ROYAL AIR FORCE

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ROYAL AIR FORCE HISTORICAL SOCIETY

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SELECTED GLOSSARY

ACSC	Advanced Command and Staff Course
AEO	Air Electronics Officer
AFBSC	Air Force Board Standing Committee's
ASC	Advanced Staff Course
BSC	Basic Staff Course
C4ISTAR	Command, Control, Communications, Computers, Information/Intelligence, Surveillance, Targeting Acquisition and Reconnaissance
CNAA	Council for National Academic Awards
CST	Command and Staff Training
CTTO	Central Tactics and Trials Organisation
DCTT	Defence College of Technical Training
DDefS	Director of Defence Studies
DEPR	Defence Education Pathway Review
DS	Directing Staff
DSAT	Defence Systems Approach to Training
ICSC(A)	Intermediate Command and Staff Course (Air)
IODP	Intermediate Officer Development Programme
IOT	Initial Officer Training
IPT	Integrated Project Team
ISS	Individual Studies School
JODP	Junior Officer Development Programme
JSCSC	Joint Services Command and Staff College
LHCMA	Liddell Hart Centre for Military Archives
OACTU	Officer and Air Crew Training Unit
OATS	Officers Advanced Training School
OCTU	Officer Cadet Training Unit
OFSTED	Office for Standards in Education, Children's Services and Skills
PA	Personal Assistant
PJHQ	Permanent Joint Headquarters
PV	Positive Vetting
QCVSA	Queen's Commendation for Valuable Service in the Air.
QHI	Qualified Helicopter Instructor
RCDS	Royal College of Defence Studies
ROAD	Review of Officer and Airmen Development
RSA	Royal Society of Arts
SDSR	Strategic Defence and Security Review
SofTT	Scholl of Technical Training
USP	Unique Selling Point

TRENCHARD'S THREE PILLARS

RAF HALTON, 23 MARCH 2016

WELCOME ADDRESS BY THE SOCIETY'S CHAIRMAN

Air Vice-Marshal Nigel Baldwin CB CBE

Ladies and Gentlemen – good morning. First let me thank Halton's Station Commander, Gp Capt Adrian Burns, for allowing us to be here today. It is a first visit for the Society, and of course Halton is absolutely connected with Lord Trenchard and the Royal Air Force's heritage.

Before I introduce our Chairman for the day, I would like to pause for a few moments to mark the passing last October of our founding President, Marshal of the Royal Air Force Sir Michael Beetham. To say that he inspired and influenced our Society throughout its nearly 30 years of existence is a massive understatement. For me, as your Society Chairman, he was a huge presence and source of encouragement. Our next journal will include an obituary covering his extraordinary life and achievements written by my Committee colleague, Air Cdre Graham Pitchfork.[1] Not long after Sir Michael died, his wife, Pattie, Lady Beetham, passed away too. Many of us will remember her with much affection. Could I ask you to stand for a moment of reflection please?

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I am pleased to tell you that Air Chf Mshl Sir Richard Johns, an ex-Chief of the Air Staff, has agreed to succeed Sir Michael as our President. It is a pleasure to see him here this morning sitting next to our indomitable Vice-President Sir Freddie Sowrey.

Our Chairman today is AVM George Black, one of the most experienced and distinguished pilots of his generation. His early career included service with the Fleet Air Arm, during which he flew Sea Hawks, making more than 200 deck landings and flying combat missions with No 802 Sqn during the Suez campaign. He subsequently helped to introduce the Lightning into service with No 74 Sqn, later commanding Nos 111 and 5 Sqns and the Lightning OCU.

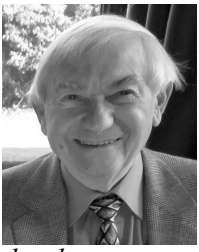
[1] Journal 63**. Ed**

He later commanded RAF Wildenrath and for over two years was the Harrier Field Force Commander in RAF Germany. He has over 8,000 hours on 120 different types of aircraft – which must be a record for a post-WW II RAF pilot, particularly a fighter pilot. After nearly two years as Commandant of the Royal Observer Corps, his final tour was as Deputy Chief of Operations at HQ Allied Air Force Central Europe. He and his wife produced two sons one of whom is a serving RAF group captain pilot, the other a captain with Virgin Atlantic – must be something in the genes.

With that background, today may not be too much of a challenge for him. George, you have control

THE RAF HALTON AIRCRAFT APPRENTICE SCHEME

Gp Capt Min Larkin



Min joined the RAF as an aircraft apprentice in 1949. He remustered to aircrew as an air signaller/air gunner in 1953 and was commissioned as an AEO in 1959. He flew in Shackletons with Nos 224, 205 and 201 Sqns and Nimrods with No 201 Sqn, latterly as an aircraft captain. Other tours included stints as a 'Trapper' and on avionics development at the RAE while staff appointments involved operations, search and rescue, training and personnel management. He completed his 45 years in uniform as Deputy Director of Personal Services. Since then he has been Halton's historian and archivist and in 1995 he founded the Trenchard Museum.

The Origins of Boy Service in the RFC and RAF

One of the main difficulties facing the Royal Flying Corps (RFC) from its foundation in 1912 was a shortage of air mechanics. Nevertheless, by combing through the ranks for skilled artificers among those already in uniform and identifying likely candidates among the many volunteers who were joining the colours, most of the shortfalls during the first two years of WW I were overcome. In January 1917, following the impressive part played by the RFC in the great battles in the previous year, the Army Council authorised its expansion to a total of 106 squadrons (86 to be in France) and in July this was almost doubled to 200. The limiting factor to this huge expansion turned out to be not a shortage of aircrew, nor of aircraft manufacturing capacity, but rather a lack of skilled groundcrew of which more than a dozen were needed to maintain each front-line aircraft.

As the rudimentary methods of training RFC tradesmen hitherto were unlikely to meet the massive new manpower requirement, it soon became clear that the RFC would have to train its own air mechanics. In order to find the thousands of skilled men demanded by the rapidly growing Service, the RFC expanded its training programmes, basing these new units wherever suitable sites could be found, an unavoidable but random process that scattered the schools across the country. For

example, a new training school was set up at Netheravon with 200 men, another was formed at Reading with 1,000, and one in a converted jam factory at nearby Coley with another 2,000, and there were many others, large and small. Under the continuing pressure on manpower another very important decision for the future of the RFC was taken; it was decided to recruit boys.[1]

This kind of improvisation could not provide all of the men the RFC needed and rationalisation of the training machine became an urgent requirement. In June 1917 Maj Gen Sefton Brancker, Deputy Director-General of Military Aeronautics, submitted proposals to centralise the technical training of men, women and boys in a new large school to be located at Halton.[2] This new school was under the direct control of the War Office and commanded by Lt-Col Ian Bonham Carter.[3]

The first 400 RFC boy mechanics enlisted at Farnborough in May 1917, shortly followed by further intakes at Blandford.[4] These boys moved to Halton in the late summer of 1917 where, by the end of the year, 2,000 boys were under training as air mechanics living in Spartan conditions in dilapidated wooden huts previously occupied by infantry troops.[5] Although many boys were later transferred to Cranwell, where permanent accommodation was available, several thousand remained at Halton undergoing in equal measure, drill, physical training, fatigues and technical training for which only basic facilities were available.[6] However, the latter improved with the opening of large workshops in early 1918 which had been rapidly constructed with the help of thousands of German POWs.[7]

The arrival of the first RAF Commandant, Air Cdre F R Scarlett CB DSO, in December 1919 heralded many improvements to all aspects of boy training, in particular the tightening of disciplinary standards which had been allowed to drift downwards after the armistice. The brass 'wheel' badge, worn by all RAF boy recruits for some 75 years, to distinguish them from men, had been introduced in April 1919. Now with some 4,000 boys on strength Scarlett

The brass 'wheel' badge, introduced in April 1919 and subsequently worn by apprentices on the upper left sleeve.

wanted an additional distinguishing feature on their uniforms to facilitate immediate recognition of the sections (later wings) to which they belonged. His reason for this was to ensure that boys committing offences both on and off the station could be dealt with expeditiously by the appropriate authority. His recommendation to the Air Ministry of distinctive coloured hatbands was approved in 1920 and this too became a permanent feature of an apprentice's uniform.

In March 1920 No 1 School of Technical Training was established at Halton, the future home of aircraft apprentice training.[8] Scarlett remained in post until 1924 and oversaw the transformation of a temporary wartime military camp into the beginnings of a permanent RAF station. He had laid firm ground on which Trenchard was able to build his aircraft apprentice scheme.

Introduction of the Halton apprentice scheme

In his memorandum, 'Permanent Organization of the Royal Air Force', which was presented to the House of Commons as a White Paper by Secretary of State Winston Churchill in December 1919, Trenchard placed great emphasis on the importance of training, particularly of skilled ground crew.[9] He argued that the best way to ensure that,

> '. . . the training of our mechanics in the multiplicity of trades necessitated by a highly technical Service […] is to enlist the bulk of our skilled ranks as boys, and train them ourselves. This has the added advantage that it will undoubtedly foster the Air Force spirit on which so much depends.' Later in the paper, he continues, 'The training of all these boys will eventually be carried out at Halton Park.[10] […] The first entry under the scheme will take place early in 1920 at Cranwell […] and move to Halton as soon as permanent accommodation is ready.'

He provided more detail about his intentions for the scheme in a letter to Churchill in November 1919, writing, 'It is necessary to enlist the bulk of the technical tradesmen of the force as boys, because the Royal Air Force cannot hope to compete in the recruitment of men who have served full apprenticeships and who can command high wages in civil life.' He goes on to say that apprentices were to form 40% of all ground crews in the Royal Air Force, and 62% of all the

Passing out parades were always suitably impressive. This one marked the graduation of the 20th Entry in July 1932.

skilled tradesmen.[11]

It was clear that Trenchard wanted highly skilled men at a price the Service could afford from its very meagre budget, and men who would foster an 'Air Force spirit'. Thus in late 1919 the Halton Apprentice Scheme was promulgated to Local Education Authorities, and entrance examinations were held in London and the provinces.[12] Medically fit potential recruits were offered training in the trade of their choice, or one the selectors thought more appropriate for them.[13] The rigorous selection procedure ensured that recruits would be of the highest quality, and because of their resourcefulness and intelligence, they could be expected to complete their apprenticeships in three years rather than the five normally served by civilian engineering apprentices. A shorter course meant a cheaper one, which no doubt pleased the Secretary of State for Air, Winston Churchill.[14]

In February 1920, still known as Boy Mechanics, the first intake of 235 was accepted at Cranwell for a three-year apprenticeship.[15] The first four intakes trained at Cranwell, and it was not until January 1922 that the first cohort arrived at Halton to become the 5th Entry. This move coincided with the adoption of the rank of Aircraft Apprentice.[16]

With luck, an apprentice might be treated to an occasional air experience flight. Among the handful of available aeroplanes was this Hart(T), K6450, which was on charge to No 1 SofTT between April 1936 and January 1938.

Two entries a year were planned.[17]

On arrival at Halton, apprentices were signed-on for twelve years from the age of 18, allocated accommodation and kitted out and they very soon found their lives falling into a well-ordered routine governed largely by bugle calls.[18] They were woken with Reveille at 0630hrs, called on colour hoisting parade at 0730hrs and sent to bed at 2145hrs.[19] Apprentices were not allowed time to dwell too much on their personal thoughts, as evenings and most of the weekends were taken up with room cleaning, inspections and parades. Recreational facilities were available in abundance, including a debating society, aircraft modelling and playing in one of the several apprentice bands, in addition a wide variety of sporting facilities was available.[20] A world-class RAF hospital on the doorstep ensured their medical and dental care were second to none, and spiritual needs were more than well looked after; but few enjoyed the compulsory church parades every other Sunday! In addition to all these privileges they enjoyed six weeks' holiday a year, mid-term breaks, and were paid, albeit a paltry amount.[21]

The cost of running Halton was a contentious issue in the early days. Following a visit by members of a Parliamentary Select Committee in 1923, they reported that they were;[22]

> '[…] of the opinion that the management and training of these boys is conducted in a very efficient manner; they were much struck with the discipline, with the order which was kept, and the arrangement by which they were efficiently taught a trade [*and they*] receive a payment of 10s. 6d. a week. This payment seems to the Committee to be unnecessary. These boys are […] not only extremely well lodged, fed, and clothed, but are taught […] trades which will be useful to them in after-life. Under these circumstances it would appear that, if any payment is to be made, it should be made by the parents of the boys, and not by the State.'

Fortunately for thousands of apprentices yet to come, this point was not pursued. But the cost issue resurfaced in a Commons debate in 1926 when one MP, Sir Frank Nelson, pointed out that £230, which was estimated to be the cost of training an apprentice, 'is probably more than it costs a parent to send a boy to any of the four or five leading public schools of England.' He went on to complain that, 'these apprentices at Halton get 1s a day pocket money, which, when they number 3,000, will cost the country £55,000 a year, and even now it costs between £30,000 and £35,000 a year.'[23] But, once again, the point was not pursued.

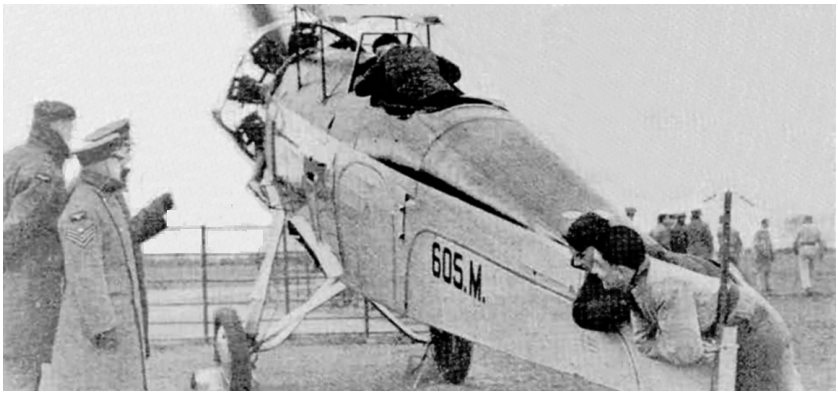
For the first 50 years of the scheme apprentices were classified as minors and their officers and SNCOs acted in *loco parentis*. In addition to their responsibilities under the tenets of normal military discipline, each apprentice was issued with a small booklet entitled *Standing Orders for Apprentices.*[24] This contained a myriad of rules which severely restricted an apprentice's freedom to spend what precious spare time he was allowed as he might wish. 'These rules are necessary for your own benefit,' apprentices were often told by their superiors. Some of the rules were reasonable for boys below the age of 18, such as 'Apprentices are to take a bath twice a week' and 'Apprentices are prohibited from visiting public houses and consuming alcohol.'[25] One of the oddest rules was, 'Females are not to attend the monthly Apprentice dances.'[26] This reflects contemporary

society's deeply conservative approach to sex before marriage. Perhaps the most resented rule, especially by older apprentices in their third year of training, was lights out at 2145hrs, when their former school chums were still out enjoying themselves with their girlfriends.

Despite the harsh standards of discipline, most ex-apprentices are only too willing to tell you about the occasions when they broke bounds, climbed in and out through windows stealthily in the dead of night, to avoid being caught by patrolling RAF Police.[27] It was a point of honour for apprentices to break as many of the rules as they could, hopefully without getting caught. With an average of 2,000 boys in residence at any one time, the establishment of RAF Police at Halton, known as 'Snoops' to apprentices, was higher than normal. The RAF Police could often be seen patrolling local towns, especially on Saturday evenings when their chances of nabbing a few apprentices in the local pubs or dance halls were high. Apprentice Flight Commanders were always busy during lunch hours hearing charges but never more so than on Mondays when they were usually faced with a crop of charges resulting from apprentices enjoying themselves beyond 'lights out' on Saturday nights. Some apprentices clocked up cricket type scores in days of 'Jankers', but someone had the good sense to rule that punishments awarded for 'youthful' offences were to be erased from apprentice records on graduation. However, many apprentices believe that this anti-establishment activity contributed as much to the development of the famous Halton Spirit as did all of the communal living, sporting activities, marching with bands and discipline.

Apprentice Technical Training

Technical training at Halton was divided into three distinct, but closely co-ordinated departments: Trade, Academic and General Service Training.[28] Initial trade training was carried out in the workshops and later in a mix of workshops and on redundant aircraft positioned on the airfield. The trades taught evolved with the ever developing advances in aeronautical engineering but they were principally engines, airframes, armaments, instruments, electrics and wireless.[29] A pass mark in all aspects of his trade training was an absolute for an apprentice to graduate. Until 1951, this mark also governed the rank at which an apprentice graduated.



Time-expired airframes were used to provide hands-on experience. Above, a Wallace, 605M (previously K3664) and, below, a selection of redundant Hart variants.

Academic training was comparable with that of a good technical college and was to National Certificate level. ‘Schools', as it was known by apprentices, was held in a purpose-built college building which had a well-stocked library and excellent engineering science laboratories.[30] All apprentices studied the same mathematics, mechanics and engineering drawing syllabuses, but engineering

science was tailored to suit an individual's trade. Included in the syllabus was English and general studies which covered, in some depth, the history of the RAF. In the third year of training, all apprentices were required to produce a set task of 5,000 words on a subject of their choice. A National Certificate, or at least a B Grade pass in the final school examinations, was sufficient to qualify an apprentice academically for commissioning: a C Grade was the minimum requirement for graduation.[31]

General Service Training was an important part of the curriculum, because, once he entered productive service, an apprentice was expected to gain rapid promotion and command men. From the outset of his training he became a member of a society based on the orderly pattern of RAF life in wings, squadrons and flights, where he learned the give and take of community living, and developed a feeling for the customs and traditions of the Service. Under the guidance of his Flight Commander and the NCO instructors, he was taught drill, physical training and Air Force Law. Leadership and management experience were provided through resource and initiative training, field exercises at summer camps and the Apprentice NCO scheme. For the many who were selected for promotion it gave greater responsibility as they progressed through the ranks. The top rank, normally flight sergeant apprentice, was in effect the head boy of the School. He commanded the whole apprentice population and also enjoyed the privilege of commanding his Entry's graduation parade, and parades for visiting VIPs and Royalty.[32]

To keep abreast of changes in RAF engineering practice, four different types of apprenticeships were introduced over the lifetime of the scheme. The original Aircraft Apprentice (AA) training started in 1920 and continued until December 1966, with the graduation of the 106th Entry. This scheme produced single-skill fitters who maintained aircraft and associated equipment and could, if necessary, actually fashion small replacement parts themselves. Initially, aircraft apprentices graduated as an Aircraftman Second Class (AC2), an Aircraftman First Class (AC1), or a Leading Aircraftman, (LAC), depending on their final trade test results.[33] Some who graduated as LACs in the 1920s were given immediate further training at Henlow and took up their first appointments as corporals. Most pre-war apprentices soon attained LAC rank but, following the 'Great

To keep abreast of technical developments Halton had state-of-the-art Blenheims to work on as early as 1937. After brief service with No 114 Sqn as K7039, this one became instructional airframe 1024M at No 1 SofTT.

Depression', from the late 1920s to the start of WW II, many did not advance beyond corporal, unless selected for flying training. After the introduction of a new trade structure in 1951, all aircraft apprentices graduated as junior technicians with some gaining accelerated promotion to corporal.[34] Most post-1951 AAs were corporals within a year of graduation.

It was in the earliest days of the aircraft apprentice scheme that the term 'Trenchard (or Halton) Brat' came into vogue, initially as a term of derision used by 'old sweats' who took a rather jaundiced view of these clever young upstarts who were destined for rapid promotion to corporal.[35] However, as time passed and the 'brats' were able to prove their worth, it became a title which all ex-apprentices are proud to claim, even those who attained air rank.[36]

In the late 1950s, a study was initiated into the RAF's youth training requirements. This was undertaken in parallel with another study into the requirements for trade specialisations and resulted in the 1964 Trade Structure, introduced in April that year. The aim of the two studies was to match the growing complexity of aircraft and their systems, particularly those associated with the projected TSR2, with ground crew who had the ability to diagnose faults in systems which cut across the traditional trade boundaries.[37] The RAF's previous reliance on maintenance by repair was being superseded by a new concept of repair by component change. As a result, the single-skill Aircraft Apprentice was replaced by a new breed, the Technician Apprentice (TA), who trained in the four trades of airframe,

propulsion, electrical and weapons.[38] Technician apprentices were recruited with a minimum of four GCE O-levels and more emphasis was placed on their academic training to ensure that most graduated with a National Certificate in Engineering.

The first TA intake (the 107th Entry) started training in October 1964 but, along with many others in the Service, they were disappointed to learn in April 1965 that the Wilson government had scrapped the TSR2 programme.[39] Although the government took options on the purchase of the American F-111 this never came about. The members of Halton's 107th entry were offered a free discharge or re-mustering to another trade. However, most volunteered to remain on the TA course as the high quality of the training they were receiving was very marketable. Equally attractive was the opportunity to graduate in the rank of corporal with early promotion to substantive sergeant after just two year's satisfactory productive service.[40] With no TSR2 or F-111 on which to employ these highly skilled graduates, on graduation they were initially utilised in single-skill posts but their multi-trade capabilities made them particularly useful as trade supervisors, and in the rectification of the more intractable faults in the complex aircraft systems then coming into service. There were also more openings for TAs to be commissioned in the engineering branch as many of them eventually were. The TA scheme ended in 1972

Whilst the TA scheme took care of engineering support for future aircraft and equipment coming into service, there was a continuing need for single-skill fitters. To meet this requirement a two-year Craft Apprentice (CA) Scheme, with a new numbering series starting with the 201st Entry had been introduced concurrently with the start of the TA scheme. The CA scheme was, in effect, a direct replacement for AA training, but required lower academic qualifications on entry. Craft Apprentices graduated as junior technicians but without formal academic qualifications, unless taken ex-curriculum. However, this did not prevent CAs from being commissioned, with some attaining air rank and others filling senior appointments in industry as we shall see later. The Craft Apprentice Scheme lasted ten years, ending with the 231st entry in 1974.[41]

In 1969 a one-year Mechanic Apprentice course was introduced starting with the 401st Entry. Its trainees graduated as LAC with many

Hunters, and the occasional Sea Hawk, in Halton's workshops in the 1970s.

of them still less than 17½ years of age. This was short-lived and the scheme was terminated after ten intakes.[42] Another short-lived course training medical admin apprentices for one year starting with the 301st Entry in 1964 ended in 1969.[43]

By the early 1970s, apprentice training had reached a crossroads and after considerable debate in the upper echelons of the Engineer Branch it was decided to continue apprentice training with the introduction of the Apprentice Engineering Technician (AET) scheme.[44] The January 1973 Entry, the 123rd, was the first to undertake AET training. The winds of change were now well and truly blowing through Halton. The maximum age of recruitment of apprentices was raised to 18½ and, exceptionally, 21. With many apprentices now older than direct entry airmen, there was no need for any of the 'rules' which governed the lives of their predecessors. Indeed some AETs were married during training, had children and lived in MQs. The standards of behaviour expected of AETs when off duty was similar to that required from all RAF personnel. Their adult status was recognised by the discontinuance of the NCO ranks and the removal of all apprentice insignia from uniforms.[45]

However, certain aspects of the original scheme were retained such

The end of an era. HRH The Duke of Gloucester reviewing the final graduation parade, that of the 155th Entry in June 1993.

as the apprentice entry numbering system and AETs were accommodated separately from airmen. However, following a concerted campaign led by the RAF Halton and RAF Cranwell Apprentices Associations, supported by some prominent ex-apprentices serving at air rank,[46] NCO apprentice ranks and the wearing of the iconic 'wheel' badge were reinstated in 1982. Ironically, many of the apprentices serving at this time were keen to see these symbols of their past heritage restored. 'After the re-introduction of the "wheel" it was paraded for the first time at the Graduation of the 134th Entry on 29th September 1982. AET Prevett, the Parade Commander, was so chuffed, he wore a 'wheel" on both arms. We did not charge him with being improperly dressed,' recalled Air Cdre M J Evans, one of four former Halton apprentices who returned to command the station.[47]

AETs were trained as dual-trade airframe and propulsion technicians and initially followed the National Certificate curriculum in their academic training as their predecessors had done. This element of the course was replaced in 1977 by the Ordinary Diploma and for most the Higher Certificate awarded by the newly formed Business and Technician Education Council (BTEC). These certificates were

awarded for achievement in all aspects of trade and academic training.[48] The AET scheme ended in June 1993 with the graduation of the 155th Entry, which also marked the end of apprentice training in the RAF.[49] AETs enjoyed the highest level of aircraft engineering training during the life of the various apprentice schemes and, unsurprisingly, produced the highest number of commissioning candidates. At the end of 2015, only 65 ex-AETs were still serving, of whom twenty-six were holding commissions, with several at senior officer level and six at air rank.

Halton was arguably one of the first aeronautical engineering colleges in the world and certainly the first in any air force. The 'Halton Apprentice' label soon became synonymous with aeronautical engineering excellence, a reputation that rapidly gained recognition throughout the aircraft Industry and internationally. The Royal New Zealand, Pakistan, Ceylon and Rhodesian Air Forces and the Burmese and Malayan Air Forces all sent boys to Halton to train alongside British apprentices. The Venezuelan Air Force sent boys to train at Halton in the 1970s.

The Halton Apprentices' Contribution to WW II

When the expansion of the RAF began in the mid-1930s, ex-apprentices, as Trenchard had planned, formed about 50% of the trained strength of the Service. With recruiting buoyant, the size of Halton intakes ballooned, reaching over 1,000 boys per entry. The 40th Entry, which enlisted in August 1939, was the largest ever with 1,385 boys taking the King's shilling.[50] Coincidentally with the arrival of this large entry, as a war emergency measure the duration of training was gradually shortened, initially to 2½ then to 2 years. This reduction in training time reached its nadir with the early graduation of the 39th entry in April 1940 after only 20 months. Many of this entry were still less than 17½, some as young as 16, officially still boys but now serving as airmen on the front line. The youngest recruit to join the RAF, at just 15years and 2 months, was Apprentice Harry Clack. Sadly, he would also become the RAF's youngest casualty on active service when he was killed in an accident while employed on aircraft salvage at Croydon in the closing days of the Battle of Britain, still a month short of his 17th birthday.[51]

Interestingly, apprentices were the only people who continued to

join the wartime RAF; from September 1939 until 1945 all other recruits were enlisted, or commissioned, into the RAFVR.

A large minority of the boys joining the RAF as apprentices saw it as a route via which they might achieve their real ambition, which was to become pilots. Ever since 1921, airmen had been able to volunteer for training as sergeant pilots and to serve as such for six years before returning to their ground trades, retaining their rank.[52] The idea was to create future leaders of the technical branch with an appreciation of the challenges faced by aircrew. Several hundred ex-apprentices serving on these engagements at the start of hostilities were, however, retained in flying posts. Many were soon commissioned rising quickly to executive positions on operational squadrons. Sqn Ldr Donald Finlay, an ex-apprentice of the 12th Entry and a triple Olympian, was well known to the public as one of the country's top athletes. He commanded Nos 43 and 56 Sqns in the Battle of Britain, shooting down four enemy aircraft and winning a DFC.[53] Finlay was one of 116 former apprentices who flew as pilots in the Battle; several of them became 'aces', some destroying more than 12 enemy aircraft, among them Sqn Ldr 'Ben' Bennions,[54] Wg Cdr 'Taffy' Higginson,[55] Flt Lt Geoffrey 'Sammy' Alford[56] and Gp Capt Frank Carey.[57] Sgt Samuel Butterfield destroyed eight enemy aircraft in 14 days of intensive operations in May 1940 accounting for four on a single day before being shot down himself over the Channel. He was rescued only to be shot down again a few weeks later and killed.[58]

While many of their colleagues were fighting in the air, thousands of former apprentices were working tirelessly on the ground to ensure their aircraft were in fighting condition. Promotion in the ground branches had been slow, even non-existent in some trades, in the inter-war years. With the rapidly growing numbers now joining the Service, thousands of ex-apprentices suddenly found themselves racing through the ranks to SNCO and warrant officer, providing a vital source of experienced technical supervisors on front line squadrons, maintenance units and as instructors for the growing number of technical training schools.[59]

Halton apprentices contributed to all of the major air campaigns of WW II, both in the air and on the ground. The introduction of the four-engined bombers in 1941 brought an urgent need for an additional crew member, a flight engineer. His role was to assist the

pilot to manage the complicated systems in these more advanced aircraft.[60] Former Halton apprentices were ideally suited to this new challenge, and several thousand of them transferred their engineering skills from the ground to the air in this role. The heavy losses sustained by Bomber Command are reflected in the 2,000 casualties listed in the Apprentices Roll of Honour in St Georges Church at Halton. More than 400 of these men had been flight engineers. Of the five ex-apprentice flight engineers who flew in the Dams Raid, only one returned.[61]

From the beginning of apprentice training, some were posted on graduation to serve on aircraft carriers, then under the control of the Royal Air Force. When control of the Fleet Air Arm passed to the Royal Navy in January 1937 it lacked the facilities for training its own aircraft engineering apprentices.[62] To meet the immediate need for these skills, volunteers were invited from the 35th, 36th and 37th Entries to transfer to the Royal Navy, and 160 of Halton's apprentices answered the call. Subsequently the RN sent 400 directly recruited Fleet Air Arm apprentices to train with the 38th to 41st Entries.[63] So – be careful when telling your RN friends this snippet as they can get very upset to learn that the junior Service, in the form of Halton apprentices, provided an important element of the foundations on which the carrier force developed into a vital arm of the nation's capability in WW II and beyond. Many of the initial Halton transferees were killed in various sea battles during the war; fifteen went down with HMS *Glorious* at the end of the Norwegian campaign in 1940.[64]

In 1943 hundreds of boys, mainly orphans and some as young as 14, were driven out of Poland by Hitler and, after a tortuous journey through the Middle East, ended up in the UK. Two hundred of these Polish boys were selected to train at Halton as aircraft apprentices and another 100 at Cranwell. They spent most of their first year in the RAF settling into their new country and learning English. At Halton, they joined the 49th and 50th Entries which eventually graduated in the late 1940s. Although able to remain in the RAF on a five-year engagement, most opted to leave the Service.[65] Many of the latter forged very successful careers in industry and academia in this country. Only five of Halton's Polish contingent elected to return to Poland.

