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42

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SELECTED ABBREVIATIONS

AFB	(US) Air Force Base
AFU	Advanced Flying Unit
AMO	Air Ministry Order
AMP	Air Member for Personnel
AMSO	Air Member for Supply and Organisation
AMWO	Air Ministry Weekly Order
BTH	British Thomson-Houston
CIGS	Chief of the Imperial General Staff
EATS	Empire Air Training Scheme
ELDO	European Launcher Development Organisation
FEAF	Far East Air Force
FM	Flight Mechanic
GD	General Duties (in effect ‘aircrew’)
ICBM	Inter-Continental Ballistic Missile
IRBM	Intermediate Range Ballistic Missile
LOX	Liquid Oxygen
LRMTS	Laser Ranger and Marked Target Seeker
MAP	Ministry of Aircraft Production
MBF	Medium Bomber Force
MRBM	Medium Range Ballistic Missile
NEAF	Near East Air Force
ORB	Operations Record Book (RAF Form 540)
PNB	Pilot, Navigator, Air Bomber
PRC	Personnel Reception Centre
RAFM	Royal Air Force Museum
SEG	Signaller, Engineer, Gunner
SFTS	Service Flying Training School
SM	Strategic Missile
TNA	The National Archives at Kew (née the Public Record Office)
UAS	University Air Squadron
WOM	Wireless Operator Mechanic

THE IMPORTANT OMISSIONS OF A 'SERVICE' BIOGRAPHY

by Anthony Furse

About twenty years ago, having recently completed the lengthy restoration of a somewhat decayed 17th Century manor house that we had acquired for a mere £3,000 some years before, my wife and I hosted a party for the benefit of some good cause or other at which I met Jeffrey Quill. Having recently written a book on the Spitfire, jointly with Sebastian Cox, it was not difficult to tempt them both to do it again and I managed to persuade them to focus on my uncle, Wilfrid Freeman, with the offer to help with family papers and background.

As a researcher, I engaged a young graduate, Sebastian Ritchie, and, under the guidance of Cox, who had found him an office, he worked his way through an endless succession of Air Ministry and Ministry of Aircraft Production (MAP) files relating to Freeman which Cox withdrew from the Public Record Office at Kew. The rules will have long since have changed, I expect, but as an introduction to biographical research, it was Rolls-Royce!

With the passage of time, Cox was obliged to withdraw from the joint project, as was Quill, following a heart attack, and Ritchie eventually moved back to academia, although he retained his interest in Royal Air Force matters and, in due course, he not only edited my unpublished Freeman biography with great skill and tact, but wrote his own account of aircraft production, and ultimately joined Cox's staff at the Air Historical Branch.

The absence of Freeman's personal files was a significant drawback, and a letter from Ritchie in August 2000, when the book was finished, emphasising the vital support Freeman had received from Cyril Newall during the years 1936-40, which was apparent from Newall's papers, merely demonstrated my inexperience as an author, since I had never consulted those documents.

But, with one exception, the main theme of my talk tonight will not be Freeman himself, so much as the peripheral research that was involved – the investigation of the reasons for delays and difficulties which had to be overcome in the relentless quest for better, faster and more reliable engines, aircraft and weapons, and, if possible, the



Sir Wilfrid Freeman, photographed during the Atlantic Conference of August 1941, with one of the 14-inch guns of HMS Prince of Wales in the background.

reasons why they occurred.

The exception, of course, was his divorce, and its effect on his career, because the divorce was the real reason why Portal, rather than Freeman, was appointed CAS in October 1940.

Freeman had known that he was placing his Service career at grave risk when his first Divorce Court hearing took place, not long after he became Commandant of the Royal Air Force Staff College on 2 January 1933, and for some months he was convinced that he would have to leave the Service at the end of his two-year term.

He was rescued from oblivion by Lord Swinton, the Air Minister, and on 1 April 1936, was appointed to the Air Council as Air Member for Research and Development – thus becoming responsible for the selection of the aircraft and engines

with which the RAF was to be equipped for the coming war. He was so successful in this endeavour that in June 1938 he was also given responsibility for production. The ‘production’ remit demanded a huge expansion of manufacturing capacity and the widespread introduction of sub-contracting arrangements. He handled the ever-increasing scope of his work with skill and tact, delegating to subordinates, like Ernest Lemon, his Director-General of Production, whom he trusted completely, the detailed management of the many innovative and immediate measure that had to be taken.

In May 1940, the transfer of Freeman’s Air Ministry departments to the new Ministry of Aircraft Production, run by Lord Beaverbrook, left him without executive power, and in September he asked to leave MAP, but without success

But by then Trenchard and Salmond, the only two Marshals of the RAF whose influence on the Air Council was still very powerful, had become worried that Churchill planned to appoint Air Chf Mshl Dowding, the CinC of Fighter Command, as CAS in succession to Newall, when the Battle of Britain ended. According to Maurice Dean, Dowding and Courtney had also been considered as successors to Ellington, before Newall had been appointed CAS in 1937.¹

The appointment of a new CAS, more than three years later may well have been appropriate, but Dean writes that Dowding had ‘fallen out very sharply with’ Salmond and Newall, and, like most of the RAF leaders, Newall had been the victim of a disparaging report by Wg Cdr Kingston McCloughry, whose articles Beaverbrook had been delighted to encourage.

Trenchard and Salmond therefore decided to pre-empt a solution by pressing for Newall’s replacement, before the end of Dowding’s tenure at Fighter Command, and Salmond actually proposed this to Trenchard on 25 September 1940.

On 24 September, Trenchard had told Salmond and Freeman, that he intended to consult Beaverbrook on the 27th or 28th, presumably about releasing Freeman from his work with MAP, and they both asked to brief him before he did so, Salmond, at their meeting the following day, and Freeman by letter.

Trenchard wrote back to Freeman, ‘... I had better know what is in your letter, so that I do not give you away ...’ and asked Freeman to lunch with him at *Brookes* on Monday, 30 September.

Freeman had had the real benefit of a personal chauffeur over the previous four-and-a-half years, a quiet, reserved, and totally discrete family man named Davies. One evening, soon after the lunch with Trenchard, Davies was told to pick up Freeman and Portal and to drive round Hyde Park whilst they talked in absolute privacy. The announcement that Portal was to replace Newall as CAS was made on 4 October.

Twenty years later, in 1960, I met Ronald Kerr-Muir, a Director of Courtaulds. Freeman had been Deputy Chairman of Courtaulds when he died in 1953, and when I asked Kerr-Muir what had happened to Davies after Freeman’s death; he replied that he had taken him on himself. Naturally, I asked whether Davies had ever talked about Freeman and, without any further prompting on my part, Kerr-Muir

recounted what Davies had told him about that two-hour drive around Hyde Park in October 1940, in the course of which Freeman had persuaded Portal to accept the post of CAS.

Re-reading, in preparation for this talk, the other sources that deal with that decision, I am struck by the total absence of any of the details that would normally explain why X was chosen instead of A, B or C. We know that Hoare had offered to make Freeman VCAS in April 1940, and that Payne, one of Freeman's ADCs, had suggested to him that he should replace Newall during the 'Phoney War', but Maurice Dean ducked it and Denis Richards, Portal's official biographer, resorted to unidentified 'papers' and the intervention of Irene Ward MP!² Portal himself acknowledged that he '... was completely surprised ...'

According to Davies, Portal was appalled at the prospect, and kept telling Freeman that he was much more suitable, until Freeman finally had to explain that the King had refused to accept him as the Head of one of the Royal Services, because he had had a divorce.

I am sure that it is the duty of all senior State servants to shield their monarchs from criticism, but attitudes to divorce have changed radically in seventy years, and I question whether HM Queen Elizabeth II would be distressed by such an issue today – even less her children.

The urgency of Portal's demand that Freeman should, at the very least, join him as Vice-Chief was also stressed by Davies, and, although Portal's appointment was dated 4 October, he did not actually take office until the 25th. Within a week he had insisted on Freeman's joining him as VCAS.

A final, mysterious, clue to that characteristically friendly evening of persuasion, was the pedantic back-dating of Portal's promotion to substantive air chief marshal, 18 months later, to 26th May 1940, giving him one day's seniority to Freeman.

As VCAS, Freeman was deeply depressed by being separated from the aircraft development and production tasks that he had performed with such success from 1936 to 1940. He was well aware of the effects of the first four or five months of Beaverbrook's reign and the likely trends of decision-making in a civilian-run Ministry, and he realised, all too clearly, the comparative impotence of the VCAS, either to initiate or to exert much direct influence on policy within the

Royal Air Force. But he made the best of it, working a 16- or 17-hour day, and using his charm, wit and mischievous sense of humour to lighten the hard grind of his joint work with Portal, with the aim of freeing the latter as much as possible to deal with his wider responsibilities as a Chief of Staff.

Portal himself wrote that his Vice-Chief ‘... showed real genius in distinguishing what was right from what was merely clever; for finding the truth and exposing the superficial and specious, and ... steadfast courage in making and defending many crucial and difficult decisions’. Freeman had also feared that, as VCAS, he would have little, if any, opportunity to apply his unrivalled knowledge in the field of aircraft production. Happily, he found that this was not entirely the case and he was able to rescue continued production of the Mosquito on two occasions, when cancelled by Portal, and to push through the vital Merlin-Mustang project, and the huge, and vital, increase in US output of airframes and Packard Merlins, in time to save the 8th USAAF daytime operations from defeat.

When he did return to MAP, on 19 October 1942, it was as a civilian Chief Executive and on terms that meant that, in effect, it was Freeman, and not the Minister, who took the key decisions on the manufacture of aircraft and equipment and, when, the somewhat pro-communist, Stafford Cripps succeeded Llewellyn as Minister and started making politically biased speeches to aircraft factory workers, it was Freeman who confronted him, and Cripps sensibly desisted.³

But MAP had been a civilian Ministry since May 1940, and Cox and Ritchie had focused their admirable researches on Air Ministry files and on Portal’s papers. This had left a number of important areas unexplored, notably the state of morale within the MAP, and had failed to unearth some hitherto unpublished facts relating to aero-engine manufacture and performance.

The mistakes made during WW I had led to virtually all orders for the powerful aero-engines required for the rearmament programme being confined to those produced by Bristol and Rolls-Royce, with Napier as a third alternative.

Bristol had several new sleeve valve projects under development, as well as their Mercury and Pegasus poppet-valve engines, but the most promising of all the pre-war designs was Rolls-Royce’s Merlin. Work had also started on the Peregrine, the ultimate development of

the earlier Kestrel, which turned out to be too small, the Vulture – in effect a double Kestrel – and the Griffon, based on the ‘R’. In the end an improved version of the Griffon saw wartime service in the later Spitfires, but more than 161,000 Merlins were eventually made in Britain and the USA.

Unbelievably, as late as May 1938, the maximum capacity of the only Rolls-Royce aero-engine factory, at Derby, was a mere thirty Merlins per week, and it was Freeman, newly appointed as Air Member for Development and Production, who insisted that they set up a shadow factory which they could run themselves – indeed, they set up two of them, one at Crewe the other at Hillington, near Glasgow. The first Merlin left the Crewe factory before the end of 1939 and Hillington delivered its first less than a year later. Finally, in October 1939, Ford agreed to make Merlins at Manchester, delivering their first engine in July 1941, and on 26 June 1940, Packard in the USA, agreed to set up a fifth Merlin production line.

That both Ford and Packard insisted on redrawing – virtually redesigning – the engine for mass production, underlines the extent to which the parent company relied on the long experience of their master mechanics. A couple of examples will suffice to show the width of the gulf that existed between the techniques involved in skilled craftsmen turning out engines in penny packets and the need to make thousands of them to the same tolerances.

One of the more difficult problems involved the forms of screw threads of bolts, there being four different UK thread forms, BA, BSF, BSW and BSP. Rolls-Royce had modified these with up to four different pitches, so that a 0.625-inch diameter bolt could have been made with 14, 16, 20 or 26 threads to the inch in a right-hand thread. Nearly 140 different external threads were used throughout the Derby engines, and, to complicate matters further, when screwing studs into aluminium castings, the fine-pitch thread needed a *medium* fit. A *tight* fit would destroy the aluminium threads; a *light* fit would allow the stud to screw out of the casing.

Packard solved the ‘fit’ problem by colouring the head of each bolt, and ‘spot-painting’ the holes into which they were to be screwed. Moreover, the tightness of a bolt was far too critical a matter to be allowed to depend on a torque wrench, so Packard specified and measured the elongation of the bolt or stud with a dial indicator.

Interchangeability was another difficulty as successive models of the Merlin emerged, and eventually Packard Merlins for British aircraft were delivered to Hillington to be brought up to date, before being issued to a unit.

From September 1937 onwards, and throughout the war, it was Ernest Hives, Rolls-Royce's General Works Manager, who led the firm's activities and, although development of new engines continued, the great majority of the 3,000 Rolls-Royce staff worked on the Merlin and Griffon, with separate teams maintaining a continuous mechanical watch on all aspects of engine manufacture to ensure that improvements to an individual component did not overstress other parts of the system as engine power increased.

The Supermarine seaplanes which won the Schneider Trophy outright for Britain had used Rolls-Royce engines with massive superchargers designed by Jimmy Ellor, and the company was well aware that engine power was proportional to the *weight* of air consumed. In 1932, Ellor had designed the side-entry supercharger for the Kestrel, with an axial inlet and rotating guide vanes. For the Merlin, his design was improved in 1939 by Stanley Hooker who introduced an unrestricted axial entry to produce the Merlin XX and 45.

The top Bristol engineers were promptly invited to see Hooker's new design in operation, but to little immediate effect, since they were far too busy to contemplate such changes. The consequences of Fedden's 1933 decision, to design all of their new engines to use sleeve valves, appeared at first to have been a mistake, since the secret of mass producing the critical sleeves was not discovered until late in 1938, less than a year before the outbreak of war. By then six new factories had been built and equipped to produce sleeve valve engines and, in case of failure, another three to make the older poppet-valve designs. This duplication imposed an excessive load on Bristol's design and development staff, which numbered less than half of that at Derby.

Moreover, despite achieving world altitude records, using a special Pegasus with two superchargers, Bristol's standard supercharger design was very old fashioned. Unchanged since 1927, it severely restricted the air flow into their most important engine, the 37-litre Hercules, until as late as 1943-44. This inevitably inhibited the

altitude performance of the aircraft which it powered and thus increased their vulnerability to *Flak* and night fighters.

I discussed this lack of progress with Alex Moulton and the late Peter Ware, both of whom had worked at the Bristol Engine Division in the early years of the war, pointing out Fedden's extraordinary failure to modify the restrictive 'snail volute' supercharger entry system to all of his engines. The conclusion that I drew from their, very discrete, explanations was that the team that had been to see Hooker's new design at Derby in November/December 1939 had failed to impress upon Fedden the urgency of the need to redesign the system for delivering supercharged air to the Bristol engines. It was the second tier of management, Moulton and Ware, who eventually did so, over the heads of the more senior managers, in the spring of 1942. They both had great respect for Fedden and assured me that work on redesigning the rear of the Hercules, to allow axial-entry, had actually started well *before* Fedden left the company in September/October 1942, but, even then, the first Hercules 100s did not become available at squadron level until about March 1944.

The fact that the 37-litre Hercules delivered less power than the 27-litre Merlin at height should have been tackled long before 1942, but the need to continue making the older Mercury and Pegasus poppet-valved engines, whilst their sleeve-valved alternatives were being perfected, had imposed an excessive load on Bristol's under-staffed senior engineering team, and Fedden had become far too immersed in prestigious RAeS committee work to intervene. The fact that it was Rowbotham, his successor, who in late 1942/early '43, cured the lubrication problems of the Hercules, simply by fitting a larger oil pump, is perhaps an indication of just how ill-defined the engineering priorities of the second largest aero-engine group in wartime Britain had become by 1941/42.

It was a tragedy for Bristols, and the RAF, that the engineers who had inspected Hooker's new supercharger in 1939 had failed to persuade Fedden to make immediate changes, but by mid '42 the overloaded engine design team, under great pressure to maintain and increase engine production, finally faced up to the task. The outcome, the Hercules 100, gave nearly 1,600 bhp at 19,500 feet compared with the 1,450 bhp of the Mark VI Hercules at 12,000 feet, and Martin Middlebrook's first account of the Nuremberg Raid of March 1944

had a footnote that the improved engine took a loaded Halifax up to 26,000 feet, well above the more heavily loaded Lancasters.⁴

Development of the larger Centaurus was slowed by Bristol's other commitments, by its cooling problems and by the lack of suitable airframes. The delay effectively ruled out its use during the war, but, in Hawkers Tempests and Furies it served in Korea and the Middle East, and it earned some very belated, 21st Century laurels, when, (along with the later Merlins,) the Centaurus became one of the three piston engines still used in US 'pylon racing' aircraft.

Moving on to gas turbines, Freeman and Tedder had recognised the potential of Whittle's ideas on 'jet propulsion' as early as 1936, and the Air Ministry continued to finance his work, and supported his proposal that Power Jets should cease to work with BTH, and team up with the Rover car company rather than an established aero-engine group. The concept of 'Big Business' as a ruthless predator, fully capable of suppressing valuable new inventions, lest they make existing technology obsolete, was alive and well in left-of-centre political thinking, but Rover was thought to have the technical competence which BTH lacked, without being a potential aero-engine competitor.

Having lost control of such matters in 1940, Freeman found, when he returned to MAP in 1942, that access to technical information relating to the Whittle engine had been given to both De Havilland and Metropolitan-Vickers – and to the Americans. He immediately insisted on enlisting the engineering expertise of Rolls-Royce, instead of Rover, in order to modify and improve Power Jets' existing designs, while tactfully soothing the over-stressed Whittle by continuing to support the independence of his company.

Turning to operational research, shortly before his death, I spent a week visiting Air Vice-Marshal, Sidney Bufton, talking with him for four or five hours a day, using pocket tape-recorders, and I learnt about his attempts to establish the transmission frequencies being used by German night fighters.

As Director of Bomber Operations, Bufton had had some difficulty in obtaining support from Bomber Command, but eventually a suitably equipped Wellington IC of No 1473 Flt was made available, along with two very brave RCAF wireless operators, an RCAF pilot and other crew, and it joined the bomber stream on 3 December 1942.

The elderly, Pegasus-engined, aircraft was at a disadvantage both as to height and speed, and it was severely damaged in the course of evading as many as a dozen attacks, in the course of which four of the crew were wounded, which obliged them to ditch the aircraft on return to the UK. The experiment was not repeated.

Patrick Bishop's very interesting *Bomber Boys*, records the allocation of three squadrons of Mosquito night fighters to Bomber Command in December 1943, noting that, 'The onboard radar they carried had difficulty tracking any aircraft, and when it did, could not distinguish between friend and foe'.⁵

By this time, the efficiency of the German *Lichtenstein* airborne radar had become impaired by 'Window', but the frequencies on which the *Luftwaffe*'s much more successful SN2 radar was operating were not discovered until the capture of a German night-fighter so equipped.

The *Luftwaffe*'s ability to pick up the radar transmissions of the *Monica* device, installed to give a bomber warning of a nearby night-fighter, was eventually recognised, leading to its disuse, but the long range power of the H2S sets was unwisely ignored, and, before a raid had even started, the German controllers could estimate the strength of an impending attack by the volume of the ground test transmissions being carried out. The strength of H2S and *Monica* signals should have been reviewed, so that H2S was tested at a minimum power, and *Monica* given a limited range, or a very narrow beam width, so that its warning value was not uselessly compromised.

Crews which had escaped attacks by night fighters should also have been interrogated more thoroughly. If all crews had been instructed to transmit an immediate coded radio report of any attacks, even if the aircraft was going to crash, the secret of the *Shräge Musik* gun installation might have been revealed before the chance sighting of a night fighter with angled cannon on a Danish airfield. A traditional attack from the beam or astern was likely to have been seen by the mid-upper and/or the tail gunner, and reported as such, but, had it been obligatory to make immediate reports of all attacks, the fact that the majority had been by an unseen opponent, might have emerged earlier, and the proper conclusions drawn.

I have often wished that I had asked 'Buf' whether the use of a photo-flash had been considered – a one-million candlepower light

shone into the eyes of a night fighter pilot before he opened fire would have ended that sortie.

And finally, a word or two about morale at the MAP. In Freeman's absence, deferred decisions, inadequate planning and a serious absence of mutual trust had led to a general lack of confidence, justifying doubts as to whether the largest single industry in Britain was being competently run. Within the Ministry itself, for instance, spheres of responsibility were imprecisely defined and, externally, the production companies were concealing their problems – and any stocks of surplus materials that they had accumulated – from MAP officials.

No attempt was made to explain why Freeman had been appointed Chief Executive but, once appointed, he soon re-imposed his authority on aircraft production and within little more than six months he had cleared the backlog of deferred decisions and stopped his officials issuing directions to industry. In Germany, Albert Speer was doing much the same!

Industrial planning had to be based on ruthless realism, and Freeman's ability and integrity was properly recognised when he became a member of 'The Boilermakers', the small and unofficial, but supremely powerful and impartial coterie of executives and officials who controlled the national allocation of labour and raw materials. These men – fewer than ten of them – transformed industrial co-operation in this country.

To have been a Boilermaker was the ultimate, wartime industrial accolade.

Notes:

¹ Maurice Dean; *The Royal Air Force and two World Wars*. (Cassell, London, 1979).

² Denis Richards; *Portal of Hungerford*. (Heinemann, London, 1977).

³ In May 1941, Beaverbrook had been succeeded at MAP by John Moore-Brabazon who had been succeeded in turn by John Llewellyn in February 1942, only to be displaced by Stafford Cripps in the following November. Ed

⁴ Martin Middlebrook; *The Nuremberg Raid*. (Allen Lane, London, 1973).

⁵ Patrick Bishop; *Bomber Boys*. (Harper, London, 2007).

**SUMMARY OF THE MINUTES OF THE TWENTY-FIRST
ANNUAL GENERAL MEETING HELD IN
THE ROYAL AIR FORCE CLUB ON 27 JUNE 2007**

Chairman's Report.

AVM Baldwin noted that the Society had held two seminars since the last AGM. The first, at the RAF Museum, Hendon in October, had covered Search & Rescue, while the second, a break from tradition, had been a visit to the National Cold War Exhibition at the RAF Museum's Cosford site. Dr Fopp and his team had hosted some 130 members and briefed on the project. As the day did not lend itself to a written record, however, the corresponding Journal might be somewhat thinner than usual. The next seminar would be on Wednesday, 24 October 2007 at Hendon, when AVM Alan Johnson would chair a programme covering the history of aviation medicine in the RAF. On Tuesday, 8 April 2008, the history of the Canberra would be covered at BAWA, Bristol.

Three journals had been distributed during the year; Nos 37 and 38 covered the seminars on Flight Safety and the RAF in the Mediterranean since World War II while No 39 had covered the minutes of the 2006 AGM, Capt Ian Whittle's lecture on his father's achievements and a reprint of Journal No 3 which had reported the proceedings of a seminar devoted to the RAF's involvement in the Suez campaign.

The Treasurer and the Membership Secretary had made good progress in resolving a number of membership issues, notably lapsed subscriptions, un-notified changes of address, and those still paying the old subscription rate. Finances remained in good shape, not least as many members had signed up for the gift aid scheme. The Society's website now contained a membership application form and brief details of the next event. The Society had joined with the RAeS, the Air Historical Branch, the RAF Museum and the Director of Defence Studies (RAF) to fund a doctoral study at Imperial College to examine the history of gas turbine development in UK and Germany before WW II. This was being carried out by Hermione Giffard, an American PhD student, fluent in German and with an engineering degree.

Concluding, the Chairman thanked the Committee for their

continued hard work on behalf of the Society. He also appreciated very much the helpful advice and encouragement which the President, MRAF Sir Michael Beetham, and the Vice-President, Air Mshl Sir Frederick Sowrey gave to the Committee.

Secretary's Report.

Gp Capt Dearman noted that correspondence and queries had declined somewhat, but support for seminars continued to be strong. Since the last AGM, thirty-seven new members had joined the society and four had been reinstated. On the other hand, fifteen members had died, fifty-one had allowed their membership to lapse and eighteen had resigned, leaving a total of 810. The sale of journals had raised £398.

Treasurer's Report.

Mr Boyes tabled the annual accounts for 2006 which showed a small deficit of £194, leaving a balance of £27,968 in reserves. Although subscription income had increased, this had been offset by higher postal costs with the annual result being close to break even. Subscriptions would remain at £18 per annum and seminar fees at £15 per head. During the year in question, the Society had made a grant of £500 to the Chichester Cathedral memorial appeal, and £1,000 to the Vulcan to the Sky appeal. A proposal by Mr Goch, seconded by Dr Fopp, that the accounts be accepted was carried.

Following a take-over of Messrs Pridie Brewster, Mr J Auber, who had previously acted as independent examiner of the Society's accounts, had left the firm but had agreed to continue to serve the society. A proposal by Gp Capt Heron, seconded by Wg Cdr Brookes, that J R G Auber Ltd be Appointed as the independent examiner was carried.

Appointment of Executive Committee.

The Chairman noted that all the executive committee members had offered themselves for re-election. A proposal by AVM Dodworth, seconded by Air Mshl Sowrey, that all committee members be re-elected was carried. The executive committee members so elected were:

AVM N B Baldwin CB CBE FRAeS	Chairman
Gp Capt J D Heron OBE	Vice-Chairman
Gp Capt K J Dearman FRAeS	Secretary
Dr J Dunham PhD CPsychol AMRAeS	Membership Secretary
Mr J Boyes TD CA	Treasurer
Wg Cdr C G Jefford MBE BA	Editor & Pubs Manager
Air Cdre H A Probert MBE MA	
Wg Cdr C J Cummings	

The ex-officio members of the committee elected were:

J S Cox BA MA	Head of AHB
Dr M Fopp MA PhD FMA FIMgt	Director RAF Museum
Gp Capt N Parton BSc MA MDA MPhil	DDefS(RAF)
CEng FRAeS RAF	
Wg Cdr A J C Walters BSC MRAeS	JSCSC
RAF	

Discussion

Dr Fopp noted that only the latest twenty or so journals were in digital form and that in order to preserve the work of the Society, and to make it more widely available, plans were afoot to digitise all previous journals and to publish them via the RAF Museum website. Asked about the possibility of a revised index, Dr Fopp noted that, once the Journals were on the web, it would be possible to search them, making an index superfluous. Acknowledging that this could result in some diminution of journal sales, Dr Fopp emphasised the importance of placing the record within the public domain. AVM Dodworth noted that hard copies could be advertised on the web. The Editor noted that journals were donated to the RAF Club, the National Archive, the Joint Services Staff College and the USAF Historical Foundation.

Questioned on the policy regarding book reviews, the Editor noted that it was one of his functions to decide which books would be reviewed and which individuals would be invited to read them.

The Vice-President expressed his thanks for the work of the Committee. There being no further business, the meeting closed at 1830 hrs.

STRATEGIC AIR COMMAND'S B-29s DURING THE BERLIN AIRLIFT

Brig-Gen Brian S Gunderson

This article first appeared in the (US) Air Force Historical Foundation's publication, Air Power History, Vol 54, No 1, (the Spring 2007 edition) and is reproduced here courtesy of its editor. It appealed to your editor because of its relevance to USAF/RAF links in general and to Scampton in particular and because it contains a definitive statement, by one who was there at the time, to the effect that the B-29s were not nuclear capable. Sadly, the author passed away in 2004. Ed

When the Berlin Blockade began in late June 1948, one B-29 squadron of Strategic Air Command's (SAC) 301st Bombardment Group, based at Salina Air Force Base, Kansas, was on rotational training at Fürstenfeldbruck, the German air base near Munich. As the friction intensified between the United States and the Soviet Union, Lt Gen Curtis E LeMay, Commander, US Air Forces in Europe (USAFE) felt that the presence of more B-29s on the European continent – even though they weren't configured to carry atomic bombs – might cause the Soviets to think twice before taking any further precipitous action.

In April 1948, the Soviets had stopped all trains from departing Berlin for western Germany. In response, US Army Gen Lucius D Clay, US Military Governor for Germany, informed the Soviets that Allied military aircraft would fly in and out of the city. General LeMay, desiring a greater show of strength, requested the Pentagon to permit him to position B-29s either in continental Europe or in Britain. The response was positive and quick. The two squadrons of the 301st that remained at Salinas AFB were immediately put on alert and then deployed to western Germany in early July. At the same time, the 28th Bomb Group, based at Rapid City, South Dakota, and the 307th Bomb Group, based at MacDill AFB, Tampa, Florida, went on alert and ordered to deploy within 12 and 3 hours, respectively after receiving notice. The rest of SAC went on 24-hour alert. Later in the month the 28th and 307th each consisting of thirty B-29 aircraft and crews deployed to England. The 28th Group deployed to Royal Air Force Station Scampton, Lincolnshire, while the 307th Group deployed one



Station Headquarters, RAF Scampton in 1948

squadron of ten planes to RAF Station Waddington, Lincolnshire, and two squadrons to RAF Station Marham, Norfolk. (The 307th flew to England via Kindley Airfield, Bermuda.)

The planned flight of the 28th Bomb Group from Rapid City to Scampton was 18 hours (12 daylight, 6 night). Each B-29 carried twenty airmen, including ten crew and ten maintenance and support personnel. Additional support personnel followed the group in C-54 transport aircraft. The 28th Group flew via the Royal Canadian Air Force Airfield at Goose Bay, Labrador, where they encountered some problems in refuelling. Then, once airborne, some of the B-29s encountered strong headwinds and communications problems, which resulted in several aircraft being directed to the RAF airfield at Prestwick, Scotland, delaying their arrival in Scampton by a day before flying on to their destination. The first B-29 landed at 0827 on July 17, with Col John B Henry, Commanding Officer, on board. He was greeted by Air Vice Marshal C E N Guest, Air Officer Commanding (AOC), No 1 RAF Group. The major London newspapers gave front page coverage to the arrival of the B-29s. The *Sunday Express* headed their story: 'The Forts Stream in All Day.'

Others said: 'The Yanks are Back' and 'Superfort Fleet Will Be Here Today.' The RAF made certain that the deployed B-29s would not want for anything.

The three airfields selected for use by the Superfortresses were a lot different from those used by most B-17 Fortresses and B-24 Liberators of World War II. The latter had been carved out of commandeered farmlands, with living quarters, messes, clubs, and support service buildings quickly constructed, mostly Nissen huts or larger variants of the same. All three RAF airfields to be used by SAC's B-29s were fully operational, constructed before World War II. (Later, 8,000-foot by 200-foot runways had been built at the host bases, permitting them to accommodate the B-29s.) Most of the buildings were built of brick, with living quarters made up of separate rooms, instead of crowded quarters, and featured heated, indoor bathrooms. The Scampton Officers and Enlisted Clubs had comfortable leather furniture in 'clubby' lounges, where one could comfortably read and write letters. A large bar offered cards, darts, and 'shove ha'penny' games to test one's skills. All in all, the atmosphere throughout the airfield was such that it fostered many new friendships between the American and British personnel.

For the first couple of weeks after the B-29s had landed in England, all three airfields – Scampton, Marham, and Waddington – were kept busy responding to a continuous stream of visiting VIPs, mostly US and British. From Washington, a group headed by Senator John C Gurney reflected the keen interest of the US Congress in the Berlin blockade and the deployment of the B-29s in particular. On the British side, the Honorable Arthur Henderson, the United Kingdom's Air Minister, and Lord Arthur Tedder, RAF Chief, were among the first of many senior RAF officers to visit the airfields. Several USAF generals also arrived, including Lauris Norstad, Curtis LeMay, and Leon Johnson, Commander 3d Air Division (later redesignated Third Air Force and situated in the London suburbs.)

Gen Hoyt S Vandenberg, the USAF Chief of Staff, commended the RAF for its support, saying, 'They have done a splendid job in making the USAF visitors feel right at home.' General LeMay emphasised to Colonel Henry and his 28th Bomb Group that he wanted the B-29s to be flying as frequently as possible over the United Kingdom and continental Europe. He wanted the Soviets to be



B-29s over Scampton.

particularly aware of their presence nearby. On weekends during summertime and early fall, the B-29s were scheduled to perform formation flying at low altitude over major cities and beach resorts in England, Scotland, Wales and Northern Ireland. In addition, sorties were also scheduled to fly over densely populated areas in continental Europe. Furthermore, practice bombing and gunnery training flights were scheduled for the bombing ranges in the Wash area off the coast of England. This area was also used by the RAF for practice bombing training. With such an active flying and maintenance schedule maintained week in and week out, it was not possible to give crews and support personnel three-day passes to go to London or elsewhere in England during the early weeks after the arrival of the B-29s. For those stationed in Scampton, the beautiful cathedral city of Lincoln was nearby and many 28th Bomb Group personnel were able to visit the city in the evenings, taking World War II 'Liberty Runs' on buses and trucks into the city. The pubs and dance halls were usually full and many new friendships were made.

