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RECOLLECTIONS OF A SECRETARY OF STATE FOR DEFENCE

The Rt Hon The Lord Healey CH MBE PC

I should perhaps start by saying that there is no specific theme to what I have to say. I was invited to speak in general terms about my time at the MOD and what follows amounts to a kaleidoscope of impressions. As the Chairman said in his introduction, I took over at Defence in October 1964, somewhat to my surprise, I have to say, but very much to my pleasure. As I drove down from Leeds, where I had been fighting my seat, I heard that Khrushchev had been forced to resign. By the time I had reached London I had also learned that China had exploded her first nuclear weapon. It looked as if I was going to be in for a very interesting time, and so it was.

I did six years at the job and there is much to be said for such a lengthy involvement. After three years in post, I was, as is usual, offered the opportunity to move to another position, but I knew that if I stayed for another three years I would actually know *more* than any of the people who would be advising me, because you poor chaps never get more than three years in the job. That may be more fun than staying put for six years, of course, but I think that we do pay a price in terms of lack of continuity.

Being Secretary of State for Defence was by far the most enjoyable period of my political career. It took me to exotic places which I would never otherwise have had a chance of seeing, like the long valley of the Hadramaut in Southern Arabia and the jungles of Borneo. But, above all, I met people, in all the Services, and Civil Servants, with whom it was a real pleasure to work.

There were two key personalities when I arrived at the Department. The first was Dickie Mountbatten, who served his last year in post as CDS with me. He was a brilliant, but extremely vain, man, and not all that easy to get on with, although we remained friends until he died. The other was his scientific adviser, Solly Zuckerman, who again remained a friend for life. But of all the Servicemen I met, the people I got on best with and liked the most were those of the RAF. In my opinion, the most outstanding airman in my time was Neil Cameron. He was the RAF member of my Programme Evaluation Group – do any of you remember the PEG? It was a group of very able middle

rank officers who were required to take an overall 'defence' view and thus to think completely independently of their parent Services. That very nearly cost Neil his career, because, after he left that job, the RAF simply wouldn't promote him. He saw no future in the rest of his career until, quite by accident, I met Andrew Humphrey, an air marshal at the time, walking down Whitehall and explained the problem. He said that he would certainly do something about it, and he did. As a result, Neil went on to become Chief of the Air Staff and finally Chief of the Defence Staff; he was an outstandingly able man, who tragically died of cancer only a few years after leaving the air force.

There were many others who remained friends for the rest of my life. Nebby Wheeler was one; Sir Freddie, of course. Paddy Coulcher**,** who was actually a little after my time, was another, and one of my best friends was Sam Elworthy, who was CAS for much of my time at the Ministry, although we rather lost touch when he went home to New Zealand after leaving the Service.

The biggest problem I had to face when I took over was funding, because the Cabinet decided that they were going to have to cut defence spending very heavily. That made life very difficult, of course, both for me and for everybody in the Services. I recall that when I used to talk to Staff Colleges I always started off by saying that I felt like the Indian Chief who, at the beginning of a very hard winter, called his tribesmen together and said, 'Now boys, I've two bits of news for you, one bad, the other good. The bad news is that there's going to be nothing to eat this winter except buffalo shit, and the good news is that there's going to be plenty of it around.' And so, indeed, there was!

The one thing that I absolutely insisted on – something which was immensely unpopular with the Foreign Office, of course – was that we could not cut defence spending unless we cut commitments as well. I had a terrific inter-Departmental fight with the Foreign Office over this, but, in practical terms, the eventual outcome meant ending our military role east of Suez. In truth there had been very little real point in our holding on to our colonial possessions east of Suez, because ever since 1870 it had actually been costing us more to *be* there than we earned *by* being there. In many cases withdrawal was strongly opposed by the local governments because the presence of British

Forces had acted as a stabilising factor. But the 1960s saw movements for national independence beginning to get a grip and the British troops who had been seen as a stabilising influence at the beginning of the decade gradually began to be perceived as an irritant. As such, their presence became increasingly provocative and, in the main, the local people wanted to be rid of them. I decided that the sensible thing to do, because this was still the middle of the Cold War of course, would be to concentrate our Forces in Europe and to withdraw most of those still stationed in the Middle and Far East. It was a very, very painful job, but I insisted on doing it, providing we got rid of the associated commitments at the same time, and we did. Under the prevailing circumstances, all of this was, I believe, inevitable but it was a very difficult time for the Services and, of course, for me as Defence Secretary.

Following on from the withdrawal, I had to make another painful decision, which was to do away with our big aircraft carriers. Indeed I had actually ordered the next one, CVA-01, myself. Since we no longer had troops stationed east of Suez, however, it was very difficult to justify the retention of the big carriers and they had to go. It later turned out, of course, that we were wrong, because most of our active fighting in recent years has been in relatively small campaigns, east of Suez and elsewhere, in which we did need carriers, perhaps not big ones like the CVA-01, but at least the 'through-deck cruisers', the first of which was actually ordered during my time. They have, I think, proved to be of immense value in permitting air power to be made available – in small numbers, of course – but we were not fighting the Russians or the Germans. This sort of thinking could be extended to other kinds of heavy equipment. Except for a World War, it could be argued, for example, that we didn't really need tanks; armoured personnel carriers were likely to be of more practical use.

But all of this has to be seen against the backdrop provided by nuclear weapons. I had been fascinated by nuclear weapons ever since the first bombs were exploded over Hiroshima and Nagasaki to end the war. I was absolutely delighted at this development because I had been in Combined Ops in the Mediterranean and was fully expecting to be sent out to the Far East to go 'island hopping' across the Pacific. To find that this problem had suddenly disappeared was a sheer delight!

Lord Healey considered the, almost bloodless, Confrontation with Indonesia to have been his most successful enterprise. While there was a constant flow of air reinforcements from the UK and elsewhere, the spearhead of any campaign would have been provided by FEAF's home team, represented here by a Tengah-based Javelin, Canberra and Hunter of Nos 64, 45 and 20 Sqns respectively.

Clearly, since then nuclear weapons have altered the entire concept of war and had a considerable influence on the way in which we structure our Forces. The fascinating thing about them, however, is that their real impact has been to make another World War impossible, because none of the Great Powers is prepared to risk nuclear retaliation. Even the disputes between India and Pakistan, which are fundamentally religious and racial, are constrained by the fact that both of them have nuclear weapons. There has been some fighting in Kashmir, of course, but both sides have been very careful not to let it go too far.

Because nuclear weapons have ruled out major confrontations, we have become accustomed to 'limited warfare', campaigns in which Special Forces have became more and more valuable. In our case this meant the SAS and the Special Boat Service, and, in order to deploy and support them, we needed helicopters.

The most successful campaign I ever carried out has been largely

forgotten, because it was so successful. It was in Borneo, the so-called ‘Confrontation’ with Indonesia, which lasted for four years. I am sorry to have to tell this air force audience that I wouldn’t permit the RAF to drop a single bomb. Yet we won, and with fewer casualties than on a Bank Holiday weekend on the roads of Britain, whereas in Vietnam at the same time the Americans were fighting a war which involved massive bombing operations and they lost that one with millions of casualties, on both sides. I am convinced that heavy bombing has very little application in the Third World because it tends to make more enemies than it kills; that was certainly the American experience in Vietnam.

I think I felt closer to the air force than to the navy or the army when I was Defence Secretary because, in those days, the navy was run largely by people who came from old naval families which happened to live near some of our big naval ports. Similarly, the army was run to a great extent by old families, very often very senior in rank. One of them, whom I first met during the war, was to become a very close friend later. Shortly before landing in Sicily in 1943 we stopped half way across the Mediterranean and the ramp of our LST was let down to permit us to bathe – no bathing costumes, of course. I found myself standing next to a very skinny Guardsman. We chatted for a while and became friends. The next time I met him, he was the Director of Military Intelligence when I was Secretary of State for Defence. The time after that, he was the Duke of Norfolk, living in Arundel Castle!

In conclusion, I would just like to say, again, that I felt very close to many of the airmen I knew. Neil Cameron, above all, remained a friend until he died in 1985. Neil was brought up in a Poor House at Perth because his father, a sergeant in the Black Watch, died three days after he was born. ‘Tubby’ Earle was another particular air force friend who had relatively humble beginnings; he started his career as an apprentice at Halton and finished it as DGI. But, as I say, my time in the Services was the happiest time of my life, above all because of the people with whom I had the privilege to work, and I am glad to say that I have managed to keep in touch with many of them ever since.

Q&A

Gp Capt Jock Heron. Lord Healey, before your Government came into power in 1964, I recall that you demolished Julian Amery in a TV debate which focused on the future of the TSR2. About five years ago, at Filton, this society hosted a seminar on TSR2 which left one question unanswered. When the project was cancelled in the spring of 1965 the associated jigs and drawings were destroyed. Could you tell us how that was ordered and the purpose behind it?

Lord Healey (LH). Well, I know that I have been accused of having ordered the destruction of all of the material which would have enabled people to reinstate the project. But I can't, for the life of me, remember actually doing it. That said, I am quite sure that, had it been necessary, the companies which had built the TSR2 would have been perfectly capable of reconstructing everything that was needed. Cancelling TSR2 was one of the most difficult decisions I had to take, but I felt that it cost more than it was worth – and we could buy American F-111s a good deal cheaper. Looking back, however, I now think that my great mistake was not to have persuaded the RAF to adopt the navy's Buccaneer. The Buccaneer could have done the job almost as well as the F-111, or the TSR2, and infinitely cheaper, but one of the articles of faith observed by all three Services in those days was NIH – Not Invented Here – never accept any weapon sponsored by another Service.

AVM Nigel Baldwin. Someone whom you will have known very well but who is sadly unable to be here tonight is the late Sir Frank Cooper, a loyal member of this society for many years. Sir Frank was at Filton, however, when we discussed TSR2, and perhaps I could quote something that he said that day.

> 'It is extraordinary how little space the cancellation of the TSR2 takes in Harold Wilson's autobiography; in Healey's autobiography he states that the 1960 estimate had tripled four years later to a sum of £750 million, the delivery date had slipped from 1965 to 1969.'

You may be reassured to know that, with all the wisdom and hindsight that the society was able to bring to bear on that occasion, our conclusion was that we had been right to have cancelled the TSR2.

MRAF Sir Michael Beetham. TSR2 would have been the best technical solution, but I agree that it was right to cancel it because the costs were simply out of control and we just couldn't afford it. I would also concede the point that the Buccaneer might have done, at that time. But I stress 'at that time' because the Buccaneer would have lasted only so long and we really did *need* the TSR2 in the long term. If we had been able to persevere with it, with updated avionics it would still have been viable today, and with a much better performance than we've got, for example, with Tornado. Wishful thinking, of course, because the whole of the aircraft industry was being restructured at the time and the procurement process was in turmoil, so there was a lack of proper management of the programme and it was hardly surprising that costs spiralled. In truth, the TSR2 project was a little ahead of its time, but its loss was still a tragedy for the RAF.

AM Sir Freddie Sowrey. I remember that you were involved with the Nuclear Planning Group which considered all sorts of ways of employing nuclear weapons in war. Demonstrative use, for instance, dropping one off Murmansk and then seeing what kind of result that was going to have. Do you think the Soviet Union was going over the same intellectual ground as we were covering at that particular time, or were we trying to be too clever in our approach to the use of nuclear weapons?

LH. Well, we went ahead with tactical nuclear weapons, which we never used, and with the Polaris programme, and with bombs, of course, to drop from aircraft, but we have never *used* any of them. As I said earlier, I think that nuclear weapons have made wars between the Great Powers impossible because no one will accept the associated risk. I recall, when I was in Defence, insisting on attending one of the procedural exercises that they did – probably the most secret exercises we have ever held. They were rehearsals for nuclear war and I played myself, as a Secretary of State. What it brought home to me was the realisation that the moment you ordered the use of nuclear weapons against another nuclear power, which was the issue, your family would be dead within two hours. Faced with that prospect, no one is going to do it, and for that reason nuclear weapons have, I believe, kept the peace. They really are weapons that cannot be used, of

course. Any conflict in Europe would have had to be fought in Germany and we could never have used nuclear weapons there, because the German government would never have allowed it. We did one exercise, CARTE BLANCHE I think it was, which showed that about half of the population of West Germany, *our ally*, would have been killed in a nuclear exchange. In short, nuclear weapons have been extraordinarily valuable as a deterrent and I am sure that it was their existence that ruled out a Third World War.

The only person I ever met who wasn't concerned about nuclear weapons was Chou En-lai who was Prime Minister of China when Mao Tse-tung was the President. I had a four-hour talk with him; it was supposed to have been two hours, but he was so interested that we went on for another two. The Chinese already had nuclear weapons, of course, and I asked him whether he was worried about the Japanese acquiring them. He said, 'No. We're a big country. We can take it; and anyway the fallout would land on Japan' – and he roared with laughter.

Humphrey Wynn. Lord Healey, I hesitate to make you blush but, when I was working on the history of the V-Force, I had the privilege of examining literally hundreds of Ministry of Defence Air Staff files and Cabinet Office papers which permitted me to see the work of successive Secretaries of State. In my view you were our most able, most clear thinking, Minister of Defence.

I wanted to ask a question about the TSR2. When you were having to decide whether to sustain the programme in 1965, the financial case against it was pretty irrefutable, but I understand that there was a ground swell of opinion within the Labour party that the RAF had been trying to secure for itself a second generation of nuclear bombers in the shape of TSR2. Were you aware of this political pressure, and did it influence your decision to cancel?

LH. No, not at all. I wasn't actually aware of that. I suppose that TSR2 would have had the potential to deliver nuclear weapons but, since they are virtually unusable, in practical terms it would only have been used to drop ordinary bombs.

AVM Baldwin. That has actually been increasingly the case within the RAF for many years. In the 1960s, the V-Force was all about deterrence, but it could be said that the balance changed progressively

thereafter with conventional operations becoming increasingly dominant, although we always maintained a nuclear capability throughout the life of the Vulcan and for the first half of the Tornado's career.

LH. Yes, I fully accept the value of nuclear weapons as a deterrent. There were actually two reasons for retaining nuclear weapons during the Cold War. The first was their obvious function as a deterrent. The second was a more subtle political argument. Put crudely, if *we* had them, the Americans could never be sure that *we* wouldn't use them – when *they* didn't want to. Bob McNamara tried very hard to persuade me not to go ahead with our nuclear programme, but I absolutely refused. It was essential that we had a system which could commit the Americans if *we* used it. It was a kind of insurance policy.

Air Cdre Henry Probert. Lord Healey, could I take you a little further away from home again. I was in Singapore in the 1960s and remember the period of Confrontation. I was delighted to hear you referring to the British achievement in the way you did. I think you yourself saw quite a lot of Lee Kuan Yew and I wondered how he reacted to our success in the Confrontation with Indonesia and how difficult you found it subsequently to persuade him of the arguments for our leaving, because he was I think, initially at any rate, very upset at the prospect of a British departure from Singapore?

LH. Singapore was the main beneficiary of the British presence in the region, because we paid an enormous amount for the right to operate our airfields. As a result, he was able to build the great industrial estate in the southern part of the island. He was very upset when I said that I thought we would have to leave and he tried everything in his power to dissuade me. In the end we did leave, of course. He thought that he had managed to persuade the Tories to stay, but they actually only stayed a year longer than I would have done. I am sure that he now realises that it just wasn't on, and, of course, he has made a tremendous success of Singapore.

After half-a-century in politics, one of the most fascinating things I have observed is that some of the most successful economic countries have been some of the very smallest. Furthermore, they have also tended not to have any regional allies or be members of any kind of group, like the European Union. Singapore is a very good example;

Hong Kong is another and I think it no accident that both of them are run by Chinese. But it is equally true, of course, of Finland, Sweden and Norway, all successful small countries which do not belong to a significant regional economic grouping.

I still see Harry every time he comes to the UK, and, even though he disagreed with me at the time, we have been good friends ever since the 1960s. Interestingly, he was, like me, a communist when he was a student in England (*Laughter*), as his wife was too! He is a brilliant man and I think it a tragedy that he did not eventually become the head of one of the big international institutions where his ability would have been fully used because, regardless of its commercial success, a tiny city state like Singapore can never wield much global influence.

AVM John Herrington. Lord Healey, after you had been Secretary of State for Defence and the other party took over, they continued to withdraw our Forces, not only from east of Suez, but also from the Mediterranean. As a result, we withdrew the Vulcan squadrons from Cyprus where they had represented the nuclear support for CENTO. I raise this because I was on an RCDS tour which visited Iran where we attended an address given by the Shah. Paraphrasing, he said, in effect, 'Our allies have deserted us; they have withdrawn their support; we can no longer depend on them to defend us; we must be prepared to defend ourselves.' Thereafter he embarked on the most enormous military expenditure programme, which, I have always reckoned, was one of the reasons why his dynasty collapsed. Would you care to make any comment on that? Would you perhaps have left those Vulcans in Cyprus?

LH. No. I think I would have withdrawn them. Iran is a very interesting place which has defied almost all generalisations which are made about other countries; in spite of the conflict between its Islamic and non-Islamic elements, it has managed to keep going. It resisted invasion by Iraq in 1980 and one of the most interesting questions now is the impact that the current mess in Iraq will have on Iran. I think the conflict which is now developing between the Shia, the Sunni and the Kurds, which will go on for at least ten years, could lead to intervention by Iran. The Saudis could also intervene, of course, and one of the big questions in the modern world is how far

Islamic terrorism will go in overthrowing pro-Western Islamic governments, like Saudi Arabia, Iran and, most important of all, Pakistan – which has nuclear weapons. An Islamic fundamentalist state which possessed nuclear weapons would be a very frightening prospect. But I fear that there is very little that we can do about it, although the disaster which many predicted for Iran did not happen, did it?

Alan Pollock *delivered an impassioned plea for the resuscitation of No 26 Sqn. Lord Healey undertook to look into the case.*

Cdre Toby Elliott. It is often said, certainly within the Royal Navy, that the Services do better under Labour than under the Conservatives, as was most certainly the case during your time at the Ministry of Defence. Do you agree with that or does it come as a surprise to you?

LH. I think that it probably depends on the individual. It depends on the ability of the Minister to fight the Defence corner in Cabinet – and that is not a question of 'parties' so much as of individuals. Nott wasn't a bad Defence Minister – not a great one – but he wasn't *bad*! (*Pause*) I am trying to recall the name of any other Tory Defence Minister! (*Laughter*)

I think the great thing about my generation of politicians was that we were fortunate in having actually served in the Second World War. Personal experience of fighting teaches you so much that simply cannot be learned by any other means.

LH. None of you have raised what is probably the most pressing matter for the Services today, which is how to organise a defence against terrorists, particularly terrorists who may be supported by, but who do not represent, Governments. Nobody seems to have found much of an answer to that.

Islamic terrorists who do not represent a Government, and who do not mind dying in the course of an attack, are the greatest threat faced by the modern world. It would be all too easy for a terrorist group to make a dirty bomb, a nuclear device, put it on a cargo ship bound for Los Angeles or San Francisco or New York and then blackmail the United States Government into giving them whatever they want. This really could happen and nobody, including me, seems to have much idea as to what to do about it.

Mike Meech. Lord Healey, you mentioned earlier that you had arguments with the Foreign Office over policy. What was your opinion then of the Treasury, and what was your opinion of the Defence Department when you became Chancellor of the Exchequer?

LH. Well, like every Chancellor I was nagged by the Defence Secretary to increase defence spending. I actually asked him if he would let me talk to the Chiefs myself, because, in politics, I have always found it much better to talk to people who really *know* what they are talking about, rather than to the Ministers! I did, in fact, talk to several of the Chiefs at that time and they did have some influence on our decisions. Again, I return to the point that no current Ministers have any personal experience of war and, as a result, they cannot really understand all of the subtleties of defence.

Philip Baggaley. Lord Healey, you were responsible for the decision to dispense with the four big carriers, CVA-01 and the others. The lack of big carriers was particularly felt at the time of the Falklands War and one of the main planks of the present Government's defence policy is to build two very big carriers. Do you, in retrospect, think that perhaps your earlier decision may have been wrong? If we couldn't have afforded four big carriers, should we not perhaps have maintained two?

LH. As you may know, I have described in my book the lengthy arguments that we had, both within the Ministry and in Cabinet, about how many carriers you would need to constitute an effective force. The general consensus was that you couldn't manage with fewer than three and that, of course, is very expensive indeed. Then again you have to ask how likely it is that you will find yourself in a situation where you can provide air power *only* from a carrier, where you have no other bases within range. The answer is that there are very, very few situations like that, and in most of those a through-deck cruiser would suffice to provide a few aircraft.

Wg Cdr Jeff Jefford. I too was in the Far East in the early 1960s. I spent some time at the HQ at Phoenix Park and I recall that when the Commander-in-Chief needed to talk to London there was a great disturbance among the signals fraternity and he eventually went into a sound-proofed room to use the special secure telephone connection.

With modern communications technology, a Minister can virtually talk to a particular soldier in his foxhole, let alone the CinC. The days of the man on the spot being told, Wellington-style, 'There's a war, General. Go and fight it and let me know when you've won', are over. The means of communication available to today's senior politicians permit them to maintain a much firmer grip on, some might say interfere in, military affairs. Do you regret not having been able to get more deeply involved because of the limitations imposed by contemporary communications?

LH. I think that I *was* able to be deeply involved. In Aden, for example, I insisted on authorising personally any operations which were likely to involve foreign powers or neighbouring states. The real problem here is one that I have referred to before and that is that it doesn't help if the politicians concerned know bugger all about defence! It wasn't so bad in my case (I hope) because I did know something about the conduct of war. I had served in Combined Ops all over the Med, in North Africa, at Anzio, in Calabria and so on. I think that the lack of that kind of experience is a problem today, but there is nothing you can do about it. As to instant communications, our facilities may not have been as sophisticated or convenient as those that are available today but, if necessary, I could be in touch with people in Aden by radio within minutes. I don't think that there is all that much difference really.

AVM Baldwin. I think that we will call a halt there. In thanking you on behalf of the Royal Air Force Historical Society for speaking to us tonight, and for being such an admirable Defence Secretary, perhaps I could offer a comment made by your good friend, the late Lord Cameron who wrote that '95% of Denis Healey's reforms were accepted.' That really has to be as good as it gets.

LH. Thank you very much, but I think that what Neil really meant was that they were accepted by the subsequent Tory administration – although they had resolutely opposed every single one when I actually introduced them! (*Laughter*)

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. It is intended to reproduce some of these papers from time to time in the Journal. This one was the winning RAF submission in 2003.* ***Ed***

HOW DECISIVE WAS THE ROLE OF ALLIED AIR POWER IN THE WAR IN THE PACIFIC, 1941-1945?

Sqn Ldr S I Richards

> '*In my view, air power is an immense entity in itself, but it is interlocked with sea and land power, and all three are interdependent*.' Lord Tedder.[1]

When the Japanese opened the war in the Pacific on 7 December 1941, they did so with a dramatic and shocking display of air power. Within a matter of minutes, Japanese naval aircraft had struck a mortal blow to US naval strength in the Pacific. In the days and months that followed, Japanese forces were to advance in an all-conquering swathe of success, each time employing air power in pre-emptive operations that left the ill-prepared defenders reeling and exposed. The Allies heeded these lessons well, as they began their equally dramatic path to victory during 1942. With the vast distances involved in the Pacific theatre and with the omnipotence of the Japanese forces, air power was a vital arm of Allied fighting power. Faced with a fanatical enemy, Allied forces soon learnt that without air power, they could be left critically exposed, with ensuing loss of materiel and lives. As the Japanese weakened, the full might of US industrial effort and manpower reserves began to show, as vast numbers of men, together with new and improved equipment, were able to shape the campaign towards victory. Not least in this effort was the introduction of new and more capable aircraft, particularly the B-29 heavy bomber. It was from these aircraft that the final acts of the war were carried out: the dropping of two atomic bombs on the Japanese Home Islands.

This paper will analyse the contribution that air power made to Allied success in the Pacific. Contemporary doctrinal attributes and principles concerning air power will be highlighted, and these

essential components, together with the influence of technology, will be examined within selected phases and campaigns of the Pacific theatre. It will be shown that Allied Commanders recognised from the outset the potential of air power, learning the concept of air superiority as the early battles unfolded, and that they soon began to adapt both man and machine, as new tactics, procedures and command structures developed, and as new roles and duties were assigned to the various aircraft in theatre. This flexibility, which allowed the ubiquitous nature of air power to be fully realised, will be argued as the key enabler of success, within this campaign. Never standing still, the aggression and inventiveness of Allied air power, coupled with technological innovation, allowed it to be employed at all levels of war, across the campaign. Space precludes a detailed analysis of the weaknesses of Japanese air power, but some specific points will be brought out.

This essay will also examine the strategic bombing of the Japanese Home Islands, including the dropping of the first atomic bomb and will show how arguments over suitable target sets were as prevalent in the Pacific theatre as they had been in the European theatre of WW II. Equally, the continuing belief that air power alone could 'win the war' will be highlighted; an expectation that can still plague airmen today.

Finally, this paper will identify the enduring lessons for the application of air power in contemporary operations. It will conclude that air power was a significant and dominant factor in the Pacific theatre of WW II. It will propose: that the lessons of that campaign, and the key doctrinal attributes of air power, are as applicable today as they were then; that threaded throughout these attributes are the key enablers of technology and flexibility; and that the combination of these attributes and enablers leads to the ubiquitous nature of air power – the all-encompassing ability to operate at all levels of war, in support, in joint operations, or as lead arm.

DOCTRINAL ATTRIBUTES OF AIR POWER

> '*Science is in the saddle. Science is the dictator, whether we like it or not*.' General Carl M Spaatz.[2]

Current UK doctrinal thinking regarding air power is enshrined within *AP3000: British Air Power Doctrine*.[3] Amongst the 'defining characteristics of air power' listed, the individual attributes of

flexibility/versatility, pace, tempo and reach, have been selected for further analysis against the Pacific campaign, along with the core capability of strategic effect, and the generic principles of war: surprise and concentration of effort. Flexibility/versatility relates to the ability of air power to carry out a variety of military tasks in parallel or sequential fashion. Pace, tempo and concentration of effort or force, are examples of how air power can continue to bring about military effects over a selected period of time – of how air power can harass and harry an opponent, rapidly regenerating in order to maintain pressure and give an enemy no chance to recover, relax or gain the initiative. Reach and strategic effect are quintessential attributes of air power, describing the ability of air power to reach out and strike a strategic blow at the enemy, despite the restrictions of time, space, geography and relative armed strength. Finally, surprise is an accepted and vital principle of war and air power is ideally suited to exploit this phenomenon. Air power can deliver military effect when it is least expected from the tactical to the strategic level of war, harnessing new technology to enhance this effect.

Centralised control with decentralised execution is an air power maxim that has its roots in WW II. Airmen today expect to operate under these conditions, citing the failures and successes of history as their justification. The requirements to concentrate effect and to maximise the flexibility and ubiquity of air power, lead to this concept of employment. The struggles of the Pacific campaign will be shown to have quickly taught these principles to the airmen of the day.

The quote by General Carl M Spaatz, is taken from a recent article by Phillip Meilinger entitled, *Ten Propositions Regarding Air Power.*[4] Meilinger highlights the symbiotic relationship between technology and air power, a relationship recognised by airmen since the advent of air power. Technical advantage often yields quantum leaps in military effect, such as a period of air superiority or invulnerability in the air; thus air power must stay abreast of technical understanding and it must push the frontiers of science, adapting and innovating along the way. Examples of how this applied to the Pacific campaign will be interlaced within the various sections below.

SURPRISE

The Japanese heralded the start of the Pacific war with a co-

ordinated series of attacks across the Pacific and East Asia. The air attacks against Pearl Harbour and the Philippines are best remembered as prime examples of the surprise and shock that air power can deliver. The Japanese had heeded the success of the British at Taranto and their attacks showed how air power could be concentrated to such an extent that, with the aid of surprise, decisive results could quickly be obtained. This point was not lost on the Allies – the subsequent US victory at Midway was a reversal of fortune borne out of the concept of surprise. That it was air power that was able to deliver such decisive blows is incontestable. Japanese forces could not have expected to achieve such significant victories without the use of air power, nor could the US Navy challenge the Imperial Japanese Navy (IJN) without the use of air power in the spring of 1942.

Contemporary historians (Prange,[5] Rusbridger and Nave[6]) have argued that the Japanese attack on Pearl Harbour was not a surprise at all. At the operational level, their arguments are irrelevant – whatever the degree of expectation, preparations to meet any attack were woefully inadequate.[7] The Japanese commander, Vice-Admiral Nagumo, sailed to a point 200 miles to the north of Oahu, before launching two strike waves at Pearl Harbour on the morning of 7 December 1941. Over 350 bomber and fighter aircraft achieved complete tactical surprise.[8] Japanese torpedoes were able to cope with the shallow waters of Pearl Harbour's Battleship Row, in an early demonstration of the importance of technological innovation in relation to air power.[9] As a result, the American Pacific Fleet was effectively neutralised, though crucially, the US carriers were not at Pearl Harbour that day and escaped destruction.

On the Philippines, only a few hours behind the Pearl Harbour attack, General MacArthur and his Air Commanders seemed uncertain of their task.[10] Into this confusion, on the morning of 8 December 1941, aircraft of the IJN and Japanese Army Air Force (JAAF) struck at targets in the Philippines from the carrier *Ryujo* and from forward operating bases on Formosa. Surprise was a key factor, in part enabled by the extended range of the Japanese Zero fighter. Experimentation with fuel mixes had yielded the potential to improve the fighter's range out to about 1,000 miles – where it was least expected – in another demonstration of the important marriage of technical innovation and air power.[11] By the close of the day 'half the heavy

bombers and one third of the fighters of the United States Far East Air Force had been destroyed and many of the remainder were heavily damaged'.[12] Within a few days, the Japanese were 'in complete control of the air over the Philippines at very small cost'.[13] Once again, the shocking and overwhelming application of air power had triumphed through the simple application of surprise. This ability of air power to act as a force multiplier, to deliver a crippling blow, in a short space of time and for relatively little effort, was to be dramatically demonstrated by the US Navy at the Battle of Midway in June 1942.

Though the Japanese knew that the US carriers were still at large, they had no knowledge of their exact whereabouts and devised an elaborate plan both to capture the island of Midway and to destroy the remaining capital ships of the US Navy.[14] Cognisant of these plans (through signals intelligence), the US bolstered the defences of Midway and positioned three carriers to the north of the islands. Robbed of surprise, Admiral Nagumo's striking force of four carriers was located. Despite a complete lack of co-ordination between Midway and the US carriers, and even between the carriers' own strike and fighter units, US carrier aircraft eventually attacked the enemy carriers, catching the Japanese off-guard. Despite horrendous losses, due to outclassed aircraft, slow torpedoes and uncoordinated attacks, three Japanese carriers were destroyed in the space of 5 minutes by thirty-seven US dive-bombers.[15] Fighting continued throughout the day, resulting in the loss of the fourth Japanese carrier, and the US carrier *Yorktown*. The results of this surprise attack on the Japanese forces had far-reaching strategic importance. The invasion of Midway was abandoned, thus halting Japanese expansion across the Pacific. The Japanese carrier forces had received a deadly blow, from which they never recovered. All this had been achieved through the medium of air power, which had shown that a handful of aircraft, despite desperate odds, could achieve a surprise victory out of all proportion to their weight of effort.

Thus were air power and the attribute of surprise united in the early days of the Pacific War. Without doubt, air power had demonstrated its potential as a force multiplier, with its ability to strike decisively and overwhelmingly. The role of technology was also evident; Japanese success was mirrored by early US failure, with the US

Navy's torpedo, and its delivery aircraft, committing scores of US airmen to an early grave. The vulnerability of both land and surface forces to air attack was now obvious and the first lessons in the requirement for air superiority had been learnt. As a demonstration of joint operations and co-ordination, Midway had little to recommend itself to US commanders. Notwithstanding the need for radio silence on the part of the US carriers, there was no co-ordination between the various elements of the carrier-launched aircraft, or between the various elements of the Midway forces, let alone between the two groups. Despite poor equipment and techniques, better results (ie fewer losses) might have resulted from a more combined and concentrated effort.[16] Concentration of effort brings an increase in firepower effect, and it is to the combined attributes of pace, tempo and concentration that we now turn.

PACE, TEMPO AND CONCENTRATION OF EFFORT

The concentrated firepower that air power could bring to bear was ably demonstrated at Pearl Harbour, in the Philippines and at Midway. But these had all been single events. When such firepower could be repeatedly used, it was able to influence a whole campaign in a decisive manner. Guadalcanal and the Solomons campaign provide fine examples of these effects. Here, beginning with a desperately small number of aircraft, air power assets ranged far and wide, persistently and aggressively engaging the Japanese in the air, on the ground and at sea, in a war of attrition that saw superior US training and equipment beginning to grind down opposing Japanese air power, inflicting mounting losses that the Japanese could not replace.