563627 Sergeant Thomas Gray VC

Halton apprentices' loyalty and devotion to duty during WW II was recog-nised by the large number of decorations they received. Notable among them was Sgt Gray of the 20th Entry, an observer, who was, along with his pilot, Fg Off Garland, awarded one of the first two air VCs of WW II.[66] Some 1,000 other gallantry awards went to former aircraft apprentices and 2,500 were Mentioned in Dispatches. However, on-going research into this topic is continually uncovering hitherto unknown awards. Recent discoveries include six George Crosses and thirteen George Medals.[67]

Given that, at the end of the war, only some 20,000 apprentices had graduated from Halton, it is clear that their contribution to WW II had been impressive and this was acknowledged by many senior commanders. For example:

> 'The consistent technical excellence of the RAF has rested upon the skill and high devotion to duty of those who learned at Halton their trades and first formed their sense of duty. Their success in the air and on the ground pays a finer tribute than any words of mine to the standard of Halton's achievements.'
>
> *Marshal of the Royal Air Force Viscount Portal*

> 'Halton throughout the years has made an outstanding contribution not only to the RAF but to the country as a whole.'
>
> *Marshal of the Royal Air Force Sir Dermot Boyle*

> 'One thing is absolutely true, the air battles of Burma were won in the classrooms and workshops at Halton; won not just by knowledge and skill of your maintenance crews, it was won by

the spirit that Halton produced.'

Admiral of the Fleet Earl Mountbatten

'Halton has given the Royal Air Force not only its hard core of efficient technical NCOs and airmen but also a magnificent core of officers many of whom are in high rank in all branches of the Service.'

Air Marshal Sir John Whitworth Jones

Achievements of Halton Apprentices

Lord Trenchard was proud of, and took a keen interest in, his apprentices at Halton and visited them often at work and play. He had always intended that the best of each Entry should be awarded cadetships at Cranwell, but were he alive today he would be amazed to discover that over 20% were commissioned, with 110 attaining air rank.[68] One of these, MRAF Sir Keith Williamson, a Cranwell apprentice, became CAS, and several others served on the Air Force Board, including Air Chf Mshl Sir Michael Armitage who was AMSO in the early 1980s and has been the Patron of the RAF Halton Apprentices Association since its foundation in 1980. Of those apprentices who became Cranwell cadets, thirteen won the Sword of Honour, giving credence to Trenchard's vision that the new Service should base the selection of its future leaders on ability and merit, and not class and social background. Halton apprentice training gave many a boy from a humble background the chance to aspire to heights not normally expected of him. This very deliberate commissioning from the ranks was an outstanding example of social mobility, uncommon for the time.[69]

Of the Halton apprentices who achieved air rank, thirteen were knighted. One, Sir John McGregor, left the RAF as a sergeant after WW II, emigrated to Hong Kong where he joined the colony's Civil Service in a lowly position and made his way up the promotion ladder to become head of the Hong Kong Executive Council and adviser to the last Governor, Chris Patten, during the negotiations leading to the transfer of the colony to China in 1997. Thousands of former apprentices made senior officer rank. On-going research indicates that some 1,000 have been awarded State Honours.[70] Uniquely, at the moment two former Halton Craft Apprentices hold high executive positions in the two principal RAF Charities: Air Mshl Sir 'Dusty'

Cliff Michelmore as an apprentice.

Miller is President of the Royal Air Forces Association, and Mr Lawrie Haynes is Chairman of the Trustees of the RAF Benevolent Fund. In his day job Lawrie is CEO of Rolls Royce Nuclear and Marine. Well known to all those who follow air shows around the country is one of the nation's most skilled display pilots, Air Mshl Cliff Spink, who was a Halton apprentice in the 104th Entry.

Although thousands of former apprentices had very successful careers in the RAF, many did not reach their full potential until life beyond the Service. The aircraft industries were naturally the first port of call for many ex-apprentices where they made magnificent contributions on the shop floor, at all levels of management, and in the boardrooms. Many former apprentices who trained as pilots and flight engineers continued to fly with civil airlines. The majority of these pilots became aircraft captains, two making notable contributions to the introduction of the Blind Landing System. Captain Eric Poole was the first pilot to land an aircraft using the system while carrying passengers and Captain Charles Owens was the first to land an aircraft using it with Her Majesty the Queen on board.[71]

After leaving the RAF, many ex-apprentices turned away from engineering altogether and forged successful second careers in other professions including medicine and the law. Some became top surgeons and a few served on the Crown Court circuit. Considering they were the two professions most apprentices had spent three years avoiding at Halton and Cranwell, a surprising number became vicars and policemen. In the latter respect, two Cranwell apprentices excelled, one becoming a bishop and another followed in Lord Trenchard's footsteps by becoming head of the Metropolitan Police.

Some former apprentices ended up as BBC TV stars. Most notable of these was Cliff Michelmore who, having graduated from Halton in 1938, was serving as a squadron leader with a military wireless station in Germany in the mid-1940s when his talent as a broadcaster was recognised by the BBC. He later hosted *Two-Way Family Favourites*, a radio programme much loved by the UK population in general and especially by personnel serving in Germany in the immediate post-war years. Michelmore, ultimately became the anchor man for BBC TV news and current affairs programmes.[72]

The most famous of the aircraft apprentice alumni is Air Cdre Sir Frank Whittle who gave the world the jet engine. Whittle initially applied to join the 7th Entry at Halton in January 1923 but failed the medical owing to his lack of height. In an article he wrote for the *Halton Magazine* while in Halton Hospital for a short period in early 1944, Whittle explains the advice he was given by a flight sergeant physical training instructor which enabled him to add three inches to his height, enough to be accepted for the 8th Entry in September 1923.[73] However, because the permanent barrack building programme at Halton had fallen behind schedule, this entry was trained at Cranwell. Interestingly, at the critical stage of the development of the engine which was to power the first flight of a British jet aircraft, Whittle requested and received the support of four ex-Halton apprentice engine fitters to help out in his workshop at Power Jets.[74] Whittle's final examination results along with those of 40,000 other former Halton apprentices are preserved at the Trenchard Museum Archives at Halton.

Trenchard's legacy.

While ex-Halton apprentices who became high achievers contributed much to its legacy, Trenchard's aim in founding his scheme had been to produce a cadre of well-motivated, highly trained airmen capable of becoming competent supervisors in the direction of work and control of men. Most ex-apprentices did exactly that. They were the true heroes of the piece, becoming SNCOs and warrant officers whose training taught them never to accept second best in keeping our aircraft serviceable and safe. They gave of their best in the inter-war years, during WW II, throughout the Cold War and in peacetime, in all theatres, in all circumstances and rightly earned the

sobriquet, ‘The Backbone of the Royal Air Force.’ Thus it is as an apprentice engineering school that Halton is best remembered, and indeed revered, not only in this country but across the industrial world.

Perhaps our founder Lord Trenchard summed up his, and the legacy of Halton in a speech he gave in the House of Lords in December 1944 on the air campaign during the war. Here is the appropriate extract

> ‘Some of your Lordships will remember that after the last war we set up in the Air Force a very large training School at Halton. It was, I believe, the largest of its kind in the world. It was a great experiment and was bitterly criticised at the time. Nevertheless, I feel justified in saying that the experiment has richly justified itself. There is no doubt at all in my opinion, that Halton and the Halton spirit have been a pillar of strength to the RAF all over the world. The Halton trained men have provided the nucleus on which the great expansion of the air force was centred. They have set and maintained an extraordinarily high standard of efficiency. You have only to look at the promotions and honours gained. A large number of these men are senior Air Vice-Marshals and Air Commodores running the highest technical offices in the Air Force. Surely the efficient maintenance of aircraft has also been one of the outstanding features of the war and that has been made possible by the Halton training of our men.’[75]

On 25 July 1952, No 1 School of Technical Training, RAF Halton received the highest accolade that any unit in the RAF can receive – the award of a Queen’s Colour. This Colour is unique in being the only one to be awarded to a youth training school in any of the armed forces and, having been received from Her Majesty by a sergeant apprentice, a unique custom was established that it may, on occasions, be carried by an NCO.[76] This custom continues at RAF Cosford, the current home of No 1 School of Technical Training, where young men and women are trained as aircraft engineering technicians on a modern apprenticeship course.

Acknowledgement. I am indebted to Gp Capt J Monahan for providing access to his, as yet unpublished, PhD thesis.

Notes: TMA – Trenchard Museum Archive;
TNA – The National Archives

[1] Armitage, M; 'The Origins of the Boys' Service in the RFC and the RAF', in *Spirit of the Air*, Vol 1, No 2, 2006, p29. Boys were actually serving in the RFC within a year of its formation. In July 1912 Maj Sykes (later Maj Gen Sir Frederick Sykes, CAS April 1918 to March 1919) wrote to the War Office suggesting the establishment of nine boys per squadron, plus ten for the airship squadron and four for the Flying Depot, and received authority from the Director of Military Training on 10 April 1913 to enlist twenty-five boys in the Military Wing of the RFC. Although War Office instructions regarding the terms of enlistment of boys were not received until 16 June 1913, twenty-five boys had been serving since 28 February 1913. See also McInnes, L and Webb, J V; *A Contemptible Little Flying Corps,* (The London Stamp Exchange, 1991) p21.

[2] 'Notes on the History of Boys Training in the RAF'; AHB document dated 5 September 1955. Copy held in TMA.

[3] Later air commodore and Commandant of No 1 School of Technical Training Halton, 1927-1929.

[4] Armitage, *op cit*, p29. See also Martin, Sqn Ldr C; 'Early Apprentice Memories' in *Halton Magazine*, Winter 1949, p57.

[5] Armitage, *op cit*, p29.

[6] Ross, J; *The Royal Flying Corps Boy Service* (Buckland Press, Dover, 1990) p73.

[7] Taylor, B; *Halton and the Apprentice System* (Midland Publishing, Leicester, 1993) p11.

[8] See Note 2.

[9] Cmd 467. A copy may be accessed at TNA as piece AIR1/17/15/1/84 and it was reproduced verbatim in *Flight* for 18 December 1919, pp1622-25.

[10] Escott, Sqn Ldr Beryl; *The Story of Halton House, Edn 5* (Halton House Officers Mess) p42. Halton Park was the original name of the land between the airfield and Halton House.

[11] Transcript of the Trenchard Memorial Lecture delivered at the Halton Branch of the Royal Aeronautical Society on 19 April 1990 by Air Chf Mshl Sir Michael Armitage KCB CBE, ex-Halton Apprentice, 56th Entry. Copy held in TMA.

[12] TNA AIR2/129. Air Ministry Pamphlet 'Entry of Boy Mechanics to the Royal Air Force' was published in October 1919; its content was summarised in *Flight* for 20 November 1919, p1517. Candidates would be nominated by, and have the endorsement of, their Local Education Authority and entry was to be competitive, via an examination which, it was anticipated, would be 'similar to that which already exists for the entry of boy artificers into the Royal Navy.'

[13] Over 20 trades were taught at Halton in the early days of apprentice training. Most were sub-divisions of fitter, carpenter, blacksmith, and coppersmith, A full list of these sub-divisions can be seen in a document entitled 'Apprentice Training at Halton', dated 11 May 1983, held in TMA.

[14] Boyle, Andrew: *Trenchard Man of Vision (*Collins, London, 1972) p330.

[15] Apprentice intakes were trained at No 2 School of Technical Training at Cranwell until 1926. Entries 1 to 4, and 8, completed the full three years at Cranwell. The 9th and 10th entries began at Cranwell but moved to Halton to complete their training.
[16] See Note 11.
[17] The 1st Entry enlisted in January 1920. Between 1920 and 1945 there were two intakes a year with the exception of 1941 when only one was recruited. From 1946 to 1964 there were three a year, and from 1965 to May 1990 there were two a year with occasional reductions to one and increases to three. The last entry, the 155th, enlisted in May 1990.
[18] RAF Form 266, 'Entry as an Aircraft Apprentice'. See also Tunbridge, Paul; *History of RAF Halton No 1 School of Technical Training* (Buckland Publication, London, 1995) p26.
[19] Standing Orders for Apprentices Wings Stationed at Halton Camp, 1927; copy held in TMA.
[20] Full details of the numerous recreational and sporting facilities available at Halton from 1920 to 1993 can be seen in various editions of the *Halton Magazine* held in TMA.
[21] Ten shillings and sixpence a week in the first year from 1920 to 1952. Apprentices received a ten shilling note on the pay parades held once a fortnight. One shilling was deducted for barrack damages and the amount remaining in credit was paid as a lump sum before proceeding on the main block leave periods. Small pay increases were given in the second year and third years, or on attaining the age of 17½ whichever came first. After 1952, annual pay increases for apprentices kept pace with the pay awards to the Armed Forces. Free travel warrants were also introduced in the WW II years and beyond.
[22] *Flight*, 9 August 1923, p480.
[23] *Hansard*. HC Debate, 25 February 1926, Vol 192, cc 820-824.
[24] Copies held in TMA.
[25] Standing Orders for Apprentices Wings Stationed at Halton Camp, 1935, pp4 & 20; copy held in TMA.
[26] Standing Orders for Apprentices Wings Stationed at Halton Camp, 1927, p23; copy held in TMA.
[27] The *Halton Magazine* September 1943, p4.
[28] RAF Training Command Public Relations Document, dated April 1974.
[29] The wireless trades were initially taught at Flowerdown. Apprentices selected for this training enlisted at Halton where they completed some basic training with their entry before moving to Flowerdown. Aircraft Apprentice training in the electrical trades moved to Cranwell in 1929 and to Locking in 1952 from where the aircraft-related aspects of this training moved to Cosford in 1963.
[30] Constructed in the early 1920s this building was originally intended to be the RAF Records Office. It was opened in 1925 as the Apprentices' 'Schools'. It is currently known as Kermode Hall after the first director of education at Halton (1922-1939), A C Kermode.
[31] Apprentice final academic examination results are held in TMA. This requirement was for Aircraft Apprentices only. For the later schemes see text.

[32] When The Queen presented Her Colour to No1 School of Technical Training on 25 July 1952, the Escort Squadron to the Colour was commanded by Flt Sgt L Parkin of the 63rd Entry. Over 1,500 apprentices were on parade. A copy of the programme for this event is held in TMA.
[33] 'An Apprenticeship in the Royal Air Force', AM Pamphlet 15, p8. 40%-59% in final trade tests qualified an apprentice as an AC2, 60%-79% as an AC1, 80% and above as an LAC.
[34] A minimum mark of 60% was required in final trade tests to qualify as a junior technician.
[35] Many articles on, and memoirs of, apprentice life are held in TMA.
[36] For example, Air Mshl Sir 'Dusty' Miller and Air Mshl Cliff Spink.
[37] Taylor, *op cit,* p21.
[38] Starting in 1959, some intakes included Dental Technician Apprentices who, except for their professional training, which was carried out at the Institute of Dental Health and Technology, were fully integrated with engineering entries.
[39] TNA CAB/238/39. Conclusions of Cabinet Meeting CC(65)20 held at 10 Downing Street on 1 April 1965.
[40] See Note 28.
[41] See Note 28.
[42] See Note 28.
[43] Letter MTE/862/2/Trg dated 11th March 1965. Copy held in TMA.
[44] Loose minute AF/4826/72/S10(Air) dated 27 Dec 1973. Copy, and other relevant documents, held in TMA
[45] *Ibid* and loose minute DDDAB & P(RAF) 1249 dated 13 December 1973, also held in TMA.
[46] Air Chf Mshl Sir Michael Armitage and Air Mshl Sir Eric Dunn.
[47] Email 09/08/2016 from Air Cdre Evans to TMA recalling his time as OC Halton.
[48] MOD Letter HN/16/15/Air dated 28 October 1977; copy held in TMA.
[49] The final graduation parade of RAF Apprentices actually took place at Cosford in October 1993 with the graduation of the avionics tradesmen of the 155th Entry.
[50] Nominal roles on joining are included among the records of each Entry, all of which are held in TMA.
[51] *Croydon Guardian*, 25 April 2008; copy held in TMA.
[52] The conditions under which airman could be trained as pilots had been announced by Air Ministry Weekly Order 706 of 8 September 1921. With the re-introduction of the air observer, by Air Ministry Order A.196 of 9 Aug 1934, airmen, including ex-apprentices, could also volunteer to fly as such but, until 1939, only on a part-time basis.
[53] Obituary, *Daily Telegraph*, 22 April 1970.
[54] Obituary, *Daily Telegraph*, 12 February 2004.
[55] Obituary, *Daily Telegraph*, 20 February 2003.
[56] Holmes, Tony; *Hurricane Aces 1939-1940* (Osprey, London, 1998).
[57] Franks, Norman; *Frank 'Chota' Carey: The Epic Story of G/C Carey CBE, DFC and 2 Bars, AFC, DFM, US Silver Star* (Grub Street, London, 2006) p173.
[58] *Haltonian Magazine*, issue No73, p3, November 2014. Copy held in TMA.

[59] Hansard. HL Debate, 6 December 1944, vol 134, cc131-89 – speech by Lord Trenchard, extract held in TMA. See also Kimber, C; *Son of Halton. The Memoirs of an Ex-Brat'* (Cox and Wyman, London, 1977) and Bishop, P; *Fighter Boys: Saving Britain 1940*; (Harper Perrenial, London, 2004) p34.

[60] Pennal, Tom; *Through Chestnut Avenue* (Scotforth Books, Lancaster, 2002) p617.

[61] Those who died were Sgts Ronald Marsden (32nd Entry), David Horsfall (33rd Entry), Guy Pegler (37th Entry) and James Taylor (39th Entry). Plt Off (later Gp Capt DFC*) Ivan Whittaker (37th Entry) survived the raid. Air bomber Fg Off John Fort DFC (19th Entry) also survived but was killed in action with No 617 Sqn on 15 September 1943.

[62] AP3003, *A Brief History of the Royal Air Force*, p58.

[63] Myers, Commander Bill; 'Two Shades of Blue' in the Halton Apprentices Naval Wing Association publication. Copy held in TMA.

[64] Their names are inscribed on the Fleet Air Arm Memorial at Lee-on-Solent.

[65] 'History of the Polish Aircraft Apprentices at RAF Halton and Cranwell 1943-1948' in *Halton Magazine*, September 1943, p16. Copy held in TMA.

[66] *London Gazette* No 34870, p3516, 11 June 1940. Posthumous awards. LAC Reynolds, the rear gunner in Garland's crew, who was also killed, received no recognition. This is still a contentious issue in some quarters.

[67] Hebblethwaite, Marion; *One Step Further. Those whose gallantry was rewarded with the George Cross* (Chameleon HH Publishing, Witney, various dates 2005-11).

[68] MoD official, named, portrait photographs of apprentices who attained air rank are on display in the Trenchard Museum

[69] For more detail see the RAF College Character Book and Ross Mahoney's PhD thesis, 'The Forgotten Career of Air Chief Marshal Sir Trafford Leigh-Mallory, 1892-1937: A Social and Cultural History of Leadership Development in the Inter-War Royal Air Force', University of Birmingham, March 2014.

[70] Current research programme at TMA.

[71] *BEA News*, No 253, 28 October 1971.

[72] Michelmore, Cliff and Metcalfe, Jean; *Two Way Story* (Elm Tree Books, London, 1986).

[73] *Halton Magazine*, March 1944, p2.

[74] *Haltonian Magazine*, June 2016, p31.

[75] *Hansard* – see Note 59.

[76] This was the first Colour Her Majesty presented to an RAF formation as Queen. In May 1951, as Princess Elizabeth, standing in for HM King George VI who was ill, she had presented a King's Colour to the Royal Air Force.

TRADE TRAINING IN THE ROYAL AIR FORCE IN THE POST-APPRENTICE ERA

Wg Cdr Christopher Jones

Wg Cdr Chris Jones joined the RAF in 1989 as an apprentice at Cosford. Commissioned in 1997, he graduated as an Engineer Officer, in 2001. He subsequently worked on Rapiers, Harriers and Tornados, including deployments to the Falkland Islands, Kuwait, Iraq, Afghanistan and aboard HMS Illustrious*. Staff tours have involved a stint at the PJHQ, and Engineering Authority duties associated with the Harrier and Tornado IPTs, and with the BAE 125s and 146s. He is currently OC No1 School of Technical Training at Cosford.*

The apprentice system of aircraft technician training lasted until 1993 and the graduation of No 155 Entry at RAF Halton and RAF Cosford. It is worth dwelling, for a moment, on the range of entry methods that existed in 1993, namely the Apprentice Technician, the Direct Entrant Technician, the Mechanic and the Flight Line Mechanic systems.

Each of these aircraft engineering entry methods required differing academic qualifications, with the apprentices and direct entry airmen requiring four 'O' levels, in subjects that included Mathematics, Physics and English. The discriminator between the two entry methods was the personal choice of the applicant and entry to the apprentice system also required the candidate to pass an additional entry examination and demonstrate engineering ability and potential as an SNCO. For the mechanics and flight line mechanics, lesser academic qualifications were required and such applicants were employed on a limited contract of 9 or 10 years. Of note, the meritocratic nature of the RAF gave the mechanics a route for Further Training (FT in Figs 1-3) if they were judged to have sufficient potential to undertake technician training.

A diagrammatic representation of the entry systems in place in 1993 is shown in Figure 1 which illustrates the hierarchy of entry systems at the time and shows that only apprentices and direct entry technicians had an accessible path to warrant officer rank. For the

Ac Engineering Entry Route – Until 1993

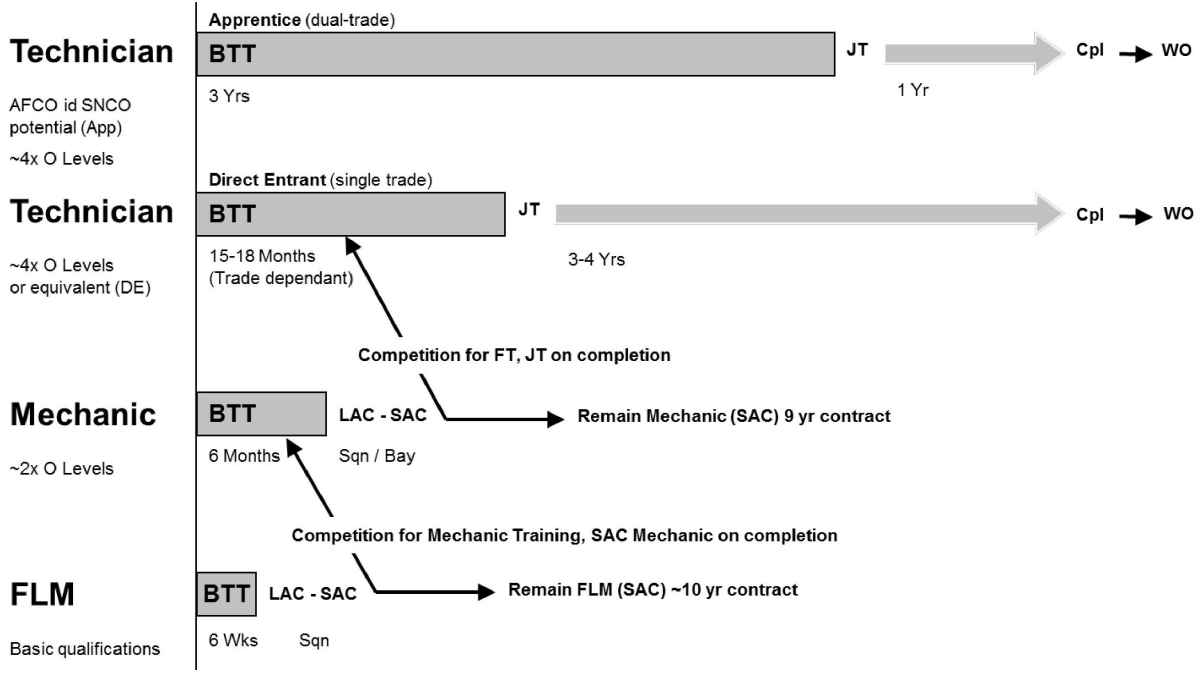


Fig 1: Aircraft Engineering Entry Route– Until 1993.

The note at top left, 'AFCO id SNCO', deciphers as 'Armed Forces Career Office identified potential for SNCO rank', a pre-requisite for selection as an Apprentice. BTT = Basic Trade Training. FT – Further Training.

mechanics, to access higher rank they had to be selected and transfer into the technician stream in order to have their contract amended to allow further service.

For the apprentices, the three-year length of their trade training resulted in accelerated promotion to JNCO rank after just one year of front-line duty. For the remaining entry methods, promotion was slightly slower. Whilst the systems of entry appear to be meritocratic, with opportunities for all to advance into the technician stream, the RAF manning climate in the early 1990s was challenging due to the many changes that resulted from a thawing of the Cold War. Against this backdrop, very few mechanics had the opportunity to transfer into the technician stream and competition was fierce. Additionally, promotion to JNCO rank and beyond was hugely challenging. Therefore many airmen found that their ability to advance was curtailed. The system in 1993 was, therefore, overly complex, difficult for RAF Manning to manage, and lacked the meritocracy that had originally been designed into it. Something had to be done because the apprentice system was ending and the needs of the RAF were evolving.

The period 1993-2003 saw a simplification of entry methods to just two: The Mech (Tech) and the Mech (Mech). The Mech (Tech) airmen required four GCSEs and typically undertook eight months of training followed by two years on a front line squadron or in a repair bay. At the end of the two years the airman was eligible for selection for further training and returned to education for one year before graduating as a technician.

The Mech (Mech) airmen required fewer O levels and after an initial eight months of training had to compete for assimilation training in order to access technician training. Figure 2 illustrates the engineering entry routes from 1993 to 2003.

Whilst the entry routes had been simplified, in 1999 the Air Force Board decided to introduce a new rank, the SAC (Technician). The introduction of this rank saw the demise of the Junior Technician. The change in emphasis, to embrace an all-technician workforce, was announced in the March 1998 edition of *Tradewise*, the 'Engineering and Trade Sponsor's Newsletter'.

In June 2002 the Air Force Board endorsed the Multiskilling Implementation Strategy. This decision removed the single.

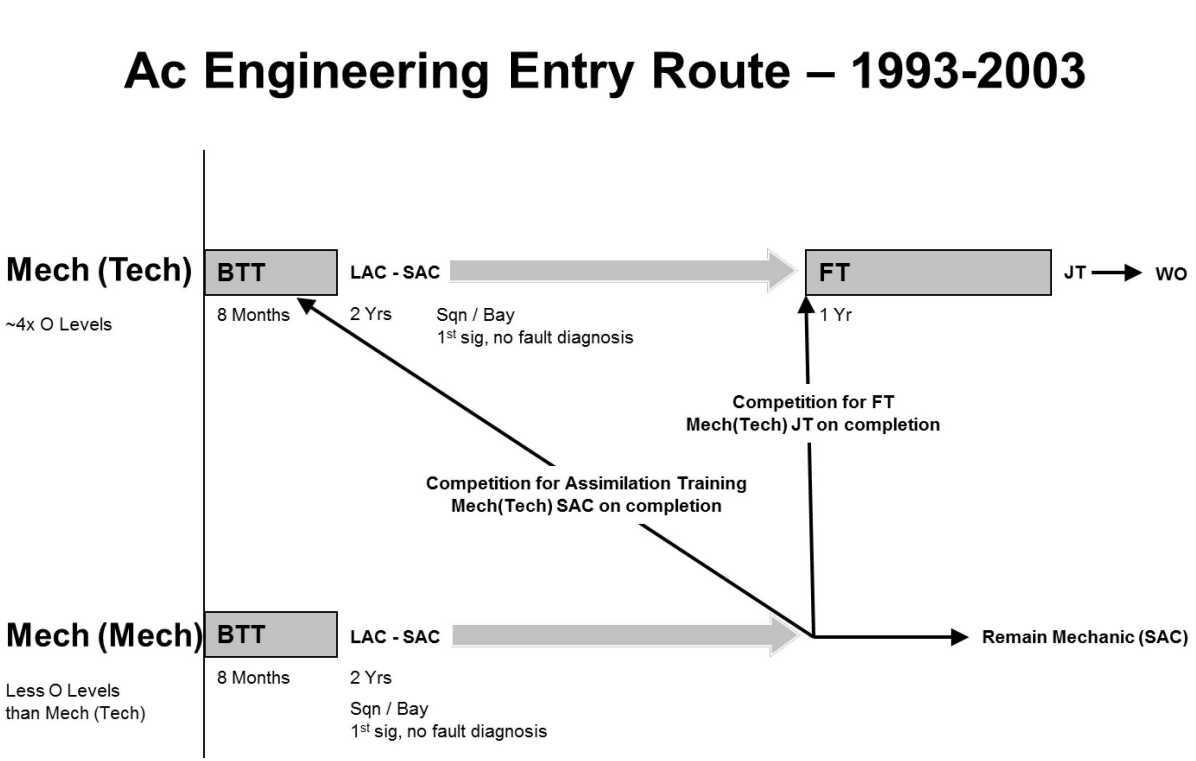


Fig 2: Aircraft Engineering Entry Route– 1993-2003.
BTT = Basic Trade Training. FT – Further Training.

trade structures of Propulsion, Airframes, Avionics and Aircraft Electrician and replaced them with Aircraft Technician (Mechanical) and Aircraft Technician (Avionics).