Security of the B-29s while on the ground at Scampton added to the overall workload, especially in the evening and during the night.



*USAF personnel carrying out a 100-hour inspection on a B-29;
Scampton, 1948.*

Many of the parking areas for the B-29s were on the fringes of the airfield, separated from heavily trafficked roads only by low hedges or a barbed wire fence. This required a USAF armed guard to be assigned to each aircraft from sundown to sunrise. The guards came out of the 28th Group's complement. To ensure that the guards' attention was not interrupted by persons along the roads who tried to engage them in conversation, an Operations Officer of the Day in a jeep continuously circled the airfields to ensure that the guards were paying full attention to their assignments. The OOD provided guards with hot beverages to make doubly sure they didn't fall asleep.

In August an unexpected tragedy occurred at the 28th Group's home base at Rapid City. A B-29, flying with a makeshift crew from all three of the Group's squadrons (the 77th, 717th, and 718th) crashed on take off after feathering an engine almost immediately after breaking ground. All aboard perished. Because everybody knew someone on board the aircraft that crashed, it was quite a shock for the 28th Group's personnel in England.

One problem facing most USAF airmen was transport to and from aircraft, to and from the flight operations/maintenance buildings, and

to and from living quarters areas. Fortunately, a garage proprietor near the airfield had a stock of World War II second-hand bicycles, which he quickly expanded by canvassing the area for miles around. As soon as he got one in hand, it was sold for ten dollars. Many owners of this new form of transportation became so enamoured with their bikes that they loaded them on board their aircraft when the time came to return to the States.

The 28th Bomb Group's three-month tour at Scampton came to a close in October 1948. It was ordered to return home, replaced by the 301st Bomb Group from Salina AFB. The 301st and other B-29 units in England that replaced the 307th Bomb Group at Marham and Waddington returned to their home bases in the States in January 1949, by which time the situation with the Berlin Airlift had eased.

Flight planning for the 28th Group's return journey proved somewhat more complicated than had the trip to England. First, the prevailing west to east winds across the Atlantic were so strong that the 28th was unable to fly directly to Goose Bay, Labrador. The plan called for the first leg – a 6 hour daylight flight – to be flown on October 19 to Meeks Field, Iceland. The second leg to Goose Bay began immediately after refuelling was a day/night affair averaging 2 hours, 45 minutes daylight and 6 hours of night flying. The last leg, on October 20, to Rapid City was 2½ hours of daylight flying and 7½ hours of night time flight. The return trip took 24 hours and 45 minutes versus 18 hours on the flight to England in July.

The deployment of these two bombardment groups ultimately marked the establishment of a permanent US Air Force presence in England. Since their arrival in July 1948, USAF aircraft and personnel have remained in England to this day.

RAF BOMBER COMMAND AND THE CUBAN MISSILE CRISIS, OCTOBER 1962

Clive Richards of the Air Historical Branch (RAF)

Accounts of the Cuban Missile Crisis from a UK perspective indicate that British intelligence officers were first informed by their US counterparts of the location of launch sites on Cuba for Soviet R-12 (NATO designation SS-4 *Sandal*) Medium-Range Ballistic Missiles (MRBMs) and R-14 (SS-5 *Skean*) Intermediate-Range Ballistic Missiles (IRBMs) on 19 October 1962. The British Ambassador to Washington DC, Sir David Ormsby-Gore, cited reports indicating that weapons ‘that may not be entirely defensive’ had been located on Cuba in a cable to the Foreign Office sent on 20 October. The ambassador was briefed personally by President Kennedy on 21 October and the President sent a personal message to Prime Minister Harold Macmillan later on the same day.¹

The British Government continued to monitor events as they unfolded during the following week, liaising with the US Government. In response to the deepening crisis, at 11:00 on Saturday 27 October 1962 the Chief of the Air Staff, Air Chief Marshal Sir Thomas Pike, attended a meeting with the Prime Minister at Admiralty House.² Sir Thomas outlined the substance of his meeting with the Prime Minister to his fellow Chiefs of Staff – the First Sea Lord (Admiral of the Fleet Sir Caspar John) and the Chief of the Imperial General Staff (General Sir Richard Hull) – at the Ministry of Defence at 14:30 that afternoon and a record of this ‘conversation’ prepared by the Secretary of the Chiefs of Staff Committee is now preserved in The National Archives.³

According to this record, Sir Thomas began by relaying a summary of a communication between President Kennedy and the Prime Minister on the evening of 26 October in which the President had described the assurances that the US Government required with regard to the withdrawal of offensive weapons from Cuba. President Kennedy had gone on to state that ‘unless he received these assurances within 48 hours he would take action to destroy the rocket sites by bombing, by invasion, or both.’ CAS further reported that although President Kennedy had ‘stated that he would consult with the Tripartite nations before taking any definite action.... [T]he Prime

Minister considered this might take the form of information rather than consultation.'

The Prime Minister had then gone on to discuss with Sir Thomas 'the current alert posture of our forces.' Although senior officers of the Air Ministry, Admiralty and War Office had been warned 'to be available, if required at approximately one hour's notice', the Prime Minister was 'adamant that he did not consider the time was appropriate for any overt preparatory steps to be taken such as mobilisation. Moreover, he did not wish Bomber Command to be alerted, although he wished the force to be ready to take the appropriate steps should this become necessary.' While plans were in hand to call a meeting of the Cabinet on 28 October should the situation continue to deteriorate, the Prime Minister's intention was 'that matters should be played as low key as possible.'

Sir Thomas informed his fellow Chiefs of Staff that 'as a result of his conversation with the Prime Minister, he had warned the Air Officer Commanding-in-Chief, Bomber Command that he should be on the alert and that his key personnel should be available on station. There were ten bombers overseas at present, but he felt that it was not desirable to recall these aircraft at the moment.' During their ensuing discussion, the Chiefs of Staff agreed that, while measures could be taken 'in a Precautionary Stage, and before any NATO Alert was declared, these had little military significance without the calling of general mobilisation', it was nevertheless essential for Bomber Command to be alerted and dispersed as soon as the situation so warranted in order that its deterrent effect should be seen to remain credible. This measure would be the most effective that could be carried out short of general mobilisation, and would give political reassurance to the United States.

Should the US mount any offensive action against Cuba, the Chiefs of Staff believed that: 'One of the most likely reactions...would be to occupy West Berlin.' However, they concluded that as 'Berlin was indefensive [*sic*] militarily', existing plans to mount probes along the ground access routes to the city would be 'useless' and that: 'The Prime Minister should be advised of this in order that he may urge the President to restrain General Norstad [the Supreme Allied Commander Europe] from undertaking any such operation.'⁴

RAF Bomber Command on 27 October 1962.

Before considering the actions of RAF Bomber Command in the wake of Sir Thomas Pike's conversation with the Prime Minister on the morning of 27 October 1962, it is first necessary to examine the strength and status of the Command at that time.

The Medium Bomber Force

From its headquarters at RAF High Wycombe, RAF Bomber Command controlled in October 1962 a total of twenty-two front-line flying squadrons, divided between two Groups; No 1 Group (HQ, RAF Bawtry) and No 3 Group (HQ, RAF Mildenhall). Seventeen of these squadrons comprised the Medium Bomber Force (MBF). No 1 Group controlled eight Avro Vulcan squadrons: Nos 44, 50 and 101 Sqns, flying Vulcan B1As from RAF Waddington; Nos 27, 83 and 617 Sqns, based at RAF Scampton with Vulcan B2s; and Nos 9 and 12 Sqns, which were also equipped with the Vulcan B2 at RAF Coningsby.⁵ No 3 Group's contribution to the UK's independent deterrent took the form of six squadrons equipped with the Handley Page Victor – Nos 10 and 15 Sqns at RAF Cottesmore, flying Victor B1 and B1As respectively; Nos 55 and 57 Sqns, operating from RAF Honington with Victor B1As; and Nos 100 and 139 Sqns, then reforming with Victor B2s at RAF Wittering. No 3 Group also included three Vickers Valiant B1 squadrons – Nos 49, 148 and 207 Sqns – at RAF Marham; however, these were equipped with US nuclear weapons under a 'dual key' arrangement and were assigned to the operational control of the Supreme Allied Commander Europe (SACEUR).

In addition to the MBF, RAF Bomber Command also included a number of specialist squadrons. Only one of these squadrons fell within No 1 Group; No 18 Sqn, then operating Valiants in the electronic countermeasures role from RAF Finningley. By contrast, No 3 Group's composition was more diverse. Honington was the home of No 90 Sqn, then operating Valiants in the tanker role, and a second squadron of Valiant tankers (No 214 Sqn) was based at Marham. No 3 Group was also responsible for the Command's reconnaissance element. This comprised two squadrons at RAF Wyton; No 58 Sqn with English Electric Canberra PR7s and PR9s and of No 543 Sqn with Valiants.⁶

Three Operational Conversion Units (OCUs) supported the flying squadrons. Two of these fell within No 1 Group; No 230 OCU, which trained Vulcan crews at Finningley, and No 231 OCU, which conducted Canberra training at RAF Bassingbourn. Finningley also housed the Bomber Command Development Unit (BCDU), which in October 1962 had an establishment of two Valiant B1s and a single Vulcan B1. No 1 Group was responsible for the Bomber Command Bombing School (BCBS) at RAF Lindholme, which trained MBF navigators in the use of the Navigation and Bombing System (NBS) using Vickers Varsity T1 and Handley Page Hastings T5 aircraft. In No 3 Group, aircrew destined for the Valiant and Victor squadrons passed through No 232 OCU. Valiant B1 and Victor B1 training was undertaken at RAF Gaydon, while that for Victor B2 crews took place at Cottesmore.

An indication of Bomber Command's strength at the time of the Cuban Missile Crisis is provided by the number of aircraft available within the Command during its second MICKY FINN no-notice alert and readiness exercise, held on 20-21 September 1962. According to HQ Bomber Command's *Post Exercise Report: Exercise Micky Finn II*, 'All units of Bomber Command participated with the exception of the Quick Reaction Aircraft (QRA), No 231 OCU Bassingbourn, the Tanker Squadrons and No 617 Squadron (Blue Steel Trials)'.⁷ At the beginning of the exercise, a total of 166 weapon-carrying aircraft were present in the Command. However, of these seven were being used by No 617 Sqn for Blue Steel stand-off missile initial operational capability trials, five were overseas, three were in store, and thirty-nine were being modified, undergoing major servicing or were otherwise unserviceable. Although only 112 of Bomber Command's 166 bomber aircraft were therefore available during MICKY FINN II, given the likelihood that the Blue Steel trials aircraft would also have been generated during an emergency it would appear that the Command could muster approximately 120 weapons-carrying aircraft capable of generation during October 1962.

Thor

In addition to the MBF, RAF Bomber Command's inventory in October 1962 also included a force of sixty Douglas Thor IRBMs, operated by twenty RAF strategic missile squadrons (under a 'dual

key' arrangement with the USAF) and divided evenly between Nos 1 and 3 Groups. Thor squadrons in No 1 Group included Nos 98, 102, 150, 226 and 240 Sqns, based at RAF Driffield and its satellite stations; and Nos 97, 104, 106, 142 and 269 Sqns at RAF Hemswell and satellites. No 3 Group's squadrons were Nos 77, 82, 107, 113 and 220 Sqns at RAF Feltwell and its satellite stations; and Nos 130, 144, 218, 223 and 254 Sqns at RAF North Luffenham and associated satellites.

Alert Conditions and Readiness States

The Command's degree of preparedness for operations was governed by a series of 'Alert Conditions' and 'Readiness States' ordered by the Bomber Command Operations Centre (BCOC) at HQ Bomber Command. The procedures in force during October 1962 were laid down in the HQ Bomber Command manual *Bomber Command Alert and Readiness Procedures (Aircraft)*, the second edition of which became effective from 1 August 1962. An extract from this volume describing Bomber Command's alert procedures was forwarded by a desk officer in the Air Ministry to a colleague in the Ministry of Defence on 9 October 1962; this extract therefore describes those procedures in force during the Cuban Missile Crisis.⁸

According to this source, 'The degree of preparedness of the Bomber Force is defined as an ALERT CONDITION'. The normal state of the Command in peacetime was designated Alert Condition 4. During 'periods of political tension – which may not be serious enough to warrant Alert Condition 2' the Command could be placed on Alert Condition 3, 'PRECAUTIONARY ALERT'. This condition could be 'issued to all or part of the force at any time' and the 'Specific actions to be taken will be detailed at the time the Alert is announced.'

The next Alert Condition – Alert Condition 2, 'GENERATE AIRCRAFT' – required the Command:

'to prepare the maximum number of aircraft to combat serviceability. Aircraft planned to operation [*sic*] from main bases are to be prepared for operational take-off and crews are to standby at 15 minutes readiness. All other aircraft are to be armed and prepared for take-off to their dispersal airfields. Reconnaissance Squadrons [*sic*] are to be prepared for

operational take-off. All Operations Rooms and other vital services are to be fully manned on a 24 hour basis. Aircraft prepared for dispersal are to remain in this configuration until either ordered to disperse or specifically order [*sic*] to prepare for operational take-off from main bases.'

During this phase, AOCinC Bomber Command was 'charged with producing 75% of available aircraft in 24 hours.'⁹

The highest Alert Condition was Alert Condition 1, 'DISPERSE AIRCRAFT'. At this stage,

'Aircraft due to disperse are to proceed to their dispersal airfields and there to be prepared for operational take-off ['regenerated']; crews will then standby at 15 minutes readiness. Aircraft and crews remaining at main bases continue at 15 minutes readiness. Once this Alert Condition has been announced aircraft will continue to disperse, regardless of Readiness State ordered, unless, or until, it is specifically stopped by BCOC.'

The Alert Conditions described above were qualified by a series of Readiness States, which prescribed the 'take-off readiness of the force' and were 'related to the tactical warning that could be expected of an impending enemy attack.' As such, Readiness States were applied to those elements within Bomber Command that had already been generated to *combat ready* status, and could be varied regardless of the Alert Condition then in force. The first was Readiness State 'One Five', or '15 Minutes'; this required 'All combat ready aircraft...to be prepared to take-off within 15 minutes.' The next rung on the readiness ladder was Readiness State 'Zero 5' ('05 Minutes'), during which combat ready aircraft would be expected to get airborne within five minutes; for those aircraft unable to start their engines simultaneously, and at those airfields lacking Operational Readiness Platforms at the end of the runway, 'cockpit readiness will be accepted as meeting this requirement although a 5 minute reaction may not be possible.' Readiness State 'Zero Two' ('02 Minutes') required 'All combat ready aircraft...to start engines and taxi to the take-off position and there await further instructions by VHF R/T.' Ultimately, combat ready aircraft could be ordered to SCRAMBLE, or 'take-off

on their operational mission subject to release while airborne.’

Although this system of Alert Conditions would appear to take the form of a ‘ladder’, it is clear that one Alert Condition is not necessarily a precursor to the next. For example, at the beginning of MICKY FINN II on 20 September 1962 the Command was moved from Alert Condition 4 directly to Alert Condition 2, bypassing Alert Condition 3. Bomber Command could be required to maintain Alert Conditions 2 and 1 for a maximum of thirty days. Readiness State Zero Five was to be held for up to four hours; while Zero Two was envisaged as lasting for no longer than a matter of minutes. The exact details of the Alert Conditions and Readiness States are crucial to a proper understanding of the decisions taken at HQ Bomber Command during the Crisis. Unfortunately, it is exactly in this realm that confusion has arisen. Thus, Professor Peter Hennessy in his work *The Prime Minister: The Office and its Holders since 1945* (Allen Lane, 2000), states that ‘In July 1961, the V-Bomber airfields had received the latest version of their ‘alert and readiness procedures’ which were the ones that were operational during the Cuban missile crisis – the so-called ‘alert conditions 5-1’. The Alert Condition system outlined by Professor Hennessy would appear to have been drawn from a document received by RAF Waddington in July 1961 and now preserved in The National Archive at Kew.¹⁰ However, as we have seen, other preserved papers at Kew show that Bomber Command’s Alert and Readiness Procedures were revised on at least one occasion between July 1961 and October 1962 and that the Alert Conditions described by Professor Hennessy were *not* those in force at the time of the Cuban Missile Crisis.¹¹

Procedures in the Thor IRBM force differed from those of the MBF. In a letter considering Thor readiness and launch procedures dated 11 August 1959, the Vice-Chief of the Air Staff, Air Marshal Sir Edward Hudleston, informed Sir Kenneth Cross that: ‘Our aim must be to keep all serviceable missiles at T-15’ (15 minutes to launch).¹² An Air Staff memo forwarded by VCAS to CAS on 5 December 1961 stated that ‘an average of between 45 and 50 Thor weapons are maintained permanently at fifteen minutes readiness’.¹³ During MICKY FINN II, ‘The Thors once again proved their reliability and 59 out of the 60 weapons available were available for launch at the 1st count down 5½ hours after the alert was called.’¹⁴

QRA

Even at the normal peacetime Alert Condition – Alert Condition 4 – a proportion of the V-Force was maintained continuously at Readiness State One Five in order to provide Bomber Command with a ‘Quick Reaction Alert’ (‘QRA’) capability. By the end of 1962, 68 weapons systems (54 Thor IRBMs and fourteen aircraft) were ‘normally held at immediate readiness (15 minutes)’.¹⁵ The Medium Bomber Force QRA component in October 1962 comprised six Vulcans of No 1 Group (one at Coningsby, two at Scampton and three at Waddington) and five Victors of No 3 Group (two at Cottesmore, two at Honington and one at Wittering).¹⁶ A further three Valiants of No 3 Group at Marham were also maintained on QRA as part of SACEUR’s alert force.¹⁷

Bomber Command on alert

Considerable confusion has grown up with regard to the stance adopted by RAF Bomber Command during the course of the Cuban Missile Crisis. In *Countdown: Britain’s Strategic Nuclear Forces*, Air Vice-Marshal Stewart Menaul – the Senior Air Staff Officer at HQ Bomber Command between 1961 and 1965 – described the impact of the Cuban Missile Crisis on the Command from 27 October 1962. In his account, AVM Menaul notes that at the time of the crisis Bomber Command was engaged in ‘one of their frequent alert and readiness exercises’. On the evening of 26 October, the AOCinC Bomber Command, Air Marshal Sir Kenneth Cross, ‘called the duty operations officer on the telephone to say that he had decided to allow the exercise to proceed and to retain the existing readiness state for the time being’; subsequently, following a discussion with his senior staff officers, Sir Kenneth ‘decided to increase the readiness state of the force, purely as part of the training exercise.’ As a result, ‘Both the Thor missile force and the V-bombers were at fifteen minutes readiness.’¹⁸

AVM Menaul’s work was published in 1980 and therefore predated the release of primary source material relating to the events of 1962. Given the author’s senior position with HQ Bomber Command at the time of the Cuban Missile Crisis, his account was accepted by a number of scholars as an accurate insight into the posture of Bomber Command during the Crisis and the decisions

made by its AOCinC, acting apparently upon his own initiative. However, in a supplementary paper published in the proceedings of a joint meeting of the RAF Historical Society and the [US] Air Force Historical Foundation in 1993, the then Head of the Air Historical Branch, Group Captain Ian Madelin RAF (Retd), noted that the recollections of Sir Kenneth Cross ‘differ from those of Air Marshal [*sic*] Stewart Menaul’.¹⁹ AVM Menaul’s recollections are also at variance with Bomber Command records now deposited in The National Archives.

On consulting the RAF Form 540 for RAF Bomber Command in October 1962, it is clear that the Command was *not* in the midst of an alert and readiness exercise on 26-27 October 1962. Rather, Exercise MICKY FINN II had taken place during the previous month; this exercise being timed to coincide with NATO Exercise FALLEX 62.²⁰ Moreover, there is no evidence of an increase in the Command’s Alert Condition or Readiness State prior to the meeting between CAS and the Prime Minister on the morning of 27 October 1962.²¹

The Operations Record Books for both HQ 1 Group and HQ 3 Group record that the Command was ordered to move to Alert Condition 3, Precautionary Alert, on or immediately after 13:00hrs on 27 October 1962.²² The measures to be taken were described by the compiler of the Operations Record Book for HQ No 1 Group in the following terms.

‘All key personnel were required to remain on station and Operation Room staff to be available at short notice. Although no generation of aircraft was ordered, some preparations were made to ensure rapid generation if necessary. All measures were to be unobtrusive.’²³

On the following day a limited increase in the number of aircraft on QRA would appear to have been ordered by HQ Bomber Command. According to the ORB for HQ 1 Group, at 15:47hrs on 28 October the Group was instructed to increase the number of aircraft on QRA from six to twelve, ‘to be effective as soon as possible after 0800Z on 29th October, 1962’.²⁴ Although there is no record of such an order in the ORB for HQ 3 Group, there are indications that this Group also increased the number of aircraft on QRA during the course of the Crisis.²⁵ Additionally, on 28 October 1962 an Exercise

SUNSPOT detachment of eight Vulcan B1As belonging to No 50 Squadron to RAF Luqa, Malta, was recalled.²⁶

All available Thor IRBMs were also brought to 15 minutes readiness on 27 October. In a letter to VCAS dated 31 October 1962, the AOCinC Bomber Command noted that: 'The recent Cuban crisis emphasises the value of Thor as a deterrent weapon.' Sir Kenneth went on to note that: 'Because its normal state of readiness is 15 minutes the whole system...could be alerted inconspicuously.'²⁷ However, there is no reference in any of the official sources thus far consulted that the Thor component (either wholly or in part) was raised to a higher readiness state during the course of the crisis.

Sir Kenneth Cross would later comment on the marked lack of direction shown by the UK's higher politico-military leadership during the Cuban Missile Crisis.²⁸ It is nevertheless clear that the measures taken by HQ Bomber Command were consistent with the wishes of the Prime Minister, as outlined in the briefing given by Sir Thomas Pike to his fellow Chiefs of Staff on the afternoon of 27 October 1962. It should be noted that contrary to some recent accounts, the definition of Alert Condition 3 in force at the time of the crisis did *not* specify that aircraft should be generated and Nos 1 and 3 Groups were clearly *not* ordered to begin generation – only to lay the groundwork for the rapid implementation of such an order should it be transmitted.²⁹ In *The Prime Minister*, Professor Hennessy notes the importance of considering carefully the nature of Alert Condition 3 'as this is the condition to which Air Marshal Cross ordered the V force at 1.00pm on Saturday 27 October as the Cuban crisis approached its peak.' He goes on to quote the following definition:

'3. *Aircraft Generation*. The maximum number of aircraft are to be made Combat Ready. At Main Bases, aircraft planned to operate from those bases are to be prepared for operational take-off; the remainder are to be armed and prepared for dispersal.'

Placing the Command at Alert Condition 3 as defined would appear to contradict both the desire of the Prime Minister that Bomber Command should not be alerted (as noted by CAS) and the instruction that aircraft should *not* be generated recorded in the ORB for HQ 1 Group (and quoted on page 132 of *The Prime Minister*). However, as noted above, the Alert Conditions cited by Professor Hennessy are

those in force in July 1961 and *not* those applying in October 1962. Under the 1962 system, Alert Condition 3 was a precautionary alert *only*, with aircraft generation beginning at Alert Condition 2. This misconception may also be reflected in Professor Len Scott's description of Alert Condition 3 as Bomber Command's 'precautionary *pre-dispersal* state of preparedness' (italics added).³⁰ Given that generation was an essential precursor to dispersal, in October 1962 Alert Condition 2 and not Alert Condition 3 was the pre-dispersal Alert Condition. This fact was reflected by Sir Kenneth in his letter to the VCAS on 31 October 1962 cited above, in which he went on to point out that 'despite having everything ready to bring 75% of the aircraft in the Command to readiness, we could not give the order for fear of the effect it might have (if it became known) on the very tense negotiations being carried on by Mr Khrushchev and Mr Kennedy.'³¹

Conclusion

The conclusion must therefore be that the only tangible change in Bomber Command's readiness would appear to have been an increase in the number of aircraft on QRA. There is no indication that the readiness state of QRA aircraft in the Command was raised above Readiness State One Five in response to a perceived threat of nuclear attack at any stage during the Cuban Missile Crisis. However, it is of course conceivable that an increase in the readiness state for the QRA aircraft may have been ordered by the BCOC at points during the crisis in order to ensure that QRA crews remained vigilant. RAF Bomber Command as a whole remained at Alert Condition 3 until 5 November 1962, when the latter was cancelled and QRA states returned to normal.³²

Notes:

¹ Podvig, Pavel (ed.); *Russian Strategic Nuclear Forces* (MIT Press, 2001) pp5-6; Hennessey, Peter; *The Prime Minister: The Office and its Holders since 1945* (Allen Lane, 2000) p118.

² No 10 Downing Street was then in the process of being refurbished.

³ COS 1546/29/10/62 'Record of a conversation between the Chief of the Air Staff, the First Sea Lord and Chief of the Imperial General Staff in the Ministry of Defence at 1430 on Saturday, 27th October, 1962'; on TNA DEFE 32/7 *Secretary's Standard File*, 1962. The account of this conversation that follows is based exclusively on the record contained on this file. The use of the word 'conversation' in this context may

reflect the fact that the Chief of the Defence Staff, Admiral of the Fleet Lord Mountbatten of Burma, was away from London on the afternoon of 27 October 1962 and could not therefore be present. In the absence of their chairman the Chiefs of Staff would not appear to have been able to 'meet' formally as a committee.

⁴ The notes of this meeting state that 'It was not intended that Commander-in-Chief, British Army of the Rhine, who was on holiday in Scotland, should be recalled at the moment.'

⁵ A ninth Vulcan B2 squadron, No 35 Squadron, was then in the process of forming at Coningsby. (Although formed, Nos 9 and 12 Sqns were still in the process of working up and at the time they had only seven aircraft between them; much the same was true at Wittering where Nos 100 and 139 Sqns could muster a total of only seven Victors. ORBs for Coningsby and Nos 100 and 139 Sqns: TNA AIR 28/1563, AIR 27/2960 and AIR 27/2976 respectively. **Ed**).

⁶ Other reconnaissance assets in No 3 Group included a Radar Reconnaissance Flight equipped with Victors at RAF Gaydon. Nos 58 and 543 Squadrons and the Radar Reconnaissance Flight all formed part of the Central Reconnaissance Establishment (CRE); the latter was located alongside the Joint Air Reconnaissance Intelligence Centre (UK) (JARIC) at RAF Brampton, a Station in Technical Training Command.

⁷ *Headquarters Bomber Command Post Exercise Report; Exercise MICKY FINN II*, appendix 377 to the Operations Record Book for HQ Bomber Command, October 1962, TNA AIR 24/2688.

⁸ The extant Alert and Readiness Procedures are preserved on AF/W592/64 Part V *Alerting the Medium Bomber Force*, TNA AIR 2/16435 (enclosure 28).

⁹ Letter from Air Mshl Sir Kenneth Cross to MRAF Sir Thomas Pike, 21 September 1962; on ID3/901/12 Pt 2 *Operational Readiness of Bomber Command* (TNA AIR 8/2369).

¹⁰ Hennessy; *The Prime Minister* p121. RAF Waddington, Form 540 Operations Record Book for the period January 1961-October 1962, TNA AIR 28/1657.

¹¹ TNA AIR 2/16435

¹² On ID3/901/12 Pt 1 *Operational Readiness of Bomber Command*, TNA AIR 8/2238.

¹³ On TNA AIR 8/2369.

¹⁴ Letter from Air Mshl Sir Kenneth Cross to MRAF Sir Thomas Pike, 21 September 1962; on AIR 8/2369. Although the RAF's initial Thor strength stood at sixty missiles, during 1961 one Thor was withdrawn from the front-line in order to be used for training purposes by the Bomber Command Strategic Missile School at Feltwell. Humphrey Wynn; *The RAF Strategic Nuclear Deterrent Forces: their origins, roles and deployment 1946-1969, A documentary history* (MOD Air Historical Branch/HMSO, 1994), p347; p349, fn 1.

¹⁵ Letter from Air Mshl Sir Kenneth Cross to MRAF Sir Thomas Pike, 30 November 1962; on TNA AIR 8/2369.

¹⁶ Details with regard to the allocation of Medium Bomber Force QRA commitments other than those in support of SACEUR are given in a draft prepared by

Ops B2, Air Ministry entitled 'Notes on Bomber Command plan to meet increased QRA commitment', dated 17 January 1963; on TNA AIR 1/16435 (enclosure 41A).

¹⁷ On page 335 of his official history *The RAF Strategic Nuclear Deterrent Forces*, Humphrey Wynn notes that 'At the beginning of 1962 the readiness for Saceur [*sic*]-assigned squadrons was increased when, on 1 January, a revised Nuclear Strike Plan came into effect; it meant that four Valiants instead of three were held at 15 minutes readiness at Marham'. However, this increase would appear to have been delayed pending the funding of the additional facilities and personnel necessary to accommodate a fourth QRA aircraft at Marham. A number of entries for the regular practice QRA alerts initiated by Bomber Command Operations Centre (Exercise EDOM) in HQ 3 Group's F540 submission for December 1962 (TNA AIR 25/1548) refer to 'The *three* SACEUR QRA aircraft and the five QRA aircraft from the MBF stations' (my italics). It would therefore appear the Valiant QRA commitment remained at three aircraft until at least the end of 1962 – thus accounting for the total of fourteen aircraft (eleven MBF and three SACEUR) cited by the AOCinC Bomber Command in his letter to CAS of 30 November 1962 (see fn 15).

¹⁸ Air Vice-Marshal Stewart Menaul; *Countdown: Britain's Strategic Nuclear Deterrent* (Robert Hale, 1980), p115.

¹⁹ Group Captain Ian Madelin RAF (Retd), 'Further Comments on Command and Control of British Nuclear Forces During the Cuban Missile Crisis'; in *Seeing Off the Bear: Anglo-American Air Power Co-operation During the Cold War* (proceedings of a joint meeting of the Royal Air Force Historical Society and the Air Force Historical Foundation, 9-10 September 1993), Air Force History and Museums Program, United States Air Force, 1995, p224.

²⁰ *Headquarters Bomber Command Post Exercise Report; Exercise MICKY FINN II* (*op cit*), confirms that MICKY FINN II took place on 20-21 September 1962. Additionally, a *Report on Exercise FALLEX '62* is also appended to HQ Bomber Command's Operations Record Book submission for October 1962. According to the latter, the synthetic phase of this exercise took place between 6-20 September 1962; this was followed by a 'live' phase that 'coincided with Bomber Command Exercise MICKY FINN. All stations in the Command were involved from the 20th-21st September, 1962.' The third phase of the exercise (a mixture of live and synthetic play) took place during 21-22 September 1962. A separate alert and readiness exercise for the Thor force – REDOUBLE – was conducted alongside MICKY FINN II.

²¹ A further indication of the fact that no increase in the Alert Condition had been instituted by Sir Kenneth Cross prior to 27 October 1962 is provided by the 'Supplement to Form 540 – AOCinC's engagements for the month of October, 1962' appended to the ORB submitted by HQ Bomber Command, which records that on the evening of 26 October 'The Commander-in-Chief attended the Autumn Ball at Headquarters Bomber Command' (TNA AIR 24/2688).

²² According to the ORB submitted by HQ 1 Group for October 1962 (TNA AIR 25/1703), this change in the Alert Condition was initiated 'at 1300Z on 27th October, 1962'. By contrast, the ORB for HQ 3 Group (TNA AIR 25/1548) states that 'The Air Officer Commanding-in-Chief declared Alert Condition 3 for Bomber Command at 1307 hours.'

²³ TNA AIR 25/1703.

²⁴ *Ibid.*

²⁵ For example, the ORB for RAF Wittering (TNA AIR 28/1667), then in No 3 Group, states that 'After the Station had been brought to Alert Condition 3 on 27th October 1962 in view of the world situation, an additional aircraft and crew were placed on QRA readiness.'

²⁶ ORB, No 1 Group, October 1962, TNA AIR 25/1703. Seven of the aircraft arrived back at RAF Waddington on the following day; however, the eighth aircraft was declared Cat 3 and as a result its return was delayed until 1 November 1962.

²⁷ Letter from Air Marshal Sir Kenneth Cross to Air Marshal Sir Wallace Kyle, 31 October 1962; on TNA AIR 20/11371.

²⁸ See Madelin, *op cit.*

²⁹ Hennessy; *The Prime Minister* p121.

³⁰ Professor Len Scott; 'Bomber Command and the Cuban Missile Crisis', paper presented to the RAF Historical Society on 11 April 2001 and later published in *Royal Air Force Historical Society Journal* 26 (2001).

