly looked good. Its upper wing lay further forward on the fuselage than the lower wing, giving it a rakish angle in profile, and the slender tail swelled into a graceful, rounded tailplane. It was considerably more stable than Cody's machine, and would generally fly straight and level without constant adjustments by the pilot. In other respects it was less satisfactory. The Wolseley, then Renault, engines with which the BE2 was equipped were badly underpowered. Later, on the Western Front, if long flights were planned the observer and his gun had to be left behind. The observer's secondary

job of defending his aircraft was hampered by his position, forward of the pilot's cockpit, where he was surrounded by struts and wires that cramped his field of fire. The aircraft's improved stability meant it was less prone to sudden involuntary actions. But it also made it less responsive when the pilot did want to change course swiftly, which meant it was slow to take evasive action against more manoeuvrable enemies.

At the time, though, the BE2 seemed like a sound and versatile machine, and 3,500 of them would be built in several variations by a number of manufacturers in the years to come. The Royal Aircraft Factory at Farnborough, nonetheless, continued to produce other types, and by the time hostilities began the RFC was equipped with a plethora of different designs acquired over the early years.

The navy's approach to aviation was more enterprising. In the search for good aircraft they did not restrict themselves to the products of the Farnborough factory and sought out the wares of the private manufacturers like Short, Sopwith and A.V. Roe, springing up around the country, as well as encouraging Rolls Royce production of aero engines. The army believed that the main function of aviation in time of war was reconnaissance. The navy took a more aggressive approach. Airships and aeroplanes could be used against enemy shipping. They were also aware that the enemy would come to the same conclusion. They fitted floats on existing aircraft to create seaplanes and ten bases were set up around the coast, stretching from Anglesey in the west to Dundee in the north, from where they could defend the island and launch attacks

against the enemy. Experiments took place in flying aircraft off ships, dropping 100 lb bombs and even torpedoes.

This independent policy reflected the fact that the Admiralty had never accepted that the RFC should have control over affairs that it believed lay firmly within its own domain. In July 1914 this divergence of opinion was formalized with the establishment of the Royal Naval Air Service (RNAS). From now on the RFC would operate solely as the air force of the army, while the RNAS answered to the Admiralty. The two would carry on their separate paths through most of the coming war, complicating the lines of command and competing for resources.

By the time the split was made official Europe was floundering into war. Most of the young aviators welcomed the prospect of action and adventure. Their spirits were dampened, though, as they surveyed the motley array of aircraft they would have to fight in.

‘I shall never forget the solemn meeting of No. 3 Squadron when our Squadron Commander, Major [Robert] Brooke-Popham, told us what was expected,’ wrote Philip Joubert. ‘Up until then it is unlikely any but the more seriously minded of us young ones . . . had thought very much about war with Germany, but here we were faced with it in the near future and we knew that although we had plenty of energy and confidence, our equipment was woefully bad. There were at least eight different types among the serviceable aircraft, and of those only three were British. The engines were largely of French origin. We had no transport of our own worth

mentioning, spares were lamentably deficient and the reserve of pilots and mechanics were derisory.’¹⁴

However, with Lord Kitchener now in charge at the War Office, plans were already under way for a massive expansion. Over the next four years this ragged outfit was to transform itself into the greatest air force in the world.