These changes led to the introduction of the Aircraft Maintenance Mechanic (AMM) system whereby all aircraft technicians had a clear route to technician status. The requirements to be an AMM were GCSE in English, Mathematics and a recognised Science. The training rationale was that an AMM would undergo 6 months of technical training, followed by 21-24 months of front-line squadron duties, followed by an automatic return for technician training of 1 year's duration. At the end of this process the AMM would become an SAC (Technician) and have a career path that would allow the attainment of warrant officer rank, subject to merit promotion. Of note, this system endured unchanged until a minor modification was made in 2015 to reduce the front-line element to just 14 months in order to accelerate the generation of technicians. Figure 3 illustrates the entry routes from 2003 to 2015.

The rationale behind the introduction of the AMM system and multiskilling was to evolve training to meet the needs of modern platforms. Whilst the training may seem to be a dilution, certainly in terms of time spent in training, there were several factors that justified such a change. First, the RAF's fleets of modern aircraft have had reliability baked into them from the design phase and, secondly, the integration of complex aircraft systems crosses the boundaries of traditional aircraft trades. Furthermore, built-in-test systems have evolved to be incredibly accurate and it is unlikely that today's technician will be as exposed to component-level repairs as the technicians of the 1970s and '80s were.

The benefits of the AMM system were that the AMM on a squadron was able to be a first-signatory across both mechanical and avionics systems. This allowed him/her to be inherently flexible and an asset to the unit, whilst also aligning more closely to the engineering arrangements of both the RN and REME (Aviation). Such a training philosophy was also aligned with the broad direction of travel of the Civil Aviation Authority.

The AMMs needed to be motivated, serving on busy squadrons, whilst also gaining qualifications. Squadrons were encouraged, and expected, to invest in their AMMs by immersing them in operations,

Ac Engineering Entry Route – 2003 to 2015

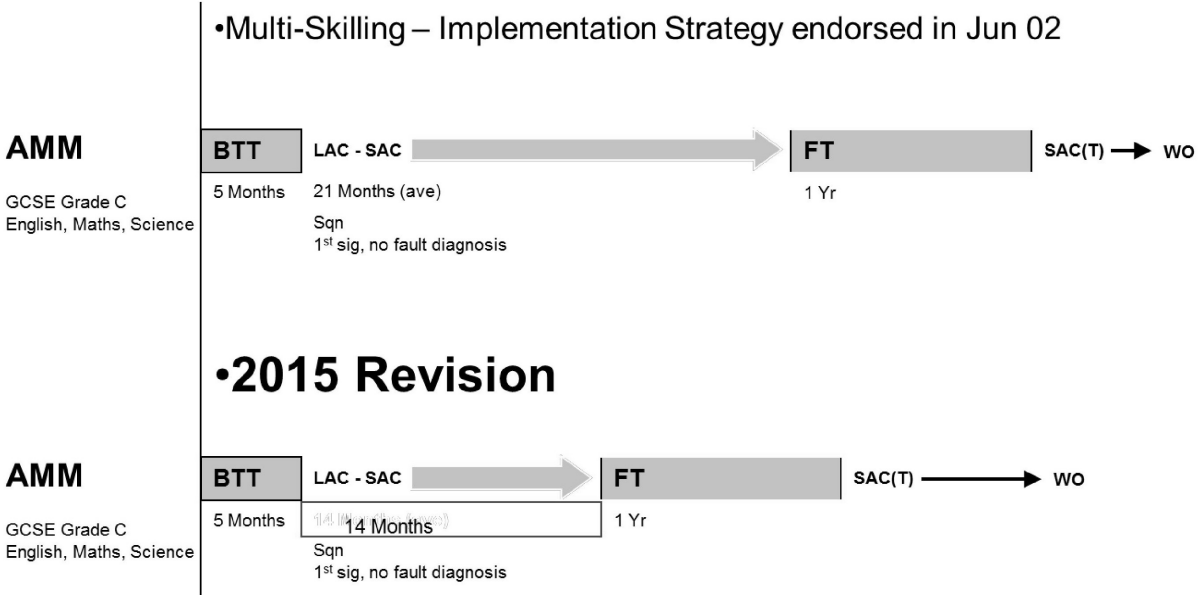


Fig 3: Aircraft Engineering Entry Route– 2003-2015.
BTT = Basic Trade Training. FT – Further Training.

exercises and service overseas; indeed many AMMs have served on operations in Afghanistan, Iraq and on exercises across the globe. It is worth emphasising that AMMs were not to be seen as Flight Line Mechanics. The AMM has a clear path to technician status and can perform basic rectification tasks ahead of returning for further training.

Trade Training in today's RAF is very much influenced by the 'joint' environment. The Defence College of Technical Training (DCTT), commanded currently by Brigadier Richard Bennett, is a 1-star HQ that oversees training in the aerospace, communications, mechanical engineering and marine engineering disciplines. DCTT comprises the following schools, all commanded by an OF5 ,ie 1-star rank, Commandant:

a. Defence School of Aeronautical Engineering.
b. Defence School of Communication and Information Systems.
c. Defence School of Electrical and Mechanical Engineering.
d. Defence School of Maritime Engineering.

Figure 4 shows the locations of the DCTT Schools.

RAF Cosford constitutes the RAF's major footprint within DCTT, with No 1 School of Technical Training, No 1 Radio School and the Aerosystems Engineering and Management Training School. Plans are also maturing to move No 4 School of Technical Training from St Athan to Cosford. Cosford's position as the prime RAF technical training establishment has been assured by a parliamentary statement and is firmly 'The Home of RAF Engineering'.

All trade training for aircraft technicians is undertaken within No 1 School of Technical Training. Aerosytems officers training and career courses for engineering tradesmen are provided by the Aerosystems Engineering and Management Training School. The Defence School of Aeronautical Engineering is a truly joint environment that trains both UK and international students. No1 School of Technical Training today comprises some 809 students and 340 staff.

Trenchard's original vision for an RAF Apprentice System did not end in 1993 with the graduation of the 155th Entry, it has simply evolved into today's Modern Apprenticeship. The drive for apprenticeships is a national challenge across all UK employers and Defence is at the forefront of delivering such qualifications to the next

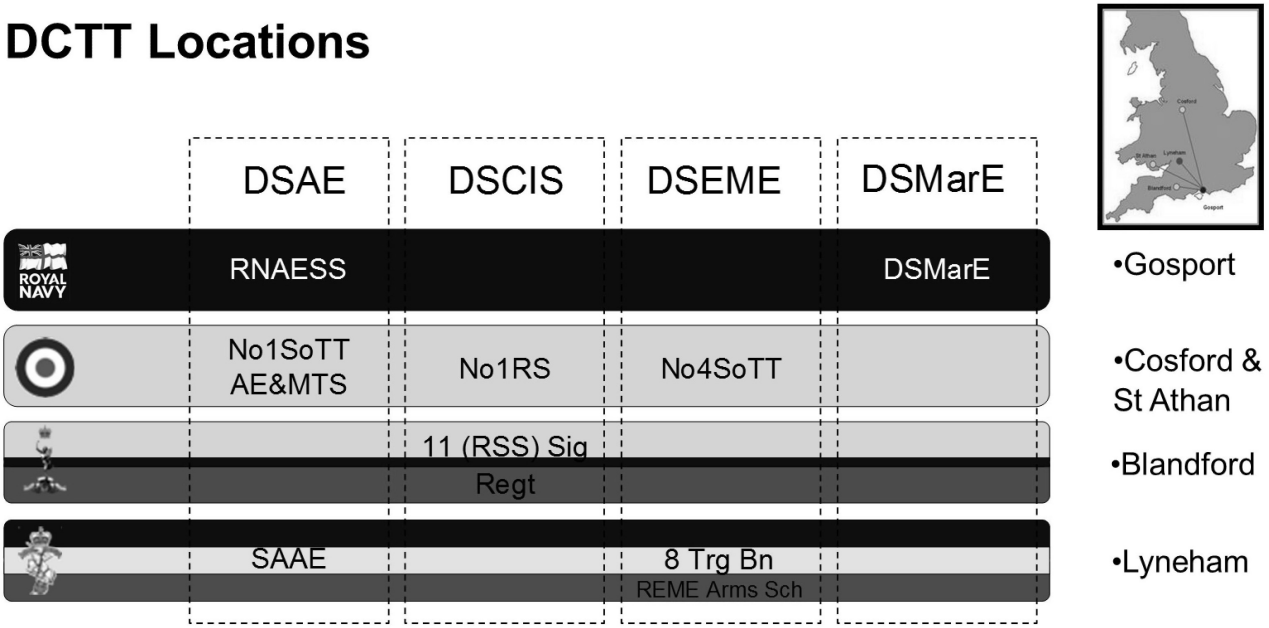


Fig 4: DCTT School Locations.

DSAE – Defence School of Aeronautical Engineering; DSCIS – Defence School of Communication and Information Systems; DSEME – Defence School of Electrical and Mechanical Engineering; DSMarE – Defence School of Maritime Engineering; RNAESS – Royal Naval Air Engineering and Survival School; AE&MTS – Aerosystems Engineering and Management Training School; SoTT – School of Technical Training; RS – Radio School; SAAE – School of Army Aeronautical Engineering; RSS – Royal School of Signals.

As at Halton in the past, Cosford maintains a selection of redundant airframes for practical work. (Chris Ward)

generation. The armed forces are the largest national provider of apprenticeships and since 2002 some 17,966 apprentices have graduated. In 2015 the RAF's apprentice training was graded by OFSTED as 'Outstanding' and this is an important accolade as many parents seek such assurances from the further education opportunities that are open to today's young people.

In conclusion, the ideals of Trenchard's Apprentice System live on today and No1 School of Technical Training is at the heart of that ethos and sense of service. Today's aircraft technicians work on technology that Trenchard could hardly have even imagined, but he would absolutely recognise that our young people live and espouse the principles of respect, integrity, service and excellence that were so close to his founding ideals. Trenchard would also recognise that all of the RAF's trade trading still has at its very core the maxim that 'The Trainee Comes First'.

THE FLIGHT CADET ERA

Gp Capt Christopher Finn

Gp Capt Chris Finn joined the RAF in 1972. As a navigator his subsequent career was closely linked with the Buccaneer and included tours with No 809 NAS, Nos 15 and 208 Sqns, No 237 OCU, CTTO and HQ 18 Gp. Twice awarded a QCVSA, he was the UK's laser-guided weapons specialist at AHQ Riyadh 1991. Having commanded the Navigator & Airman Aircrew School at Cranwell, his final appointment was as Director Defence Studies (RAF). Since leaving the service in 2005 he spent ten years lecturing on aspects of international relations and air power at the RAFC Cranwell in association with King's College London and Portsmouth University and became, and still is, a member of the International Guild of Battlefield Guides.

The Flight Cadet era began on 5 February 1920 with 52 cadets joining the new RAF College at Cranwell. It could be said to have ended on 4 April 2011 when Air Chf Mshl Sir Jock Stirrup, who was the last flight cadet (No 98 Entry) to reach senior rank, retired from the Service.

This paper will examine the Flight Cadet System in terms of: its original structure and subsequent major changes; the factors involved in the system's evolution and eventual demise; and the influence of the system on the Service.[1]

On 25 November 1919 Air Mshl Sir Hugh Trenchard, the Chief of the Air Staff, outlined his vision for the new RAF in a Memorandum to the Secretary of State for Air, Winston Churchill. The following summarises Trenchard's overall view on the structure of the new air force:

> '[…] to concentrate attention on … laying the foundations of a highly-trained and efficient force which, although not capable of expansion in its present form, can be made so without any drastic alteration should the necessity arise in years to come.'[2]

In a speech to the staff and cadets at the RAF College in 1921 he expanded on the role envisaged for the new Flight Cadets saying:

SUBJECT	MARKS
PART I	
English	150
General Knowledge	150
Interview & Record	250
One of: Modern Language; British History; Elementary Mathematics; Everyday Science	100
PART II	
Three of: Latin; Greek; German; Modern History; Lower Mathematics; Higher Mathematics; Physics-plus-Chemistry; Biology; Navigation	300 each
TOTAL	**1550**
A candidate must obtain minima of 50 Marks in the interview, 30% in educational subjects and such an aggregate of marks in the whole examination as to satisfy the Civil Service Commissioners	

Table 1. The Admission Criteria as at 1936.

> 'We have to learn by experience how to organize and administer a great Service, and you, who are present at the College in its first year, will, in the future, be at the helm.'[3]

Entry to the College was to be through an examination administered by the Civil Service Commissioners. Candidates had to have sat, or be about to sit, the School Certificate and a list of public schools whose Headmasters could directly nominate candidates was included in the Regulations for Entry. Table 1 shows the criteria for admission in 1936.[4]

The pass criteria were those for all four service colleges/academies and applicants could specify more than one college and preferences depending on how well (or poorly) they did in the application process. However, the RAF College was for pilots only and hence the RAF added a stringent aircrew medical and further interview to the process. There was, however, no pilot aptitude testing. It also placed restrictions on which papers could be submitted in each Part so that each candidate had to submit at least one mathematics or science paper. For a normal cadetship, lasting two years, fees of £150 and expenses of £65 for uniforms and books were required. Five 'King's Cadetships' were awarded per course, on the basis of performance in

SUBJECT	EXAM*	TERM	TOTAL	%
Educational Subjects	600	500	1100	9·1%
Aeronautical Science	1200	800	2000	16·5%
Aeronautical Engineering	1300	700	2000	16·5%
General Service Subjects	2100	600	2700	22·3%**
Aviation & Aeronautics	1100	1200	2300	19·0%
Drill, discipline and general efficiency (awarded by the Commandant)		2000		16·5%
TOTALS	**6300**	**5800**	**12100**	

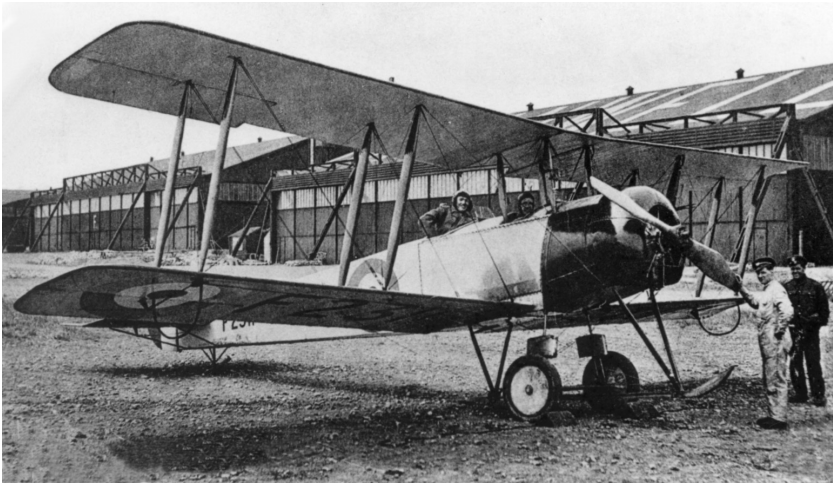
* Pass mark = 55%
** Inc 12% Armament, Meteorology, W/T & Morse

Table 2. The Syllabus as at 1923.

the entrance exams. However, the Air Council could 'where the financial circumstances of the parents or guardians are such that the grant would not be justified' award the grant to other high-performing applicants whose parents were considered to be in need of financial assistance.[5] There were some other external scholarships but one cadet record shows a cadet being withdrawn from the College 'by parents' rather than voluntarily and one can only wonder if that was due to financial circumstances.

There is also one clear statement in the Regulations for Entry concerning the role of the College in that it ' is intended exclusively for those who desire to make the Royal Air Force their permanent profession.' Put together with Trenchard's earlier statements, and the inclusion of pilot training in the syllabus, it is quite clear that he envisaged an exclusively pilot-led air force. As we will see, Cranwell would never produce more than a small minority of the RAF's pilot requirements; the rest would, initially, be a mix of short-service officers with limited career opportunities and SNCOs.

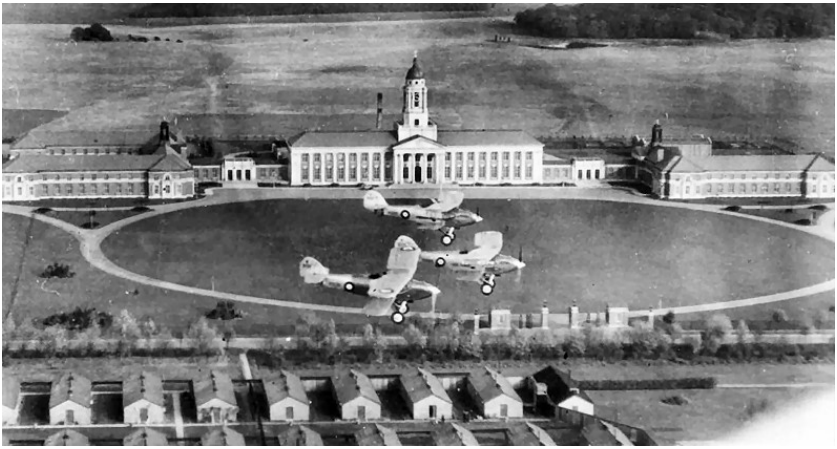
The syllabus, as at 1923, is summarised in Table 2.[6] The Term marks were awarded by the instructors in, what today would be called, continual assessment, and the Commandant could award up to 16·5% of the overall marks himself. Within 'Aviation & Aeronautics' pure piloting (aircraft handling and airmanship) amounted to just 10% of the course; the remainder was navigation and spotting. However, the



An Avro 504K at Cranwell in the early 1920s.

General Service Subjects contained a further 12% of aviation subjects. Thus flying was 31% of the overall course. The cadets were expected to become proficient pilots on the Avro 504, a basic trainer. However, the pilot trainees at the Service Flying Training Schools (SFTS) were also expected to be proficient on the Bristol Fighter or similar types, effectively advanced trainers. As early as 1922 the first Commandant, Air Cdre Longcroft, commented on the poor flying standards of many cadets and stated that 'anyone can learn to fly'.[7] There were, however, many instances of cadets giving up leave to catch-up on flying. By 1936 the discrepancy in the pilot output standards was such that a squadron of Bulldogs was established on North Airfield to bring the Cranwell standard up to that of the SFTSs.

The cadets were accommodated in the hutted ex-RN Lines, just south of Cranwell Avenue. Mirroring the other service colleges, and the public schools, standards and discipline were set and enforced by cadet Under Officers and NCOs from the senior course. There were some initiation rituals with the new cadet being ceremonially accepted into the cadet body by having their bowler hat jumped upon! The cadets formally dined-in every night with the staff attending once a week. The social make-up of the course can be judged from the commissioning list from December 1932 where: 23 cadets were from public schools; one from a Technical School; one from Cambridge



Audaxes over the College building which was officially opened in October 1934.

University and public school; and four were Halton Apprentices. The *College Journals* of the pre-war period give a good insight into the attitudes of the staff and cadets to professional military service. In the second *Journal* an article by 'CAP' (the CFI, Sqn Ldr Portal) extols the virtues of beagling in the personal and physical development of the cadets. The 1922 article by 'LWB' (Wg Cdr L W B Rees VC) is an excellent treatise on the emerging technical issues of air-to-air and air-to-ground gunnery, and one of very few 'professional' pieces in the *Journal* in the whole inter-war era. In the 1930s, apart from a polemic by one of the academic staff, the forthcoming war is studiously ignored. The majority of the articles and news in the *Journals* concern social, sporting or adventurous activities. It is easy to criticise the 'Stalky & Co' atmosphere but two things have to be born in mind. Firstly, the Service's hierarchy was predominantly ex-RN or Army where overt expressions of professionalism were frowned upon. Also, the majority of the cadets were under 21 years of age and hence, legally, boys; termly reports were sent to parents and guardians on their progress at Cranwell.

By the outbreak of WW II the RAF College had its permanent home in College Hall, to the north of Cranwell Avenue and the last pre-war (short) cadet course passed-out on 7 March 1940. Since

MRAF the Viscount Trenchard inspecting the Junior Entry at the Passing-Out Parade of 47 Entry on 27 July 1949. Note the mix of airmens' uniform and cadet insignia.

5 February 1920, 1,217 cadets had joined the College and 1,096 had been commissioned. At the end of WW II 477 of those had been killed, or were missing, in action or had died in flying accidents.

The first full-length post-war course, No 46 Entry (as they were now known), commenced on 15 October 1946 with 36 pilot cadets. No 46 Entry passed-out with 32 on 8 April 1948, the same year that the RAF College moved back into College Hall. One significant change was that fees were no longer charged. The College soon settled down into a pre-war pattern of training. Visits to other Cadet Colleges, such as the French Air Force College at Salon, were re-commenced and the cadets were flown to Germany to observe Operation PLAINFARE at first-hand. However, two problems soon emerged. The first was with the essentially pre-war syllabus. The second, the quantity and quality of the Flight Cadet entrants.

These problems were symptomatic of a number of broader issues. The first was a war-weariness amongst the general public which made recruiting the right calibre of cadet difficult. The second was the implementation of the 1944 Education Act (the Butler Act) which made a free Grammar School education accessible to those who

possessed the intellectual abilities. The third was the increasing complexity of the RAF's aircraft. In just a decade the College had gone from the Bristol Bulldog to the Gloster Meteor as the aircraft used to deliver the advanced flying phase of the course. Thus the desire to retain pilot training to wings standard as an integral part of the Cranwell cadet course considerably increased the demands on the cadets and on the amount of time in the syllabus dedicated to flying training.

So, in 1952, the Air Ministry set up an internal review into the whole Cranwell syllabus. As this was going on, in 1953, cadet NCO ranks were dispensed with. Instead there was one Senior Under Officer and one or two Under Officers in the Senior Entry of each of the squadrons. The 'Hartley Report' was approved by the Air Council in 1955 and made two statements about the desired outputs.[8] The first, short-term, aim was 'to produce good junior officers and proficient pilots and navigators.' This was still, just about, compatible with the time available and aircraft in use. The second, long-term, aim was less so. This was:

> 'To produce the quality of education and officer training which will enable the Cranwell graduate to develop his powers and facilities to meet the demands of progressively higher rank. He must be led to cultivate the capacity for logical and objective thinking, firm judgement and clear expression looked for in a good staff officer and a competent senior commander. He should be sufficiently an educated man to comprehend the broad as well as the narrow professional view.'[9]

Whilst the expressions used are those of the time, the broad thrust of this aim is remarkably similar to that expressed in the 2005 Officer Cadet Training Review.

1956 saw three significant events. First, Air Chf Mshl Sir Dermot Boyle (September 1922 Entry) became the first former Flight Cadet to be appointed Chief of the Air Staff. Secondly, a new curriculum was introduced. The course was increased to three years in length but there were to be only two entries per year (although the annual intake would remain the same). And the requirement for cadets to serve as airmen, wearing a mix of airmens' uniform and badges, and white cap-bands, for the first two terms was dropped. Lastly, the first navigator Flight

The first navigators were admitted to Cranwell in 1956, leading to the acquisition of Valettas. Note the distinctive blue fuselage band that distinguished all of the College's aircraft. (MAP)

Cadet arrived at the College.

In 1959 the pilot syllabus comprised: in year 1, 45 hours of navigation training in Valettas; in Year 2, 140 hours of basic flying training on Provosts; and in Year 3, 130 hours of advanced flying training on Vampires. The General Syllabus comprised: Aeronautical Science 1,008 hours; Humanities 426 hours; Private Study (all subjects) 399 hours; and General Service Subjects 740 hours. Other activities included sports, visits and (in the leave periods) adventurous training expeditions. Cadets also now had the opportunity, in what little time remained, to undertake a London University External Degree option. But the College was only producing 63% of its required pilot output. To make it more attractive the Civil Service Commissioners' Exam was dropped in favour of a requirement for all candidates to have five GCSEs (two at A Level) including English Language, Mathematics, a science subject or a foreign language and two others. A Levels were not required for Officer Cadet Training Unit entrants (the majority) although they could still be awarded Permanent Commissions.

By 1960 the V-Force was at its peak, and the Lightning and Wessex (for example) were being introduced. To bring pilots up to the entry standard for the Operational Conversion Units for these aircraft two Advanced Flying Training Schools (Valley for fast-jets and Oakington for multi-engined aircraft) were introduced. At the same

One of Cranwell's fleet of Chipmunks in the mid-1960s. (MAP)

time the RAF Technical College (for engineer officers) and the associated University Cadet scheme were well established. Then, on 15 December 1960 the Air Council decided to move the RAF Technical College from Henlow to Cranwell and amalgamate it with the RAF College. Supply and Secretarial Branch Flight Cadets had been trained at the College from 1946 and RAF Regt Flight Cadets (who previously went to Sandhurst) were also now being trained at Cranwell. Only the Air Traffic and Fighter Controllers of the General Duties (Ground) Branch were not to have the opportunity to train at the RAF College.

In 1961 the Jet Provost was introduced for Basic Flying Training. The early 1960s were in many ways the heyday of the Flight Cadet System, with now four cadet squadrons (hence the building of the fourth wing on College Hall), and perhaps of the post-war RAF as well. As an example, the 1963 visit to the USAF Academy at Colorado Springs had its own dedicated Comet. In 1963 an article was published in the *RAF College Journal* to summarise the Flight Cadet training system 'for the record' prior to the amalgamation. [10] The syllabus can be summarised thus:

> Cadet Wing: General Service Training and Drill; fitness and sport; leadership – including a two-week leadership and field-skills camp (in Cyprus or Germany) in Term 2, run by the RAF Regiment staff and with a three-day escape and evasion exercise at the end; visits and adventurous training; and in the final Term the Senior Entry

cadets were, if not Under Officers, designated Senior Flight Cadets and all were involved in supervising the junior entries as part of their transition to Junior Officer status.

Flying Wing: For pilots 40 hours in Chipmunks in Term 2 (air experience flying for all other branches); 170 hours in Jet Provosts in Terms 4 & 5; for navigators 174 hours of basic navigation training in Valettas. Wings or 'brevets' were awarded just prior to the cadets passing-out from Cranwell.

Tutorial Wing: A (General) Stream – Sciences and Arts subjects at A Level standard. B (Science Specialist Stream) – Associate Fellowship of the RAeS. C (Degree Stream) – the University of London General BA Degree.

Cranwell was now, for the General Duties (Flying) Branch cadets, in effect, just one of the four Jet Provost Basic Flying Training Schools and one of two Air Navigation Schools. No 83 Entry (the first of the two Entries in 1963) graduated 45 aircrew; one (a pilot) gained his RAeS Associate Fellowship and four (two pilots and two navigators) gained their BAs. Thus for the vast majority of the cadets the academic syllabus was designed to broaden rather than deepen their knowledge. Despite the introduction of the Sixth-Form Scholarship, aimed at boys in the Public and Direct Grant Sectors of secondary education, the number of boys coming from Headmasters' Conference Schools (the top 10% of the fee-paying Grammar Schools) was steadily dropping. The *College Journal* regularly records visits by groups of Headmasters as the College sought to 'sell' itself to these influential people.

One factor in the decreasing interest in the RAF as a career was the 1957 Sandys' White Paper on Defence which foresaw the replacement of long-range bombers and air defence fighters with missiles. But the other, more enduring, one was the expansion of university education. In 1963 the Robbins Report on Higher Education stated that:[11]

'. . . the number of boys and girls obtaining the minimum university entrance qualification has grown much faster than the number of university places.'