³¹ Letter from Cross to Kyle, 31 October 1962; TNA AIR 20/11371.

³² TNA AIR 25/1703.

THE THOR IRBM – THE CUBAN MISSILE CRISIS AND THE SUBSEQUENT RUN-DOWN OF THE THOR FORCE

John Boyes

In the mid 1950s, to counter unexpected advances in the Soviet Union's missile capability, which had provided them with intermediate range weapons able to mount a credible strike against significant targets in Western Europe, the US sought to base their own intermediate range weapons in host European nations.¹ This resulted in the operational deployment of 105 Intermediate Range Ballistic Missiles (IRBM) in Europe. These IRBMs consisted of forty-five SM-78 Jupiters – thirty in Italy and fifteen in Turkey – and sixty SM-75 Thors operated by the Royal Air Force in Eastern England.

Born out of the Bermuda Summit Conference between Prime Minister Harold Macmillan and President Eisenhower in March 1957, Project EMILY,² the codename for the UK's Thor Agreement, came into being on 28 February 1958. Its gestation was not without problems and the RAF was reluctant to declare the missiles operational until the US-based development programme had proved itself. To many, the profile of early launches did not inspire confidence in the reliability of the system. However, such was the pressure from the US to be able to declare the missile a credible deterrent that the five-year Thor Agreement was activated, albeit against some opposition, on 1 November 1959. Nonetheless, it was not until May 1960 that agreement was reached to fit the warheads on the missiles.³

The Douglas SM-75 Thor had a range of 1,500 nautical miles. It was powered by a single Rocketdyne MB-3 engine using RP-1 (a light cut petroleum) and liquid oxygen (LOX) giving 150,000 lb of thrust. Its launch weight was 110,000 lbs. It carried a 1.44 megaton W-49 warhead housed in a Mk 2 re-entry vehicle. Sixty missiles were deployed by twenty RAF squadrons from 1959 to 1963.

Thor was to maintain a discreet profile. The Campaign for Nuclear Disarmament (CND) had been formed in early 1958 and the annual Easter Aldermaston Marches enjoyed significant support. Even within the ranks of Bomber Command, let alone the broader reaches of the RAF, Thor was something of an unknown quantity. Nevertheless, the missile clearly conformed to the doctrine proclaimed by the Sandys



Destined for the Hemswell Wing, missile 214 being extracted from the C-124 that had delivered it to Scampton.

1957 White Paper with its reliance for the future on missile systems. There were indeed those who believed that it would give useful experience in advance of the UK's own MRBM, BLUE STREAK, becoming operational in the early 1960s. However, the programme had never had the wholehearted support of the Air Ministry and was often under attack from the Opposition. In official correspondence, AOCinC Bomber Command Air Chf Mshl Sir Harry Broadhurst seemed unenthusiastic about supporting a weapon that was under his command, referring to it as 'a weapon of doubtful operational value which, in any case, can never be used until after our deterrent policy has failed, and we have been hit ourselves'.⁴ Typical of political criticism was Mr Geoffrey de Freitas' Parliamentary Question on 5 March 1958 when he asked, 'Is it not a fact that everywhere outside this Government, Thor is regarded as a highly inefficient missile, and is not it ridiculous to waste £10 million on bringing it over here?'.⁵ But Macmillan supported Thor, both for its strategic value and as a continuing sign of UK/US co-operation.

The first RAF missile, the second production Thor, arrived in the UK on 29 August 1958. It was airlifted into RAF Lakenheath on a

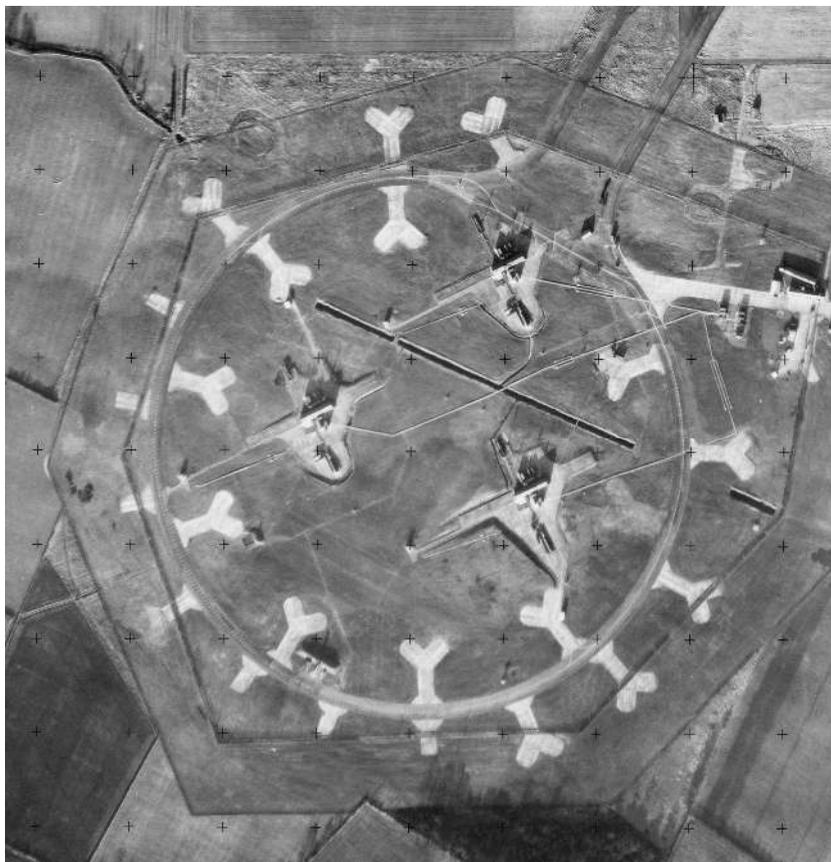
C-124 Globemaster II of the Military Air Transport Service (MATS). This was but one of very many 'Thor Hauls' which brought much of the equipment from the US.

Macmillan did not want the missile's arrival to be marked by any publicity. However, such was the level of press interest, and advised that the press would inevitably fill an information void with their own speculation, he was forced to agree to a press facility for the missile's onward journey to RAF Feltwell, the first designated Thor squadron location. In any case it was difficult to disguise the twenty Thor sites as significant construction works had to take place and it was impossible to conceal these. In addition, CND was also well aware of where the missiles would be based and openly advertised protest rallies at the sites.

Unlike the Jupiters, which were part of the NATO arsenal, the RAF's Thors were under the control of a dual-key system. The RAF could initiate the launch countdown, but only a USAF officer could arm the warhead. How well this system, requiring the agreement of the Prime Minister and the US President, and subsequent dissemination downwards through the chain of command to the Thor bases, would have worked, in what may well have been a very short decision time, was fortunately never to be tested. Whilst one can see how the UK could easily veto a launch proposed by the Americans, it is difficult to envisage how the US could have realistically prevented the UK from acting if it had decided to launch on a unilateral decision.

Nominally, No 77 (SM) Sqn became operational at RAF Feltwell on 1 September 1958 only three days after the arrival of the first missile. This was the lead site and Wing Headquarters of the first complex of five Thor squadrons. It was followed by No 97 (SM) Sqn at RAF Hemswell on 1 December of that year. The satellite sites for these two stations all became operational on 22 July 1959 with the RAF Driffield Wing following on 1 August and the final five sites of the North Luffenham Wing being declared operational on 1 December.

The US had always seen the IRBMs as a short term measure. In their eyes, they would be obsolete once the Atlas and Titan Intercontinental Ballistic Missiles (ICBM) were deployed in the fortress of continental America. Thus on 1 May 1962 US Secretary of Defense Robert McNamara informed the UK Minister of Defence,



Each one having three launch emplacements, the twenty Thor sites were laid out to a standard pattern on redundant WW II airfields. This is No 150 Sqn's site, at Carnaby, which was built within an unusual (possibly unique?) circular arrangement of disused aircraft dispersals in the south-west corner of the airfield.

Peter Thorneycroft, that US support for Thor would not be extended after the five-year agreement period finished on 31 October 1964. There may have been a case for the UK to 'go it alone'; there was after all no need for a UK-based missile to have ICBM range. Douglas had offered an uprated Thor to the Air Ministry in February 1962 but it would have cost the UK an extra £3M. The question of

manufacturing UK warheads for Thor had been considered in 1959, but it had been proposed not to ‘embark on any programme of providing British warheads for Thor merely for the purpose of making the weapons an element of our independent deterrent.’⁶ The only requirement under this heading [was] for Blue Streak’.⁷ The same document noted under the heading ‘Defensive Weapons’ two distinct phases:

- ‘(i) from 1959 to 1967 when the deterrent will consist primarily of the V-Force and Thor and
- (ii) after 1967 when the deterrent will consist mainly of Blue Streak deployed underground’.^{8,9}

But by April 1960 BLUE STREAK had been cancelled, principally as a result of inadequate initial funding and rapid advances in missile technology.¹⁰ It had, however, been planned that BLUE STREAK would be silo-based, a protection that Thor did not have. Without such protection Thor was a soft target and therefore extremely vulnerable. This vulnerability had been a criticism from those against Thor from the start. It is now apparent that it was not until 1963 that Thor was in fact truly vulnerable to a Soviet first strike. Up until this time the Soviet Union did not have the capability to strike the Thor bases with sufficient accuracy to guarantee their destruction. With the benefit of hindsight, Thor’s value as a strategic deterrent was perhaps understated. In 1961, however, the Air Council had appeared to endorse an extension to Thor’s life recognising that, ‘60 megaton weapons at 8-10 minutes readiness are a factor an enemy could never wholly ignore. Their existence would complicate his task and add some measure to his doubts about the outcome of aggressive moves against the West. . . . A short extension of Thor’s life – from 1964 to perhaps 1966 or 1967 – could then give us at relatively low cost a deterrent supplement of which we might be very glad during the period covering the conversion of the Vulcan for the carriage of Skybolt.’¹¹ Bomber Command’s stockpile of nuclear weapons for its aircraft was also improving. By 1962 UK stocks of the relatively low-yield RED BEARD were being progressively transferred to NEAF and FEAF and the original American Mk 5s supplied under Project E had been withdrawn (although Mk 28s, and later Mk 43s, were still available exclusively to the Valiants assigned to SACEUR) in favour

of YELLOW SUN Mk 1 with its GREEN GRASS warhead and replacement of this with YELLOW SUN Mk 2 with a RED SNOW warhead was well under way.

However views could quickly change. Once the announcement had been made and without continuing US support, there was little enthusiasm to provide funds from a defence budget that was itself under increasing pressure to maintain a weapon that was seen as, at best, obsolescent. The public announcement that the Thor squadrons would be drawn-down was made in a somewhat low key manner during Question Time in the House of Commons on 1 August 1962, the day after the Cabinet Defence Committee had agreed to the run down. AOCinC Bomber Command, Air Mshl Sir Kenneth Cross, whilst aware of the ending of the Thor deployment was not informed of the announcement in advance. It came as a complete surprise to him, much to his annoyance, and also to the 4,000 officers and men of the Thor Force. But Thor's most significant contribution to UK defence was still to come.

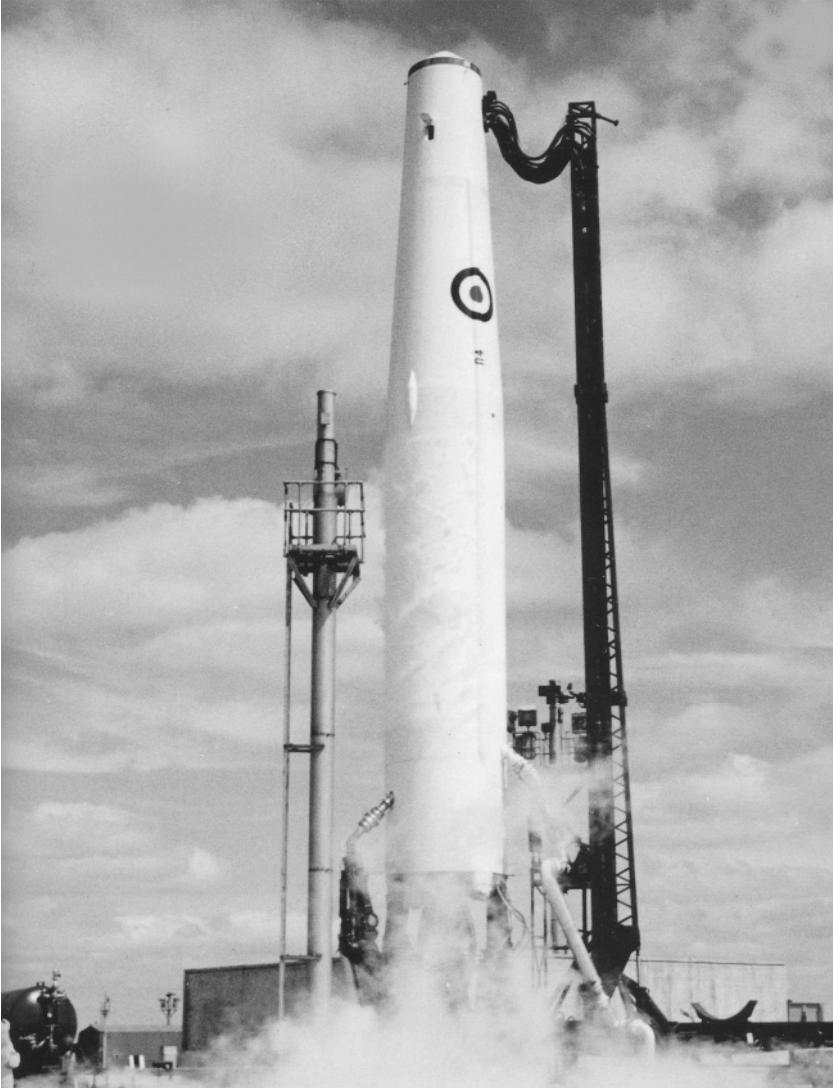
The Cuban Missile Crisis can find its roots in the less than successful Summit Conference held in June 1961 in Vienna. It was the first confrontation between Premier Khrushchev and President Kennedy. Khrushchev was unimpressed with a youthful Kennedy taking his first tentative steps onto the international stage. He was keen to test the US President's resolve. This was, from the start, a high risk strategy, as the Soviet intelligence assessment was that, in general, Eisenhower had been capable of controlling the apparent warlike attitude of the United States. They were not sure that Kennedy had the same control as his predecessor.¹² On 14 October 1962, a U-2 photo-reconnaissance aircraft piloted by Major Richard Heyser brought back photographs from Cuba which showed incontrovertible evidence of preparation of missile sites on the island. Initial interpretation suggested 42 launch pads for either MRBMs or IRBMs. On the 21st, President Kennedy advised the British Ambassador to Washington, Sir David Ormsby-Gore that US intelligence sources had been monitoring the deployment of Soviet missiles in Cuba. This intelligence was clearly disseminated in some form through Bomber Command as, on 23 October, No 104 (SM) Sqn noted in its ORB that maximum security had been implemented because of the international situation. The basis of this decision would appear to have been taken

locally at squadron level as there was no official action taken until events took a significant turn on the 27th when CAS, MRAF Sir Thomas Pike, was summoned to the Admiralty by Macmillan and briefed on the situation. Only at this stage were the Defence Chiefs seemingly brought into play. Macmillan was apprehensive about being seen to escalate the problem, believing that history showed that mobilisation had often led to war rather than acting as a deterrent. He therefore requested the utmost discretion in the Services' response to the apparently deteriorating situation. Nor did he consider that, 'the time was appropriate for any overt preparatory steps to be taken such as mobilisation.'¹³

Before a meeting that afternoon with the First Sea Lord and CIGS,¹⁴ Pike briefed Cross advising him that, 'he should be on the alert and that his key personnel should be available on station. There were ten bombers overseas . . . but he felt it was not desirable to recall these aircraft at present.' Cross thereafter took the decision to increase the readiness of his Command and at 1300hrs ordered Alert Condition 3 – Precautionary Alert. This was applied to both the V-Force and the Thor squadrons. For Thor this meant that two launch crews had to be on station at all times. It did not order the dispersal of the V-bombers – presaged by the announcement of Alert Condition 2 but not enacted until a move to Alert Condition 1 – which would have been a very visible activity and could have been construed as an overt act of escalation and certainly very much in contravention of Macmillan's wishes. This discrete approach meant that the recall of the personnel could not be ordered over the BBC.¹⁵ As telephones were by no means commonplace, for some this recall was to be communicated by a visit from the police.

The US Joints Chiefs of Staff had placed Strategic Air Command (SAC) US-based forces on higher alert – DEFCON 2 – on 24 October. This represented one state of readiness below 'maximum force readiness'. It was to be the highest level of alert ordered at any time during the Cold War. On the 22nd General Curtis LeMay had already ordered SAC's B-52 bombers to be placed in a state of readiness and armed with nuclear weapons.

The Thor squadron ORBs show the receipt and action of the Alert Condition 3 order at various times over a period of some 70 minutes. Essentially, by 1415hrs the entire Thor force was being brought to 15



LOX boiling off from one of No 113 Sqn's three Mepal-based missiles at T-4. Under peacetime conditions, only the oxidant was actually loaded during practice countdowns; the RP-1 fuel was also pumped but it by-passed the missile and was diverted into a tanker.

minute's standby – Readiness State One Five – and the recall of crews was underway. The reality of this situation was that this state was little different from normal day-to-day operations when the missiles on standby were, in any case, held at T-15 readiness. However on this occasion fifty-nine of the Thors were brought to operational readiness. The sixtieth missile was the one on Pad 3 at Feltwell which was used for training and crew categorisation purposes. An order was issued at 1545hrs on the 28th to bring this missile too to standby, but this was rescinded six hours later and the Pad returned to Safe Maintenance Condition.¹⁶ The normal number of missiles required to be available at T-15 was 39. This essentially represented 66% of the Thor Force with allowance being made for the Feltwell training missile. The remaining third would be represented by missiles being used for, or recovered from, practice countdowns, undergoing routine or periodic maintenance or being replaced by another missile as part of the major servicing cycle.

Different squadrons seem to have reacted in different ways. No 240 (SM) Sqn noted in its ORB that 'no specific actions [were] ordered. LE (Launch Emplacement) 42 was being prepared for Standby on completion of [the] Training Programme. All communications equipment rechecked.'¹⁷ Certainly security was reinforced and two crews were on station at all times. At Feltwell, 'anti-sabotage measures were taken'. *Ad hoc* arrangements had to be made for feeding the extra personnel, but these conditions were not too unfamiliar, since they had been practised previously during some of the Bomber Command-sponsored events that exercised the Thor Force, such as RESPOND, RECLAIM and REDOUBLE.¹⁸

So far as the US personnel were concerned, the Authentication Officer (AO) had to be at his post at all times and he wore his launch key – which initiated arming of the warhead and was normally secured in a safe – around his neck. Although some US officers believe that the AOs were armed during the crisis, no specific evidence has been found to confirm this and it is disputed by RAF officers who remember their US counterparts being content to rely on the RAF Police for protection.

As far as most of the Thor Force was concerned, other than monitoring the missiles perhaps a little more closely, there was little else to do outside the normal operational duties. Perhaps not

surprisingly, the Americans appeared to be taking things a little more seriously than their RAF counterparts. One AO remembers that the US personnel were 'all hyped up' and was surprised that the RAF crews appeared to be much more relaxed about the situation. 'Actually we were doing pretty much the same as the RAF crew, watching cricket. We ate in shifts so [we had] one AO at the desk. We were in direct contact with the Command Post at Hemswell. I believe they were in contact with the 7th Air Division, who were in direct contact with SAC HQ [codenamed DROP KICK], [but a lot of that] was far up the chain [of command] from where we sat. We were the grunts.' The Americans had also been somewhat proactive in planning a possible evacuation for their families. Sterling and dollars had been issued and in one case a wife due to give birth was provided with an emergency birthing kit by a fellow wife who was a nurse.

There was the inconvenience of having two crews on station which required a revised rota system and arrangements had to be made for extra rations. The Training Teams were none too pleased, as all practice countdowns were stopped – it took six hours to re-cycle a missile to T-15 after a countdown and it was out of service during this time. The carefully crafted training schedule was soon just a memory, although an Exercise RESPOND was held on 30 October to test communications. The intervention of an actual operational situation seems to have been seen as a major inconvenience!

The Police force was initially augmented but this was later relaxed. The Police contingent at No 77 (SM) Sqn at Feltwell was issued with weapons and ammunition but the OC was later advised that this was an unnecessarily robust response to the situation. Obviously all training attempts to penetrate the sites were suspended in the interests of safety. The squadron ORBs give little indication of a major international crisis. No 102 (SM) Sqn at Full Sutton was hosting 100 visitors as the Alert Order was received. The visit went ahead with a LOX demonstration and film of a live launch but the scheduled countdown demonstration was cancelled in view of the situation. Nonetheless, the visitors were entertained to tea before they left. Gp Capt Roy Boast, Hemswell's Station Commander, remembered that the, 'weather was lovely, making my knowledge harder to bear alone with everyone else behaving normally.'¹⁹ No 226 (SM) Sqn at Catfoss still managed to proceed unhindered with its annual families'



A Thor being erected during the transition from a readiness state of T-15 to T-8.

Hallowe'en Party. Perhaps surprisingly, the situation did not appear to stop the OC of No 107 (SM) Sqn from taking leave from 27 to 30 October nor the OCs of No 113 (SM) and No 98 (SM) Sqns from taking leave during the first week of November. The senior flight lieutenants assumed (a somewhat more onerous than usual) command during their absence. No 144 (SM) Sqn at North Luffenham did not even deem the events worthy of a mention in its ORB.

The missiles lay horizontal in their shelters disturbed only by the hum of the air conditioning units. From this position they could be erected, fuelled and launched within 15 minutes although a modification was in the pipeline to reduce this time by increasing the rate of fuel and liquid oxygen (LOX) loading. Despite reports to the contrary, there is no evidence in the squadron ORBs that any missiles were taken into any phase of the countdown. Theoretically the shelters

could have been rolled back and the missiles raised to a vertical position at T-8 (Phase 2 of the five-phase launch procedure). Unfuelled they could have been maintained in this state for an extended period of time – undefined, but in practical terms measurable only in hours. Target realignment would also have had to be checked on a regular basis using the long range electrotheodolite, as the gyroscopes would tend to wander. By its very nature, raising the missiles would have been a visible activity – all the bases were in easy view of the public – which could have been seen as escalatory and therefore very much counter to Macmillan’s wishes. Taking the missiles any further into the countdown would have involved the transfer of fuel and LOX. The missiles could only be held fully-fuelled for a short period of time²⁰ after which they would have to be either launched or emptied and re-cycled to standby, an operation that took six hours. Whilst LOX was routinely loaded during practice countdowns, fuel never was – it was diverted into a tanker adjacent to the fuel tank – because, after fuel had been loaded into the missile, it was impossible to clean and de-contaminate the fuel systems completely. It required the return of the missile to the manufacturers, Douglas in California.

The Thor warheads were not part of the Project E arrangements although the codename given to the Thor deployment, Project Emily, has led to some confusion in this respect.²¹ Unlike the Project E munitions, the Thor warheads were not held in separate US custody but were on site at all times either mounted on the missile or held within the designated US storage compound, access to which was strictly controlled by personnel from the US 99th Munitions Maintenance Squadron (MMS). The warheads could be armed only by the US Authentication Officer (AO) using his launch key as part of the launch sequence. It had been calculated early on in the programme that it would take up to fifty-eight hours to put all the warheads in place if they had been stored at the Thor Wing HQs, thereby significantly reducing the deterrent effect of the missiles. The warning time of a pending Soviet attack was considered to be twenty hours.

Whilst Macmillan cannot have envisaged using the Thors militarily, except *in extremis*, he did offer to Kennedy, in extreme confidence, a proposal to immobilise the Thors if this would assist the negotiations. The signal to Washington advising this offer concludes

‘please burn after reading’.²² The President replied that he would ‘put it in the machine’.²³ By this time, however, Kennedy had already agreed the basis of the secret deal with Khrushchev which resolved the crisis.

The tension decreased on 5 November, when Bomber Command reverted to Alert Condition 4 at 0940hrs(Z), but SAC remained at DEFCON 2 for a further ten days. Sqn Ldr R Henderson, OC 220 (SM) Sqn reflected, ‘I was very pleased with the quick and enthusiastic reactions of the service and civilian members of my squadron during the initiation of the Alert 3 programme. The Operational Plan and the augmentation of duty personnel were achieved within one and a half hours of the receipt of the alert’.²⁴

The crisis had, however, showed the real value of Thor. The minutes of AOCinC Bomber Command’s Conference, held at RAF North Luffenham in November, recorded that: ‘Without visible change, 59 of the 60 missiles had been made serviceable and ready simply by use of the telephone. It was regrettable that, starting 1st April, 1963, Thor was to be withdrawn’.²⁵ As far as the V-bombers were concerned, ‘It had been amply demonstrated that what really counted was the number of aircraft at readiness. SAC maintained a 50% readiness and although it was unlikely that Bomber Command could achieve this figure there ought to be a method by which the percentage of aircraft at readiness on main bases could be changed as necessary’.²⁶ Exercise MICK was thereafter accordingly altered so that readiness percentages could be changed unobtrusively.²⁷

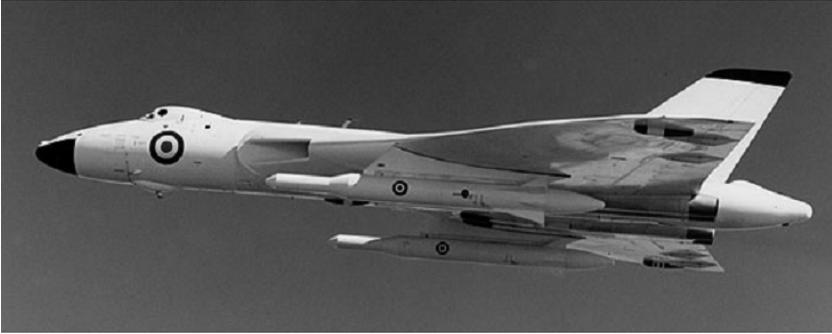
The ease with which the missiles could be brought to readiness compared with the V-bombers impressed AOC 3 Group, AVM (later Air Chf Mshl Sir) Brian Burnett. The V-bombers did achieve their target readiness times, ‘after many QRA practices, but it was so much easier with Thor and this and its successful penetration prospects were the great advantages of Thor’.²⁸ Cross had initially shown little interest in, or knowledge of, Thor when he took over as AOCinC Bomber Command in May 1959. However he had gradually warmed to the value of Thor and eventually seems to have been one of its strongest supporters. Thor’s strength, the speed with which it could be made ready, was counteracted by the fact that the launch locations were fixed. Consideration had been given to designing a mobile system²⁹ but, in truth, a missile of this size and complexity could only



Most Thor-associated equipment was trailer mounted, making the system 'portable', as distinct from 'mobile', not least because the launch emplacements themselves were very substantial fixed structures.

be moveable, not mobile.³⁰ The decision to launch Thor was irrevocable: it could not be recalled or immobilised once launched. By contrast, the V-bombers' missions could be aborted and, although they took longer to be brought to a high state of readiness, they had the added advantage that they could be dispersed to reduce their vulnerability. The aircraft could not all be held on an ongoing basis at Readiness State One Five whereas, in broad terms, the Thor Force could be.³¹ By the autumn of 1962 Thor was a mature system. In November 1962 there was 92% readiness of the missiles. The following month it was 94.4%, equivalent to 55.7 Thors being in a ready state throughout the month. In fact some doubts did exist about the wisdom of closing down the Thor Force as, on 1 November, the Chiefs of Staff were asked to make a rapid examination of the implications of a slower run-down of the missiles.³² However the 1963/64 Defence budget anticipated a requirement for substantially increased expenditure in support of new defence requirements and the argument for prolonging Thor was unattractive. It was, in practice, too late to stop the draw-down process.

The return of the missiles to the US had actually started before the Cuban Crisis. The US military space programme was rapidly developing and Thor was by then a reliable launch vehicle. A request had been made for the early return of ten missiles to be converted into space launchers. The RAF was unwilling to accelerate the closure of



Some consideration was given to prolonging the life of the Thor Force on a purely national basis but, since Skybolt was in prospect, this option was dismissed in November 1962 – and the draw down of Thor had already begun in October. Unfortunately, Skybolt would be cancelled in December, just one of a number of significant might-have-been programmes that afflicted the RAF during the 1960s.

the Thor squadrons but there was not this number of spare missiles available so, of the eleven missiles returned early, nine had to be taken from the squadrons. This meant a rearrangement of the remaining missiles to maintain operational capability. These missiles were quietly airlifted back to the US between 9 October 1962 and 5 April 1963.

This early return had already compromised the original timeline for the closure of the twenty sites. It had been due to start with the Driffield Wing (1 April 1963) thereafter proceeding, at 45-day intervals, to Hemswell (15 May), Feltwell (1 July) and finally North Luffenham (15 August). However, after the request for early return of missiles, it was decided to start with Brighton and use LE 40 as a pilot project for the other sites and to test Bomber Command's Thor Phase-Out Plan, a concise four-page set of instructions issued in October 1962.³³ On 1 December 1962 'Launch Emplacement 40 was taken out of Standby Status and dismantling commenced prior to shipment back to the United States.' First of all the missile was brought to a safe maintenance condition with all pyrotechnics removed before being taken back to Driffield the following day for return to the US. Thereafter the LE itself was stripped of its equipment 'in absolutely foul weather.'³⁴ All fuel and LOX was decanted from

the storage tanks. The generator trailers were prepared for shipment. The ancillary equipment in the shelters was removed before the prefabricated structures were dismantled. Finally on 20 December LE 40 'ceased to exist'. The other squadrons followed during the spring and summer of 1963. The last Douglas Thor was flown back to the US on 27 September 1963. BLUE STREAK had been cancelled. Nor was Skybolt ever to grace the wings of the Vulcan or Victor other than in mock up form. It had become the victim of political wranglings in the US. The V-bombers turned to low-level tactics to evade ever more sophisticated Soviet air defence measures. It was only a short term solution. Thor, although short lived, had satisfied a political, rather than a military requirement, but from an uncertain start it had developed into a dependable weapon which was to become one of the most reliable launch vehicles in the US space programme. Its departure from the UK had been as low-key as its arrival and by many it had not been properly understood. It had proved itself during the Cuban Crisis, but Defence Budgets were tight and it was a weapon that could easily be deleted from the RAF Vote.

On 17 June 1969, HMS *Resolution* set sail from the Clyde Submarine Base on the Royal Navy's first Polaris Patrol. At midnight on 30 June the Royal Navy took over responsibility for the UK Deterrent.

Notes:

¹ Unknown to all concerned, the USSR had, from 1958, deployed SS-3 (*Shyster*) IRBMs in East Germany but the numbers were small and they were inaccurate weapons, which would have limited their ability to attack targets as small as the Thor bases.

² TNA AIR 2/14905. f.63A. Memo from AI(S)1b, K D Bannister.

³ Hansard, Wed 5 Mar 1958. Col 1115.

⁴ TNA AIR 20/10325. Letter from AOCinC Bomber Command to VCAS, 10 Mar 1959; BC/S.91560/CinC.

⁵ TNA DEFE 13/394. f.E53. Harold Watkinson to SoS(A), 10 May 1960.

⁶ Notwithstanding this decision, the author believes that details of a proposed Thor warhead are contained in file ES/1659, retained within the AWRE at Aldermaston.

⁷ TNA AIR 2/13789. Project 'E', para 11.

⁸ *Ibid.*

⁹ Even by this date alternatives to BLUE STREAK had begun to emerge: Polaris and WS138A (the designation of the air-launched Skybolt)

¹⁰ The missile did have a successful second life as the first stage of the ELDO Europa civilian launch vehicle.

¹¹ TNA DEFE 13/123. Letter from Air Ministry to Minister of Defence, 23 Oct 1961.

¹² TNA DEFE 32/7. f.E52

¹³ *Ibid* f.E61.

¹⁴ *Ibid* f.E63.

¹⁵ Referred to by MRAF Sir Michael Beetham in the discussion period during the Royal Air Force Historical Society's seminar on RAF Nuclear Weapons fully reported in the RAFHS Journal No 26, p47.

¹⁶ TNA AIR 27/2952 – No 77 (SM) Sqn Form 540, October 1962.

¹⁷ TNA AIR 27/3003 – No 240 (SM) Sqn Form 540, October 1962.

¹⁸ These exercises could be run in isolation or in conjunction with those involving the V-bombers, thus, for instance a no-notice Exercise REDOUBLE ran in parallel with an Exercise MICKY FINN in September 1962.

¹⁹ *The Ermine Link*, Journal of the RAF Hemswell Association. Issue No.19, p.29.