In early August 1942, US Marines landed on Guadalcanal in the Solomons and occupied the newly constructed Japanese airfield. As a joint operation the invasion met with little resistance, but so worried about Japanese air power was the Task Force Commander, that by the end of the first day, the covering carrier force had been withdrawn. By late August, small detachments of carrier aircraft and US Army Air Force (USAAF) aircraft were operating from the newly named Henderson Field on Guadalcanal. Thus began a desperate holding action, which hinged upon possession of Henderson and the continued success of Allied air power in the region. B-17 bombers from the New Hebrides Islands ranged far and wide, carrying out harassment raids

on Japanese shipping and forces across the Solomons, as well as providing long range reconnaissance information. The most desperate struggle occurred at Henderson itself. Bombed daily from the air, attacked on the ground by Japanese troops and shelled at night by Japanese naval forces, the airfield was constantly under threat of being lost. Neither side could claim air superiority; the US forces were too small and disparate, whilst the Japanese air bases were too far away and the Japanese dared not risk their carrier forces in the area on a permanent basis. Somehow the field was kept open and US aircraft flew daily, able to inflict damage to Japanese forces in the air, on the ground and at sea. It was this tempo of operations, this persistence that began to wear down the Japanese. Both sides recognised the vulnerability of their naval assets and, despite strong naval presences leading to several surface battles, neither side was able to dominate the area from the sea. But air power was able to deliver constant effect, thus keeping the Japanese attempts to dislodge the US from Guadalcanal at bay. The best example of this is revealed during the period 14 to 15 November 1943, with the last Japanese attempt to re-take Guadalcanal. An invasion force of twelve troop transports with warship escorts, estimated to be carrying up to 35,000 troops, was discovered by a reconnaissance B-17. Concentrated attacks by US aircraft throughout the day left only four transports able to continue to Guadalcanal – the Japanese abandoned these on the beach as aircraft from Henderson Field destroyed them on the morning of 15 November. Thus in two days, air power had completely wrecked the last Japanese hopes of retaking Guadalcanal,[17] through its ability to concentrate its effort on a single objective and to maintain a high tempo of operations.

This pace of operations had another telling effect upon the Japanese air arms. They began to lose the war of attrition, despite having aircraft, such as the famous Zero, which could out-perform their US equivalents. There was however, a flaw in Japanese thinking. Whilst the Zero was a highly manoeuvrable aircraft, capable of long-range flight, it achieved these results through its lightweight build. Thus it proved vulnerable in combat, a problem compounded by its lack of self-sealing fuel tanks.[18] Allied pilots found that by careful tactics, they were able to survive longer than their Japanese opponents, helped by more robust aircraft. It was a slight

technological advantage, but it furnished the high attrition rates metered out against the Japanese. The results were at times spectacular; on a raid against Henderson on 23 October 1943, the US fielded twenty-eight fighters against a Japanese force of sixteen bombers and twenty-five fighters. In the ensuing fight, twenty-two Japanese aircraft were destroyed, for no Allied loss.[19] Both sides continued to reinforce their air assets as often as possible but, as the months drew by, the constant tempo of operations began to dilute the Japanese strength in the air, as it could not replace the experience of the pilots that were being lost. The Allies began their offensive drives up the Solomons and along New Guinea in 1943, gradually increasing the strength and disposition of their air arms as they went. By late 1943, there were 650 aircraft available to support the invasion of the island of Bougainville, compared to the handful of aircraft that had fought so desperately from Henderson Field in the autumn of 1942.[20] This time air superiority was partially achieved, with dedicated fighter patrols protecting the beaches and naval invasion vessels.[21] So hard pressed were the Japanese, that in November 1943 they dispatched over 250 aircraft and pilots from their carrier forces into the Solomons theatre. Almost all were to be lost to Allied action, immobilising the carrier forces for at least six months.[22]

The Japanese willingness to commit to such losses and to fritter away their best pilots was in part a reflection of their strict military code – *Bushido*. According to this culture, death was preferable to surrender. It was a harsh discipline that pervaded all aspects of military thinking.[23] There was no question about giving up the smallest of possessions; rather, it was a question of fighting to the last man. In particular, the Solomons and New Guinea became the bleeding ground of Japanese air power. After Bougainville, experienced IJN pilots were thrown into the defence of Rabaul, such that final losses amounted to 70% of the Navy's most valuable pilots. By the time the Allies had destroyed the Hollandia base on New Guinea, the 'JAAF had been eliminated as an effective fighting force with 90% of its pilots with 300-600 hours flying experience lost.'[24] The loss of technicians, killed or captured was also significant. Such was the dominance of Allied air power, as the tide of war turned against the Japanese. Persistent, aggressive use of air power was whittling away the Japanese strength.

There were many other examples of tempo, persistence and concentration of effort across the Pacific campaign, but the above shows how air power unlocked the door to success; how, despite harrowing odds, it could still bring effective firepower to bear and hold the enemy at bay, through its ability to regenerate and reappear, to survive and re-attack, and to move swiftly from one task to another across the spectrum of offensive and defensive tasks required. Once again the impact of technology was seen, this time acting in the Allies' favour as the Japanese threw away the cream of their pilots in a debilitating demonstration of the conservative ethos of *Bushido*. The necessity for air superiority, over both amphibious operations and in protection of Sea Lines of Communication (SLOCs) was now accepted and was to be practised with great effect as Allied forces began to move across the Pacific. In summary, although land forces held the bases, and naval forces battled for supremacy, it was air power that time and again reached out and struck the enemy, concentrating sufficient firepower to achieve decisive results.

REACH

'Air vehicles can project military power over great distances, unconstrained by the physical barriers of topography.' AP 3000.[25]

Reach is a key enabler of air power. The Japanese attack on Pearl Harbour opened the Pacific war with a classic display of the joint effect of naval and air power reach. Thereafter, the ability of air power to be the decisive arm, through the attribute of reach, was proven repeatedly. Reach enabled aircraft to seek out and engage opposing forces, and to observe and report from far and wide, often unchallenged and undetected. Reach enabled the carrier aircraft of both sides to rove across the oceans seeking out targets, whilst the carriers themselves stood-off under the protective screens of fighters and surface units. Finally, in the latter part of the war, the impressive range of the B-29 bomber, allowed this new and untried aircraft to reach out and rain destruction upon the Japanese Home Islands. This was raw air power.

Moving on from the obvious example of Pearl Harbour, the battles of the Coral Sea in May 1942, and of Midway, give further proof of how the quality of reach can enable air power to deliver a decisive result. In both cases it was aircraft that located each side's opposing

force and it was aircraft, not surface vessels, that carried out the attacks. Opposing sailors never sighted each other, but they were vulnerable to attack nevertheless.[26] In the Solomons and Papua New Guinea, aircraft from both sides used the attribute of reach to conduct long range strikes and reconnaissance. Japanese floatplanes and specially adapted bombers carried out reconnaissance; their efforts were mirrored by Allied PBY Catalina flying boats and B-17 bombers. Despite being stationed over 500 miles away, Japanese bombers from Rabaul regularly attacked Henderson Field on Guadalcanal, often augmented with aircraft from Japanese carrier forces. They came close to rendering Henderson unusable. US B-17 bombers similarly ranged up and down the Solomons, constantly harrying the Japanese.

As the Pacific campaign unfolded, it became a battle for the next suitable airfield. With each step forward, air power was able to reach out further and further. This was typified during the fighting for the Solomons in 1943, and for the Marianas during the summer of 1944. In the former campaign, Allied forces made deliberate progress up the Solomons, capturing and repairing enemy air bases, before springing forward from these bases with ever increasing air cover. The further the Allies advanced, the further was the reach of their air power. In the Marianas, the whole purpose of the invasion of the islands of Saipan, Tinian and Guam, was to establish air bases from which B-29 bombers could strike at Japan. The fall of these islands was regarded as so serious by the Japanese Government that the Premier, Gen Hideki Tojo, resigned.[27] On 24 November 1944, the first B-29 bomber raid to strike at the Japanese Home Islands from the Marianas was launched. With such strikes representing a round trip of 3,000 miles,[28] the strategic reach of air power would now be employed in earnest.

The enabling concept of reach was therefore another vital contribution that air power made to the Pacific campaign. Reach enabled air power to search out and attack the enemy, to bring to bear the attributes of surprise, tempo and concentration of effort already mentioned. Boosted by the projection of naval carrier power at times, it was still air power that played the dominant role – so much so that the whole construct of the advance towards Japan, was one of advancement from airfield to airfield, until at last US bombers could strike at the Japanese Home Islands direct.

STRATEGIC EFFECT

'So we had won after all!…..As for the Japanese, they would be ground to powder.' Winston S Churchill.[29]

When writing his celebrated memoirs, *The Second World War*, Churchill clearly recalled the strategic importance that the Japanese attack on Pearl Harbour signified. Setting aside the afterglow of victory, it is a clear statement of the global consequences of that one precipitous act. A few hundred aircraft, with one bold stroke, had tipped the military balance of the war by bringing the US into the conflict. The very decisiveness that air power could deliver was to continue to alter the strategic balance in the Pacific, throughout the length and breadth of the conflict. A series of dramatic carrier battles was to tip the strategic balance away from the Japanese, whilst the strategic importance of islands such as Guadalcanal, Bougainville, New Guinea, and the Marianas, was due to their ability to provide bases for air power and staging points for follow-on land operations. There were also two startling examples of air power's strategic potential: the Doolittle raid on Japan and the targeting of an important military leader of the Japanese Navy. The strategic effects of the B-29 bombing campaign against Japan will be covered in a later section.

Stung by the Japanese success at Pearl Harbour, President Roosevelt sought to strike at the Japanese homeland and boost the morale of an outraged American society. A daring one-way raid against Japan was executed on 18 April 1942, led by a USAAF pilot, Lt Col James Doolittle. Sixteen B-25 medium bombers were launched from the carrier *Hornet*, at a point 800 miles from Tokyo, in a unique combination of maritime and air power strategic reach. Bombs were dropped on Tokyo and other Japanese cities.[30] Whilst the damage inflicted by the bombing was minor, the raid yielded important strategic results: the Japanese immediately diverted aircraft into a home defence force; they felt even more persuaded to attack Midway – a disastrous action from a strategic viewpoint; and they overran the airfields in China where the American B-25s had planned to land (but had not been able to reach). Again air power had precipitated events of far-reaching strategic consequence, despite, on this occasion, having delivered little military effect.[31]

Admiral Isoroku Yamamoto, Commander of the Japanese

Combined Fleet, was widely known to have masterminded, at least in part, the successful Japanese advances across the Pacific. He was viewed as a strong and resourceful leader. When careless Japanese signals traffic was intercepted and decoded by the US in early April 1943, it revealed the details of the movements of Yamamoto within the Solomons theatre of operations. On 18 April 1943, a flight of P-38 Lightnings flew over 400 miles from Henderson Field to shoot down and kill Yamamoto. Air power alone was able to strike such a strategic blow.[32] It is difficult to quantify what effects the loss of Yamamoto brought about, but the morale of the IJN suffered a 'significant' blow.[33] That it was the P-38 Lightning that achieved this success was not insignificant – this fighter had recently been introduced into the Pacific theatre. With the ruggedness, range and firepower to survive in the demanding environment of the South Pacific, this aircraft was another example of successful Allied technological innovation – adapting air power to the needs of the battle in order to gain important advantage.

As the strength of the US Navy carrier forces grew, their striking power and air dominance increased. Through 1944, both sides recognised that a culminating fleet action would have to be attempted at some point. When the US began the invasion of the Marianas, Japanese Admiral Ozawa knew that the time had come. On 19 June 1944, in an action that became known as the 'Great Marianas Turkey Shoot', US carrier aircraft destroyed approximately 300 attacking Japanese aircraft, at a loss to themselves of twenty-six aircraft, with insignificant bomb damage to one US battleship.[34] On this and the following day, US aircraft and submarines sank three Japanese carriers.[35] It was a strategic blow to the IJN from which it could not recover, delivered in no small measure by the joint actions of air and sea power. The battle marked the 'destruction of Japanese carrier air groups as a conventional air force….'[36]

From Japan's opening gambit onwards, air power was crucial to the delivery of strategic effect in the Pacific campaign. The battles at the Coral Sea and Midway relied on air power to halt Japanese territorial expansion. Small isolated acts such as the Doolittle raid produced strategic consequences out of all proportion to their military effect – effects that were only possible through the flexibility and reach of air power. Finally, it was chiefly air power that left the

Japanese carrier forces impotent, robbed of their strategic potential in the face of overwhelming US air power. Having secured the Marianas, it was from the newly constructed airfields on these islands that the USAAF began the strategic bombing campaign against the Japanese Home Islands.

FLEXIBILITY AND VERSATILITY

In its first real action against the Japanese, the US launched the Doolittle raid from the deck of the carrier *Hornet*; it was a prime example of the flexibility and versatility of air power. Carrier employment was not a role envisaged for the B-25, but the raid showed what could be done, given an aggressive and innovative fighting spirit – and so the story continued throughout the war. Allied aircraft were to be employed at all levels of war from the tactical to the strategic, in roles that varied from air-to-air to air-to-ground, from direct anti-shipping to maritime mine laying, and from reconnaissance to strategic bombing. Air power also played a key role in the transport and logistics arena, able to travel the vast distances of the Pacific theatre in support of the Allied campaign. Often, it was the ability of air power to switch between roles as the situation demanded, that proved to be the decisive factor.

On 3 June 1942, a Catalina flying boat on a maritime patrol mission located the Japanese transport group heading for Midway. That same day, four Catalinas completed the 9 hour flight from Pearl Harbour to Midway. The newly arrived aircraft were immediately tasked with attacking the Japanese ships – all the more remarkable since Catalinas did not, at that time, carry torpedoes. Nevertheless, within a few hours of landing, the Catalinas were heading out towards the Japanese with one torpedo loaded to each aircraft.[37] This innovative and flexible outlook, which resulted in the sinking of one of the transport group[38] (or possibly just damage[39]), revealed the flexible nature of air power to the Americans. It also affected Japanese tactical thinking during the ensuing battle, causing them to put too much emphasis on the destruction of Midway, and thus to be caught unprepared by US carrier aircraft.[40] The strategic consequences of the Midway battle have already been noted; how the flexibility of air power contributed from the very start is highlighted by the Catalina attack.

Flexibility and versatility were key ingredients of Allied success at Guadalcanal. USAAF P-400 fighters began operating from Henderson Field in late August 1942. Their performance as fighter aircraft was soon in question – the Japanese Zeros easily out-manoeuvred them from above. The solution was to reverse the roles of the aircraft at Henderson: Marine Corps F4F aircraft assumed more fighter responsibilities, whilst USAAF pilots learned how to bomb and strafe with the P-400 – a role at which they soon proved very useful, in both anti-ship and Close Air Support tasks.[41] This versatility was mirrored in the employment of Allied light and medium bombers across the breadth of the Solomons campaign. B-17s reconnoitred far and wide, staging through Henderson to increase the range of their cover. This had not been a role envisioned for this heavy bomber, but it was to provide a vital service, keeping Allied forces constantly informed, and thus ready to counter Japanese attempts to overrun Henderson. As the Allies advanced across the Solomons and New Guinea, air power assets increased in numbers and strength. The USAAF's Fifth Air Force, unhappy with the quality of its bomber aircraft results, devised and implemented a number of innovative tactics and equipment. Skip-bombing of Japanese ships was introduced by the B-25 force and proved to be a deadly form of attack. B-25s and A-20s were fitted with extra forward firing guns, making them fearful ship-strafing assets. Disappointed with their lack of anti-ship capability at night, the USAAF developed a blind radar bombing aircraft, the SB-24. First appearing in August 1943 in the Solomons theatre, these aircraft contributed greatly to the overwhelming attrition of Japanese surface vessels around the Solomons. By October 1943, 'the enemy could no longer sustain his barge losses.'[42] Equally able to bomb ground targets with new parachute retarded bombs, the versatility of Allied air power in the South West Pacific, often enabled through technological innovation, became its strongest quality, as highlighted by the historian Rohfleisch, in Craven and Cate's *The Army Air Forces in World War II*:

> 'By mid-December [1943]…Allied air forces so completely dominated the entire area that enemy commanders could scarcely risk daylight movement of their troops in any manner of surface craft, ….No aircraft could be left on bases outside of

> Rabaul and Kavieng, nor could air installations be repaired, without continuous fear of surprise air attacks.'[43]

Navy surface vessels had proved too vulnerable to guarantee this level of success – periodic surface actions up and down the Solomons had seen losses incurred by both sides. But the flexibility of air power, with its ability to switch from task to different task, coupled with its speed and reach, meant that air power alone was the dominant player as the campaign progressed.

Air power flexibility was key to the Allied invasion of the Marianas. The operation began with a massive fighter sweep by US carrier aircraft. The total Japanese air strength was reduced by about a third and before the battle proper, the carriers 'had won control of the air'.[44] Air superiority was now seen as an essential prerequisite to amphibious operations. Subsequently, prior to the landings on Saipan, carrier aircraft bombed and strafed Japanese defensive positions. During the landings themselves, combined surface shelling, aerial bombing and strafing reduced the ferocity of the Japanese defences. Carrier aircraft acted as spotters, directing naval gunfire onto appropriate targets. When the IJN sought to engage the invasion forces, a massive defensive effort, the 'Marianas Turkey Shoot', took place. At the same time, carrier aircraft bombed and destroyed Japanese aircraft that had landed at Guam.[45] Without the presence of air assets and the variety of tasks that they could perform, the Saipan and subsequent Marianas landings could not have gone ahead without prohibitive losses. The importance that the US Navy attached to the provision of air power at this stage of the war, may be judged by the fact that no fewer than fifteen fleet and escort carriers were assigned to the Marianas operation.[46]

From late November 1944 onwards, with secure bases in the Marianas, the USAAF's B-29 bombers began the systematic bombing of the Japanese Home Islands in a true display of the flexibility of air power. No other force had the reach, tempo or concentration of effect to carry out such a campaign at this stage of the war. In March 1945, B-29s began the aerial mining of Japanese waters, contributing to the maritime blockade of Japan. Such operations were not regarded as orthodox strategic missions; however, the USAAF commander, General Curtis E LeMay, a strong proponent of aerial strategic

bombardment, supported the mining operations as a further demonstration of the versatility of air power.[47]

With vast distances separating Allied forces across the theatre, and with hostile jungle terrain serving to isolate various fighting elements, re-supply became a vital role of air power in the Pacific. The epic struggle over Henderson Field on Guadalcanal would have been lost but for air re-supply.[48] Across in Papua New Guinea, Allied troops fought a difficult holding action against Japanese ground forces heading for Port Moresby and relied upon aerial re-supply, reinforcement and medical evacuation as they progressed.[49] A year later, on 5 September 1943, the Allied airborne assault against Nadzab, in New Guinea, demonstrated the extent of the Allied effort, and of the versatility of air power. Over 300 aircraft took part in the assault, including ninety-six C-47 transport aircraft, carrying paratroops, supplies and some artillery.[50]

Flexibility and versatility were therefore crucial attributes of air power, which allowed it to contribute so emphatically to the Pacific campaign. Air power was vital across the theatre – it allowed Allied commanders to maintain the initiative and apply constant pressure on the Japanese, aided by the ability of their air power assets to switch roles rapidly and to be used for a variety of tasks at all levels of the conflict. Finally, the ability of individual commanders and of the Allies in general, to innovate, improvise and invent solutions to maximise the versatility of those assets, proved to be a key factor in the drive towards Japan.

COMMAND, CONTROL AND JOINT OPERATIONS

At the Battle of Midway, US Navy, Marine and Air Force units had all struck at the Japanese forces in an uncoordinated fashion. Command and control (C2) of the various elements was disparate, chiefly as a result of unpreparedness. However, at Guadalcanal, and through the Solomons and Papua New Guinea campaigns, C2 steadily improved. By reason of the vast distances and unreliable communication links, much of this was due to force of circumstance; nonetheless, the co-ordination and control of the various air assets required to support amphibious landings was soon mastered, and applied with vigour as the Allies advanced across the Pacific. Improvements in the joint application of air power were soon evident;

by the end of the war air power was a truly joint fighting arm.

Due to the immediacy of the Japanese forces, the combined Navy, Marine and USAAF elements at Henderson Field were compelled to operate under the command of a single, joint commander on the spot. The Allied code-name for Guadalcanal was CACTUS and the units serving at Henderson soon became known as the Cactus Air Force. This unified title reflected the unity of command under which they operated, despite differences in equipment, typified by the different radio frequencies operated by the naval and AAF aircraft.[51] When Guadalcanal had been secured, a US Marine commander, General Geiger, arrived on the island to provide operational control of all the land based aircraft in theatre, to be known as 'COMAIRCACTUS', including those aircraft operating in the New Hebrides Islands. From this arrangement grew 'COMAIRSOLS', a command organisation that successfully directed air operations across the Solomons, with a mixture of Navy, Marine, Army and New Zealand officers, who threw aside parochial service beliefs and applied the principle of unified command and control.[52] That air power assumed such a dominant role in the Solomons was in no small way due to this concentration of command effort. It was a model copied elsewhere, with in place commanders assuming operational command of all regional assets, but working for the overall theatre commander.

As the island invasions gathered pace, joint operations became the accepted method of attack. At Bougainville in the Solomons, amphibious landings were supported by heavy fighter protection from COMAIRSOLS assets, including naval and USAAF aircraft. Prior to the invasion, COMAIRSOLS aircraft had relentlessly bombed local Japanese airfields. Support to ground troops was provided by Marine aircraft, as they were the most proficient in these techniques. Carrier aircraft were integrated into the plan, including strikes against the Japanese stronghold at Rabaul.[53] Further north in the Gilbert Islands, US Marines suffered heavy casualties during the invasion of the Tarawa Atoll in November 1943. Air and naval fire support was poorly co-ordinated, and inexperienced pilots dropped their bombs 'too far in advance of the troops'.[54] Lessons were learnt – Admiral Chester Nimitz, commander of all Allied forces in the Central Pacific, had replica enemy bunkers built, in order to determine the best methods of destruction.[55] By June 1944, techniques had been

improved. The invasion of Saipan has already been noted as an example of joint operations, with co-ordinated fire support, bombing, strafing and spotting being carried out.[56] Allied forces were able to capture Aslito airfield on Saipan, following which USAAF fighter aircraft were catapulted off two escort carriers and were undertaking attack missions in support of the ground troops within a matter of hours. Within two more days, extra aircraft had arrived, allowing defensive and offensive air operations to be mounted through both day and night, in support of continued fighting across Saipan, Tinian and Guam.[57] Coupled with the offensive actions being carried out against IJN surface units, the Marianas campaign was a truly joint operation.

The pattern for joint operations had been set. The battles that raged over the Philippines, Iwo Jima and Okinawa were improvements on the theme. Massive Allied air presence allowed for more concentrated bombing and strafing against the Japanese defenders, whilst USAAF medium and heavy bombers pounded Japanese airfields and support areas. Centralised control allowed for proper allocation of air assets, and co-ordinated operations involving Army, Navy and Marine aircraft. Schemes were not always successful or harmonious; weather often precluded the use of air power and results were sometimes inconclusive. When LeMay's B-29s were called upon to strike at Japanese *Kamikaze* airfields, in support of the Okinawa landings, the results were debatable – LeMay regarded the attacks as a distraction from the strategic bombing campaign.[58] However, the use of joint procedures had been tried, tested and perfected in the face of battle, and was to become the accepted method of amphibious assault. By 1944, military commanders were producing papers explaining the benefits of air power support in joint operations.[59] From the muddled beginnings at Midway, centralised command and control of air power, together with joint operations, had developed into a properly understood and skilfully applied operational art.

THE STRATEGIC BOMBING OF JAPAN

> *'Without strategic bombing, a landing on Japanese shores would have been costly, in spite of all the weaknesses of the defending forces.'* United States Strategic Bombing Survey.[60]

The strategic bombing of Japan occurred in two distinct phases. From bases in China, the first B-29 missions against the Japanese

Home Islands were launched in June 1944. For a variety of reasons the results were disappointing, so that when the Marianas became available, the main effort was switched to operations from those islands in November 1944. The B-29s employed a variety of techniques and weapons against the Japanese and their targets were the subjects of much debate, as were their results. That the bombing directly contributed to Japan's final surrender is not in doubt, though whether surrender could have been achieved without the use of the atomic bomb is not so clear. Notwithstanding this debate, it was air power that furnished the Allies with their final victorious moment.

Design studies for the B-29 began in June 1940. After the Pearl Harbour attack, initial low rate deliveries were increased to an order of 1,664, 'even before the first prototype took to the sky in September 1942.'[61] The risks were high – the aircraft featured new technologies such as radar navigation, advanced engines and pressurised crew cells, as well as remote-controlled automatic gun turrets.[62] But the gamble paid off, as the B-29 bombing campaign undoubtedly contributed to the surrender of Japan, notwithstanding the dropping of the atomic bomb. This latter weapon was yet further proof of US dominance in the area of air power and technology, arriving as it did hot on the heels of improved incendiary weapons and aerial mining operations, all delivered by a bomber that the Japanese were unable to destroy in any significant numbers, due to its superior height and speed.[63]

With B-29s becoming available for use in the spring of 1943, the only viable choice of base at that time was central China.[64] With Nimitz and MacArthur in disagreement over proposed targets, the USAAF Commander, General Arnold, elected to retain command of the new strategic bomber force, controlling their activities directly for the Joint Chiefs of Staff.[65] Codenamed Operation MATTERHORN, the choice of targets was, however, limited by range to south east Asia, Manchuria and part of the southern Japanese Home Island of Kyushu.[66] Sixty-three B-29s raided Japanese steel works on Kyushu on 15 June 1944, marking the beginning of the strategic bombing campaign against Japan.[67] But, according to the United States Strategic Bombing Survey (USSBS), MATTERHORN proved to be 'not decisive.'[68] Technical problems bedevilled the new aircraft, crews were inexperienced and the technique of high level bombing remained difficult to implement accurately, exacerbated by the effects of winds

at high altitudes. Senior commanders had not yet adjusted to the balance of expectation versus reality and continued to wrangle over the best targets to strike and methods to use – an enduring conundrum for air power commanders.[69] Worst of all was the logistic burden of operating from China. All supplies, including fuel, had to be flown over the Himalayas from India, resulting in an average of about one sortie per month per aircraft.[70] The important attributes of pace, tempo and concentration of effort could not be applied. Whilst this rendered the strategic effect of MATTERHORN dubious, it did at least force the Japanese to divert extra effort into its defensive organisations. The B-29s were withdrawn from China in January 1945, as operations from the Marianas gathered pace.

Despite equally poor results at first, the strategic message conveyed by the first B-29 sortie from the Marianas was powerful and prophetic – the US was now in a position to launch attacks against Japan, and in particular Tokyo, with 'relative impunity'.[71] General Curtis E LeMay transferred to the Marianas in January 1945 in order to invigorate the bombing campaign. As the number of B-29s increased, new techniques were introduced along with improved incendiary devices. This flexibility, so crucial to air power, began to take effect. Having had their aircraft industries targeted already, the Japanese had dispersed and relocated 37% of their capability by February 1945,[72] but this now rendered them equally vulnerable. LeMay instigated a programme of attacks against urban industrial areas, using incendiary and high explosive bombs delivered from low to medium altitude, initially at night. The results were dramatic, helped by the wooden construction of much of Japan's urban dwellings. The prime example was a raid against Tokyo on 10 March 1945. The resultant firestorm burnt out 63% of the city's commercial zone, destroyed 18% of the industrial area, killed over 83,000 people and left more than a million homeless. By the end of the war, US attacks had caused significant levels of destruction to a total of sixty-six Japanese cities. In parallel to the firebomb attacks, precision attacks by day against industrial, oil and infrastructure targets were carried out, though the weather significantly hampered the missions.[73] Finally, it should not be forgotten that the bombing complemented the maritime blockade of Japan that was already in progress. With the shortages in raw materials that this blockade produced, the industrial

destruction wrought by the bombing campaign was made more potent. The mining operations conducted by the B-29s in 1945 simply added to the Japanese woes. In the last twelve months of the war, 49.7% of all Japanese merchant-shipping losses were due to aircraft attack, and a further 12.7% were due to aerial mining.[74]

The results of the bombing surpassed all expectations – air power alone had delivered such a devastating blow. The post-war USSBS provides a detailed statistical analysis of the bombing – two examples illustrate the point: destruction and dispersal of the aircraft industry reduced output by 57% in the last ten months of the war; worker absenteeism was between 40% and 52% in July 1945 across key production facilities.[75] The results were compelling at the time, and with loss rates, for example, in the order of 2%, LeMay began to believe that an invasion of the Home Islands could be avoided – that air power could end the war by October 1945.[76] The USSBS lends credence to this view, stating that:

> 'The bombing offensive was the major factor which secured agreement to unconditional surrender without an invasion of the home islands…..The atomic bomb and Russia's entry into the war speeded the process of surrender already realized as the only possible outcome.'[77]

The atomic bombs dropped on Japan, fearful though they were, caused less damage than the previous firebombing campaign. However, their terror stemmed from the fact that only one or two aircraft were needed to deliver such effects and Japan had no idea how much more instant destruction was about to be meted out – she had had enough already. Coupled with the Russian invasion of Manchuria and Korea on 8 August 1945, the Japanese finally yielded to the inevitable, surrendering despite the presence of 2.5 million undefeated troops on the Home Islands and 9,000 *Kamikaze* airframes still available.[78]

US airmen had wrangled over target selection throughout the bombing campaign. With cool hindsight, the USSBS stated that 'a concentration of air attacks exclusively on railroads and urban areas….would in all probability have led to an earlier surrender…'[79] This statement highlights the difficult choices facing a commander who seeks to employ strategic air power. As for the B-29 campaign –

it undoubtedly contributed towards the ending of the war. Although contemporary historians present various arguments (Keegan and Weinberg argue that Japanese military obduracy rendered the campaign inconclusive, while Coox and Overy maintain that the bombing was a crucial factor in the final victory[80]), there can be few other explanations for the final capitulation of Japan. It is equally clear that the bombing formed a powerful adjunct to the economic blockade of Japan, delivering the *coup de grâce* which finally tipped the balance. The atomic bombs simply reinforced the hopelessness of Japan's situation to her ruling bodies. The bombing campaign highlights many of the areas already considered in this paper and shows how the attributes of reach, strategic effect, tempo, concentration of effort, flexibility and technological innovation are all crucial to the proper delivery of strategic bombing and strategic air power. It also illuminates the key dilemmas that face the air commander: those of matching expectation with results and of selecting those targets that are likely to yield the most telling strategic effect upon the enemy.

CONCLUSIONS: LESSONS IN AIR POWER

> *'If I were to give you one factor as the leading one that led to your victory, I would give you the air force.'* Japanese Fleet Admiral Osami Nagano.[81]

This paper has shown how air power did indeed play a decisive role in the Pacific campaign of WW II. Key doctrinal attributes and concepts of air power have been measured against selected elements of the campaign and have highlighted how air power was a vital force multiplier that was crucial to the success of the war. From the tactical to the strategic, air power was the driving force behind the Allies' eventual victory, so much so that the whole campaign was driven by the need to spread the influence of air power back across the Pacific towards Japan. The terrible effects of strategic bombing played a vital part in the Japanese surrender and the demise of Japanese air power yields an important lesson in the strategic complexities of air power.

With the help of air power, the enduring principle of surprise yielded spectacular results from the start. Pearl Harbour and Midway showed that results of far-reaching strategic importance could be achieved through carefully planned surprise attack. Air power was

able to deliver this through its unique qualities of speed and reach. Neither result would have been possible without air power. Technology has furnished today's air power with stealth, stand-off, electronic deception, increased speed and improved reach. All of these qualities contribute to air power's continued ability to deliver surprise and shock. The key attributes of pace and tempo, together with the principle of concentration of effort, allowed Allied air power to begin the war of attrition in the Solomons and beyond. Day after day, Allied aircraft ranged across the south west Pacific, aggressively searching out and engaging the Japanese on the sea, on land and in the air. Backed up by the resources of American industry, men and material continued to arrive in theatre and slowly gain the upper hand, as the pace of events gradually wore down the overstretched Japanese forces. Again, surface forces proved too vulnerable; it was air power that dashed in and dashed out, continuously pushing the enemy back. When the bombing of Japan began, it was concentration of effort that yielded the terrifying results. These lessons remain valid; the shrinking inventories of modern air forces emphasise the need to concentrate effort. Commanders must employ precision, and weapon-to-target matching, as an operational art, not just a tactical skill, with the attributes of pace and tempo enhanced through increased weapon effectiveness.

Tactical and strategic reach, were enduring attributes of air power throughout the war. From the assassination of Yamamoto to the B-29 bombing campaign, the reach of air power proved crucial, allowing pre-invasion strikes, blockade and mining operations to succeed. Submarines also had reach, and the provision of tactical air assets was repeatedly, though not exclusively, delivered through naval carrier power in the central Pacific. Nonetheless, these latter points emphasise the joint nature of air power; it was the maritime blockade and air power which brought Japan to her knees, enabled in no small way through the attribute of reach. This attribute is so fundamental to air power that it will always have a part to play. In contemporary operations, global reach has brought the ability to reach an enemy anywhere – witness the NATO raids into Yugoslavia from Germany in 1999, and the continued operations into Afghanistan since September 2001, from bases and carriers well removed from the theatre of operations. Reach remains fundamental to the employment

of air power. Strategic effect is often associated with reach and it was air power that delivered strategic effect most obviously in the Pacific, from Pearl Harbour and Midway to the bombing campaign against Japan. The capture of the Marianas was made possible by air power and it was from there that the bombing campaign began. Invasion of the islands without comprehensive air operations would have been unthinkable – a lesson that should not be missed by air commanders today. Neither should the joint nature of air power be undersold. In the Pacific, joint operations had to work and commanders soon learnt to co-ordinate their forces in order to multiply their effect. Joint and centralised C2 organisations worked well – by the final stages of the war, albeit with overwhelming air power, amphibious operations ran extremely smoothly, despite the tenacious fighting qualities of the ordinary Japanese soldier. The lessons of Tarawa were certainly learnt, as was the critical requirement for air superiority over friendly forces and SLOCs. The concepts of joint operations and centralised control, whilst well understood today, require constant attention. Increasingly expeditionary in nature, modern forces still need to remember the force multiplication achieved through the joint application of air power – history provides the clues.