The report proposed an 80% increase in the number of places in higher education within 10 years. This was from 5% of the secondary

level output to 9%, and with a target of 18% in 1980. The Report also recommended the creation of the Council for National Academic Awards (CNAA) to allow the Technical Colleges to run degree-awarding courses. The military technical colleges were not considered and service officer training in general was lumped in with the Agricultural Colleges! In 1964 the Defence Council set up the Melville Committee to examine the implications for Defence of the Robbins Report. The RAF's Director General of Training set up a Working Party to formulate the RAF's input to the Melville Committee. The Working Party proposed that eventually a Batchelor Degree would be the entry requirement for all General List (ie career) officers and that this could be gained either at university or at Cranwell. The Air Force Board Standing Committee's (AFBSC) preferred option was to take graduate entrants with Cranwell providing professional training. Also in 1964 a further review of the Cranwell course recommended a reduction in length from 3 to 2½ years – the so called 'Holder Syllabus' – reflecting the removal of Advanced Flying Training from the course. In 1965 the Melville Committee agreed with the AFBSC but also suggested that the General Duties (Flying) Branch course at Cranwell could be CNAA accredited. However, the course met neither the quantity or quality requirements, in terms of academic content, and in 1966 it was accepted that CNAA accreditation was unachievable. Finally, in 1968 the AFBSC decided that the RAF College was to deliver officer training to Graduate Entrants from the University Cadetship Scheme only, to provide Basic Flying Training for Cranwell commissioned student pilots and professional training for engineering officers. It did not, however, decide to make a Batchelor Degree the minimum academic qualification for a Permanent Commission.[12]

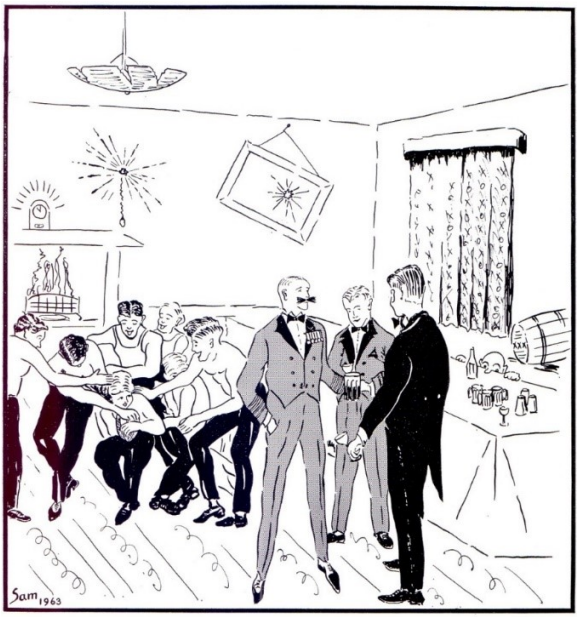
No 98 Entry was the last 'full' Flight Cadet course. There was then only one, September, Entry in each of 1968, '69 and '70. Nearly half of 99 Entry went to university after one year at Cranwell, as the AFBSC had intended, and a few of 100 and 101 Entries also did so, although these were much smaller courses than previously. No 101 Entry passed-out on 16 March 1973 and included 26 pilots.

So, how successful was the Flight Cadet System in providing the RAF's senior leadership? During WW II the influence was minimal because the former flight cadets were too few in number and too

Marking the end of an era, Air Chf Mshl Sir Dennis Spotswood, CAS and a former Commandant, reviewing the Passing-Out Parade of 101 Entry, the last of the traditional Flight Cadet intakes.

junior. However, in 1947 the Old Cranwellians Association commissioned a survey of their number which was published in the *College Journal*.[13] Some 420 pre-war flight cadets were still serving. Two were air vice-marshals, 45 were air commodores (out of 88 pilots listed as such in the Air Force List of the time), the majority were group captains and wing commanders, and a few had not progressed beyond flight lieutenant.[14]

The interesting statistic is that over 50% of the serving air commodore pilots were former flight cadets and, as the early Cold War progressed, this was to extend throughout the Air Officer ranks. From 1956 to 2006 eight of the fifteen Chiefs of the Air Staff were former flight cadets, with four of them holding consecutive office from 1992 to 2006. This is not surprising as the wartime and national service generations were retired by the early 1990s, and there were few graduate entrants in proportion to flight cadets. However, these four Chiefs of the Air Staff, Air Chf Mshls Sir Michael Graydon (76 Entry), Sir Richard Johns (76 Entry), Sir Peter Squire (89 Entry) and



Civilian at College Guest Night – 'And what are you looking for?' Officer Host – 'We are looking for Air Marshals for 1993.' (RAF College Journal*, Summer 1963 edition*.)

Sir Jock Stirrup (98 Entry) led the Service through the complex times of the 'Peace Dividend', the Iraqi 'No Fly Zones', and the 2001 Afghanistan and 2003 Gulf Wars. Of the six RAF Chiefs of Defence Staff from 1956 to 2006 only two were former flight cadets, whilst three of the six Vice-Chiefs were.

In 1963 Nos 83 and 84 Entries between them produced 70 pilots (against a requirement for 96) out of the 456 that the RAF required that year – 16·3% of the overall pilot output.[15] Considering pilots only (this was Trenchard's intent, and only a couple of the General Duties Branch air commodores were navigators at that time) in July 1993: 22 out of 46 air commodores were former flight cadets (48%); 14 out of 25 were air vice-marshals (56%); 6 out of 9 were air marshals (67%); and 2 out of 6 were air chief marshals (33%); the only serving Marshal of the RAF was ex-national service. Three years later former flight cadets comprised: 11 out of 21 air vice-marshals (53%), although now four were Graduate Entrants; 4 out of 5 air marshals (80%); and all four air chief marshals.

Given that the flight cadet system never produced more than about 20% of the RAF's pilots, but did produce the vast majority of its General Duties Branch air officers, one has to conclude that it was successful in meeting Trenchard's vision of producing an identifiable professional elite, of pilots, to lead the Service. Trenchard's flight

cadet system was designed to mould selected public school boys, and some apprentices, for future leadership roles. It strengths were its inculcation of Service ethos and the creation of a network of like-minded professionals. Its fatal weakness was its inability to continue to provide pilot training to wings standard as an integral part of the course and, at the same time, provide a degree-level education.

Notes:

[1] Note on sources. A fuller account of the Flight Cadet era is contained in E B Haslam's book *The History of Royal Air Force Cranwell,* HMSO, London, 1982 (hereafter referred to as 'Haslam'). The main sources for this paper are the *RAF College Journals*, the *Air Force Lists* and the various cadet records all held in the RAF College Library. Only direct quotations or other official sources will therefore be cited in this paper. The author wishes to thank the RAF College Library staff for the unstinting help and copious quantities of tea they provided him with during the research for this paper.

[2] Cmd 467, *Permanent Organization of the Royal Air Force*, HMSO, London, 1919, p2.

[3] *RAF College Journal*, Cranwell, Vol I, No 1, 1921, p5.

[4] TNA AIR10/1848. AP121, Regulations for admission to the Royal Air Force College, Cranwell, 13th Edition, June 1936.

[5] *Ibid*, p9.

[6] AP121, August 1923, pp16-17.

[7] *RAF College Journal*, Cranwell, Vol II, No 2, December 1922, pp8-9.

[8] C46619/51/DTF cited in Haslam, Ch 10.

[9] Haslam, p86.

[10] *RAF College Journal*, Cranwell, Vol XXXV, No 2, Summer 1963, pp145-149.

[11] Cmnd 2154, *Higher Education,* HMSO, London, October 1963.

[12] This decision remains extant.

[13] *RAF College Journal*, Cranwell, Vol XX, No 1, Winter 1947-48, pp46-47.

[14] Only substantive ranks considered.

[15] Jefford, Wing Commander C G; *Observers and Navigators*, Grub Street, London, 2014, p331.

OFFICER TRAINING IN THE 21ST CENTURY; TRAINING GENERATION Z

Air Cdre Chris Luck

Chris Luck joined the RAF in 1984. Qualifying as a helicopter pilot, he flew Pumas with Nos 33, 230 and, as a QHI, 27(R) Sqns, seeing service in Northern Ireland, Belize, Iraq and Bosnia. After staff appointments at High Wycombe and Wilton, he was seconded to the Kuwait Air Force as an advisor and helicopter instructor. He spent 2003-07 with the USAF's Air Command and Staff College at Maxwell AFB following which he commanded No 33 Sqn and, after a stint at the PJHQ, RAF Shawbury. He is currently Commandant of the RAF College and Director of Recruitment and Initial Training RAF.

Introduction

As you will have seen through today's presentations, there have always been pressures to adapt officer training for financial, technological and sometimes sweeping strategic imperatives driven by global events. Today is no different. As a result of a combination of all three previously stated change-drivers, the RAF College, and specifically the Officer and Air Crew Training Unit (OACTU), is again making significant adjustments to what we teach the next generation of leaders and how we teach it. This short presentation will outline, in broad terms: the distinctive characteristics of the cadets that we are currently training; what other factors are impacting what we do; and how it all comes together in delivering the next generation course. I will be happy to take questions at the end.

Generation Z

In my opinion, the most significant factor, and challenge to us at the College, is the impact of technology on the lives of our potential recruits. The officers of tomorrow, Generation Z,[1] are already being shaped by the cultural forces of today. They have grown up in an environment far removed from that which shaped us* (Generation X); they are digital natives rather than digital immigrants.[2] Globalisation

* 'Us' refers to the current officer corps; most of the day's audience were at least 'Baby Boomers' (born 1946-64) with a fair proportion even older. **Ed**

and technology has given them a universal perspective and an ability to instantly engage, cross-reference and, ultimately, to challenge authority, process and established norms. They are less deferential and more willing to argue their points. They seek assurance through social endorsement; the number of 'likes' they receive on Facebook is more persuasive for them than the provenance and robustness of any given argument. They are a generation that have always been able to reference Google and instantly crowd-source and validate whatever their attention is drawn to. They do this through that extension of the self, known as mobile devices. So great and interwoven is the impact of technology that clinical trials have shown that Generation Z suffer physiological stress if disconnected from their devices. This, therefore, is the generation that will be tomorrow's officer corps and we have no choice but to accommodate them and, more importantly, to adjust to them.

But this generation does have unique strengths that are entirely aligned with the way that military capabilities are evolving; networked and autonomous, comfortable with algorithms and with multiple potential outcomes. I don't have a crystal ball, but a reasonable bet is that the preponderant proportion of future warfighting will be conducted by binary code without direct human intervention. Today's officer cadets are going to be operating capabilities and platforms that are currently on the drawing board and many of them will most likely be commanding and leading in roles using technologies that do not even exist as yet.[3] Moore's Law and the rapidity of technological change will guarantee that. The writer Ray Kurzweil goes so far as to predict that the man and machine 'singularity' will be with us in the early part of the 21st Century.[4] With the speed of change accelerating, we will need a generation of officers who are adept at transformative change, comfortable with rapidly obsolescing capabilities, equipment and doctrine, and the inverse of this, savvy and able to identify and harness new technology and apply it to new algorithms and doctrines so as to deliver greater effects. Our future officers will need to communicate digitally at an unprecedented pace and be able to sift vast amounts of data for what is relevant, timely, and ultimately a winning advantage. Today's cadets will be in the knowledge exploitation business, not generation of it. They value knowledge's exploitation through sense-making of the petabytes of accessible and

inversely increasing data.[5]

To recap, today's potential leaders know nothing other than a digitally-enhanced world and are comfortable with transformative change at ever increasing pace. However, recruiting the officer corps of today for the future has not changed in its fundamentals since Lord Trenchard established the College. We still seek intelligence, grit, determination, fitness and leadership potential – in other words talent. Our challenge is how do we adapt to meet today's Generation Z reality? The 2005 Officer Cadet Review expanded training into Mission Command and to Emotional Intelligence in leadership, that is transformational leadership rather than transactional. This has worked well for the last decade, but Generation Z and its technology-led social characteristics and preferences have forced a change in training outlook and need.[6]

Training Pedagogy Today

As members of Generation Z walk through the gates of RAFC Cranwell, the current system's ability to train them is increasingly mismatched from their expectations, capabilities and needs. These digital natives find that universal, free-to-use, Wi-Fi is not available and that personal digital devices are not allowed as part of the education pathway and its delivery or during the routine working day. They will also see that a significant proportion of lectures are still delivered through PowerPoint in a directed manner; in many ways 'chalk and talk' is alive and well but ossified. Their interaction with staff and material is prescribed in many ways, and is certainly not free-flowing and anarchic in the ways they are used to. We are therefore effectively anaesthetising our officer cadets in the classroom and switching them off by turning the educational clock back to the 1980s or the 1990s at best. Accommodating their educational requirements, and the social practices and codes, of this new cadre has meant that the College has had to re-evaluate how it delivers training and in particular the blend of methods and media used. The College's push for digitisation has become one of necessity not fashion. If we can deliver education using technologies and learning methods that are familiar, we will retain the advantages that Generation Z bring as a cohort; this is essential to a Service that is increasingly digital. If we are to train the Digital Airman to operate and fight the digital air force,

then we must wield the right pedagogies in shaping them.

Manpower Constraints and SDSR 2015

So, not only do we have a different and unique generation, the resource context in which we are operating is demanding change in our officer training. It should come as no surprise to anyone in this audience that RAF manpower now hovers around the 31,000 mark. When I joined it was 96,000, and for many in this audience it was the best part of 200,000 strong. And yet the Government's direction and strategy is clear; we are to remain a global presence. Technology and its manipulation is one answer, but the other is to ensure that as many of the 'Few' in blue are delivering their primary duty as soon as possible. Therefore education needs to be collapsed, as far as it sensibly can be. Using technology is a means of delivering just-in-time education and training and of also accelerating individual-learning journeys through Virtual Learning Environments and blended learning.[7] The College has begun to look at all options for increasing blended learning both while at the College, but also in advance of starting. The ambition is, not only to make it more palatable and digestible to Generation Z, but also to decrease the required course time. This will allow them to reach the front line, where they are sorely needed, more quickly. As the College seeks to adapt to generational preference, and to respond to the pressure to shorten the time-expensive educational journey, SDSR 2015 has also added another dimension that is forcing change.

SDSR 2015 might be described as a somewhat pleasant 'catastrophic-success' problem for the RAF in having gained increased air capabilities. To meet strategic realities maritime patrol aircraft return to the capabilities portfolio, as do additional fast-jet squadrons and a significant running-on of heavy-lift and C4ISTAR platforms. To meet this surge, as of Recruiting Year 2017-18, aircrew officer numbers are being increased from circa 90 aircrew total per year to 130 pilots alone per year. The total impact of SDSR 2015 growth is that the College will need to train up to 600 officers a year vice the previous maximum (seldom reached) of 360. There is no additional resource or luxury of time to make the changes required. The only solution available in the 5-months available to deliver the additional capacity was to collapse the course to 24 weeks. This was

achieved by a significant reduction in the academic programme and the field exercise programme. In addition, the majority of the 'reflection' time, for student and staff alike, has been squeezed out. From a purist educational perspective this was not the way to do business, but from a pragmatic perspective needs-must is met. I personally did an 18-week IOT course and don't feel I suffered too much, or, to be honest, I was not even aware that I was somehow being disadvantaged. The aspiration is that the previous work to digitise the course, for all the reasons covered, will allow us to buy-back capacity and therefore opportunities to reinstate elements of the course. All the drivers for change do present a risk to quality, if not quantity, and this is being mitigated as best as possible.

Testing the New Course and Modularisation

The College and OACTU staff are looking at every aspect of the new course now that it has started in its Beta format.[8] I have no doubt that there will be testing and adjustments to make for a while, as initial assumptions are tested in practice. Work on digital and blended learning will continue at best effort according to resources available and work is slowly beginning at modularising officer training. Modularisation's aim is to divide the course into distinct modules that have clear outcomes of their own. Individual candidates can then be assessed for their past experience and their qualifications to determine what modules they require to complete officer training. The aim is to have individual candidate journeys within a cohort structure. This sounds more complicated and difficult than I believe it is. For example, if a 3-year University Air Squadron (UAS) officer cadet elects to join and has completed all his UAS training syllabi, perhaps including the RAFC UAS Pilot Officers' Commissioning Course, she may not need to do the modules that cover culture, ethos, uniform, marching, etc. She may be able to arrive at Cranwell some weeks after the true *ab initios* start. This has the advantage of reducing time in training, and the associated resource costs, as well as ensuring that candidates are not disengaged by covering old ground. This is likely to be the most contentious evolution of officer training, but if we are to make serious inroads into reducing resources and maximising time on the front line, then it deserves serious study.

Accreditation

Last but not least, an attraction of RAF service today to potential candidates is civilian-accredited qualifications. The College has an active association with organisations such as the Chartered Management Institute (CMI), to deliver accredited courses that can be built on during subsequent service. This is good practice being followed throughout Defence Education; for example, the Defence Strategic Leadership Programme for 1-star officers comes with a CMI Level 8 certificate in Strategic Leadership and Chartered Manager status for those that apply.

Potential Challenges

Shaping the technology-enhanced Generation Z for officer service is not a risk-free proposition. Research conducted in America and elsewhere on students leaving university suggests that graduates have shown shortcomings in interpersonal skills. This is something which we read about almost daily in the newspapers and from critical commentators and perhaps have witnessed ourselves. Therefore it will be an essential tenet of IOT design that all future programmes will maintain a blend of face-to-face interaction and discussion to promote a greater interpersonal skill set. Despite the reduced course length, field exercises, as well as sporting and social opportunities, will aim to maximise the 'human interface'. However, the reality that two people sitting together may be conversing through texting is a fact of life today. However disconcerting this is, I do remember reading somewhere that the invention of the telegraph and then the telephone was deemed to be the prelude to the destruction of social intercourse and was to be resisted! Every generation has a Luddite tendency; Generation Z will be no different in due course!

Another challenge to implementing a 'digitised' IOT is the cultural change which will be required within the College. The key to updating officer training to suit the learning styles of Generation Z is to instigate a step change in how training is designed, delivered and managed across the College. This will require all stakeholders to buy into the vision of a digitised future. This buy-in will be fully championed and supported by the senior leadership of the College and everything possible will be done to ensure that staff members have the right resources and training to deliver lasting cultural change.

However the majority of staff are not digital natives and, as I have already witnessed, are not yet comfortable with the brave new world of Generation Z.

Conclusion

Officer training has always evolved as context and contingency has changed. Proponents for and against pedagogies have always existed and will continue to do so. What is unarguable is that the needs of Generation Z must be addressed if we are to attract and train them without disengaging them. The onwards rush of technology is here to stay and a cohort that understands it, thrives on it and can manipulate it to our Service's advantage, is what must be delivered by the College. That is not to say that the physical, moral and gritty ends of being an officer are let go of, or lost in the digital noise and maelstrom; they must not be. We cannot escape resource constraints; our people need to be delivered to the frontline as soon as possible. To do that we must use technologies, techniques and enablers that both accelerate the training journey and shorten the distance to completion. We must account for previous experience and qualifications, through modularisation, to save on time and money. Only by doing all of the aforementioned can we meet the surge in the numbers required as a result of SDSR 2015.

The next twelve months of the digitisation of IOT project will prove to be demanding, exasperating, and very exciting. The project should provide the technologies and training content to enable IOT training staffs to use the most up to date delivery methods, including, but not exclusively, blended learning. While engendering this new training culture and format we must not forget the good work done previously by OACTU, especially with regards to developing interpersonal skills, seen as a weakness in Generation Z. This new combination of culture, technology, content and delivery will ensure that the College and IOT training meets the needs of Generation Z and the RAF, and is at the cutting edge of training in Defence and the wider education sector.

As Commandant of the Royal Air Force College and guardian of officer training, I am excited about the new dimension that Generation Z brings to the Air Force, and I am confident that despite serious resource constraints and increased output demands, your College will

continue to produce superb young officers, who will serve with distinction and deliver and lead RAF air power towards the 22nd Century.

Thank you.

Notes:

[1] Conventionally defined as people born between the early 1990s and the early 2000s.

[2] For amplification of these terms, see Palfrey, John and Gasser, Urs; *Born digital : understanding the first generation of digital natives* (Basic Books, New York, 2008).

[3] The web is full of discussion of what jobs will exist in the future. This example at *http://moneyinc.com/future-technology-jobs/* lists ten Future Technology Jobs that will exist in 10 years but don't now.

[4] Kurzweil, Ray; *The Singularity Is Near: When Humans Transcend Biology* (Penguin, London, 2006). Kurzweil foresees the dawning of a new civilization where we will be able to transcend our biological limitations and amplify our creativity, combining our biological skills with the vastly greater capacity, speed and knowledge-sharing abilities of our creations. In practical terms, there will be no clear distinction between human and machine, real reality and virtual reality.

[5] 1 PB is a quadrillion bytes**; i**n scientific notation, that's 10^{15}!

[6] When learning, Generation Z is more self-directed than its predecessors and is likely to pick up new skills and tasks more quickly than previous generations.

[7] Blended learning is a formal education program that involves combining Internet and digital media with traditional classroom methods that require the physical present of both a teacher and students, with some element of student control over time, place, path, or pace.

[8] The first shortened course was introduced in April 16. Locally known as the 'Beta' course because it is not tested in advance or DSAT compliant.

‘A DISSEMINATING STATION FOR APPROVED DOCTRINE’? THE DEVELOPMENT OF THE RAF STAFF COLLEGES, 1922-1997

Dr Ross Mahoney

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In his last book, the late Vincent Orange lamented that the Royal Air Force (RAF) Staff College, from its opening in 1922 through to the outbreak of the Second World War, had been nothing more than a ‘disseminating station for approved doctrine.’[1] This view is a significant indictment of the Staff College and the RAF that suggests that the system did little to educate and prepare nurtured officers for the responsibilities they would encounter in their careers. However, such interpretations, while open to question, can be reflected on and questions asked about the pedagogical purpose of the Staff College. As such, this article will reflect on the development and changes at the Staff College through the lens of the need for, and purpose of, such an institution over the period of its existence from 1922 to 1997. Before considering the need for a Staff College, it is worth noting that there had not just been one but four locations that were the home to an RAF Staff College with the first opening at Andover in 1922. After several War Courses, Andover closed in 1940. The Staff College then reopened in 1942 at Bulstrode Park, which then, in turn, moved to Bracknell in 1945. A small portion remained at Bulstrode, but then in 1948, it moved back to Andover. There had also been an overseas Staff College at Haifa during WW II. The Staff Colleges at Andover and Bracknell co-existed until they merged in 1970. This was the situation until Bracknell merged with the British Army and Royal Navy Staff Colleges, located at Camberley and Greenwich

respectively, and the Joint Services Defence College to establish the Joint Services Command and Staff College (JSCSC) in 1997. This represents a tangled heritage, but broadly, the history of the Staff Colleges can be split into the four phases that form the basis of this article. First, there is the period from formation to 1939. Second, the Second World War. Third, the era of the two Staff Colleges and fourth, from Bracknell to the JSCSC.

The Need for a Staff College

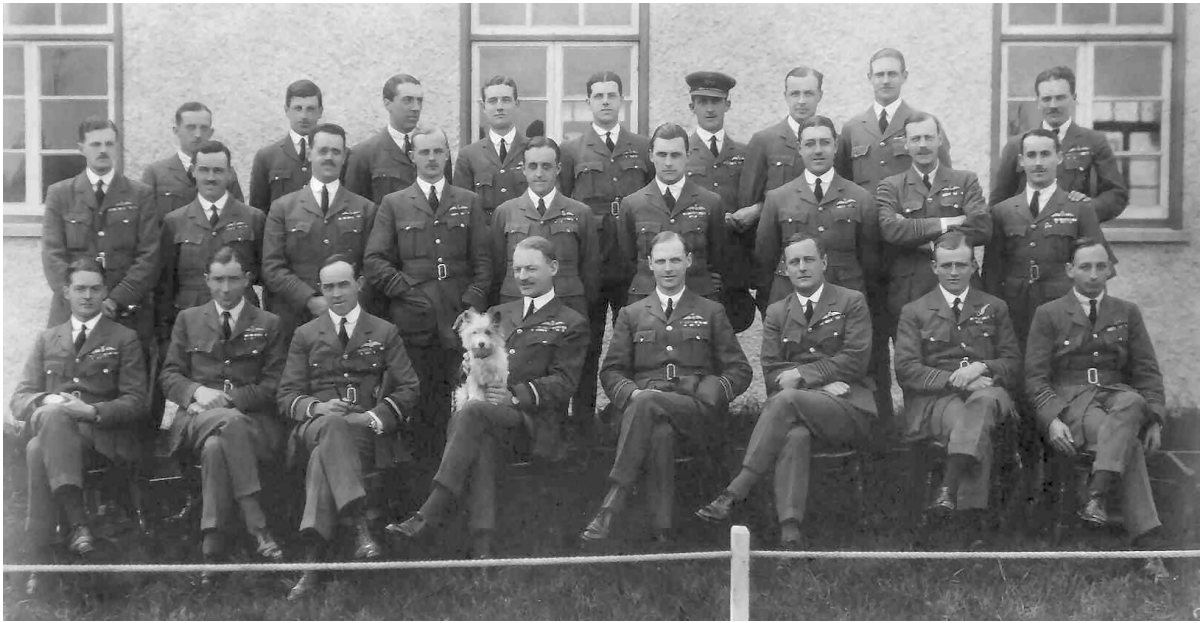
The formation of the Staff College marked an important moment in the history of the RAF. It is commonly assumed that the idea for a Staff College emerged from Air Mshl Sir Hugh Trenchard's memorandum on the 'Permanent Organization of the Royal Air Force' that was presented as a Command Paper to Parliament in December 1919.[2] Andover's Operations Record Book (ORB) made this very point; however, Trenchard's idea for a Staff College, and for his other pillars, did not develop in a vacuum.[3] Both the RAF's cultural and organisational heritage owed much to the Services from which it had been formed, the British Army and the Royal Navy. Arguably, it was the experience of staff training and education in the British Army and Royal Navy that led to the importance of this area being recognised. Furthermore, given that the Royal Navy, despite its having had a War College before the First World War, did not form its own Staff College until 1919, it was the British Army's experience of staff education from which the need for such an institution for the RAF was derived.[4] Additionally, in his 1918 paper on the 'Air Power Requirements of the Empire,' the Chief of the Air Staff (CAS), Maj Gen Frederick Sykes, had recognised the need for a Staff College.[5] Nevertheless, it was, after the changes wrought by Sykes' removal as CAS, Trenchard's paper that gained traction and provided the foundation for the future of the RAF.

The difference between these two papers was that Trenchard's was written in a manner conducive to his audience, the Secretary of State for War and Air, Winston Churchill. Trenchard played on ideas of identity and the importance of institutions that Churchill would have understood as a former officer of the British Army. For example, on the need for the RAF (Cadet) College at Cranwell, on 15 December 1919, Churchill described the former as the 'Air Force Sandhurst' in a

parliamentary debate over the Air Estimates that also covered Trenchard's memorandum.[6] Churchill had attended the Royal Military College at Sandhurst between 1893 and 1894. This use of language was key. Trenchard understood, or was, at least, able to get his 'English merchants' to enunciate for him, the importance of these foundation stones of the RAF in a manner that would influence.[7] Furthermore, Trenchard's paper is written in a persuasive manner while Sykes' is presumptuous. Sykes assumed that there would be an air force while Trenchard made a case for the Service and how it should develop. Nevertheless, the importance of a Staff College was clearly recognised and possibly came from Sykes' experience of the Indian Army Staff College at Quetta or Trenchard's lack of staff training. However, the latter's use of capable Staff College trained officers during WW I, such as Robert Brooke-Popham and Philip Game, may also have contributed to his recognition of the need for such an institution. Finally, the need for a Staff College was, perhaps, axiomatic. If the RAF were to have an Air Staff, it followed that it would require staff officers and that they would need to be trained, educated and have a mastery of the knowledge underpinning their chosen profession. This was something that the RAF lacked in 1919. An additional outcome of this education was that it would allow the RAF to develop subject matter experts that would enable the Service to explain its role in the British defence establishment, though it was not always successful in this arena.

Phase One – From Formation to the Second World War

Andover, co-located with its parent headquarters, No 7 Group, opened in November 1921. This was the point at which Air Cdre Brooke-Popham became Commandant. In 1940 C G Grey, the former editor of *The Aeroplane*, would reflect that, although he had initially declined the post, when Brooke-Popham saw the list of alternative candidates, he decided that he would have to accept it.[8] Brooke-Popham, a graduate of Camberley before the First World War, was one of the few RAF officers to hold the coveted post-nominals *psc* – awarded to those who graduated from Camberley. This, coupled with his operational experience, made him an ideal candidate for the position and much of the work he undertook before the opening of Andover, including a visit to the *Écoles Supérieures de Guerre* in



DS and students of No 1 Staff College Course, 1922-23. Top: Flt Lt H S Kerby; Sqn Ldr C F A Portal; Wg Cdr R E C Peirse; Flt Lt W B Farrington; Flt Lt N W Wadham; Sqn Ldr C W H Pulford; Flt Lt W R D Acland; Sqn Ldr K R Park; Wg Cdr J E A Baldwin. Middle: Flt Lt G M Lawson; Flt Lt D Gilley; Sqn Ldr H S Powell; Flt Lt J B Cole-Hamilton; Wg Cdr C H K Edmonds; Sqn Ldr W S Douglas; Flt Lt C H Hayward; Sqn Ldr L L MacLean; Sqn Ldr W A McCloughry. Bottom: Sqn Ldr R M Drummond; Gp Capt W R Freeman; Air Cdre R H Clarke-Hall; Air Cdre H R M Brooke-Popham; Sqn Ldr B E Sutton; Sqn Ldr B E Smythies; Flt Lt E B C Betts; Sqn Ldr E B Beauman.