²⁰ As an experiment a fully fuelled Thor was held on a launch pad at Vandenberg AFB, California. The test was terminated after 24 hours due to concerns over the missile's structural integrity.

²¹ The confusion was also evident at the highest level where some Project Emily documentation can be found misfiled in Project E files.

²² TNA PREM 11/3691.

²³ *Ibid*.

²⁴ TNA AIR 27/2023 – No 220 (SM) Sqn Form 540. November 1962.

²⁵ TNA AIR 24/2696.

²⁶ *Ibid*.

²⁷ Exercise MICK was to 'exercise the operational readiness of all or a proportion of the Medium Bomber, Reconnaissance and SACEUR assigned Forces with measures appropriate to an Alert Condition 3'. Operation Order No.38/62. TNA AIR 24/2696.

²⁸ Correspondence with Sir Brian K Burnett GCB DFC AFC, April 2007.

²⁹ As most of the support equipment was trailer mounted, this led to a belief by some that mobility had been designed into the system. It was, however, the fact that the Thors would have to be based outside the US that had led to this design feature as all elements of the system had to be easily air-transportable.

³⁰ The Jupiter IRBM designed by a US Army team under the German V-2 rocket designer Wernher von Braun was originally claimed to be a mobile system. Von Braun knew well the advantages of a mobile missile as no V-2 had ever been located and destroyed on its launch pad. By the time they were spotted, the missile had been fired and the launch crews had moved on to another location. Von Braun reluctantly had to admit that even Jupiter was only a moveable system and it was only ever deployed on fixed sites.

³¹ During Exercise MICKY FINN II, in a parallel Exercise REDOUBLE, 59 of the Thors were available for the first countdown 5½ hours after Startex. AIR 8/2369.

³² TNA AIR 8/2307. Loose Minute, BF.1746/S.6, from Head of S.6, E F C Stanford, to PS to SoS.

³³ Wynn, Humphrey; *RAF Nuclear Deterrent Forces* (HMSO, London, 1994) p361.

³⁴ TNA AIR 27/3003 – No 240 (SM) Sqn Form 540, December 1962.

AIRCREW STATUS IN THE 1940s

Wg Cdr Jeff Jefford

Although the arrangements that effectively established the officer/aircrew relationship in today's RAF stem from the experience of the 1940s, to set the subject in perspective, it is necessary to begin this paper with a little pre-history, and to run it on into the 1950s.

Pre-War Practice

For much of the inter-war era, the years during which the leaders of the early post-WW II RAF had learned their trade, the only aircrew of any consequence had been pilots; back seats were filled by part-time airmen air gunners, mostly qualified as wireless operators, and/or (from 1935) observers, the latter being ranked as mere corporals until 1939. Most of the pilots were officers; the relatively small numbers of Cranwell cadets and university graduates held permanent commissions, with the rest serving on short service terms. While this matched Trenchard's blueprint, which had envisaged that all pilots would be officers – and that (almost) all officers would be pilots – as early as 1921 the RAF had also begun to train a limited number of its non-commissioned personnel as pilots.¹ Expected to fly for only five years before reverting to their original trades, this initiative was intended to create a trained reserve that could be called upon in the event of an emergency while widening the career opportunities available to airmen. The scheme proved to be both popular, and economic, and by 1928 it was envisaged that up to 15% of pilots might be NCOs in the future, thus reducing the overall requirement for (more expensive) officers. In the event NCO pilots represented 5.5% of the total by 1925, 13.9% in 1930 and 17.1% in 1935.² Boosted by RAFVR sergeants, this proportion would have virtually doubled to 33.8% by the outbreak of war.³

During the later 1930s, with the introduction of increasingly complex multi-seat, multi-engined, high performance aeroplanes, the RAF had very gradually begun to come to terms with the fact that its pilots would not be able to cope alone. It was still intended to meet the requirement for larger numbers of, still part-time, back-seaters by internal recruiting but, pending the completion of the RAF's expansion programmes, this was simply not practical. As a result, to

tide it over, the Service accepted that it would have to resort to employing direct entrant observers who were to serve on four-year engagements. Unlike internally recruited observers, however, these men would have no other skills, so they were to fly as full-timers. Nevertheless, despite their lack of flexibility, like their regular counterparts, they too were to be ranked as corporals. The first intakes of direct entrant observers began training in August 1938.

As the prospect of war drew closer, more attention began to be paid to the problems that this would involve, the experience of large scale air exercises, amplified by real events, like the Munich crisis of 1938, serving to expose the very obvious flaws in the existing crew policy. In short, the practice of using ground tradesmen to fly on a part-time basis was clearly unworkable – not least, because it required a man to be in two places at once.

Reality finally prevailed in 1939 when it was accepted that *all* gunners and observers would have to be employed on a full-time basis. The scheme envisaged that an airman would spend his first three years flying as a wireless operator/gunner at which point the more capable of them would, after additional training, become observers and be promoted to sergeant. In the fullness of time some observers might eventually be retrained as pilots and the scheme even provided for a proportion of observers to be commissioned.⁴

These development were not greeted with universal approval, not least because a clause in the new scheme, which was implemented in January 1939, provided for all currently qualified observers to be made up to sergeant. According to J R Paine, this caused consternation at Wyton where the Sergeants Mess was suddenly obliged to give house room to dozens of, ‘jumped up corporals’, the Station Warrant Officer allegedly being, ‘nearly in tears when he announced that the Mess was opened to us.’⁵ In all probability, a very similar reaction will have occurred in every sergeants mess from Stranraer to Seletar.

If the accelerated promotion of serving airmen had been a bitter pill to swallow, there was worse to come. The first direct entrant observers (also now automatically ranked as sergeants) began to reach the squadrons of Bomber Command in April 1939 and this time it was the AOCinC himself who reacted. Air Chf Mshl Ludlow-Hewitt had been the original instigator of the full-time aircrew scheme but, as he had envisaged it, no one would have been given three stripes until he

had qualified as an observer, which he could not possibly do in much less than four years. This provision having been short-circuited by the direct entrants, he was now being asked to accept, as sergeants, men who had been in uniform for no more than eight months and possibly even less. Protesting that, 'the rank which they hold has proved extremely embarrassing', Sir Edgar complained that, 'they are, of course, unable to exercise proper authority and it is ridiculous that they should be given a rank for which they are unsuited.' He fulminated on to the effect that the value of his scheme had been, 'torpedoed and doomed to failure', by the introduction of these, 'counterfeit NCOs.'⁶ Now that conscription had been introduced, Ludlow-Hewitt wanted no more of these, 'half-baked sergeant observers.'⁷

As AMP, AVM Portal responded coolly to this, not entirely unjustified, tirade by reminding the AOCinC that the object of the exercise had been, 'to give the Observer prestige and to attract the right sort of man', and that this specific aspect of the direct entry scheme had actually been discussed with him in advance.⁸ In essence, it was a question of paying the rate for the job. Since all aircrew had to be persuaded to volunteer, even with conscription, Portal did not believe that the air force could obtain the considerable numbers of high quality recruits that it needed without offering sergeant rank as an inducement.

Ludlow-Hewitt was obliged to manage his social and disciplinary problems as best he could, but his scheme proved to be short-lived in any case. The idea of aircraftmen flying operationally did not long survive the test of war and losses meant that it was quite impractical to wait three years for a wireless operator or gunner to blossom into an observer. Indeed, within a matter of months the RAF would be granting all gunners, as well as all observers, immediate SNCO status.

There is one other curious aspect to this late pre-war spat. While AOCinC Bomber Command had been railing against the accelerated promotion of observers, he had had surprisingly little, in fact nothing, to say about 'instant' sergeant pilots. Yet all of his arguments had been specifically based on, 'the old tradition that a man gets his promotion according to his experience.'⁹ While this approach may well have been 'traditional', it was certainly not based on any fundamental principle. After all, non-commissioned aircrew, both

pilots and observers, had graduated as ‘instant’ sergeants during WW I. More recently this practice had been revived in the context of a batch of direct entrant regular sergeant pilots who had been trained in 1935-37 and for the large numbers of NCO RAFVR pilots who had been recruited since then. While the introduction of immature sergeant observers had clearly provoked Ludlow-Hewitt’s ire, should he not have been equally eloquent in condemning these young pilots?

Wartime Practice

Because of the significant budgetary implications, the Treasury has a role to play in determining commissioning policy and the Air Ministry opened negotiations for the wartime case as soon as war was declared. Sanction for some gunners to be commissioned was obtained as early as October 1939 but the problem was more complex for pilots and observers, especially the latter. The Treasury was not contesting the idea of officer observers, but it was disputing the numbers involved. The RAF wanted 50% of all observers, and pilots, to be commissioned. The Treasury was content with 50% of pilots but would initially agree to only 30% of observers. As AMP, Portal, by now an air marshal, considered this unacceptable because it undermined the principle of equal career prospects which, it was maintained, was inherent in the terms of service of all NCO aircrew.¹⁰

After some more haggling the Air Ministry effectively won its case in January 1940.¹¹ Interim arrangements provided for pre-war recruits of various kinds who were still passing through the training system, and who had enlisted on terms in force at the time and which the Air Ministry felt obliged to honour.¹² Once the pre-war backlog had been cleared, however, the system would be dealing exclusively with wartime RAFVR recruits, all of whom would be inducted as airmen; thereafter the commissioning quotas were to be up to:

- a. 100% of all potential officer pilots being trained at Cranwell;¹³
- b. 45% of pilots trained at other SFTSs and
- c. 50% of observers.

The combination of 100% of ex-Cranwellians plus 45% of the rest approximated to 50% of all pilots being officers, the same proportion as was envisaged for observers. It should be stressed, however, that these figures were the upper limits and there was no obligation to grant commissions to that level on graduation.

Following some early makeshift arrangements, formal commissioning quotas for gunners were agreed in July 1941 with up to 10% of WOp/AGs graduating from training as officers and a further 10% after they had accumulated some operational experience. The proportions for straight air gunners were 5% and 15%. Flight engineers were introduced early in 1941, exclusively as NCOs to begin with, but small numbers began to be commissioned from mid-1942 and in early 1943 a similar quota to that applying to WOp/AGs was authorised, ie up to 10% on graduation and a further 10% on active service.

The Air Ministry was concerned at the adverse implications of over-commissioning and, to ensure that this did not occur, it set up a system to monitor the situation. In the event the Ministry's fears proved to have been groundless. Once it had stabilised, it transpired that the early wartime system actually granted immediate commissions at a rate well below the permitted maximum. The situation was formally reviewed in the autumn of 1940 when it was agreed that, while the overall 50% quotas for pilots and observers should be retained, as a rule no more than 33% of either should graduate as officers, with the remaining 17% being available for subsequent commissioning from the ranks. At the same time, because the international and bilateral training arrangements that had been set up with the various Dominions were beginning to produce results, the governments of Canada, Australia, New Zealand and South Africa were urged to adopt the same policy. With some minor adjustments, they did, thus ensuring that the global commissioning pattern was more or less standardised.¹⁴

As the war progressed, the RAAF, RCAF and RNZAF expanded and matured as independent fighting services. As a result, the Australian, Canadian and New Zealand governments began to develop their own perspectives on the status of aircrew. In view of the considerable contribution that the Dominions were now making to the prosecution of the war, they expected their views to be taken into account.¹⁵ While the British had been more or less able to dictate employment policy in the early days, it was, by 1942, becoming increasingly necessary to indulge in formal consultations. This became very apparent at a major international conference held in Ottawa in May-June 1942 to decide the way ahead for aircrew training for the

rest of the war. It was axiomatic that this would involve commissioning policy and it proved to be a contentious issue.

In essence, the New Zealanders advocated an ultra-conservative approach, withholding all commissions until an individual had demonstrated his ability in service. At the other extreme, the egalitarian Canadians wanted to commission *all* pilots and observers, plus 25% of WOp/AGs on graduation and another 25% in the field. The Australians took a pragmatic view, recommending the abolition of the quota system and commissioning anyone who deserved it.

For the British, it was the Canadian approach which presented the greatest difficulty, since, it was argued, if practically all aircrew were to become officers it would seriously undermine the entire concept of the commission. The Canadians countered that the question was somewhat academic, as leadership was hardly a factor in an aeroplane where the efficiency of a crew depended on the skills of its individual members and teamwork, not the issuing of commands. Furthermore, the existing arrangements frequently resulted in the ridiculous situation of, for instance, an officer gunner being subordinated to an NCO pilot in the air, their precedence being reversed when they were on the ground. Finally, the Canadians pointed out that, since they all faced the same hazards, it was invidious for some members of a crew to be treated differently from others, especially as NCOs were paid less for facing the same risks.

There was little prospect of reconciling the various arguments that were being advanced and the end result had to be a compromise. The British insisted on retaining the quota system, at least in principle, but conceded that it need not be imposed rigidly. In other words, while the notional overall 50% constraint on the commissioning of pilots, navigators and air bombers was supposed to remain in force, there was to be no practical limit on the numbers who could be commissioned while on active service (although, for their part, the British still intended to make some attempt at observing the 50% maximum within the RAF).¹⁶

There the matter rested, but the Canadians soon made it very clear that they had no intention of being bound by any arbitrarily imposed quotas. During the last quarter of 1942 no fewer than 57% of RCAF pilots and 54% of RCAF navigators were commissioned on graduation. Furthermore, while stopping short of actually introducing

a 100% officer policy, the Canadians also tended to be increasingly liberal in their assessments of NCOs seeking commissions from the ranks.¹⁷

Preparing for Peace

With the Allies firmly established on the other side of the Channel and the Russians advancing from the east, the eventual outcome of the war was no longer in doubt by September 1944 when Air Chf Mshl Sir Sholto Douglas was appointed to chair a Committee on the Composition of Air Crew, one of a number of similar committees set up to consider various aspects of the RAF's post-war requirements.¹⁸ It was charged with answering a number of questions, the most significant in the context of this paper being: which aircrew categories would be required after the war and what should be their relative gradings?¹⁹

Having consulted widely across the RAF, the Douglas Committee's report recommended that the (currently) thirteen categories and sub-categories²⁰ of wartime aircrew would be overspecialised for peacetime purposes and that these should be reduced to just five, tentatively identified as pilot, navigator/bomb aimer, flight engineer, radio operator (air) and air gunner/armourer.

As to relative grading, the committee recommended that all five categories, 'should be of equal status as regards conditions of service and rates of pay.' This degree of equality was justified on the grounds of the significantly increased level of technical skill that it was proposed to demand of the lineal descendants of the 'non-PNB' trades.²¹

While acknowledging that it was exceeding its brief, having spent some time reflecting on the provision of post-war aircrew, the Douglas Committee had considered it appropriate to offer some further thoughts on their status. It recommended that the granting of commissions should be restricted to the numbers actually required to do specific jobs, ie to fill leader posts on squadrons and associated appointments at station level, and on the specialist staffs at headquarters. That would mean that the vast majority of aircrew in the post-war air force would be airmen, and the committee considered that they should revert to, 'the normal Service custom of working up through the ranks.'²² This was not enlarged upon, but it plainly

implied removing the wartime pattern of 'instant NCOs and 50% to be officers' and reinstating something akin to the aircraftmen gunners of the 1920s, except that this time, even pilots were to be consigned to oblivion.

This exercise in thinking ahead was prompted by the realisation that in 1946, just as it had had to do in 1919, the RAF would have to deal with massive demobilisation and reorganise itself on a peacetime basis. One lesson that had been learned from WW I was that the national economy, which would be in the throes of switching from a wartime to a peacetime footing, with all that that implied in terms of cancelled military contracts, would be unable to absorb several million men overnight. To avoid creating mass unemployment, demobilisation was to be done in phases with release dates being broadly decided on a 'first in, first out' basis.

While the government's imposition of this formula had settled the demobilisation issue, the RAF had to find its own solutions to the problems of internal reorganisation. While the questions that had to be answered in 1946 were much the same as those of 1919, the circumstances in which they were being asked were very different. The Armistice of November 1918 had come as something of a surprise and, with no previous experience of how to run a peacetime air force, and no guarantee that there would even be one, it is perhaps understandable if some mistakes were made. None of these uncertainties applied to the end of WW II. A permanent air force was a matter of fact, not conjecture, and there was ample experience upon which to draw. The RAF should, therefore, have been able to make a much better job of its second transition from war to peace. So far as its aircrew were concerned, it failed to do so.

The nature of the problem.

As previously noted, the days of the omnipotent commissioned pilot, assisted, when unavoidable, by a part-time airman, were already over by the time that war broke out. Somewhat reluctantly, the RAF had accepted that its part-time aircrew would all have to become full-timers and that the observers would have to be sergeants. The introduction of these 'instant' SNCOs in 1939 had caused some protest which AVM Portal, had dismissed at the time. Nevertheless, it would seem that these objections had been registered. By early 1940 it

had been agreed that, like observers, all gunners would also have to be sergeants. This development was bound to lead to a further proliferation of very junior 'senior' NCOs which, in turn, provoked another wave of concern for the social and disciplinary well-being of the Service. AMP had, therefore, been obliged to reconsider the problem.

In February 1940, Portal suggested a scheme under which all airmen aircrew, including pilots, would become a discrete corporate entity. They were to have no executive authority outside their own (aircrew) community and were to live and mess together, segregated from 'proper' NCOs. It was proposed that they should all wear three chevrons but in a different colour from those of real sergeants. Among themselves, aircrew would be graded as Class I, II or III, the first two being distinguished by an appropriate numeral in the vee of their stripes, with selected Class I airmen possibly being authorised to wear a flight sergeant's crown.²³

Reading between the lines of this proposal, one can see that after only six months of wartime experience the RAF was already finding it difficult to work within the constraints imposed by the traditional military rank structure. The root of the problem was that, broadly speaking, seniority in rank was supposed to come with age and experience, and it implied an increased level of responsibility. Very few wartime aircrew could satisfy any of these criteria as most were very young, very inexperienced and responsible only for their own actions within a crew. Yet, if they were going to be able to handle complicated equipment, under fire in an airborne environment, aircrew needed to be very capable people. It followed that they needed to be accorded an appropriate level of pay and respect and, within a military society (of that era), this could be done only by granting them an appropriate rank. Portal's ideas were an attempt to break out of this straightjacket but, at the time, they were not adopted.

This problem was not confined to NCOs, of course, and, in some respects, it was even worse where officers were concerned. Reference has previously been made to changing attitudes towards commissions, notably in the context of the Ottawa Conference. Although the RAF had continued to accept that about 50% of its aircrew might have to be officers (which was, after all, its own invention) this had never been more than a rather hastily devised wartime expedient. Unfortunately,

the educational and behavioural standards, the degrees of enterprise, mental alertness and courage, and the sense of responsibility which were expected of an officer were much the same as those demanded of many aircrew. The inescapable conclusion was that (as the Canadians had argued) it had been entirely appropriate that so many wartime aircrew had been commissioned. If this approach were to be sustained by the peacetime RAF, however, it would make the Service permanently 'top heavy' with what would be, in effect, quasi-officers who had little, if any, executive function. Interestingly, it could be argued that this had actually been the case back in the 1920s and '30s when the majority of pilots had served for relatively short periods during which they had been required to do little more than fly their aeroplanes – yet most of them had done so as officers.

While Portal's suggested solution to the problem had been shelved in 1940, the problem had not gone away and there was a constant undercurrent of concern in the upper reaches of the air force hierarchy over the attitudes displayed by wartime aircrew. This had been observed upon as early as July 1939 when Bomber Command had noted that (the recently introduced) direct entrant full-time NCO aircrew displayed, 'a tendency to regard flying as their only duty in the Royal Air Force.'²⁴ Then again, in the course of a review of the situation, conducted by AMP, by then Air Mshl Sir Bertine Sutton, towards the end of 1942, he quoted AOCinC Bomber Command, Air Mshl Harris, as follows:²⁵

'These newly promoted officers and sergeants have little or no idea of discipline, and the old tradition that the NCO is the backbone of the Service has completely disappeared. NCO members of aircrew have now assumed large proportions, and attempts by more experienced NCOs to enforce any sort of service discipline are swamped by the multitude.'

In amplifying these remarks, Sutton added that aircrew tended to, 'consider themselves as a race apart who need take no interest in their aircraftmen or in general administration.' That said, this was hardly surprising as, until they gained their 'wings', all wartime aircrew had the status of mere aircraftmen. Only on graduation did they actually become NCOs or officers, and even then they were being provided with little in the way of instruction as to their wider responsibilities.

This was also true of those commissioned later; a transformation which involved little more than the purchase of a new uniform and transferring one's personal effects from the Sergeants to the Officers Mess, as often as not on the same station – there was no mandatory formal 'conversion course'.

These concerns eventually began to be aired in public via, for instance, an article in *Tee Emm* for August 1943 which pointed out that far too many wartime (mostly, but not exclusively, aircrew) officers knew too little about the airmen who served under them. More concrete initiatives had already led to the establishment of the Air Crew Officers School and the Air Crew NCOs School.²⁶

Sutton had also dusted off Portal's idea of abandoning the attempt to integrate aircrew into the traditional rank structure and accepting that they really were a different, special kind of animal that needed to be classified separately. While he appreciated the superficial attractions of such an approach, however, AMP also foresaw all manner of adverse practical implications and he advised the Air Council most strongly against attempting to introduce such a scheme in wartime; advice that the Air Council accepted.²⁷

Against this background, it was almost inevitable that the end of the war would be seen to present an ideal opportunity for restoring a more traditional balance between commissioned and non-commissioned personnel and, perhaps, for finding a means of avoiding the over-ranking of aircrew. In re-considering the idea that Sutton had rejected in 1942, Douglas' Post-War Manning Committee had suggested that the problem might be solved by treating aircrew in the peacetime air force as a new form of, what was loosely termed, 'sub-officer' who would fall somewhere between warrant and commissioned officers. This rather *outré* proposal was subsequently circulated to all Command HQs, both at home and abroad, and a wide cross section of opinion was sought at other relatively senior levels within the command structure, a total of sixty-eight addressees in all.

The response could fairly be described as inconclusive. Consider, for example, the replies to a question regarding the need for separate messes for sub-officers. Of those who had been asked, 43% had been in favour and 9% had been against. Unfortunately, since the remaining 48% had declined to offer any opinion at all, this had left the question

substantially unanswered. Similarly indeterminate views were expressed over the desirability of reintroducing short service commissions. Twenty-one responses were in favour; nineteen were not, leaving twenty-eight who either knew or cared not. Nevertheless, when reduced to a crude 'for' or 'against' assessment, 63% of the responses could be considered to have been broadly in favour of the 'sub-officer' idea. Most of those who dissented counter-proposed a reversion to a form of 'tradesmen air crew', some going so far as specifically to recommend the reinstatement of pre-war practice.²⁸

Devising the solution to the problem.

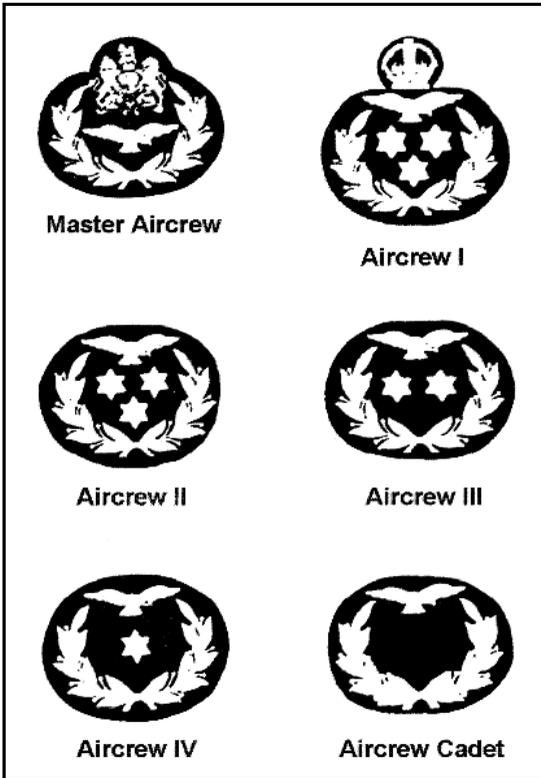
With the ending of the European war the urgency attached to the deliberations of the various committees increased and it fell to the recently appointed AMP, Air Mshl Sir John Slessor, to consider their recommendations and to adopt or adapt them as necessary to create a coherent policy. He concluded that, whatever proposal emerged, it would have to possess three fundamental characteristics. First, it would have to preserve the coherence of the RAF, that is to say, avoid its polarisation into air and ground factions.²⁹ Secondly, it would be necessary to reduce the wartime overprovision of officers to the numbers actually required to 'manage' the Service. Thirdly, something would need to be done about warrant and non-commissioned ranks which, so far as aircrew were concerned, had lost their true significance and become little more than pay grades.

AMP proposed to solve the first problem by accepting the five permanent aircrew categories proposed by the Douglas Committee, drawing *all* of the engineers, signallers and gunners from ground tradesmen who, after a period of flying duties, would revert to their original occupations. Since these men would be required to maintain currency in their original trades, this was expected to provide sufficient air/ground cross-fertilisation to ensure the desired degree of cohesion. On the other hand, the demands placed on pilots and navigators made it impractical to expect them to be dual-qualified as technicians. It was accepted, therefore, that most of them would have to be directly recruited as professional aviators, from which it followed that any serving airmen who were selected for pilot or navigator training would also have to be permanently remustered as aircrew.

There was no dispute over the second problem, since there was widespread agreement that it would be necessary to reduce significantly the overprovision of aircrew officers. It followed that the majority of aircrew would not be commissioned in the future, which led directly to the third problem, that of the status which they were to be accorded. In view of the Service's ambivalent reaction to the 'sub-officer' idea, this was rejected. Nevertheless, AMP recognised that aircrew were 'different' and that this difference needed to be acknowledged in some way. He also considered that a similar distinction should be granted to certain highly skilled technicians, mostly those of Trade Group I, especially as it was anticipated that three of the five post-war aircrew categories would be drawn from this pool of manpower. He proposed therefore to treat these tradesmen as a new class of 'artificers' and to muster them on the same semi-privileged basis as that envisaged for aircrew, perhaps also hoping by this means further to cement the cohesion between ground and air personnel.

So far as aircrew were concerned, AMP's concept involved new rank titles which would have a status equivalent to warrant and NCO ranks within the other traditional groups. While senior members of the new aircrew structure were to have notional executive authority over all airmen, it was expected that this would normally be exercised only within the group, Slessor anticipating that, 'in the ordinary way, I do not think that the question of executive command over airmen of other groups will arise.' To this end, he envisaged that aircrew (and artificers) would be mustered separately on parades and, to reflect their superior status, that they were unlikely to become involved in fire picquets, Orderly Sergeant and other such mundane barrack duties. His thoughts also embraced the need for segregated messes, dedicated rank badges and even the possibility of a different style of uniform for the aircrew, the old RFC 'maternity jacket' being suggested for walking-out dress.

While some of its details would be discarded, within Slessor's overall mid-1945 concept can be seen most of the key features of the scheme that was to be implemented a year later.³⁰ On the other hand, it also bore more than a passing resemblance to Sir Charles Portal's ideas of 1940 which, considering that he was CAS when the post-war plans were being laid, is perhaps not too surprising.



Although the post-war aircrew scheme had been implemented in July 1946 and the designs for the associated rank badges had been publicised in the following September, they were not formally introduced until June 1947.

Cranwell being re-established for this purpose.³² All other aircrew, including the majority of pilots, were to be non-commissioned but with entirely new titles and badges of rank.³³ In effect, the post-war air force was to have a novel, three-tier structure, comprising traditionally ranked officers, traditionally ranked airmen *and* 'aircrew'.

Once the necessary domestic facilities could be provided, it was intended that aircrew, who were to be regarded as a quite separate 'third' entity, would live in segregated messes. This idea harked back

The 1946 Aircrew Scheme.

The permanent arrangements for the provision of aircrew in the peacetime air force became effective on 1 July 1946.³¹ As expected, the only aircrew categories to be retained were those of the pilot, navigator, signaller, engineer and gunner.

While the rationalisation of aircrew categories had been relatively straightforward, the RAF's long-term plans were far less so and they proved to be very unpopular. The root of the problem was 'status', in that only pilots (and relatively few of those) were to be trained as officers, the RAF College at

to the separate messes which were to have been provided for the sergeants involved in trials conducted with NCO pilots in 1918.³⁴ While little had come of this idea during WW I, rather more progress was made in the late 1940s. Nevertheless, while separate aircrew messes had begun to be provided at some stations, they were not universally available before the scheme was abandoned.

While the Air Ministry Order that announced the new arrangements had stated categorically that aircrew were *not* to be referred to as NCOs, for matters such as marriage allowance, pension rates and the like, it was necessary to define some sort of equivalence with traditional ranks.³⁵ This was as follows:

Aircrew Rank	Airman Rank
Master Aircrew	Warrant Officer
Aircrew I	Flight Sergeant
Aircrew II	Sergeant
Aircrew III	Corporal
Aircrew IV	Corporal

In the case of individuals, the words Pilot, Navigator, Signaller, Engineer or Gunner were used in place of the generic 'Aircrew' in all of the above. Ranks were initially abbreviated as, eg PI, NII, SIII, EIV but from mid-1948 onwards Arabic numerals replaced the Roman ones, thus P1, N2, S3, E4.³⁶

All previously qualified aircrew were transferred to the new system in the minimum rank of Aircrew II. New intakes were to undergo their basic training as Aircrew Cadets and their operational training as Aircrew IVs followed by entry into productive service as Aircrew IIIs. Promotion to Aircrew II was anticipated after five (and Aircrew I after nine) years of service, which is to say that a typical aviator could expect to complete the whole of his first (and in many cases only) squadron tour as an Aircrew III – roughly equivalent to the man who looked after the Bedding Store.

That said, despite, their notional rank equivalence, aircrew were relatively well paid and there was a distinct differential in their favour, as illustrated by the following table, which shows daily rates of pay on promotion to Aircrew II or to sergeant in a ground trade.³⁷

Rank	Per day
P2 or N2	15/0d
S2(A), E2(A) G2(A)	14/0d
S2(B), E2(B), G2(B)	12/6d
G2(D)	12/6d
Sgt Group A trades	12/0d
Sgt Group B, C and D trades	10/6d

*See Note 38 for an explanation of the A, B & D annotations.*³⁸

Nevertheless, what had started out as a ‘sub-officer’ proposal had become so debased that many aircrew, those who would follow the initial batch of wartime veterans, were going to be more like ‘sub-SNCOs’, the majority being assigned a rank that equated broadly to that of corporal. Needless to say, the fact that it had significantly degraded the social status of aircrew, even including pilots, meant that the scheme provoked some resentment.

The limited initial implementation of the 1946 Scheme

Considerations of status aside, the new scheme offered poor career prospects because it generally involved short-term contracts. Although it had been envisaged that pilots and navigators would be directly recruited as such, in practice, rather than implementing this procedure in full from the outset, the Service was able to live off its fat. Under a scheme, which had been introduced at the end of 1945, wartime NCO pilots and navigators had been offered three-year extended service engagements.³⁹ While this approach sufficed for a time, these interim arrangements were suspended in April 1947 when they were superseded by the recruiting of direct entrant civilians on short (five-year) service terms, although there was some prospect of re-engagement for up to twenty-two years.⁴⁰

Similarly, while the 1946 Scheme had envisaged that all signallers, engineers and gunners (often abbreviated to ‘SEG’ when referred to as a group) would be internally recruited from airmen serving on twelve-year engagements, in practice this proved not to be entirely the case. Although a start was made on internal SEG recruiting, much of the short-term requirement was actually met by retaining wartime personnel under the same three-year extended service terms as were (initially) being exploited to provide the majority of pilots and



A navigator cadet in an Anson.

naviators.

The 1946 Scheme included the statement that, 'all aircrew in the post-war air force will be eligible for consideration for commissions.' This may have provided some grounds for optimism, but, in reality, the numbers involved were bound to be relatively small, because the

Service's immediate needs were largely satisfied by the retention of ex-wartime officers in all categories. Furthermore, the commissions available to most officers promoted 'from the ranks' offered terms which compared very unfavourably with those of the permanent commissions on which the new generation of Cranwell graduates were to serve.

The consequence of all of the above is that, despite the underlying aim of the new manning scheme, because the air force of 1946-47 was still largely composed of inherited wartime veterans, it still tended to reflect the wartime 50% (for pilots and navs) commissioning policy, the only difference being that the 'other' 50% were no longer sergeants; they were now Aircrew IIs. This was a transient situation, of course, and as the wartime officers, most of whom were serving on relatively short peacetime engagements, began to fade away, it was anticipated that almost all of their replacements would be in the form of the new-style 'aircrew'. This writer has not found a contemporary forecast, but it seems likely that, in the fullness of time, the wartime ratio of roughly 1:1 officers to NCOs would have become something more like 1:8 or 9 officers to aircrew, with the vast majority of the officers being pilots.