The strategic bombing of Japan was clearly an air power preserve. The submarine blockade was the only operation that might be said to challenge the assertion that it was air power that ended the war. This paper has argued that both campaigns contributed to the final surrender, but that it was air power that delivered the most shocking blows, and that accelerated the final outcome. Air power was decisive in that it certainly saved the Allies from undertaking an invasion of Japan. Mass destruction of cities is not an accepted role for air power today, notwithstanding the existence of ballistic and theatre nuclear weapons around the world. Strategic bombing does remain valid, given the clinical precision that can be achieved with modern technology, but airmen must be careful not to promise what they cannot deliver, and they must be clear in their selection of target and expected strategic effect. These are not easy challenges, as General LeMay discovered in 1945, and they remain a challenge for the future employment of air power.

Finally, it was the flexibility and versatility of air power, coupled with the application of technology, which gave the allies a vital lead in

the Pacific campaign. Innovative and aggressive, the fighting spirit of the air power arms in the Pacific meant that even inferior equipment found a use and that no platform stood idle for want of a role. The Japanese could never rest; the ability of air power to operate at all levels of war, from the tactical to the strategic, harnessing technology in increasingly effective ways as it did so, meant that air power proved to be a ubiquitous enemy to the Japanese. The conservative outlook of the Japanese air arms, their lack of strategic vision, their slow rate of technological advance, and their adherence to the *Bushido* ethos, meant that the Japanese simply lost the technological race and that Japanese air power was eventually outclassed. Backed by superior economic strength, Allied air power dominated the skies over the central Pacific and Japan in the latter stages of the conflict. Flexibility and versatility are unique attributes of air power; in the Pacific they were the dominant qualities that provided air power with its decisive edge – decisive over the Japanese forces and decisive as the leading arm in the campaign. Today, as in the Pacific campaign, airmen must always lead the technological race or risk rapid obsolescence and defeat. The ubiquity of air power must be recognised as its greatest strength – its ability to operate across the disciplines and layers of war with technology as its shield.

Thus was air power the decisive weapon of defeat for the Japanese in the Pacific. The lessons of that campaign are as pertinent today as they were then. The key attributes and principles of air power were applied across the Pacific, from desperate beginnings to orderly and structured joint operations in the final stages. That it was air power that began and ended the conflict is no insignificant fact. Our understanding and application today, of the enduring principles of air power, owes much to the courage and innovative fighting spirit of the Allied air arms in the Pacific campaign.

Notes:

[1] Tedder (1947), pp29-30.
[2] Quoted in Meilinger (1995), p56.
[3] *AP 3000 – Third Edition* (1999).
[4] Meilinger, op.cit, pp1-84.
[5] Prange (1991), pp446-462.
[6] Rusbridger and Nave (1992), pp177-180**.**

[7] Smith (1997), pp48-53.
[8] Keegan (1997), pp206-211.
[9] Keegan, op.cit, p208.
[10] Bartsch (1997), pp53-57.
[11] Scutts (2000), p33.
[12] *War With Japan* (1995), Vol II, p29.
[13] Ibid, pp29-30.
[14] Ibid, p149.
[15] Keegan, op.cit, p228.
[16] Winnefeld and Johnson (1993), pp14-22.
[17] *Wings at War Series, No. 3* (1992), pp51-54.
[18] Pelvin (1995), p15.
[19] Rohfleisch (1950a), p57.
[20] Rohfleisch, (1950c), p251.
[21] Ibid, pp255-258.
[22] Ibid, pp259-260.
[23] Deighton (1995), pp505-506.
[24] Pelvin, op.cit, p13.
[25] *AP 3000*, op.cit, p1.2.7.
[26] Campbell (2001), p6.
[27] Haulman (1999), p14.
[28] Coox (1998), p294.
[29] Churchill (1950), p539.
[30] Coox, op.cit, p261.
[31] *The Doolittle Raid – 18 April 1942* (1992), pp3-4.
[32] Rohfleisch (1950b), pp213-214.
[33] Scutts op.cit, pp51-52.
[34] *War With Japan*, op.cit, Vol IV, pp130-131.
[35] Keegan, op.cit, pp250-251.
[36] *War With Japan*, op.cit, Vol IV, p136.
[37] Lord (2000), pp66-75.
[38] Keegan, op.cit, p226.
[39] Lord, op.cit, p75.
[40] Keegan, op.cit, pp226-229.
[41] *Wings at War Series*, op.cit, pp21-27.
[42] Rohfleisch (1950c), pp241-243.
[43] Rohfleisch (1950c), pp267-268.
[44] *War With Japan*, op.cit, Vol IV, p113.
[45] Ibid, pp112-148.
[46] Scutts, op.cit, p56.
[47] Haulman, op.cit, p26.
[48] *Wings at War Series*, op.cit, p40.
[49] Watson (1950a), p108.
[50] Watson (1950b), pp184-185.
[51] Hallion (1989), pp165-166.

[52] Winnefeld and Johnson, op.cit, pp23-38.
[53] Rohfleisch (1950c), pp252-267.
[54] *War With Japan*, op.cit, Vol IV, p54.
[55] Potter(1976), pp262-264.
[56] *War With Japan*, op.cit, Vol IV, p140.
[57] Olsen and Mortensen (1950), pp690-691.
[58] Coox, op.cit, pp327-328.
[59] Moyer (1944), pp15-19; Arnold (1944), pp3-8; Browning (1944), pp17-20.
[60] *United States Strategic Bombing Survey: The Effects of Strategic Bombing on Japan's War Economy* (1947), p59.
[61] Coox, op.cit, p267.
[62] Ibid, pp275-277.
[63] Ibid, pp283-286.
[64] Ibid, pp274-278.
[65] Ibid, p273.
[66] Ibid, p275.
[67] Ibid, p280.
[68] *USSBS*, quoted in Haulman, op.cit, p12.
[69] Coox, op.cit, p283.
[70] Haulman, op.cit, pp10-11.
[71] Coox, op.cit, p303.
[72] Ibid, p315.
[73] Ibid, pp319-362.
[74] *USSBS*, op.cit, p43.
[75] *USSBS: Japanese War Production Industries* (1947), pp6-12.
[76] Coox, op.cit, pp340-341.
[77] *USSBS: The Effects of Strategic Bombing on Japan's War Economy*, op.cit, p3.
[78] *USSBS: Japan's Struggle to End the War* (1947), p1.
[79] *USSBS: The Effects of Strategic Bombing on Japan's War Economy*, op.cit, p65.
[80] Keegan, op.cit, pp480-484; Coox, op.cit, p366; Overy, op.cit, pp127-133; Weinberg (1996), p12.
[81] Quoted in Emme (1959), p209.

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SUMMARY OF THE MINUTES OF THE SEVENTEENTH ANNUAL GENERAL MEETING HELD IN THE ROYAL AIR FORCE CLUB ON 10 JUNE 2003

Chairman's Report.

AVM Baldwin, Chairman, noted that the Society had held two seminars at the RAF Museum during the past year. The first of these, in October 2002, had covered Reserve and Auxiliary Forces in the RAF, and was chaired by AVM Barry Newton. A hardback journal, to be published in August, would probably be the most comprehensive account of RAF Reserves ever produced.

The second seminar, held just before Easter 2003, saw a record number of around 180 members attending to examine Air Aspects of the Falklands Campaign of 1982 under the chairmanship of Sir John Curtiss, who had been the Air Commander throughout the operation. The Society was most grateful to the Chief of the Air Staff, Air Chief Marshal Sir Peter Squire, and his immediate predecessor, Air Chief Marshal Sir Richard Johns, who had offered their experiences of Harrier operations; Sir Peter speaking from the perspective of OC 1 Sqn and Sir Richard as the Station Commander at Gütersloh. The President, Sir Michael Beetham who had been CAS,and acting CDS, at the time made his own observations and then summed up.

The next seminar would be held on Tuesday 21 October 2003 at the RAF Museum when our sister organisation, the US Air Force Historical Foundation would join us in a combined programme to discuss Anglo-American aspects of air power from WW I through to the first Gulf War. Members were encouraged to support this event which promised to be of great interest.

The Society had made a grant of £500 towards a projected memorial hangar to be built on Malta, dedicated to the achievements of the RAF and their Maltese colleagues during WW II. An anonymous member of the Society had donated £1,000 for the Society's general use. The Society was in a sound financial state and the subscription could remain at £15 per annum, but seminars were being subsidised by over £5 per head. While the committee considered that a reasonable subsidy was appropriate, in the light of the travel and other costs of attending seminars, if the subsidy became excessive, the charge for seminar attendance might eventually have to be increased.

The Chairman announced with great regret the death of Derek Wood, our former editor and a founder member to whom much was owed for the early and continuing success of the Society. An expert in his field, Derek had been the author of many books, including *The Narrow Margin*; the Chairman and Vice-President had sent their condolences to Derek's widow and family.

Concluding, the chairman thanked the committee for their continued hard work on behalf of the Society. The quality of the Society reflected their efforts, but their reward was the support of the membership in attending seminars and recruiting new members. As always, the chairman appreciated the helpful advice and constant encouragement of the President, Marshal of the Royal Air Force Sir Michael Beetham, and the Vice-President, Air Marshal Sir Frederick Sowrey.

Secretary's Report.

Gp Capt Dearman noted that fifty-nine new members, of whom six were serving officers, had joined over the year, while forty-five had ceased membership for various reasons. The membership stood at 887. The sale of journals had realised £543 since the last AGM. A steady flow of correspondence, including many queries which were referred to the Museum or to the AHB, reflected the wider interest in the Society and a source of new members.

Treasurer's Report.

Mr Boyes tabled the annual accounts for 2002 which showed a relatively small loss of £1,105. The current year forecast was for a very small surplus. A continued subscription of £15 pa was therefore appropriate, and seminar fees could also remain unchanged at £15 per head for the time being. The Society's reserves stood at £28,514 at 31 December 2002, a healthy sum. Subscription income had increased slightly, but gift aid declarations had reduced as new members seemed reluctant to sign the appropriate form. This meant a reduced income to the Society, and the treasurer would write to remind relevant members of the advantages of the scheme.

A proposal by Tony Richardson, seconded by Wg Cdr Jefford, that the accounts be accepted, and that Messrs Pridie-Brewster of 29/39 London Road, Twickenham TW1 3SZ be re-appointed independent examiners was carried.

Appointment of Executive Committee.

The chairman noted that, because of posting changes, Wg Cdr W Carter had taken the post of Wg Cdr McDermott at JSCSC and had agreed to serve ex-officio. The remaining members of the committee had all agreed to continue serving. The chairman thanked Wg Cdr McDermott for his valuable support and wished him well in his new appointment. Proposed by Gp Capt Neubroch and seconded by AVM Herrington, the motion to re-elect the present committee was carried. The 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	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 were:

J S Cox BA MA	Head AHB
Dr M Fopp MA PhD FMA FIMgt	Director RAF Museum
Gp Capt C J Finn MPhiI RAF	DDefS(RAF)
Wg Cdr W Carter RAF	JSCSC

Discussion.

The chairman announced that Wg Cdr Stephen Richards had won the Two Air Forces Award sponsored jointly by the Society and its counterpart, the (US) Air Force Historical Foundation. Sir Michael Beetham, presented the trophy and an inscribed copy of Anthony Furse's biography of Sir Wilfrid Freeman to Wg Cdr Richards.

Alan Pollock suggested an informal exchange of e-mail addresses. Wg Cdr Cummings reminded members of the repository of member's specialisations which was privacy protected. There would be problems with the Data Protection Act, and the possibility of viruses. On a show of hands, the proposal was defeated, but the chairman agreed to study the subject further in committee.

Bill Beaumont suggested the possibility of a seminar to look at the social structure of the RAF, and its comparison with RN and Army

units and the civilian population.

Air Cdre Dye expressed his thanks to the Society for its support of the planned British Air Services Memorial at St Omer in Northern France, and drew members' attention to a booklet describing the project. The appeal was progressing well, but donations would be welcome. The memorial is expected to be unveiled and dedicated over the weekend of 11/12 October 2004.

Note. The corresponding item to this in Journal 29 was headed Minutes of the Fifteenth AGM. This should, of course, have read 'Sixteenth'.

CAN YOU HELP?

No 230 Sqn and/or Aviation in Ulster.

RAFHS member Guy Warner is working on the history of aviation in Ulster, one current project being to research the background of the resident RAF helicopter unit, No 230 Sqn, with a view to publishing its story. If anyone can offer any information, especially photographs, specifically related to No 230 Sqn (any time, anywhere) and/or to any aspect of aviation in, what is now, Northern Ireland, stretching right back to pre-WW I days, you are invited to get in touch. Guy can be contacted via email at gcwarner@hotmail.com or by letter at:

4 Farm Lodge Way, Greenisland, Co. Antrim, BT38 8YA.
Tel: 028 90862843.

Female Pilots in the Air Transport Auxiliary.

Dr Helena Schrader, an American historian working in Berlin, is preparing a new account of women pilots in the ATA. Anyone, not exclusively ladies, who served in or who had contact with the ATA, in any capacity, is invited to contact Dr Schrader via email at helena.schrader@t-online.de or by letter at:

Tretschkestrasse 22, 12163 Berlin, Germany

FEEDBACK

A Supply Aspect of the Falklands Campaign

I was, unfortunately, unable to attend the Falklands Seminar last April but, having read the most interesting record of the presentations and discussions in Journal 30, I can offer a supply-related contribution.

I was in Harrogate as DDSM1 during Op CORPORATE, and was responsible for the supply of engines, as well as engine spares and general stores. Thus, whilst I go along with Peter Dye's comments that 'the overall position on engines was generally satisfactory', I cannot agree that such an optimistic statement applied to the Victor fleet's Conways.

At the beginning of April 1982 the supply position on the Victor Conways was appalling. The industrial R and O programme was for four engines per month, and it was falling behind schedule at the rate of at least one engine per month. There were three Victors with no engines; there were no serviceable reserve engines and a large backlog of u/s engines was stored at 16 MU. So, in view of the crucial importance of the AAR Victors to the Operation, the resolution of this problem is, perhaps, an unsung story worth telling.

The man who mattered was Mike Keen, the Product Support Director at Rolls-Royce. When we met in mid-April he asked how many engines we needed. My answer was 'eighteen in thirty days', and he accepted the challenge.

The Conways were repaired and overhauled at the British Airways Engine Facility at Treforest in South Wales where the manager was a ex-Fleet Air Arm man. All the u/s engines at Stafford were delivered to Treforest overnight, F6(Air) agreed to fund the repairs, my MOD(PE) colleague Roger Jones (with whom I had been at Staff College) agreed to '24/7' overtime, and Treforest started work.

The result was a magnificent seventeen repaired Conways in the following month and, as they say, the rest is history. The Conway was the only military engine handled by Treforest, the other seven or eight repair lines being civil engines, but these took second place to the Conways in April and May 1982. Indeed, when I visited Treforest after the war to thank them for their efforts, the Manager had just received a very critical note from the Head of British Airways

concerning late delivery of an RB211 on the very same day that he had received a thank-you letter from Controller Aircraft. Needless to say, and in the best Fleet Air Arm tradition, the MOD letter was simply forwarded to BA with no additional comment!

Finally, a few more minor, but nevertheless important supply points related to CORPORATE . The Harrier's Pegasus engine was not the most reliable at that time and Rolls-Royce Bristol was struggling to keep to the agreed R and O programme. Nevertheless, they very quickly generated all the u/s engines that we held at the beginning of April, and we were all mightily relieved that the Pegasus remained so serviceable throughout the war. After the war, two MBEs were awarded to the staff at Harrogate. One went to the WRAF officer who ran the Harrier airframe spares cell, and the other went to one of my Civil Service Executive Officers who was responsible for replacing the many repair tools that went to the bottom of the ocean in the *Atlantic Conveyor*.

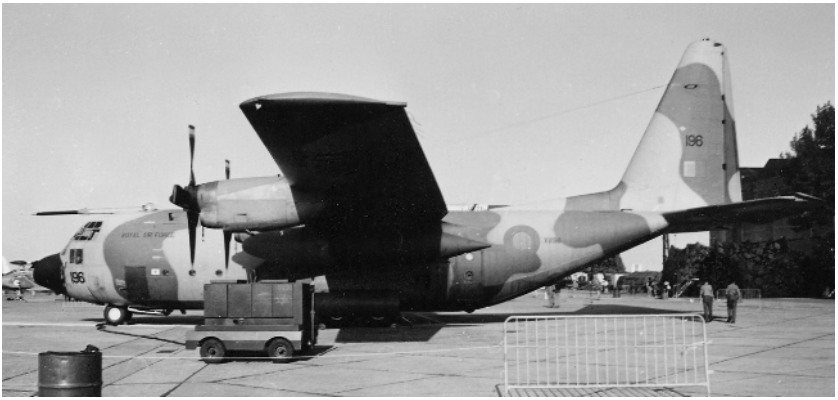
From my point of view, I cannot overemphasise the fact that the superb work of the aircraft industry during April and May 1982, aided by the fine efforts of the MOD(PE) technical officers, did much to ensure that the supply support of the air forces in the South Atlantic was not in jeopardy; a point that I made very strongly in an MOD Engineering and Supply lessons-learned meeting after the war.

Air Cdre Derek Waller
Arundel

The Post-Campaign Airbridge

Although the 'The RAF in the Falklands Campaign' seminar confined itself to the actual period of fighting, it may be worth a short reflection on what came next, and in particular the Airbridge. Although I missed the campaign itself, I was heavily committed to the South Atlantic for most of my first tour on the Hercules as a junior navigator on No 30 Sqn.

The Airbridge was initially one flight a day, but by the time I started my involvement in the summer of 1983 it had settled to five flights a week. To get one Hercules to the Falklands required two



A Hercules sporting the now familiar refuelling probe that would have looked very odd in the pre-CORPORATE air force. (Air Britain)

tanker aircraft with the normal option being one Victor and one of the specially modified Hercules tankers. The Hercules tanker would launch first at about 0600hrs with the freighter following 10 minutes later. Both aircraft would be at normal maximum take-off weight. The Victor would follow at 0630hrs and, with its superior speed, catch the Hercules tanker at 0800hrs some 600 nm down track. Using the 'tobogganing' technique described by AVM Evans, the Hercules would receive 34,000 lbs of fuel, bringing it to its maximum over-weight figure of 175,000 lbs. The Victor would return to Ascension and with the disparity in weights the Hercules freighter would slowly catch up with the tanker. The second RV would be some 1800 nm down track when, again, about 34,000 lbs of fuel would be transferred. The tanker would then return to Ascension while the freighter continued to RAF Stanley. For the tanker crew it was about a 12 hour 30 min sortie. The freighter generally took a little over 13 hours to reach the Falklands.

For the Hercules crews it was a three-week detachment, amassing some 100 flying hours. As a tanker crew (and we tended to operate, contrary to standard Air Transport practice, as a constituted crew) we flew three or four sorties a week. We would also, during our tour, do one four-month detachment to the Falklands where three resident, tanker-qualified Hercules crews operated the two tanker and one 'flat floor' aircraft. Our prime tasks were Maritime Radar Reconnaissance

of the Falkland Islands' Protection Zone, tanker support to the resident Phantom (and until they left, Harrier) detachments, and aerial re-supply of the South Georgia Garrison.

Fuel planning for the Airbridge was tight. The southbound freighter would meet strong headwinds after the second RV all the way to its destination and had to arrive overhead with a minimum of 26,000 lbs of fuel to enable it to reach the nearest politically acceptable diversion airfield, a further six hour's flying distant. For the northbound aircraft they had the advantage of following winds; furthermore the weather factor at Ascension, plus its isolation, afforded it 'Island Holding' status. This meant that there was no diversion airfield and we carried only minimum fuel plus one hour's extra for holding – 9200 lbs. In exceptional circumstances this could be reduced to 6500 lbs. This Island Holding applied to both the returning tanker and the northbound freighter.

For the tanker crews it was a straightforward daylight flight, departing Ascension at dawn and returning in the early evening. For the freighter crews it would be a night arrival if in the Falkland's winter to add to the unpredictable South Atlantic weather! The freighter aircraft would be unloaded, refuelled, re-loaded and serviced and flown overnight back to Ascension Island by the crew who had brought the previous aircraft down – a slip pattern, to use Air Transport terminology. For the crew that meant a long first day and then a second day sitting waiting for the arrival of the next aircraft (or two days if there was no southbound the next day – only five flights a week) before a 12 hour overnight flight home.

The Airbridge was a remarkable success and although things did occasionally go wrong, with broken probes or the usual in-flight problems, nothing serious happened in the four-or-so years it operated before the opening of Mount Pleasant and the arrival of the wide-bodied aircraft. A remarkable achievement and a tribute to the air and ground crews of both the Victor and Hercules squadrons, and to the myriad of supporting personnel based on both Ascension and at RAF Stanley.

Wg Cdr Ian Shields
MOD

DEREK WOOD – AN OBITUARY

Derek Wood, who died recently aged 73 after a long illness, was one of our earliest members. Widely recalled within the Society, he edited our Proceedings (now the Journal) for several years, contributed to our seminars, and was ever willing to lend his advice and expertise in other ways.

Enthusiasm for aircraft lay at the centre of his life, with its roots in his schoolboy experience of witnessing parts of the Battle of Britain as it was being fought over Sussex, his home county. But for health problems he would almost certainly have entered the RAF after the war, so he did the next best thing and in 1947 joined the Royal Observer Corps, where he was able to employ his great aircraft recognition skills over the next 26 years.

To earn his living he turned to aviation journalism, quickly making a mark for himself and in 1961 becoming Air Correspondent of the *Sunday Telegraph*. It was at the same time that his magnum opus appeared. *The Narrow Margin*, which he wrote with Derek Dempster, was quickly acclaimed as the definitive history of the Battle of Britain, and, notwithstanding the multitude of books that have since been written on this subject, it has stood well the test of time. John Terraine, returning to it frequently in *The Right of the Line*, is just one of the great military historians who have paid it tribute.

Now on the 'aviation map', Derek remained with the *Sunday Telegraph* for 25 years. He built up to major links with the Royal Aeronautical Society, *Jane's Defence Weekly*, *Interavia* and the *International Defence Review*. He also played a considerable part – valuably assisted by his wife Lyn – in running the Air Public Relations Association, which kept him for many years in close contact with the RAF.

A fluent speaker and a fearless questioner, he was frequently in the public eye – and not least when he challenged Denis Healey about the cancellation of the TSR2. So we in the Historical Society were delighted when Derek eventually agreed to give us his active support. Our subsequent success owes him much.

BOOK REVIEWS

The Battle of Britain – Victory and Defeat: The Achievements of Air Chief Marshal Dowding and the Scandal of his Dismissal from Office by J E G Dixon. Woodfield Publishing (Woodfield House, Babsham Lane, Bognor Regis, West Sussex, PO21 5EL); 2003. £15.00.

The sub-title tells the reader what to expect: a demolition job. To some, not least this author, the treatment of Sir Hugh Dowding by his Royal Air Force peers and superiors, and by the politicians of the day, is a dark stain on the history of the Service in WW II. In *The Battle of Britain – Victory and Defeat*, Jack Dixon, a member of our Society, puts the case: he describes the scheming that led to Dowding's dismissal after the daylight battles of 1940 and highlights the apparent mean spiritedness of Dowding's contemporaries in denying him, both then and subsequently, appropriate recognition for his achievements.

Using a wide range of published sources, the author lays out the ground work dealing with the planning for and the fighting in 1940, in a succinct fifty pages (including a sharp analysis of the so-called 'big wing' controversy – the tactical dispute between 11 and 12 Groups – giving, in passing, short shrift to Douglas Bader and his AOC, Leigh-Mallory). He then moves up a gear describing the machinations behind Dowding's eventual removal (and that of his AOC 11 Group too). Sholto Douglas, DCAS during 1940, and Leigh-Mallory, ('The schemers who benefited the most from Dowding's removal'), not surprisingly come out of Dixon's analysis as ambitious men who exploited the institutional antipathy towards Dowding in the Air Ministry to the full. Sholto Douglas's ingratiation with Sinclair, the Secretary of State for Air, and the newly appointed CAS, Portal, is just one example of the forces trying to undermine Dowding's position.

When Portal succeeded Newall as CAS on 25 October 1940, it was 'one last volley….enough to push him (ie Dowding) over.' Portal's widely experienced right hand man, Wilfrid Freeman, is quoted writing in 1944: 'Why did we get rid of Dowding who did something, and retain a number of inefficients (*sic*) a little junior to him who have nothing whatever to their credit?' There is little doubt, from Dixon's research, that the 'we' encompassed Sinclair.

Both Portal and Sinclair come out of Dixon's analysis badly. It is a depressing and unattractive story made worse by the Machiavellian manoeuvring behind the scenes of the old guard, Trenchard and Salmond. Using their influence as previous CASs (and as Marshals of the RAF), Dixon concludes that both undermined Dowding and sold his achievements short. (Although we know that there was a real possibility that Churchill might have made Dowding CAS – which probably explains their concerns).

In the second half of the book, 'Dowding and Park having been removed from their Commands, without thanks or reward', the author switches his attention to their successors, Sholto Douglas and Leigh-Mallory, and, by this stage not surprisingly, excoriates them. The night battle in late 1940 and the day fighter sweep policy across France the following year (suggested by, of all people, Trenchard and causing the loss of 226 fighters and pilots in the first six months of 1941 alone, for very little effect) are a litany of frustrating failure. The reluctance of Portal and others to countenance the development of a long range fighter, despite evidence already available of what even a modified Spitfire could have done (Dixon quotes the experience of Sidney Cotton in developing a 1,250 mile-range PR Spitfire in early 1940) is particularly telling. Dixon accuses Portal of being 'blind and obdurate', even into 1943 over the issue, and describes the tension between the Americans (Arnold) and the RAF as the newcomers '…..looked around and saw the Fighter Command of the RAF virtually unemployed…….the spectacle of a fighter force which Portal stated to consist of 1,461 aircraft with crews inactive while his bombers were being shot out of the sky both incomprehensible and unacceptable.' Dixon opines that Portal's failure to promote the development of a long range fighter for the RAF '…is one of the most egregious sins of the Second World War.' He then asserts that had such an aircraft been developed, Bomber Command would have been able to carry out an '....infinitely more accurate, sustained, and scientific assault against Germany's war industries'; the war might have been shortened, and Bomber Command 'would have been spared its terrible casualties.' Here the author allows his pen to run away. After all, despite the introduction of long-range escort fighters, the USAAF's casualties in Europe during their day bombing campaign were not all that different from those of Bomber Command, the 8th

AF alone sustaining some 26,000 fatalities (with another 21,000 or so becoming PoWs) while losing more than 4,000 heavy bombers and 2,000 fighters over a period of some two-and-a-half years. But the reader of Dixon's account will get the drift as the author assassinates both Leigh-Mallory and Sholto Douglas (and Portal on the way with, incidentally, only a footnote to Freeman who was the main instigator of the highly successful Merlin-engined P-51 Mustang).

Perhaps the most depressing part of the whole story, as we all look back with hindsight and some sixty years of argumentation, is the mean spirited way in which Dowding was treated at the end. As described in the Society's 1990 publication *The Battle Re-Thought*, soon after the battle in 1940, the Air Ministry published an account which, extraordinarily, managed to omit Dowding's name. Dixon relates the saga and concludes that '…..the suppression of Dowding's role in the Battle of Britain seems to be of a piece: to deny to Dowding all recognition for his role in the heroic victory.' On the other hand, it has been argued that the reason for the omission of Dowding's name was a, probably misguided, attempt to avoid petty jealousies and to try to stem the press's enthusiasm for personality cults. Nevertheless, can one imagine a HMSO document describing El Alamein without mentioning Montgomery? Debating why it was that Portal (abetted by Sinclair) would want to deny Dowding the recognition that was due to him, Dixon presents his last Exocet: the denial to Dowding of the rank of Marshal of the Royal Air Force. The old saw that the honour only went to past CASs was overtaken by the raising of Harris and Douglas. ('No less an unworthy figure than Sholto Douglas….who dares compare Douglas's achievements with those of Dowding! Douglas's elevation can be regarded as nothing other than a conscious and wilful insult to Dowding on the part of Portal and the Air Council').

Dixon concludes that 'they' did not want Dowding interfering once he had retired. Marshals did not retire – and, most certainly, they interfered. The final irony in all of this is that Dowding's eventual baronetcy came as a direct result (a command?) of the King, who 'was aggrieved at the lack of recognition accorded to Dowding.' Dixon quotes that, of the four air marshals listed in the Official History for their distinguished service in WW II, Portal, Tedder and Harris were awarded the highest rank. Only Dowding was denied it. Dixon

concludes: 'There can be little doubt that if Dowding had been an Army or a Navy man, he would have been so honoured.'

There is more, and I have touched on only some of the argumentation. Of course, there is much assertion, and one is constantly benefiting from hindsight. In a book with two sub-titles, one of them, *A Full Account of the Removal of Air Chief Marshal Sir Hugh Dowding from Fighter Command Without Reward or Recognition after he had won the Battle of Britain. A Saga of Heroism and Treachery*, the reader can hardly expect a balanced account. So, while some allowance must be made for the passion with which the author presses his views, his conviction is infectious. It remains to be seen whether anyone will be prepared to present a case for the defence but, until someone does, this book represents a persuasive last word on the affair.

AVM Nigel Baldwin

Buffaloes Over Singapore by Brian Cull with Paul Sortehaug and Mark Haselden. Grub Street; 2003. £19.99.

Relatively little has been written about the air aspects of the Malayan Campaign that led to the humiliation of the Fall of Singapore. This book puts flesh on the bones of such earlier works as exist, by describing the gallant fight put up against huge odds by the pilots of Singapore's fighter force. Its four squadrons of Brewster Buffaloes, reinforced for a month or so by a Dutch squadron, bore the brunt of sustained attack by massive bomber formations, generally escorted by greatly superior fighter aircraft. Although these disparities were compounded by the inexperience of their pilots and by woefully inadequate support, a large number of enemy aircraft had been destroyed by the time of the surrender on 15 February 1942. In addition, the squadrons gave courageous support to the retreating army, besides carrying out invaluable photo reconnaissance.

This excellent book gives a blow by blow account of the campaign but rises above the detail of daily combat in many of its authors' perceptive observations. It draws heavily on diaries and eye witness reports but largely avoids the pitfalls of this approach which can lead to populist judgements, often the province of the coal face observer. Many of the accounts involve understandable emotion, not least in describing tensions between the squadrons and the Staff, besides those

that evidently flourished between the RAAF and RAF. There is some bitterness too, probably reflecting the wider Australian view that the British handling of the Malayan Campaign amounted to 'The Great Betrayal'.

Greater objectivity is to be found in the opinion of those RAF officers who led the squadrons and, to a greater or lesser degree, commanded the respect and affection of their troops. The verdict of Flt Lt Tim Vigors on the monstrous lapses in Naval-Air co-operation contributing to the sinking of HMSs *Prince of Wales* and *Repulse* bears close attention, for such lapses were not unique. Sqn Ldrs Howell and Clouston offer insights into the wasteful employment of a small fighter force that could have made a greater impact, had it been better supported and handled. They lavish praise on their gallant personnel. Excerpts from a report written by Sqn Ldr Harper RAF, OC 453 Sqn RAAF, whose leadership was later criticised by an Australian Court of Inquiry, contain further valuable lessons.

Buffaloes Over Singapore is well written, easy to read and nicely produced, although the quality of its many excellent photographs is disappointing. It steers clear of repeating many of the myths surrounding the Fall, although the old canard, that Singapore's guns faced only out to sea, is duly given an airing in the account of a RNZAF pilot who had distinguished himself in combat. The book concludes that the Buffalo was simply not up to its task. The young pilots, largely recent products of RAAF and RNZAF FTSs, were raw but learnt fast and stuck courageously to their hopeless task. The necessary leavening of combat experience was minimal and the air defence system, essential if best use was to be made of fighter squadrons, was rudimentary and unreliable. Lessons abound, not least for politicians who would today cut corners with defence!

AVM Sandy Hunter

The Lancaster Manual. Greenhill; 2003. £25.

This book hardly lends itself to a review, in the conventional sense, as it is simply a reprint of AP2062A & C. That is to say that it is the engineering manual for the Lancaster Mks I and III and its authors clearly did not set out to produce a work of literature. So, while this substantial volume (it runs to well over 500 pages) may be a trifle short on poetry, it is long on technical detail and profusely illustrated

with diagrams illustrating the numerous electrical circuits, the various hydraulic systems, the arrangement of the engine and flying controls, the layout of the fuel system and everything else that made a Lancaster work. There is a photographic insert illustrating the various crew stations, although I suspect that this is a relatively recent addition, as the caption writer can't tell his H2S from his GEE box. A contemporary error of that nature would surely have been corrected by routine amendment action, and this reprint, incidentally, appears to reflect ALs published up to as late as November 1944.

Not really bedtime reading, but an essential reference if you happen to have a Lancaster that needs rewiring or replumbing, and simply reeking of nostalgia for anyone who ever flew in or worked on one in real life. It is worth noting that this is the third book in a series sponsored by the RAF Museum, earlier volumes having reproduced the equivalent manuals for the Spitfire V and the Hurricane II.