Paris to examine French methods, set the framework for the inter-war Staff College.[9] In addition to the Commandant, the choice of Directing Staff (DS) was crucial and, with the exception of Air Cdre Robert Clark-Hall, the first DS had all recently completed courses at either Camberley or Greenwich. This became the norm with both Commandants and DS typically emerging from the RAF Staff College. By the late-1930s, Andover also had DS from the British and Indian Army on its staff. The location of the college was also significant and while Trenchard's 'Permanent Organization' paper had named Halton as the planned home for the Staff College, it eventually ended up at Andover for reasons of economy, though in 1918, it had been suggested by the Director of Air Training that a 'school for higher education' be established at the Royal Naval College at Greenwich.[10] The choice of location was also linked to the importance of flying in the RAF. Apart from Stores Branch officers and those associated with non-military functions, such as the Medical and Accountant Branches, all RAF officers were members of the General Duties Branch and thus qualified as pilots. Officers were required to maintain their professional proficiency, which influenced the RAF's ethos, and this was an issue that consistently figured in discussions over moving the Single Service Staff Colleges closer together. Additionally, it took until 1929 for the first Stores Branch officer to attend Andover; however, by the 1930s, at least in the Third Term, Medical Branch officers were also attached to the Staff College.[11] Nevertheless, in 1958, when the amalgamation of the two Staff Colleges at Andover and Bracknell was being discussed, RAF Odiham was considered as a location in part because it had 'an airfield.'[12]

As already noted, the need for a Staff College was clearly recognised by the RAF's senior leadership; however, there remained the question of what was to be its purpose. Arguably based on his experience at Camberley before WW I, Brooke-Popham outlined his vision for Andover in his opening address when he noted that the Staff College's aims were:

a. To train officers for work on the Staff not only in war but also in peace.
b. To give future commanders some instruction in the broader aspects of war, whether on sea, or land, or in the air.

c. To found a school of thought and to assist in solving problems regarding the organisation, training or employment of the Air Force.[13]

At the heart of Brooke-Popham's vision was the desire to avoid the anti-intellectualism that is typically associated with the military. This was supported by comments in Trenchard's opening address – delivered by AVM Sir John Salmond – in that Andover was to be the 'cradle […] of our brains.'[14] This phrase has often been linked to developing doctrine but should be more broadly regarded as part of the desire to develop the professional mastery of nurtured officers. Brooke-Popham's taxonomy moved from training through to education to give officers knowledge of the challenges they might confront in the future. This idea of developing broader knowledge, as illustrated throughout this article, was a constant challenge but one recognised as a necessary function of the Staff College.[15] However, part of the challenge here lay in the language used to describe Andover's activities with training and education often used interchangeably. This is further complicated by the fact that after the Second World War, the term 'Command and Staff Training' (CST) was used as a catch-all phrase for non-specialist courses including Staff College. Nevertheless, Brooke-Popham reflected on this point of developing knowledge and preparing officers for future command by noting, after WW II, that:

> 'From the start, it was emphasised that our job must be, not only to produce good staff officers but also to lay the *foundations* for those who could become commanders in the future.'[16] (Emphasis added.)

The importance of developing future leaders was reiterated by the Air Ministry who regularly reminded the Commandant about the importance of the award of the post-nominal *psa* to those who completed the course. It was stated that it was from those awarded *psa* that the RAF's future senior leaders would be selected.[17] In 1962, *psc* eventually replaced the symbol *psa*. At the same time the post-nominal *qs* – until then awarded to RAF officers who attended either Camberley or Greenwich – was also standardised as *psc*.[18] The importance of Staff College was reflected in the selection process, and

while the first two courses were hand-picked, from the third course onwards, an entry qualifier was introduced.[19] This existed until 1968 when successful completion of a correspondence course run by the newly established Individual Studies School (ISS) became the pre-requisite for Staff College.[20] Both processes acted as a gateway for nurtured officers as the RAF recognised that successful students would form the core of its future leadership. Nevertheless, this is not to suggest that there were not issues with these processes with the standard of English being a perennial problem for the RAF. Furthermore, lectures on English remained part of the curriculum for this reason and would eventually be picked up by the Officers Advanced Training School (OATS) after the Second World War.[21] It was also clear that not all officers were as well prepared for Staff College as they should have been and in the first volume of *The Royal Air Force Quarterly,* Wg Cdr Ronald Graham, a former DS and later Commandant, wrote a series of articles outlining steps to prepare for Andover.[22]

The experience of Staff College varied between individuals. For example, AVM Sir Cecil Bouchier reflected that unlike his roommate on the eighth course, 'Squadron Leader Geoffrey Bowler,' he often worked until late in the night in preparation for the next day's work.[23] Regarding the pedagogical tools utilised by the DS, the experience of Staff College consisted of lectures, seminars, syndicate work and conferences on set questions. There was also a degree of so-called 'white space' in the curriculum to allow officers to prepare and these methods remained in use by the Staff College. Officers also had the opportunity to undertake visits abroad that were described as 'purely educational, and not to spy on our hosts'; however, these reports did find their way to the Air Ministry.[24] The curriculum itself was broad in conception mirroring the argument that the course was more about education than training. During the inter-war years, the curriculum can be broadly split under the headings of administration and organisation; staff duties; history of military operations; strategy and leadership, and included aspects related to the RAF's sister services.

While broad in conception, air power, naturally, became a key topic in student-led activities. Interestingly, given on-going historical debates over the ethics of the strategic air offensive against Germany in WW II, certainly by the late-1930s, officers received education in

the field of international law. It was made clear that international law was customary and not reliant on a 'superior authority for its enforcement.'[25] One discussion question focused on the Planning Staff at Bomber Command preparing an attack on targets near Cologne and the legitimacy of such attacks in the light of international law.

Despite the broad range of subjects examined, however, students often conformed to the so-called 'DS solution' to the problem. Nevertheless, in being exposed to the topics discussed, the RAF nurtured its officer class and helped develop its organisational capacity. Of the RAF students attending Staff College during Brooke-Popham's time as Commandant, at least 65 per cent went on to reach the rank of 1-star or above. These included names such as Marshals of the Royal Air Force Viscount Portal, Lord Douglas, Sir John Slessor, Air Chf Mshls Sir Keith Park, Sir Trafford Leigh-Mallory and Sir Richard Peirse. Additionally, the award of *psa* was, on occasion, withheld from an officer.[26] Nevertheless, by the mid-1930s the course expanded, as it was becoming clear that war was on the horizon and the RAF would need more Staff College graduates to fill the increasing number of staff posts. Additionally, an increasing number of flight lieutenants was being sent on the course in comparison with courses in the 1920s. In all, some 560 officers passed through Andover's doors before the outbreak of the Second World War.

Phase Two – The Second World War

When WW II broke out, the DS and students reported to their war appointments; for example, the Commandant, AVM Arthur Barrett, became the principal RAF liaison officer to the French Air Force and eventually Air Officer Commanding-in-Chief of the British Air Forces in France. However, the Staff College did not close, and in late 1939, war courses began as it was recognised that as expansion continued, trained staff officers would be required to allow the RAF to operate efficiently. Furthermore, to ensure a degree of continuity between peace and wartime courses, the new Commandant, Wg Cdr Aubrey Ellwood, had served on the DS under Barratt, as had the former's only DS, Lt-Col Stephenson of the Indian Army. The first course began in November 1939 and consisted of twelve students from the rank of pilot officer to flight lieutenant.[27]

Even in its earliest iterations, several key changes can be

identified; first, the rank of officers attending was, in general, more junior than those on the peacetime courses, thus recognising the need to generate more staff officers for an expanding air force. Second, the course was much shorter as it was clearly understood that it was more necessary to develop skills than knowledge; a case of training rather than education. This leads to a third observation that, as with each Service's staff training during WW II, students did not attend Staff College to evolve thinking about their Service, but were there to have knowledge conveyed to them.[28] Thus, in many respects, those attending Staff College were more akin to pupils than students.

This final aspect, of imparting skills, became more apparent when the decision was taken to re-establish the War Course in 1941; the first War Courses had ended in May 1940 as officers were required to undertake other duties due to the geostrategic situation.[29] Nevertheless, when discussions emerged in 1941 about reopening the Staff College, VCAS, Air Chf Mshl Sir Wilfrid Freeman, a former DS and Commandant, made it clear to CAS, Air Chf Mshl Portal, that:

> '[T]he real difference between the Staff College in war and peace is that during the war no attempt should be made to fit officers for higher command.'[30]

It was a case of providing the necessary training needed to fulfil staff duties and command at the squadron leader or wing commander level rather than any nurturing for senior leadership positions. This tension between the pre-war and wartime Staff College courses are best illustrated in a lecture to the No 4 War Course on 'Character Training and Discipline' in which it was stated that:

> '[The] Power of Command is not a matter of intuition; it can be taught to some extent and should not be left to […] what is loosely called "the school of life".'[31]

This is interesting because pre-war 'leadership' education was more a case of what one did rather than what was taught; whenever it was examined, however, it was done using examples drawn from great men and linked to issues of morale.[32] Nevertheless, the war course continued throughout WW II, despite challenges such as the intensity of the three-month course and various administrative difficulties, such as 'poor kitchen arrangements.' Additionally, one student, Wg Cdr

Anderson, appears to have managed to retain 'command of a Mustang squadron' during No 7 War Course.[33]

As the Staff College re-started in 1942, the RAF also became involved in CST in the Middle East. In early 1940, the British Army had established a Staff College at Haifa in Palestine with the aim of producing officers for specific duties in much the same way as the RAF War Course would.[34] Furthermore, by 1941, the RAF was sending officers to this course at Haifa as they had with Camberley and Quetta prior to WW II. In 1942, an 'RAF Wing' was added to No 6 Course at Haifa to 'ensure greater air-ground co-operation.'[35] By 1944, the value of this wing was recognised by the Service and it became the RAF Staff College (Overseas). Nevertheless, Haifa remained an essentially Army-sponsored institution and its RAF graduates continued to be awarded the post-nominal *qs(w)* (indicating satisfactory completion of a short war course at a Military Staff College), rather than the *ws* (satisfactory completion of a short war course at RAF Staff College) that their UK counterparts received.[36] The former was derived from the *qs* gained by RAF officers who had attended a full pre-war course at Camberley or Greenwich.

By 1945, the course at Haifa was well thought of and offered a different experience to that provided by similar institutions in the UK. It was, alongside the British Army Staff College at Haifa, essentially the first 'joint' Staff College as they were co-located. Given the debates over this issue in the inter-war years, this is an especially noteworthy success. Also, life appears to have been more pleasant with an abundance of fruit, though, by 1945/46, this was tempered by the 'crackle of gunfire' as a backdrop. As a result, students passing through Haifa at this stage qualified for the General Service Medal simply by attending Staff College.[37]

Phase Three – The Era of Two Staff Colleges

By 1944, it was apparent that changes in CST were required for the RAF as it prepared to resume a peacetime posture. While the three-month course at Bulstrode was considered a success, the Air Member for Training identified several challenges that required consideration. These included: the perennial problem of the standard of English amongst students; course length; spare time for reading and the lack of exercises with the British Army and Royal Navy.[38] These concerns

return to the issue of the Staff College's purpose – education or training?

From its earliest days, course length had been an issue for the Staff College, and how this linked to education. In 1921, Brooke-Popham had advocated a two-year course from 1923 onwards after the 'experimental' first course as he believed that this was what was required to develop officers able to 'think out for themselves.'[39] Furthermore, in the late 1920s, under AVM Edgar Ludlow-Hewitt, the course had been extended to 15 months to move it in line with the start dates for Camberley and Greenwich and it had allowed for expansion in the syllabus.[40] However, the course soon returned to being a year. Nevertheless, at one-year in length, the inter-war courses were more about education than training, which had also been the focus of the shorter wartime courses. Furthermore, the extension to six and then twelve months in the post-WW II years was tacit recognition that the course was about education with Sir Peter Harding, a former Marshal of the RAF, who had attended Bracknell in the 1960s, reflecting that Staff College was 'so much more University than nursery.'[41]

In an analysis, undertaken by Bracknell in 1950, into the provision of CST, recommendations were made to delineate between training and education with the OATS, later the Junior Command and Staff School and then the Officers' Command Course, to be responsible for the former while the Staff College could become an 'Air War College' and focus on the latter.[42] While this never completely happened, new directives were issued for the Staff College and the OATS, and by the 1950s, it was agreed that Bracknell and Andover were about providing 'advanced service education,' though elements of staff training did remain.[43] Finally, during the 1950s, it was accepted as a principle that all group captains should be Staff College qualified, thus, highlighting the link between 'higher service education' and preparation for senior roles.[44]

Despite changes in course length and the return to education rather than training, the key issue for this period was the decision to maintain two Staff Colleges and their eventual amalgamation at the end of 1969. In 1945, it was agreed that the principal Staff College would move to Ramslade House at Bracknell where the intake increased from 60 to 120 students; Ramslade had previously been the headquarters of the 2nd Tactical Air Force. However, it was also

Home to the RAF Staff College, 1941-48, this is Bulstrode Park today.

decided to maintain a smaller Staff College at Bulstrode, which eventually moved back to Andover.

This decision was clearly an issue of defence diplomacy as, by the end of WW II, it was apparent that the RAF would play a leading role in the post-war development of European air forces. A key element of this would be the provision of CST, and initially, Bulstrode provided provision for 40 students including ten from the RAF and the Dominions, though the balance of this population shifted in later years.[45] Bulstrode was commanded by an air commodore 'under the general direction' of the Commandant at Bracknell, an air vice-marshal, and the former's course broadly followed that of the main Staff College.[46] There were, however, problems early on with the cost of the course and in 1946, the Czechs, for example, withdrew their students. However, costs were reduced and, as noted in *The Hawk* in 1962, 312 international students had been trained at Bulstrode/Andover.[47]

Despite changes in the 1950s, by the 1960s, the RAF recognised the critical challenge related to the provision of CST; namely, the balance between providing staff training appropriate to rank and the education of officers destined for senior positions. This had always been a concern and, while the OATS had been formed to provide lower level training, challenges still existed. Moreover, as Harding reflected, OATS 'was rigid beyond belief' and the instructors 'weren't really your top-flight runners, and they enjoyed the sort of power they had over you.'[48] Nevertheless, the OATS course existed to prepare and refresh officers' knowledge so that they could 'hold junior command and staff appointments' and, eventually, successful completion came to be 'normally […] regarded as a prerequisite' to Staff College.[49]

Based on its experience, the RAF slowly developed a programme of 'progressive' through-life non-specialist training and education for officers that in 1966 was furthered by the introduction of the ISS course, which then became the prerequisite for Staff College.[50] The ISS-run correspondence course emerged from a review of CST undertaken by Bracknell's Commandant, AVM David Lee. In his 1964 report, entitled, 'Non-Specialist Officer Training', Lee suggested a system whereby officers would attend the OATS, followed by the ISS course and then Staff College in a 'progressive' sequence that was eventually accepted by both the Ground Training Committee and a manpower committee that had proposed a review of CST.[51] Furthermore, during the 1950s and early 1960s, there had been continual concerns raised over the Staff College qualifying examination that presaged the introduction of the ISS.[52] Finally, control of the system of CST was refined, when, in 1966, the Commandant at Bracknell also became Air Officer in Charge, CST, which brought the courses above under his purview.[53] This marked the start of a period of significant reform of CST within the RAF.

Another key change in the 1960s was the decision to amalgamate Andover and Bracknell. Amalgamation had been a constant point of discussion, but the challenge was always how to achieve the desired end without losing the inherent advantage in defence diplomacy afforded by Andover's existence. Part of the problem also centred on the nature of the course and the view, amongst some, that the level of 'training' provided at Andover was lower than that at Bracknell, in part, because of the composition of the student body.[54]

The students at Bracknell were predominantly RAF, along with officers from Canada, Australia and the US, while Andover's intake was much more international. As a consequence, the Bracknell course was able to consider problems of a classified nature which students at Andover could not. Despite this, it was clear that, for economic reasons, the Staff Colleges would have to merge. Thus, Lee, in a 1964 memorandum on 'The Future of the RAF Staff Colleges', outlined the British Army's method whereby all students attended Camberley under a RESTRICTED classification for seven months, then a further two months' study for Army, Commonwealth and US students under a CONFIDENTIAL level, and then finally a SECRET period for British students.[55] Eventually, by the early-1970s, this solution had, in effect, been adopted by the RAF with the Staff College course split into two. The first two terms, totalling 38 weeks, were attended by all students with a third 'Additional Studies Term' for only RAF, 'Old Commonwealth' and US officers.[56]

After accepting Lee's proposal, development of the new course was undertaken by the so-called 1969 Committee established in 1966, which consisted of one group captain and two wing commanders with the aim of making suggested changes to the syllabus.[57] Planning, based on the recommendations of the 1969 Committee, was slowly refined, and the syllabus 'tried out at Bracknell in 1969' before implementation in 1970.[58] Regarding the phrase 'advanced service education,' the 1969 Committee concluded that the purpose of Staff College remained the instruction of officers in staff work and also the 'broadening of knowledge and outlook,' that had been long recognised as the institution's aim since the time of Brooke-Popham.[59] Finally, an important aspect of the amalgamation was the provision of new buildings to accommodate the new course. This took some time to implement and, although the merger was announced in the House of Lords on 8 July 1965, it did not actually happen until the last class finished at Andover towards the end of 1969.[60]

Phase Four – From Bracknell to the Joint Services Command and Staff College

It is apropos to this article that, the then Wg Cdr, R A Mason's history of the Staff College finished in 1972. This is because Mason wrote his history at the halfway point in the fundamental changes that

affected the Staff College after the Second World War. Apart from the amalgamation and the creation of the ISS, the other key aspects of the Staff College's history in this period were the establishment of the Basic (BSC) and Advanced Staff Courses (ASC), the creation of the post of Director of Defence Studies (DDefS) at Bracknell and the merger of the Single Service Staff Colleges to form the JSCSC in 1997.

In 1972 the Air Force Board approved a revision of CST, including the establishment of the BSC as a separate course.[61] A number of factors had influenced the need for change, but predominantly the introduction of the Graduate Entry Scheme at Cranwell.[62] Many more officers were now entering the RAF already academically qualified to first degree level and the air force was obliged to adapt itself to cater for this significant change within British society as a whole. At the same time, the new sequence of courses represented a further attempt to address the fundamental problem that had existed ever since Brooke-Popham's time – the balance between *training* students for staff duties and *educating* officers for senior ranks. This had, in part, been achieved by the introduction of the corresondence course run by the ISS; however, the development of the BSC, undertaken by an implementation team established in January 1973, took this process further; it was noted in Defence Council Instructions that the aim of this course was to 'prepare squadron leaders for command and staff appointments appropriate to their rank' while building upon knowledge developed by the ISS course.[63] It also became the pre-requisite for the ASC, and one officer reflected that the BSC 'set out to do for staff training what Henry Ford did for motoring' by giving as many officers as possible a grounding in the skills necessary for staff duties.[64]

Conversely, once the ASC was introduced in 1975 it existed to 'fill high-grade command and staff appointments.'[65] In short, nurtured officers selected for the ASC dealt with subjects, such as national strategy, air power and command and leadership, which would give them the intellectual ability to manage the challenges they would encounter in senior positions as well as a firm grounding in the core elements of their profession; the application of air power, which accounted for 26 per cent of the course.[66] A key change in the development of the ASC was the shortening of the course to just six

and a half months. This was done using a 'systems approach' to analysing the requirements of the course. However, as course length was decided on first, and as at least one officer recognised, '[T]his effectively placed the cart before the horse' regarding how objectives could be achieved.[67] Whether this was an efficient way of designing the course is outside the scope of this article, but it is worth reflecting on the words of the students who attended the first of the new short courses, No 65 ASC:

> '[G]one are the halcyon days of the one-year course […] We have moved from topic to topic with almost indecent haste and it has been suggested that the term 'advanced' refers not only to the level of the work undertaken, but to the constant forward movement from one exercise to the next.'[68]

Apart from work on the curriculum dictated by the amalgamation of Andover and Bracknell, the 1969 Committee also recommended that a post responsible for research into key topics be established at the Staff College.[69] This was not taken up, but in 1976, the RAF established the post of DDefS with the then Group Captain Mason becoming the first appointee in January 1977. The Terms of Reference made it clear that the post had been established to educate both those within the RAF and externally about the contemporary contribution of air power by generating an awareness and understanding of the subject.[70]

However, part of the problem in understanding the establishment of this post is teleological in character. While subsequent incumbents have become involved in the development of doctrine, this was not the reason for establishing the post. It was the need to educate and 'promote the study of air power' that had been key and while the RAF's decision to create the post was 'far-reaching', it needs to placed in an educational rather than a doctrinal context.[71] The establishment of the DDefS post at Bracknell, however, did raise questions; for example, in *Air Clues*, Wg Cdr P M Hammond of the Department of Air Warfare, questioned why the position was not located at Cranwell.[72] However, if it is accepted that Cranwell was the home of *training* in the RAF, while the Staff College was the home of Service *education*, then it was entirely appropriate to establish the post at Bracknell. Hammond also criticised Mason's background as not a

'practising airman', though it is clear that CAS, Air Chf Mshl Sir Neil Cameron, and the Director-General of Training, AVM Frederick Sowrey, considered Mason, the right person for the job.[73] This was underlined by Mason's successor, Gp Capt Timothy Garden, a pilot, when in a contribution to the debate in *Air Clues*, he pointed out that the post should be held by the most appropriately qualified person to achieve its aims.[74]

Finally, the relationship between education, the Staff College and the DDefS post should be understood within the context of the aims outlined by Brooke-Popham in 1922. The RAF had always sought to develop a 'School of Thought' about the application of air power; however, this idea came last in Brooke-Popham's taxonomy because it was only through the first two aims – developing staff duties and education in the broader aspects of war – that this final objective could be achieved. Moreover, it can be argued that rather than finding an 'air force Clausewitz' – though officers such as Slessor came close – the RAF has sought to develop a collegiate body of knowledge about the use of air power through Staff College graduates, which is linked to their leadership development and preparation for potential senior command. Furthermore, while the Staff College has always had a relationship with doctrine – the first course provided input into the development of CD22 and at least one graduate was responsible for revisions to AP1300 in the late 1930s[75] – this was because they had had the intellectual capacity, developed through Staff College attendance, to produce such important statements of intent. Thus, by linking DDefS with the Staff College, and ensuring that the post was related to education rather than training, subsequent post-holders have continued to contribute to the collegiate intellectual development of the RAF through various schemes such as publications, conferences and the management of defence fellowships.

While the changes of the 1970s continued the development of a 'progressive' system of CST at Bracknell, the 1980s was the decade during which these changes became embedded. Nevertheless, as with previous changes, revisions were implemented with ASC becoming ten months in length. However, it was in the 1990s that the final act for the Staff College was played out against the background of the changes in Britain's defence establishment that were part of the so-called peace dividend after the end of the Cold War. As part of 'Front

Having narrowly escaped demolition, along with the other buildings that had constituted the RAF Staff College complex at Bracknell, only Ramslade House itself still survives.

Line First',[76] the Conservative government sought to make significant savings in defence expenditure.[77] In the context of this process, it was decided to merge the Single Service Staff Colleges as part an increased move towards 'jointery.' However, what is of interest here is that Bracknell was initially considered to be unsuitable for the new institution; Camberley was the front runner. Nevertheless, by 1996, Bracknell had re-emerged as the preferred temporary solution, and when the JSCSC eventually opened in 1997, it did so at Bracknell pending completion of a new, purpose-built facility at Shrivenham.

Hawks in and out of the Nest

Before concluding, it is worth reflecting that CST in the RAF was not just limited to its own Staff Colleges. As with the other Services, the RAF had always regularly sent officers to Camberley and Greenwich, and in the post-WW II years, to similar institutions run by allies, such as the United States Air Force Air Command and Staff College and the Royal Canadian Air Force Staff (RCAF) College in Toronto. Moreover, one of the fundamental pedagogical processes at the heart of Staff College attendance is that of socialisation. It is not enough to just learn about one's own profession; it is also necessary to

understand the work of others whom you will serve alongside within the RAF, the other British services and those of allies.

The practice of sending officers to other Staff Colleges began before the formation of Andover, and for the first few years of the latter's existence, the DS was drawn from those who had attended either Camberley or Greenwich from 1919 onwards. While some Royal Navy officers – mostly Royal Marines – had attended Camberley prior to WW I, this was a new process for each Service. Increasingly, as time went on, those officers attending other Staff Colleges were drawn from those who had graduated from Andover. The same was true for both the British Army and the Royal Navy and such experiences allowed for learning between the Services and the ability to speak a common language. While a useful experience, this process did have its challenges as indicated by the experience of Wg Cdr (later Marshal of the Royal Air Force Sir) Arthur Harris at Camberley in the late 1920s.[78] Furthermore, certainly up to the 1960s, and possibly beyond, the RAF's attitude towards to the Joint Services Staff College appears to have been less than optimal.[79]

Nevertheless, on this shared experience, one useful, though anecdotal source, for this process comes from the pages of *The Hawk* – the journal of the RAF Staff College that had been established in the late-1920s. For many years, each edition featured a letter playfully written from a 'Hawk' in the Royal Navy's, the 'Pelican's', or the British Army's, the 'Owl's', nest.[80] These eventually became reports from these institutions but continued to adorn the pages of *The Hawk*. They drew out important points about shared experiences and events of interest. For example, the report from the RCAF Staff College in 1957 noted that two RAF officers had 'hitch-hiked' around the frozen north of Canada.[81]

This socialisation process was a corresponding one and, as already noted, the decision to maintain two Staff Colleges during the early years of the Cold War was a case of defence diplomacy. Through Andover, the RAF sought to sustain and nurture relationships that the Service had developed with allied nations and by the mid-1990s, Bracknell included students from former Warsaw Pact countries.[82] *The Hawk* also often contained advice from overseas students and in 1979, Lt Cdr Bud Langston, a student from the US Navy who rose to become a rear admiral, reflected on being 'A Yank at Starf College',

which highlighted cultural differences between the US and the UK. Langston recollected: being told to put his bags into the 'boot' of the taxi; being 'poisoned' by his 'Batwomen' in the 'Mess'; the challenge of connecting his kitchen appliances to just two power points and the problem of only having one TV channel. Despite these cultural differences, Langston enjoyed his time at Bracknell.[83] On a more serious, note, Wg Cdr G W Johnson recalled the time that a student from Saudi Arabia took 'refuge' in his embassy for fear of reprisals, because a British citizen had been flogged in Jeddah for breaking local alcohol laws. 'Major al-Ankari was taking no chances on mob rule breaking out at Andover', Johnson reflected.[84]

Conclusion

It has not been possible in an article of this length to fully explore every aspect of the development of the RAF Staff College. Part of that challenge lies in the fact that after the Second World War, the Staff College became the core aspect of a progressive CST system within the RAF. Arguably this was a lesson learnt from pre-war experience when issues such as the balance between training and education, and course length had first been raised. Nevertheless, what is clear is that throughout its history, the RAF regularly attempted to assess the suitability of its CST delivery and at times, notably in the 1960s and 1970s, this resulted in significant changes to the character of that provision. Furthermore, throughout its history, the Staff College had sought to be more about education than training. It had attempted to give nurtured officers the knowledge necessary to undertake their duties as professionals while grappling with the challenges of an ever-changing defence environment. In this respect, it is worth reflecting on the enduring importance of Brooke-Popham's words from his final address to the fourth course in 1926:

> 'I believe that the actual knowledge you have gained here has not been the most important benefit you have derived from the course […] If this place is of any real value you should, in your own particular sphere be able to raise the standard of the RAF to a slightly higher level.'[85]

Nevertheless, further research remains to be done into how effective that provision was in providing officers with the knowledge

they needed in order to undertake their duties. Nevertheless, Air Chf Mshl Sir Philip Joubert de la Ferté, who was both DS and Commandant at Andover during the inter-war years, reflected that, in comparison to the other Services, RAF officers would:

> '[f]ight amongst themselves in private and in the open, and would quite ruthlessly disagree with the instructors before a mixed audience. Nothing was sacrosanct. Air Ministry official publications, in fact, were usually regarded with derision, and only the new and the most advanced theories were deemed worthy of consideration.'[86]

This willingness to critique appears to have remained the case when, in 1995, Sqn Ldr John Moloney, a graduate of No 86 ASC, critiqued AP3000, the RAF's recently introduced capstone doctrine, in the pages of *The Hawk*.[87] Finally, while 1997 saw the end of the RAF Staff College as a physical institution, it is possible to suggest that it is only now that its influence is beginning to wane as the last officers to attend Bracknell retire. This arguably marks the end of the RAF Staff College.

Postscript: I am currently undertaking research into the history of CST within the RAF up to the close of the Staff College in 1997. I am keen to hear from anyone who undertook staff training in the Service. This research covers not only the RAF Staff College but also the ISS, the OATS and its successors, attendance at the other service Staff Colleges, the Joint Services Staff College, and its successors (the National Defence College and Joint Services Defence College), the Imperial Defence College and Royal College of Defence Studies. If you are willing to share your experiences, then please contact me at thoughtsonmilitaryhistory@gmail.com

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STAFF TRAINING TODAY

Air Commodore A J Byford

Air Cdre Byford joined the RAF as a university cadet at Cambridge before qualifying as a Tornado pilot. He subsequently took part in twelve operational deployments, including command of No 31 Sqn in Iraq and of No 904 Expeditionary Air Wing in Afghanistan. Staff appointments have involved OR, and NATO and European Policy posts at the MOD and tours as the Tornado Fleet Manager at Air Command and as Director of Defence Studies (RAF). He is currently Deputy Commandant and Assistant Commandant (Air) at the Joint Services Command and Staff College.