It should be stressed that this summary, represents merely an overview of what was a very complicated plan. Furthermore, it reflects only the regulations as they were originally announced plus a few of the more significant amendments; many other refinements had to be introduced as weaknesses, omissions and defects in the arrangements made themselves apparent.

The 1946 Scheme in perspective.

With the benefit of hindsight, we can see that much of the content of the 1946 Scheme seems almost deliberately to have flown in the face of more than thirty years' experience of military aviation, including two World Wars. If nothing else, these wars had surely demonstrated that many aircrew, and particularly pilots and navigators, needed to be officer-grade material. The RFC of 1914 had felt this intuitively and a trial involving NCO pilots conducted in 1918, had indicated that it had probably been right to trust its instincts.⁴¹ The RAF of the 1920s had more or less obliterated any remaining distinction between officers and pilots by making most of them one and the same. By 1940 it had once again been found



Three of No 611 Sqn's early post-war pilots sporting campaign medal ribbons and PII rank badges. L-R Frankie Traynor, Ray Griffiths and 'Doc' Morgan. (Peter Geldart via Aldon Ferguson)

necessary to commission large numbers of non-pilots, particularly observers, and by 1942 the Canadians were advocating the commissioning of practically *all* aircrew. Yet in 1946 the Air Ministry had simply dismissed all of this.

Despite its reluctance to learn from the past, the post-war RAF did come to terms with one aspect of reality in that it decided to retain a variety of specialist branches to handle non-flying matters.⁴² In practice, however, a large proportion of the officers in these branches tended to be pilots who had transferred to ground duties. Furthermore, as they climbed the ladder of success, it became standard practice for career officers (almost exclusively pre-war or wartime pilots⁴³) to alternate their flying tours with periods on the ground, during which they tended to monopolise the more prominent and influential administrative posts at station level. As a result, the RAF of the late 1940s (and 1950s) still looked remarkably like that of the 1930s and the casual observer could have been forgiven for thinking that it was still essential to be wearing a pilots badge in order to succeed in

almost any field.

While the RAF had not, strictly speaking, re-established its officer-pilot dominated *ancien regime*, even if it did rather look as if it had, its treatment of all other aircrew had certainly represented a step backwards. Although non-commissioned pilots and navigators were to be employed as professionals, albeit many of them on short-term engagements, the other three categories would all be ground tradesmen, all of whom were to fly for only a limited period. This was not quite a reversion to the part-time crewmen of the 1920s, but it was not much of an advance either, and the Air Council's decision to impose such low ranks on practically all aviators seems almost perverse. What the peacetime Service had needed was a scheme which would fulfil its own requirements whilst satisfying the aspirations of its people. What it had produced matched the first of these criteria admirably, but entirely at the expense of the second. In effect, the 1946 Scheme was an attempt to impose the concept of a small and carefully groomed corps of officer pilots who would exercise authority over 'the troops'.

Such an approach does work in an army or a navy, but an air force is neither of these. The fundamental nature of warfare on land or at sea means that, in a combat situation, large numbers of soldiers, or the entire crew of a ship, will be directly involved. Each soldier or seaman represents a small cog in a large machine which is operated by a handful of officers. In an air force it is *only* the handful of officers who do the fighting – or, to be pedantic, a handful of men, many of whom need to have much the same qualities as are traditionally associated with officers.

The officer/aircrew relationship is clearly a problem which is peculiar to air forces. Slessor's 1946 scheme was an attempt to solve it by imposing an army/navy style solution. It was simply the wrong answer. If the RAF was to have high quality aircrew it needed to recruit them from the same pool as its officers, and, if it was to be successful in doing that, it needed to pay them something like the rate for the job and, for pilots and navigators at least, that could be done only by giving them commissioned rank.

But in 1946 it is unlikely that such considerations would have been seen to present a significant problem. At the time the RAF still had thousands of surplus aircrew, adequate numbers of whom were

content to remain in uniform, especially as these veterans had some precariously preserved rights, provided that they could find their way through the chicanes of sub-sub-clauses built into the new regulations. Furthermore, conscription continued to provide a virtually unlimited supply of fresh manpower from which (it was anticipated) any gaps could be filled by persuading some of them to sign on as aircrew, this source being guaranteed in 1948 by the institution of peacetime National Service.⁴⁴ Some did, but not nearly enough.

The flaws within the 1946 Scheme.

The fact that the 1946 Scheme worked, for a while, does not mean that it was a success. Far from it. Despite its obvious appeal to the Treasury, it proved to be deeply unpopular, not least because of its divisive nature. The post-war UK may not have been a workers' paradise, but it was certainly a socialist democracy. The RAF's blatantly class-based system was far too much at odds with the tenor of the times to be tolerated for long.

There was another adverse factor at work too. After the trauma of the Great Depression, sandwiched between the devastating experiences of two prolonged World Wars, people sought security above all else. The *Zeitgeist* clearly called for a 'job for life with a pension'. The RAF was still offering short-term engagements, even to most of its officers.⁴⁵ Inevitably, the result of all this was that recruiting proved to be difficult.

So far as the SEG aircrew categories were concerned, there had been insufficient takers from among ground tradesmen. It seems that, to airmen who wished to pursue a technical career, a five-year stint of flying was perceived to be a detour during which colleagues, who had kept their feet firmly on the ground, would forge ahead. It had been intended to prevent this happening by requiring groundcrew to maintain currency in their parent trade while engaged on flying duties. While not literally reinstating the part-time crewman of the 1920s, this concept was close enough to suggest that it had been devised by men who had been familiar with that system in their youth and who had still not really come to terms with the fact that, regardless of which seat one occupies in an aeroplane, flying really is a full time job that needs to be done by professionals.

As in the 1930s, maintaining currency in two very different fields

proved to be more easily said than done. For instance, an engineer flying three or four sorties a day on the Berlin Airlift had quite enough to do without having to practise tin-bashing or keep his hand in on a lathe. Similarly, a Sunderland signaller flying lengthy patrols during the Malayan Emergency had little 'free' time to spend in the Signals Section or the Radio Bay.

Nevertheless, while such factors seem to have deterred many serving airmen from volunteering, there were still some who were keen to fly. Unfortunately, many of them wanted to fly permanently; but, for the SEG categories, this was not an option under the five-years-only provisions of the 1946 Scheme. In short, the whole concept had proved to be deeply flawed and in many respects quite unrealistic.

Since internal recruiting was failing to produce the numbers of aircrew required, the termination of the extended service scheme early in 1947 served only to exacerbate the problem. By the summer the practical implications of this situation were beginning to become apparent. In short, if all signallers and engineers (gunners were less difficult) were to be drawn from Group A (*see Note 38*) tradesmen, which was the stated aim, it would require *every* ex-apprentice radio fitter, and one in every three ex-apprentice airframe and engine fitters, to volunteer to fly. That would demand a substantial increase in the numbers of (very expensive) apprentices being trained, because many of them would be unavailable in productive service since they would be 'misemployed' as aircrew. The situation was further complicated by practical difficulties in the field of career management. While the exploitation of Group B trades provided an apparent solution, on closer examination this also proved to involve recruiting and management problems.⁴⁶

But, all of these difficulties aside, the fact was that tradesmen simply did not want to fly in the numbers required and a proportion of those who did volunteer fell short of the required medical standard or failed to complete their training. Having considered all of the options, AMP, still Sir John Slessor, was forced to conclude that it would be necessary to accept direct entrants into the SEG categories.⁴⁷

While the option of a flying tour remained available to those Group A and B tradesmen who wished to volunteer, direct entrant recruiting was reintroduced in the autumn of 1948. Furthermore, direct entrant SEG candidates were now being offered eight-year engagements (as

were pilots and navigators) with the possibility of further service to complete twenty-two years.⁴⁸ This abandoning of the air force's aim of 100% internal recruiting for five-year flying stints, struck the 1946 Scheme a mortal blow, although it took almost two more years to die.

Meanwhile, another problem was becoming increasingly apparent among pilots and, especially, navigators. While recruiting adequate numbers was proving to be difficult, because the terms on offer under the 1946 Scheme were so poor, it was, for exactly the same reason, also proving to be difficult to obtain people of the right calibre. By 1948, AVM Sir Basil Embry, who had overall responsibility for training these men, and who had been opposed to the new policy from the outset, had become so concerned about its long term effects that he was becoming increasingly strident in his attempts to persuade his colleagues to recognise the seriousness of the situation. In a 1948 memo to VCAS, for instance, he complained about, 'the material we are able to attract by offering a bricklayer's pay for a Meteor pilot...'⁴⁹

A few days later he wrote to AMP as follows:⁵⁰

'I am sure our present aircrew policy will not give us the men of the right quality to handle our present-day equipment, let alone the weapons of the future. I believe the right policy is to admit that the majority of flying posts must be filled by commissioned officers if we are to attract the type of men we want to handle the equipment. To think that it will be done by men of lower grade . . . can only give us a front line of poor quality which might lead to catastrophic results if it were ever put to the test of war.'

There can be little doubt that one of the causes for the disappointing response to the demand for internal recruits had been the widespread antipathy felt towards both the new-fangled aircrew rank titles and the unique range of badges associated with them. While it was the badges that generally provided the focus for dissatisfaction, the underlying problem was really one of status because the significance of the unfamiliar emblems was not widely understood and, as a result, many aircrew felt that that they were not being treated with the respect that they considered to be their due.⁵¹ This palpable air of discontent will have done little to encourage ground tradesmen to become aircrew.



Air Chf Mshl Sir George Pirie (AMSO) inspects a guard of, mostly bemuddled 'jam-labelled' P2s (and one N2), in the hairy No 1 uniforms, bulled boots and blancoed belts that were à la mode for aircrew in the late 1940s (and whatever possessed the air force to introduce those dreadful floppy, girlie-style berets?). Could this have been the occasion referred to in Note 53? (Mike O'Connor)

Meanwhile, aircrew certainly did not hesitate to make their views known to anyone who happened to ask their opinion including, when they could gain access to them, members of the Air Council. It is said, for instance, that when inspecting a group of Hastings aircrew during the Berlin Airlift, CAS, Lord Tedder, asked them what they thought of the new badges. The response was that, 'They make bloody fine jam labels, Sir.'⁵²

This sort of lobbying was certainly successful, as several other

luminaries who had 'had their ears bent' during visits to the coal face are known to have been sufficiently concerned subsequently to have written to AMP to ensure that he was fully appraised of the situation.⁵³ By mid-1949 the 'establishment' could have been in no doubt that aircrew did not like their new ranks or their new badges or their new, that is to say, their lack of, status.

The demise of the 1946 Scheme.

The initial post-war scheme for the provision of aircrew was abandoned in 1950. It was replaced by one which removed, 'certain disadvantages which practical experience of the present policy has revealed', which was probably as close as the Air Council could be expected to come to publicly admitting that it had got it badly wrong.⁵⁴ Ironically, the Chief of the Air Staff at that time was Sir John Slessor, who was obliged to preside over the demise of the ill-conceived system that he had introduced during his watch as AMP.

The most obvious outward indication that things were changing was the withdrawal of the unpopular alphanumeric soup of N1s, P2s, S3s, E4s, etc and the reinstatement of traditional ranks. All qualified non-commissioned aircrew were transformed overnight into (at least) sergeants. Another sign of the restored status of aircrew was that they were now to wear a gilt eagle in the vee of their chevrons.⁵⁵ The only element of the old system that was (and still is) retained, is the rank of Master Aircrew and the associated badge, albeit now with a gilt eagle in place of the original embroidered one.

As significant as the reinstatement of three stripes, was the introduction of flying pay at 4/6d per day for (sergeant) pilots and navigators and a shilling less for all other categories.⁵⁶ Flying pay aside, the reversion to proper NCO ranks had been accompanied by an early increase in basic pay. For a junior sergeant, the daily rates of pay were now eighteen shillings for pilots, navigators and air signallers (A), air engineers (A) and air gunners (A). Although the (B) and (D) suffixes had been dropped in 1948,⁵⁷ it was still considered appropriate to maintain a pay differential between SEG aircrew who possessed superior levels of technical expertise and those who did not. Thus, on initially gaining their flying badges, and until they upgraded their qualifications, direct entrants were paid 1/6d per day less than (A) graded ex-tradesman.

As important as all of the other changes associated with the terms of service introduced in 1950 was a realistic prospect of a full career. As ever, there were a variety of constraints and preconditions. The option of a five-year flying stint was still available to serving airmen but, depending upon their trades, some were now able to remuster permanently to aircrew duties. Direct entrant air signallers and air engineers retained the 1948 offer of an initial eight years of active service with the prospect of re-engagement for a total of twenty-two years as aircrew, but, if mutually agreeable, there was now the possibility of further service, usually in a ground trade, terminating in a pension at age 55. Similar re-engagement provisions applied to serving NCO pilots and navigators (although by this time recruiting in these categories was confined to officers).

The evolution of early post-war commissioning policy for aircrew.

In 1945-46 it had been anticipated that, once the transition from war to peace had been completed, the bulk of the air force's flying personnel would be provided by the new breed of 'sub-NCOs'. By relying so heavily on airmen aircrew in the future, it followed that there might be no need to reintroduce short service commissions. This, in turn, raised the tantalising prospect of an 'ideal' peacetime air force, that is to say, one which could be managed by a relative handful of officers, all of whom would serve on permanent commissions.

Nevertheless, the pros and cons of short service commissions were given due consideration and, to tide the air force over while these matters were being debated, extended service commissions were introduced in 1945. There was the usual plethora of terms and conditions (and later amendments) but, in essence, the scheme offered wartime officers terms broadly similar to those which were being made available to wartime NCOs, although of rather longer duration, four or seven years, depending upon individual circumstances.⁵⁸

It has been suggested above that the beginning of the end of the 1946 Scheme could be discerned in 1948 when the shortage of tradesmen volunteers had obliged the Air Council to forego its ideal of having an exclusively internally-recruited SEG workforce. In the context of pilots and navigators, the first symptoms of decay had actually appeared long before that. Unsurprisingly, many potential pilots and navigators had failed to appreciate the attractions of flying

as pseudo-corporals. So, to provide an added enticement, less than a year after the new concept had been implemented it had been decided to reintroduce the prospect of short service commissions. These arrangements, which were announced in February 1947, effectively replaced the transitional system of extended service commissions.⁵⁹

Short service commissions were available in practically all branches, but, so far as flying personnel were concerned, only to pilots and navigators. Furthermore, while the direct recruiting of short service officers was envisaged for some ground branches, this was not to be the case for GD officers, most of whom were expected to be obtained by commissioning selected direct entrant airmen candidates on completion of their flying training.

Unfortunately, the Order that re-introduced the short service commission had a sting in its tail, because it included a statement, tucked away in a footnote, that said: 'At the present time, there are no vacancies for short service commissions for navigators.'⁶⁰ This was to have a measurably adverse impact on morale.

The initial response to the new arrangements was disappointing and in the spring of 1948 AMP, by now Air Mshl Sir Hugh Saunders, took the problem to the Air Council. There were three causes for concern. First, the current standard engagement was too short to permit pilots and navigators to develop their skills fully. Secondly, because engagements were short, the turnover was high, which drove up training costs. Finally, and most importantly, the terms presently on offer were simply failing to attract the numbers required. The solutions to these problems were self-evident – longer engagements and a juicier carrot.⁶¹

From September onwards any civilian who applied for pilot or navigator training was offered, 'a guarantee of a short service commission', so long as he could persuade the Selection Board that he was officer grade material.⁶² Confirmation of the commission, which would now involve eight years of active service, was conditional upon satisfactory performance during, and completion of, training. This development did not preclude the direct recruiting of non-commissioned Ps and Ns, which continued as before. The new arrangements also made provision for pilots and navigators who had been selected as potential officers, but who had subsequently failed to make the grade as such, to transfer to non-commissioned terms on an,

initially, eight-year engagement.

Within the community of serving non-commissioned aircrew, the prospect of becoming an officer was still confined almost exclusively to pilots and navigators. The regulations did permit signallers, engineers and gunners to apply for commissions but, if granted, this usually involved a transfer to a ground branch, because the RAF already had sufficient wartime officers still serving on emergency commissions⁶³ and/or extended service terms to meet its limited requirements in the SEG categories. Some of these officers were engaged until as late as 1954 but a substantial proportion was due to leave the Service in 1949-50 so, to avoid a sudden exodus, they were offered the opportunity of extending their engagements to a total of eight years. This usually involved a formal transfer to short service terms but, whatever the arrangements, the retention of these veterans continued to restrict commissioning opportunities for junior SEG aircrew who wished to continue flying as officers.

This constant tinkering with commissioning policy during the later 1940s was symptomatic of the difficulties that the air force experienced in redefining itself during a period in which erstwhile allies, the USSR and China, became the potential opposition, leading to an increasingly polarised international political situation. By 1950 early post-war uncertainties had crystallised into an increasingly Cold War. This relative stability made it possible to take a longer-term view and thus to adopt a more radical approach to the provision of aircrew, including officers.

In November of that year, a few months after the restitution of traditional NCO ranks, it was declared that it was, 'the aim of the Air Council that all pilots and navigators shall be commissioned officers.'⁶⁴ This did not mean that any applicant with the necessary flying aptitude would automatically be commissioned but that the air force would accept for training only those applicants who were assessed as being suitable to hold a commission – which is not quite the same thing. This was a startling departure from the policy prevailing only three years before when the Service had been expecting to manage almost exclusively with mere P3s and N3s. The problem was that it had proved to be extremely difficult to obtain enough of either.

The air force was finally being forced to grasp a nettle which it had

been carefully avoiding for years. However unwelcome, it was being obliged to accept the fact that the essential characteristics required of a pilot or navigator were much the same as those which were demanded of an officer. There were probably some who would still have disputed the truth of this, but even if there were, these dissenters could hardly have denied that people with the educational qualifications, speed of reaction, resourcefulness and other qualities necessary to be pilots or navigators were a valuable commodity. If the RAF wanted its share of this commodity it would have to pay the market price. Within a rigidly hierarchical military structure, however, there was (at the time) an inextricable link between pay and rank. While some minor perturbations in pay scales could be tolerated, it would have been very difficult for such a system to endorse an arrangement which might have involved, for instance, a twenty-year old 'corporal equivalent' Aircrew III aviator being paid more than (say) a forty-year old flight lieutenant in a ground trade.⁶⁵

The idea of making aircrew a separate third entity had been, in some respects, an attempt to avoid, rather than to face up to, this problem. Since this concept had proved to be so unattractive, the RAF had had little alternative but to offer commissions to virtually all pilots and navigators, and even then it became necessary, as an added recruiting incentive, to top up their income by introducing specialist 'flying pay'.⁶⁶

Both at the time (1950), and in later years, there has been some debate as to the justification for paying people extra merely for doing what they had volunteered to do. Lest there still be any doubt, it is worth quoting from Air Ministry policy letters on the subject. One stated, in 1952, that, 'this additional emolument was introduced essentially to attract young men of high quality to take up flying as a career.'⁶⁷ In 1956 another said that the main purpose of flying pay was, 'to induce men possessing the high qualifications needed for the performance of aircrew duties in peace or war to undertake a flying career',⁶⁸ and this message was repeated more or less verbatim in 1958.⁶⁹ In short, flying pay was a recruiting carrot, plain and simple.

Flying pay aside, the imposition of what amounted to a universal commissioning policy meant that, to quote John James, the RAF had effectively adopted the slogan, 'if a man's good enough to be a pilot (*or a navigator* – *CGJ*), he's good enough to be an officer,' which, to

paraphrase Trenchard, was almost exactly the reverse of what the Great Man had been saying in the 1920s – that, ‘if a man were good enough to be an officer, he must also become a pilot.’⁷⁰

While it was now official policy to recruit only officers as pilots and navigators, large numbers of NCOs were still serving in these categories. Over the next several years, many of these men would be commissioned, on a variety of terms, but others would not, in some cases because they were considered unsuitable but often because they chose not to change their lifestyle. Inevitably, the numbers of non-commissioned pilots and navigators gradually declined, although they continued to fly until well into the 1960s, by which time most were ranked as warrant officers, ie as master aircrew.

As to the 100% officer policy – did it work? Yes – and No. By 1950, using the arrangements that had been in place since September 1948, about a quarter of the pilots, and almost half of the navigators, who completed their training were already doing so as officers. But, of the first 238 pilots and navigators to graduate after entering training under the regulations introduced in November 1950 only one failed to gain a commission.⁷¹ So the Air Council’s stated aim, ‘that all pilots and navigators shall be commissioned officers’, was clearly being achieved. But at what cost? The Command Research Officer at HQ Flying Training Command, F C Watts, concluded that:

‘This aim is being achieved by a lowering of the standard of personal qualities required for a commission. To reject aircrew pupils who, in the opinion of their instructors, are below previously laid down standards in personal qualities would result in a 40% reduction in the output of trained aircrew.’⁷²

Not exactly a palatable conclusion but, while this exercise had served to quantify the position, the outcome can hardly have been much of a surprise. In effect, the air force was trying to have its cake while eating it and it was going to have to live with the somewhat indigestible consequences for the time being. There were only two ways to restore the quality of the aircrew element of the officer corps. It would be necessary either to attract higher grade candidates or to reduce the numbers required, since that would permit the selection parameters to be raised.

The first option was a non-starter, as it implied the offering of an

unaffordably juicier carrot. Fortunately, it would soon prove to be possible to reduce the numbers required because, once the Korean crisis had passed, and in the wake of the 1957 Defence White Paper, the RAF began to contract – a process that in 2008 still appears not yet to have run its course.⁷³ This progressive reduction in the size of the air force reduced the numbers of aircrew that would be required and thus permitted the entry standard to be raised. Furthermore, this was accompanied by much longer engagements which meant that each individual would be spending more years in uniform, further reducing the demand for new recruits and permitting the Service to be even more selective. So, while the 100% officer policy may not initially have been entirely successful, this was another transitory state and the quality versus quantity equation gradually came back into balance.

Looking back, we can see that manning/commissioning policy had followed a very uncertain path over a thirty year period. Beginning with virtually all pilots holding commissions in 1920, it progressed via a *de facto* assumption that they would all be sergeants during WW II (the question was how many of them should *become* officers, not how many should *not*) and the ‘sub-NCO’ anomaly of the late 1940s, back to 100% commissions in 1950. But times had moved on and, although the great and good of the post-war air force tried hard to make the new breed of officer aviators conform to the fondly remembered patterns established by their pre-war predecessors, circumstances had changed, irrevocably. Trenchard’s air force had been run almost exclusively by officers of the General Duties branch – Jacks-of-all-trades who were responsible for practically everything. It was the increasingly widespread disinclination to accept this duality that had led Sir Bertine Sutton to conclude that some aircrew, ‘consider themselves as a race apart who need take no interest in their aircraftmen or in general administration.’ He was right, of course; that is how many aircrew think and Slessor’s scheme had been, at least in part, an attempt to legislate for this attitude. His approach had proved to be unworkable and his successors were equally unsuccessful in their attempts to persuade (a lot of) aircrew to look very far beyond the confines of the cockpit. Over the next half-century the ‘establishment’ gradually came to terms with this situation but traces of the DNA of Slessor’s idea may surely still be detected in the specialist aircrew scheme of the 1970s and in today’s professional aviator concept.

Notes.

¹ AMWO 706 of 8 September 1921.

² TNA AIR 20/6228. A lengthy paper (dealing with accident rates) on this file contains an analysis comparing NCO pilots (actually employed on flying duties) to commissioned pilots (ranked as squadron leaders and below), between 1925 and 1935.

³ TNA AIR 2/8179. On 18 July 1940 the Director of Manning, Air Cdre J W Cordingley, minuted on file A.82118/40 that, with respect to qualified pilots, the most accurate figures that he could produce to reflect the position on the outbreak of war were:

	Officers (Flt Lt and below)	Airmen	Total	% of NCOs
RAF	3,561	1,450	5,011	28.9%
RAFVR	886	816	1,702	47.9%
Total	4,447	2,266	6,713	33.8%

⁴ AMO A.17/1939 of 19 January.

⁵ Paine, J R; *Getting Some In* (Worcester, UK, 1990), p62.

⁶ TNA AIR 2/2968. Unreferenced letter dated 12 May 1939 from Ludlow-Hewitt to AMP, AVM C F A Portal.

⁷ Although not universally implemented, provision for conscription, initially confined to men aged 20-21 years, had been introduced in April 1939.

⁸ TNA AIR 2/2968. Unreferenced letter dated 22 May 1939 from Portal to AOCinC Bomber Command, Ludlow-Hewitt.

⁹ See Note 6.

¹⁰ TNA AIR 2/2075. Air Ministry letter 773716/38 dated 22 December 1939.

¹¹ *Ibid.* The agreed proportions were announced in the form of a 'memorandum on arrangements for the allocation of candidates to pilot, observer or other crew duties and their selection for commissioned rank', which was published under cover of Air Ministry letter S.41477/S.7(e)/1 dated 9 January 1940, and circulated widely to concerned units within Reserve Command.

¹² This involved, for instance, those who had originally been enlisted as Cranwell cadets, as potential RAVFR officer pilots, as RAFVR sergeant pilots and observers, as UAS entrants, as members of a UAS who were also sergeant pilots in the RAFVR, as direct entrant observers and those pilots (including many from the Dominions) who had signed up for short service regular commissions.

¹³ Although the formal cadet scheme had been suspended in September 1939, flying training continued at Cranwell throughout the war years, and a certain *cachet* still attached to a Cranwell-trained officer, even a wartime one, hence the initial commissioning quota allowing for *up to* 100% of the output from what was known as the RAF College SFTS (until March 1944 when it was numbered as No 17 SFTS, this unit later being superseded by No 19 SFTS).

¹⁴ TNA AIR 2/8179. Notes of a meeting held on 9 October 1940 under the Chairmanship of the Director of Postings, AVM P Babington.

¹⁵ The provision and training of aircrew for the RAF was not confined to Australia,

Canada and New Zealand, but only these three Dominions participated, along with the UK, in the joint training programme conducted in Canada. Broadly similar programmes were also undertaken in Rhodesia and South Africa, but under separate bilateral agreements with the UK.

¹⁶ TNA AIR 20/4101. Ottawa Air Training Conference, Minutes and Proceedings, 19 May-5 June 1942.

¹⁷ TNA AIR 6/63. Figures taken from a Note, dealing with the commissioning of aircrew, of 24 February 1943 by AMP, Air Mshl Sir Bertine Sutton, which was submitted to the Air Council as AC 15(43) and considered at its Meeting 4(43) held on 3 March.

¹⁸ Among these were: the Post-War Manning Committee and the Personnel Reserves Committee, both of which were chaired by DGM, AVM J W Cordingley; Air Mshl Sir Roderic Hill's Committee to determine the Future of the Technical Branch and a committee, chaired by Air Mshl Sir Philip Babington, to decide the RAF's Future Administrative Requirements.

¹⁹ TNA AIR 2/8638. The establishment of the Douglas Committee and the nature of its enquiries was publicised by Air Ministry letter S.103928/S.10(d) dated 27 October 1944.

²⁰ The thirteen were: pilot; navigator; Nav(B); Nav(R); Nav(W); air bomber; flight engineer; WOM(air); WOp(air) Grade I; WOp(air) Grade II; air gunner; air gunner/FM(A) and air gunner/FM(E); a fourteenth, the meteorological air observer, was about to be introduced.

²¹ Following a general revision of aircrew categories in 1942 prospective aviators were initially identified as being potential pilots, navigators or air bombers, with no distinction being drawn between them in the early stages, ie as 'PNB' material, or individually as flight engineers or air gunners. All Aviation Candidate Selection Boards were instructed to adopt the new procedure with immediate effect on the authority of Air Ministry letter A.372400/42/P.7 of 9 August 1942 (TNA AIR 29/603)

²² TNA AIR 2/2662. From the Report of the Committee on the Composition of Air Crew, published as S.103609 dated May 1945.

²³ TNA AIR 2/4456. Unreferenced letter dated 5 February 1940 from AMP, Air Mshl Portal, to all AOCinCs.

²⁴ TNA AIR 14/16. From BC/4140/TR, a letter to AOCinC Training Command drafted for AOCinC Bomber Command in July 1939. Whether it was ever sent is not known, but the fact that it was written clearly reflects contemporary concerns.

²⁵ TNA AIR 6/63. Note by AMP (Air Mshl Sir Bertine Sutton) submitted to the Air Council as AC (1)43 of 29 December 1942.

²⁶ Although it did not formally adopt its title until December 1943, the Air Crew NCOs School had, in effect, been operating as such at Whitley Bay since the previous January when the resources previously allocated to No 1 Wg of the disbanded No 2 RAF Regiment School had been diverted to the task. The eighteen-day course covered: colour-hoisting and parades; morale, welfare and discipline; 'admin & org'; PT and games; leadership and Ground Defence Training.

The very similar Air Crew Officers School (ACOS) was set up at Sidmouth in April 1943. It provided four weeks of general duties instruction for up to 1,500

students at a time. As with the NCOs, the course was primarily intended for newly commissioned EATS graduates who were supposed to attend between PRC and AFU – although this was neither essential nor exclusive; some EATS graduates by-passed the course while some officers promoted from the ranks in the UK were able to attend. In April 1944 the ACOS moved to Hereford where it remained until the end of the war.

²⁷ See Note 25.

²⁸ TNA AIR 2/8638. These examples are taken from PWMC/S.10/P/49, dated 17 March 1945, which had summarised the responses to some of the key questions previously posed by the Post-War Manning Committee in preparation for a forthcoming (its fifty-seventh) meeting.

²⁹ This concern reflected the pre-war Air Council's fear of internal division and thus its reluctance to establish a professional Technical Branch. As explained in AMWO 426 of 21 June 1928, for instance, it preferred that all matters relating to engineering should be handled by officers of the General Duties Branch (a synonym for pilots) so that, 'the danger is avoided of developing technical branches out of touch with flying and fighting requirements, and out of sympathy with the officers who fly and fight.'

³⁰ TNA AIR 2/8494. AMP laid out his conclusions in a ten-page draft paper, A.766116/45 of 25 June 1945. His proposals were refined on 4 July at a meeting, attended by most of the Air Ministry's Departmental Director Generals and concerned Heads of Finance Departments. As paper AC 31(45), the final version (which differed only marginally from the original) was submitted to the Air Council on 20 July (TNA AIR 6/65) and received its general approval on 27 August (TNA AIR 6/75).

³¹ AMO A.492/1946 of 6 June. Although the new arrangements were actually implemented by this AMO, which provided the necessary fine detail, a broad overview, explaining the rationale underpinning the scheme and making specific reference to the new rank titles, had been published as early as 19 December 1945 in a White Paper (Cmd 6715).

³² The cadet scheme was reintroduced in October 1946, the senior course in residence at No 19 SFTS being identified as No 45 Entry; see AMO A.58/1947 of 23 January.

³³ AMO A.498/1947 of 12 June introduced the rank badges to be used by aircrew, although the designs had actually been formally approved some nine months previously and publicised at that time; see, for instance, *Flight* for 19 September 1946. In the interim aircrew had continued to wear the conventional badges of rank to which they had originally been entitled. To be worn on the upper sleeve, the new badges were embroidered in light blue silk (with added colour where appropriate, as in the crown and the Royal Coat of Arms) on an RAF blue/grey ground. There was one other deviation in that the stars were in light blue only for aircrew having an (A) suffix, for those annotated with a (B) or (D) they were in white, (*see Note 37*).

³⁴ Wg Cdr 'Jeff' Jefford; 'NCO Pilots in the RFC/RAF 1912-1918', *Royal Air Force Air Power Review, Vol 7, No 2* (Summer 2004).

³⁵ AMO A.492/1946 of 6 June.

³⁶ AMO N.438/1948 of 3 June directed that Arabic numerals were to be adopted in place of Roman ones. This order had actually been specifically concerned with the

mark numbers of aeroplanes and aero-engines, and the designation of a variety of stores, but, following its publication, Arabic numerals were soon adopted universally.

³⁷ AMO A.514/1946 of 5 June published details of the New Pay Code.

³⁸ These suffixes were related to sub-divisions within the early post-war ground crew trade structure which was divided into A, B, C and D groupings for pay purposes. Broadly speaking, the A Group comprised highly skilled fitter-grade tradesmen; B covered the less skilled mechanics and their equivalents; C embraced clerical trades, and D unskilled aircrew; see AMO A.683/1946 of 8 August. While it was the intention that all new SEG aircrew would be recruited from the A Group and provision had been made, where appropriate, for serving ex-war-time aircrew to be graded (B), it was also necessary to apply a (D) suffix to cater for directly recruited wartime gunners who had no other trade qualifications.

³⁹ AMO A.1153/1945 of 5 December, the amended provisions of which were subsequently reiterated in AMO A.963/1946 of 14 November.