CGJ

Air Power, From Kittyhawk to Gulf War II by Stephen Budiansky. Viking Press; 2003. £20.

Stephen Budiansky is engagingly honest in setting out his intention and his parameters. His aim is 'to tell the story of air power-of the revolutionary transformations that the airplane has brought to the conduct, consequences and meaning of war in the hundred years since its invention.' But, he warns, 'telling the story' is not the same as 'a definitive account'. He had to be 'quite ruthless' in abandoning 'much that is justifiably famous' if he 'was to have a prayer of getting where (he) was going.'

His research is extensive; his writing is fluent and lively. His account contains many detailed and illuminating vignettes of commanders, aircrew, scientists, aircraft and weapons.

His American perspective, emphasis and selection of events will be of particular interest to those British readers whose historical awareness may be a little insular. For example, he acknowledges Colonel Edgar Gorell's early contribution to ideas of precise strategic bombing. He reminds us of the considerable US advances in airframe design, instruments and navigational systems in the 1930s, well ahead of their UK counterparts. He cogently argues the importance of air power in the Spanish civil war and the fact that the UK was slow to

read lessons across from it. His assessment of aircraft carrier development before 1941 is rather more even handed than some light blue accounts. Late in the book, he draws on two highly regarded analysts, Mark Clodfelter and Ben Lambeth, to give a persuasive account of air power in Vietnam and the subsequent recovery of the USAF to its current pre-eminence.

It soon becomes obvious where Mr Budiansky is 'going'. Running through the book is his trenchant criticism of all those air power enthusiasts who believed that air power should be directed at the enemy's morale, rather than his fielded forces. This is old ground, and it has been more persuasively worked, for example by Richard Pape. Trenchard, Douhet, Harris, LeMay and Warden are censured. Chennault, Coningham and the young Turks of the US Air Warfare College of the 1990s are presented as the pragmatic, insightful thinkers.

There is indeed a strong case to be made. Moreover, air power enthusiasts of all persuasions have too often been guilty of promising more than contemporary technology could deliver. Mr Budiansky's condemnation would however, be more cogent if it was embedded in a broader historical awareness and not undermined by an advocacy as narrow minded and selective as that which he ascribes to his prey. Factual errors and omissions, sometimes of surprising significance, further undermine his credibility. In a book review, only a handful of typical examples can be given.

He makes no mention of the first Smuts report of 1917, which was stimulated by the inadequacy of UK air defences, by the waste of duplicated and competitive procurement between the RFC and the RNAS and by pressure on British politicians from constituents who were in fact very worried by German bombing.

When Trenchard was insisting on his aircraft engaging German opposition deep in their own skies, his strategic context was the impact on allied ground forces of hostile artillery spotters operating over the front lines. Aircrew losses counted in tens or even hundreds in the air were set against thousands in the trenches.

British imperial policing and its impact on aircraft, procurement and ideas in the RAF in the 1920s can only be understood in the context of the 'Ten Year Rule' which is not mentioned. Luftwaffe concepts of operations were dictated by the expected proximity of

hostile forces immediately across Germany's borders, but the author omits Blitzkreig from his catalogue of 'greatest events'. He accurately identifies German weaknesses in intelligence, strategy and fighter endurance as contributing factors to British success in the Battle of Britain. He then ignores subsequent Royal Air Force pride in the defensive sacrifices in Fighter Command in favour of a cheap and unsupported reference to 'crowing' RAF and USAF protagonists of 'strategic air warfare'. The historical significance of the Battle, without which subsequent US operations in Europe would have remained theoretical, passes unremarked.

His assessments of the Combined Bomber Offensive remain predictably uninfluenced by the scholarship of Richard Overy and Henry Probert. He attributes the absence of Luftwaffe fighters on D-Day to the activities of General Quesada's tactical squadrons, while subsequently noting without further comment that the fighters escorting the bomber streams destroyed 30% of the 'entire German fighter force' in January 1944, 30% in February; a further 56% in March and that by June an attrition rate of 'close to 100%' had been achieved.

The official history of the RAF's strategic bombing campaign was written by Sir Charles Webster and Noble Frankland, not by Dr Solly Zuckerman, who presided over the post war British Bombing Survey Unit Report. The footnotes indicate that the author was aware of both, but his failure to distinguish between them in the text does not inspire confidence in the mastery of his sources. Meanwhile, four years of incessant air-land battles in eastern Europe are covered by a single page devoted to the technical qualities of the Shturmovik. Stalingrad and Kursk are apparently not among the 'greatest events'.

Royal Navy readers will be surprised to learn that by spring 1941, 'America was protecting (Britain's) transatlantic lifeline', although obviously not very successfully, as Mr Budiansky later concedes that by June 1941, 700 ships had been lost in the Atlantic, amounting to a crippling 2.8 million tons. HMS *Prince of Wales* and *Repulse* were sunk later that year while, according to the author, sailing from their home base of Saigon.

Only in his last 100 pages, does Mr Budiansky address the second half of the century. The Berlin Airlift is dismissed in one sentence as 'one of the most brilliant American achievements of the post war era'.

Quite apart from the RAF and French Air Forces' contribution, it was in fact the one air operation in the Cold War which changed the direction of history. It is ironic that Mr Budiansky fails to observe that the Airlift was carried out in the face of strenuous USAF opposition because of the 'diversion' of transport aircraft from their primary role of supporting deployments of strategic bombers. Management of the Cuban missile crisis, the second critical event of the Cold War, which depended heavily on aerial reconnaissance to avoid recourse to the bombers, is omitted completely.

Omission of such events, with their negative implications for USAF bomber priorities, is ironic, but not surprising. The author is obsessed with the strategy and politics of Strategic Air Command to the exclusion of its NATO environment. SAC's posture was politically convenient for an alliance reluctant to meet the Lisbon Force Goals. It was not just the USAF which perceived the Korean war to be against the wrong enemy in the wrong place at the wrong time. The threat was Soviet; the battleground central Europe; the western alliance outnumbered. Reluctance to build slow piston engined aircraft solely for use in Vietnam was sensible in an air force of a country whose declared priorities were still with the Warsaw Pact in Europe.

NATO revised its strategy in 1967 in response to Soviet possession of nuclear weapons, not in the late seventies. There is no reference to the comprehensive tasks subsequently allocated to NATO's air power in the event of war. The doctrine of 'Follow on Forces Attack' was a quite separate and unimplemented US Army unilateral doctrinal revision in the late 1980s.

In his last chapter, the author attacks the 'mechanistic theories' of Colonel John Warden, emphasises the re-appearance of air-ground synergy and congratulates airmen who in the campaigns of the 1990s have finally substantiated their claims to ascendancy, not in an 'independent' strategic environment, but on the battlefield. He singles out PGM and networked operations yet nowhere mentions the contribution of US Navy and Marine Corps aviation.

Mr Budiansky's explanation of how the aeroplane has transformed the conduct of war is that armies would now be 'needed primarily to induce the enemy to move and to occupy relatively undefended territory.' He does not address his other two issues: transformation by

the aeroplane of the ‘consequences’ and ‘meaning’ of war. To do that he would have to examine the different political and operational circumstances of the wars of the last decade and compare them with earlier ones. He would need to examine the stimulation of asymmetric response to overwhelming US air power. Perhaps he would take into account the total mismatch in conventional military strength in Afghanistan and Iraq II. He might consider the transformed nature of coalition warfare as a result of US air power dominance. He would, in short, need to reconstruct his entire book, because the aeroplane has changed the consequences and meaning of war more in the last thirteen years than in the previous eighty.

This is a big book which has been widely publicised. But it is not ‘the’ story of air power. It adds nothing to our knowledge of air power’s impact in the last century. Its case against the strategic bomber advocates is already well known, while pre-occupation with it here leads to omission or distortion of other equally important events and developments. It is ‘a’ story, skilfully yet capriciously adorned. Above all, it is a reminder that wide and assiduous use of sources is no substitute for a deep understanding of a subject. There is no obvious reason why a member of the Royal Air Force Historical Society should buy it.

AVM Tony Mason

Royal Air Force Germany Since 1945 by Bill Taylor. Midland Publishing; 2003. £35.00.

Midland’s latest, 240-page A4 hardback, addition to their catalogue adds to their growing reputation for well-researched, well-written and very well-presented books on well-selected topics. This one tells the story of the RAF’s presence in Germany from the part that it played in the final defeat and subsequent occupation of, what soon became, a divided territory, via its involvement in the Berlin Airlift and forty-odd years of Cold War to its final withdrawal from a reunified country in 2002. It does this in some depth and with just enough reference to changes in political direction (the implications of the Korean War, the 1957 White Paper, ‘tripwire’ to ‘flexible response’, post-Cold War operations and so on) to set the day-to-day activities in a sensible context.

It would be surprising if a 150,000-word book (plus another 25,000

in the appendices) were to be entirely flawless and I did find one or two factual errors. For instance: India gained its independence in 1947 (not 1949); No 18 Sqn spent 1969-70 at Odiham (not Oakington); and SACEUR's major aircraft generation exercise was an ACTIVE EDGE (not ABLE ARCHER, which was to do with nuclear release procedures). One can also find the very occasional typo or missing conjunction and a few presentational oddities, eg there is no hyphen in Sholto Douglas and the Bü 131 is the Jungmann (not the Jungmeister) and it is, I think, technically incorrect to refer to the RAF's top man in Germany as the AOCinC because, for some arcane constitutional reason, between 1949 and 1993 he was actually designated more simply as a CinC (Air Force Lists *passim*).

This is, of course, my customary nit-picking (it's a tough job, but someone has to do it) so I will move quickly on to stress my real admiration for Gp Capt Taylor's work. He spent some twenty years researching his field and it is quite clear from the result that he knows his subject intimately. This comes across in the narrative which inspires confidence in the reader; one feels that one can rely on this book as a sound work of reference. The way that the book is organised has fostered a degree of repetition – a chapter will, for example, tend to open with a review of the contemporary ORBAT, reflecting changes that had been described in some detail over the previous few pages. This is not necessarily a bad thing, of course, as it permits most chapters to be read in isolation, which is very convenient. The bulk of the book inevitably concentrates on the activities of the squadrons but appropriate attention is given to supporting engineering organisations, to those involved in the logistics chain and to the RAF Regiment. To round off there are numerous appendices providing brief details of scores of ancillary organisations: hospitals; bomb disposal, signals and photographic units; recreational gliding centres and many more.

If the written content of this book is impressive, it is at least matched by the accompanying illustrations. I counted almost 300 black and white photographs plus another sixty-odd in colour and ten maps, well over a picture per page. But it is not just the quantity; the quality is there too. The photographs are, without exception, well chosen and beautifully presented on gloss paper, thus ensuring the best possible fidelity of reproduction. Many of the pictures are fresh; all are precisely and informatively captioned and they make an admirable

contribution by amplifying the adjacent text.

There is, I suspect, much new information in this book, and even if it is not new, it is good to have it all between one set of covers. Who knew, for instance, that a prototype hardened aircraft shelter was constructed at Wildenrath as early as 1954? Then again, this book provides more detail on LIVE OAK, JACK PINE and the plans to keep the Berlin air corridors open than I have previously seen in print.

To sum up, Bill Taylor has done the RAF in Germany proud. If you were involved with the Typhoons and Tempests of 1945 or the Tornados of 2001, or at any time in between, I am sure that you will appreciate this book. Highly recommended.

CGJ

To Hell And Back: True Life Experiences of Bomber Command at War by Mel Rolfe. Grub Street; 2003. £8.99.

In 1998 Grub Street published the first edition of; *To Hell And Back* and, after being produced and reprinted several times as a paperback, it has returned in a new version.

The book, as its sub title makes clear, is a record of true life experiences in Bomber Command. However this is not strictly accurate, since a few of the stories relate to operations outside the realms of Bomber Command. This, however, reminds the reader that bomber operations were also undertaken from Italy and one story recalls the sorties flown to bring relief to Poland during the Warsaw Rising.

I once recall a famous bomber captain being asked what it was like to fly a tour of night bomber operations, mostly against well defended targets deep in enemy or occupied territory. 'It was 90% boredom and 10% sheer terror', was his simple response. In the twenty stories recounted in this volume, Mel Rolfe concentrates heavily on the 10%.

Each of the twenty chapters follows a similar pattern; the crew whose story it is, are introduced and we learn something of their backgrounds and often how they came to be together. It is this scene setting which reminds the reader – should he ever forget – that every bomber was flown by a team of individuals and every loss was a tragedy which went far beyond the crew and into families spread throughout the world. The individual stories are all gripping and one realises the fine line which existed between successful completion of a

sortie and disaster, and between survival and death. The book is a good counterpoise to 'heavier' works, such as strategic histories or biographies of the great and good.

At a distance of almost sixty years, the book has a sobering impact on the reader, who realises to what the young men of that wartime generation were subjected and how it must have affected them. It is difficult to imagine how our current generation might cope with such pressure.

All in all this a worthwhile book which highlights some of the less well known factors of the bomber war, including the murder of RAF prisoners. The book is well illustrated, with appropriate photographs of many of the characters one meets in the stories recorded. Mel Rolfe is to be congratulated for compiling so interesting a volume of personal sketches of life at the sharp end of a bloody and costly campaign. As personal experience becomes history, as those who fought the bomber war pass on, books like *To Hell And Back* will become increasingly valuable sources of reference as to what it was really like.

Wg Cdr Colin Cummings

September Evening by Barry Diggens. Grub Street; 2003. £17.99.

This interesting book can be recommended to anyone curious about the brief life of this very effective WW I fighter pilot who, having shot down forty-eight Allied aeroplanes, most of them British, was killed at the age of 20. As the author points out, Voss has been the subject of three previous books, all of which contradicted each other in parts, and the destruction of German records during the final retreat of 1918 and the fall of Berlin in 1945 has made it almost impossible to compile an accurate biography. Nevertheless, a great deal of thorough research has gone into the production of this study and it represents a determined attempt to clarify many of the uncertainties attending Voss's life and death, although the author accepts that his work may have raised more questions than it answers and he invites further debate and commentary.

The first brief chapter covers Voss's life from his birth in 1897 through his Army service on the Eastern Front from November 1914, via his transfer to the Imperial German Air Service and his training and subsequent service as an observer on two-seaters, to his

conversion onto single-seaters and posting to *Jasta* 2, the top fighter squadron of the time. Chapter 2 describes at length each of his victories up to the forty-seventh while the final chapters provide detailed accounts of his last victory and his end under the guns of No 56 Sqn's SE5as and close with a review of the differing interpretations of the way in which he met his death that have held currency at various times.

Seven Appendices add substantially to the comprehensive detail of the book. The most important covers the Combat Reports submitted by McCudden, Bowman, Rhys Davids, Hoidge and others of No 56 Sqn. These add both overall clarity and fine-grain confusion. Other Appendices cover the Bowman versus Chidlaw-Roberts accounts, Voss's service record, his victory list, details of the Fokker Triplane in which he was killed and some rather coarse quality maps portraying his final combat and locating the sites of his victories. Finally there is a ninety-five-entry bibliography and a decent index. The production is topped off by the inclusion of seventy-two photographs.

There are a few aspects that might have merited more coverage. Voss was clearly an exceptional pilot and shot and one wonders how he came to be so good, since natural ability alone does not necessarily make a great fighter pilot. His previous experience of aviation, including training, had covered the period August 1915 to November 1916 and had included active service on two-seaters for six weeks over Verdun and two months over the Somme. To what extent did his initial exposure to aerial combat as an observer and, in particular, the practical experience of aerial gunnery that this would have provided, foster his skills as a marksman?

Sixteen of Voss's first twenty-six victims were two-seaters and six more were DH2s that were seriously outmoded by 1917. It would, I think, have been helpful if the table of victories had noted the type of aeroplane that Voss had been flying on each occasion but it is clear that until the SE5a and Camel arrived at the Front he was usually flying a better aeroplane than his opponent and even then his mechanically synchronised Spandau machine-guns seemed to have been much more effective than the relatively unreliable hydraulically synchronised Vickers used by the RFC.

The author admits that any 'grammatical nonsense' is his responsibility and, while my discomfort with the text is not

exclusively grammatical, the very first sentence does introduce a numerical uncertainty that could have been avoided by the simple substitution of 'several' for 'a number of'. Clichés abound such as 'stuck to his tail like glue', 'reap a grim harvest', 'opened the floodgates', 'poured a withering fire' and the odd muddled metaphor like 'a deluge of fiery shots' interrupt the flow of interesting data and narrative. I disliked the use of the word customer for a potential victim and I did not understand the notion that an RE8 had a 'preponderance' to stall nor the use of 'diatribe' where 'debate' would seem to have been a more appropriate word.

Despite these minor irritations those interested in the Voss saga will find this an informative volume.

Jack Doyle

British Flying Boats by Peter London. Sutton; 2003. £25.

Until now, the best overall reference work on British flying boats has probably been Geoff Duval's 1960s contribution to the Putnam series, which he must have written during lulls in his day job as a QFI at Bassingbourn where he spent his time introducing new crews (mine included) to the Canberra. Well-received when first published, there were flaws in Duval's book and these became increasingly apparent with each addition to Putnam's range of detailed company histories. The volume dedicated to Saunders Roe, one of the UK's major flying boat design houses, was contributed by Peter London, which made him an ideal candidate for the task of compiling a fresh account of the half-century that saw the rise and fall of British water-based aviation.

The result is a handsome, slightly less than A4-sized, 298-page book which examines in some detail the entire history of British flying boats. Terminology is important here; we are dealing exclusively with hull-in-the-water aeroplanes, so there are no Schneider Trophy-style floatplanes. Starting with the unsuccessful Humphreys Biplane of 1909, we are taken, via the Felixstowe boats of WW I and the stately, galleon-like silver biplanes and the graceful Empire boats of the inter-war years, to the workhorse Sunderland of WW II and after. The story is brought to a, probably overdue, close by the SR A/1 and Princess, both remarkable achievements in terms of engineering, but for which we can now see, with the benefit of hindsight, there had probably never really been much prospect of operational deployment or

commercial success.

While London provides ample coverage of the design characteristics of the more familiar types, both civil and military, and summarises their use, his canvas is as broad as the industry and he actually describes every British boat that ever flew, and one or two that didn't. All of the raw statistical data (weights, dimensions, performance figures, serial allocations, etc) are presented in tabulated appendices, allowing the first 250 pages to be devoted to a smooth-flowing narrative which is illuminated by an admirable selection of well-reproduced and informatively captioned photographs at a rate of one per page.

The absence of any of my customary pedantic observations on grammar, typos and/or factual errors does not indicate that this reviewer is mellowing with age, nor does it signify a change in editorial policy. The fact is that, just for once, I found absolutely nothing to carp about. That said, readers who are not surfers or who are unaccustomed to messing about in boats, might have appreciated a glossary. As it is you may need to look up the odd unfamiliar nautical term, eg chine, flare, tumble home, skeg and trots (my Oxford Concise drew a blank with the last of these).

Today, while residual interest still flickers in Japan, China and Canada, the Russian aviation industry is the only serious contender for the title of champion of the large flying boat. Elsewhere, the concept was more or less abandoned forty or more years ago. When flying boats were in vogue, however, British designers were as innovative and competent as any and their successful projects were world-class. This comprehensive and authoritative book, tinged as it is with nostalgia, provides an excellent account of, what amounts to, a closed chapter of aviation history.

CGJ

Battle Of The Atlantic by Marc Milner. Tempus; 2003. £25.

Canadian Marc Milner is Professor of History at the University of New Brunswick. This book, one of several he has written on the naval history of WW II, concentrates on the war in the North Atlantic, excluding the Russian convoys and tending, understandably, to focus on the North American seaboard, particularly the period after the USA had entered the war. Apart from some coverage of early surface raider

activity, the bulk of the book is devoted to the U-boat threat. There is detailed coverage, from both Allied and German perspectives, of policy, command organisation, strategy, tactics and the technical developments involved in the Battle. The air participation receives relatively little attention but the critical importance of the contribution that it made is acknowledged. In particular two sinkings by Sqn Ldr Terry Bulloch, of No 120 Sqn, flying a Liberator and John Cruickshank's action, for which he was awarded the VC, while flying a Catalina, receive special mention.

The Introduction reviews U-boat and ASW development and activity in WW I and post-war international legislation governing future conflicts, particularly the 1930 Submarine Protocol, which was signed by most major states, including Nazi Germany in 1936. It was this agreement which prompted the CNS of the RCN to observe in 1937 that, 'If international law is complied with, submarine attack should not prove serious.' While this view reflected the general sentiment of the whole of the British Empire and Commonwealth, it was also realised that it was a big 'if', and plans were put in place to counter a submarine threat to allied shipping. The sinking of the SS *Athenia*, a few hours after war was declared, indicated that the way ahead would not be in accordance with international law.

But, despite the plans, Britain was not prepared for the task of protecting the Atlantic shipping lanes when war broke out. The anxiety and frustrations of commanders and combatants alike – both British and German – as they prepared for the battle ahead come through in the early chapters. This is a feature running through the book with anxiety and frustration being replaced by self confidence as the advantage swings between the opposing forces.

The appreciation of historian V E Tarrant, that the opening months of the war were 'little more than a nuisance', would not have been shared by the men manning the ships. It is certainly not borne out by Milner's descriptions of the actions during the period. With ship sinkings mounting, the period to April 1941 was but a foretaste of things to come. But the U-boats were not having it all their own way. The centralisation of Naval and Coastal Command operational control, as Western Atlantic Command in Liverpool, concentrated our ASW resources and was a turning point; as Churchill observed, 'the Battle of the Atlantic had now really begun.'

The account of the struggle over the next four years makes exciting reading as Milner traces the impact made by the introduction of new, and more capable, ships and aircraft equipped with more effective sensors and weapons. The availability of the captured Enigma yielded greatly improved intelligence permitting losses to be reduced by routing convoys to avoid enemy submarines. But improvements in German capabilities kept pace with those of the Allies and sinkings continued to increase remorselessly until the tonnage being lost began to exceed the new build rate. Dönitz' developing strategy and tactics eventually gave rise to serious concern over the availability of food, raw material and munitions in the UK.

The US declaration of war brought welcome resources to the campaign and also some relief as the U-boats turned their attention to the rich pickings offered by the North American seaboard – unescorted ships silhouetted against the bright lights of un-blacked out coastal towns. Their task was made even easier, because the USN ignored British advice as to the effectiveness of the convoy system. All of this is described by Milner as 'Carnage off America.'

Maritime aviators, past and present, will perhaps be surprised that May 1943, when Dönitz withdrew his Wolf Packs from the central Atlantic following the loss of forty-one boats in one month, and officially recognised as the date of victory in the Battle of the Atlantic, is reached as early as page 155 of 250 pages. This is witness to the fact that a significant campaign continued. Indeed, while merchant shipping losses fell dramatically, U-boat sinkings continued to rise while the numbers at sea were reducing.

Milner concludes that:-

the Battle of the Atlantic was won by radar – not by securing the German Enigma codes and intelligence from Ultra;

the Germans were nowhere near winning the battle of the Atlantic – not a view supported by Churchill who said after the war, 'The only thing that ever frightened me during the war was the U-boat peril'; and

the USA and Canada both played salient roles in the Atlantic, and in time their efforts came to match, and in some ways surpass, those of Britain;

These conclusions suggest that the book could possibly be seen as

controversial in some circles and generate much discussion. Less likely to be disputed is his belief that a modern history of Coastal Command is needed.

That said, the book is a good read. It is well written, illustrated with good photographs and clear diagrams. The author presents a clear appreciation of: the complexity of the Battle as seen from both sides; the scale of the losses of ships and U-boats and their crews; and the ever changing struggle for superiority throughout the campaign which raged from September 1939 to (nominally) May 1943, but actually to the end of the war in May 1945. My one criticism is that for a reference book, as this one will undoubtedly be regarded, the index is woefully inadequate.

The book is certainly worth its price. Highly Recommended.

AVM George Chesworth

British Experimental Turbojet Aircraft by Barry Jones. Crowood Press; 2003. £29.95.

Back in 1990 Argus published a book by Barrie Hygate which described and illustrated all significant British experimental jets. Not long afterwards *Aeroplane Monthly* began a series of articles, which took several years to complete, in which Barry Jones examined each of these same aeroplanes in turn, the most significant difference being that Hygate had used (mostly) 1/72nd scale general arrangement drawings whereas Jones had presented his 'three-views' as coloured artwork. In essence, the title under review presents the magazine articles between one set of hardback A4 covers. That is not strictly true, as some of the photographs are different and the text has been extensively rewritten, or paraphrased, although I doubt that this has involved the presentation of much new material.

So what we have here is pretty much an exercise in recycling. That said, I found very little to complain about in either the content or the presentation. There are hardly any typos, half-a-dozen at the most, and the only factual error that I came across is a statement to the effect that all Meteor T.7s were either built or retrofitted with the F.8-type tail that had been developed for the Gloster GA2; in fact only a handful of two-seaters was modified in this way to become hybrid 'Mk 7½s'. In view of the authoritative nature of the rest of the narrative and the very readable, and thus easily assimilated, writing style I imagine that this

must have been a temporary aberration.

So, if you want to know about the thinking behind Fairey's FD1 and FD2, the HP 88 and HP 115, Boulton Paul's P.111 and P.120, the Avro Ashtons, Short's SB4 and SB5 and many others – about thirty in all – this book will probably tell you all that you will ever need to know. My vagueness about the total is because it will depend upon the reader's opinion as to the extent to which aeroplanes like the Hawker P.1040 and P.1072 or the Supermarine Types 510 and 535 represent different designs, as distinct from being mere variations on a theme. Either way, they are all given equal space in this book. Each programme is reviewed in some depth, including an account of the trials and tribulations encountered during flight testing, and rounded off with an assessment of what each project had contributed to the sum of human knowledge. For good measure the author has thrown in an account of another six significant designs, including the Miles M.52, the Hawker P.1121 and the TSR2, of which only the latter actually flew, although these 'also rans' do not get a drawing.

Comprehensive (although, a little surprisingly, the chosen timeframe precluded the inclusion of British Aerospace's EAP), well written, extensively illustrated and nicely presented, this book is a reliable reference source on some of Britain's mould-breaking concepts – and some of its lame ducks. Since this is the third major essay on the same theme in only thirteen years, I imagine that the market must be close to saturation so, if the subject interests you, I would buy now, because it seems unlikely that the exercise will be repeated for some time.

CGJ

Shot Down and On the Run. The RAF and Commonwealth aircrews who got home from behind enemy lines 1940-1945 by Air Commodore Graham Pitchfork. The National Archives; 2003. £19.99.

We are all familiar with escape stories, *The Wooden Horse, The Great Escape* and others of that genre. In fact the author recalls his fascination with such accounts as a teenager and his continuing interest has led him to write this book. Once outside the wire the elite bands of escapers became members of a much larger group – the evaders – men who had bailed out or crashed with their aircraft over alien territory and were trying to elude capture, or death, and make

their way home. It is the evaders who take centre stage here. It was clearly in the interest of the RAF to prepare men for the role of evader and hence to benefit in two ways – leaving aside the purely humanitarian aspect of getting men back home again. First, returned evaders could be reintegrated with the Service and also provide valuable experiential data which could be used to brief others: secondly, knowledge gained about enemy dispositions and local conditions in the places through which they had passed could be of value to our intelligence operations. The training and equipment issued to aircrew was constantly updated in the light of such feedback. Anticipating all of this, an escape and evasion organisation, Military Intelligence 9 (MI 9), was set up in the summer of 1939 and the author gives a succinct account of its workings which makes a good introduction for those not familiar with its activities. He provides a bibliography which is a guide to the relevant documents held by The National Archive at Kew and to some well-selected secondary sources, such as M R D Foot and J M Langley's *MI 9: Escape and Evasion.*

Evading capture for aircrew dropping into Germany itself was extremely difficult and the same was true of Italy before the Armistice which followed the Allied landings. An example of a man who successfully evaded in pre-Armistice Italy is Flt Lt Tony Snell whose remarkable adventure is recounted here. Many fell into the countries of occupied Europe and experienced different problems. Different still were those for men lost in the deserts of the Middle East. Desert survival is difficult but the laws of hospitality of Desert Arabs, well documented by Wilfred Thesiger and others, could be a valuable asset. The worst scenario of all lay in south east Asia. There men had to cope with the onerous demands of survival in jungle conditions, among local populations whose cultures were so different from their own but with whom they had to co-operate. They faced a further grave danger. A German captor would recognise an evader's status and respect it – there were some exceptions – but the Japanese were a different matter. With their perverted sense of honour, which led them to treat their PoWs so despicably, they would have shown neither understanding nor mercy. There was also the problem of reaching safe territory in the Far East and the epic voyage of a group who crossed the Timor Sea to Australia in an open boat following the fall of

Singapore is one example of what could be required. Another is provided by the rescue from Papua New Guinea of two evaders of No 22 Sqn (RAAF) who, having reached the coast, were picked up by the Coastwatchers – an organisation composed of Australians and New Zealanders set up to report on Japanese movements in the south west Pacific region.

The book deals with evasion in all theatres, each group of countries being introduced by a section which sets the scene and outlines any specific arrangements which were made to brief and equip evaders, either under MI 9 auspices or from local initiatives. For examples, training programmes were established in the UK, a Jungle Kit was issued and a booklet of survival hints, *The Jungle Hiker,* was produced by the RAF Welfare Department of No 222 Group. Jungle survival training schools had been set up in both Ceylon and Assam by mid-1943. The author has not relied solely on documentary sources for the rich crop of stories he has assembled but has also interviewed a number of ex-evaders. This aspect of the text makes for the kind of reading typical of those books which had inspired the author in his youth and provides some fascinating stuff. In some places organised help was available, as in the escape lines of Belgium and France, the Dutch Resistance in Holland, the Mil Org resistance movement in Norway and the Partisans in Poland and Greece. Although the Danes did not have an organisation in place at first their strong support for the Allied cause and their individual bravery made up for that. In fact, wherever evasion was taking place the role of members of the indigenous population was of vital importance. Members of Arab tribes in the Western Desert, Naga tribesmen in Burma and natives of Papua New Guinea were to be found among those who helped evaders. It is noteworthy that in the European theatre many women played key roles, both as organisers and participants, in the work of escape lines and there are excellent accounts of their work and personal sacrifices to be found in this book. Several received honours and awards, eg George Medals, in recognition of their courageous service to the Allied cause. There were countless others, both men and women, who risked their own safety and that of their families to help evaders and they too are represented in the text.

The book has many photographs of evaders and their helpers together with good maps which make it easy to follow accounts. There

are also interesting illustrations of such things as the jungle survival kit, forged identity papers, official documents, etc. The quality of illustration is high and we are spared those grainy offerings that so often let down the overall quality of a book. This is a book of quality. It informs, entertains and uplifts the spirits. The information is at a level which makes for easy access to a reader new to the field under discussion and the author's lucidity and attention to providing details of his sources reinforces confidence in his account. The evaders' stories and those of the civilians who took such great risks to help them make very interesting reading. Finally, the reader learns something about the willingness of good men and women to stand up with great courage to the forces of evil wherever they appear. In short, I can thoroughly recommend this book.

Dr Tony Mansell

Marshall of Cambridge by Stephen Skinner. Tempus; 2003. £12.99.

Stephen Skinner's *Marshall of Cambridge* tells the story of a family firm which has flourished in nine decades. Profusely illustrated and written in an economical style, it sets out in careful detail the story of a group of companies bearing a name familiar to many in the Royal Air Force. It is primarily an account of the activities of the Marshall Group in aircraft engineering, but quickly reveals that there is considerably more to the Group than its reasonably well-known role in the management of military aircraft fleets such as the Hercules and TriStar. Above all, Skinner tells a tale of almost heroic proportions, describing what is rightly acknowledged as 'prodigious enterprise' and telling of the sustained courage and boldness that have allowed Marshall of Cambridge to retain its independence in the fiercely competitive aviation industry. The Group's name, coupled with that of its great centenarian Life President, Sir Arthur Marshall, is rightly respected across the globe.

Stephen Skinner's chronicling of Marshall's catalogue of involvement in aircraft engineering is undoubtedly fascinating, but it is in his account of the leadership and commercial acumen of the Group's successive Chairmen that this slim volume is perhaps most gripping. The 'Marshall Way' is a convenient shorthand phrase used repeatedly to describe all manner of courageous business decisions, taken in time – and at the right time. These often involved substantial

investment and risk. This repeated pattern and the deliberate strategic diversification of activity between divisions of the Group led to its survival and strength today and to its position as one of the largest employers in Cambridgeshire.

Those less fascinated by the business dynamics of this great engineering group will find much of interest in the book's description of Marshall's role in working on almost every major aircraft type, civil or military, since the outbreak of the Second World War. Nearly every page offers new insights into the breadth of the Group's activity over the years. It is likely that this will be something of an eye-opener to most readers, as it was to this reviewer for whom Marshall had been synonymous largely with refuelling and stretching the Hercules, or with producing custom-built cabins and vehicles for field operations.

Stephen Skinner's book is well written and only the hypercritical will be much exercised by the occasional typesetting error or aberration in punctuation. Plane spotters, however, will pounce with delight on an errant Miles Master, seen posing as a Harvard in one of the many excellent photographs to be found in its pages. These are very minor blemishes in a very tightly written account of a large subject. It is both nicely presented and well illustrated and I am glad to have it on my shelves.

AVM Sandy Hunter

Air War Over Russia by Andrew Brookes. Ian Allen; 2003. £24.99.