Introduction

This short paper aims to provide a summary of Royal Air Force staff training today, although it should be noted from the outset that the emphasis has now switched to command, staff and leadership *education* rather than *training.* Education is rather more challenging to deliver (and sometimes to justify) than training, because training is about teaching professional and practical competencies and skills, producing outcomes that can be assessed, measured and tested comparatively easily. It is, perhaps, useful to conceptualize education as being about 'thinking' whereas training is about 'doing'. So, for example, one might *train* an individual to fly an aircraft to the required standard, but then *educate* him or her so they can think more creatively about how air power may be most effectively employed in support of either a Joint campaign or the national interest.

The change has been made because in the 21st Century the RAF needs officers at every rank level who are not just professional masters of their own branch and single-Service environment in a practical sense, but may also play their part effectively as staff officers across wider Defence; over 50% of RAF personnel are now-employed in non-RAF, Joint or Combined (multinational) appointments, so they all need to be able to understand and articulate the case for air power at the appropriate level. To succeed in this environment, they therefore need not only to be trained in the professional skills necessary to equip

them for their specific, specialist roles, but also educated to understand how the RAF contributes to Defence more broadly, the current strategic context in all its complexity and, crucially, to be able to develop their own cognitive abilities: qualities such as creativity, innovation, communication and, particularly, critical thinking (assessment, analysis, problem-solving and decision-making) and wider thinking skills. To meet this remit, RAF professional military education is increasingly delivered on a progressive, incremental and through-career basis – as continuous professional development – rather than, as was too often the case in the past, where one or two 'iconic' educational interventions would be separated by many years without any formal staff education being offered.

Consequently, although the paper will begin by describing the Joint Services Command and Staff College as the successor to the RAF Staff College as the primary medium for delivering advanced staff training, it will broaden the scope by looking at staff training across the rank structure, in particular as the result of the Review of Officer and Airmen Development.[1] It will conclude by offering some personal observations about the RAF's approach to staff training and speculate about its possible direction in the future.

The Joint Services Command and Staff College

Ross Mahoney has previously charted the history of RAF staff training, so this paper picks up the story where he left off, at the natural juncture in 1997 with the disestablishment of the RAF's own Staff College at Bracknell. This was a result of the 1994 Defence Costs Studies Review, which envisaged a future of increasingly Joint operations in the aftermath of the 1991 Gulf War and with the impending creation of more Joint entities, such as the Permanent Joint Headquarters and the Joint Rapid Reaction Force. Therefore, and not unreasonably, the view was taken that if the three Services were to operate together effectively and harmoniously, those selected as their future commanders and senior staff officers needed to be educated together on the same course and at the same location, so that they could build empathy and understanding and work to a common doctrine. Consequently, the Navy, Army and Air Force relinquished

[1] The Review of Officer and Airmen Development Final Report of 16 Apr 2007.

their own bespoke staff colleges and attendant courses (at Greenwich, Camberley and Bracknell respectively) and pooled their resources within a new Joint Services Command and Staff College (JSCSC).

The JSCSC opened in 1997, initially at the former RAF Staff College site at Bracknell (supplemented by temporary portakabin accommodation on the playing fields to cater for the increased numbers) whilst a new college was purpose built for it at Shrivenham in South Oxfordshire within the grounds of the existing Defence College of Management and Technology. The first course – Advanced Command and Staff Course (ACSC) Number 1 – commenced at Bracknell in September 1997, with the JSCSC moving to its new home at Shrivenham in time to deliver ACSC 4 in 2000. It has remained there ever since, and the students of ACSC 19 – the nineteenth iteration of the UK's approach to the delivery of advanced Joint staff training – will graduate in July 2016.

Unsurprisingly, while the logic driving the development of Joint staff training was unassailable, single-Service suspicion abounded and there was deep-rooted cultural resistance and even hostility to change; the education of a Service's future elite was an emotional issue and the respective Service Secretaries and Chiefs were understandably interested, if not concerned, about ownership of the development of their key people. Huge efforts were made to mitigate these inevitable sensitivities. In particular, the Army had traditionally used performance on their advanced staff course as a filter for future advancement through the infamous 'black bag' system, [2] so was alive to any initiatives that could be interpreted as attempts to drive out single-Service or Land-focused course content. The RAF had equally strong opinions about the direction staff training should take, but was conscious that it was difficult for its voice to be heard because of the 'tyranny of numbers' enjoyed by the Army. These tensions are reflected in the JSCSC's command structure, which is designed to provide tri-Service checks and balances. The 2-star Commandant post rotates between the three Services: the first RAF Commandant, and second JSCSC Commandant, was the then Air Vice-Marshal Brian Burridge in 2000. In addition, there are three 1-star Assistant

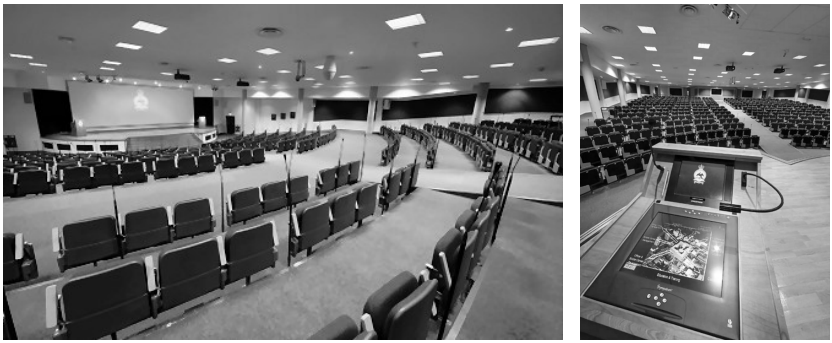
[2] Where the graded list of students were matched to the choicest appointments originally drawn from a 'black bag'.

The very impressive main building of the Joint Services Command and Staff College at Shrivenham.

The entrance hall to the JSCSC; note the flags of the many nations that have taken advantage of the world-class facilities on offer.

Commandants drawn from each Service, ostensibly to deliver course functions on a day-to-day basis but, in reality, established principally to assure single-Service equities. ACSC itself is split into three divisions, each led by a Divisional Director (at group captain/colonel/captain RN rank) from each Service, although the divisions themselves are tri-Service in directing staff and students.

The need to persuade the Services to embrace the enterprise is also manifest in the architecture of the JSCSC building itself: the two wings purportedly represent an aircraft, the main dining room is shaped like the prow of a ship, and the Army have battlements and a few black and white tiles – apparently a fondly remembered feature of the floor in the entrance hall at Camberley – in the main forum to make them feel at home. The artwork and other artefacts were also carefully selected to maintain both the best of tradition and Service balance. The substantial cost of the new building and the ongoing delivery of the course was met through a, then ground-breaking, 30-year Private Finance Initiative (PFI) providing both the infrastructure and all support services. While PFIs have received a mixed press in the interim, the contract at Shrivenham has been outstandingly successful in supporting the delivery of genuinely world-class military



Two views of the spacious main lecture theatre at Shrivenham.

education in a state-of-the-art facility. The scale and scope of the building is by itself a hugely impressive statement of intent, and the demonstrably better education, accommodation, sporting and social opportunities at Shrivenham were undoubtedly pivotal in helping all three Services to swallow the bitter pill of losing their own staff colleges and in embracing the Joint education model.

In 2002, the JSCSC and the other units at Shrivenham were integrated as the Defence Academy of the UK, with Commandant JSCSC now reporting to a 3-star Director General Defence Academy. However, JSCSC has maintained its strong identity and brand; indeed, its remit has continued to grow within the Defence Academy construct, with a range of other Command, Staff and Leadership Training Delivery Units, both at Shrivenham and elsewhere, now being brought under the JSCSC banner. These include the Defence Centre for Language and Culture (previously the Defence School of Languages at Beaconsfield), the Armed Forces Chaplaincy Centre at Amport House in Hampshire, and the Shrivenham Leadership Centre at Beckett House. In 2014, the Defence Academy and all its constituent units (including the JSCSC) were absorbed within the new, 4-star Joint Forces Command (JFC), which was established to champion and deliver Joint capability. This now stands *inter pares* with the Navy, Army and RAF, with Commander JFC enjoying the same status and authority as the three Service Chiefs of Staff.

Advanced Command and Staff Training

So much for the JSCSC as an institution. But what does advanced

command and staff education look like now for the RAF students attending the ACSC? Over nearly two decades, the course has evolved continuously, but the core purpose and objectives have endured. The aim is to prepare officers for unit-level command and high-tariff staff appointments, so the vast majority of RAF students are either brand new wing commanders or senior squadron leaders on the cusp of promotion. Most therefore attend in their mid- to late-thirties. Students are selected on the basis of their potential for promotion to group captain, so competition for places is correspondingly fierce, with only the top 20% of each cohort making the cut. It is now very rare for an RAF officer to command at unit level, or be promoted to group captain, without graduating from ACSC and attaining the coveted post-nominals *psc(j)* – 'passed staff college (Joint)' – which are an essential pre-requisite for the highest profile staff jobs.

To meet the aim, the ACSC is conducted as an academic year-long, full-time residential course delivered by a combination of military staff and civilian academics.[3] This enables students to elect to take a Master of Arts degree in Defence Studies with a little extra work – and some 75% of them currently choose to do so. The prestige of ACSC means that it attracts the highest level speakers from all fields: apart from military luminaries, speakers on the last course included Sir John Major, Sir Douglas Hurd, Lord Ashdown, Sir Lawrence Freedman, Sir Hew Strachan, Sir Clive Woodward – and even Ruby Wax! The basis of the learning model used on the course is small-group teaching delivered through syndicates of 10-12 students, where the knowledge and rich experience available within the student body can best be shared and discussed in seminars and other activities.

ACSC is inherently Joint, but it also has a strong international flavour. The current course is composed of some 280 students: 75 UK Army, 50 RN, 50 RAF, 15 UK civil servants and 90 international students from 50 countries, ranging alphabetically from Angola and Austria through to Vietnam, the USA and Uruguay. The Defence Engagement benefit is obvious and diversity is a real strength, both academically and intellectually. Fortuitously, the single-Service concerns aired when JSCSC was first established have proved to be largely unfounded. Defence has become increasingly Joint over the

[3] The academic provider is King's College, London.

last twenty years, so most students are already comfortable working in a Joint environment, not least on recent operations, and relish the opportunity to meet and learn from each other and further broaden their knowledge base. The network of friendships they develop – across Defence and internationally – is one of the most valuable outcomes of their year at Shrivenham. Those taking up single-Service appointments on graduation often find the scope somewhat parochial after they have had their horizons broadened by a staff college education!

Initially, the ACSC syllabus comprised three terms: a single-Service term and two Joint terms. This was counterproductive, as it provided the opportunity for the respective Services to try and pack their own entire staff college syllabi into the ten weeks of the single-Service term; and not all resisted the temptation to do so; for example, the single-Service (Land) phase was known colloquially as 'Camberley in a term'. However, as single-Service sensitivities abated over time, the course has evolved to become entirely Joint, with a much better educational outcome as a result. Now, only two weeks are set aside at the very start of the course for a single-Service 'Introduction', which aims to base-line understanding and knowledge of current environmental issues across all branches of the same Service. It is still necessary because, for example, an RAF nurse will be expected to act as the air power expert when he or she joins their Joint syndicate regardless of his or her specialisation, so the RAF Service Introduction provides an opportunity to refresh air doctrine and reinforce core RAF knowledge and messages.

The reduction in single-Service education at ACSC has been possible because of the advances made in staff education at lower rank levels. For the RAF, the Review of Officer and Airman Development has been instrumental in providing a much better educated cadre of officers up to and including squadron leader rank, the gateway to ACSC, and this development will now be considered in a little more detail.

Review of Officer and Airmen Development

The Review of Officer and Aircrew Development (ROAD) was conducted in 2006 to analyse through-career professional development of (principally) the junior officer cadre. It found existing training was

high quality, but was too little (for the complexity of the contemporary operating environment) and offered too late in most officers' careers. Interventions were often voluntary and there were duplications and gaps between courses, with skills and knowledge-fade in the long periods between courses.

The solution offered by ROAD was a coherent, through-career development programme based on blended learning: short residential interventions supported by online, distance learning. The resulting, and highly successful, Junior Officer Development Programme (JODP) builds on the foundation provided by Initial Officer Training at the Royal Air Force College, Cranwell, offering a one-week intervention at the end of a junior officer's first tour, two weeks at the end of the second tour and one week at the end of the third tour, all connected by a programme of peer networking and distance learning and delivered by the RAF Division (commanded by a group captain with a wing commander Course Director) at the JSCSC. The interventions are carefully tailored to reflect the increasing maturity of the junior officer cadre as it advances through its career and encompasses subjects including: coaching and mentoring; command, staff and leadership training appropriate to the relevant experience level; how to lead and manage the ever-increasing number of change or structural transformation programmes the RAF is subject to; continuous improvement; risk management; budgets and finance; strategic planning; peer-to-peer networking; and communication skills.

The JODP has put the RAF at the forefront of staff training as the only proper, coherent, approach to professional development based on a rigorous analysis of training needs rather than a perception of what is required. It is telling that the Royal Navy is now seeking to replicate JODP for its own purposes as it understands the quality of junior officers that the programme is producing for the RAF.

Intermediate Command and Staff Training

After completing JODP, officers of all branches selected for promotion to squadron leader (including specialist and professionally qualified officers) are now required to undertake the Intermediate Command and Staff Course (Air) – ICSC(A) – within their first year in rank. This is an eight-week long residential course, again delivered

by the RAF Division at JSCSC, and builds on the JODP to deliver a much higher output standard than the previous four-week long course or the (now redundant) Higher Air Warfare Course previously delivered at the Air Warfare Centre at RAF Cranwell.

From 2018, the JODP and ICSC(A) will be combined into a single, Intermediate Officer Development Programme (IODP) to ensure a smoother progression from JODP to ICSC and then onto ACSC for those fortunate enough to be selected for the advanced course. This will entail dividing the current, single ICSC(A) course into two, shorter interventions: an initial course delivered at the point of promotion, to equip officers with the skills and knowledge to act as a junior squadron leader; and a final intervention to prepare them for life as a senior squadron leader.

The Future: the Defence Education Pathway Review

In 2015 the Defence Education Pathway Review (DEPR) was launched after an earlier report had demonstrated a number of shortfalls in the staff training currently being offered across the Defence community. In particular, the highest ranked (3- and 4-star) officers of all three Services felt they did not have the financial or business acumen to run Defence as an enterprise, as they are increasingly expected to do. The report also recognised that the mainstream supporting staff – the 80% of the officer cadre not selected for ACSC and therefore unlikely to be promoted beyond wing commander, but potentially able to serve till age 60 under new terms and conditions of service – were receiving little or no development beyond ICSC. Finally, it considered that more needed to be done to professionally qualify and accredit officers for an increasingly career field based approach to talent management, where there is less tolerance for the traditional 'gifted amateur' approach – ie the expectation that because an officer is a good Harrier pilot, he or she will be equally expert in managing a multi-million pound budget or thousands of people with no experience or qualification in these areas.

To address these problems, DEPR has recommended a three-stage career development programme based on blended learning. The RAF has already adopted a very similar approach in the staff training system described above, so the impact will be felt less than on the other two Services. The Initial Career Development Programme

envisaged by DEPR equates very closely to the RAF's new IODP and finishes as an officer completes ICSC (ie on promotion to squadron leader or equivalent).

The cadre is then split into two streams on selection (or not) for ACSC, and marks the point where an officer embarks on the Advanced Career Development Programme. Those in the 'Strategic Leader' stream will advance through ACSC and then embark on the Higher Career Development Programme when promoted to group captain and, if selected, attend one of three courses: the Higher Command and Staff Course (an operational-level war-fighters' course delivered at JSCSC); the Royal College of Defence Studies (a political-military strategic-level decision making course delivered at the RCDS in London); or a new, Higher Defence Means Course (designed to fill the gaps identified by DEPR in giving senior officers the skills to manage defence as a business).

Those not selected for ACSC will now follow the 'lead practitioner' pathway, where their own Advanced Career Development Programme will comprise blended learning (based on ACSC content) to offer continuous development of command and staff skills, along with professionally accredited qualification in their respective career fields to provide them with specialist chartered or lead practitioner status. This will allow them to act as professional 'subject matter experts' in their fields and support the strategic leaders more effectively whilst giving them transferable shills and qualifications should they choose to leave the Services and seek civilian employment.

Some personal reflections on RAF staff education

Historically and by instinct, I believe the RAF is not (and never has been) a particularly reflective Service. We have always put a premium on technical innovation, and our training is justifiably still a byword for excellence; but this is about 'doing', and has not always been matched by a similar interest in the conceptual component – 'thinking'. Consequently, the RAF has not always ascribed the same value to staff education as the Army (although we have always given it much greater emphasis than the Royal Navy, which has been wedded historically to a Nelsonian tradition of practical seamanship which regards classroom learning with huge suspicion). This

deficiency in the conceptual component has been recognised by the outgoing Chief of the Staff and is reflected in the 'Thinking to Win' initiative he has recently launched.

And yet, despite this traditional distrust of the conceptual, the RAF has emerged with arguably the most coherent and effective programme of through-life staff education of all three Services, and is currently producing junior and middle rank staff officers of exceptionally high quality. It is noteworthy (and reassuring) that the DEPR recommendations for pan-Defence staff education correspond so closely with the programme the RAF already offers.

'Thinking to Win' is an indication that staff training will remain a priority even in – or perhaps because of – the current age of austerity, where it is often seen as a force multiplier or short cut to capability, on the basis that 'it's not what you have, but how you use it' that matters. However, it will always come under scrutiny, as the benefits are indirect, not immediate, and intangible, and when manpower is at a premium, the opportunity costs of putting human resource into any sort of training margin will always hurt. Finally, staff education is always emotive, because it is about people and so is often regarded as the test as to whether a Service cares about developing its human resources or not. For the RAF, the example (and shadow) of Trenchard will always loom large, because in an age of equal, or even more acute, austerity, he made his priorities absolutely clear when he invested in the holy trinity of the RAF Staff College at Andover, RAFC Cranwell and the Apprentice School at Halton at the expense of more or better equipment; a truly daunting legacy to live up to for those responsible for developing our people today.

DISCUSSION

Pressure on time lead to the truncation of the afternoon's programme so the two Q&A sessions have been reported here as a single event.

AVM Michael Robinson. I would like to think that I may have been one of those romantic young men who just wanted to fly. Be that as it may, having been at Cranwell as a flight cadet, as a squadron leader and as Assistant Commandant, I have had some direct experience of the rate of change at Cranwell. The only constant I found was its state of flux. And so, it would seem, it goes on.

A minor point of correction. The 46th Entry was the first *full-time* post-war course. 45 Entry, my entry, was a one-year course, although we did employ the ranks of corporal, sergeant, senior under officer, etc.

When I was Assistant Commandant, in the mid-1970s, I was bitterly disappointed at the physical unfitness – and the mental unfitness – of so many cadets. They didn't seem to have the necessary drive and determination after three years at university. So I wondered to myself whether this really was the best use of their time between the ages of 18 and 21. My personal answer was that I didn't think it was the best way. On the other hand, I took an MA when I was 62 – which was perhaps a little late! So my question is – is today's young man at Cranwell challenged on the sports field? Do you, for instance, still have inter-Service matches?

Air Cdre Chris Luck. You have highlighted a problem that is common throughout the youth of today's Western consumer society – physical fitness. But do we still do inter-collegiate games? Yes, we do. In fact, a few weeks ago, we beat the French! And we continue to encourage sport – athletics, football, polo and so on. But we do face a challenge – which is the input standard. Like everyone else, the RAF can only draw on what society provides and youth fitness, however it is measured – stamina, BMI, robustness, resilience – is a very real concern, especially for Generation Y and the Millennials who simply do not do much sport. So we are finding the Basic Fitness Test, which used to be a walkover for most, is now a significant challenge to many. Since society is failing to provide sufficient candidates able to

meet a minimum level of fitness we are beginning to seriously consider whether we will have to undertake getting them up to the required standard ourselves before we start formal training. That, of course, has resource implications in terms of cost and course length. So – you are right to be concerned – but, right now, College Cranwell still tends to win most of its matches.

AVM Andrew Roberts (74 Entry). You have been obliged to reduce the IOT course from 30 to 24 weeks. How concerned are you about that? Will it revert to 30 in the long term when you reach a steady state, and how do you calculate the optimum length of the Cranwell course?

Luck. I am concerned because, as I said, the cut in course length in order to achieve the required throughput, amounted to 'blunt force trauma'. We were informed of the numbers involved in late November/early December and told to be ready to implement the new programme in April. That meant rejigging the system to go from four 90-cadet courses per year to six annual courses of 120 – without breaking step. That was quite a challenge. So, yes, I am concerned. Have we lost too much on air power studies? Most likely – yes. Have we lost too much in the way of field activity and leadership exercises? Probably, again – yes. But this is not the first time that the air force has had to do this sort of thing, of course – not least in the later 1930s when we were having to expand the air force as matter of urgency.

So we have to accept the reality, deal with it and continue with the work, that is always ongoing, to provide the course that we want. So what is it that we require of a 21st Century officer? It's not just the ability to handle the technology; it's also about the quality of the individual. We need leaders and leadership is about people. That is fundamental and, as Commandant, locking that in is my primary concern. We are working on a refined syllabus which we aim to implement next year.

Do I see the course growing again in the near term? I doubt it. In a resource limited economy, are we likely to be given additional funding in the next five years or so? I think that unlikely. But, perhaps we should not focus too much on length – the course has been as long as three years and as short as 18 weeks – I was an 18-weeker myself. The

key is not so much length as content and quality – and those are what we endeavour to provide.

AVM Tony Mason (long term employee of Whittle Hall). First of all, thank you very much, Chris, for your presentation. It was, I think, very reassuring to hear of the extent to which the air force is moving and its influence within the community. That said, I was surprised that the word 'content' did not feature until right at the end. You told us at some length about the methods and the technology employed but I would like to pick up on the point that Andrew made about the reductions. In terms of content, we know that technology is changing very rapidly – as is the operational environment in which air power is employed – and I am a little concerned at the apparent relegation of content and, specifically, content related to air power. So my questions are, whose decision will that be and how are you going to do it? What will all that entail? – because air power is what we are all about.

Luck. You are quite right, and we do need to be concerned about it. CAS and the Air Force Board have just launched their 'Thinking to Win' campaign – the fundamental conceptual components of which include the air force officer's ability to understand, situate, argue for and then use air power. That is germane to success, to going forward and I have no intention of undermining that. What I need to do is move forward from the tyranny of the now and look at content and what it is that we want. And what we want are thinkers – individuals who can cope with ambiguity, who can understand air power, at both the tactical and strategic level. I am not going to pretend that what we have done to the academic portion of the course thus far has got it right but the key word is 'ongoing' and now that we are ready for the April start date we need to understand and prepare for the next 100 years of air power so that we educate correctly. That – 'the next 100 years' – is, of course a pretty bold statement, because who knows what that will involve? But you are absolutely right – we are not in the right place with the course as it is. But the air force *is* in the right place and this is underpinned by the energy and drive behind the Chief's 'Thinking to Win' and the fact that the Director of Ground Training, Christina Elliott, has undertaken, in partnership with myself, a fresh look at the continuum of education for officers, throughout their careers. We are currently reviewing Phase Zero and I have already

instigated a compulsory course, a ground syllabus, at university air squadrons and we will take that on through the Junior Officer Development Programme, ICSC, ACSC and all the way up to the Defence Strategic Leadership Programme. We want, and need, to do this better, so my answer to you is that I agree – the airman of today is not sufficiently intellectually knowledgeable or agile. We have recognised that. We need to do something about it – and we are.

Richard Bateson. An event linking Cranwell, Halton and Trenchard that intrigues me was the arrival in October 1937 of a high level delegation from Nazi Germany led by *General der Flieger* Erhard Milch. Spending a week as guests of the Air Council, this party which included *Generalleutnant* Hans Stumpff and *Generalmajor* Ernst Udet visited both the RAF College, where Milch planted a tree, and later No 1 School of Technical Training and its workshops. Afforded high priority by the British Government, the German guests were received by the King, witnessed a lavish air display at Mildenhall and inspected the RAF stations at Wittering, Hornchurch and Odiham, the latter, a new site, being officially opened by Milch himself. A dinner was given in their honour, hosted by the Secretary of State for Air, Lord Swinton, with a reciprocal function hosted by the German *Chargé d'Affaires* at which one of the guests was MRAF the Viscount Trenchard. One wonders which side profited most from this exchange. Less than two years later we were at war.

AVM George Black. Thank you for that. I would just offer the comment that I don't think that the Germans were ever our natural enemy. I spent many years working within NATO and the German Air Force was among the most professional to serve with.

Luck. And we are very grateful for the two wonderful portraits that they left with us!

Gp Capt 'Min' Larkin *recollected that CAS' office had offered the Commandant, Air Cdre Ranald Reid, some subtle guidance on hosting the Milch delegation's 21 October visit to Halton. He was unable to recall the precise details but subsequently provided the text of CAS' note of 15 October which said:*

> 'It is desired to impress the German Mission with the state of our preparedness and efficiency. It is most desirable to counteract the

impression they may have that we are unprepared for any sort of emergency.

CAS wishes all officers and airmen, questioned by members of the Mission, to answer forthrightly and to speak to these Germans as Britishers speaking to Germans.

CAS considers that General Milch will be seeking evidence of physical fitness. Therefore, it might be as well to allow the Mission to see (as it were casually) Apprentices in Physical Training.

C in C Fighter Command has arranged for the casual appearance of one of his wings to be near Halton at some suitable moment when the visitors would be likely to notice them.

It has been decided that the Nazi flag will not be flown but that, as a small compliment to the German Air Force, small Nazi emblems (which appear to give pleasure) may be displayed on luncheon tables.'

Seb Cox (Head of AHB). Min – I wonder if you were perhaps underestimating the revolutionary nature of the initial apprentice scheme – in social terms. It was highlighted by your references to rates of pay and whether the boys should really have *paying for* their education, rather *being paid* while receiving it. At that time, compulsory education stopped at 14. You could stay on at school after that but, depending upon your local education authority, you would quite likely have had to pay to do so. They *might* pay for you, but they weren't obliged to. Furthermore, there was very little in the way of a welfare state. So, if you left school at 14 you were sent out to work and became a nett contributor to the family income. If you had an apprenticeship – anywhere other than in the air force – you would have had to pay for it, making you a drain on the family's resources. So what Trenchard was saying, in effect, was 'If you send me your child, I will not only feed, clothe and house him – thus relieving you of those costs – I will also provide him with a trade, that you would otherwise have to pay for.' For working class and lower middle class families this was a very attractive offer. So I would suggest that, in this context, Trenchard was a social revolutionary, way ahead of his time. The way in which it was funded was a key, perhaps the key, feature of his scheme. There was nothing remotely like it in the other Services.

Larkin. Absolutely. Couldn't agree more – and that is reflected in the number of candidates who used to sit the entrance exam, which far outnumbered the vacancies. That was especially true in the 1920s and the early '30s when things were tough, economically. On occasion we had up to 20 times as many applications as could be accommodated. Pre-war it was indeed a hugely attractive scheme. As a coda to that, (Air Chf Mshl Sir) Mike Armitage did some interesting work on this and he found that most of the boys in the pre-war entries came from grammar schools, and there were even a few from public schools.

Gp Capt Jock Heron (71B Entry). One way or another, many of us in this audience have been directly associated with the institutions that have been described today and that experience fostered an intense sense of loyalty. I am not sure that the more recent processes that have been described, for both officers and airmen, are going to result in people having the same sense of loyalty to the Service that is so vital and which meant that one could always rely on one's colleagues in a tight situation, whether in a Chinook or a Tornado. We rather took that for granted. How are we going to sustain this sort of culture in the future?

Luck. Another good question. I think what you are getting at essentially, is the brevity of courses, that simply aren't long enough to permit people to develop a sense of belonging. I am very conscious of that and I am at great pains to meet my cadets, especially during the last fortnight, the run-up to graduation, and talk about heritage, ethos, core values – about Cranwell as the 'spiritual home'. It is also why I am quite passionate about the Cranwell Association and using it to develop that spirit of 'oneness' and to permit that to carry on through and beyond the gates of Cranwell. I am delighted to say that yesterday 55 new officers signed up to the Association, including several internationals – we now have over 700 members. So delivering a sense of 'who we are', as an entity, is challenging – and cutting back to 24 weeks from 30 only adds to that challenge. It is a problem that I am very aware of, but it simply is not something that you can mandate; you can only encourage and foster.

Heron. In much the same context, how are we going to retain the young airman who has just obtained a degree in business studies?

Wg Cdr Chris Jones. In short, we have to enrich his experience within the air force – and that is yet another challenge. My generation joined for a full career, and there are still some of us around, but Generation Z isn't necessarily looking for a long term career, and we have to recognise that. What we have to do is try to keep them in. We used to have 'pension traps' – the 38/16 point and the 44 point. Instead, today we offer career incentives; so offering our young airmen the opportunity to qualify for a degree is actually something that we need to explore, because that is the sort of thing that interests them. From a technical perspective, there is a shortage of engineers so the vultures really are circling. The air force does well at attracting capable young men and women but we are less successful at retaining them because industry and commerce can offer better remuneration and we have to counter that by making life more rewarding. But it isn't easy.