⁴⁰ AMO A.312/1947 of 17 April made 30 April the last date for applications under the extended service scheme, which meant that the last pilots and navigators to be engaged under these terms would still be serving in 1950.

⁴¹ See Note 34.

⁴² In addition to the GD Branch, and the equally long-standing 'professionals' of the Medical, Dental, Chaplains and Legal Branches, there were by 1947: Technical, Equipment, Secretarial, Education, Catering, Flying Control, Provost and Physical Fitness Branches plus the RAF Regiment. All of these were to become permanent features of the RAF. In addition, although they would be less long-lived, in 1947 the RAF also still had an Administrative and Special Duties Branch plus Balloon, Meteorological, and Medical and Dental Quartermasters Branches.

⁴³ *The Air Force List* for July 1947 records the names of 1,343 wing commander and squadron leader pilots compared to just seven senior officer navigators and four on the gunner/signaller list; there were no flight engineers above the rank of flight lieutenant. This was not entirely surprising, of course, as there had been no commissioned back seaters at all until 1940, so the most senior of them were only seven annual rungs up the career ladder.

⁴⁴ The National Service Act of 30 July 1948 consolidated all related legislation introduced since 1939 and thus effectively extended the current arrangements for wartime conscription (which had never been terminated) with effect from 1 January 1949.

⁴⁵ The age of an officer's retirement depended upon his rank and differed from branch to branch. In the specific case of GD officers serving on *permanent* engagements, a flight lieutenant could expect to be compulsorily retired at 41 years of age, a squadron leader at 43, a wing commander at 47 and a group captain at 50; see AMO A.278/1947 of 24 April.

⁴⁶ TNA AIR 6/94. The problems involved in the provision of SEG aircrew were laid before the Air Council Standing Committee by AMP, Air Chf Mshl Sir John Slessor, in his undated (but circa May 1947) SC (47)23. With minor reservations, his recommendations were accepted at the Committee's meeting 6(47) held on 2 June 1947 (TNA AIR 6/90).

⁴⁷ *Ibid.*

⁴⁸ AMO A.733/1948 of 9 September.

⁴⁹ TNA AIR 20/6638. Memo P/1/2/ACAS(Training) dated 17 February 1948 from AVM Embry, to VCAS (Air Mshl Sir James Robb).

⁵⁰ *Ibid.* Memo P/1/2/ACAS(Training) dated 12 February 1948 from AVM Embry, ACAS (Training), January 1947-April 1949, and previously, Director-General of Training since the autumn of 1945, to AMP (Air Mshl Sir Hugh Saunders).

⁵¹ A disgruntled RAF aviator enlarged on several aspects of the status problem in a letter published in the correspondence column of *Flight* for 10 February 1949.

⁵² Stringman, D C; *The History of the Air Engineer* (RAF Finningley, 1984), p66.

⁵³ The Secretary of State (Arthur Henderson) minuted AMP (Air Mshl Sir Hugh Saunders) on this topic on 22 December 1948 (TNA AIR 20/9087) as did AMSO (Air Chf Mshl Sir George Pirie) on 23 April 1949 (TNA AIR 20/9099).

⁵⁴ AMO A.545/1950 of 31 August.

⁵⁵ A public announcement referring to the imminent restoration of traditional NCO ranks had actually been made as early as 24 June 1950 in a statement by the Secretary of State for Air, Mr Arthur Henderson, addressing aircrew at Benson.

⁵⁶ AMO A.780/1950 of 14 December.

⁵⁷ AMO A.733/1948 of 9 September.

⁵⁸ AMO A.775/1945 of 31 July. The two periods on offer were: four years plus four on the reserve for non-regular officers, ie those commissioned from the ranks of the RAFVR on qualification or later; and seven years for ex-regular, ie pre-war, airmen who had been granted temporary commissions during the war.

⁵⁹ AMO A.127/1947 of 13 February announced that short service commissions were to be reintroduced to replace the interim extended service commission, 31 March being the last date for applications under the earlier scheme. Full details of the short service scheme were published in AMO A.592/1947 of 17 July.

⁶⁰ AMO A.592/1947 of 17 July.

⁶¹ TNA AIR 6/84. Conclusions of Air Council Meetings 27(48) held on 26 April 1948 and 40(48) held on 26 June.

⁶² AMO A.733/1948 of 9 September.

⁶³ AMO A.476/1939 of 9 November made early provision for relatively large numbers of ground tradesmen to be commissioned for wartime service. These regulations were progressively refined until they were restated in AMO A.366/1940 of 13 June in which the phrase 'for the duration of hostilities' was subsequently amended (by AMO A.834/1941 of 9 October) to read 'for the duration of the emergency'. Hence the term 'emergency commission', which referred to the specific arrangements whereby ex-regular, ie pre-war, airmen could be commissioned into the RAF while wartime recruits were commissioned into the RAFVR. The granting of emergency commissions was terminated by AMO A.169/1948 of 19 February.

⁶⁴ AMO A.750/1950 of 30 November.

⁶⁵ It could be argued that the specialist allowances and/or enhanced rates of pay that were drawn exclusively by aircrew represented the thin end of a rather obvious wedge that had long been inserted into this presumption. This wedge was driven further home by the introduction of Branch Commissions in the 1950s and Specialist Aircrew

in the 1970s. The rank/pay link was finally, and specifically, broken by the Professional Aviator concept of 2003 which permits a flight lieutenant pilot on the maximum rate to earn the same as a junior group captain who is not drawing flying pay.

⁶⁶ AMO A.780/1950 of 14 December. To be pedantic, flying pay was actually being *re*-introduced, although it had not been paid as such since 1919. Even that statement is only partially true because, until 1946, *all* officers of the GD Branch had always been paid at a different, and in most cases preferential, rate (shared with officers of the Technical Branch after that had been introduced in 1940) compared to those of other branches. With effect from 1 July 1946, however, this differential had ceased (see AMO A.514/1946 of 5 June) and thereafter flight lieutenants and above of all branches (with the usual exceptions of doctors, dentists and lawyers) were paid at the same rate. The only deviations from this rule involved GD pilot officers and flying officers, who were paid three shillings per day more than junior officers of other branches, and non-commissioned aircrew of all ranks who, under the terms of the 1946 scheme, were paid at a preferential rate compared to groundcrew (*see page 72*). Although these excesses were absorbed within the basic rate, rather than being paid as a separate allowance, a specific reference at para 17 of AMO A.514 makes it quite plain that it was *de facto* 'flying pay'.

⁶⁷ TNA AIR 2/13469. Air Ministry letter A.119154/52/F.2 dated 21 March 1952 from E C Wood (AUS at the Finance Branch) to five AOCinCs and CinCs who were having problems with ex-GD officers who had voluntarily transferred to the Technical Branch in response to a wartime appeal on the understanding that they would not be financially disadvantaged as a result. Some of these men, especially those who had maintained their currency, were claiming an entitlement to the recently introduced flying pay. These claims were dismissed.

⁶⁸ *Ibid.* Air Ministry policy letter A.119154/52/F.2 dated 21 April 1956 from K H S Edwards (USofS at the Finance Branch) to numerous very senior Service addressees making it quite clear that, notwithstanding the fact that officers of other branches might sometimes fly in the course of their duties, flying pay was exclusively reserved for members of the GD Branch.

⁶⁹ *Ibid.* Letter A.243640/56/F.2a of November 1958 from the Air Ministry to the War Office explaining the party line on the award of flying pay within the RAF.

⁷⁰ James, John; *The Paladins* (London, 1990), p147.

⁷¹ TNA AIR 24/2137. FTC/S.100926/RB, HQ Flying Training Command Research Branch Memorandum No 52, 'Commissioning Rates at Flying Training and Air Navigation Schools' dated 14 August 1952.

⁷² *Ibid.*

⁷³ In 1953 the RAF numbered in excess of 270,000 personnel to man 150 regular squadrons, ie not including a further twenty-six RAuxAF flying units. The target figure for 2008 is a mere 41,000 in forty squadrons.

THE CREATION OF BRITISH AIRBORNE FORCES AND THE BATTLE OF ARNHEM

Wg Cdr Colin Cummings

In 2006 Guy Warner, of the Ulster Aviation Society, suggested that the RAFHS might consider holding a seminar in Northern Ireland. The Committee had reservations over the practicality of this but two members undertook to travel to the province to deliver individual presentations in the spring of 2007. This is one of them; the other speaker was the late Air Cdre Henry Probert whose subject was Sir Arthur Harris.

One of the major battles of WW II, which has caught the attention of historians and the general public alike, was the attempt, in September 1944, to outflank the enemy forces in North West Europe and cross the Rhine in Holland, before swinging eastwards onto the north German plain.

This combined land offensive and airborne attack was Operation MARKET-GARDEN, which took place between 17 and 26 September, and has since been subjected to more analysis, debate and column inches of text than any comparable allied military operation.

Rather than discussing the battle itself, I intend to focus on the way in which the British formed and developed both their airborne forces and the means of delivering them into action, before considering some of the lessons which may be drawn from the operation.

During this presentation, I shall cover the following topics:

- The origins and development of British Airborne Forces between 1940 and 1944.
- The overall military situation in September 1944.
- The rationale underpinning the thrust into Holland.
- The lessons learned, which carried forward into the next airborne assault.

It is often said that, as with, for instance, computers and space travel, ideas precede the practical ability to implement the concept and the use of airborne forces falls into that category. Its origins can probably be traced back to as early as 1784 when, following the

successful demonstration of balloons in France, Benjamin Franklin observed that:

‘5,000 balloons, capable of raising two men each, could not cost more than five ships of the line . . . and where is the Prince who can afford so to cover his country with troops for its defence that 10,000 men descending from the clouds might not in many places do an infinite deal of mischief before a force could be brought to repel them.’

Of course, Franklin’s ideas took no account of the logistics of assembling and flying such a force nor the factors of concentration of effort or the impact of winds, etc. Nonetheless, the seed was sown.

It is common currency that Winston Churchill is supposed to have been the first to suggest the formation of airborne forces, when he proposed the creation of an airborne corps of 5,000 men. However, during May 1940, the topic was frequently aired in *The Times*’ letters page and on 4 June, the MP Frederick Cocks asked Anthony Eden, then Secretary of State for War, whether he intended to organise a corps of parachutists and gliders.

The formation of any such organisation carries with it a need to identify just what is required and it would probably be true to say that nobody had a very clear idea of what was actually needed or of how to go about achieving it. It must also be remembered that the tabling of this new idea was but one more problem for the military and air force planners to deal with, just a few days after the retreat from Dunkirk had been accomplished. Indeed at this stage there were still substantial numbers of British troops to be withdrawn from France.

So what were the main issues facing the Army and RAF staffs as they attempted to meet Churchill’s directive?

First, the Army needed to identify, recruit and train the troops that would be required to serve in a specialised new role – a role in which it was axiomatic that it lacked expertise; despite which, it tended to dismiss such military advice as was available. The Poles, for example, had significant experience in training both parachutists and glider pilots and a Colonel Marecki of the Polish general staff, having visited Ringway, presented the British military with a nine-page paper outlining solutions to many issues then current or anticipated. There were also problems with the allocation of manpower, because the kind

of men who might be suitable as parachutists were likely to be of the same calibre as those being recruited for the newly created Army commandos; indeed at one stage commandos were re-assigned en masse to be converted into parachute troops. Later, and having chosen to ignore the advice of the Poles when first it was offered, the decision was taken to convert existing units to the airborne role – both parachute and glider borne. This was done by the simple expedient of re-labelling a unit as ‘airborne’, clearing out the deadwood and injecting fresh manpower to its strength. In the case of the glider borne troops, however, there was a rather larger tally in manpower terms because these battalions were to be significantly larger than the ground infantry unit which spawned them; but more of that anon.

The RAF, for its part, was very lukewarm about the whole idea and, reluctant to allocate aircraft and personnel to the venture, it expended much energy in raising all sorts of problems, without seeking to solve them, possibly in the hope that if the whole enterprise foundered, they could say; ‘We told you so!’ The RAF also failed to identify the sort of aircraft which could be used for mass parachuting and completely ignored the two bomber/transport types in its inventory, the Bombay and Harrow, offering instead early versions of the Whitley. Even in this regard they fell short of their undertaking, in that only six of the twenty-one aircraft promised actually materialised. An example of the sort of attitude which prevailed was to state that there were no better aircraft available, but when a Whitley was flown into Ringway to be converted into a ground trainer, it was found to be of a more recent version and in significantly better condition than the flying examples provided thus far. When a request was made to retain this aircraft in flying condition, it took the system several weeks for permission to be granted. A spin off from this was that staff from the unit took it upon themselves to find late-model Whitleys sitting around doing nothing and to transfer them to Ringway. In this way, the unit was eventually to standardise on the Mk V, which was able to carry ten parachutists.

The Whitley was not well-suited to the parachute dropping role and all sorts of methods were tried to get the paratroops out of the aircraft in as tight a bunch as possible. At first, the rear turret was removed and replaced with a platform from which the paratrooper dived: later the method was to drop from a hole cut in the floor. It was only when



A Tiger-engined Whitley III of the Central Landing School.

the Whitley Vs became available that a stick of ten could be carried, prior to that it had been restricted to eight. Despite its limitations, the Whitley was used to deliver the first two small-scale airborne operations conducted by parachutists. The RAF never developed a dedicated paratroop carrying aircraft during WW II and it did not acquire a significant para-dropping capability until Dakotas were made available to No 46 Group. Even so, the major British parachute drops, at Normandy, Arnhem and the Rhine, were accomplished only through the availability of the C-47s of IXth USAAF Troop Carrier Command – the squadrons of Nos 38 and 46 Groups being assigned mainly to glider towing and resupply work, although some parachute dropping was undertaken.

However, I am jumping ahead. In their reluctance to become too deeply embroiled in airborne forces, their ‘airships’ were outflanked to a degree by one of the officers they appointed to help with the formation of the Central Landing School, later to become the Air Landing Establishment. He was Pilot Officer Louis Arbon Strange. Strange had been awarded the DSO, MC and DFC in WW I and, for flying an unarmed but serviceable Hurricane out of France and escaping from an attack by an Me 109, he won a second DFC in 1940, thus becoming one of a small band decorated for gallantry in both wars. Strange’s life is a fascinating tale in its own right but, for now, it suffices to say that when he arrived at Ringway, to find that nobody had the faintest idea of what was going on, he took himself off to

London. There he called on various old acquaintances and, having gained some idea of what was required, he returned to Ringway as a squadron leader charged with implementing the RAF's contribution to the project – the original appointee having, somewhat ironically broken a leg whilst parachuting.

Strange was undoubtedly a maverick, but it takes someone with his dynamic approach to make things happen and, by exploiting his 'old boy' network, he was instrumental in recruiting, as instructors, experienced parachutists and glider pilots and in arranging for the supply of parachutes that had been adapted for parachuting for its own sake, not solely for use *in extremis*. In fact he thwarted the RAF's 'let's not get too involved' approach and when the project began to show signs of becoming a reality, and those who had kept their heads below the parapet emerged to take control, Strange and others he had 'tainted' were marginalised. Nevertheless, Strange had the last laugh, because he eventually returned to airborne forces as Deputy Chief of Plans at Allied Airborne Army HQ under General Louis H Brereton and finished the war as a group captain. The Army side of the new enterprise was led by Major John Rock RE and these two men can be credited with much of the early success enjoyed by those setting up the airborne forces business.

At this stage I should offer a word of warning about the official history of airborne forces, written in 1949 by Colonel Terence Otway DSO. There are some quite important aspects of the trials and tribulations in the early days which are either not covered or are glossed over by Otway, harping back to my earlier point, there is almost no mention of the Poles and the contributions they made through their experience or the innovations they proposed eg; parachute jumping towers. Allowing that this is being written from the comfortable distance of some 60 years from Otway's work, I suggest two reasons for these oversights. First, so soon after the war, Otway may not have had access to all the information and second many of those involved in the early days, were of high rank by 1949 and we know that some of the goings on in the early years did not always reflect well on these officers.

An important element of airborne forces development was the provision of training and assault gliders and here we can see what can be achieved when one devotes one's mind and energies to a



Airborne troops boarding a Horsa.

programme.

Having relocated from Ringway to Haddenham at the end of 1940, the Glider Training Squadron (later No 1 Glider Training School) began work using civilian sailplanes and light aircraft as tugs but design work on the first assault glider was already in hand and, in just four months from specification to first flight, this had materialised as the Hotspur. In the event, the Hotspur proved to be unsuitable for its intended purpose, mainly because of its limited (eight-man) capacity, but partly because the Mk I probably flew rather too well – behaving, in some respects, more like a sailplane than an assault glider. However, with clipped wings and other modifications it became a very effective trainer and about 1,000 Hotspurs were eventually built to provide the backbone of the UK's glider pilot training programme, bridging the gap between elementary pilot training and the operational conversion units.

The second British glider, the Horsa, was also developed with some haste, seven months from specification to first flight. Much larger, than the Hotspur, it was capable of carrying 27 soldiers and their kit or a wide range of bulkier loads, such as a 6-pounder anti-tank gun, its limber and a jeep to tow it. The load carrying capacity of this glider actually drove a change in the number of soldiers in a rifle

platoon of a glider borne battalion to 27 and this spun on to making four platoons to a rifle company and four rifle companies to a battalion, whereas in a normal infantry unit it was three and three. The later Horsa II, had a removable nose, which made the task of loading and unloading vehicles a good deal easier.

The Americans provided the British with modest quantities of their principal glider; the Waco CG-4 Hadrian. This aircraft was of very different construction to the British gliders but it was used in Sicily and most of the remainder were shipped to the Far East (although ten were used at Arnhem). By way of a reciprocal arrangement, numbers of Horsa gliders were passed to the US forces in Europe.

Needless to say, there was always a mismatch between capacity and requirement and this was addressed in part by the third British machine, the Hamilcar. A team of 100 designers collaborated on this project, which proceeded at a more measured pace. Even so only eleven months had elapsed between start of work and first flight in March 1942, and it was so successful that initial flight trials were completed in a mere four weeks. The Hamilcar was the only glider which could carry the long-barrelled 17-pounder anti-tank gun and its impressive load carrying capacity meant it could carry a bulldozer or a Tetrarch or Locust light tank. As might be imagined, this glider, with its all up weight of 36,000 lbs, needed something pretty substantial to tow it into the air and this was to be the Halifax.

Despite the initial problems and uncertainties, a limited operational capability had become available as early as the end of 1940. This was exploited on 10/11 February 1941 when Whitleys of No 51 Sqn, detached to Malta, dropped a total of thirty-eight paratroops, some of them sappers, in southern Italy where they were to blow up the Tragino Aquaduct; a task which they duly accomplished. However, a Whitley involved in a diversionary bombing raid force landed on the very beach assigned to be the pick-up point from which the troops would be evacuated by submarine. The submarine was cancelled and the raiding party was captured but the enterprise had demonstrated the feasibility of airborne attacks, or, more precisely, and as we would say today, the insertion of special forces.

During 1941, the development of the airborne forces continued apace with much progress being made in formalising the division of responsibilities between the RAF and Army and establishing the

recruitment and training regimes.

For the RAF's part, they introduced the following:

- a. Elementary Flying Training Schools (EFTS) for Army pilots destined for gliders.
- b. A Glider Training Squadron, which evolved into a total of five Glider Training Schools, to give basic glider training to pilots graduating from the EFTSs.
- c. The expansion of the Central Landing Establishment to include glider and parachute training squadrons and a development squadron.

Over time these units expanded, changed their names, locations and precise responsibilities several times and it is not necessary to trace this evolutionary process here. Suffice to say that, in due course Nos 296 and 297 Sqns were formed and they, in turn, spawned Nos 295 and 298 Sqns, with a Wing HQ – No 38 – to control them. As the organisation matured and grew, the Wing became a Group in October 1943.

On the Army side of things, the early parachutists were formed into 11th Special Air Service Battalion – not to be confused with the SAS – and by the end of 1941, this unit had become 1st Parachute Battalion, three other battalions were formed later, as was 1st Parachute Brigade and then a Division was mandated, with Major General F A M Browning appointed as Commander Paratroops and Airborne Troops. The Polish Parachute Brigade, also formed in 1941 and was trained by the British, as were French and Belgian airborne units.

To administer the emergent force required an administrative umbrella which was provided by the Army Air Corps, which came into being at the end of 1941. It was to have two regiments, the first, the Glider Pilot Regiment, was established in February 1942 with two battalions (later retitled wings). It was joined by the second, when the Parachute Regiment was formally constituted in the following August.

In the meantime, and as already noted, the first operational use of British paratroops had taken place in Italy in February 1941; incidentally, the Whitleys had been led on this occasion by OC 51 Sqn, Wg Cdr Willie Tait, later to command No 617 Sqn, and it earned

him the first (of his four!) DSOs. It was a year before another parachute operation, the Bruneval Raid, was attempted. Major John Frost's company strength force was dropped from Whitleys of No 51 Sqn led by an equally prominent airman, Wg Cdr Percy Pickard, who had featured in the film *Target For Tonight*. This raid, *inter alia*, brought a Military Medal to Flight Sergeant Charles Cox, an RAF radar expert. While both of the early parachute operations had achieved their objectives, the first attempt to use gliders, an attack on the heavy water plant at Rjukan in Norway in November 1942, ended in disaster when both gliders and one of the Halifax tugs crashed in the mountains in awful weather conditions and the surviving troops were murdered by the enemy.

Events in North Africa conspired to see 1st Parachute Brigade deployed in an infantry role at the end of 1942. The Brigade strength increased with time and the 1st Airborne Division fought numerous actions in North Africa and was involved in the invasions of Sicily and Italy, before being withdrawn to the UK towards the end of 1943.

In the meantime, the expansion of airborne forces had continued and 6th British Airborne Division was formed.

From the RAF's viewpoint, one of the most testing enterprises was the ferrying of several dozen Horsa gliders from UK to North Africa in preparation for the airborne assaults on Sicily and the Italian mainland. There were two broadly similar operations. The first, Operation BEGGAR began on 3 June 1943 and involved No 295 Sqn towing Horsas from Portreath to Rabat/Salé in Morocco in a single 10-hour flight over 1,300 miles. Besides the risks of broken tow ropes, the weather and marauding Ju 88s, there was a significant element of fatigue and the gliders each carried three pilots. The second was Operation ELABORATE which started on 15 August; this time both Nos 295 and 297 Sqns participated and, although there were losses of both tugs and gliders, most got through. From Salé, there was another long tow as the gliders had to be moved east along the North African coast to Froha (Algeria).

The invasion of Sicily, Operation HUSKY, was the last time that British gliders were employed in the Mediterranean theatre (their projected use at Salerno was cancelled) and thereafter attention focused on NW Europe where, by mid-March 1944, the Order of Battle for No 38 Group was as follows:

- Four squadrons, each with 26 Albemarles, at Brize Norton or Harwell.
- Four squadrons, each with 26 Stirlings, at Keevil or Fairford.
- Two squadrons, each with 20 Halifaxes, at Tarrant Rushton.
- A Heavy Glider Maintenance Unit.
- Two Operational Training Units, one each at Ashbourne and Tilstock.
- A Heavy Conversion Unit at Tilstock and an Operational & Refresher Training Unit at Hampstead Norris.
- No 1 Parachute Training Unit at Ringway.
- A variety of other training, experimental, development and support units.

By this time, a second tactical transport Group, No 46, had been formed and this comprised Nos 48, 233, 271, 512 and 575 Sqns each equipped with the Dakota and based at Down Ampney, Broadwell and Blakehill Farm. Two more Dakota units formed during the summer; Nos 525 and 437 Sqns, the latter being a Canadian unit.

By this time all elements of the airborne forces were undergoing intensive training in preparation for the Normandy landings and for the squadrons of No 38 Group, this included participating in the delivery of supplies to resistance groups, mainly in France, in support of Bomber Command's dedicated special duties units, Nos 138 and 161 Sqns.

All of the transport squadrons were fully committed to Operation OVERLORD – the Normandy landings – and whilst their main task was towing gliders, the pathfinders, troops from 3rd Parachute Brigade and some specialist elements parachuted from Albemarles and Stirlings. Thereafter re-supply sorties continued throughout the summer, as did specialist tasks, such as supporting the Special Forces in their deep penetration work.

Within three months of the initial landings, the Allied forces had broken out of the beachhead and were fanning out in all directions. The British and Canadians were on the left, pushing towards Belgium and Holland, with the Americans on the right, moving east and south east deeper into France.



A Horsa down near the Caen Canal. June 1944.

The problem was the rate at which the ground forces were advancing, because they began to outstrip the capacity of their logistic back-up. There were, as yet, no large ports in Allied hands and even when Antwerp was captured, the banks of the river leading to it, were still held by the enemy. All supplies had to be unloaded across the beaches and whilst Mulberry was a great success it could not cope with all of the calls made on it. Furthermore, the distances that the Allied armies had travelled meant that it took several days to move stores from the coast to the front line and the eight of traffic that this required caused congestion; in short, supply lines were tenuous. This was the situation that led to the mounting of Operation MARKET-GARDEN.

Montgomery proposed that, if the Rhine could be crossed, it would allow a breakout into the north German plain. To do this would require the seizure of several intervening bridges, with the ultimate objective being the most northerly one – at Arnhem. As it was put at the time; three airborne divisions were to lay a carpet along the 60 mile route over which the ground forces would advance rapidly. The plan was ambitious and fraught with danger, since the enemy would hold the ground to both sides of the corridor and could be expected to react vigorously. It was thought, wrongly, as it transpired, that the area into which the forces were to thrust was relatively lightly held and by troops who were not of the best. The ground forces would be from British XXX Corps, led by the Guards Armoured Division. The airborne troops would be the 82nd and 101st US Airborne Divisions

and British 1st Airborne Division, all part of 1st Allied Airborne Army.

By this time 1st Airborne Division had recovered from the losses it had sustained in the Mediterranean in 1943 and it had been in training for just such an event. Because the composition of 1st Airborne differed from that of a conventional infantry division it is worth identifying its components.

Its teeth were provided by three brigades of infantry; 1st and 4th Parachute Brigades and 1st Airlanding Brigade. The six parachute battalions each comprised about 550 men split into three rifle companies and a support company controlling the mortars and medium machine-guns. The three battalions of the Airlanding Brigade, were much larger. With a strength of nearly 870 men, they comprised four rifle companies, each with four platoons plus a support company of nearly 250 men to man double the amount of support weapons (sixteen medium machine-guns and a dozen 3-inch mortars) but, importantly, there was also an anti-tank group of two platoons, with eight 6-pounder guns. Divisional artillery was furnished by a dedicated regiment with two dozen 75 mm pack howitzers and two anti-tank batteries comprising a mix of 6- and 17-pounder guns. Three Field Ambulance Units provided medical cover and there were Engineer, Provost and other supporting arms embedded within the division.

There were, however, two other elements of some substance that should be mentioned. The first was the two Wings of the Glider Pilot Regiment, which would provide a pool of some 1,200 men, all of whom would be available for alternative employment once their gliders had been landed and the equipment unloaded. The other unit was the Polish Parachute Brigade Group, a self-contained organisation, comprising three small battalions with integrated artillery, medical, engineering and other support. This force could muster about 2,200 men, but the British military hierarchy, with its inherent prejudice against foreigners, never utilised this unit fully and it was assigned a less pivotal role than it deserved or could have been expected to perform well in.

As is well known, despite much heroism, the operation did not achieve its aim. Since the story has been so well documented elsewhere, however, a detailed account of the action that ensued is not



Gliders on the ground at Arnhem, 17 September 1944.

necessary here. But I shall highlight some of the issues that arise.

First, the casualties. In all, some 1,900 allied personnel were killed in and around Arnhem and Oosterbeek. Of these, almost 330 (15%) were aircrew or air despatchers. Aircrew, as a group, suffered more

fatalities than any other unit, except the Glider Pilot Regiment; 214 against 229, whilst the air despatchers lost a higher proportion of men than did many of the infantry units deployed.

A question that is sometimes asked is: 'Was MARKET-GARDEN a failure?' In the tactical sense, of not getting the armies across the Rhine at Arnhem, the answer has to be, 'Yes'. However, it did mean that the allied ground forces had actually extended their front further than might otherwise have been the case. It then gave more options as to when, where and how to cross the Rhine, when that did eventually become possible.

The aim of MARKET-GARDEN was to get into Germany in the autumn of 1944 and then to swing eastwards across the north German plain. With hindsight, I think it would have proved costly and very difficult to have defeated the Germans in the west in 1944. Their capacity for improvisation and resistance was exceptional and even after the further 6 month's attrition forced on them through the winter of 1944/45, their final defeat was no walkover.

One aspect of the plan that I find difficult to understand, is General Browning's decision to take his Corps headquarters into the front line of the battle. By doing so, he absorbed airlift capacity, that was already at a premium, thus precluding its use for additional fighting troops who might conceivably have made enough of a difference to have permitted the force to seize the bridge on the first day. Furthermore, Browning's presence near Nijmegen posed problems for General Jim Gavin, who had to find troops to protect the HQ and its staff. Whether this was just Browning 'showing off' we shall never know but I believe that he would have made a more positive contribution to the actual conduct of the battle had he stayed in the UK.

Browning, whose personal bravery is beyond reproach, was not, in my judgement, high command material but was a product of the upper class system of preferment. He was always immaculately attired, some might say a dandy, who designed his own uniform and he was pompous. On one occasion, he admonished one of the battalion commanders for daring to speak to the King, without the latter having first asked a question! Furthermore, in my personal opinion, by using them as a scapegoat for wider failings, Browning's treatment of the Poles after Arnhem was disgraceful. It may be no coincidence that,

Browning was sent out east after Arnhem and progressed no further in the Army.

As to the lessons learned from the battle, most of these are self evident. A lightly equipped airborne force should not be deployed so far in advance of the ground forces that it cannot achieve its aim, either because it is not supported from the ground or because it takes the ground forces so long to reach the airborne troops that their gains are lost. Another lesson is that an airborne force needs to be delivered, with all its weapons, in as short a time as possible and in as concentrated a manner as possible. An airborne force is particularly vulnerable to counter attack by enemy armoured forces because it generally lacks the heavy weapons needed to counter the enemy's armour.

In the aftermath of MARKET-GARDEN, 1st Airborne Division never regained its full strength and, minus 4th Parachute Brigade, which never reformed, it was sent to Norway at the end of the war. Similarly, with the loss of over 200 glider pilots killed, and many more wounded or captured, the strength of the Glider Pilot Regiment had also been seriously depleted. Since the training machine was producing far more aircrew than were required at this stage of the war, the solution was to draft in some 1,500 surplus RAF pilots. These men, all of whom had been trained far more comprehensively than their army counterparts, were converted to gliders and given elementary infantry training so as to be able to conduct limited military tasks once they were on the ground. When Operation VARSITY took place on 24 March 1945, these, often reluctant, pilot/soldiers acquitted themselves well, but half of the 100 or so glider pilots who were killed on that occasion belonged to the RAF.

In summary, from a standing start, within just four years the British had created a substantial, well equipped, aggressive and experienced airborne force, supported by a large tactical transport force. Despite a lukewarm and rather lacklustre start, operations were being planned and launched within a year of its inception, specialist procedures and doctrines, were devised and these worked well in practice; indeed some of them remained in use until fairly recent times. The closeness with which the Glider Pilot Regiment, other elements of the Army Air Corps and the RAF were working by the war's end provides a model for the joint operations we see today.

‘Around the world I search for thee’:

**THE ROYAL, DOMINION AND ALLIED AIR FORCES
MISSING RESEARCH AND ENQUIRY SERVICE, 1944-1952.**

Stuart Hadaway (of the RAF Museum)

By the end of the Second World War, well over half of the Royal Air Force aircrew who had been killed in action, plus a significant minority of the ground crews, were listed as missing. Their location and fate was quite simply unknown, with all the resulting uncertainty and emotional trauma for their families. In round figures, 42,000 personnel were listed only as missing, and the fate of as many more was based purely on information supplied by the German government, whose reliability was less than ideal to say the least.

This in itself was not unusual, and indeed probably to be expected. One third of all British and Commonwealth casualties from the First World War were still missing at the end of that conflict, and nearly a thousand names had eventually been added to the Flying Services Memorial at Arras. These men had for the most part been killed in one narrow strip of Belgium and France, and in machines that crumpled on impact, unlikely to bury themselves deep in the ground or explode. Their successors during the Second World War flew more solid aeroplanes, and carried thousands of pounds of ordnance and fuel at twice or more the speed. A crash was likely to see wreckage scattered across the landscape by explosions, or driven deep into the ground by speed and weight. Either way, bodies would be more difficult to locate and identify. And, of course, these men might be missing, quite literally, anywhere. A raid from England to Berlin (let alone the oil fields of Rumania, or Northern Italy) involved hundreds of miles of dog-legging across Europe. Even assuming that the aircraft was on course, this left a swathe of hundreds of square miles under the bomber stream where an aircraft might crash. Similarly, this war involved a far higher proportion of operations over water, be it the North Sea or the English Channel, the Mediterranean or the North Atlantic, the Bay of Bengal or the Pacific.