Owing to a natural preoccupation with events in the west, relatively little attention was paid to the fighting on the eastern front during the war and much of the information that did percolate through, courtesy of the Soviet propaganda machine, was of questionable accuracy. Little changed for the next fifty years because the post-war Russians became, if anything, even more uncommunicative. As a result, much of our awareness of the eastern air campaigns had to be derived from heavily biased German sources. Since the mid-1990s, however, it has been possible to gain access to original material and we now have a much better grasp of the activities of the wartime Russian aviation industry and detailed accounts of the technical development of the aeroplanes that it produced, permitting realistic qualitative assessments to be made of their capabilities.

While most recent books on Soviet aviation have dealt with

aeroplanes types and/or the exploits of wartime fighter pilots, Andrew Brookes has essayed an overall appreciation of the conduct of aerial warfare from the Caucasus to the North Cape, including maritime actions in the Black Sea and against the PQ convoys bound for Murmansk. As the extensive bibliography indicates, other authors have attempted to do this in the past. I cannot claim to have read many of these works but I doubt that any of them will have been as easy to read as this one. The book's only significant weakness is that it appears to be based entirely on secondary sources which, because most were written under the constraints imposed by WW II and/or the Cold War, must raise questions over their objectivity, and probably their accuracy too – how much faith can one really place in ORBATs based on wartime German intelligence estimates or operational statistics compiled by 'official' Russian sources? Until someone gets in amongst the original records, however, what has appeared in print must suffice and what Brookes has done is to produce a, perhaps the first, very accessible account of the air war in the east.

The 160-page book, which includes an excellent index, features numerous maps but, because of the vast size of the combat area, most are of too small a scale to do more than show the overall thrust lines of an engagement with a few major cities indicated to provide some idea of the location. The narrative mentions far more places than are shown on the maps so, if you want to keep up with the ebb and flow of the action, you may need to refer to a fairly hefty atlas. It also contains about eighty photographs, some of which do seem a little familiar although there are some fresh ones among them. One or two bloopers, have slipped through the net, eg the crashed aeroplane illustrated on p103 is a DFS 230, not a Ju 52. But these are few and far between and one's confidence in the author's overall competence is reinforced by the fact that he, unlike far too many other writers, does take care to render German unit designations correctly (although I'm not sure that there ever was a ZG72 – p134).

An interesting insight into the *Luftwaffe's* war is provided by frequent references to its anti-aircraft units, broadly equivalent to the RAF Regiment and its Bofors guns. Time and again the *Flakkorps* would find itself in the front line using its 88mm cannon against ground targets and we are told that, while shooting down some 500 Russian aeroplanes in a little over two weeks during the fighting in the

Yelnya salient (you'll need that atlas) in August-September 1941, air force AAA units also destroyed 360 armoured vehicles.

The book does far more than provide a blow-by-blow account, as the author assesses the various phases of the four-year campaign against the accepted principles of air warfare. Many of these principles were still being established by trial and error during the course of WW II so it is, perhaps, not entirely surprising if some commanders failed to adhere to rules that had yet to be clearly defined. Nevertheless, it is interesting to observe that some generals, notably the *Luftwaffe's* Wolfram von Richthofen and the Soviet Air C-in-C, Alexander Novikov, seemed to have had a natural 'feel' for air power and an almost instinctive ability to apply it where it would do most good, and in the most effective fashion. There are other useful 'teaching points'. We are, for instance, fairly accustomed to thinking on a grand scale when dealing with the war in the east, and there are lots of very large numbers in this book. There is, however, far more to air power than having a lot of it, as the author demonstrates by contrasting the roughly 2,750 aircraft that the *Luftwaffe* fielded for Operation BARBAROSSA in 1941 with the Coalition's line-up of 2,615 for DESERT STORM. But his point is that the numbers do not tell it all, because apart from every one of the Coalition's aeroplanes being far more capable than those of a half-century earlier, their effort was directed across a front of only 480 kms, whereas the German air fleets had been spread across 22 degrees of latitude. Concentration is the key.

I doubt that this book will prove to be the last word on the air war over Russia but, because it is so easily assimilated and user friendly, it is certainly an excellent start. Recommended.

CGJ

BOMBER COMMAND ASSOCIATION
60th ANNIVERSARY SYMPOSIUM

RAF MUSEUM, HENDON, 12 OCTOBER 2002

CHAIRMAN

Air Mshl Sir John Curtiss KCB KBE
Nos 578 and 158 Sqns 1943-45

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Proceedings of the Bomber Command Association
60th Anniversary Symposium held at the RAF Museum, Hendon
on 12 October 2002 under the Chairmanship of
Air Mshl Sir John Curtiss KCB KBE

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INTRODUCTION

MRAF Sir Michael Beetham GCB CBE DFC AFC

Nos 50, 57 and 35 Sqns 1943-46
President, The Bomber Command Association

The subject of The Strategic Bomber Offensive has been studied extensively over the years. Apart from the many books on the subject, the RAF Historical Society has held at least two seminars. As far as I can recall there was one here at Hendon, with US 8th Air Force represented, in the 1980s, and the other with the RAF Staff College at Bracknell in 1993. Some of you will have been present at both.

But I think it is timely, in the year in which we are commemorating the 60th Anniversary of the Bomber Offensive, to hold this seminar here today and I am glad to see such a good attendance.

Some people have asked why we have chosen this year, when the offensive was actually conducted continuously over more than five years of war. We decided on this year for three reasons. First, 1942 was the year in which Harris took over as CinC. Secondly, the Command had been largely re-equipped with four-engined bombers by 1942. And thirdly, the first 1000-bomber raids were launched during that year.

In other words, 1942 was the year in which the offensive really got going. Furthermore, having observed the very successful and widely publicised 60th Anniversary of the Battle of Britain in 2000, we were also conscious that next year the Navy and Coastal Command are to commemorate the Battle of the Atlantic. The following year will be devoted to D-Day and 2005 will see the 60th Anniversary of VE Day. 2002 was, therefore, seen to be the year in which we might perhaps be able to make some impact on the general public. We started with a moving Service of Commemoration on 24 April in St Paul's Cathedral. More than 2,000 people attended, including the Prince of Wales, who stood in at short notice for The Queen Mother who had sadly died just ten days before. The Lancaster flew over just as everyone left the cathedral and there were some excellent photographs in the Press. The morning was rounded off by a magnificent reception given by the Lord Mayor in the Mansion House. Many of you, I know, were there.

The Royal International Air Tattoo, the Imperial War Museum and

the RAF church, St Clement Danes, have also staged events and the Air Force Board hosted a splendid dinner at High Wycombe last night. All of these events have been well, and sympathetically, covered by the media. We have had none of the controversy that surrounded the unveiling of the statue of Arthur Harris ten years ago. I like to believe that there is now a greater public understanding of why we had to launch the offensive and of the difficulties we faced at the time.

We have been helped in all of this by some excellent spadework by the RAF's public relations organisation and also by some excellent books which have appeared in recent years, Denis Richards, Seb Cox, Henry Probert and Richard Overy, all playing an important part in this respect.

The campaign is going to be well covered today by speakers who are all well-versed in the subject and they need no introduction from me.

Many aspects of the campaign will be covered including why, despite the heavy casualties and its achievements, the Command has never really been given the credit for playing such a vital role in the Allied victory. For it was indeed a *vital* role.

A Lancaster of No 50 Sqn. (MAP)

SETTING THE SCENE, 1917-42

Air Cdre Andrew Lambert MPhil RAF

Assistant Commandant (Air)
Joint Services Command and Staff College

I am but a humble fighter navigator, so what do I know about the bombers' war? It is, nevertheless, a subject that has always interested me and I am pleased to be able to rehearse the arguments. I hesitate a little because, unlike Seb Cox, who will follow me, I am the bearer of bad tidings. Seb will be starting in 1941-42 and going on to the 'broad sunlit uplands', whereas I do not have a very good story to tell, so I hope that you will not shoot the messenger!

The history of Bomber Command is very much that of a fighting force and, although it had some difficulties early on, it is a truly remarkable story. There are, however, facets to this story that many people would prefer to ignore because it tells: of misguided fixations with numbers, rather than capabilities; of *panaceas*, as Harris called them; of being snowed under by directives; of misrepresentation; of erroneous perceptions; of an unshakeable belief that bombing was the *only* solution; of an almost religious faith in the 'knock-out blow'; a blindness to reality in the context of the accuracy of navigation and bombing; and some weaknesses in the way that the RAF dealt with politicians. It is a long list. But we were not alone in our inadequacies; the Army was doing little better. None of this contains any startling revelations but I do want to draw the obvious conclusion from this, which is that commanders cannot afford to embark on a campaign based on false premises; it is essential that the military be utterly honest in making its assessments of its own, as well as of the enemy's, capabilities.

I should probably start at the beginning, with the First World War. The token air assets available in 1914 were dedicated exclusively to support of the land battle with little thought being devoted to the longer term. Things soon began to change, however, and the first Zeppelin attacks took place in 1915, causing a fair amount of panic. But the Germans were not the only people who were thinking ahead and one the earliest, albeit little known, British advocates of air power was Lt Cdr (later Major) Lord Tiverton. Because Germany was under

a blockade its food supplies were very limited, so Tiverton put forward the idea of destroying the potato crop which, if successful, might actually have taken Germany out of the war altogether. His ingenious scheme involved packaging up Colorado beetles and delivering them by air. Was this an early example of biological warfare? Whether it was or not, it was never actually tried (probably considered to be a bit 'below the belt') but we can glimpse what might have been achieved in the Turnip Winter of 1917, so-called because that was all that the Germans had to eat. Rather more conventionally, in September 1917 Tiverton submitted a formal *Paper on the Strategic Objectives of a Bomber Force* in which he divided up the industrial heartland into four groups centred on Mannheim, Düsseldorf, Cologne and the Saar valley, arguing that if those areas could be neutralised it would destroy the German capacity to wage war.

Easier said than done in 1917, of course (and in WW II for that matter) but, the Germans had already tried it using their Gotha bombers to attack London during the summer. The public outcry that these raids produced resulted in Gen Jan Smuts being appointed to investigate the situation. In his report, he said, among other things, that:

> '….the day may not be far off when aerial operations with their devastation of enemy lands and destruction of industrial and populous centres on a vast scale may become the principle operations of war, to which the older forms of military and naval operations may become secondary and subordinate'.

Moving on from that conclusion, it was but a short step to the formation of the Royal Air Force on 1 April 1918.

As an adjunct to the RAF, but very much part of it, the Independent Force was set up in June 1918 under Maj-Gen Trenchard. Conceived as a dedicated bombing force, it was intended to use its DH 9s and O/400s to carry the fight to the enemy. It was also the first manifestation of a growing realisation that air power could be used in an 'indirect approach', as Liddell Hart called it later, seeing this as a reflection of our maritime tradition.

The historical experience of the Central Powers gave them a very different perspective. From a viewpoint in Dresden, in whichever direction you looked you would always have been faced with potential

enemies, which inevitably meant that you would have had to rely on your army for protection.

The British had never had that problem. The Channel had always been our moat and the security which it had always afforded gave us a certain amount of flexibility. This permitted us to think strategically and not just tactically, to see that there might be other means of winning a war, apart from defeating the enemy in the field. So, when the UK was subjected to air attack, the idea resonated within the British psyche leading to the creation of the Independent Force which was intended to employ air power both independently (of other considerations) *and* strategically. Whether this was a practical proposition in 1918 is, of course, highly questionable, but, 'it's the thought that counts'.

There were three prominent early advocates of the use of strategic air power: Hugh Trenchard in Great Britain; Giulio Douhet, an Italian; and Billy Mitchell in the USA. It was Douhet who wrote, just after the war: 'A complete breakdown of the social structure cannot but take place in a country subjected to this kind of merciless pounding from the air.' Mitchell clearly believed that air power represented the solution to practically all military problems when he said: 'Air power, both from a military and economic standpoint, will not only dominate the land but the sea as well' – and in 1921 he proved the latter point by sinking the German battleship, *Ostfriesland*. It was a slightly artificial situation, of course, but the fact remains that Mitchell's bombers did attack the ship, and they did hit it and it did sink.

Running in parallel with this purely military approach, there was a debate over the moral and physical aspects of what was and was not acceptable in warfare. Having already experienced air attacks, the British had been obliged to accept that the Home Front really was in the front line and in 1918, when compiling a list of targets that would be effective in taking the war to the enemy, Tiverton requested a list of German towns which featured concentrations of workers' accommodation. There were ample grounds for believing that attacking the population might hasten the end of the war. After all, the October Revolution had recently taken Russia out of the game; Germany was far from politically stable and it might not take much to push her over the edge too. Beyond such conceptual thinking, there were more concrete and immediate plans for carrying out a direct air

attack on Berlin. Clearly, the potential impact of air attack on morale had been recognised and shortly after the war Trenchard was to say that 'in my judgement, the moral to the material is in a proportion of 20 to 1' and this, he argued, was the prime justification for the Royal Air Force.

He also suggested that apart from the physical damage inflicted by air attacks and their adverse impact on morale, there were substantial marginal benefits to be gained, because, he said, 'hundreds of guns, searchlights, 'planes and thousands of men will be required to defend every single town. Every unit of the Independent Force immobilises at least fifty times its fighting value.' This worked both ways, of course, and as Air Cdre Brooke-Popham would later tell the Staff College, 'to defend Britain against just fifty machines would tie up 270 aircraft and 13,000 men.'

So we now come to the inter-war years, and the need to counter the 'Continental Menace' represented by France, a somewhat artificial construct conjured up in 1923. While pondering this one, Trenchard observed that 'the nation that could stand being bombed the longest would win in the end.' In a bombing duel, he thought that the French would probably squeal before we did and there are overtones of this in WW II. At much the same time, Liddell Hart wrote that 'a nation's nervous system, no longer covered by the flesh of its troops, is laid bare to attack'.

As a result of WW I having been promoted as the 'War To End All Wars', pacifism was rife in the 1930s. For example, a 'Peace Ballot', seeking endorsement of an anti-war policy, was conducted in the UK in 1935; it attracted more than eleven million signatures. Similarly, you will be aware of the outcome of the Oxford Union debate on the motion 'That this House will not fight for King and Country'. Clearly, there was no great desire to have a war and most people were content to put their faith in a defence policy which was predicated on the assumption that there would be no major war for at least ten years. Originally proclaimed in 1919, this comforting policy had been renewed annually until as late as 1933. Apart from anything else, it had avoided an expensive rearmament programme and air power had proved to be a very cost-effective means of maintaining imperial control, notably in Iraq, where a handful of RAF squadrons had been doing what would otherwise have required several divisions.

Against this background, it is easy to understand why there was such widespread enthusiasm for the Disarmament Conference which took place in Geneva between 1932 and 1934 when it was being proposed that bomber aircraft should be taken out of the inventory altogether and that aerial bombing should be outlawed as a form of warfare.

Sadly, it was not to be. Hitler, became Chancellor of Germany in 1933 and there was a gradual realisation that there would have to be some form of rearmament. On 12 May 1934, Neville Chamberlain, said (as Chancellor of the Exchequer), 'I have practically taken charge now of all the defence requirements.' But Chamberlain was a prudent man who did not see the need for vast expenditure on armaments, in fact he regarded every pound spent on guns as a pound wasted. Between 1934 and 1939 the succession of RAF Expansion Schemes ran from A to M, although some were never implemented, because they had to be leapfrogged while they were still in draft form in order to keep pace with the German build up. The aim of all of these schemes, however, was limited to achieving 'parity', and I think that that was a mistake, because parity rarely deters and because parity places the emphasis on numbers, rather than capabilities.

So what forces did all of this activity provide us with? It was still the biplane era, so we had lots of Hawker Hinds, plus a handful of Overstrands and some heavier bombers, like the Vickers Virginia and its transport derivative, the Victoria, and the slightly more up to date Handley Page Heyford. There were a few Hendon monoplanes, with Harrows in prospect but none of these types was really very impressive.

Having been under development on a clandestine basis for some time, the existence of the *Luftwaffe* was revealed in March 1935. The Foreign Secretary, Sir John Simon, visited Berlin a few days later only to be told by Hitler that his air force had *already* achieved parity with the RAF. This was a slight exaggeration but it did have some 20,000 men and about 1,800 aeroplanes on charge, which was not too far off the mark and with universal military service having just been proclaimed, recruiting was plainly not going to be a problem for Germany. The upshot was Expansion Scheme C but this had been something of a panic measure, and an inadequate one at that, because it was a cheap option that could not provide the capabilities that were

actually needed. Nevertheless, it sufficed until February 1936 when it was superseded by Scheme F. In mitigation, it is perhaps only fair to acknowledge that all of this was happening against a background of a deep recession and, as Sir John Simon said at one stage, if we were going to have to fight, then 'we must first have a secure economy; we can't just spend our way to victory.' On the other hand, that is rather what Hitler was doing.

So what of the strategic concept? There was an unshakeable belief in the 'knock-out blow', that the knock-out blow would always be decisive and take the enemy country out of the war in short order. Furthermore, the evidence of incidents such as the bombing of Shanghai in 1932 and of Guernica in 1937 suggested that, if sufficient force could be mustered this might well be true. In 1932, Prime Minister Baldwin famously said that 'the bomber will always get through' and there was a widespread popular belief that this was indeed the case. But none of this had actually been proven; as Sir John Slessor was to put it, 'Our belief in the bomber in fact was intuitive. It was a matter of faith.'

Apart from these largely perceptual matters, there were practical difficulties. For instance, how could the knock out blow concept be squared with an Anglo-French undertaking of 1938 to the effect that we would not attack cities? Then again, how could such a blow be inflicted with Hampdens, Whitleys and Wellingtons which, fully loaded, could actually go very little further than the Ruhr.

There were other practical problems too. In 1938 Bomber Command reluctantly conceded that a pilot could not fly the aircraft and navigate as well, but, because adding an observer to the complement of each crew was not going to be offset by the deletion of the recently introduced co-pilot, this implied a substantial demand for additional skilled manpower, as well as dedicated training facilities. Worse still, only 10% of the hours flown that year were at night and most of those were little more than circuits and bumps to maintain currency. Overall bombing accuracy in September 1938 was assessed at just 15%, and that was from an attack delivered from only 2,500 ft under virtually ideal conditions on an academic bombing range, so it represented the very best that might be expected.

By 1939 a measure of reality had begun to intrude and it was realised that much still needed to be done if we were to have an

effective bomber force. Navigation was high on the list of priorities. The AOCinC, Sir Edgar Ludlow-Hewitt, had once gone on record as saying that Bomber Command could cripple the electrical power system of the Ruhr in a fortnight. This claim was not endorsed by the Air Staff, incidentally, and later on Ludlow-Hewitt came to terms with the truth. In his annual report in 1938 he wrote that, 'Bomber Command is now virtually powerless against the modern enemy and to commit the force in its current state would be a major disaster.' This was pretty much on the eve of Munich, of course, when there was every likelihood that we might actually have gone to war.

And so we come to September 1939 when ten squadrons of Battles went to France to form the Advanced Air Striking Force, accompanied by four of Blenheims assigned to operate with the Air Component of the British Expeditionary Force. Neither type was particularly successful and, although relatively modern, they were poorly defended and no match for German fighters or *Flak*. Meanwhile, a force of some twenty-three squadrons of Blenheims, Hampdens, Whitleys and Wellingtons had remained in the UK and these too were immediately committed to operations. Apart from naval vessels in port, however, Bomber Command was prohibited from dropping bombs on German targets for fear of causing civilian casualties. For the first six months of the war, therefore, most of the RAF's 'offensive' effort involved the delivery of propaganda leaflets.

Nevertheless, this early experience was sufficient to demonstrate that navigation was very inaccurate, especially in poor weather. Coastal targets could be found relatively easily, of course, but coastal targets were also very well defended. Out of a force of twenty-four Wellingtons despatched to Wilhelmshaven in daylight on 18 December 1939, twenty-two reached the target. Twelve aircraft were lost in action and six more were damaged in crash landings on returning to the UK, two of them so badly that they had to be written off. Only six aircraft returned unscathed. And all of this had been for nothing; no bombs had been dropped because there had been no ships in the naval anchorage and everything else had been ruled 'out of court'. This had not been the first time that Bomber Command had suffered such a high percentage loss rate, but it was to be the last.

The RAF was obliged to abandon its belief in the ability of bomber formations to penetrate to their targets in daylight and survive; an

article of faith to which it had adhered ever since the DH 9s of 1918. Quite plainly, Stanley Baldwin had been wrong; the bomber would *not* 'always get through'. From then on there was little alternative to sending out lots of individual bombers at night, each one attempting to find and attack its target alone and in the dark. There would be no more strength in numbers, no mutual support, until 1942.

Not long afterwards, on 10 May 1940, Hitler launched his invasion of France and the Low Countries and it soon became clear that their *Blitzkrieg* tactics, a well co-ordinated combination of an armoured thrust supported and protected by air power, would permit the Germans to dictate the outcome of the land battle. The British had no corresponding concept of operations with which to attempt to stem the advance. Co-ordination with the French was poor and the RAF's fighters were unable to establish a favourable air situation. As a result, the relatively numerous, but technically inadequate, Battles suffered very heavy losses in their valiant, but hopeless, attempts to support the British Expeditionary Force.

A few days later, on 14 May, the *Luftwaffe* attacked Rotterdam and the gloves were off. The inhibitions over the bombing of civilians had been discarded. 'Area bombing' had been initiated – by the Germans. Until then Bomber Command had been attacking road and rail targets in France in an attempt to interdict the enemy's supply lines but on the night of 15 May, for the first time, the objectives of the British night bombers were German industrial targets to the east of the Rhine and, again for the first time, more than 100 aircraft were involved. With hindsight, we know that these raids were largely ineffective, although we did not know that at the time, of course. What was really important, however, is that they took place at all. The Rubicon had been crossed and there was no going back.

This initial night bombing campaign was short lived and after a few days Bomber Command was redirected to interdiction in an attempt to take the pressure off the army, but it was all to no avail. By 4 June 338,000 men had been evacuated from Dunkirk and on the 17th France surrendered. Thereafter, only Bomber Command was capable of carrying the war to the enemy but Britain was next on Hitler's list and over the next four months the RAF would fight a crucial defensive battle.

I am not going to attempt to analyse the conduct of the Battle of

Britain today. Suffice to say that, before they could attempt an invasion, the Germans needed to establish air superiority and the *Luftwaffe*, which had been conceived as a tactical force to support a rapidly moving army, was not the weapon of choice for a sustained assault on a well-defended fortress. Nevertheless, the German Air Force gave the RAF a good run for its money and inflicted a substantial amount of damage in the process. This damage was psychological as well as physical, of course. I am thinking, for instance, of the evacuation of children and of people having to sleep in the Tube (although some people still do that today!).

Perhaps I can best sum this up by quoting from a report, commissioned in May 1942, in which Mr Justice Singleton wrote:

> 'During the ten months from August 1940 to June 1941 the German Air Force dropped some 50,000 tons on this country. Great discomfort was brought about in a number of places. Some 40,000 deaths were caused and the war effort was impeded to some extent.'

The highest at which this has been put to me is that it caused three month's delay in our effort generally. On the other hand, the researchers of the Ministry of Home Security appear to show much less interference, but one thing is clear and that is, if it had continued at the same scale, its effect would have been very seriously felt. That having been said, the propaganda line being pedalled in the popular press, along the lines of 'London can take it; let 'em have it back,' may not have been universally endorsed by those who were actually on the receiving end.

Meanwhile, Bomber Command had been attacking the assembled invasion barges and striking at Hitler's factories. This effort was being publicly acknowledged as early as 19 May when, in his first broadcast as Prime Minister, Mr Churchill said:

> 'At the same time our heavy bombers are striking nightly at the tap root of German mechanised power and have already inflicted serious damage upon the oil refineries upon which the Nazi effort to dominate the world directly depends.'

This was not the only occasion on which the bombers were singled out for praise. I suspect that it is not generally appreciated that Churchill's speech to the House of 20 August, from which we have the stirring, and oft-quoted, passage about 'The Few' was not actually

devoted solely to the Battle of Britain. His address ranged widely over various aspects of the war situation, at home and abroad, only six lines being dedicated to Fighter Command, compared to Bomber Command's twenty-one.

Despite this recognition, however, things were not going as well as we had thought. Not least because of confusion over the definition of Bomber Command's precise task. What, exactly, were the bombers supposed to be trying to do? Including sub-variants, twenty 'Western Air Plans' had been drafted by the time that war was declared, although some had not yet been fully staffed. Each one represented a specific objective, or set of targets, eg the Kiel canal, leaflet dropping, communications, oil production, manufacturing industry, mining and so on. These were soon superseded, however, by a steadily lengthening sequence of 'directives', many of which involved significant changes in emphasis. Between 1940 and 1945 Bomber Command received no fewer than forty-five separate directives which hints at, at least a degree of, uncertainty when it came to telling the CinC what he was supposed to do.

In July 1940, the message was to attack enemy ports and shipping. In August it was to reduce the weight of the German air offensive. By September priority had shifted to attacking the invasion forces. By March 1941, under what was known as the 'Atlantic Directive', Bomber Command was to give absolutely priority to attacking submarine bases for the next four months; then, following the 'Channel dash' by *Scharnhorst* and *Gneisenau*, it was anti-shipping. Meanwhile, No 5 Gp was carrying out a mining campaign, but the Middle East and the Far East were also crying out for bombers and the Command was also required to carry out 'Circuses', daylight raids into occupied Europe by light bombers escorted by fighters. If you examine the targets actually attacked between 1939 and 1941 you will find that military objectives top the list, followed, to a much lesser extent, by industrial targets with even less effort being directed at transportation and communications. It is quite clear from all of these different kinds of activity that there was a certain lack of focus, little attempt to select and maintain a specific aim.

But things were about to change, because we slowly began to come to terms with the realities of night bombing. A significant milestone on this path was passed on the night of 16/17 December 1940 when

The Wellington was the mainstay of No 3 Gp 1939-42. This is a Merlin-engined Mk II of No 104 Sqn. (MAP)

Mannheim was the target for some 200 bombers assigned to Operation ABIGAIL RACHEL. It was to be a night attack on the industrial centre of the city. Since no specific factory had been nominated as the aiming point, this was the first overt example of an 'area' attack.

The mission reports indicated that everything had been satisfactory. Large numbers of explosions had been seen and the raid appeared to have been a total success. But had it? Subsequent analysis revealed that bombs had been scattered widely and that there had been little concentrated damage, indeed 20% of the 1,200 buildings that had been hit had been in Ludwigshaven, on the wrong side of the Rhine. Although it had been hailed in the press as a great success, it was plain that the attack had actually been a failure. The doubts that this sort of incident fostered were finally resolved in the summer of 1941 by the Butt Report, which painstakingly analysed the results of a number of raids. In short, this concluded that only one crew in five got within five miles of their target, ie within a 75 square mile area surrounding the aiming point.

It was not a good position from which to start the fight back but, as a 'half term report', it wasn't all bad. On the plus side, we had the very capable 'shadow factories' and by the spring of 1940 we were already outproducing the Germans in fighter aircraft. This was important because, in 1937, Sir Thomas Inskip (Minister for the Co-

ordination of Defence) had said that the RAF's role was not to deliver an early knock out blow but to prevent the Germans from knocking us out, which meant that production priority had been switched from bombers to fighters in time for the Battle of Britain. This did not mean that no bombers were being built, of course. Whitleys, Wellingtons and Hampdens had continued to roll off the assembly lines to be joined in late 1940 by the first Stirlings and Halifaxes and, a year later, by Lancasters and Mosquitos.

While these aeroplanes represented the tools with which to do the job, they were accompanied by a growing appreciation of how they ought to be used and an identification of the skills that would be necessary. All of this represented an increasing understanding of the art of the possible. We had learned that we could not fight by day so we had accepted that we would have to do it by night. Similarly, we had come to accept that it was impractical to attempt to find precise targets, so we had to live with area bombing. There was much still to be done; there was an urgent need to improve navigational accuracy, but at least the way ahead was becoming clear. We also needed dynamic leadership. The latter was to be provided by Arthur Harris, and I will give him the last word:

> 'What shouts of victory would arise if a commando unit wrecked the entire Renault factory in just one night with a loss of just seven men? What credible assumptions and an early end to the war would follow up upon the destruction of a third of Cologne in an hour and a half by some swift-moving mechanised force which, with but 200 casualties, withdrew and was ready to repeat the operation just 24 hours later? Or what acclaim would greet the virtual destruction of Rostock and the Heinkel mainland subsidiary factories by a naval bombardment? All this, and far more, has been achieved by Bomber Command.'

HARRIS AND HIS MEN

Air Commodore Henry Probert MBE MA
Author: ***Bomber Harris, His Life and Times***

When I decided to write about Sir Arthur Harris one of the greatest questions I wanted to answer was, what was the secret of his leadership?' How did he inspire his men to go on putting their lives on the line in the face of such appalling danger? Sir John Slessor, who knew Harris well and was one of the RAF's most distinguished commanders, was convinced that, despite hardly ever visiting his units, Harris was a thoroughly good CinC Bomber. Yet Slessor often wondered how Harris did succeed in getting the message across to men who were suffering terrible casualties and went on doing so until Bomber Command at last made its decisive contribution to victory.

It is a subject that will, I suppose, for ever be debated, and in trying to resolve it we have to remember that Bomber Command was involved in a unique campaign in a unique war; there were no precedents, no blueprints, for how one led one's men in such a situation and over such a length of time, and probably no one else would have tried to do it in the same way. So, first and foremost, we need to understand something of the man himself, his upbringing and his earlier experiences in the RAF. I dug into these as deeply as I could when researching my book and I would like to start now by picking out certain key points which to my mind distinguished him from those of his RAF contemporaries who also reached the most senior ranks in the Second World War.

First, there was the absence of a proper home life. While there was nothing unusual about going to boarding school, there was in those days for most children an established home to go to in the holidays, whereas the young Harris was largely left to fend for himself. In other words he found himself in situations where he had to think for himself and develop his own initiative, and the relatively small school he went to, while not strong academically, also gave him and his chums ample opportunities to pursue their own interests. The little picture painted many years later by one of his contemporaries seems to me particularly apposite:

> 'Perhaps it was the shine of his buttons on parade, for he was always a keen cadet; perhaps it was his prowess on the football

field, for he was one of the stalwarts in a team I captained, or it may have been because we were confederates in many illicit adventures. In all these activities he was a leading spirit, and it was undoubtedly at Allhallows that he began to reveal that quality of leadership that is so eminent in him now.'

Then came his decision to do his own thing and seek his fortune abroad. There was no inclination to follow a military career via Sandhurst or try to go to university; what he wanted to do was to get away to somewhere new where it mattered not who one was but what one did, and where he could use his already developing practical skills. And inevitably, when he started farming and so on in Rhodesia, he found himself, at the age of eighteen, having to manage substantial numbers of local labourers and cope with a host of practical problems in pretty primitive conditions. What else could have provided better basic leadership training?

Next, of course, came the war, when our young man decided he must do his bit and after hardly any training served as a bugle playing squaddie in the South West Africa campaign of early 1915. Four months of marching across vast deserts, camping in the open, occasionally doing a spot of fighting were enough to put him off being a soldier ever again, but they did give him practical experience of life in the lowest ranks and he never forgot it.

By the end of that year he was back in England in a totally different situation, learning to fly, and in April 1916, less than three months after gaining his 'wings', he was made a Flight Commander on home defence fighters. The following summer he spent several months, again as a Flight Commander, with a fighter squadron operating over the Battle of Passchendaele, and by the end of the war in these and other appointments he had fully demonstrated his talents. He was a highly respected leader in the air, his piloting skills reflected in the destruction of five German aircraft over Belgium in 1917. He was constantly thinking how to do the job better, not least when attempting to tackle the early Zeppelins over London in 1916. He recognised the need for training; having himself received no applied training whatsoever he worked out his own night flying procedures in 1916 and instituted practice flying based on them. The value of efficient and effective training soon became, and remained, a matter of critical importance to him and a key factor in his leadership. It was

later strongly demonstrated in 5 Group in 1939-40 and exemplified by the home-spun OTU he set up at Finningley. Similarly he had great respect for the ground crew who served him; the respect was mutual, though the strict disciplinarian in him did not always endear him to them.

I think there can be no doubt that by the end of WW I Harris's leadership skills were developing well and the process continued during the 1920s. A significant element here was his determination to stand up to higher authorities when he considered them at fault, and in so doing to put his own reputation on the line. In 1922, for example, he incurred the wrath of the Army commander on the North West Frontier by complaining about his squadron's dearth of spare parts and so on. Later, determined to back up his own electrical tradesmen, he even took on Trenchard, who actually knew nothing about the relevant technicalities. In such ways he was demonstrating to his men how hard he was prepared to work on their behalf and defend their cause.

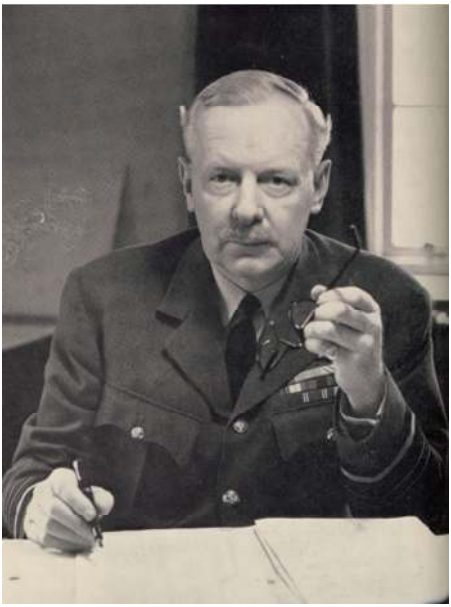
Then there was his thinking about how to use his aircraft better, as shown in Iraq when he and his technicians designed bomb-racks, rails enabling his transport aircraft to be fitted for use as bombers; such inventiveness was again to be demonstrated in relation to his Hampdens in 1940. Iraq confirmed other qualities of his leadership, for example, his concern about his men's living conditions and his insistence on firm discipline. Then came his period at Worthy Down, where he insisted on the very highest flying standards and the importance of practising night flying, and led as usual by example. In my book I have mentioned 'The Rumble Club' which he initiated and to which he seems to have made a considerable contribution. I would be interested to hear if anyone has any knowledge of this.