Luck. Perhaps I should also respond to this with my Director of Recruiting hat on. It is, as Chris said, a very real challenge and in contrast to the picture that Seb painted of the pre-war social context, today's young men and women don't need to join the RAF for the money. There are ample employment opportunities available, so we don't even have Trenchard's financial carrot to attract them. So what can we offer? Should we, for example, pay their university fees to relieve them of what has become a considerable debt – would that encourage them to sign on? But getting them in and then persuading them to stay is a problem, because they have a different mind set. Interestingly, however, it is a fact that only 3% of today's officer corps actually serve to age 55. But it isn't the 55-year men that are a problem; the ones we need to retain are those who have accumulated the necessary degree of experience and gravitas to begin to handle leadership roles and that is difficult because that is the point at which industry and commerce will want to poach them. We are looking at that, of course, but resources are limited – we can't pay more – so we compete on a vocational basis – and vocation is so important. You don't just 'do a job' in the air force. You get your adventure training; you get your continuous personal development; you can go on to get your PhD – that is all achievable in today's RAF. That said, with a shrinking air force with fewer people doing more work, it becomes

increasingly difficult to release people for vocational activities. But we just have to keep fighting this one.

AVM Marten van der Veen (Commandant, Staff College, 1996-97). We heard from Min how the three-year apprenticeship created a skilled, dedicated and reliable workforce with a wonderful *esprit de corps*. In those days we were able 'catch 'em young' but it would seem that that is no longer an option, and neither are lengthy courses – today's IOT is less than six months. To what extent are we able to inject some specific element of 'attitudinal' training into our progressive training system to try to generate that essential sense of corporate loyalty? Do we seek any assistance from the outside world – perhaps marketing, PR, academic psychologists and the like – or is that considered unnecessary?

Air Cdre Alastair Byford. There are elements of that included in the courses. It is difficult to quantify, but we are actually delivering more of this than we did in the past. For instance, if I look back at my own experience, I did IOT, as a graduate – and that was it. The next staff intervention I had was the ICSC which I did as squadron leader. So, for the first ten, or more, years of my career I just lived in, and flew from, my HAS site on the far side of the airfield. I very rarely set foot on the other side of the station – I had little idea of what anyone else on the station was doing – apart from chatting-up the doctor at Happy Hour or, in my case the dentist, to whom I am now married! Under today's Junior Officer Programme, two years after Cranwell they do get the opportunity to do a course. It's only a week but it does introduce them to other branches and specialisations, and this is followed up by peer networking on-line which also contributes to a shared experience. Those who are selected for the ACSC get a year's residential experience which permits them to develop a joint-Service network. But I would make the point that even a shortened 24-week IOT is longer than the course that I did. So – am I sanguine about this? No, I'm not and the interventions that we do have will come under increasing pressure as the air force continues to contract. Fewer people will mean that there will be increasing resistance to releasing them to attend long residential courses and I would expect questions to be raised over the ACSC. Can we really afford to withdraw a substantial cohort of our most promising middle-managers for a whole academic

year in mid-career? Would commercial operators, companies like BP for instance, do that? I'm not sure that this has been a satisfactory answer to your question. I am certainly not relaxed about this issue, but I do anticipate that we will have difficulty defending our residential courses in the future because they are both time-consuming and expensive.

Black. I think that the factor that has emerged from the whole day, and the one that I would particularly like to stress is the need to focus on the issues of loyalty, commitment and leadership which underpin the projection of air power. We must never forget that, but I see changes in the Service today which worry me. Trenchard created a flexible air force that was able to handle emergencies as well as its planned activities and that capability was dependent upon the dedication and commitment of its people. I am concerned that the mind set associated with the digital age may have undermined some of those ideas. We have the aeroplanes; we have the people. We don't know what they will be faced with in the future but, whatever it is, to cope with it they are going need old-style loyalty, commitment and leadership.

Byford. I wouldn't, of course, disagree with any of that. I don't have the precise figures with me but I think that it is probably relevant to point out that we no longer work in relative isolation. Something like 40% of our people are actually employed in joint-force, as distinct from purely RAF, appointments and that proportion is even higher among officers.

Black. Yes, I am aware of that – I have seen it myself, and I fear that it causes a worrying dilution.

Ross Mahoney. Perhaps I could make a point about the promotion of air power drawing on the experience of the inter-war years. The RAF was only producing a small number of officers who had the language skills to 'sell' air power effectively. While they did endeavour to create networks with the other Services, the fact is that the other Services didn't really want to hear the message. I would cite, as an example, Trafford Leigh-Mallory who attended the 4th Staff College Course before spending 1927-29 as Commandant of the School of Army Co-operation. During that time he worked closely with the

mechanised force and his advocacy of air power impressed the CIGS sufficiently for him to actually sing his praises and his expertise led to him joining the instructional staff at Camberley. Yet, two years later, in 1932 or '33, that former CIGS is writing to the Secretary of State for War advocating the disbandment of the RAF – despite saying 'I understand the purpose of an air force'! My point being that when we didn't have 'jointery' it was very difficult to sell air power to people who just didn't want to listen. In today's much more closely integrated Services, they have to.

RAF APPRENTICE TRAINING SCHEMES

Sqn Ldr Bryan Clark

The RAF apprentice and flight cadet training schemes were the backbone of the Royal Air Force in the years leading up to, and during and immediately after, the Second World War, and I'm sure Min Larkin[1] will give a good account of the huge contribution Halton's ex-apprentices made to our service, both on the ground and in the air (the Bomber Barons[2] and all that). Halton was of course the Apprentice Mecca, but it wasn't the only place at which boys as young as 15 or 16 began training for careers in the RAF. Today, we would call these establishments Residential Sixth Form Colleges, but then they were simply known as Apprentice (or Boy Entrant) Schools. The alumni of these schools served the RAF immensely well.

When I joined as an apprentice in January 1956, there were said to be something like 10,000 to 11,000 apprentices and boy entrants in training at three apprentice schools (Halton, Hereford and Locking) and at least four boy entrant schools (St Athan, Cosford, Compton Bassett and Yatesbury). All apprentice selection took place at Halton, but Administrative Apprentices went to Credenhill (Hereford) for training. As one of those Administrative Apprentices, I want to make a claim for the contribution made by Apprentice Clerks as they were originally known, particularly in the fledgling RAF in the 1920s and 1930s.

The apprentice clerk scheme was introduced in 1925[3] alongside the aircraft apprentice scheme, and had, arguably, at least as important an impact on the creation and effectiveness of the new Service as the better known Halton scheme.[4] We were always smaller in number, and possibly because our school moved several times – twice before the war and four times after – we have never been as well known, though we too like to regard ourselves as 'Trenchard brats'. More importantly though, much of the RAF's administrative, accounting, clerical, legal and personnel procedures (known until the 1970s as P1 (discipline), P2 (officers) and P3 (airmen) were created and refined by these former apprentice clerks. Though with hindsight one could say it was an early example of the creation of a modern bureaucracy, it consisted of a series of well-tested interlinking systems that served the RAF extremely well and put it, administratively, streets ahead of the

Army, and possibly even the Royal Navy with its long tradition of professional secretarial officers and petty officers and on which many of new Service's procedures were probably based.

In the early 1920s priority had to be given to the setting up of administrative and organizational systems for the new, separate, air force. To this end, the Chief of the Air Staff (CAS) selected a brilliant administrator, just transferred to the RAF, Major John Walter Cordingley, an ex-naval warrant officer writer, and a man with an exceptional track record as an administrator at all levels in the Royal Navy and with important experience of manning policy at the Admiralty. Major, soon to be Squadron Leader, Cordingley was instructed to form and command a Record Office for the Royal Air Force at Flowerdown, a former RNAS station in Hampshire. This was soon set up, though it moved to Ruislip within a few years to be nearer the Air Ministry, under whose direct control it had been established. Meanwhile, the CAS was also keen to attract into the new service well-educated young men for training in the highly-skilled aircraft servicing trades so necessary in a service at the cutting edge of global aeronautical development. Thus was born the Aircraft Apprentice scheme, *including* Apprentice Clerks.[5]

All apprentice clerks were taught touch typing and those training as clerks general duties (post-WWII: clerks secretarial) were also trained to write shorthand.[6] There being no WAAF or WRAF between the wars, ex-apprentice clerks were often employed as personal clerks by very senior officers. Their abilities rapidly became recognised outside the RAF, and they were often 'poached' by diplomatic, consular and other government departments.[7] From August 1928 onwards one third of each intake of apprentice clerks was trained as clerks accounting, clerks pay accounting or clerks stores accounting. Total numbers varied from intake to intake but the average was around 34. The largest intakes, not surprisingly, were those in the period of expansion immediately before WW II. Promotion for many ex-apprentice clerks was rapid in the extreme. To advance from leading aircraftman to senior NCO or warrant officer in only two or three years was not unknown. It has to be remembered, of course, that at this time records were manuscript, typewriters and duplicators were manual and the nearest thing to a computer was the Hollerith punch-card machines at the RAF Record Office, which allowed the identification of airmen's

individual skills by the insertion of metal wires, rather like knitting needles, into punched cards so as to be able to select men with the right skills, education, background or, sometimes, languages for a particular post.

The apprentice clerk scheme continued into the early years of WW II, but was abandoned in 1942 when it became necessary to move the RAF Record Office from Ruislip and away from the *Luftwaffe* bombing of London. Various proposals were made for this relocation, but in the end the decision was taken to move the Record Office to Innsworth (Gloucester). This had a direct impact on the training of apprentice clerks, as they had been training at Ruislip since 1925, in the classrooms in the mornings and in the Record Office in the afternoons. There was no accommodation for them at Innsworth, and so the scheme had to be closed down. By that time 2,080 apprentice clerks had been trained since 1925 and the number of intakes had reached 61, which entry graduated from Ruislip in 1942.[8] Prior to closure, the scheme had been reduced from three intakes, or entries, a year to two.

From 1925, boys entering under the scheme had been given service numbers in a block running from 590000.[9] When the school closed in 1942, the last number to have been issued was 592080; thus, 2,080 apprentice clerks had been trained in 17 years. Aircraft apprentices had been allocated their own similar six-figure batch of service numbers, in a series immediately before that allocated to the clerks, but by the mid-1950s, at 589999,[10] they had caught up with the clerks' batch and were obliged to leap-frog it to a new series, having trained a far greater number of boys and continued training throughout the period 1942-47 when the clerks' scheme was dormant.

By the time I had completed my training and was in so-called 'man's service', these early apprentice clerks were senior people, whether commissioned or as warrant officers and senior NCOs, and were running the RAF's administrative centres worldwide as staff officers, often at a very senior level, or as chief clerks. At warrant officer level, it was said that a handful of ex-apprentice clerks at the RAF Record Office, the eight 'home' commands and the four overseas commands, were in effective control of the RAF's administration worldwide, occasionally taking a sideways shuffle as they all moved round one. Many other former apprentice clerks were wing

commanders and group captains, filling posts at Command HQs as Senior Personnel Staff Officers and the like, and a few reached air rank. Their influence on the smooth-running of things administrative was huge. These men had written most of the RAF's accounting and administrative procedures, together with the extensive spot checks and inspections that were stricter even than most banks employed.

As a young secretarial officer, most of my bosses in personnel and accounts in my early years after OCTU seemed to be ex-apprentice clerks, which considering how few of them had been trained at Ruislip provides some indication of the extent to which the administration of the RAF was in their hands. My first boss after commissioning was a very senior flight lieutenant ex-apprentice clerk in his late 40s. He knew more about P1 than anyone I had met before or did afterwards. His knowledge of everything administrative was also encyclopaedic to the point where at this small operational base, an OCU, he was effectively the Deputy Station Commander. His superiors in rank were all pilots on ground tours, and the Station Commander took no decisions of an administrative nature without first consulting him. At my next station the Senior Administrative Officer, a squadron leader, was another ex-apprentice clerk. He had trained as a pay accountant and in his case knew more about accounts than anyone I had met previously. To watch him adding up a column of figures with nothing more technical than a sharpened pencil was a joy to behold. His deputy was another ex-apprentice clerk, who had been a pilot during the war.[11]

Others also became aircrew.[12] On graduating as a junior technician, and having been recommended for aircrew training, I went to the Aircrew Selection Centre at Hornchurch for medical and aptitude assessment. Sadly, my eyesight let me down, but a kindly warrant officer at the Record Office, who knew I was going up for assessment and whom I had come to know through our almost daily telephone talks about the posting of men from Wittering, where I was then briefly based, to Christmas Island for the British nuclear tests, consoled me by suggesting that I should apply for 'Special Duties Overseas', something I had never heard of. He needed urgently to fill a vacancy for a personal clerk to a senior officer at Headquarters Far East Air Force, and if my application under the relevant Air Ministry Order, happened to land on his desk within the next 48 hours, he

would take it as fortuitous that his need had been met. Days later he told me he had received my application, but I would have to attend for a selection interview at the Record Office.

When I arrived I was ushered into an interview room to be confronted by two squadron leaders and a warrant officer seated behind a table. (Bear in mind that I was still only 18 years of age!) As soon as I was seated and had taken my hat off, one of them, reading from my application, said, 'I see you have a 59 number – you're an ex-apprentice?' When I said yes, he waved his hand in front of all three of them and said, 'So are we'. They then asked a few questions to test my clerical knowledge, reminisced about their time as apprentices, and then said, 'Well, everything seems to be in order; you're in', shook my hand and sent me off to pack my things at Wittering, complete a PV clearance and prepare to be flown by charter flight to Singapore. For years afterwards, I used to joke that it was the nearest thing I ever came across in the RAF to a 'Masonic handshake': but, they knew my background, knew the training processes I had completed (I came top of my course) and had the confidence to send me off at 18 years of age to be PA to a senior officer and the corporal in charge of the top secret registry at HQ FEAF.

The apprentice clerk training scheme remained dormant from 1942 until 1947 when an Administrative Apprentice Training School (AATS) was formed at St Athan (moving to Hereford in the mid-1950s). The apprentice clerk service numbering system continued from where it had left off in 1942, restarting at 592081. *Entry numbers*, however, started afresh and so by January 1956 given three intakes a year and nine years later, when I joined, AATS Entry numbers had reached the 27th. This was always something of a bone of contention with Halton apprentices when we met at sporting fixtures, as they regarded us as apprentice newcomers, whereas, as we would quickly point out, we were really the 88th Entry of apprentice clerks and would have been in an even higher numbered entry had our school not closed for five years between 1942 and 1947, whereas Halton had not! It was never quite clear why the decision was taken in 1947 not to continue the entry numbers in sequence as happened with Service Numbers. It may have been because of the inclusion for the first time of suppliers (Equipment Branch apprentices), as well as clerks and accountants.

My apprentice number, issued in January 1956, was just over a thousand on from the 592080 at which numbers had stopped when the scheme was put into mothballs in 1942, and, as I say, I was in the 27th post-war entry of apprentices. Several of my instructors were themselves pre-war apprentice clerks, including one who had trained in the final intake at Ruislip, the 61st, before the school had closed. There was, thus, a strong sense of continuity within this small clerical fellowship. Another of our instructors, a flight sergeant clerk, was an ex-Pathfinder with a DFC; he had been commissioned as aircrew during WW II but returned to his ground trade as an NCO after the war.

In the post-war era we were trained, of course, like all apprentices, in the 'advanced' trades of our respective trade groups,[13] with the concomitant option of progressing on either the command or the technician promotion routes if we so chose, subject, in the case of technician promotion, to passing an examination and spending a minimum period of time in each rank.[14] By the time I was commissioned,[15] I had passed my senior technician examination and had turned my corporal's tapes upside down as a corporal technician.

In the privately-published[16] '*The 2080 – A Record of Service – The Apprentice Clerks 590001 to 592080*' it is recorded that of the 2,080 clerks trained by 1942: 819 were commissioned (four reaching air rank); 1,061 were warrant officers or senior NCOs; 455 served as aircrew; 318 were awarded decorations or distinctions and 276 were killed in action or on active service[17].

The post-war AATS[18] lasted until 1963 when, what with RAF numbers falling rapidly as stations closed, the withdrawal from east of Suez beginning to bite and national service ending, the school was closed, the last intake being the 46th Entry which began its training at Bircham Newton and graduated from Hereford in August 1963.[19] For a decade after that, boy entrant clerks, renamed apprentices, completed a shorter – even than the boy entrant – one year course in what had formerly been a 'skilled' trade, and were issued with Service Numbers from the old apprentice clerk block, in intakes/entries numbered between 301 and 330, before that school too closed.[20] This third phase was, however, in reality a reduced, skilled-trade training course rather than a continuation of the old advanced-trade apprentice course. I can say this with some confidence as, after almost four years

as an instructor at the boy entrant school, I helped draft and write the syllabus and training manual for the new reduced and shortened course, before departing for OCTU.

A quick count through a ten year old list of members of the Administrative Apprentice Association – not exhaustive, of course, as many former apprentices have not joined – reveals at least 35 decorations and awards, including an AFC and bar, plus numerous degrees and professional qualifications. The apprentice selection processes obviously worked.

There is a good case, therefore, while some of us are still around, to remember this history to put together a record or presentation of the role apprentice clerks served in creating the administrative processes that served the RAF well from the 1920s to the age of computers half a century later.

Notes:

[1] Whom I met in 2005 when we unveiled a memorial window to Apprentice Clerks and Administrative Apprentices at St George's Chapel, Halton.

[2] On a visit by three of us apprentice clerks to High Wycombe, then HQ Bomber Command, we were asked, by the young WRAF officer who was hosting our visit, if we would 'mind' (!) calling on a group captain who was himself an ex-Halton apprentice and would like to meet us. That group captain was John Searby, the Pathfinder and Master Bomber of Peenemünde fame.

[3] In fact the Apprentice Clerk scheme can legitimately be dated back to August 1921, when 36 boys were enlisted as 'the Experimentals', and began experimental clerical training at the RAF Record Office. It can thus be argued that apprentice clerk training pre-dates the aircraft apprentice scheme by four years.

[4] The basic entrance qualification agreed in 1925 was that Apprentice Clerks should pass the same Civil Service Commission examination as Aircraft Apprentices but omitting the Science paper. Indeed, it was proposed that Apprentice clerks be known as Aircraft Apprentices but the title Apprentice Clerks was chosen instead.

[5] In 1933 there was a proposal to move the apprentice clerks from Ruislip to Halton and for their posts at the RAF Record Office to be civilianised, or, alternatively, also to move the RAF Record Office to Halton. Neither option was taken up. A proposal in 1939 to move the Record Office to Farnborough also came to nothing. A further proposal to move the apprentice clerk training scheme to Cranwell in 1941 was also abandoned. Finally, the Record Office moved to Gloucester in 1942, and the apprentice scheme was forced to close.

[6] By the time of my training our typing and shorthand qualifications were validated by the RSA and appropriate certificates were issued. Those ex-apprentices with sufficient speed as shorthand writers could seek further training to become court shorthand writers, which carried with it fast promotion to sergeant or chief technician rank. A member of my entry took his shorthand skills into journalism, where he ended

up as the features editor of a well-known national newspaper (and recently attending our 60th reunion).

[7] One so poached ended up as a Superintendent in the Metropolitan Police. Several were later ordained.

[8] As a result, the 61st Entry became the last until the apprentice clerk scheme was revived in 1947 at St Athan. Appropriately, the reviewing officer at the graduation of the 61st Entry was Air Vice-Marshal Sir John Cordingley, the same ex-RN writer who had run the Record Office for a remarkable 17 continuous years and set up the apprentice clerk training scheme and much of the RAF's administrative and organizational systems.

[9] Interestingly, an official RAF Record Office list of the blocks of service numbers allocated to different groups of airmen (and some civilians) from 1918 onwards, given the author 30 years ago, shows (correctly) that the number 590000 was never issued, that 590001 to 594261 were issued to 'Apprentice Clerks' (that is, *including* the 46 post-war entries as well as the 61 pre-war entries), meaning that a total of 4,260 numbers was issued to apprentices in 107 entries. Thus, 2,080 apprentice clerks were trained in the first phase of the scheme between 1925 and 1942 and a further 2,180 in the second phase between 1947 and 1963. The 46th entry, which graduated in December 1963, was, therefore, the last to be trained to junior technician advanced trade/pre-war apprentice clerk standard. Nine months later, in September 1964, the third phase of 'Administrative Apprentice' training began on a shortened one-year course to SAC level, for clerks and suppliers at what had previously been a boy entrant school at Hereford, and for nursing attendants (later medical secretarial) at Halton, starting afresh with the 301st entry. From then until the 310th entry, attested September 1967, a further 2,302 numbers were issued from the old apprentice clerk series (594301 to 596003). That the third phase jumped 594262 to 594300, which were never issued, and began at 594301 was presumably intended to link the service numbers with the new entry numbering system, which also started at 301. From the 311th entry until the 330th entry, attested September 1972 and graduated August 1973, a different block of numbers (8000005 to 8002157) was used in the seven-figure series at that time being introduced throughout the RAF. With the graduation of the 330th entry, the training of administrative apprentices of any kind, and of any service number, ceased.

[10] Aircraft Apprentices were allocated the series 582000 to 589999, but this series was exhausted by September 1954. From then until the end of the scheme the numbers 680000 to 689444 were issued.

[11] This is not to deny, of course, the even greater influence throughout the RAF of ex-aircraft apprentices both in the air, and, particularly, in the engineering branch. During my time in Northern Ireland (by then in the Security branch (Provost/RAF Regt)) two successive group captain COs of the Maintenance Unit servicing Phantom aircraft at Aldergrove were ex-Halton apprentices and the third a graduate of the RAF's Technical College.

[12] Many apprentice clerks volunteered for aircrew duties during WWII and most succeeded. Some, however, found it difficult to persuade their often quite senior masters to release them from their clerical roles, for, as one air officer (later a famous

war-time Commander-in-Chief) remarked, ‘We can get as many aircrew as we like and train them quicker than we can get good trained clerks’! One of the RAF’s Battle of Britain ‘aces’, was ex-apprentice clerk Spitfire pilot Flt Sgt George Unwin (15th Entry), later Wing Commander Unwin DSO, DFM & Bar.

[13] There were 22 trade groups in the 1951 post-war restructuring of ground trades, all except one with several advanced, skilled and assistant trades within them. As a junior technician clerk (an advanced trade) at Wittering I can still remember the berating I received from a hairy old flight sergeant fitter, who coming into the General Office one day thought that I was dodging work on the line for a soft billet in an office. He would not accept that I could possibly be a technician clerk.

[14] Three years from junior technician to corporal technician, then four years to senior technician and a further five to chief technician.

[15] Commissioned on the general list of the Secretarial Branch, I transferred to the Provost (Security) branch three years later.

[16] Edited and published in the early 2000s by an ex-apprentice clerk who was an instructor at Hereford in my time as an apprentice.

[17] Excluding wounded/injured and POWs for whom details could not then be easily found.

[18] During my time at AATS two successive COs were ex-apprentice clerks, one a war-time pilot. Of the seven post-war COs four were ex-apprentice clerks and one ex-Halton.

[19] By then a similar number of apprentice clerks (2,180) had been trained since the scheme was resurrected in 1947, as had been trained between 1925 and 1942 (2,080), a neat coincidence. Of this second phase of apprentices at least 18 reached group captain rank and a similar number were awarded cadetships at Cranwell (or Sandhurst for the RAF Regt).

[20] Entry numbers 301 to 320 ran in sequence but after that only some numbers (322, 324 and 326) were used until, finally, the 330th entry entered Hereford in September 1972 and graduated in August 1973, bringing to an end apprentice training that could trace its roots back to the 36 boy ‘Experimentals’ of August 1921, 52 years previously. During this third and final phase, other trades were introduced, such as Nursing Attendant and later Medical Secretarial. They were trained at Halton (hospital). The final intake, the 330th entry, was the largest ever with 165 boys.

BOOK REVIEWS

Note that the prices given below are those quoted by the publishers. In most cases a better deal can be obtained by buying on-line.

A History of the Mediterranean Air War 1940-1945, Vol 3 by Christopher Shores and Giovanni Massimello with Russell Guest, Frank Olnyk and Winfried Bock. Grub Street; 2016. £50.00.

As its sub-title explains, this edition, of a projected seven-volume series, covers *Tunisia and the End in Africa, November 1942-May 1943*. Vols 1 and 2 were reviewed in Journals 54 and 59 so what follows must, inevitably, recycle much of what has been said before. As the lengthy list of authors indicates, while Chris Shores is an acknowledged expert on wartime British aviation, and this is his project, he has drawn heavily on the expertise of his regular collaborators who are specialists in the exploits of the Italian, German and American air services.

The narrative opens with a brief pre-history to set the regional scene, including notes on earlier operations undertaken against the Vichy-French in North and West Africa during 1940-42 and an account of the run-up to Operation TORCH, including the initial ORBATs of the available British, American, German, Italian and French air forces. Thereafter, the content is strictly chronological, each day's combat claims and recorded losses are tabulated, by air force, providing detail such as the unit, the pilot's name and aircraft type along with, where known (and in the majority of cases it is), the aircraft's serial number, the time and location of the claim/loss and a brief note on what happened. Where appropriate (and again, in most cases it is) there is a narrative description of the day's activities, sometimes running to several pages and sometimes including the personal recollections of a participant. The author provides appropriate comments on the introduction of tactical innovations, mistakes made, lessons learned and so on. In this context, Shores highlights the contrast between the dated tactics, eg twelve aircraft patrolling in close-coupled box formations, and the lack of experience of combat and field-living conditions that characterised the USAAF and RAF units deployed in North West Africa, compared to the

scruffy, well-acclimatised, tent-dwelling, veterans of the *Luftwaffe* and the Desert Air Force with their far more flexible formations, the RAF flying constantly weaving fluid fours or sixes with the Germans employing, what would eventually be recognised as the right answer, the finger-four. He also provides a concise appreciation of the need to unify the command arrangements for, and co-ordinate the operations of, the allied air forces based in Algeria and those advancing from Libya as the pincers began to close on Tunis.

It has to be said that, notwithstanding the broad scope of the title, which proclaims an account of *all* aspects of the war in the air, the content is largely confined to the activities of fighter pilots and squadrons so it feels like an extensively revised and much expanded edition of 1975's *Fighters over Tunisia*. Indeed, bomber, and to a lesser extent maritime, operations are afforded even less attention than they were in Vols 1 and 2. As before, while the occupants of the back seats of Beaufighters are named; anyone other than the pilot of any other multi-seat aeroplane is simply lumped together anonymously as 'and crew', except, curiously enough, the co-pilots of Italian bombers who are also identified in the daily tabulations of aircraft lost.

That reservation aside, this book surely provides as comprehensive a day-by-day account of fighter operations in this theatre and timeframe as is ever likely to appear in print. The meticulous international research has permitted many of the claims and losses to be reconciled, highlighting, once again, the inherent optimism of all fighter pilots. For example: on 1 December 1942 the Germans claimed to have shot down nine Spitfires whereas only three were actually lost, and on 30 January American P-38 pilots were credited with eight German fighters plus two probables, compared to admitted losses of only two Bf 109s. But the enthusiasm of the fighter pilots was easily trumped by that of the USAAF's air gunners, a classic case occurring on 23 January when B-17s attacking Bizerta claimed to have shot down fifteen enemy aircraft, not to mention five probables and another six damaged; the Germans appear to have sustained no losses at all in that action. All of these claims will have been made in good faith, of course, but they were not isolated cases and the tabulation of *all* claims provides scope for some interesting analysis and, perhaps, revisions of some reputations.

This is another densely written (and well bound) doorstop of a

book and it contains such a huge amount of information that the occasional mistake is almost inevitable and a close reading of the text does reveal a few inconsistencies. For example, losses noted in the narrative occasionally fail to match the tabulated details, eg while two Wellingtons are noted as having failed to return on 21/22 January, the details of only one of these are tabulated and details of all three Wellingtons recorded as lost on 11/12 April are lacking. On p13 there is a reference to a Martin 187, rather than a 167, and Roy Nesbitt was a navigator, not a pilot (p390). But these are mere pinpricks and in 680 closely typeset pages the incidence of detectable errors and omissions is remarkably low, and such problems as do occur are pretty obvious because most are in the nature of oversights or typos rather than being factual errors. I was, incidentally intrigued, as is the author, by contemporary references (pp352 & 406) to a mysterious Beaufighter armed with a pair of 40mm cannon – not the well documented R2055; this one was X7704.

The illustrations are as impressive as the written content. I counted more than 230 informatively captioned photographs. A few will be familiar but most are being reproduced for the first time, certainly in an English language publication. The quality sometimes varies, of course, reflecting the quality of the original image, but the reproduction in all cases is first rate.

The book is rounded off with a really comprehensive index permitting the reader to find all references to every named individual (so no bomber navs) broken down by nationality and every unit broken down by air service. All of which makes the book extremely user-friendly as a work of reference.

Strongly recommended. Another *tour de force* by the team; three down – four to go . . .

CGJ

Air Wars 1020-1939 – The Development and Evolution of Fighter Tactics by Philip MacDougall**.** Fonthill; 2016. £20.00

In *Air Wars 1920-1939,* Philip MacDougall sets out to explore ‘the development and evolution of fighter air tactics between the First and Second World Wars’ and to illustrate how such developments were put into practice in 1939. The resulting 176-page book, with its 64 b/w plates, contains a great deal of detail about aircraft specifications and

performance and describes how differently individual nations responded to advances in technology. On balance his judgements are not favourable to the Royal Air Force, with many familiar criticisms aired, of failures of intelligence and of indifference to developments elsewhere.