So it is no real surprise that so many men went missing. They took off one night and turned towards Germany, or headed out across the Atlantic or the Mediterranean, or set course for a jungle clearing in

Burma, and were simply never seen again. The Air Ministry did its best to cope in the circumstances. From being woefully unprepared in September and October 1939, relying for much of their information about casualties on the BBC, the Casualty Branch had expanded and come to an arrangement with the Germans via the International Red Cross. Regular lists of casualties were exchanged, giving names, dates, locations, serial numbers, personal effects and ultimate fates of the bodies. With typical bluntness, the Germans called these *Totenliste*, or Death Lists. Perhaps inevitably, there were cases which, even when listed, did not provide definite identification. Airmen were not supposed to carry identifying papers or effects, while the composite fibre used for standard issue identity tags was flammable. Identities would be partial or inaccurate, with maybe only one or two members of a crew being identified even with near certainty. Equally, it could prove difficult after, for example, the crash of a fully laden bomber, to tell even how many people were on board, never mind separate out the bodies.

By late 1941 a considerable backlog of these cases had built up, and the Casualty Branch was coming under increasing pressure from the public for news of their missing relatives. Wg Cdr Burges of the Branch wrote a memo to Air Cdre Douglas Colyer DFC, Director of Personal Services, on this very subject. Although many of the families of the men who had gone missing during the Battles of France, Norway or Britain had been willing to accept the 'missing' label at the time, believing that some form of security reason prevented the Air Ministry from divulging their fate, a year on they were becoming more restless. They believed, as Burges explained, that 'an omniscient Air Ministry must have in its possession full details of what has become of aircraft and crews.' Because of this, he continued, the question arises in the Casualty Branch as to what steps can be taken, and how far we should go, in the conduct of enquiries into the fate of personnel who have been reported missing.¹

Colyer consulted the Air Member for Personnel, AM Sir Philip Babington MC AFC, advising that 'we want to make every effort to meet the wishes of the relatives',² but that he also felt that P4(Cas), struggling as it was to keep up with the growing casualty lists coming in from what was now a global war, did not have the staff to carry out such a task. Babington in turn passed the matter on to the Permanent

Under Secretary of State for Air, Sir Arthur Street MC, and the Parliamentary Under Secretary of State for Air, Lord Sherwood, for comment and advice. Sir Arthur, an infantry veteran of the First World War with a son in Bomber Command (eventually missing himself, only to reappear and become one of the fifty officers executed after the Great Escape), was ultimately responsible for public relations within the Air Ministry. His view was that 'it would be bad for morale if the idea were to get abroad that the Air Ministry was disinterested in the fate of people who were no further use to the Service.'³ He suggested the establishment of a small sub-section within P4(Cas), one serving officer and two clerical staff, to begin work immediately. Lord Sherwood, answering a day later, was in complete concurrence. Interestingly, he voiced the opinion that the view quoted by Burges about the 'omniscient Air Ministry' was due to the excellent work of P4(Cas) to date, implying that nothing should be done to inhibit this work now.⁴

With that, the Missing Research Section, P4(Cas), was formed, on paper at least. Manpower shortages and arguments with the Secretarial Branch of the Air Ministry over the provision of staff led to some delays. Two clerks had to be allotted from somewhere, and a serving officer to command appointed. The Secretarial Branch felt that as the Missing Research Section (MRS) was there to lighten the load on P4(Cas), then P4(Cas) should provide the necessary people. It took a terse explanation from Burges in late December 1941 to prise the needed staff from them, although within a few weeks of physical establishment the first serving officer, Plt Off Kinnaird, was posted away. Another of P4(Cas)'s officers, Flt Lt Alfred Peveril Le Mesurier Sinkinson, was seconded in his place, but only on top of his other duties. Even so, Sinkinson entered his new role whole-heartedly, beginning what would become an eight year long role as lynch-pin of the RAF's efforts to trace and recover missing aircrew.

Much of the work of Sinkinson and the MRS is still restricted and inaccessible to the general researcher, although thankfully a handful of cases were singled out by Sinkinson every quarter and sent to Burges to illustrate their work. Statistics are impossible to compile, or even rough numbers, except to say that that tens of thousands of cases were investigated; any, in fact, where there was any doubt as to the identity of a body recovered by the Germans or as to the location of someone

who had simply disappeared. The surviving reports naturally concentrate on the more successful cases, although a small sample of the many unsuccessful, or rather, unclosed, cases are also included. Sinkinson and his team were, for the most part, working on second-hand, incomplete information provided by the Germans, or less often from one of the national Red Cross organisations or via the Resistance or British Intelligence. Sometimes there was enough to confirm an identity, through one of three main avenues.

Firstly there was the personal possessions carried by airmen. The carrying of such items was of course forbidden, but thankfully the rule was regularly broken. A letter could be traced back to a sender and careful enquiries made to find out who the recipient was. The same was true of photographs of girlfriends or other 'sweetheart' mementoes. Such enquiries were always handled with the utmost discretion and sensitivity, and where possible indirectly. For example, *Totenliste 177* reported that 440176, Eden, M, had been washed up in Schleswig-Holstein on 14 August 1943. There was no information on how this identity had been established, which was unfortunate as LACW 440176 Eden was very much alive and stationed with 17 OTU at RAF Silverstone. Instead of contacting her directly, Sinkinson spoke to her commanding officer and discovered the identity of her fiancé, a Canadian flight sergeant who had gone missing in late July. This was enough to confirm his identity and the news was gently broken to LACW Eden. Jewellery was also a common clue. Engraved initials could easily be traced, as could other inscriptions. If the item (as, for example, watches often were) was dated, the date would be checked against the suspect's wedding dates, or 18th or 21st birthday dates and usually a match would be found somewhere. It was indicative of the heavy work load of P4(Cas) that these simple but time-consuming tasks had not been done before.

The second common key was equipment serial numbers. The numbers on almost any piece of kit from an aircrew watch to an aircraft component could be traced through the RAF's records to find who they had been issued to. In August 1942 Sinkinson reported on a case sent in by the Belgian underground, who had sent physical evidence to him via the SOE. These were a few fragments of leather and other materials from a crash site.⁵ Two of the leather fragments had markings – 'R61780', 'Oida' and what could possibly be 'RCAF'.

One of the miscellaneous items was the beginning of a spool of film marked 'Start 7 A/C 7520 S'. The serials on the film was traced, and came back confirming that it had been issued from 7 Sqn to Short Stirling N7520. The crew of this aircraft included R61780 Sgt Bracken and a Plt Off Hoidas. From this, the fate of the entire crew could be confirmed.

The third major source was laundry labels. These often contained a name or Service Number, but even if they did not, they would have the laundry's customer reference number. With the help of the professional organisations and journals of the laundry trade, Sinkinson compiled an extensive database of British laundry labels, enabling investigators to trace the individual laundry used from the style of their label. Then it was a simple case of checking their records to find out who the customer had been.

These were the lucky cases, though. It was not uncommon for the information gathered by the Germans or others to be meaningless, contradictory or garbled. In October 1944, Sinkinson was informing Wg Cdr Burges that 'The Germans have surpassed themselves with an entry in the *Totenliste* which states that an airman called 'Lhude Sing Cuccu' was shot down in a Typhoon on 10th January, 1944.' This time the situation was recoverable. Records showed that only two Hawker Typhoons were lost over France on that day. One of the pilots had been Plt Off James Bassett. Sources confirmed that Bassett had had a verse from the Elizabethan song 'Sumer is icumen in', recently parodied in the flight safety publication *Tee Emm*, emblazoned across his Mae West.⁶

These investigations could only go so far. Usually the descriptions were enough to get a handle on a crew but not the individual numbers. Others were clearly unsolvable unless the site could be visited and the bodies and wreckage examined by an expert. These cases were carefully recorded and filed away against a future date when this would be possible.

The chance came in late 1944. With the Allied advance across France it became both safe and practical to send a team to the continent to begin examining these outstanding cases. Six officers were selected, all men who had lived in France before the war and knew the country and the language, with drivers and a clerk and with Sqn Ldr William Mace Mair RCAF in command. Permission was

obtained from SHAEF, and in December 1944 the team arrived in Paris as the Missing Research and Enquiry Section. Here they came to the immediate conclusion that they were not going to be able to handle even a fraction of the outstanding cases.

In March 1945 Air Ministry Weekly Orders included 'A.247 – RAF and Dominion Air Forces' Missing Research and Enquiry Service', announcing the establishment of No 1 Missing Research and Enquiry Section. Between May and August, seven more Sections were established, in Belgium, Holland, Norway, Denmark, Germany and France. In late July and early August meetings were held at the Air Ministry to decide whether even this expanded service would be capable of carry-out their task to any worthwhile degree. There was also the question as to whether the task justified diverting men and resources from an already over-stretched RAF.

In this they were adamant. 'The Air Ministry', they stated, had 'an obligation to elucidate the fate of 'missing' personnel.'⁷ Partly this was due to the public interest in the issue, but there were other possible motivations too, such as the desire to do things differently as a further means of establishing their independent identity as the Royal Air Force. But whatever the cause, it was decided that 'the public interest in the missing problem [demands] that the highest priority be accorded to the requirements of the Missing Research and Enquiry Service.' It was proposed that the MRES would be radically expanded, with three main field units, one each based in France, Germany and the Low Countries, all under the operational control of P4(Cas) in London. Each would consist of 50 search officers, with individual transport and drivers, plus clerical staff. Significant in this was the specific mention of motor transport, something from which the ground forces suffered a perennial shortage.

Even this would prove to be insufficient, and by the end of the year five MRES Units had been established (see Appendix A), covering the whole of Europe and the Middle East. Over the course of 1946 and 1947, ten smaller Search Teams would also tackle Burma, Siam and Indo-China. Operational control would be held by P4(Cas), via Headquarters Missing Research and Enquiry Service North-West Europe, under Wg Cdr Eustace Fellowes Hawkins DSO. Hawkins had been a colonel in the Royal Artillery during the First World War and had settled in France, first as the Paris manager for Rolls-Royce Motor

only did this make them eligible for special allowances from the Foreign Office, it also gave them the physical support they needed to conduct operations for the further twelve months they needed to fully complete their work.⁸ In Greece, where search teams operated under Hawkins' personal control, supplies and manpower were gladly offered by and accepted from Communist guerrillas.⁹

Back in London, the Missing Research Section kept busy, feeding information to the field teams and collating the evidence sent back. They would double-check all cases and confirm the conclusions before they were closed with the identification of an airman, and the family informed accordingly.

Perhaps unsurprisingly, given all that was going on within the RAF between 1945 and 1952, the MRES never reached full strength, and often teams were hampered by lack of motor transport or other equipment shortages. Indeed, beyond disinfectant, rubber gloves and scalpels, very little specialist equipment was provided at all. Little training was provided, mainly lectures from MRS staff at RAF Gatwick as search officers waited to fly out to their units, but these were of limited use.

Most officers who joined the MRES were volunteers, although some (like the drivers and clerks) were simply drafted in. Few had any real idea of what the job entailed. For some, especially from the Dominions, it was a way to stay in Europe and see a bit more of the world, and from ground level this time. For others it was a way to recapture the lost comradeship of the war years:

'In February 1946 I was stationed at RAF Gatwick when I became aware of a unit that was forming there before proceeding to Germany. The formation of the unit, RAF, RAAF, RCAF and RNZAF, seemed like being back on [a] Bomber Squadron and the job they were about to undertake seemed to me as a job well worth doing.'¹⁰

Most, once they were in the field, developed a deep commitment to their task. After all, it was their comrades and (sometimes quite literally) friends whom they were recovering. In 1950 when the successor unit to the MRES, the Royal Air Force Graves Service, was closed down, six of the seven officers had still not taken their 28 days End of War leave, while the seventh was not eligible. Seven-day

weeks, and twelve- or more- hour days, were not uncommon in the MRES.

Once in the field, each Section broke up into a headquarters, and then five or six two-man teams – one search officer and one driver. Sections were assigned to a local government area, a *Kreis* in Germany, *Department* in France, etc, and the Air Ministry would send them copies of all the files they held on aircraft suspected to have been lost in that area. They would usually start by interviewing the local authorities – mayors, clerics, grave diggers, coroners, scrap dealers, police, and anyone else who may have been involved in the recovery of crashed aircraft or their crews. This would help them to compile a list of crash and grave sites, with known dates, aircraft types, and anything that was held about the identity of the crew.

Armed with this information, the task now became the location and positive identification of remains, human or otherwise. Even those graves already identified were opened and the original findings were verified, as often as not being wrong. Frequently whole crews would be in a single grave, identified by one or more names, and they would need laying out and identifying individually. Exhumations could not be carried out by RAF officers, though, and Army Graves Registration Unit personnel needed to be present to physically lift out the body. Then it would be left to the RAF to handle the examination.

The biggest difficulty was the lack of personal effects. Identity tags tended not to survive, and letters and other documents would also rot. Jewellery, cigarette cases, and such like were useful, but often would have been taken either by the Germans, or by the Russian prisoners of war they tended to use as burial details. The most usual means for identification was clothing: laundry marks with serial numbers or even names, different national flashes and cloth types, or similarly the different quality of cloth for different ranks, and crew insignia and brevets. If the remains could be traced back to a wreck, all the better, as serial numbers either on the aeroplane or on engines, fuel tanks, or other components, could identify that positively. Then it was a case of matching up the trades of the bodies to the crew list. Other clues could also be gleaned from the wreck too; one Bristol Blenheim crew, shot down in May 1940, were identified by the remains of a dog found in the wreckage. One pilot lost that day was known to frequently take his Cocker Spaniel with him on flights.¹¹



No 1 MREU, St Omer, March 1947. Standing: Goldstein, Brother Simon, Noel Archer; sitting: Millward (?), Ralph Laronde, and a surgical glove. (By kind permission Mrs A Archer)

A standard operating procedure was established quite early on, though. A set of very basic rules and guidelines was drawn up and periodically updated through the Missing Research Memoranda. Rules included the stipulation that the first thing any search officer would do on approaching a grave, and the last thing he would do before leaving it again, was to salute it. Another Memorandum pointed out that at the first sign of an airman's death being the result of a war crime, the case should be handed straight over to the War Crimes Commission for investigation. Although the original investigating officers would sometimes be involved in the subsequent detective work and any arrests and trials, it was purely in a supporting role to the WCC. Occasionally, MRES investigations would be hampered by local officials or witnesses having already either absconded or been arrested for war crimes. On several occasions, the bodies of murdered aircrew were recovered after those who had been responsible had been tried and executed.

Each region met with their own unique difficulties. Western Europe was comparatively straightforward. France recovered well

from the war; food was relatively plentiful and the local population friendly. Apart from waiting for areas to be cleared of unexploded ordnance and minefields, progress by No 1 MREU was swift. Local support made the job easier: a Madame l'Herbier of the French Red Cross provided lists of hundreds of Allied aircrew casualties that she had visited in hospital since the war began, including details on the burials of them or their crewmates (an effort for which she would receive an OBE).¹² The extensive resistance network had gathered evidence carefully during the war, and were an invaluable asset now, although their activities did cause some hiccups. It was not unusual to find an extra body in aircrew graves where a collaborator had been disposed of.

Belgium was similarly straight forward for No 2 MREU, although the devastation caused in the Ardennes complicated matters. In Holland they faced a more severe challenge. The harsh winter of 1946/47 made all movements difficult, while only two vehicles were available for use until one of the RCAF search officers managed to acquire some Jeeps from the Canadian Army in Germany.¹³ The waterlogged ground did have some benefits, though, as bodies and wreckage were likely to be that much better preserved and easier to identify. Again the local population, and even more so the Dutch government, made the job incalculably easier. The Dutch Navy, for example, loaned the MRES floating cranes to pull wreckage from the sea, something only manageable otherwise in Norway. There No 3 MREU found their formidable task made a lot easier by, in particular, the Norwegian Navy. Boats could ferry them up and down the coast cutting journey times by days, cranes could pull wreckage from fjords, and even on at least one occasion a Norwegian submarine was deployed to use its ASDIC to locate a submerged bomber. The mountainous terrain of Norway did cause some problems. Melting snow and glaciers meant that wreckage and associated bodies could be dispersed over considerable distances, and it was probably here that the MRES became most forensic, habitually relying on vegetation types found with bodies to trace them back to their original crash sites. In mid-1946 a special operation was even launched into the Arctic Circle, Operation Polesearch, to locate crashes in the far north.¹⁴ Two officers were despatched: Flt Lt Brooks, and the indefatigable Sqn Ldr Eric 'Chick' Rideal. Rideal, a graduate of Trinity Hall Cambridge and

Grenoble University, had worked as everything from deep sea trawler hand to GPO sorter before joining the RAF as an AC2 clerk in 1940. He was an undoubtedly resourceful officer, as he would prove not only in the frozen north of Norway, but also in 1948 when he was chosen as the only MRES officer allowed into Poland. This was despite having been arrested by the Russians for working on the wrong side of the border in Berlin the previous October.¹⁵ Working out of Berlin (allegedly being the last Western officer to leave before the Soviet blockade was imposed, although the unit records show that his last visit was two days *after* the blockade began), he spent the rest of the year travelling the length and breadth of the country recovering more than 400 airmen.¹⁶

In the south of Europe No 5 MREU had been working through Italy and the Balkans. Here the equipment shortage had been acute, not least because of the frequent attentions of the locals, who had a reputation for being light fingered. Crash sites and bodies were often picked clean as well, leading to great difficulties in identification. Despite this and the political upheaval that covered most of the region, work progressed fairly well. Transport between the Greek islands was slow, but sometime solved by hitching lifts on passing Royal Navy or other Allied ships. Those areas under Communist control were also cleared, with the Greek and (even more so) Yugoslavian Communist authorities providing every reasonable aid and more to recover aircrew.¹⁷ As these areas were cleared, the Unit moved north into Austria.

By the middle of 1947 virtually the full strength of the MRES was concentrated in Germany. Each Zone of Occupation (except the Soviet) had a unit attached, although it was No. 4 MREU in the British Zone who were there longest, and had the lion's share of the work. Their area included the Ruhr and, naturally, this was where the bulk of the casualties still lay. Sqn Ldr Bill Armstrong commanded No 20 Section, responsible for the heart of the Ruhr, and he outlined some of the challenges facing his team in January 1949:

‘During the war at least 1,577 aircraft were shot down in this area. Many complicated problems have therefore attended the conduct of Missing Research operations. It is so often that many crashes must be considered jointly when endeavouring to get a



Flt Lt 'Cobber' Keen examining wreckage for clues, Germany. (By kind permission Flt Lt Myhill)

ruling on one particular incident. The devastation and confusion resulting from frequent large scale air-attacks makes it impossible in many incidents to obtain the true facts of a case without lengthy and detailed investigation work.¹⁸

This is where the work of the MRES became a giant jigsaw puzzle, described by one of the clerks, Cpl Douglas Hague, as 'the biggest detective job in the world.'¹⁹ It was not just the scale of the task, but the location of it that would hamper the MRES. Sqn Ldr Armstrong commented on the devastation of the Ruhr; he did not point out who had devastated it. Perhaps inevitably the RAF officers on the ground faced some hostility, some of which would be less diplomatically confronted than others:

'One incident comes to mind where the bodies were buried in an allotment, and I arranged for an exhumation to take place and just before the appointed time my interpreter said to me that a lot of the local German people with allotments there were getting rather concerned that they would lose their crops. In



Inside HQ No. 22 Section, Krefeld, with paper files being transferred onto an area wall map. Flt Lt Myhill seated. (By kind permission Flt Lt Myhill)

view of the severe rationing they could do with the food. Well I said that the British people were experts in the field of rationing, and furthermore I am not going to allow a British airman to lay without a coffin in an unconsecrated grave one moment longer than is necessary.²⁰

Sometimes the obstructions were not as aggressive, but still took their toll. Search officers found a common pattern to any conversation with a witness before any practical start could be made on useful questioning:

‘No matter what strata of society a witness came from, their employment or background, three common factors would emerge. Sooner or later during their questioning they would continue to introduce in their comments: (1) They never belonged to the Nazi Party. (2) They never voted for Hitler and (3) They never knew or heard anything about concentration camps.’²¹

Only with this out of the way could work progress.

The comment on rationing brings up another important fact. Conditions in Germany after the war were harsh. The Great Hunger killed tens of thousands – about one in three deaths between January 1946 and June 1948 were due to malnutrition and exhaustion.²² Jobs as civilian staff for the MRES were much sought after, as the positions brought regular rations and at least one hot meal a day. In fact, many of the Sections began acquiring food, sometimes from less than reputable sources in Germany, more often from their colleagues in Holland or France, to supplement their staff's rations. A heavy social life also developed. In Germany Sections tended to remain permanently in one place, whereas elsewhere in Europe they had been transient. Search teams felt the natural need to let off steam, and considering the work they were doing no-one could blame them, and parties and heavy drinking was a regular feature of office life. Not a few MRES members ended up marrying German girls.

The MRES had only been intended to operate for one year, and at the end of that twelve months a running battle between P4(Cas) and the rest of the Air Ministry and Government began. The powers that be wanted search efforts to be brought to a swift conclusion, with resulting laying off of staff and reduction of budgets. P4(Cas) fought hard and kept the Service alive until 1949, when, in late September, No 4 MREU, the only unit still active, was officially closed down. By this time a total of 22,975 of the 41,881 personnel listed as missing since the end of the war had been accounted for, and either identified or buried as unknown airmen. Around two-thirds of this number had been accounted for in Germany.²³

Missing research did not end there, however. In November 1948 the RAF Graves Service had been established, although, again, work was slow to begin due to shortages of staff and resources, much of which was simply transferred over from the MRES. The RAFGS had two sections: No 2 Missing Research Graves Service (MRGS) based on an old airfield at Rotenburg, close to Reichswald, and No 3 MRGS at Rheinberg. Each consisted of four officers and was linked to the major RAF cemetery in their area. Their job was to co-operate with the Imperial War Graves Commission (IWGC) in establishing permanent burial plots. They would also undertake a small amount of investigative work, as new wrecks and remains were discovered.

Locating and identifying airmen had only been half the job. These



The end result: The silent rows of nearly 8,000 RAF aircrew at Reichswald Forest War Cemetery. (Author's collection)

men now needed to be concentrated into properly cared for IWGC cemeteries. Thousands of bodies would need to be exhumed, their identities confirmed for a final time, moved to an IWGC site, and then reburied and marked with the correct information. Up until the end of October 1950, when the RAFGS also fell foul of defence cuts, they would handle some 18,000 bodies in the Ruhr alone, with a gratifyingly low rate of mistakes.²⁴ Even so, the closing of the RAFGS was accompanied by appeals from its staff that the job was not yet finished.

With the decline of the RAFGS a Berlin Detachment (consisting of Flt Lt John Rhys Hughes DFM and bar, his driver, and a clerk) remained to deal with the final rump of cases still trickling through from the Soviet Zones. Wherever possible, bodies were recovered from the far side of the Iron Curtain (sometimes by clandestine means, much to the annoyance of the IWGC when they found out²⁵). In February 1952 Hughes was recalled to the Air Ministry to make his final report and officially close the RAF's missing research efforts. A veteran of 67 operations, many as a Master Bomber, Hughes had been with the MRES and its successors since 1945, most of that time in Germany. On making his report, his first request was that he would be allowed to return to Berlin and complete his work.

Casualty statistics are notoriously hard to compile, and even well-known figures like that of Bomber Command losses have been called into question of late.²⁶ Perhaps the most complete available from the time (although even here the figures do not add up) are those quoted by the Air Ministry in February 1951:

Missing at cessation of hostilities:	41,881
Accounted for (known burials):	23,881
Formally lost at sea:	9,281
No information:	6,745 ²⁷

Discrepancies aside, they do give a good impression of the achievement of P4(Cas) and its subsidiary units in tracing the aircrew who had been killed during the war. This was an age before computers, instant information exchange, or DNA analysis. With no precedent to follow, shoe-string resources, and only the most basic training and support, the missing research organisation accounted for more than three-quarters of the RAF's global missing personnel.

Notes:

- 1 TNA AIR 2/6330 Minute Sheet, Minute 1, 31 October 1941.
- 2 TNA AIR 2/6330 Minute Sheet, Minute 2, 1 November 1941.
- 3 TNA AIR 2/6330 Minute Sheet, Minute 4, 17 November 1941.
- 4 TNA AIR 2/6330 Minute Sheet, Minute 5, 18 November 1941.
- 5 TNA AIR 2/6330. Report No 2, Case V.
- 6 TNA AIR 2/6330/33a. Case I.
- 7 TNA AIR 20/9050/3.
- 8 TNA AIR 55/67/2.
- 9 *RAF Review*, February 1950, p10.
- 10 RAFM X002-9296/001.
- 11 RAFM X004-2400 Pirie file.
- 12 RAFM AC92/1/9 Part 2, Section B.
- 13 Flt Lt R Saint-Vincent, 'Missing in Action', *Airforce Magazine*, Fall 2005.
- 14 RAFM B3294 Short Summary of Operations Polesearch, Northern Norway, 1946.
- 15 RAFM B3294.
- 16 RAFM DC74/39/14.
- 17 For example, see: AIR 55/74/43.
- 18 RAFM B3295.
- 19 RAFM B3613.
- 20 IWM 015248, Reel 4, Flt Lt Colin Mitchell.
- 21 IWM 215 (3115), Flt Lt Colin Mitchell.
- 22 Jackson, R; *Berlin Airlift* (London, 1988) p24.
- 23 AIR 2/6330/42a.
- 24 TNA AIR 2/10346/171a RAF Graves Service – Final Report, Appendix A.
- 25 TNA AIR 2/10148/157 IWGC to S14(Cas), 14 February 1952.
- 26 Chorley, W; *Bomber Command Losses, Vol 9* (Hersham, 2008), Appendix A.
- 27 TNA AIR 2/9910 Missing Research activities, Oct-Dec 1950, report by S14(Cas), 3 January 1951.

Appendix A: Chronology and organisation of Units

Original Search Sections:

Unit	Date	Event
No 1 Section	Dec 44	Established by Casualty Branch Air Ministry, and sent to France (Paris)
No 2 Section	May 45	Established in Belgium (Brussels)
No 3 (Mobile) Section	Jun 45	Established to sweep France
No 4 (Mobile) Section	Jun 45	Established to sweep France
No 5 Section	Jul 45	Established in Holland (The Hague)
No 6 Section	Jul 45	Established in Norway (Oslo)
No 7 Section	Aug 45	Established in Denmark (Esbjerg)
No 8 Section	Aug 45	Established in Germany (Bunde)

Unit	Date	Areas
1 MREU	Aug 45	France and Luxembourg. HQ Le Mans. Task: Search Dunkerque to Brest, inc all Departments.
	15 Dec 45	All Sections in the field, although some delayed by mine clearance problems around the coast.
	Aug 46	Coast complete. HQ move to Chantilly, a section detached to Luxembourg.
	31 Jul 47	Disbanded at Chantilly, leaving a detachment in Paris.
2 MREU	Aug 45	Belgium, Holland, Czechoslovakia, French Zone of Germany. HQ Brussels. Initial search Belgium and Holland.
	Sep 46	Search of Belgium complete, Holland bogged down with bad weather. HQ moves to Schloss Schaumberg, Diez, Germany, leaving a section in Holland.
	Winter 46/47	Severe winter hampers operations.
	30 Sep 47	Begin disbandment.
	14 Oct 47	Disbanded.

3 MREU	<p>Aug 45</p> <p>Jan 46</p> <p>Sept 46</p> <p>Dec 46</p> <p>29 Feb 48</p>	<p>Norway, Denmark, American Zone of Germany. HQ Esbjerg (Denmark).</p> <p>Arrives in Denmark, begins sweeps of north Schleswig-Holstein and south Denmark. Hampered by weather. Four sections in Jutland, a section in Funen, two in Zealand, a section in Norway.</p> <p>Norway complete.</p> <p>Denmark complete. HQ moves to Karlsruhe, US Zone (same building as HQ American Army Graves Service).</p> <p>Disbanded in Germany.</p>
4 MREU	<p>Aug 45</p> <p>Oct 46</p> <p>1947</p> <p>Apr 48</p> <p>1 Sep 48</p> <p>Dec 48</p> <p>30 Sep 49</p>	<p>British and Russian Zones of Germany, Poland. HQ Hamburg. Search from north to south, with HQ moving through Wesendorf for central & south eastern areas, and Sudern (nr. Gotesloh) for south western (inc. Ruhr).</p> <p>A section allowed into Russian Zone, HQ Berlin.</p> <p>This section spawns Berlin Detachment, directly under HQ MRES.</p> <p>A section begins operations in Poland.</p> <p>All liaison officers, Motor transport & staff of MRES transferred to 4 MREU at Sudern.</p> <p>Polish section returns to HQ 4 MREU.</p> <p>With HQ MRES, disbanded.</p>
5 MREU	<p>27 Jul 45</p> <p>1 Jul 46</p> <p>1 Jul 47</p> <p>10 Aug 48</p>	<p>Created as Med/ME MRES</p> <p>Renumbered 5 MRES, under HQ MRES NEW</p> <p>HQ moves from Treviso, Italy, to RAF Klagenfurt, Austria. To come under Operation Control of OC MRES NWE, and Administrative Control of AHQ Austria.</p> <p>Two sections left in Italy and Sicily.</p> <p>Disbanded at RAF Klagenfurt.</p>

HENRY PROBERT 1926-2007

a Eulogy delivered by Sebastian Cox at Kingsdown Crematorium, Swindon on 8 January 2008

For those who do not know me, I am Sebastian Cox, the current head of the RAF's Air Historical Branch. I am greatly honoured that Audrey has asked me to speak about Henry today.

In Shakespeare's *Julius Caesar* Mark Antony in his funeral oration says, 'the evil that men do lives after them, the good is oft interrēd with their bones.' In Henry Probert's case this is most unlikely since he conveyed the good in himself to others and you would be hard pressed to find an evil bone in him. Perhaps an almost invisible trace might be present in a small metatarsal, but frankly I doubt it. The worst I ever heard him say of someone was that they were 'difficult'.

My problem today is that I have the daunting task of reflecting on the good. Daunting because, as so many of you know from personal experience, there was so much that was good across a wide spectrum of activity which filled a rich and varied life. The organisations which



Air Cdre Henry Probert

have benefited from Henry's presence on this earth include not simply and most obviously the RAF, but also the Air Historical Branch, the Royal Air Force Club, the RAF Rowing Club and the Leander Club, the Royal Air Force Historical Society, the School of Oriental and African Studies, various examination boards including that of the Seychelles, and on

right down to his local Probus Club and a host of other organisations too numerous to mention.

If all the world's a stage and all the people merely players then Henry's adult life was a play in three acts. Apart from his beloved family, the themes which run throughout, and which underpinned and inspired nearly everything he did, are service, education and history. He was himself a beneficiary of that most unfashionable, and sadly increasingly rare animal, a liberal education. His life is a monument to the benefits that it brought, for behind that slightly austere and serious demeanour lay a deeply human and humane man, and it was that understanding nature, linked to a thoughtful intelligence, which made him so good with people.

Act One opens with Henry coming down from Cambridge after reading history at Sidney Sussex College. He joins the then Education Branch of the RAF in 1948. His service was to take him all over the world, to famous and exotic RAF stations, such as Changi in Singapore and to more obscure backwaters –who here has heard of RAF Butzweilerhof in Germany, an early posting? From the start he brought a combination of professionalism, dedication, seriousness and sincerity to all that he did. And he brought something else, a deep commitment to educating others, not just officers, but airmen. Henry believed, rightly, that education and training were far from the same thing. He knew that an educated man or woman has infinite opportunities, where one who is merely trained is competent but limited. As well as Germany and the Far East his career took him to Northern Ireland, Whitehall, HQ Bomber Command, the RAF Staff College at Bracknell as a student and on the staff, and finally to the post of Director of RAF Education, sadly just at the point at which the post was downgraded from air vice-marshal to air commodore. I have little doubt that in an earlier time he would have been promoted AVM but it was not to be.

It is a measure of the man that a career in the service, distinguished as it was, was to be just the first act of a three act play. Act Two came with his retirement from the RAF when he became Head of the Air Historical Branch only the seventh person in its fifty-year history to hold the post. He brought to the job an undiminished enthusiasm for the history of the Service he loved and the meticulous research and writing skills of a fine historian. He set out to re-invigorate the study

of Royal Air Force history. He could have contented himself, as some of his predecessors had, with simply administering the organisation. But that was not Henry's way. He saw that the Service's history needed to be studied in a professional manner that reached both an internal and an external audience.