At this point I want to stress that, until he left Worthy Down at the end of 1927 at the age of 35, Harris had learnt most of what he knew in the hard school of experience. He had undergone no initial officer training or other significant formal training (including leadership) or broader education, and could not be regarded as belonging to what might be called 'the RAF establishment'. Then he was selected as a student, not for the Andover Staff College, but as a wing commander at Camberley, where nearly all the Army students were junior to him and younger. Two peripheral RAF appointments followed and only in 1933 was he suddenly picked out to become the RAF's planner at the

Air Ministry. I am not going to go into the reasons for this here but I do suggest that Harris's approach to air leadership in war, first in 5 Group and then at Bomber Command, was much influenced by his own practical activities in the early years and hardly at all by the kind of theoretical discussion of the subject that his contemporaries had been periodically engaged in. Obviously he had learnt from his time with the Army at Camberley and he enjoyed reading military history in his spare time, but the RAF itself had done little to encourage him in the study of air power and high command. So, if we are inclined to regard his methods of leadership in Bomber Command as unconventional I do not find this odd, nor am I surprised that other high RAF commanders like Slessor found his approach difficult to understand.

So how did he do it? Here I think I must rely mainly on a brief summary of Chapter 10 of my book, a chapter to which I gave much thought. It is certainly true that Harris rarely got out and about, not even in his Headquarters, and I do think he should have found a little time to make himself better known among his middle ranking staff, some of whom felt unduly isolated from the top management. The main criticisms, however, have centred on the rarity of his visits to his stations, though there were squadron visits such as I have mentioned and several more to which readers have drawn my attention. Moreover, the two or three recollections I have uncovered show clearly how well he came across to his crews on such occasions. The key features of these were the professional knowledge and understanding he displayed, his almost brutal honesty, and (not always *totally* concealed) his inner feelings about the sacrifices he was calling on them to make. Then, of course, there was the bush telegraph and the flow of direct personal messages, couched in crew-room terms, which he sent out before important raids and sometimes after them. Hamish Mahaddie, so fondly remembered by many of us, knew Harris well and had great respect for him, and Hamish rated very highly the value of those messages.

Nor should we forget the value of the media, in those days the radio, the newspapers and the cinema. Here were being reported, among other things, the operations of the Command, and some of the statements of its CinC, together of course with criticisms: the whole subject was controversial and Harris was most anxious that the



Air Marshal Sir Arthur Harris.

message about the bomber offensive should be fairly delivered both at home and abroad, and not least in the interests of the men and women who were involved in it. They needed to know, he believed, that the campaign in which they were risking their lives was both justified and approved of by the nation as a whole. Sadly, he was never satisfied that the publicity was as good as it ought to be, and partly because the government often appeared to be equivocal about it. So he himself spared no effort to put the message across to the media, spending much time receiving them as visitors and explaining why and how the offensive was being conducted and its achievements. The frequency and importance of such visits and many other visits by influential personalities of all kinds provide one good reason of many for his not getting away from the Headquarters as often as some think he should have done. He himself estimated that he had received altogether some 5,000 visitors at his official residence, *Springfield*, by the end of the war. Here, I suggest, was a major aspect of his leadership.

For direct leadership, of course, Harris relied heavily on his AOCs and on his own senior staff, all carefully chosen from those officers whom the Air Ministry could make available to him. Never must we forget the contribution of his deputy throughout, Bob Saundby. There have been debates about his close subordinates, with staff officers like Sydney Bufton in the Air Ministry arguing that they should all have had recent operational experience and criticising them for not flying on the occasional wartime sortie, as USAAF commanders such as Eaker did at times. Harris, arguing that they knew too much to risk their falling into enemy hands, was adamant in refusing them

permission; Donald Bennett was particularly upset about this. I personally judge that Harris was absolutely right. Another issue too required a strong line, one which I uncovered only in Harris's own papers, namely his decision to replace Alec Coryton as AOC 5 Group in 1943. Coryton had been increasingly questioning the operational judgements that lay behind some of Harris's target selections, and implying that the resultant casualties might not be justifiable, and Harris felt it essential that all his AOCs should stay in step.

This brings us to casualties, a subject on which Harris has been widely taken to task. The critics allege that he always thought of losses in terms of aircraft and not of human lives. It is true that at the time few who had dealings with him in the normal course of business ever found out how he actually felt about the losses from the human standpoint, but those who were closest to him certainly did. Diana Collins was one of these. She was a distant cousin of Harris and the wife of Canon John Collins, the Padre at his Headquarters and later of CND fame, and she later wrote that his concern for his men's welfare and his distress at casualties went very deep. And when writing to Alec Coryton explaining the reasons for having him relieved at 5 Group, Harris said 'you cannot bear the thought of casualties, but you have no monopoly on this. I only hope you may never have on your heart and conscience the load which lies on mine.' Essentially, Harris understood that heavy casualties were inseparable from the kind of campaign he was being required to direct and he had in mind the far greater casualty roll on the Western Front in the previous war. But he knew too that he must never give the impression of being borne down by them.

There were, of course, many practical measures which Harris urged on higher authority in order to maintain his men's morale. Laying down the number of sorties required to complete an operational tour of duty was one. A second, which he fought hard for but did not win, was for all captains of heavy bombers to be commissioned. Others, which he also lost, were for 'fair and reasonable rates of pay' and special allowances for married men who for good operational reasons were required to live on their stations. LMF was another important subject, and while Harris certainly held clear views on the handling of what we refer to today as combat stress I believe his attitude should be described as firm but not harsh. In this

as in so much else Harris was a fair-minded man.

Nor can I ignore the great number of men who came from overseas, especially the British Commonwealth. Harris has had a bad press here in some ways, for example being accused of preferring his own RAF men to the 'colonials'. Certainly there were practical issues. Should these men be integrated into RAF squadrons or formed into separate 'national' squadrons? Would the build-up of the Canadian contribution in No 6 Group cause Bomber Command to become unbalanced, and did the higher ranking 'colonials' have the operational experience required for effective leadership? And, later in the war, were the national policies of governments, especially Canadian and Australian, towards tour lengths and demobilisation going to be divisive? These were important issues, both practical and political, and Harris felt he had to devote considerable attention to them.

Let nobody think, from all this, that Harris ignored that vast number of ground personnel, women as well as men, whose work enabled the bombers to fly. His own files contain many letters on subjects such as establishments (particularly of maintenance personnel), undermanning in technical and domestic trades, the crying need for better training, improved working conditions, and the ever-increasing substitution of airwomen for airmen. He certainly accepted that women's aptitudes and skills were well suited to many types of work, but they were seldom capable of the same degree of physical effort as the men. There is no question in my mind that, just as he did as a young Flight Commander in the First World War, he understood the demands being made on all who served under him, including the physical dangers all of them had to face.

To conclude, I must mention his continuing concern after the war for all who had served in Bomber Command. Right to the end of his days Harris resented, not only the lack of proper recognition of their sacrifices, but also the widespread controversies that surrounded the whole bomber offensive and created serious doubts in the minds of many of the survivors about its value. Hardly was the war over than Churchill, in his VE speech to the nation, left out the bomber offensive from his list of tributes to the many parts of the armed forces which had contributed to victory. Harris found this omission incomprehensible and never forgot it; I will comment on this a little

Despite the vigorous representations made on their behalf by Sir Arthur Harris, the efforts of Bomber Command's thousands of groundcrew were not to be recognised by the award of a campaign medal. This group belonged to No 61 Sqn.

further this afternoon. He was equally incensed at the failure to award a campaign medal to the men and women of Bomber Command, something he had first strongly urged back in 1944. He certainly wanted a special medal or clasp for his aircrew, but at least they did receive the appropriate campaign stars; it was the situation of the hundreds of thousands of ground personnel that really infuriated him, for all they received was the Defence Medal.

One of his most strongly worded letters (and he wrote a lot of them!) was his protest on 1 June 1945 about the absence of a campaign medal. I have quoted this at some length, with its concluding statement that if his men were to receive no such recognition, neither would he. Effectively the decision had been made in 1944 by the Honours and Awards Committee in relation to ground personnel of all RAF operational commands in the UK, and also of similarly placed sailors and soldiers. It had taken account of Churchill's personal opposition to awards of this kind. So when the final submission, based on Harris's letter, was received by the Committee on 19 July 1945 it was almost summarily dismissed. And that was the end of the matter. So there was, in my view, a strong

connection between this denial of a medal for his men and the fact that he did not receive the Peerage so many people thought he should have done. In reality it was his loyalty to the men and women of Bomber Command that made him refuse it.

From then on, first while carving a new career in South Africa and the USA, and subsequently while making a new home for himself in Goring-on-Thames, he largely kept his distance from the major controversies, even when they surfaced after the publication of the Official History. Unfortunately, this was widely represented as concluding that the bomber offensive had been a costly failure, and Harris, who had always disapproved of the way the history was being written, felt that many of his 'old lags' were hurt by what they believed to be an unfair verdict on their efforts.

Almost certainly it was this issue that caused him to start taking an active interest in the activities of his old lags, and when he began attending the occasional 'event' he was first surprised and then delighted at the reception he received. So in his later years he started appearing at occasions such as the Pathfinder Reunions, and in 1974 he spoke for an hour, unscripted, at Headquarters Bomber Command, firmly setting out Bomber Command's contribution to victory. From then on, for the last ten years of his life, he supported the establishment of the Bomber Command Museum here at Hendon, the Bomber Command Association and the Aircrew Association, still fighting the cause of his men.

It was in 1979 that I myself, as the newly appointed Head of the Air Historical Branch, visited him twice at his home in Goring. Like one of many, many others who were similarly welcomed and entertained there, I was left in no doubt about the strength of his convictions concerning the bomber offensive and the continuing lack of adequate recognition of those he called his 'old lags'. Then, on 4 September 1982, I was present at the Guildhall Banquet held in his honour by the Aircrew Association. Here, at the age of 91, he made his last great public speech and, as the audience rose to him, the respect and affection in which they held him were clear for all to see. Maybe, like Slessor, I still cannot fully comprehend how he did it, but here beyond any doubt was the RAF's greatest leader of the Second World War.

THE YEARS OF DEVELOPMENT

J Sebastian Cox BA MA

Head of Air Historical Branch

Ladies and Gentlemen. Welcome to the 'broad sunlit uplands'. Actually we are not quite there yet but we will be this afternoon. That quote, incidentally, comes from one of Churchill's 1940 speeches and it occurs to me that it might be appropriate to point out that, in his famous 'Never in the field of human conflict' speech, many people are unaware of the fact that he continues with a long and equally heartfelt dedication to the men of Bomber Command in which he mentions them and their work in terms similar to those that he had used of Fighter Command's 'Few'. It is worth re-reading and I would commend it to you.

So, to move on. As Air Cdre Lambert has explained, by mid-1941 we knew that we were in trouble. The Butt Report had revealed, not only that we could not hit a barn door, but that we could not even find the barn. But things began to change from February 1942 with the appointment of a new CinC – Arthur Harris.

In some ways, of course Harris, is lucky. How, under the circumstance, can I say that?, you might ask. After all, we have just heard that he had taken command of a force which was apparently completely ineffective. Nevertheless, he *is* lucky, because he takes over when technical solutions to the earlier problems are beginning to emerge. His appointment more or less coincides with the introduction of better aircraft in the form of the four-engined heavies. Strictly speaking they had begun to enter service before he became CinC but they did not arrive in significant numbers until he was in the chair. Of equal importance, the first of the radio navigational aids, GEE, was also beginning to become available. Clearly, the technical quality of Bomber Command's equipment began to improve in 1942, but there was still much to be done.

In Harris, we had a single-minded and forceful leader, a man with an acute brain. He was a man after the Prime Minister's heart in that he was wholeheartedly committed to taking the war to the Germans. Harris was to enjoy, in the middle years of the war at least, a fruitful relationship with Churchill, involving mutual respect and admiration.

A Halifax Mk II Srs I (Special) of No 10 Sqn. The complexity of its designation hints at the problems which dogged the Halifax until it evolved into the definitive Mk III. (MAP)

This he exploited to good effect, and in February 1942, despite his own formidable qualities, Harris needed all the help that he could get in order to make his force an effective one.

As I have already said, the new heavy bombers were only just starting to make themselves felt. At the beginning of March 1942 Bomber Command could field forty-four squadrons, but only fourteen of these were armed with heavies, and that total includes the Manchesters, which were not proving to be a great success. At this stage there were only two squadrons of Lancasters, neither of them operational. Apart from the Lancasters, all of the heavy bombers had problems of varying degrees of seriousness. The Manchester was so underpowered that it was eventually withdrawn from front line service in June. The Halifax airframe required such extensive modification that Harris was unwilling to use it operationally before the changes had been made, and the Stirling squadrons were seldom able to achieve even a 50% serviceability rate, causing Harris to complain, in December 1942, in his own inimitable fashion, that the aircraft 'had made no worthwhile contribution to the bomber effort for some time.' Under the circumstances, Harris was forced to continue to rely on the older twin-engined medium bombers, the stalwart Wellington and the obsolescent Whitleys and Hampdens. All in all Bomber Command was not in good shape; furthermore it was experiencing substantial

delays in its planned expansion programme.

The causes of this dismal picture were many and varied. Air Cdre Lambert has already highlighted some of these but in 1942 there were two specific developments which had a direct impact on the conduct of the air war, and on Bomber Command in particular. Since they tended to dictate the way in which Harris was obliged to run his command and, in turn, influenced his relationships with both the Air Ministry and Churchill, they are worth examining in a little more detail.

One of these critical factors was the failure of the Ministry of Aircraft Production to hit its forecast production targets for bomber aircraft, which undermined the Air Staff's assumptions about the numbers of aircraft, and thus the weight of attack, which could be deployed against Germany. Paradoxically the entry of the United States into the war in December 1941 had also had an adverse impact, because American aircraft, previously destined for delivery to Britain, were promptly diverted to satisfy the demands of the US armed forces. As a result, the RAF's original, and probably overoptimistic, plan to deploy a force of 4,000 heavy and medium bombers by December 1943 was reduced in June 1942 to a target of 2,500 by the same date. There was a second related problem here in that there was also a critical manpower shortage in the UK. This threatened to undermine Bomber Command's effort through a shortage of trained groundcrews, an embargo on airfield construction and, looping back to MAP's problems, shortages of skilled labour to build the aircraft that the Command needed.

The second critical factor was the constant and debilitating drain on Bomber Command's crews and aircraft to support other campaigns. Bomber Command became in effect the *Milchkuh* which was drained to feed others. This was a development which Harris felt that he could, and should, attempt to influence and it was his attempts to do so that brought him into conflict with the Air Ministry.

There are exact parallels here with Fighter Command's position during the Battle of France, which led to Hugh Dowding's famous letter of protest and his appearance before the War Cabinet. In essence, the problem was that the pre-war expansion plans for the RAF had concentrated almost exclusively on Bomber and Fighter Commands, partly because of assumptions on the manner in which we

were going to fight. Until March 1939 the British Army, which was, in theory, going to be committed to the Continent, was tiny. The government did a U-turn in 1939, but that undermined many of the pre-war assumptions on which the expansion schemes had been founded. As a result, air cover for the army in France in 1940 could be provided only at the expense of Fighter Command, because that was where *all* the planned fighter squadrons had been put. Bomber Command found itself in a very similar situation in 1941-42 because the only source of aircraft (other than fighter types) with which to reinforce Coastal Command, Army Co-operation Command, or the Middle East, and later on the Far East, was Bomber Command. Yet, while Dowding is generally lauded for the stand he took over sending fighters to France in 1940, despite the fact that in grand strategic terms it could be argued that he was a shade too parochial in regarding with equanimity the defeat of Britain's principle continental ally, some historians (sometimes the same ones who praise Dowding) tend to criticise Harris for his similarly blunt refusal to recognise any other Command's claim on his resources.

There is, inevitably, another side to the story. Thus, while shortfalls against planned production resulted in a deficit of 200 Stirlings, 110 Lancasters and sixty-five Halifaxes by August 1942, a grand total of 375 aircraft, diversions to other Commands made that situation even worse. In the period 1 January to 1 September 1942, for example, diversions of aircraft from the strength, or potential strength, of Bomber Command amounted to some 510 aircraft, representing the effective loss of approximately twenty-eight squadrons. The majority of these diversions were to Coastal Command and the Middle East. Furthermore, while the transfer of these aircraft elsewhere meant that they were no longer available to participate in the bomber offensive, they usually took their crews with them, which implied a long-term commitment to supply replacement crews and aircraft at regular intervals.

Few CinCs would be prepared to countenance such a constant drain on their command without protesting, and Harris, like Dowding before him, was no exception. The problem was, perhaps, not so much the protesters themselves as the manner in which they expressed their concerns. In June 1942 Harris addressed a memorandum to the Prime Minister in which he argued that air power had to be concentrated

against Germany and not used in 'vastly protracted and avoidable land and sea campaigns'. Not content with that, he opined that the diversion of aircraft to Coastal Command meant that the latter was in effect 'merely an obstacle to victory'.

He did not, however, explain to the Prime Minister how the population, including his own aircrews, were to be fed, or his aircraft fuelled, if the U-boat war was lost. Nor did Harris explain how fighting the Battle of the Atlantic could be avoided. In this instance, as in many others, he would have done better to contain his hyperbole and limit himself to a considered exposition of the impact on his command of such diversions. But it was, of course, Harris's single-mindedness, the very quality which enabled him to mould his command into the effective force that it became, that precluded his being able to see the other side of the coin.

We might add in passing, however, that the Admiralty were no strangers to tunnel vision either, even if they did express themselves in less colourful language. The navy had, for instance, argued for the immediate transfer of six-and-a-half bomber squadrons to Coastal Command and two more to the Indian Ocean and followed this up within a month with a further demand for additional long range bomber squadrons. We should, incidentally, also appreciate that Harris was well aware of Bomber Command's relative ineffectiveness at this stage of the war and that this weakness posed a direct threat to its continued existence. As the official historians, Webster and Frankland, have pointed out, if, in 1942, Bomber Command, with its limited, indeed diminishing, resources, could win some notable victories then, *and only then*, might it be afforded the opportunity of fulfilling its destiny.

Harris knew full well that he had to demonstrate that his command was capable of achieving worthwhile results. Equally, he knew that, since it had failed to do so thus far, it was never likely to do it if its front-line strength not only did not grow, but actually shrank further. It was this consideration that explains, at least some of, his frustration with the navy and Bomber Command's other critics.

These kinds of interrelated, inter-Service squabbles and resource factors, together with the recognition that the previous operational technique of despatching aircraft to find and bomb their targets individually had failed, led Harris and the Air Staff to conclude that a

Only 28% of the 1,047 aeroplanes assembled for Operation MILLENNIUM on 30/31 May 1942 were four-engined types. Twenty-eight were venerable Whitleys, most of them drawn from the OTUs of No 91 Gp. This one, still wearing the codes of No 78 Sqn and with an impressive mission tally on its nose, was actually flying with No 10 OTU when it posed for this picture. (MAP)

policy of concentrated area bombardment of German cities was the only possible way forward. Now area bombardment, despite what the Press appears to think, was *not* invented by Arthur Harris. Indeed he was not even the CinC when the first directive relating to area bombing was issued.

It is also important to understand that area bombardment had the explicit political approval of the British War Cabinet. Both Harris and the Air Staff understood that the devastation of a city by area bombing required large numbers of aircraft concentrated in time and space to overwhelm the active and passive defences, and one of Harris's most important contributions to Bomber Command was the development of the concept of the bomber stream. At the start of his tenure as CinC the bomber stream might be up to 300 miles long. By the end of the war the stream was frequently only 70 miles long, yet it contained significantly larger numbers of aircraft, and that in itself is a tribute to Harris's leadership.

With the inadequate force available to him in 1942, however, Harris knew that achieving notable victories would be difficult, but he contrived to do just that in the early summer by mounting the three One-Thousand Bomber Raids, starting with Cologne at the end of May. At that time the monthly average of aircraft available to his

command was 333, and yet he mounted three 1000-bomber raids. Two of them were actually a little shy of the nominal '1000' but they still involved 900+ aircraft, so how did he manage that with an average availability of only 333? He did it, of course, by scraping up every available aircraft and crew from the front-line and employing all the crews and aircraft he could muster from the OTUs and, indeed, even stealing a few from Coastal Command and elsewhere.

He could not, however, do this on a regular basis. He had originally hoped that he would be able to mount a '1000 Raid', or something close to it, about once a month, but even that proved to be impossible. The fact is, as the Germans would learn later in the war, if you drain your second line units and OTUs to provide crews for the front-line you will eventually run out of trained crews.

But what was the aim of the 1000 Raids? Well, it is quite plain that the targets were the German industrial cities of Cologne, Essen and Bremen. Or were they? I would suggest to you that the *real* target of the 1000 Raids was Whitehall. Why? Because Harris knew the value of public relations. He realised that he badly needed a public relations victory on the Home Front if he was going to sustain his command and protect it against the pressures of its internal enemies. The three 1000 Raids did precisely that. They certainly attracted newspaper headlines but, more to the point, they also demonstrated to the Prime Minister the real potential of a *larger* Bomber Command.

The three raids had effectively stopped the rot and the Prime Minister was re-engaged. It would, incidentally, be 1944 before Bomber Command again succeeded in putting 1,000 aircraft over one target, but that was of little consequence. Harris had achieved his domestic victory: Churchill instructed the Air Ministry that the effective strength of Bomber Command was to be increased to fifty squadrons of heavy and medium bombers by the end of the year (1942) and suggested that two of these squadrons should come from Coastal Command and one from the Airborne Division. Although this was still short of what Harris had urged on the Prime Minister, it was the first step towards reversing the flow of aircraft *out* of his command.

While Harris and the Air Staff may have been as one on these aspects, there were still significant differences between them and this may turn out to be a recurrent theme during the rest of today's

deliberations. Air Cdre Probert has already mentioned Sydney Bufton, the Director of Bomber Operations, and Air Cdre Lambert has, quite rightly, noted the number of directives which flowed in Bomber Command's direction. The first occasion on which Harris clashed with the Air Staff was in 1942, not long after he had been appointed as CinC, the subject being the introduction of GEE. The Air Staff had high hopes that GEE would not only improve Bomber Command's lamentable night navigation, but also prove efficient as a blind bombing aid. It is interesting to note that the directive to the CinC of 14 February, the famous 'Area Bombing Directive' as it is often known, also held out the hope that GEE would allow 'for effective attack of precise targets'.

Harris was, quite rightly in my view, very sceptical. This was not to be the last time that he was to point out that, whatever his directives might dictate in theory, in practice weather and the enemy's defences actually played a far larger part in the conduct and success of operations than the Air Staff was willing to concede. As the official historians have pointed out, 'his mind tended to reject simplified ideas which seemed to offer quick or easy solutions' and from the early days of his command, Harris adopted an attitude of stark realism, amounting at times almost to pessimism, towards questions of operational feasibility.

Interestingly, in terms of what Air Cdre Probert said earlier about the Director of Bomber Operations' criticism of Harris's staff on the grounds of their lack of operational qualifications, it is my opinion that, regardless of their level of operational experience, Harris's team actually had a far more realistic appreciation of what was and was not possible than did the Directorate of Bomber Operations. This, despite the fact that, like Bufton, many of the men at the Ministry had flown on operations earlier in the war. An interesting conundrum, is it not, that the critics were less realistic than the people they were criticising, even though it was they who had the operational experience? Why that should be, I do not know. I have no solution to the conundrum; I merely pose it.

At this stage in the period of experimentation and development within Bomber Command, we must address the famous question of the Pathfinder Force. This is yet another aspect over which Harris has been criticised, often vehemently so, for his negative attitude towards

the pathfinder concept and in many ways, I think, rightly so. On the other hand, what many of these critics often forget is that there was, as there always is, another side to the argument. To put the problem in a contemporary perspective we must remember that we are talking about a still relatively small force. What Sydney Bufton and the other pathfinder enthusiasts wanted to do was to take from this very small force the best and most experienced crews to create a 'Target Finding Force' which could develop the necessary operational techniques to permit it to find and mark the aiming point. It was a laudable and sensible aim.

Harris's opposition was based on what he saw as a policy which was just as likely to undermine Bomber Command's effort, as to enhance it. He believed that if you 'creamed off' the brightest and best crews from a small force those that were left would be so relatively incompetent that they might well be unable to exploit the expertise of the pathfinders; in other words, that the concept contained the seeds of its own destruction.

Because of his opinion, Harris rather undermined the PFF in the beginning by not co-operating as wholeheartedly as he might (should?) have done. Rather than selecting the best crews from all of his squadrons and sending them to the PFF, which had been the idea, he merely allocated four standard squadrons to the new force and transferred them lock, stock and barrel – the good, the indifferent and the bad. It is for precisely this reason that the PFF takes rather longer to get into its stride than had been hoped but, by the time that it does start to become operationally effective, the Main Force has expanded substantially. In a sense, Harris had won both sides of the argument. He had been obliged to tolerate the PFF, because Portal ordered him to create it, but his token initial support prevented the critical dilution of the experience level within the overall command. This delaying tactic had ensured that when the PFF did eventually become effective it was able to control and direct a large Main Force that was actually capable of following where it was led.

To round off, I need quickly to review later developments that occurred in 1942, '43 and '44. I have already mentioned some of the operational techniques which Harris introduced and which he continued to refine, a process that permitted him to mould a very effective Main Force with increasingly effective techniques. This

involved the development and introduction of a lot of technical devices, including navigational aids, like GEE and H2S, and means of regaining the initiative from the *Luftwaffe*, notably by the deployment of WINDOW, first used to such remarkable effect over Hamburg in 1943. Surprisingly enough, however, there was also a need to develop such basic tools as proper target marking bombs. Why surprising? Because it was nearly three years into the war before anybody actually began to think seriously about the basic requirements of an effective strategic offensive – like the need for target markers. That it took such a long time does, I think, provide grounds for some legitimate criticism. Three years really was *too* long and it was Harris who saw what was needed and it was due to his single-mindedness and forcefulness of character that real progress began to be made.

Despite these positive influences, however, there is no doubt in my mind that Bomber Command suffered, at least a measure of, defeat in the Battle of Berlin. Historians argue about this; many are extremely critical of Harris and believe that he continued the Battle for too long, that he was too single-minded in pursuit of this particular objective. Indeed, it can be argued that, in going for Berlin, he was not even abiding by the target categories embraced by the directives which he had been given. Here I have little sympathy with AVM Norman Bottomley, Bufton, Baker and others in the Directorate of Bomber Operations who sought to persuade Harris to change course during this period and go for targets such as Schweinfurt and some of the German aero-engine factories. I think it is a lamentable comment on the Directorate that they could actually write to the CinC suggesting that he should bomb six towns related to German aircraft production when these town did not figure in Bomber Command's current targeting directive. They *were* a feature of the US 8th Air Force's Directive, but not of Bomber Command's, and the official historians do point this out. It seems to me that if there was to be a Directorate of Bomber Operations advising the CinC, then, at the very least, it really ought to know what its own directives said; in this case it appears that it did not. The solution was in their own hands, of course, because they could always change the directive but, as Air Cdre Lambert pointed out, the CinC was actually drowning in directives.

This was yet another reason why Harris used to get so aggravated with the Air Staff; it must have been very frustrating to have been

conducting a campaign while having to contend with an office up the road which kept sending him instructions on how to do his job via means which were plainly impossible to implement. As the war progressed, the Air Staff did become a bit more realistic but the damage had already been done and Harris had no confidence in this group of officers, many of whom, incidentally, he had refused to have in his own command. Clearly, he can have had little respect for some of them in the first place and when they sent him flawed directives and ill-conceived advice, this served only to confirm his opinion of their inadequacy. All too often Harris was told that if he bombed here and mined there this would undermine the whole German economy; he did it and it didn't work. This sort of thing really did happen. Schweinfurt was a case in point. The Ministry said, bomb it and the economy will grind to a halt. Harris said that the Germans would simply find another source of supply for their ball-bearings. In due course he bombed Schweinfurt and the Germans went elsewhere. So, Harris was right and the Ministry was wrong, and this was not an isolated incident. This is another theme to which I will return later in the day.

For now, I will leave you with one thought. Harris wrote in the most glowing terms of only one period of the war when he felt that the higher direction he was receiving was on the mark, sensible and helpful and that everybody in the vessel, as he put it, was pulling the ship in the same direction. That was when he came under the command of a US Army general and another air marshal, Dwight Eisenhower and Arthur Tedder. Oddly enough, this was another of those interludes when Harris's command was frequently being diverted from the direct assault on Germany to bombing targets related directly to the land war in North West Europe, yet it is during this period that he considered that his command was being most effectively directed from above. This was in marked contrast to his feelings about the Directorate of Bomber Operations, a topic which I will pick up again this afternoon. For the moment, suffice to say that problems with directives began to crop up again as soon as Portal and the Air Staff regained control of Harris's force in September 1944. It is worth pointing out that, in the approximately six months that Harris was under SHAEF, it issued him with only one directive – just one!

MORNING DISCUSSION

Stephen Mason (Associate Member of the BCA). Reference was made to the range limitations of the bombers available at the beginning of the war, the Whitleys for instance. Was any consideration given to moving more squadrons to France so that this problem could be mitigated by moving the bombers closer to their targets?

Air Cdre Lambert. Yes there was, but the interesting thing is that bombers that had originally been conceived to take on France would now have to penetrate deep into Germany. At the time that you were talking about, of course, the immediate threat would have been an attack through the Low Countries and that could have been countered from the bases in the UK so there was no real incentive to deploy forward. Even if we had moved more bombers to the continent, however, this would not have overcome the problems with the weather or the limitations of the available bombs so, in practical terms, they would still have had little realistic capability against anything beyond the Ruhr Valley.

Leon Samuel (MA post graduate student, London University). Air Cdre Probert, you said that Harris's attitude towards LMF was fair, but not harsh; could you expand on that?

Air Cdre Probert. This is a vast subject and, unfortunately, we have only a very short question time in which to deal with it. Harris clearly understood the importance, the significance, of LMF and he also understood the risk it posed to the general state of morale if he and his subordinate commanders were not firm in their handling of it. If LMF were allowed to develop, people would be able to avoid carrying out their proper duties and that had the potential, ultimately, virtually to wreck the bomber offensive. He knew that it had to be dealt with firmly but, at the same time, he did understand the practical problems that the individuals concerned would have to face; he also knew that LMF had to be treated with some understanding which meant that a fairly delicate balance had to be struck. The studies which have been made into the incidence of LMF, notably by an American, Mark Wells, indicate that the actual rates were remarkably low, and that leads me to conclude that, on balance, I think that Harris's

management of this very difficult problem was as good as it could have been.

Paddy Leadon (Air Crew Association). I have never understood why the British media do not make more of the fact that, regardless of whether or not Bomber Command was actually hitting its targets, it was necessary for them to keep trying. The morale of the British people must have been very low at that time and the bomber offensive was the only way in which they could be reassured that the Germans were being attacked. I also think that the significance of the Peenemunde raid has never really been fully brought home to the British public; had Hitler been able to launch his V-2s a year and half or two years earlier he could have almost negotiated a peace.

Lambert. I think you're absolutely right. After Dunkirk, bombing was the only means by which the British could feel they were doing anything at all to respond to the Germans and that is why it was so important that Bomber Command carried the offensive to the enemy. But what I think is equally important is that we also acknowledge that this was a time of missed opportunity. There were many things that needed to be changed, navigation and bombing accuracy in particular. Had we recognised, and corrected, these defects at the time, the effectiveness of our campaign could have substantially increased. It is a great shame that the early bombing effort was as ineffective as it was. Nevertheless, you are quite right; it had to be done for the sake of morale.

Sebastian Cox. The only thing I would add to that is that was not only the *British* public who benefited. People in many of the occupied countries were also considerably heartened by Bomber Command's efforts especially, I think, in Holland and Belgium. I am not so sure about the French; I suspect that their attitude may have been a little more ambivalent at the time. But I have no doubts about the Dutch; several Dutch people have told me how encouraging it was for them to hear the nightly streams going overhead.

Frank Haslam (No 207 Sqn Association). We have heard that Harris rejected certain personalities who ended up at the Air Ministry where they subsequently became a thorn in his flesh. Is there any evidence to suggest what criteria he set for the selection of his staff?

Probert. I am unaware that he had any kind of specific model; I certainly found no indications of his having used such an approach. I think its fair to say that in the later stages of the war Harris was concerned to ensure that his AOCs had ample wartime flying experience. He was certainly very keen to get Sam Elworthy, and Constantine, and Hugh Lloyd. All of these individuals were prominent among the rising generation and Harris appreciated the value of giving them command experience, and not just for the rest of the war either; he was blooding them for whatever might come afterwards.

I should perhaps offer one more comment on the Air Ministry staff. We should not make the mistake of tarring them all with the same brush. I remember talking to one officer, who later became an air marshal, who was at pains to impress upon me the fact that there were, among the members of the Air Staff who were not actually working in Bomber Ops but who did know what was going on, many who were very upset at the way in which Harris was being treated. A lot of them felt that he was receiving an unduly rough ride from their bomber colleagues at the Ministry.