The book is presented in three sections, the first dealing with 'The Post-War Debate', starting with the tactical lessons of WW I, by way of a benchmark for what followed. Of particular interest to Royal Air Force readers are the pages describing the Air Fighting Development Establishment at RAF Northolt and the annual air exercises in which defence against unescorted bombers was tested. MacDougall is critical of the practice of allowing individual squadrons to evolve 'tactical fighting methods of their own'. Familiar criticism of the use of 'crowd-pleasing' Hendon Vic formations, 'as a means of waging war' is underscored by a rather chippy attack on the inter-war officer caste. Meanwhile, Claire Chennault emerges in America as a stalwart critic of the bomber obsession of the disciples of Douhet and is clearly more to the author's taste.

MacDougall's second section, 'Theory into Practice' reviews three regional conflicts which confronted theory with the realities of air fighting. The Spanish Civil War allowed both Germany and the Soviet Union to develop tactics appropriate to modern equipment. The lessons of the vulnerability of unescorted bombers were learnt and, especially in Germany, these and other lessons were analysed, notably by Lützow who had done much to develop the fighter battle formations later further refined by Mölders and which endure to this day. Japanese experience in the Sino-Japanese War allowed similar progress to be made. In both cases, says MacDougall, little attention was paid by British Air Intelligence or by the RAF. A brief undeclared war between the Soviet Union and Japan on the Manchuria-Mongolia border in 1939 gave further opportunities to learn by experience to both parties.

The last section of this book, 'The Final Reality', is potentially the most interesting, yet it fails in some ways to live up to that billing. The story of the Battle of France and of tactical and equipment failures of the RAF is well known and this chapter of *Air Wars 1920-1939* adds little that is new. The unpreparedness of squadrons to deal with escorted bombers and with the presence of comparable fighter aircraft

are well known. Indeed, the author's reliance on secondary source material, such as the popular writings of Charles Gardner, Noel Monks or Paul Richey, lends further familiarity to his account. His quotation of reports by the then Squadron Leader Halahan do usefully illustrate how some lessons about formations and gun harmonisation were learnt and responded to. The unsuitability of 'Fighting Area Attacks' for such conditions is already well known.

By contrast, a chapter on the Winter War contains some fascinating information about the tactical skills of the Finnish Air Force and about the failure to share the lessons of Spain on the part of a Soviet Air Force almost fatally damaged by political purges. The success of the Brewster Buffalo in Finnish hands leads nicely to consideration of the RAF's failures in the Far East where MacDougall is fiercely critical of a familiar whipping boy, Sir Robert Brooke-Popham, quoting Chennault's failure in 1941 to interest B-P in lessons learnt in operations against the Japanese. The effects of poor intelligence and of ethnic stereotyping – today's 'racism' – were, he suggests, decisive.

This book is better in some parts than in others. It is especially strong in setting out the evolving performance of fighter aircraft and perhaps less so in describing in lay terms the implementation of new tactics. Strangely, although general reference is made to primary sources, notably from The National Archives, the author eschews the use of end notes. Much of his secondary source material is of the era of immediate post-war biography and is more graphic than critical. Other sources, such as the *Dundee Evening Telegraph* or the *Edinburgh Evening News* may seem rather arcane. There are a number of minor errors that better proof reading might have spotted. However, there is much buried away in *Air Wars 1920-1939* that repays reading. Its reminders of the vulnerability of unescorted bombers – and of failure to prepare to deal with escort fighters – are reason enough to read it.

AVM Sandy Hunter

Harrier Boys, Volume Two by Bob Marston. Grub Street; 2016. £20.00.

This new volume in the 'Boys' series from Grub Street covers, mainly, the exploits of the second-generation aircraft and those who flew and supported it during its twenty-one years of outstanding

service in the front line. Following his *Harrier Boys Volume One*, published in 2015, Bob Marston has compiled and edited another excellent selection of stories, opening with the gestation of the second-generation Harrier. It was recognised by the mid-1970s that the original aircraft suffered from a number of shortcomings, principally in range, weapons payload and manoeuvrability. Although the MoD budget for air systems provided for a new aircraft to AST 403, the project which several years later was to emerge as the Typhoon, some money was available for improvements so a series of modifications were studied with the aim of introducing major enhancements to the basic Harrier. Fortunately, procurement policies in the MoD for the RAF's offensive support front line changed with, first, the recognition that the Harrier's unique flexibility offered major advantages for undefined expeditionary commitments and, secondly, that the AST 403 project had been delayed. By 1981 the decision had been made to acquire an anglicised version of the US Marine Corps' AV-8B, a collaborative project between BAe (Hawker Kingston) and McDonnell Douglas. The first of the new type was delivered to the RAF in 1989.

Bob Marston, who was one of the RAF's most experienced Harrier pilots, flew both generations of the aircraft. Thus he is well qualified to repeat his successful technique from *Harrier Boys One* of linking and expanding each chapter with observations based on his personal experience, all of which are relevant to the stories, both from the front line and from flight test and development. Adventurous air displays and flypasts are included as are accounts of the Harrier GR5 Pegasus Mk 107 flight test aircraft achieving several time-to-height records from a vertical take-off. These sorties were flown by BAe and Rolls-Royce test pilots who describe how they designed the flight profiles to set the records; 36 seconds to 10,000 ft and 126 seconds to 39,000 ft are remarkable statistics.

Previous books in the series have educated and entertained readers with personal stories, in and out of the cockpit, of excitement, risk, adventure and 'there I was' tales, mainly during the Cold War, but *Harrier Boys Two* contains much more serious accounts of the 'Electric Bona Jet's' operational employment in the front line which, after all, was its purpose. Just as relevant to the Cold War as to expeditionary warfare, the mantra that 'Requirements can change

overnight but the hardware can't' meant that the versatile Harrier GR7/9 became the RAF combat aircraft of choice for operations in the Balkans, Iraq and Afghanistan where its STOV/L flexibility enabled the Harrier to provide rapid response to tasking from austere land bases and from the *Invincible*-class aircraft carriers. As an aside, within a few months of its withdrawal from service, its presence as a quick reaction offensive support aircraft was sorely missed in Operation ELLAMY over Libya where ground forces had to rely on British air support by Typhoons and Tornados flying lengthy sorties from distant bases, hours away from the area of operation.

A significant departure from the previous pattern is that *Harrier Boys Two* is probably titled incorrectly because it includes an account by the first RAF female Harrier pilot whose observation about her predecessor male Harrier pilots having 'testosterone-driven male egos' is inaccurate, (her words!). She expressed a wish to avoid the media scrum and just get on with the job that she loved. Two chapters are devoted to the Sea Harrier and our dark blue counterparts, one from an engineer describing the challenges of supporting the aircraft while underway at sea and an account from one of the last Sea Harrier Squadron Commanders covering the use of the Sea Jet during operations in the Adriatic and the Gulf.

Within its profusely illustrated 218 pages there are positive contributions from those who loved the Harrier including several from American exchange officers who flew with the RAF, drawing attention to the common culture within the services and from those British pilots who flew with the US Marine Corps. Less complimentary are the critical views of some who describe inter-Service dogma while operating alongside the Royal Navy in the Joint Force Harrier and who, unfortunately, remained sceptical of the working relationship between the two Services, a relationship which will be key to the future success of the F-35B.

As a result of lessons learned during almost continuous operational deployments throughout its lengthy career in the RAF front line, a formidable array of weapons configurations and enhanced avionics capabilities for day and night operations had been incorporated. These are described in the closing chapters but, ironically, politics and budget pressures overwhelmed sound arguments to retain the Harrier's unique operational capability and the latest enhancements came too

late to prevent its being consigned prematurely to the history books in 2010. However, it is a proud history and Air Mshl Gary Waterfall, the last in a distinguished line of Harrier Force Commanders, describes the final days at RAF Cottesmore in a touching tribute to events which, sadly, marked the end of an era.

I commend Bob Marston on his skills and knowledge as editor, writer and proof reader, apart from a personal observation that in the list of contributors I am described as having been Station Commander at RAF Swinderby in 1984; it should read RAF Stanley, where my last association with the Harrier was with No 1453 Flight. This is a superb book containing both historical observations and collections of authoritative accounts from those who were associated with the Harrier, as pilots, engineers, staff officers and ground crew. Together with its predecessor volume, it is highly recommended.

Gp Capt Jock Heron

Meteor Boys by Steve Bond. Grub Street; 2016. £20.00.

'Boys books' – and still they come. Having run through a fair proportion of current and recent(ish) RAF aeroplanes, the net is being cast wider and this one reaches back as far as one of the first generation of jet fighters. Since the last phase of my nav course at Thorney Island was flown on the NF14, and I also cadged a couple of rides in T7s, I can actually claim to be a 'Meteor Boy' myself – just – indeed one of the accounts in the book actually recalls the experiences of a trainee nav who passed through the system a year or two after me.

Since many of the contributors had to rely on memory to retrieve details of events that occurred half-a-century or more ago, this volume provides some useful examples of why one should treat anecdotal evidence with a degree of circumspection. For example, there is uncertainty in some quarters as to whether the hydraulics, ie undercarriage, flaps and air brake, were driven by the port or starboard Derwent (it was the latter) and the target-towing winch is reported as having been 'hung under the starboard wing' of the TT20 (it was on top). Then again an eyewitness to an un-dated mid-air collision between an NF11 and a USAF F-86 (it was on 29 July 1953) recalls the Meteor pilot going down with the aircraft while his navigator baled out, only to be decapitated by the tailplane; the Sabre pilot survived but sustained head injuries delivered by an axe while he was

being released from his inverted cockpit, although he did make a full recovery. What actually happened was that the navigator was indeed killed when he hit the tailplane, but his pilot made a successful descent by parachute; the Sabre pilot ejected but died when his parachute malfunctioned. It's not that people tell untruths, of course; we just fail to remember things or remember them inaccurately – and the further back in time, the greater the likelihood of error. Happens to us all.

I came across one or two oddities that got past the proof-readers, eg 'on mass' and 'chamois level' – glitches in audio transcription software perhaps? – and the monastery below Mt Sinai is St Catherine's, not St Margaret's. The hoary old myth concerning the ever-lengthening nose of the Meteor night fighters gets another airing.[1] But I should not overstate my case. This 223-page book, with its 80 well-produced black and white photographs inset within the text, plus another 45 presented in colour in two inserts, is an entertaining read. Many of the illustrations, incidentally, have been drawn from private collections and will not have appeared in print before.

There are rather more contributors than in most of the other books in the 'Boys' series and they have some interesting tales to tell. They provide some insight into all of the roles in which the Meteor flew, so, apart from the classic day fighters and the T7, there are stories from those who flew the FR, PR and NF variants, even the potentially pilotless target drones, and the story is rounded off by contributions relating to Martin-Baker's pair of ejection seat test beds and display flying the survivors, notably the only currently airworthy F8 which is based in Australia. There are throughout, as one would expect, a number of references to practising asymmetric flying (including the

[1] To accommodate the AI 21 radar of the NF12, in place of the AI 10 fitted to the 48ft 6in NF11, it was necessary to introduce a 17-inch extension to the nose. The later NF14 retained the AI 21, so there was no need for any further extension but when the new variant first appeared someone (incorrectly) added the 17 inches *again* and that error has been recycled repeatedly ever since, 20th Century reference books often crediting the NF14 with a length of 51ft 4in. The NF14's nose may *look* longer but it is an illusion arising from the steeper angle of the windscreen (compared to that of the NF11/12) and, perhaps, the apparently slimmer lines conferred by the blown canopy, but in fact the NF12 and NF14 were both the same length – 49ft 11in – but this one is proving very hard to eradicate.

pros and cons of throttling back an engine versus shutting it down) and to the notorious 'Phantom Dive' which didn't claim (what was probably) its last victim until as late as 1988. But the lasting impression is of the appalling accident rate in the 1950s and the way in which it was simply accepted – that was just the way it was, not least because, as Peter Bogue puts it on p85, '. . . the RAF was led by ex-wartime 'names' and still had some of the old spirit left. We got away with murder then.'

As with all of the 'Boys'-series, this is an enjoyable, sometimes amusing, sometimes sobering (all those fatal accidents) read. If you like aeroplanes and stories about them, you just have to like these books and this one is an excellent example of the genre. If I hadn't secured the review copy, I would probably have bought one – how's that for an endorsement?

CGJ

Fighter Pilot by Helen Doe. Amberley Publishing; 2016. £9.99.

I have always considered reviewing autobiographies to be a high risk occupation, with biographies written by family members a close second. However, a first 'thumb through' of *Fighter Pilot*, a biography of Wing Commander Bob Doe DSO DFC*, written by his daughter, revealed a 255-page paperback with a comprehensive index, sixty plus monochrome photographs and an impressive bibliography of primary and secondary sources, coupled with an equally valuable listing of notes cross-referenced in the text. When one then reads the author's *bona fides*, one learns that she is an academic with considerable achievements as an historian. To cap it all, Dr Helen Doe is a member of this Society!

Endorsements for the book, by Professor Richard Overy and Stephen Bungay, appear on its cover and, if there were any remaining doubts as to its quality, the Acknowledgements page reflects the breadth of the author's research.

With all thoughts of 'high risk' melting away, my remaining concern centred on the subject matter. Several years ago, and on the Society's behalf, I prepared an evening lecture to be delivered near the subject's birthplace at Moffett called 'Lord Dowding and the Battle of Britain'. In this I tried to trace Dowding's influence on the whole of the battle, from his early ideas to the detail of his strategic plan and its

execution. I did not seek to review the battle on a daily basis, although I did offer opinions on Bader and his 'big wing' theory. My fear, therefore, was that this book might prove to be little more than an account of one individual's experiences and solely their contribution to the battle.

I need not have been concerned. Helen Doe's book is much more than a limited account of a short but important period; rather it is a comprehensive account of the life of a man, admired and respected widely across the military aviation community.

The author has skilfully avoided, what could so easily have been, a rather dry or repetitious account and uses a mix of Bob Doe's own comments, historical narrative and factual information gleaned from interviews and the official records, which together make the book flow nicely. There are no fancy flashbacks and the account canters along at a good pace, offering no temptation to skip to something a bit more interesting, a few pages further on. That said, the first half of the book deals with Doe's upbringing, his transformation to a skilled operator and his success during the battle. The period after the battle and his subsequent serious injury, followed by a spell as an instructor, contains some very interesting information about those who helped his recovery and whose contribution to, often innovative, maxillofacial surgical procedures is often overlooked in preference to some more high profile exponents in the field of facial reconstruction. Doe's posting to the Far East is then covered in considerable detail and it might be argued that his sustained involvement with the RIAF and the Burma campaign was as important as the contribution he made to the Battle of Britain.

Doe's post-war service warrants only 22 pages which includes an, I thought, unnecessarily detailed account of the 25th Anniversary dedication of the Battle of Britain. Although the author comments on the failure of her father's first marriage and makes brief mention of her half- and stepsisters, there is little more about Doe the family man, although other accounts allude to a third marriage and more children. It seems, however, that Doe found the post-war RAF, and certainly after he finished active flying duties, an uncomfortable place and the book seems to gently confirm this.

The account might have benefitted from a little more information as to how Doe spent the remaining forty or so years of his life after

retiring and how he coped with the world beyond the air force. We know that he had a successful civilian career, but I sense there was more to tell.

This book is probably the best biographical account I have read of anybody in any walk of life and I recommend it without reservation. Whilst the final comment from Doe, that he and his colleagues should not be seen as heroes but remembered for what they did, is probably a good reflection of the man but perhaps too modest, given the pivotal importance of the Battle of Britain and its place in history.

Wg Cdr Colin Cummings

Eyes All Over The Sky by James Streckfuss. Casemate; 2016. £19.99.

As suggested by its sub-title, *Aerial Reconnaissance in the First World War*, the author is concerned that the corps squadrons and balloon sections of WW I have been largely overlooked, indeed virtually forgotten. He contends, quite rightly, that it was their work that actually represented the most significant contributions that 'air' made to the prosecution of the war.

I have no problem with his argument, which is supported by copious notes, indeed, I warmly endorse his conclusion, but I did have a problem with some of his references. For example, AIR1/676/21/12/1872, is cited at Note 42 to Chapter 4, but there is no such piece at The National Archives (TNA); the file concerned, 'Battle of Arras (Preparatory Period)', is actually AIR1/676/21/13/1777. Moving on, Note 46 is a reference to No 2 Sqn's records for July 1916, but the narrative then switches to matters arising in the records of No 34 Sqn between August and October, but the related Note 47 is '*Ibid*' – ie the records of No 2 Sqn for July. Notes 48 and 49 are also '*Ibid*' (ie to 2 Sqn) but should have been to the document at Note 42, which had been re-cited at Note 45. Confused? So was I, and it took a personal visit to Kew to sort it out. Streckfuss is a long-established aviation historian of some repute and I have no doubt that he did his homework, as his numerous references attest, but there was clearly some occasional carelessness when annotating them.

That aside, I had a problem with one or two other references, in this case, the way in which they had been used. For example, on page 75 the author states that when the USA entered the war 'the British

conceded that their French counterparts did better at artillery spotting than their own army.' The document cited to support this is dated January 1917, two months *before* the USA declared war, and a year before any of its Observation Squadrons actually became operational. Furthermore, the file cited, AIR1/71/15/9/126, is concerned with the rather specialised application of spotting for naval monitors bombarding targets ashore so the 'British' in this case were actually the RNAS and I am not persuaded that the views of an individual sailor can be represented as a valid criticism of the activities of the much larger RFC doing something rather different.

One more negative – the maps. There are two of them, one of France and one of the UK. Both are hopelessly inaccurate. Better outlines of the British Isles were being drawn in the 16th Century and a Tudor cartographer would have known better than to locate Fort Grange (ie Gosport) in Argyll or Martlesham Heath in, roughly, Sussex. Similarly, on the map of France the port of Dunkirk is shown about 20 miles inland and Gontrode in Picardy, rather than Belgium, where it actually is. How did these get past the proof-reader?

Having got all that off my chest, what of the text? I liked, indeed admired, it. A fair amount of space, including Chapters 2, 'The Fighter Pilot Mystique', and 3, 'The Forgotten Air Service', is devoted to sharpening the perspective on the first war in the air and refocusing attention on 'observation' as the essential core activity, rather than the exploits of individual 'aces'. The narrative then goes on to examine, in some detail, the co-operation of aeroplanes and balloons with the guns, the conduct of contact patrols and short range reconnaissance, photography, mapping and, where appropriate, the application of these at sea. This is not the first time that attention has been paid to these issues, of course, but this book has been written by an American and that, for me at least, is its USP. The work of the United States Air Service has received relatively little attention on this side of the Atlantic and Streckfuss provides an informed account of its activities. Furthermore, it is notably balanced in that it repeatedly acknowledges America's lack of preparedness and consequent need to rely on the British, French and Italians for equipment and, in order to catch up on tactics and techniques, expertise. I should add that, while the American point of view predominates, due attention is given to the pioneering work carried out by the British, French and German air

services in developing the tools of the trade, not least cameras and wireless.

Recommended (apart from those maps).

CGJ

Lawrence of Arabia & Middle East Air Power – various authors. Cross & Cockade International, 2016. £14.00 UK inc P&P (via Cross & Cockade website).

This is one of a growing series of Cross & Cockade monographs produced to the same extremely high standard as that Society's journal. That is to say that it is an A4-sized softback on gloss paper with authoritative text and copious illustrations – more than 120 black and white photographs supplemented by appropriate maps and, in colour, profiles of selected aeroplanes and reproductions of relevant paintings. Previous titles have been devoted to particular aeroplane types – the FE2, the Dolphin and the Nieuport (in British service) – but this one breaks new ground.

The written content comprises ten submissions contributed by a consortium of writers, notable among them, Peter Dye, Trevor Henshaw, Roger Bragger, Peter Wright, Mike Napier and the late Mike O'Connor, all of them experts in their field. The content includes: an assessment of Lawrence as an 'air power visionary'; an overview of the war service of Nos 14 and 111 Sqns; detailed accounts of the activities of No 14 Sqn's C Flt supporting Lawrence in the Hedjaz, Nov 16-Jul 17, and of X Flt doing the same from Aqaba and on into Palestine, Oct 17-Sep18. There is the story of the O/400 flown from the UK to Egypt in August 1918 and of the operations that it subsequently undertook in theatre. This is followed by an account of the redeployment of No 58 Sqn and its Handley-Pages from France to Egypt in 1919 in the course of which two aircraft were written-off in crashes which, since he was on board one of them, cost Lawrence a couple of broken bones. There is an account of the establishment of the Cairo-Baghdad air route in 1921 which, of particular note, is accompanied by a reproduction, in colour, of every page of the contemporary Pilot's Handbook, in effect a strip map. Finally there is a listing of all aircraft on charge to, and of all aircrew and other officers who served with, No 14 Sqn, 1915-18, and some details relating to the opposition – the German/Turkish air units deployed in

the Near/Middle East.

Much of this material has appeared over the previous 45-odd years in various editions of the *Cross & Cockade Journal* but, where appropriate it has been amplified or updated, and it was an excellent idea to bring it all together between one set of covers and make it available to a wider audience.

CGJ

Rhapsody in Blue by Graham Williams. Fonthill; 2016. £20.00.

Those who know the author will recognise his direct character and writing style from the content of his 272-page autobiography, *Rhapsody in Blue*. It is a straightforward description of a unique and varied flying career and adds to a growing collection of authoritative personal records of the Cold War activities of the Royal Air Force. It is unique in the sense that his few staff tours were usually abbreviated by circumstances where his experience and qualifications led to his talents being used to better advantage closer to the cockpit. Also, only a few of his adventures during his tours as a test pilot at Boscombe Down were shared by anyone else and, finally, unlike several of his counterparts who were given repetitive tours in the flight test world, his test pilot qualification did not prevent him from undertaking duties as a front line commanding officer.

His early career, after graduating from Cranwell in 1957, followed the pattern of many of his flight cadet contemporaries, with successive tours on the Hunter. His accounts of life on No 54 Sqn at Odiham and Stradishall, the OCU at Chivenor and No 8 Sqn in Aden will be familiar to those flew the Queen of the Skies, both in the UK and, from Khormaksar, across the Arabian Peninsula, particularly during Radfan operations. Towards the end of his Aden tour he volunteered for the Empire Test Pilots School but was posted, on paper, to the CFS before a change in his career path led finally to his selection for the ETPS course which he completed in 1966.

His subsequent tour on A Squadron at Boscombe Down coincided with the major aircraft re-equipment programme which introduced three new fast jets to RAF squadrons, namely the Phantom, Jaguar and Harrier, all of which he flew. It was the latter type which brought the author and his A Squadron colleague, Tom Lecky-Thompson, to prominence when they flew their early production Harriers in both

directions across the Atlantic in the 1969 *Daily Mail* air race. The book's cover is the famous image of the author's Harrier hovering over the St Pancras coal yard, the London destination of the race. This was a courageous enterprise because the Harrier had gained its release to service only six weeks earlier. In every respect the project was challenging and the author's account of the drama of his vertical take-off from the pad in the Bristol Basin in New York, with marginal fuel in very poor weather, to achieve a rendezvous with his Victor tanker somewhere above the weather off the US eastern seaboard is undramatic and without exaggeration. While I doubt that in the current risk averse culture such excitement would be contemplated today, the award of the prestigious Harmon Trophy recognised the pioneering courage of the two pilots. The Grub Street 2015 publication, *Harrier Boys*, contains a précis of these and other events in the hovering life of the author (*see page 124* – **Ed**).

His previous experience on the Harrier led to early promotion in 1972 and command of No 3 Sqn, the third of the new units being formed at Wildenrath. Under his leadership he brought it to operational status quickly and his time in Germany proved his abilities as a front line commander. He returned to the UK to begin a stint at the Royal College of Defence Studies which took him away from the cockpit for two years in a less demanding but very interesting environment in Seaford House. A subsequent posting to the MoD, again on paper, was changed when he was promoted to return to Germany to command the Jaguar base at Brüggen where, despite being less than complimentary about the aircraft, he completed another successful tour, including a stint as a duty QRA pilot. His description of life at the helm conveys the busy social round and operational tempo at the biggest RAF station in Germany during the height of the Cold War.

His two flying tours on the front line in Germany were ideal qualifications for a subsequent appointment in the Rheindahlen headquarters as Group Captain (Offensive) Operations where he was detached twice to Nellis AFB to command RAF units involved in RED FLAG exercises. After a break of twelve years from the test pilot world, he returned for two successive tours, first as Commanding Officer Experimental Flying at RAE Farnborough for a year and then as Commandant at Boscombe Down for a full tour as an air

commodore.

He describes how he recommended future changes to the clumsy organisation for which he had responsibility where the operational and administrative chains were ill-defined, a situation far removed from his experience as a Station Commander in Germany. His unique flying career came to an end when he was posted to the MoD for a short tour as a Director of Operational Requirements before further promotion led to two tours as an air vice-marshal in the confines of Whitehall. First, he became ACDS (OR) Air where his wide experience was an appropriate background for defining the future air systems needs for the RAF at a time of uncertainty over the Airborne Early Warning requirement and the politics surrounding the early days of the European Fighter Aircraft. His last tour was as Commandant General of the RAF Regiment, an appointment which was outside his speciality, but nevertheless was a proud and rewarding stint with those men who had provided support throughout his tours in command in Germany.

His accounts of adventures in and around cockpits, ranging from the First World War's SE5 to the Harrier and Jaguar, are revealing and he does not gloss over mistakes in his thirty-seven year career described, in his words, as a *Rhapsody in Blue.* It is an easy and entertaining read, well-illustrated and written in an authoritative and flowing style, consistent with the character of the author. It is recommended both for the enthusiast and as a sound reference for Cold War historians.

One minor observation is that '*The Gorillas*' skiffle group (at Cranwell – **Ed**) was the most outlandish name which we could muster for a bunch of enthusiastic musical amateurs, all of whom realised their ambitions to become fighter pilots.

Gp Capt Jock Heron

ROYAL AIR FORCE HISTORICAL SOCIETY

The Royal Air Force has been in existence for more than ninety years; the study of its history is deepening, and continues to be the subject of published works of consequence. Fresh attention is being given to the strategic assumptions under which military air power was first created and which largely determined policy and operations in both World Wars, the interwar period, and in the era of Cold War tension. Material dealing with post-war history is now becoming available under the 30-year rule. These studies are important to academic historians and to the present and future members of the RAF.

The RAF Historical Society was formed in 1986 to provide a focus for interest in the history of the RAF. It does so by providing a setting for lectures and seminars in which those interested in the history of the Service have the opportunity to meet those who participated in the evolution and implementation of policy. The Society believes that these events make an important contribution to the permanent record.

The Society normally holds three lectures or seminars a year in London, with occasional events in other parts of the country. Transcripts of lectures and seminars are published in the Journal of the RAF Historical Society, which is distributed free of charge to members. Individual membership is open to all with an interest in RAF history, whether or not they were in the Service. Although the Society has the approval of the Air Force Board, it is entirely self-financing.

Membership of the Society costs £18 per annum and further details may be obtained from the Membership Secretary, Wg Cdr Colin Cummings, October House, Yelvertoft, NN6 6LF. Tel: 01788 822124.

THE TWO AIR FORCES AWARD

In 1996 the Royal Air Force Historical Society established, in collaboration with its American sister organisation, the Air Force Historical Foundation, the *Two Air Forces Award*, which was to be presented annually on each side of the Atlantic in recognition of outstanding academic work by a serving officer or airman. The British winners have been:

1996	Sqn Ldr P C Emmett PhD MSc BSc CEng MIEE
1997	Wg Cdr M P Brzezicki MPhil MIL
1998	Wg Cdr P J Daybell MBE MA BA
1999	Sqn Ldr S P Harpum MSc BSc MILT
2000	Sqn Ldr A W Riches MA
2001	Sqn Ldr C H Goss MA
2002	Sqn Ldr S I Richards BSc
2003	Wg Cdr T M Webster MB BS MRCGP MRAeS
2004	Sqn Ldr S Gardner MA MPhil
2005	Wg Cdr S D Ellard MSc BSc CEng MRAeS MBCS
2007	Wg Cdr H Smyth DFC
2008	Wg Cdr B J Hunt MSc MBIFM MinstAM
2009	Gp Capt A J Byford MA MA
2010	Lt-Col A M Roe YORKS
2011	Wg Cdr S J Chappell BSc
2012	Wg Cdr N A Tucker-Lowe DSO MA MCMI
2013	Sqn Ldr J S Doyle MA BA
2014	Gp Capt M R Johnson BSc MA MBA
2015	Wg Cdr P M Rait MA BSc

THE AIR LEAGUE GOLD MEDAL

On 11 February 1998 the Air League presented the Royal Air Force Historical Society with a Gold Medal in recognition of the Society's achievements in recording aspects of the evolution of British air power and thus realising one of the aims of the League. The Executive Committee decided that the medal should be awarded periodically to a nominal holder (it actually resides at the Royal Air Force Club, where it is on display) who was to be an individual who had made a particularly significant contribution to the conduct of the Society's affairs. Holders to date have been:

Air Marshal Sir Frederick Sowrey KCB CBE AFC
Air Commodore H A Probert MBE MA
Wing Commander C G Jefford MBE BA

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