So it was that he encouraged outside scholars to engage with the Branch and in his quiet way he guided and influenced them. His efforts bore spectacular fruit – the late John Terraine wrote much of his seminal study of the RAF in the war, *The Right of the Line*, sitting at a typewriter in the room next to Henry's office. Professor Vincent Orange's raft of biographical studies of important RAF leaders were likewise the fruit of repeated visits and weeks of labour within the Branch. But you did not need to be a professor or a distinguished author to be welcomed to the club. A string of PhD students from across the world also passed through the doors – and he took a genuine interest in them and their work. Many now hold senior positions at UK universities, the Joint Staff College, and institutions across the globe. It was not simply the facilities he made available to such scholars, but, being Henry, the productive arguing over lunchtime beers in the pub, which encouraged, inspired and invigorated them. He did not simply allow them to research with AHB – he understood that engaging with a band of people who knew the subject was more fun and more productive than simply being in a large archive.

He also, developed strong links with sister organisations in the US, Canada, France, Germany, Australasia and beyond and ran his own international conference in AHB itself – all of which established an international reputation which we cherish and maintain to this day.

Whilst at AHB he was, along with Sir Freddie Sowrey, the man most responsible for the establishment of the RAF Historical Society, serving on the committee successively as a member and then as the Vice-President. He is the only member of the Society Committee to have served uninterrupted from its inception in 1986 until now. Yet with all that he still found time as Head to write himself, both contributing to and shaping a detailed internal study of the RAF in the Falklands War, and writing *High Commanders of the RAF*, the potted biographies of every CAS from Lord Trenchard to Lord Craig, a task which required him to engage with all those Chiefs still living, and the

relatives of those now gone, all anxious to enhance their own or their relatives' reputations – a brave, some might think foolhardy undertaking, but one which he negotiated with his usual diplomatic finesse.

But his was not a one dimensional life, as many here today well know, throughout it he continued to maintain a range of other interests, not least his duties as a committee member of the RAF Club, a position he had first taken up in 1974 whilst at HQ Bomber Command and which he held as an elected member, uninterrupted, for thirty years. His desire to extend scholarship and knowledge as widely as possible is epitomised by the major part he played in establishing the Club's very popular lecture programme and the very fine Club library. He also co-authored an excellent history of the Club itself. Being the fine historian he was, he told the story warts and all, and the volume is in many ways a fitting tribute to his own extraordinary contribution to an institution he loved, though you will find only two brief references to him in it.

He also maintained a lifelong interest in rowing, serving as Treasurer, Chairman and later President of the RAF Rowing Club, and subsequently being elected to the Leander Club in his beloved Henley-upon-Thames where all who visited his home will remember that the banister was an RAF oar. He was rightly proud of his Leander associations.

He relinquished the post of Head of AHB in 1989, and lesser men might have rested on their laurels, or in Henry's case his oars. Instead he embarked upon Act Three of his life. A period which was to be as productive as those which went before and which, in keeping with his life thus far, would produce work of lasting benefit to others. He now had the time to devote himself to his love of history. ably supported by Audrey he commenced writing a history of the RAF in the Far East in the war. During his own service at Changi he had written a short history of the station, and he always felt that those who served there and in Burma and Hong Kong during the war had been ill-served by history. He set out to right the wrong, and produced a fine and thoughtful book, *The Forgotten Air Force*. Once that was done, being Henry, he did not rest, but looked for a fresh challenge. And there are few greater challenges for the historian than writing a biography, and few more challenging subjects than the ever controversial 'Bomber'

Harris. His fine biography of Harris won widespread praise from the critics, and rightly so. It is beautifully written, and combines meticulous research, with insightful understanding and analysis. This was no hagiography, but a reasoned, well-judged and above all fair-minded book, no mean feat given the subject. It will stand the test of time and will be essential reading for any who aspire to understand the wartime RAF. It will live on and most assuredly not be interrēd with *his* bones.

After *Harris*, he wrote a history of the RAF in Gibraltar, and, aged 80, had recently embarked on a biography of Sir Michael Beetham. Sadly it was not to be completed. The curtain came down before he could take it forward.

We are left to mourn his passing. A man who quietly enriched the lives of so many who served or worked with him, or who were the beneficiaries of his generosity, his wisdom, his guidance or his knowledge. Often, it was only much later that they came to appreciate the true extent of the help and mentoring they had been given.

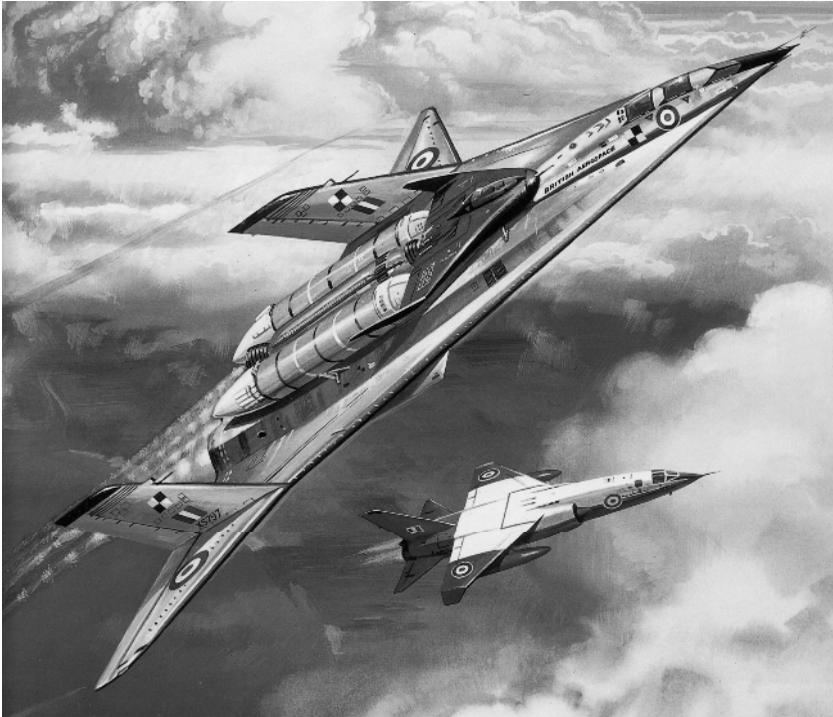
For a large part of his life Henry really did epitomise the phrase ‘an officer and a gentleman’, but he went on to further and enduring triumphs as ‘a scholar and a gentleman’.

Henry, unlike so many, you really did make a difference, and you will be badly, sadly missed by us all.

BOOK REVIEWS

British Secret Projects – Hypersonics, Ramjets and Missiles by Chris Gibson and Tony Buttler. Midland Counties; 2007. £24.99.

This is the fourth, and probably last, in Midland's series on British aviation projects (it has since embarked on similar undertakings recording the corresponding efforts of the Soviet and American aircraft industries). Like its predecessors, this 208-page, A4 volume is printed on coated paper and lavishly illustrated with drawings, artists impressions and photographs – of hardware, of projects that produced any, or of models of many which did not. The accompanying picture, which is featured on the dustjacket, is reproduced here as an example. It shows a projected BAC scheme which was intended to put an unpowered, rocket-boosted, lifting-body 'spaceplane' into orbit by giving it a flying start on the back of a 250-ton Mach 4 mother ship. This is just one of the dozens of equally sophisticated, sometimes



bizarre-looking, concepts that took shape on the drawing boards at Warton, Filton, Kingston, Derby and elsewhere that are described in the book. Some were satellite launchers, some were Mach 7 troop transports, some were combat aircraft but all required innovative propulsion systems so we are given an insight into ramjets, turboramjets, scramjets, flashjets, turborockets and LACE (liquid air combustion engines). Along with this we are introduced to exotic fuels, like cryogenic hydrogen, pentaborane, Sheldyne, and materials that might cope with the extreme environmental conditions involved – like tantalum. This is all pretty heady stuff but it is touched on only lightly. The discussion is probably at too superficial a level to satisfy an aerodynamicist, a structures engineer or an engine designer but it is just right for the casual reader, like myself – and there is no maths.

The second half of the book, the part which deals with the hypersonic aircraft projects, is a little depressing, as none of this work produced anything of any substance – not even mock-ups. At bottom this will have been due to a lack of funding and to changing requirements, notably a national decision to concentrate on building satellites and paying someone else to launch them, rather than building a launch system of our own. But the authors also suggest that the British aircraft industry, and the Ministries concerned, may also have been inclined to aim too high, too soon. Nevertheless, even if some of these projects did tend to resemble flights of fancy, they were, at least theoretically, feasible and one cannot help but be impressed by the fertility of the imaginations that were at work in the British aviation industry of half a century ago – most of these projects were conceived circa 1955 to 1965.

The first half of the book is a little more positive as it deals with missiles. There were a good many dead ends here too, BLUE STREAK, BLUE WATER, RED DEAN and BLUE ENVOY, for instance, but alongside these there were some successful programmes, like Firestreak, Bloodhound, Sea Slug and BLUE STEEL. All of these, indeed all British missile programmes, those that succeeded and those that failed, are covered. In the process, one begins to make sense of those rather indistinct official photographs that one remembers from the 1950s, featuring the launch of some pretty uninspired-looking rockets, with cryptic designations such as RTV-1 or XTV-2. It is all put together here, with lots of helpful diagrams showing how

these programmes sometimes evolved into viable weapons while others petered out.

The writing is a little colloquial at times, a trifle heavy on clichés, but it is easy to read and the descriptions are easily understood, which, since they are often dealing with very sophisticated concepts, they needed to be. Errors? Something went wrong with the caption to the top drawing on the back cover; the white Vulcan illustrated on p204 belonged to Bomber, not Strike, Command; and there is a reference on p43 which could have been to the Shackleton AEW2 or the Gannet AEW3 – but Shackleton AEW3 just doesn't work. None of these are of much consequence, of course, but there are a few other statements that may make you do a double take. I was, for instance, surprised to read that ASV-21 radar was 'being developed for [the] Buccaneer' (p92). Not impossible I suppose, but could Ferranti's LRMTS really have been used to designate targets for other systems? (p83) and a temperature of -40°C at 36,000 feet seems a trifle warm (p147 – a standard atmosphere would suggest something closer to a much chillier -56°C).

There is an excellent index, a very necessary glossary and a couple of very useful appendices. One explains the relationship between the original and the current designations of radar frequency bands and the other is the most comprehensive list yet published of 'rainbow' codenames. This is not confined to aviation projects so, alongside the more familiar GREEN SATIN and VIOLET PICTURE one can discover what RED BIDDY, YELLOW DUCKLING and BLUE BUNNY did – or might have done if they had been pursued to completion.

A valuable addition to an informative series, interesting, easily assimilated and made all the better by Midland's consistently high production standards.

CGJ

Royal Aircraft Establishment at War by Richard Dennis MRAS. Tutor Publications; 2007. £17.00 plus p&p from The FAST Museum bookshop, Trenchard House, G1 Building, Farnborough Rd, Farnborough, GU14 6TL.

Royal Aircraft Establishment at War was offered to me for review in characteristically kindly fashion by the Editor, who described its

handling of a complex story as being ‘aircrew friendly’. When he added that it was ‘extensively illustrated’, I knew that his description really meant ‘pilot friendly’ and that I could probably handle it! In fact, I did so with great pleasure, despite not being the most technically minded of readers. The 132-page A4 softback book offers a remarkable glimpse of the range and scope of the work of RAE at Farnborough during the Second World War and, by way of *obiter dicta*, makes a number of very telling points about the fate of the Establishment and its research work in the 1990s.

Richard Dennis writes with the authority of a RAE insider, having started his career as an engineering apprentice at the Establishment in 1942. This is an extremely readable, yet comprehensive account of the wartime years and the result is much more a cornucopia than a mere catalogue of activities and products. The early chapters offer the reader a concise history of the Establishment and provide a useful account of its structure and of the relationship of its departments and ancillary agencies. The pages describing the eclectic range of tasks and projects addressed during the war years provide a very clear justification for the assertion by the then Minister for Aircraft Production, Sir Stafford Cripps, that Farnborough was the nerve centre of Britain’s effort in the air during WWII.

This is a story which describes the inter-relationship of the research departments and the development activities of the RAE. There are some surprises implicit in what is written about the post-design engineering work done at Farnborough which might have been expected to have been the business of other establishments, notably TRE where radar development was concerned. Similarly, the relationship between RAE and Industry is one where the author makes clear his view of the important part played by the Establishment in developing new products, often at the very cutting edge. Farnborough’s own part in designing, developing and testing such critical components as gun and bomb sights is given due prominence, without ever detracting from the balance of this excellent book.

Richard Dennis writes clearly and with admirable brevity, given the range of developments and equipment described in his book. In a postscript, he sounds an understandable note of scepticism and concern about the future of aviation research, given the moves of the last 20 years which have transformed the arena in which RAE was

once both pre-eminent and of huge national importance. *Royal Aircraft Establishment at War* leaves us in no doubt that this was the case.

AVM Sandy Hunter

Spitfire Dive-Bombers Versus The V2 – Fighter Command's Battle with Hitler's Mobile Missiles by Bill Simpson. Pen & Sword; 2007. £19.99

In the summer of 1943, RAF Bomber Command made a major attack on the German rocket research facility at Peenemunde, inflicting serious damage on the establishment and causing casualties amongst the scientists working on the enemy's missile programme. If the British thought that they had fatally wounded the development of the rockets, then they sadly underestimated the German war machine's ability to improvise, disperse and rejuvenate.

In September 1944, with Paris in allied hands and the thrust into Belgium and Holland underway, whilst the US forces pushed eastwards towards the German border, it was probably understandable to believe that the menace of the V1 'Doodle Bug' was about to be removed and a major threat to home security neutralised: then came the V2!

The V2 was a remarkable piece of technical ingenuity. Whereas the Doodle Bug used a ramjet and travelled in a fairly flat trajectory until its fuel supply was exhausted, at which point it headed to earth, the V2 was fired into the upper atmosphere and at supersonic speeds travelled to its targets, arriving unannounced.

As the enemy was driven further away from the channel coasts and as fixed installations came under ever greater attack, the Germans were forced to rely on mobile launch facilities to conceal their V2s and safeguard them from destruction. The direction of the allied advances dictated that the missiles would be fired from The Netherlands and what followed was an early version of 'Scud Hunting' which became so important a part of the first Gulf conflict in 1991.

What is probably not known generally is the extent of the efforts taken by the RAF to search out and destroy the V2 and its launch sites and the serious problems faced in doing so; whether the poor weather, the shortening daylight hours of the winter or simply trying to locate

active sites before the Germans could shoot and scoot!

Bill Simpson's book, the title and sub title of which admirably encapsulates the subject matter, covers all these factors but the main part is given over to a detailed account of individual sorties, with comprehensive listings of crews and individual aircraft and also personal recollections of the aircrews involved and some of the Dutch population most directly affected by the conduct of the campaign. Unfortunately, there is little by way of contemporary German input, which would have made for a very well balanced account of this little known part of the air war. The book also focuses considerable attention on the bombing of the town of Bezuidenhout, on the outskirts of The Hague, which caused very significant civilian casualties.

The book is well illustrated with photographs of the period and some of the persons involved in more recent times and there are several charts and tables summarising the numbers of V2s fired. In all this hardback runs to nearly 260 pages including a comprehensive Index and Bibliography.

Wg Cdr Colin Cummings

The Handley Page Victor, Volumes 1 and 2 by Roger A Brooks. Pen and Sword, 2007. £29.99 each.

I wanted to like these books – I really did, but they are not nearly as satisfying as they appear at first glance. It is clear that the author, an ex-apprentice who spent much of his service working on the Victor, ultimately as a Crew Chief, and is still associated with the example preserved in working order at Elvington, is devoted to 'his' aeroplane and one sympathises with his desire to see its story told. It is evident that he has assembled more than enough reference material to achieve his aim but he seems to have been unable to digest it all and then regurgitate it as a coherent tale. Instead, he has simply published much of it verbatim. Some documents are reproductions of articles originally published in various 1950's editions of the *Handley Page Bulletin*, others, OR229/3 of June 1954, for instance, and a June 1955 assessment of the prototype by the A&AEE, are presented as photocopies of the typewritten originals. While this practice presents the reader with something of a kaleidoscope of font styles and point sizes, the text in these sections is reasonably error free. Unfortunately,

that is not the case where the author uses his own words, because there are numerous presentational inconsistencies (B Mk 1 or Mk B 1? – and is there a space between the ‘B’ and the ‘1’ or not?) and Sdn /Ldr (for Sqn Ldr) and spelling mistakes – ‘prroduction’; ‘resembled’ (he meant reassembled); ‘tailplane’ is one word not two (it is rendered both ways at various junctures, even both in one line on p119); there is only one ‘l’ in marshal and HP’s London factory was at Cricklewood (not Crinklewood) – omitted words, incoherent syntax, apostrophes where none was needed and the lack of an apostrophe where it was. There are odd instances of words being inexplicably split, as in ‘to gether’, ‘in corpora ting’, ‘them selves’, or not, as in ‘bombay’ (for bomb bay) and a plural ‘s’ being added where it was not required and omitted where it was. One can only conclude that Pen & Sword’s proof reader was having an off day – or, could it be that Pen & Sword have no proof reader?

The evolution of the Victor, especially the Mk 1, was quite complicated because individual airframes could metamorphose through a series of guises appearing at various times in their careers as a B1, B1A, B(K)1A, B1A(K2P), K1 or K1A. To clarify this, I would have described the differences between the variants and then listed the individual airframes, tracing their histories by recording, in chronological order, the dates on which each one underwent modification programmes that involved a change in designation and on which ownership passed from one unit to another. The author has elected to define the characteristics of a particular mark number and then to list those airframes that carried that designation, this exercise being repeated for each version. As a result, apart from a lot of the descriptive passages being repeated unnecessarily, an individual airframe may well appear three times, eg to trace the career of XH615 you have to flick from p200 to p210 to p214. To cap it all, the contents page serves only to muddy the waters, as the designations that feature there do not match those in the body of the book – and the page numbering is wrong into the bargain (in fact, on the contents page, all page numbers from 130 onwards are scrambled). So, not very user-friendly. Furthermore the content of these fragmented mini-histories is inconsistent – the dates of XH648’s four major servicings are all recorded, but they are not for other aircraft, and I am not sure how one is supposed to interpret some of the information that is

provided; for example, XA926's entry (as a K1), features the following '....[to] 57 Squadron 23/3/66: 28/6/66: 7/66: 8/66: 55 Squadron 3/6/74.....' Why include random dates, unassociated with any event? What do they mean?

Illustrations? Yes, oodles of them, 190+ photographs, seven excellent profiles by Dave Windle illustrating the various colour schemes sported by Mk 1s and 60+ graphs, layout drawings and wiring diagrams of various system. Some of the latter are rather small, but they are well-reproduced and I could read them, albeit with the aid of a magnifying glass – but that could just be me – and the photograph tally is a bit generous because some pictures appear twice.

I came across one or two eyebrow-raising 'facts'. Who, for instance, was the Air Chf Mshl Vernon Brown who was taken up for a flight in the prototype in July 1953 (p118) and on p196 we are told that twenty-two Lockheed U-2s were built (a bit short of the actual total I fancy) and that the RAF 'acquired five' of them – which is definitely something of a revelation.

All of the above comments relate specifically to Vol 1, which I have read from cover to cover. Vol 2, which I have only leafed through, is similar in presentation and provides lots more illustrations, only the tendency to use them twice is even more apparent here, at least a dozen instances in this case. Vol 2 describes the Mk 2 followed by a series of appendices dealing with Victor-miscellanea in general, including, for instance, two accounts of the aircraft being spun, an essay on underwing tanks and Kuchmann carrots, a description of AAR equipment, an interesting analysis of all major Victor accidents and a seven-page listing of Victor modifications. The latter enables one to glean, for example, that Mod 794 of May 1958 related to a (or the?) 'recuperator bleed', but is one then any the wiser?

That, in a nutshell, is the problem with these books. The author has collected a mine of information and seems to have been quite unable to resist the temptation to publish it, all of it, whether or not it was likely to be of any interest or value to the reader, and without doing nearly enough to present it in a format that can be easily assimilated.

That said, everything that you could possibly ever want to know about the Victor is here, and I learned a lot. I was, for instance, interested to discover that in the HP80, as originally schemed in 1947, all five crew members would have faced forwards on ejection seats.

One wonders just who it was who subsequently confiscated those intended for the rear crew and decreed that they should all be obliged to sit 'with their backs to the engine'. And who knew that, as late as 1951, it was still intended that, in the event of an emergency, the whole pressure cabin would be jettisoned for a parachute descent?

So – not all bad, but not good, and not nearly as good as it could have been with the assistance of a competent editor and, in that respect, Roger Brooks was not well served by his publisher – and when a book is marketed, especially books as expensive as these, the publisher's reputation is on the line, just as much as that of the author.

CGJ

Stirlings In Action With The Airborne Forces by Dennis Williams. Pen & Sword; 2007. £25.00.

If books published and column inches written, are any indication of the perception of the RAF's contribution to the 1939-45 war effort, then Spitfires and Lancasters have it by a long way, from an aircraft perspective, whilst Fighter, Bomber and Coastal Commands set the pecking order for organisations – 617 Sqn excepted!

By these measures, the air transport force and the Stirling come a long way down the pecking order and it was the lack of coverage of the air war in the Far East which, in part, led the late Henry Probert to produce his *Forgotten Air Force*.

For an air force which started the war with almost no transport aircraft, the RAF steadily developed its transport support force and, at home, No 38 Wg begat No 38 Group and eventually Transport Command, within which the Group was part. This expansion required much larger numbers of aeroplanes. Because, apart from a handful of Yorks, the British aircraft industry produced no dedicated transport aircraft during the war, much reliance was placed on the American Dakota, although these were supplemented by substantial numbers of British types adapted to serve in the transport role as 'stop gaps'. One such was the Mark IV Stirling, which, by deleting the nose and mid-upper gun turrets, providing parachute and equipment dropping orifices in the fuselage and attaching a glider towing bridle under the tail, transformed an obsolete bomber into a reasonable tactical transport which equipped several squadrons at home as well as others on special duties work abroad.

Two such UK units were Nos 190 and 620 Sqns and these were based for much of their shared existence at Fairford and Great Dunmow. Dennis Williams' book covers the period during which these units were employed on transport duties, the former being reformed at Leicester East having disbanded as a maritime squadron, whilst the latter changed roles and worked up at the same base, prior to both moving to Gloucestershire. In the case of No 620 Sqn, moreover, its history operating the Stirling in the bomber role is also covered.

The majority of the book, which is based on official records, amplified by personal accounts, covers the period from the beginning of 1944 to the end of the war. The accounts are frequently detailed and the reader gains a good sense of the sort of conditions and way of life which prevailed and some of the issues and frustrations faced by both air and ground crews. The book is illustrated by a large library of monochrome photographs, many of which are personal 'snapshots' which have not reproduced particularly well. The paired squadrons' heydays were the final eighteen months of the war and the reader is taken through sorties supporting clandestine operations, mainly in France and the low countries, and also the major airborne attacks in Normandy, at Arnhem and finally the Rhine Crossings, by which time both squadrons were based at Great Dunmow in Essex. The risky operations to Norway are also included and some mention is made of the Glider Pilot Regiment squadrons, which worked closely with the transport units that were to tow their Horsas into battle.

As with so many RAF aircraft and units, Nos 190 and 620 Sqns and their Stirling did not long survive the outbreak of peace and the Stirling gave way to the Halifax in the summer of 1945. No 190 Sqn disbanded early in 1946, whilst No 620 Sqn moved to the Middle East where it suffered the same fate in September of that year.

This book is an interesting account for anybody seeking to broaden their understanding of one of the other roles undertaken by the air force, apart from fighter, bomber and coastal. It also presents a good commentary on life at the sharp end, in a force where, whilst the pace of operations was generally not as hectic as in Bomber Command, the risks were comparable to those of the bomber force and were faced by crews not subject to the same structured tour length. This hardback runs to over 340 pages and includes a comprehensive Index and a Roll

of Honour, the latter being ordered by squadron and then chronologically, with aircraft and sortie details being described within the text.

Wg Cdr Colin Cummings

Bomber Command Losses of the Second World War, Vol 9 by W R Chorley. Midland Counties, 2007. £19.99

The first volume in Bill Chorley's monumental work was published as long ago as 1992 and it has taken him until now to complete his mammoth project. Volume 9 is a Roll of Honour for Bomber Command, including the AASF and the two bomber squadrons of the Air Component of the BEF, covering 1939-47. As such it provides what amounts to an index to the previous eight volumes. It is broken down by year and then, within each year, by 'air force', so that the RAF/RAFVR/AAF casualties are followed by separate listings of RAAF, RCAF, RNZAF, Polish, Free French, SAAF and Norwegian personnel plus WAAFs and others who died while attached to Bomber Command, mainly groundcrew working with Servicing Echelons but including, for instance, some civilians and a number of USAAF aircrew. Within each block, individuals are listed alphabetically, the details provided being full name, Service Number, rank, unit and date of loss, the latter providing the entering argument into the previous books where details of the incident, may be found; in practically all cases this includes the target, aircraft serial number, take off time, the names and fates of the rest of the crew and a brief account of the circumstances. It is all remarkably comprehensive and an admirable work of reference, although one does need to use it judiciously because later volumes include amendments to earlier ones as new or corrected information came to light. To take just one example, in Vol 3, covering 1942, the fate of the crew of a Wellington, X3203 of No 12 OTU lost on 1/2 June, is recorded as one fatality and four POWs, but in Vol 7, which is devoted solely to the OTUs, this is revised to two and three.

In the light of the above, I would strongly advise users to cross-check information within the series, which means that you do need access to the full set and the downside to that, of course, is the cost. Some volumes are currently out of print, but the whole series would have cost you about £150 – but even that is not unreasonable spread

over the fifteen years that it took to produce.

Each book in the series is rounded off by a statistical analysis of its content, for instance, losses tabulated by type (op, non-op, ground) for each squadron/unit and each Group. Vol 9's most interesting appendix provides an annual breakdown by 'air force'. This results in a total of 57,205 casualties, which differs somewhat from the 55,500 which is the usually quoted figure. Chorley provides a rationale for the difference, which is partly explained by his cut-off date, which he has extended to the end of 1947, to conform with the date used by the Commonwealth War Graves Commission, but most of the difference arises from discrepancies in the actual figures and Chorley does provide 57,205 individual names, so, without double-checking his entire database, one is inclined to think that he is probably right.

A most valuable contribution to the annals of the RAF and an indispensable aid to anyone contemplating writing the history of a Bomber Command unit.

CGJ

(Note – not a criticism, merely an observation. In recording the twenty-six casualties sustained in 1947, the author was confronted by ranks such as GII, PI, PIV and SII. He was not able to account for these and hazards a guess at what they might mean. He is not too far off the mark, but the fact that such a dedicated researcher is unfamiliar with the early post-war aircrew rank structure is one of the reasons why your editor thought it worth publishing the article at page 57. CGJ)

Bomber Units of the Luftwaffe 1933-1945, Vols 1 and 2 by Henry L de Zeng and Douglas G Stankey with Eddie Creek. Midland; 2007/8. £35 each.

Billed as 'a reference source', these two volumes represent exactly that – and a very good one. The content is arranged by *Geschwader* and then subdivided to provide individual accounts of its *Stab* and constituent *Gruppen*. The authors assume that their readership will already be familiar with the organisational structure of *Luftwaffe* units and the flexibility that this provided, permitting an individual *Gruppe* to be, for instance in the Balkans, while the rest of the unit was in Holland, the waters sometimes being muddied by the redesignation of

sub-units, III./KG4, for instance, becoming, III./KG30. Individually numbered *Staffeln* are not generally addressed as such, but when appropriate, reference is made to them within the text relating to their parent *Gruppe*. This sort of complexity will probably become self-evident to the uninitiated after a while, but I think that a brief initial explanation might not have come amiss. That minor omission aside, there is an absolutely essential two-page glossary which deciphers the many abbreviations that crop up and translates those fiendishly complicated German compound nouns that were used to designate units.

As is pointed out in the Preface, an estimated 97-98% of the *Luftwaffe's* records were destroyed in 1945. The authors first began to take an interest in the wartime German Air Force in the 1960s and it has taken until now for them to fill in the void represented by the almost total absence of what RAF folk would call ORBs. In the process, aside from drawing on published works, they have exploited the extensive holdings of primary source material in the archives at Freiburg, Washington DC, Maxwell AFB and Kew, and at the end of the chapter devoted to each *Geschwader* there is a list of references identifying the specific pages of books or individual documents; in the latter case, where available, these extend to Y Service intercepts and ULTRA transcripts.

No attempt has been made to 'write' these unit histories in prose, the information being presented in very succinct note-form. It covers (where known) dates of formation, of changes of location, of re-equipment and of disbandment plus occasional indications of numbers of aircraft on charge/serviceable. Interspersed with this basic data are notes on the operations being conducted, targets attacked (you will need a good atlas for the Eastern Front), losses and so on, and there is a list of *Kommodoren* and *Kommandeure*, with dates, although the accuracy of some of these is questionable. The authors make no bones about including information that may be imprecise but where they have done it, this is specifically acknowledged, and, in view of the depth of the authors' expertise, one is inclined to accept that, where they have been sufficiently confident to publish their best guess, it will not be that far off the mark.

Even using my best forensic techniques, I was hard-pressed to find any significant errors, although I did notice that a *Major* Werner

Dahlke is listed as commanding IV.(Erg)/KG1, which was a training unit at Munster, between May 1941 and July 1942, *and* II./KG1, which was operational in Russia, between November 1941 and January 1942, which doesn't seem likely (unless there were two Dahlkes).

Being a Midland publication, I hardly need to say that the production standards are of the highest quality. Within the constraints imposed by the original material, photographic reproduction is excellent; many of the pictures, and there about 450 of them, are printed full-page width, and in colour where appropriate. The subjects run from the mainstream He 111s, Do 217s and Ju 88s via the makeshift FW 200 and the troubled He 177, to the exotic Me 262 and Ar 234 and the backs-to-the-wall piloted V1s and piggy-back *Mistel* plus portraits of notable bomber pilots. The captions are all satisfyingly informative and one was surprised to read of the number of sorties that some of these men racked up; there are pictures of several who logged more than 300 and Hansgeorg Bätcher flew a remarkable 658 missions – and survived.

Until these two books reappear in a revised edition, they will, I am sure, come to be recognised as *the* reference work on *Luftwaffe* bomber units. Recommended.

CGJ

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All ranks can, and are, encouraged to become members of this Society. Membership is just £23 a year, £10.50 for Service widows and Life Memberships are also available. To benefit from these services and to support the Society's vital work on your behalf contact its Membership Secretary by telephone, email or letter – details opposite.

HALTON HOUSE OPEN DAY
10.30am-4.00pm, Sunday 7 September 2008



Commissioned by Alfred Rothschild in 1880, Halton House was completed in 1883 and for the next thirty years it provided the venue for lavish weekend house parties at which he entertained the cream of British society. On the outbreak of war Alfred offered the Halton Estate to the War Office and by September 1914 there were some 12,000 troops living under canvas within the grounds. From 1917 onwards Halton became the main centre for the training of air mechanics for the RFC, and later the RAF, its intakes including boys as young as 15, thus establishing the basis for the later peacetime apprentice scheme.

Alfred Rothschild died in 1918 and title to the property passed to his nephew, Lionel. By this time the estate was covered by acres of hatted accommodation and technical workshops and restoring it to its pre-war condition would have been inordinately expensive. Instead, Lionel was persuaded to sell the entire site to the Air Ministry and Trenchard used it to establish what eventually became the famous No 1 School of Technical Training.

Halton House became the Officers Mess and it still is. It is opened to the public annually and on 7 September 2008 there will be an opportunity to see the well-preserved Victorian décor in the presence of well-informed guides, many of them serving RAF officers. There will be a shuttle bus service connecting the house to The Trenchard Museum where visitors can learn more about the history of the station and of the RAF's Apprentice Scheme.

ROYAL AIR FORCE HISTORICAL SOCIETY

The Royal Air Force has been in existence for almost 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 inter-war 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, Dr Jack Dunham, Silverhill House, Coombe, Wotton-under-Edge, Gloucestershire. GL12 7ND. (Tel 01453-843362)

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 RAF winners have been:

1996	Sqn Ldr P C Emmett PhD MSc BSc CEng MIEE
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1999	Sqn Ldr S P Harpum MSc BSc MILT
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2002	Sqn Ldr S I Richards BSc
2003	Wg Cdr T M Webster MB BS MRCGP MRACs
2004	Sqn Ldr S Gardner MA MPhil
2005	Wg Cdr S D Ellard MSc BSc CEng MRACs MBCS

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
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