Wg Cdr R J Wasley. I was interested in Air Cdre Probert's comments on LMF. One member of my crew had the misfortune to be classed as such. At that stage he had already completed half a tour with us. He had recently been married and his new wife declared that she would leave him if he did not stop flying. That put him in a pretty difficult position, of course, and he eventually decided that his wife was more important to him than completing his tour. With hindsight, I believe that he was treated abominably. He was sent to Sheffield where he was publicly stripped of his rank as a sergeant and labelled within the RAF as a coward. I think that that was monstrous.

Probert. I am sure that everyone here would sympathise with your colleague. Nobody would pretend that the right decision was reached in every case but under wartime conditions hard choices clearly had to be made and they had to be made quickly – and the over-riding priority had to be the winning of the war. I don't think that I can usefully add much more.

Bernard Fitch (No 61 Sqn, 1943-44). It is my clear recollection that Harris was always known as 'Butch', which was not, incidentally, a reference to the fact that our losses were a bit steep; I am sure that it

was actually a tribute to his sheer dogged determination. Has there been some kind of politically inspired change so that we are now supposed to remember him as 'Bomber' Harris, possibly due to the heavy losses and also the Dresden raid? I have seen no reference to 'Butch' Harris for years. Is my memory serving me false?

Probert. No, your memory is quite sound. There were a number of names that were applied to Harris, some of them less polite than others! But 'Butch' was certainly very widely used by his men. In the crew rooms, in the hangars and out on the dispersals, he was definitely 'Butch'. Equally certainly, despite what some of the critics have said, of course, he was *not* known as 'Butcher', although this term was applied by some elements within the media. The sobriquet 'Bomber' Harris was also an invention of, or at least popularised by, the media. I do not know exactly when it started but it was certainly used by the Mayor of High Wycombe at some major function, in 1943 I think, and it soon caught on. Then again, his contemporaries knew him as 'Bert', which is how many of us tend to think of him today. What he would not stand for, however, was being called 'Ginger'!

Representative of the cost – an unidentified Lancaster of No 83 Sqn that made it home, although not unscathed and not, it would seem without at least one casualty.

SURPRISES

Air Commodore Henry Probert

With so much having already been written about Bomber Command and its wartime CinC I did not really expect when I started on my book to find much that was new. In the event, however, I surprised myself and I am now going to share with you some of my so-called 'discoveries'.

First Harris's family. Those who rely on his own memoir and on Dudley Saward's biography for their information learn that he was married just once, in 1938, and while the occasional reference to a first marriage appears elsewhere no major source draws attention to it. Yet, as I soon ascertained from Harris's four children, three of them came from his first marriage in 1916, and this one lasted 18 years. Why it should have been excluded from Saward's 'authorised biography' I do not know for certain, though I suspect Harris, who was still around when the book was written, must have insisted on it. Anyway there was ample material to enable me to fill this particular gap, something I considered essential to a proper biography, and indeed the present-day family were insistent that I should do so.

Then there was the Battle of Passchendaele in 1917, also entirely ignored in Harris's own memoir and by Saward. Why, I wondered, for the experience was surely critical to Harris's thinking about war. Fortunately, sufficient detail was available in squadron histories, and I can only surmise that Harris himself may not have wanted to eulogise what he considered only a modest contribution. In my judgement his experience of successful operational flying over that dreadful battlefield was of huge significance to his thinking about war.

The inter-war years produced only the occasional surprise, though I certainly did not know about his unique airship flight in 1931 until I came across it in one of his albums and in his log book. It occurred when the *Graf Zeppelin* was visiting Egypt and the German crew needed an RAF pilot to accompany them on a flight to Jerusalem. It was Harris who went, and who flew (or rather navigated) the ship. My researches also led me via a series of coincidences to a flight he made in a Hornet Moth over Rhodesia in 1936, when he was between marriages. Although strictly on duty, he had as a passenger a very attractive young lady, to whom he turned at one point and said: 'Polly,

it would be very nice if you would marry me.' 'It is very nice of you to ask me,' she replied, 'but I think you are too old'. It was sixty years later, then living in Australia, that she herself sent me this little story. She died quite recently.

On a very different note my eyes lit up when I spotted a letter in Harris's personal papers from Sir James Barnes, written after the war. Barnes, by then the Deputy Under-Secretary of State, had worked in the Air Ministry as an Under-Secretary before the war, and he told Harris that he, and many others who were there at the time, were convinced that if there was no war he would be out on his ear, but if there was a war he would have the highest command. I had certainly never expected to find a document of this nature, and it provided me with an invaluable perspective on Harris's performance in the corridors of power before the war.

Other significant perspectives came from three of Harris's former PAs, first mentioned to me by his family. Saward had never been in touch with any of them. One, James Pelly Fry (nicknamed 'Pelly' – Harris loved conferring nicknames), had worked for him in Palestine and much later written a memoir. The others, brothers Peter and Paul Tomlinson, had important wartime recollections and Peter, whom I visited in Cape Town in 1996, had remained in close touch after the war. I had never expected such contacts and the fact that all were living-in PAs (one of them became Jackie Harris's godfather) gave them inside knowledge and an understanding of their master which I could never have obtained elsewhere. Indeed two of them had frequently flown with him and spoke highly of his piloting skills and of his keenness, as an AOC, to fly whenever he possibly could. Too many of his critics have alleged that he was out of touch with flying; not true!

Now for a few words about Harris's attitude to developments in technology, about which some of his correspondence surprised me. I had not expected to find him complaining in November 1940 about the effort being wasted on a new navigation system called TR1335, the future GEE. This ran totally counter to what Saward wrote in his book and, given Saward's background, I had assumed that he would be correct on such matters. Then there was Harris's scepticism about the value of the *Luftwaffe* beams as aids to target finding. When I talked about Harris to Professor R V Jones in 1997 he told me that

these remarks had done nothing to persuade him that Harris had sufficient understanding of the more advanced technologies that were soon to be so important. Again, there were Harris's predictions about the Mosquito, when he told Wilfrid Freeman in April 1942 that the aircraft would go down in history as a 'second Battle' as far as its bombing role was concerned. He usually came round on such matters, although as late as 1944 he was venting his spleen against the scientists at TRE (Telecommunications Research Establishment), who were sharply criticising him for failing to exploit the full potential of H2S in Pathfinder operations. His words to TRE certainly did his reputation no good in that august establishment. 'They should mind their own ruddy business,' he said, 'they remind me simply of a bunch of prima donnas squabbling in the limelight.' A letter I received recently from a reader of my book probably referred to this conflict when asking me to confirm a story about Dr Martin Ryle, one of the scientists there, angrily throwing an inkpot at Harris. I told him I had no knowledge of such an incident and very much doubt if anything like it ever happened, but if anyone here can help please let me know.

Let me turn now to a very different group of people with whom Harris also had dealings, namely the American airmen. Here Harris's papers were eye-openers, for I had previously not appreciated the extent to which he battled on behalf of the 8th Air Force during its build-up in this country and its early operations. He had, of course, become friendly with men like Arnold, Andrews and Old when visiting the States in 1938, and with more airmen, most notably Eaker, and senior politicians (even Roosevelt) in 1941, though, at the same time, he had also been highly outspoken about general American attitudes to the war in those years. So when, in 1942, the USAAF started to arrive in England, Harris immediately offered full support. It began with helping Eaker set up his HQ; then came much discussion about the location of air bases and extensive assistance in setting them up, to the extent of telling Eaker that anything he wanted was his for the asking 'up to half my kingdom'. It was not long, however, before Harris realised that Eaker's biggest problem was to persuade his masters back in the States to give his build-up the necessary priority, and he himself became increasingly worried that the many resources he was providing were yielding little in terms of an active USAAF contribution to the bombing offensive. So, in late 1942, Harris started

bending the ears of the Air Ministry, then Churchill and also his own friends in Washington, not least Bob Lovett, effectively the American Air Minister. His protestations, fully encouraged by Eaker, continued for much of 1943 and, although they cut right across the normal lines of communication, certainly paid dividends. The extensive correspondence on this subject in Harris's own files tells me how much the long-lasting friendship between our two air forces owes to Harris's personal efforts on behalf of the USAAF in those wartime days.

Having just mentioned Churchill I feel I must say that I had not really appreciated the extent of the contacts between him and Harris. I knew, of course, what Harris had said about this in his own memoir, *Bomber Offensive*, published in 1947, but then I found out that much of the book had been ghost-written by his former Press Officer, John Lawrence. When Lawrence's widow showed me an exchange of letters between him and Churchill these indicated that Harris had personally drafted his comments on their relationship and, more significantly, that Lawrence had shown these paragraphs to Churchill and obtained his express agreement to their publication without amendment. I have always regarded that statement as a wonderful reflection of the working relationship between the two men, which is why I decided to quote it at some length, and I regret that it rarely receives mention by the many historians who write about Churchill. The fine book recently written about him by Roy Jenkins is just one that ignores it, indeed it hardly refers to Harris at all and says little of the bomber offensive either. I see this, incidentally, as a very real problem for all of us who are concerned about Bomber Command. Our subject receives adequate treatment in the specialised histories but scant, if any, coverage in the wider ones which are all that most readers of wartime history seem to have time for.

Anyway I felt it right to stress the significance of the ties between Churchill and Harris and to dig around as much as possible, and not least in relation to the war on the Eastern Front, about which Churchill had frequent dealings with Stalin. Most of the exchanges relating to the bombing offensive are reasonably well known and they clearly indicate its value to Churchill when trying to counter Soviet allegations of British inaction in 1942 and 1943. But it was only when I saw a translation of a German historian's book about Dresden that I

spotted a further message from Stalin to Churchill in January 1944, strongly urging him to continue, even to step-up, the bombing of Berlin. Götz Bergander, the author of the book, had found this message in the Soviet archives and it seems to me that it may have underlined, in Churchill's mind, the importance of that winter's Berlin offensive, about which Harris has always received so much criticism. Certainly Bomber Command took a pasting from the German night fighters over those winter months but, in the context of the overall war situation at that time, its efforts and losses were very far from wasted.

The attack on Dresden was another subject that demanded attention and my account of this, if I dare say so, has so far received no complaints – and several plaudits from readers whom I expected to be critical. Here I had three surprises. First I was lucky enough to meet the interpreter who worked for the Chiefs of Staff at the Yalta Conference, who told me about their top-level discussions with the Russians about air operations in support of their offensive on the Eastern Front. The conventional wisdom, according to the formal conference minutes, has always been that the only cities the Russians specified by name for such attacks were Berlin and Leipzig. The interpreter, a reliable witness in my view, clearly remembers not only that Dresden was included but that Stalin himself interjected strongly for it. Second, Bergander, the German historian who has researched the whole subject in great depth, very firmly puts the death toll at between 35,000 and 40,000, ie no more than in Hamburg in 1943. I have discussed this with him at length and go with his conclusion. Whether we will ever get this across to the wider world I doubt, since far larger figures going so far as 200,000 have been repeatedly quoted over the years, and even David Irving still goes for about 60,000. My third point is Bergander's conclusion. 'The shockwave triggered by Dresden swept away what was left of Germany's will to resist' is what he wrote, and this reflects his overall judgement on the consequences of our bombing on German morale.

Now for a short selection of other surprises, presented as 'did you know?'

Number 1. Did you know that Harris urged a plan after the Dams Raid to despatch No 617 Sqn to Rome to kill Mussolini? I certainly had never heard of this until I found letters about it in Harris's own papers. These indicated that in 1942 he had suggested a precision

attack on Mussolini's residence and office in Rome (a follow-up to Augsburg possibly) and on 11 July 1943 he repeated his proposal as a means of encouraging the Italian surrender. He would use No 617 Sqn, overflying France at night, bombing at 0930 hrs, half-an-hour after Mussolini's usual time of arrival, and continuing to North Africa. Not a bad idea we may think, and Portal backed it. Eden, the Foreign Secretary, opposed it, however, stressing the damage to the Allied cause if things went wrong, and Churchill agreed. So Harris's contribution to provoking the collapse of Italy had to continue by area bombing.

Number 2. Did you know that Harris had no knowledge of the German ENIGMA cypher until long after the war? I myself had always been puzzled about this. I knew that Harris had not been on the original ULTRA list, which was drawn up when he was DCAS in 1941; 'need to know' did not extend to his level at that time, but I had always assumed that he must have been placed on the list when he became CinC in 1942, although I could find no firm evidence. Then, when I listened to the video-taped interview conducted by Tony Mason in 1982, I heard Harris state that he had never been informed of the ENIGMA intelligence source and had only learnt about it long afterwards. At the time it was presumably thought that he still did not need to know, and I suppose that for operational purposes that was strictly true. Yet, when that dreadful argument with Portal about the significance of oil surfaced in the winter of 1944-45, I judge that Portal was wrong not to have had Harris briefed about the main source of the relevant intelligence. The historian Ralph Bennett, a leading authority on ULTRA, certainly felt Portal should have done, as did Professor Harry Hinsley, the official historian of Intelligence, with whom I discussed the subject shortly before his death.

Number 3. Did you know that Harris went to visit Marshal Zhukov in 1945? Here I relied totally on the memory of Peter Tomlinson, his former PA, who had taken over the post again in 1945. It was he who told me the story when I spent a couple of weeks with him in 1996. It was quite simple. Harris had been told soon after the war that Zhukov would like to meet him, whereupon Tomlinson accompanied his master in his personal Dakota to Zhukov's Headquarters, presumably near Potsdam, although Tomlinson could not remember. Tomlinson did recall the warmth of the welcome and the generous liquid

hospitality but not what was actually said; since they had not taken their own interpreter they had to rely on Zhukov's. But the rapport between the two men was totally apparent, said Tomlinson. I and my researcher, Joe Davies, later tried to find written evidence to support this but could find none. Eventually, however, feeling confidence in my witness, and having challenged him at the time, I decided to accept his story, judging that he had no reason to invent it.

Number 4. Did you know that Harris was in the running for a lot of different jobs after the war? One of these was Commissioner for the Metropolitan Police, the post formerly held by Trenchard in the 1930s. It was Home Secretary Herbert Morrison (himself, perhaps surprisingly, a firm supporter of Bomber Command) who approached Harris about this in 1944, and the offer was not rejected out of hand. Other possibilities were the post of Inspector General of the RAF, the Governorship of the British Zone of Germany (the job Sholto Douglas eventually received) and the Governorships of the Isle of Man and of Bermuda. The Governorship of Southern Rhodesia was another and would have been particularly attractive, given Harris's African connections, but the timing was wrong. So a whole series of public appointments were mentioned but at the end of the day none was thought suitable and he decided to go his own way into the world of commercial shipping.

Number 5. Did you know that Harris and Albert Speer exchanged several friendly letters in the I970s? While I knew that Dudley Saward had spent some time with Speer when researching his biography of Harris, only when I found some correspondence from Speer in Harris's own papers did I realise that the two men had exchanged letters directly. Then I managed to obtain copies of Harris's own letters from Speer's archives. While only brief, they did demonstrate the degree of respect that now existed between the two men and made it clear that they wished they could have met; indeed I think they were in fact close to meeting in 1973. One thing Harris certainly made clear: he believed Speer to have been harshly treated after the war.

Number 6 is a brief point that will be of interest to today's women pilots in the RAF. In 1940, when AOC 5 Group, Harris had on his staff a WAAF officer who held a civil pilot's licence and he tried unsuccessfully to persuade higher authority to permit her, and others similarly qualified, to fly RAF communication aircraft.

Now, to conclude, I would like to return to a critical matter that I referred to this morning: Churchill's omission of Bomber Command from the many tributes he made in his VE speech to the nation. I had always been puzzled by this. It simply did not make sense to me that Churchill, always such a firm supporter of Bomber Command's war role, could have missed this particular trick, and while I could appreciate his deep concern about the appalling destruction that had been inflicted, as evidenced in his remarks after Dresden, I found it hard to regard such reasons as adequate. So important did this matter seem that I and Joe Davies dug around in the published books as much as possible, yet without success, until, in 1998, a newspaper article referred to a recently opened file in the Public Record Office. This revealed that in May 1945 Churchill had instructed the Chiefs of Staff and their planners to 'think the unthinkable', ie to examine the military possibilities of driving the Russians back home before the Western Allies had demolished their forces. In so doing, Churchill said, the planners were to take account of a possible German contribution. With his mind clearly running along such lines, might it be, I asked myself, that Churchill had judged it inappropriate to refer publicly, at that very moment, to the devastation brought to Germany itself by the bombing campaign? I do not know, and Martin Gilbert, who of all people ought to know, could not even find the text of Churchill's speech in his own papers. It remains, as far as I am concerned, an open question but I do hope that one of these days somebody will surprise me with the answer. For me it remains the biggest question of all just as it was always utterly incomprehensible for Harris himself.

AUTUMN 1944-MAY 1945

J Sebastian Cox

Well, now perhaps we are in those 'broad sunlit uplands', because Bomber Command had undoubtedly become a very powerful and effective force by the autumn of 1944. Unfortunately, this created its own problems, because if you have a powerful and effective force, you have to decide how you are going to use it, and if your force is also extremely flexible, other people may want to tell you how to use it.

By late 1944 Bomber Command was back under the overall control of Sir Charles Portal and, therefore, the Air Staff, which meant that Harris was no longer working directly with Sir Arthur Tedder and General Eisenhower. The result of that, as I mentioned this morning, was an almost immediate return to the discord which had previously existed between High Wycombe and the Ministry. The Air Ministry issued Harris with yet another directive at the end of September, one which placed German oil production at the top of the list of target priorities. It did, however, also recognise that there were factors, in particular the weather and German defences, which meant that targets other than oil might also have to be attacked on occasion.

Unfortunately, there has been some confusion among certain historians over the nature of 'a directive'. In brief, it is a document which specifies what targets are to be attacked and in what order of priority but acknowledging that a commander may need to make choices within his overall remit. If the intention had been to confine the offensive *solely* to oil then the 1944 directive would have said so. It did not; it provided a selection of target categories and, notwithstanding the fact that they were prioritised, this granted Harris a degree of flexibility to operate within those constraints. Some of the historians who have taken the view that a directive is an absolute edict have argued that Harris was at fault in that he did not concentrate *exclusively* on oil. They are wrong, because their argument is based on a false premise.

Nevertheless, there are two aspects of the bomber campaign in the winter of 1944-45 that we should examine. We need to assess the military impact of Bomber Command's operations at that time, and we need to consider what might have been achieved if things had been

done differently. The latter exercise is a popular one among historians and their constructs have undoubtedly contributed to damaging Harris's reputation, since they portray him as an inflexible, unthinking, single-minded, almost purblind, commander whose sole aim was to bring about the total destruction of German cities by area bombing.

Many of these arguments are grossly simplistic, even grossly unrealistic, although they do tend to chime with our *current* perceptions. In other words, they are in tune with what we are now used to, specifically our perception that air power is an instrument that can be wielded with *precision*. The problem that we have to deal with when discussing these matters is that what we understand by 'precision' today bears little relation to what that term meant in 1945. Today, 'precision' means that if you drop a bomb, it is almost certainly going to hit the *exact* spot that you aimed at. In 1945 it meant that you just *might* score a hit somewhere within the entire factory complex that served as the target.

The bomber offensive during the winter of 1944-45 has provided the grounds for most of the more informed and sustained criticism of Harris. Leaving aside those who take issue with the whole concept of strategic bombing on moral or other grounds, other critics have focused on this period because they believe that Harris had choices and opportunities at this stage which he did not exercise and it is for this, they argue, that he should be criticised.

Many of these arguments rest on the framework provided by Webster and Frankland's Official History. They analysed the bomber offensive from the autumn of 1944 onwards and they did it on a largely statistical, or percentage, basis. In other words, they looked at the percentage of bombs dropped on particular target sets (as we would now call them) and the results that were achieved, and it is this data, as much as Harris's verbal fireworks in his famous written exchanges with Portal, that has formed the basis for much of the criticism which has followed.

Webster and Frankland were at least measured in their criticisms, conceding for example that in the autumn of 1944 (and you will not find many of Harris's critics quoting this), 'The operational arguments in favour of area bombing, though of diminishing force, were by no means exhausted', which is an interesting enough statement in itself.

They also stated that 'the last year of the war produced certain new strategic arguments in favour of an all-out attack on German morale', but they nevertheless concluded that neither of these reasons fully explained the gigantic effort devoted to area bombing by Bomber Command in the final offensive, nor did Sir Charles Portal regard this as either inevitable or desirable.

The official historians were the first people to attempt to examine the question of late wartime bombing policy in terms of percentage effort by target sets, albeit using contemporary statistical data. In doing so they were able to quantify the effort devoted by Bomber Command to attacking oil in the autumn of 1944, that is to say about 14%, and compare this with the 53% directed against Germany cities.

We then find these figures reproduced, more or less exactly, in a wide variety of works including, for instance, and in no particular order: John Terrain's *The Right of the Line*; Max Hastings' *Bomber Command*; Richard Davies' *Carl Spaatz and The Air War in Europe*; John Ellis' *Brute Force* and Professor Harry Hinsley's *Official History of Intelligence*. All of these writers, and many others, are critical of Harris, some virulently so, and all are inclined, to varying degrees, to see little or no merit in his responses to Portal's strictures on the need for a greater effort against oil. In so doing, they dismiss Harris's counter-arguments concerning the weather and tactical restrictions which is, I submit, disingenuous.

Yet there is evidence which indicates that there is, as there usually is, another side to the picture. This may not completely absolve Harris but it does at least suggest that a lot of the criticism is excessive. In particular, and as Webster and Frankland point out, one encounters several fundamental problems in attempting to analyse Bomber Command's effort. Apart from the fact that so called 'strategic' bombing often became confused with tactical bombing, especially at this stage of the war, it was often difficult to identify the effort being devoted to each target set. For example, in area attacks upon towns in the Ruhr, which were recorded under the heading of 'industrial area' (that is to say the 53% to which I have already referred), substantial damage was sometimes done to benzol plants, which belonged, of course, to the oil plan.

In this context we should note that the Allied oil experts estimated that in September 1944 more than 50% of Germany's oil production

came from benzol plants. These produced oil as by-product of coke ovens, most of which were situated in the Ruhr which was, of course, one of Bomber Command's primary *area* targets during the autumn. Plainly, the benzol plants would have sustained substantial damage in the course of Bomber Command's 'area' attacks. We should also note that, according to the American official historians (not Bomber Command's greatest admirers), by the end of November 1944 'all of the RAF's synthetic oil targets were suspended because they were no longer operating.' That statement alone should give us pause for thought in view of some of the criticism levelled at Harris on the bombing of oil.

There is also a tendency on the part of the critics to assume that a decrease in the tonnage dropped on cities was matched by a corresponding rise in the tonnage dropped on oil. There is evidence to suggest, however, that this may not have been the case, and on this point even Webster and Frankland may have been less balanced than usual. The British Chiefs of Staff produced a detailed post-war study, entitled *Oil As A Factor In The German War Effort*, which included a through analysis of the entire war effort against oil targets and of its effectiveness. This study concluded that between October and December 1944, when Bomber Command is criticised for devoting only 14% of its effort to oil, there were, allowing for the weather, only seven nights and three days when oil targets could have been attacked but were not. In a similar vein, the report of the British Bombing Survey Unit indicated that that few tactical opportunities to prosecute the campaign against oil were missed. During this period the report notes that Bomber Command operated against oil targets on twenty days and eighteen nights, and against other targets systems on thirty-five days and forty-six nights. An admittedly rough and ready calculation would suggest, therefore, that Bomber Command could not have raised its effort against oil by much more than 8.5%, perhaps 7000 tons. Bomber Command dispatched some 26,389 sorties during the three months in question and, again crude, calculations suggest that 8.5% of that total would amount to 2281.

There are two other pieces of evidence that support this figure as a fair approximation, although it can be no more then that. First, largely as a result of pressure applied by Portal, Harris did increase the effort devoted to oil in the early months of 1945 to 25%, which compares

tolerably well with my rough calculation which indicated a capacity of 22½%, (ie the 14% that had actually been achieved over the period October-December plus the estimated 8.5% of 'missed opportunities')

Secondly, in commenting on a draft of the history in 1959 ACAS(Int) wrote, 'The difference of view between the Air Staff and the CinC was not as great as the amount of paper absorbed in its discussion would indicate.' The CinC attacked many precise targets with astonishing skill and accuracy. Reasonably good weather was essential for such precision attacks and, with the best will in the world, his precision attacks could not have been increased indefinitely. In bad weather, the balance of his effort would still have gone on area targets. This simply had to be the case; remember we are talking about North West Europe in the autumn and winter when bad weather is the norm, not the exception.

To go back to the argument about increasing the precision effort from, say, 12.5% to, say, 25%, we may compare that with Max Hastings' view that 'the difference between the actual and potential effort Bomber Command concentrated on all targets may have been only a matter of ten or twenty thousand sorties.' In other words ten times my figure (my 2281). It is, incidentally, particularly interesting to note that in 1959 ACAS(Int) was one AVM Sydney Bufton, of Directorate of Bomber Ops fame in 1944-45. Bufton had, of course, been one of Harris's chief antagonists at the Air Ministry. As we have seen, Harris was constantly at loggerheads with him throughout the winter of 1944-45, along with others on the Air Staff and within the Allied Combined Strategic Targets Committee, the Anglo-American body charged with establishing target priorities and monitoring the effects of the combined bomber offensive. From within this circle, Bufton consistently and persistently pushed the claims of oil.

That it was Bufton who made the post-war comment about the relative amount of extra effort available to attack oil is, therefore, significant. The official historians did not choose to speculate on what additional percentage might actually have been sent against oil, but the implication is that it could have been significant. There can be little doubt that the foundation of others' more intemperate criticism of Harris is firmly grounded in the official historians' work.

The evidence that I have presented, however, suggests that the picture is not as clear cut as it is often made out to be. This is not to

deny that had Harris deployed an extra 8-10% of his effort on oil, the result might have been decisive. As Professor Milward, the economic official historian (and not an ardent admirer of the strategic bombing offensive) has written, 'By the narrowest of margins the strategic air offensive failed to smash Germany's economy by this one method of attack.' In discussing attacks on transportation targets, which was one of the other major targets sets for the winter of 1944-45, Webster and Frankland reiterate their warnings on the dangers of relying on statistical summaries to determine the focus of the offensive, and they do so with even greater emphasis than they do with oil. Following on directly from their observations on benzol plants, to which I have already referred, they wrote, 'Even more so was this the case with the communications plan. It was impossible to make an effective area attack on any town area without doing damage to communications and very probably the railways. Similarly it was very difficult to attack a large railway centre without doing damage to the town.'

The forces committed to the communications campaign were generally given two aiming points when bombing railways. One was the railway centre and the other was the centre of the town. The devastation of the town contributed to the difficulty of repairing the railways. It was only when the target was relatively isolated that 'pure' communications bombing could be categorised as such. Similar considerations applied to other target systems, but it was particularly true of communications bombing. Webster and Frankland concluded that 'it would, therefore, be entirely misleading to judge the Bomber Command effort against communications by the statistics recorded under that heading.' Equally, of course, it is just as misleading to interpret the Official History's statistics for area attacks as being purely that, as many critics are wont to do. In this respect it is instructive to note that the Air Ministry War Room monthly summaries of Bomber Command operations for the winter of 1944-45 recorded area attacks on towns and cities associated with railway facilities *separately* from pure area attacks.

If the figures for these *railway* area attacks are combined with those for direct attacks against transportation, the following figures emerge:

December 1944 – 30,000+ tons; 61.5% of the month's total

January 1945 – 8,800+ tons; 28.8% of the month's total
February 1945 – 19,500 tons; 43% of the total effort.

Note that the figure for January does not include attacks on transportation targets in direct support of military operations, which, because of the Ardennes offensive, actually absorbed a considerable proportion of Bomber Command's effort. If we take these into account, the January figure goes up to 15,000 tons, 45% of the monthly effort, compared to only 5,000 tons, or 16%, on industrial towns *per se*. This does *not* mean that these were *not* area attacks; they *were*. Nor does it mean that, when selecting the towns for attack, Harris did not do so with his own campaign to knock out the remaining German cities of any size at the forefront of his mind. What it does indicate, however, is the complexity of the subject. Webster and Frankland clearly understood this complexity very well, but others, who have since drawn on their work, have all too frequently failed to grasp its implications. The result is that the impression of Harris, and of the targets which he attacked during this period, which should be seen as a study in shades of grey, tends to be viewed instead in black and white.

As I stated earlier, the Official History established the framework within which the subsequent debate on the bomber offensive has taken place. The importance of this framework, which is based crucially on the question of categorisation, which we have discussed, cannot be overestimated. A comparison with the official history of the American air forces in WW II illustrates the point. The USAAF itself, and its official historians, subsequently deliberately chose to categorise *all* of their raids as 'precision' attacks. This is why, for many years, the debate over wartime bombing has tended to be framed in terms of the contrast between American 'precision' and British 'saturation' bombing. In fact, as recent US scholarship has clearly demonstrated, for much of the later stage of the war, the period when criticism is levelled disproportionately at Bomber Command, especially Harris, there was actually very little to differentiate between the two forms of attack adopted by the two nations.

As Richard Davies, an American, says 'marshalling yards undoubtedly served as a euphemism for city areas.' He goes on to point out that the USAAF bombed city areas as a matter of policy, but

that it did so largely because of the vagaries of European weather and that 'under non-visual bombing conditions, night or heavy overcast, the points of attack and the bomb loadings of the RAF and the Army Air Force were virtually indistinguishable, as were their results.' To illustrate just what that meant in practice, we need only reflect on the fact that 70% of the total bomb tonnage dropped by the US 8th Air Force between September 1944 and April 1945 was dropped *non*-visually, in other words, in *area* attacks. In November 1944, which is when the dispute between Portal and Harris starts, the figure was 90%, a statistic which should give us further pause for thought when assessing the arguments between Portal and Harris over the influence of weather.

Furthermore, as another American historian, Hayes Parkes, points out, 8th Air Force tonnage delivered blind against industrial heavy industry, marshalling yards, and oil, chemical and rubber, between September and December 1944 constituted 52.9% of its tonnage for that period, 'a figure comparable to', and these are his words, not mine, 'the 53% dedicated by Bomber Command to its general area offensive.' In other words, there is *no difference* between the two air forces in this period; *none*. Parkes is quite clear that the USAAF went 'out of its way', his words again, 'to distinguish its own bombing from that of Bomber Command' and that 'it mischaracterised the effort of its ally and its own in the process.' It is true, of course, that the USAAF was engaged in a selective, rather than a general, area campaign. In other words, they chose their targets and the cities they bombed with a target set in mind whereas Bomber Command did not always do that.

On the other hand, there is evidence to show that by January 1945 Bomber Command was considering its campaign in exactly those terms. Thus, late in that month, Bomber Command's Intelligence Staff was complaining about the lack of guidance from the Combined Strategic Targets Committee on the relative importance in terms of 'economic and military value of those German towns which still presented worthwhile area targets.'

I would suggest, therefore, that Harris, whatever his manifest faults in some regards, in part fell victim to the approach chosen, for perfectly good and sensible reasons, by the British official historians, and expressed by them in perfectly measured language, coupled by

their absolute honesty in discussing bombing policies. By contrast, the USAAF chose deliberately to dissemble about its own policy. As a result, the conclusions which so many historians have subsequently drawn regarding the bombing policies of the two air forces in this period of the war seem to be excessively harsh and, inevitably, they do tend to cast Harris in a poor light, which, in some respects at least, he does not deserve. That is not to say that I do not think that he should have directed more of his effort against oil, because I do. I believe that he should have devoted that additional 10% to oil and that, had he done so, it would have had a disproportionate impact. This would have been particularly marked using Lancasters because of the weight of the bombs they carried; not the overall tonnage, I mean the weight of each individual bomb. British attacks were significantly more effective than American raids because USAAF bombs were smaller and they did not do the same amount of damage per aircraft.

All of that having been said, while I do think that Harris should have devoted more effort to oil, I also consider that much of the criticism that has been directed against him has been excessive and ill-founded.

I will now move on to consider another aspect of the criticism levelled against Harris, that he continued to bomb cities. Why, for example, did we bomb Dresden? Dresden was a particular, and peculiar, case. It was bombed largely, as Henry Probert has already indicated, because the Russians asked us to and because Winston Churchill was anxious that we should. Churchill asked Bomber Command to bomb the city and when it did not respond quickly enough, he sent a particularly irate minute to the Secretary of State for Air asking why. The result was the attack carried out on 13 February 1945 but, despite its subsequent notoriety, the nature of the Dresden raid differed little from any other area attack of the war. It just happened, for both tactical and meteorological reasons, to have been extremely effective.

Furthermore, Dresden was not an isolated case. Other area attacks continued to be mounted. By this stage of the war, however, it seems to me unrealistic to suggest, as some people have, that Bomber Command should somehow have been reined in. You do not go through six years of war, losing millions of people, to fight an aggressive dictatorship and at the point where you have your boot on

its throat, suddenly take it off again. To argue in this vein is, in my opinion, utterly ridiculous. At the time, the British people simply would not have tolerated a reduction in the bombing of Germany in order to minimise German casualties in the knowledge that it must cause a corresponding increase in British losses. But that suggestion has been seriously made. What did happen, of course, and there is evidence to support this, is that by the end of the war, the bomber forces, and I include the Americans in this, actually began to run out of targets.

Germany had been more or less laid waste by the spring of 1945 and there was little left to bomb. The German economy was no longer able to function and it was in this devastated state as a direct result of the combined bomber offensive. But to characterise one part of the bomber offensive, the American contribution, as being *ipso facto* 'precision' and Bomber Command's effort as being largely 'area' or, to use more emotive terms, 'carpet' or 'saturation' bombing, is simply, factually, wrong. But that precise contention has also contributed to the semi-informed criticism of Harris. In other words, that made by people who take themselves seriously as historians, like Max Hastings (as opposed to the media, who have no understanding of the issues involved whatsoever). In the process, this has contributed to creating a skewed misconception of what Bomber Command did, or could potentially have done, in the last six months of the war.

'....by the spring of 1945 there was little left to bomb.'

PERSONAL RECOLLECTIONS

Wing Commander Russ Jeffs AFC

Nos 18, 50 and 207 Sqns 1939-42

It had been hoped that Ken Brown of No 617 Sqn would be available to address the meeting but he was unwell and thus unable to make the journey from Canada. Wg Cdr Russ Jeffs agreed to deputise.

Ken Brown very much regrets not being here to talk with old friends about those they knew in days of yore. The good news is that his health is improving.

I have had a number of telephone conversations with him and he would like me to join with him, and many other Canadians, in expressing concerns about the denigration of Bomber Command, and Sir Arthur Harris in particular. Many Canadians served in Bomber Command and they feel slighted and exasperated by what appears to be a poorly informed public in Britain and a derogatory media in Canada. He has the following message:

> 'During the war of 1939-45, the aircrew of the RAF and RCAF were often members of the same bomber crew. Their lives depended on each other and this created a strong bond, which has lasted over the past sixty years. This bond is as important today as it was then, for our beliefs in freedom and democracy are the pillars on which we stand or fall. Our country still struggles to maintain our democracy in a technological environment. Our strength is in our people and we must continue to establish a bond between them as we did in wartime. Old friends continue to fade away and new ways must be found to create the bonds that were so essential in wartime. It has been written that 'links with the past provide insight into the future' and we must be ever mindful of our future.'

Ken has asked me to fill in the rest of his allotted time with my own recollections.

My recollections of the war years include a postcard from 'Shorty'' Kempster of No 18 Sqn, sent from a hospital in Belgium in 1939 saying that he was OK but 'please note that the 109 is faster than a Blenheim'! After the fall of France a small group of us, including

A Hampden of No 50 Sqn.

Pickard, met to discuss plans to carry on the fight if Britain capitulated.

I joined No 50 Sqn in the autumn of 1941 as a Flight Commander. We were armed with Hampdens and, later on, Manchesters. I do not know if you have heard of 'Hampden bladder'. The Hampden had been designed to carry a bomb load of 1000 lbs for 1000 miles, later increased to 2000 lbs for 1500 miles. The aircraft was unheated and no provision was made for the pilot to relieve himself. Since many operational sorties exceeded six hours, this created problems for the pilot. Our solution was to fire a Very light and make use of the cartridge casing, emptying the contents through the pistol vent in the fuselage. In consequence the night sky was dotted with coloured flares as Hampdens wended their way home, no doubt much to the puzzlement of German observers.

We also had 'Blenheim finger'. There was a very narrow slit for the pilot to lower the flaps. Unless one used the issue suede gloves, one's fingers were usually cut and abraded when adjusting the flaps.

In those days, for security reasons, operational briefing was restricted to pilots and navigators. They worked out the approach to targets in the first instance, which they then explained to the rest of the crew, allowing for their input. There were no navigational aids.

It was important to keep the gunners informed of areas where their special vigilance was necessary, because one cannot be on full alert for hours on end. The gunners' expertise in identifying types of *Flak* and the angle of ground flash from heavy *Flak* batteries was a special skill. When one heard the command 'Weave!', one knew that it meant more than an emotional reaction. The aircraft became a living entity in which its crew was its sensory system.

During this period the close historical links between ground crew and aircrew were emphasised. Ground crews waited in all weathers, often in remote dispersal areas for the return of their battle-weary colleagues. They were the first to welcome them home and all too often experienced the meaning of, 'One of our aircraft is missing.'

On my 29th birthday, 7 December 1941, Hitler declared war on the United States of America and, for the first time since the war began, victory appeared to me to be possible.

I took command of No 207 Sqn in May 1942. In the European air war the Lancaster, the best of the heavy bombers, was at last in full production. The high explosive RDX, which until now had been the preserve of the Royal Navy and the *Luftwaffe*, was at last acquired by the RAF. New navigational devices made it possible to get us to within five miles of our targets, enabling the Pathfinder Force to be developed. At last, Bomber Command was all set to meet Churchill's exhortation to Harris – 'Set Europe ablaze.'

Concentration of the bomber force over the target was now of the essence. The crucial factor in achieving this was timing. Concentration was essential to overwhelm the rapidly improving German defensive measures. Gone were the days of 'beating up' a German airfield to provoke some 'nervous Nelly' to disclose their 'colours of the day', or of dropping an empty beer bottle when coned in the searchlight belt in order to cause the German acoustic searchlights to track it to the ground.

The new strategy moved tactics more and more from the squadrons to the Groups. The onus fell heavily on the Flight Commanders to make the system work. They were the survivors who discussed at first hand the changing battle scene and passed on their skills to the new crews.

As an aside, I recall the story of Smith, the 5 Group Met Officer at the time and much trusted by Harris, telling Ralph Cochrane, AOC 5 Group 'that if the boys go out tonight, Bert will be out tomorrow.' Indeed, despite a more optimistic weather forecast from the Air Ministry, it was fortunate for us all that that maximum effort raid against Hamburg was scrubbed. Smith was right in his forecast of fog, fog and more fog over the Command that night.

At this time No 207 Sqn had been replacing Manchesters with Lancasters. The success of this crucial transformation lay with the

likes of Thos Murray, 'Pat' Pattinson, Dave Green, 'Penny' Beauchamp, Peter Ward-Hunt, 'Babe' Ruth, Jimmy Cliff, 'Woody' Woodhouse and their superb crews.

Despite the increasing centralisation of command, No 207 Sqn had more than its share of individual sorties: Danzig, Le Creusot and the *Tour d'Italie*, all in daylight and with few casualties, which says much for the squadron's training and tactics.

To finish on a personal note, looking back over sixty years, these operations may have inspired the squadron's self-deprecating ditty *'Why, Oh Why, 207!'* or Pat Pattinson's never to be forgotten rendering of *'Swing Low, Sweet Chariot'* in his inimitable low bass voice and with that irrepressible twinkle in his dark eyes.

As No 207 Sqn has this year been re-activated, my hope is that these names will be part of the link between the past and the future of the squadron.

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Squadron Leader Tony Iveson DFC

No 617 Sqn 1944-45
Chairman, The Bomber Command Association

My recollection for you today concerns 617 Squadron's three attacks on the German battleship *Tirpitz* in late 1944. I was a Flight Commander on the squadron and the first pilot to go there without a previous bomber tour. We were given the task, along with No 9 Sqn, by Sir Arthur Harris, after the navy implored him to deal with *Tirpitz*. They had tried over the years to sink her with submarines, midget submarines, torpedo bombers, dive bombers, etc, but she had defied them all. Bomber Command had tried, also with a conspicuous lack of success.

In 1944, the navy made their most serious attempts. Task Forces of twenty-two warships and 170 aircraft in April and twenty warships and 120 aircraft in July, inflicted damage and casualties but no *coup de grace*. The Fleet Air Arm's little bombs didn't penetrate and sometimes bounced off. It really was a waste of time and effort.

Sir Arthur agreed to intervene in what he called 'this war of the dinosaurs' and promised to sink her, but in our spare time! Please note

A Lancaster. (MAP)

that comment. We were given the job because we had the Lancaster with its range and bomb capacity. We had the Stabilised Automatic Bomb Sight (SABS); I think we were the only squadron with it at that time. We had the weapon, Barnes Wallis' Tallboy. And we had very experienced crews, used to operating on their own by day or night against small but vital targets.

Tirpitz was holed up in Alten Fjord, on Norway's North Cape and out of range from this country. So, for the first attack in September 1944, we flew to an airfield on the River Dvina near Archangel. We were welcomed there by a band and, as we went aboard our quarters, a ferry boat, we passed by a banner with the greeting 'Welcome to the glorious flyers of the RAF.' 'Fame at last', some said. That night we were also welcomed by armies of red bugs. The only person not bitten was our CO, Wg Cdr Tait. A cockney rear gunner remarked, 'Even these communist bugs have a respect for rank!' We hung about for a few days whilst a Mosquito made weather recces each morning. To pass the time we took on the Russians at football. The band was there and played whenever a goal was scored. We got quite a lot of music that day because the Russians beat us seven–nil!

Eventually the weather cleared and we set off for Alten Fjord and I saw *Tirpitz* over the nose of Lancaster F-Fox. At the same time I saw the smoke generators on the surrounding mountains start up and fill the fjord with smoke. We bombed on dead reckoning but we did not believe that we had done damage. Much later we learned that one bomb, probably James Tait's, had struck the bow.

When the Russians put in an attack in the far north of Norway, *Tirpitz* was moved westward to Tromsö Fjord. She was still within the

Arctic Circle, but now she was within range from airfields in the north of Scotland. In addition our Lancasters were stripped of their mid-upper turrets and all armour plating, including the most important piece from behind my seat! We also got more powerful engines and an extra fuel tank in the fuselage. The latter was very necessary as the round trip to Tromsö took twelve and a half hours!

Late October saw us weaving around over Tromsö in thick cloud trying to get a glimpse of our target but with no luck. We returned to our base at Woodhall Spa in Lincolnshire in a chastened mood. This was not going to be easy!

It was getting late. By 21 November the sun would not be visible from the ground at Tromsö. We were running out of time but we had been told we would go back again and again until the job was done!

So, very early in the morning of Sunday 12 November 1944, we set off again, at 68,000 lbs all up weight. Taking off from Lossiemouth we flew past the Orkneys and the Shetlands to a point 65°N 7°E where we turned towards Norway. Crews flew individually to a rendezvous over a lake in southern Sweden. From there we flew north towards Tromsö.

At briefing, I had learned there was a new factor in the 617 v *Tirpitz* equation. *Luftwaffe* fighters had arrived at Bardufoss, an airfield some forty miles from Tromsö. Me 109s and Fw 190s, armed with cannon and 100 mph faster than us, against our Lancasters with one rear turret with .303 Brownings. It would hardly be an equal contest and it certainly gave me food for thought on the climb to bombing height in the rapidly increasing daylight.

This time the weather was perfect. A beautiful cloudless blue sky with almost limitless visibility. And there was *Tirpitz*, black against the blue water, no smoke screen this time. We were all sure this was our big chance.

I believe this attack was the most successful high level precision bombing attack of the war. Nine five-ton bombs dropped within one and a half minutes from around 15,000 ft on a target only 300 yards long by 40 yards wide in the beam. The result? Two direct hits and three near misses! All eighteen aircraft of No 617 bombed within four minutes; No 9 Sqn followed on and eleven minutes after the first bomb, *Tirpitz* had listed and capsized to 135 degrees when her masts grounded in the sea bottom. Nearly 1000 German sailors went down

with her.

Tirpitz was the largest and most powerful warship in the Western Hemisphere at that time: 53,000 tons; eight fifteen-inch guns in four turrets; twelve six-inch guns, eighty plus anti-aircraft guns, twenty-one-inch torpedo tubes; engines developing 150,000 hp, giving her a speed of nearly 40 mph. Fuel capacity of 8,700 tons gave her 9,000 miles between pit stops. A floating fortress indeed!

Although the *Flak* was fairly intense at first on 12 November, we lost no aircraft. So, 'Where was the *Luftwaffe*?' We were curious too, but more than happy that they never appeared to molest us. I have heard many and varied post-war explanations for their absence, most of them unsatisfactory. What is certain however, is that the CO of the local fighter group, 28 year-old Major Heinrich Ehrler, who had scored 199 kills flying over Scandinavia, was court-martialled, with others, and sent to prison. But pilots of his calibre were desperately needed by this time and he was released after a month on the direct order of Hitler. He was killed over Berlin in a jet fighter in April 1945. To conclude, let me remind you of Sir Arthur Harris's remark 'in our spare time.' I believe he was right because we did it at 9 o'clock on a Sunday morning. Surely, almost all over the world, 9 o'clock on a Sunday morning is regarded as spare time!

A footnote. When the navy wins an important victory at sea, decorations are generously awarded. For instance, DSOs and DSCs were handed out to the Fleet Air Arm when they did *not* sink the *Tirpitz*. Well, we did sink the *Tirpitz* and what did No 617 Sqn get? I'll tell you. A third bar to James Tait's DSO! Well earned indeed, because he planned and led every attack and hit the battleship with his bomb at least once! Interesting contrast though, isn't it?

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Air Vice-Marshal Jack Furner CBE DFC AFC

No 214 Sqn & No 100 Gp 1942-44

Talk to us, they said, about your personal recollections of Bomber Command. For ten minutes, maybe fifteen, but no more! Fifteen *hours* would be easier.

Right; Here goes. It was exactly sixty years ago this month when I

'The big one – the Stirling' This ex-No 214 Sqn aeroplane served out its time with No 1651 HCU. (MAP)

first entered Bomber Command in the autumn of 1942. Home from Canada; into an OTU, No 11 at Westcott. I think it's particularly important to mention the OTU because of the strangely casual, yet extremely critical, procedure of coming together as crews. I have always been thankful for my choice of pilot (or his choice of nav?) I don't really remember how it happened. A tall, laconic New Zealander, a man of few but effective words, a stickler for a high degree of discipline in the air. Johnny Verrall was his name. Add a cockney bomb-aimer, a Scots engineer, a Geordie W/Op, a Scouse mid-upper gunner and another Kiwi in the tail turret and we had a crew. Train them together for the first time in a Wellington at the OTU, then train them some more at an HCU in the big one – the Stirling.

The Stirling looked magnificent in the air, once that enormous undercarriage was up. The Queen of the Skies we called it. The trouble was, it couldn't reach the heights of the Hallies and the Lancs – 14,000 feet with a light load and it was struggling, not to mention avoiding loads from above! Johnny Verrall's crew joined No 214 Sqn in March 1943 and they managed to complete a tour of ops through the spring and summer of that year. Chedburgh was their airfield. Nothing fancy; Nissen huts – very basic. Kiel was their first target. Then a long list of Ruhr cities, many repeatedly: Hamburg several times in the same week; Peenemunde; Krefeld; Mulheim; Nurnberg;

Turin – the mid-1943 list. There were also mining sorties in the Baltic, off the Frisians, in the mouth of the Gironde River.

Many of you here will remember the typical operational sortie. It began with the briefing. Navigators usually had a bit more preparatory work to do than other crew members and would have to assemble for their detailed preparation of logs and charts a good hour before the rest of the crew came in. By the time complete crews were sitting to hear target details, outline of route, markings, weather, defences, bomb load, fuel, signals, encouragement from Commanders and any visiting brass, the navigators would have log, flight plan and chart ready. Always, at the specific request of my skipper, I would have the fighter belt pencilled in. He would wish to corkscrew *all* the way through it, regardless of whether there were to be any sightings.

Assemble all kit: parachute, Mae West, sextant, navigation bag with log, charts, maps, star data, protractor, Dalton computer, dividers, parallel rule. Out to the aircraft at dispersal a good hour before take-off. Run engines. Thorough checks all round by each member. I check all navigation equipment – compasses, GEE, H2S, air position indicator, astrograph, sextant. Shut down. Last smoke, ritual pee on the tail wheel. Back into that storeys-high cabin of the Stirling. Smells of petrol, and oil, and hot metals. Engines start. Pilot and bomb-aimer go meticulously through pre-take off checks. Line up. Await green Aldis. Go! Down the runway, all four engines roaring and spitting flame in the dark. Rotate. Climb at planned rate, with flight plan indicated airspeed and on planned course, adjusted for magnetic variation and compass deviation. Cross UK coast at planned exit point and at planned height. Change course. Continue climbing across North Sea. Test guns. Passing through 10,000 feet, oxygen masks on. Keep continuous log on pro-forma. Monitor airspeed and course. Get fixes on GEE. Check wind. Announce, 'Enemy coast ahead'. Get fix from bomb-aimer crossing coast if cloud and visibility allow. Check wind. Prepare skipper for fighter belt. Corkscrew. Accurate recording of navigational path now more difficult, so thank goodness for the API. Other crew members report searchlights ahead or off route, or *Flak*, or fighter activity, or our own people going down. Too soon the GEE goes – jammed by Jerry. H2S remains but very difficult to decipher inland whilst corkscrewing. Trust to Dead Reckoning as monitored by Pathfinder markers at points along the route and at the target. Change

course as demanded by flight plan. ‘Fighter!’ call from rear gunner. Much more violent evasive action to throw him off. Target approaches. Markers, fires if visible; well lit cloud with markers above if not. Pilot responds to bomb-aimer: ‘Left Left’ or ‘Riiiight’ or ‘Steady’. Interminable ‘Steady’ – come on, come on! ‘Bombs gone!’. ‘Course for home 315, skipper.’ Caught in searchlight. Brilliantly lit up, we’re vulnerable. Violent manoeuvres. Hold breath until darkness again. John’s got us out of it. Lots of *Flak*, but we’re lucky; not a hit. Same thing all the way out back to their coast – only even *more* vigilant, fighters more evident. Comparative calm of North Sea. Course for home base. Descending, oxygen mask off, dirty mark around face. Familiar red pundit flashing. Our turn to land. Breathe wonderful East Anglian summer air. ‘Another one tucked away, skip’ shouts the rear gunner. Cigarette. Debrief. Meal. Try to sleep as the sun comes up.

Thus a general memory in a couple of minutes of a four-to-eight hour trip. Particular memories? The whole of Wuppertal on a brilliant night seemingly going up in one awful pillar of smoke. The awesome chaos below of Hamburg’s ‘firestorm’. The extraordinary beauty of the Alps in moonlight en route to Turin. But the one memory that stands out above all others is Peenemunde on 17 August 1943, and for a number of reasons. It was to be our last but two, although we didn’t know that at the time. We were certainly reaching the slightly twitchy stage in the twenties. We were briefed that it was a scientific establishment making something or other that did not bode well for the UK. The briefing was highly unusual. Not a major city. Not an aiming point designed to take out as much industry as possible, but a strange place on the Baltic coast which none of us had ever heard of. ‘It’s a secret place’, the briefers said, ‘where new experimental equipments are being developed.’ Stressing the extreme importance of the target, the Operation Order contained the words, ‘If the attack fails to achieve the object it will have to be repeated the next night and on ensuing nights regardless….’

There were a number of discrete aiming points. Ours was a particular part of the Experimental Establishment. Other Groups would be targeting the living quarters of the scientists involved. We were to fly Stirling EF404, Z-Zebra. We were to go in over the target at a much lower level than usual, only 8,000 feet. And there was

moonlight. ‘But’, they said, ‘there are only light *Flak* defences.’ The route looked nice. A quick dash across Denmark, then through the Baltic and turn on to the target from a headland to the north of it, just a few miles from the coast. Good responses on the H2S. A snip! Or so we thought. Not exactly. The *Flak* over the target was rather worse than briefed – we were bouncing around on a dense carpet of it. And on the way home, there were *Flak* ships accurately placed in the Baltic all the way along our track, or so it seemed to us. It proved all very tiring for skipper Johnny Verrall. He lined up the aircraft for the final approach to Chedburgh exactly eight hours after take-off and ever so slightly misjudged his touchdown point on the runway. Proud old EF404 ran off the end of the runway and into a ditch. We were shaken but unhurt.

It was some time before we realised the importance of Peenemunde. At least, on that night, we must have delayed their V-1 and V-2 programmes somewhat and ensured that London didn’t receive as many of them as Hitler would have wished. As an afterthought to the raid, I suppose it was useful to the US space programme that we missed Werner von Braun….

There were frequent losses. Faces would come and go all too quickly, but there was little point in dwelling on that. We young men wouldn’t wonder until we were some years older what the resulting sad administration was doing to our kindly ‘uncle’, George Wright, the Squadron Adjutant. It was he who would be tasked with informing relatives, dealing with personal effects and clearing rooms ready for later arrivals. The Chairman of the No 214 Sqn Association, Jack Dixon, reminded me more than fifty years later that his crew and John Verrall’s were the only two crews to survive the whole period March to September 1943. We now know that of the 1750 Stirling bombers that were built, some 600 were lost. Sixty-two were lost in our last month alone. That was August 1943. They were soon withdrawn from the bombing role.

Now let me move on quickly to 1944. After a short staff break I returned to No 214 Sqn when, by now in No 100 Group, they were re-equipping with B-17s borrowed from the USAAF. They were being fitted with a long list of intriguing pieces of kit with names like JOSTLE, MANDREL, AIRBORNE CIGAR, AIRBORNE GROCER and PIPERACK. Each one was designed to jam a specific type of

equipment or a specific part of the transmission spectrum. German speaking operators were to be carried in the body of the aircraft, their purpose being to detect discrete R/T frequencies being used by German fighters and ground control and jam them.

The squadron's task was to provide electronic coverage for the main bomber force by jamming as many frequencies and equipments as our installed kit and the expertise of its operators would allow. The main point of the B-17 was that it had the height – say, 25,000 feet – to fly a clear 5,000 feet above the main bomber stream and thus provide jamming cover on all frequencies. We were inextricably linked to the bomber force and we therefore followed their routes, with one or two exceptions when we were sent off to create confusion and deception on our own as, for instance, on the night of 5/6 June 1944. I quote from an official report:

> 'On 5/6 June a Mandrel screen was formed to cover the approach of the Normandy invasion fleet, and it appeared that considerable confusion was caused to the German early warning system. Five Fortresses of 214 Squadron flown by W/C McGlinn (*my captain*), S/L Day, S/L Jefferies, F/L Peden (*now a retired QC in Winnipeg, happily in touch*) & F/O Lye, also operated in support of the D-Day operation in their Airborne Cigar role….an Me 410 had the misfortune to choose McGlinn's aircraft which had F/L Eric Phillips manning the tail turret, and he shot it down.'

Thus did a thousand aircraft to the west of us begin the great invasion without undue hindrance.

I left Bomber Command at the end of 1944 to go to the Far East and drop more useful things into Burma.

Thirteen years later I returned to the Command. Vulcans. The V-Force. War planning. And, in 1968, as Station Commander at Scampton, I was privileged to command the ceremony, with ten other stations participating, which marked the transition from Bomber Command to Strike Command.

Nine years ago, there was a similar symposium to this one, at Bracknell, sponsored by the RAF Historical Society and the RAF Staff College. I quote some words of Lord Mackie, a fellow navigator: 'I was very proud, and still am to this day, of being in Bomber Command and I will hear no ill spoken of it.' I second that.

THE BOMBING OF GERMANY IN WORLD WAR II: A REAPPRAISAL

Prof Richard Overy MA PhD FRHistS

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Author: *Bomber Command 1939-1945, Reaping the Whirlwind*

Because Prof Overy was unable to attend in person, his paper was read on his behalf by ***Mr Roy Irons.***

Ever since the end of WW II the bombing of Germany has been popularly viewed as a flawed strategy. The exaggerated expectation of some airmen that bombing would end the war on its own was shown to be a sham. The post-war bombing surveys set up by the British and the Americans made it clear that German military production expanded rapidly in the face of the bombing. The failure to crack German morale was evident in the almost suicidal defence of the Reich against the armies of the Allies, east and west, in 1945. The implicit assumption is that the western Allies would have been better off making more ships, tanks and fighter aircraft than expending prodigious economic effort on the bomber offensive.

This is a hard case to challenge. German war production did indeed almost treble between 1941 and 1944, reaching a peak in September of that year when the bombing of Germany was about to reach its deadly crescendo. Yet the case against bombing is in almost all respects misleading. Looked at from the German side, bombing acted to distort German strategy in ways which undermined the German war effort fatally; it placed an enormous social cost on the German war effort at its critical juncture; finally, it compromised the programme of industrial rationalisation and expansion begun in 1941 and so prevented Germany from producing at anywhere near the optimum. No doubt bombing strategy could have been conducted more effectively. It was a blunt instrument in WW II, given the prevailing technology and the strength of German air defences. Yet the cumulative impact of bombing on German politics, economy and society created conditions that made Allied victory possible in both western and eastern Europe.

Month	Synthetic fuel	Total home production*	Aviation fuel
Jan	336	673	159.5
Feb	306	638	163.7
Mar	341	733	180.4
Apr	348	658	175.4
May	285	606	156.1
Jun	145	427	53.8
Jul	86	344	34.7
Aug	47	318	17.1
Sept	26	265	10.0
Oct	38	279	21.0
Nov	78	290	39.0
Dec	56	272	24.5

* Includes domestically produced natural oil and all forms of synthetic fuel oil.

Table 1. German fuel oil production in 1944 (K tonnes).
Source: C Webster and N Frankland, *The Strategic Air Offensive Against Germany 1939-1945* (London, 1961), vol IV, appx 37, p 516.

Physical Destruction

This claim can be supported in a number of ways. The direct physical impact of bombing in the last two years of war was in itself significant. The overall loss of 17% of industrial output in 1944 due to bombing was not as negligible as is sometimes argued (it would be an economic catastrophe in peacetime), but the general figure gives little indication of the impact on particular sectors. Attacks were launched by the US 8th Air Force based in Britain against specific industrial sectors where loss rates were very much higher; at night RAF Bomber Command supported the campaign by attacks against industrial cities in which the specific target – oil, for example, or the aircraft industry – was located. During 1944 production of synthetic oil, vital for aviation fuel, dropped by 86% in eight months (see Table 1); output of basic chemicals for explosives fell precipitously – nitrogen by 75% during 1944 – so that by the end of the year the output of explosives was reduced by 42%. The loss of aircraft output was almost one-third in 1944, and of those produced one-quarter were destroyed from the air at the factory airfields or in transit. The loss of tank output was

35%[1]. These figures represent a crippling deficiency in the face of a numerically larger enemy, but one generally less experienced in battle. Once the German transport system was attacked as a first priority in the autumn of 1944 the German war economy was doomed. Goods could no longer be shipped, even when they could be manufactured.

The physical destruction placed a clear ceiling on the ability of the German economy to produce what it was capable of producing. With substantially smaller resources the Soviet Union outproduced the German economy in every year from 1942. But physical destruction represented just one aspect of the economic impact of bombing. In 1942 the German authorities prepared plans for the dispersal of German industry to safer havens. This often took the form of dividing production up into small units, where skilled labour was in high demand and transport costs between the units much higher. Dispersal made it difficult to extract the maximum benefit from the rationalisation programme in German industry begun in 1941 and later extended all over Germany by Albert Speer, Hitler's Armaments Minister from February 1942. In addition to dispersal there was repair of bomb damage. During the summer of 1944 Speer estimated that between 200,000 and 300,000 men were permanently employed in trying to repair oil installations and place oil production underground.[2] These were man-hours lost to the productive effort. Under bombing Germany was running to keep still. In an entirely bomb-free environment, like the Soviet Ural region, or the US West Coast, none of these additional costs and dangers had to be met and managers were free to concentrate their efforts on maximising production.

The Diversion Of Resources

The loss of battlefront weapons and equipment through physical destruction or dislocation was exacerbated by the diversion of strategically significant resources to combat the bombing. This was an aspect of the air war that the German authorities failed to anticipate. Although a well-orchestrated and high-quality air defence system was established using anti-aircraft artillery, night and day fighters and radar, the costs and scale of the defence effort reduced substantially the equipment available at the fighting fronts. In January 1944 68% of the German fighter force was protecting the Reich; by October 1944 the figure was 81%. Every effort to keep aircraft to support land

operations was squandered by the escalating demands for men and 'planes to fight the bombers. The 2000 aircraft designated to combat the Allied invasion of Normandy in June 1944 were frittered away in home defence, leaving fewer than 200 aircraft in France to face 12,000 Allied 'planes. With greater emphasis on home defence fighters, the output of bombers stagnated and then declined, leaving the fighting fronts barren of the heavy air support they had relied on in the early years of war. By 1944 German air power had evaporated on all fronts. The loss of air support was regarded by German generals questioned in 1945 as the single most important cause of German defeat.

The anti-aircraft defences absorbed at their peak in 1944 some 803,000 men and women, but the whole anti-aircraft effort, including repair teams, civil defence staff and administrators absorbed an estimated 1.2 million more. There were 14,489 heavy anti-aircraft guns and 41,937 light guns in 1944, and extensive use of high-quality radar equipment.[3] This represented one-third of all gun production, 20% of all ammunition, half the production of the electrotechnical industry and one-third of all optical equipment. These were resources that could have been diverted to the regular forces at the front, and utilised to produce more battlefront aircraft, vehicles, artillery and communication equipment.

The Social Cost

The post-war fixation with the idea that German morale, in itself a poorly-defined concept, did not crack under the effects of mass bombing for years on end has obscured the very real social impact produced by bombing. For most Germans living in major cities in western, northern and central Germany bombing became from 1942 a major hazard for months or years on end. City-dwellers found themselves the victims of regular loss of amenities such as gas, electricity and water supply, and at the bottom of the list of priority when it came to restoring them. Bombing inflicted massive casualties, at least 410,000 dead and possibly double that injured, which placed a persistent strain on local medical services and supplies. From 1943 onwards bombing induced in a great many Germans feelings of apathy, isolation, physical lethargy and, unsurprisingly, a deep terror. The American post-war survey of German morale found that 91% of those questioned believed bombing was the most difficult thing for

Date	Official evacuees	Unauthor-ised evacuees	Total evacuated
to 15 Sep 43	1,792,884	977,871	2,770,755
to 18 Oct 43	1,987,182	1,241,025	3,228,207
to 15 Dec 43	2,094,964	1,146,290	3,241,254
to 22 Jan 44	2,157,175	1,180,142	3,337,317
to 25 Sep 44	4,301,271	1,346,271	5,647,542
to 25 Oct 44	5,029,124	1,540,566	6,569,690
to 25 Nov 44	6,044,916	1,724,964	7,769,880
to 21 Jan 45	7,175,020	1,769,956	8,944,976

Table 2 The evacuation of German civilians 1943-1945.
Source: O Groehler, *Bombenkrieg gegen Deutschland* (Berlin, 1990), p 282.

people to bear during the war.

The consequences for the efficiency of the German war effort were profound. During the war an estimated 2.6-to-3 million dwellings were totally destroyed and millions more damaged. The state reacted by organising mass evacuation from the major cities, but increasingly Germans simply left the cities of their own accord. By the end of the war almost nine million had moved (see Table 2), most of them to the safety of villages and small towns. Rehabilitation was an expensive and difficult project under the strain of war. The host communities were often hostile to their urban guests, creating new social strains. The Labour Front leader, Robert Ley, was put in charge of the rehabilitation programme, and promised to build pre-fabricated housing for bomb victims but shortages of raw materials reduced production to a trickle. In 1944 the output of consumer goods actually increased to meet the state's commitment to giving bomb victims basic household goods and bedding. The evacuation schemes absorbed the energy of a very large number of women who might otherwise have been available for war work. Volunteers organised schools, soup-kitchens, transport or ran nurseries. Under these circumstances the efforts to recruit a further three million women for the war economy in 1944 came to nothing. Thousands of women fled to areas where there was no or little war work to be done except for help on the farm.

For those that stayed behind urban life became increasingly dangerous and debilitating. In the Ford Works in Cologne in 1944 an

average of 25% of the workforce was absent on any one day. At the BMW works in Munich absenteeism reached 19% of the workforce in August 1944.[4] The loss of man-hours on this scale had serious economic implications, and encouraged the regime to rely even more on forced foreign and concentration camp labour whose presence in the factory could be ensured at the point of a gun. Air-raid alarms also took a toll. In Mainz the population had 540 hours of alarm between January and November 1944.[5] Sitting for hours in caves or bunkers at night, with little sleep and endless queuing for food in broken streets created symptoms of severe stress and produced a listless and underperforming workforce. The priority of most bomb victims was not political protest but simply survival.

The German Response

The reaction of the Hitler regime to the bombing made a difficult situation worse. Not until 1944 was Hitler prepared to give priority to home defence, by which time the Allied air forces were in the ascendancy thanks to the use of the long-range 'strategic' fighter. Hitler wanted revenge for attacks whose purpose he saw as sheer terrorism and encouraged the development of new wonder weapons, the V-1 flying bomb and the V-2 rocket, to be used for attacks on London and western invasion forces. He also hoped to place German war industry underground so that Germany's war effort could keep going from a subterranean world of bunkers, mines and potholes. Both projects made extensive demands on German industrial and labour resources at a critical point in the war, and neither produced any strategically useful result.

The programme to produce the V-1 and V-2 absorbed scarce raw materials and manpower for weapons that carried too small a payload and were still too underdeveloped to be certain of success. In the end only 9,521 flying bombs and 5,000 rockets were fired. Many failed on firing, or fell short of London. The total tonnage of 14,000 fired in 1944 represented just 0.77% of the tonnage dropped by the Allies. The volume that actually hit London was equivalent to the tonnage carried by just one major Allied raid on Germany. Yet the materials used in the production of the V-weapons could have built the equivalent of 24,000 fighter aircraft.[6]

The plan to place German industry underground also represented a

Industry	Planned	In progress	Completed by 1944
Aviation	48,150,900	21,933,971	8,371,320
Tanks	2,109,000	1,818,400	290,500
Vehicles	2,808,360	2,711,500	96,800
V-Weapons	1,538,700	387,400	1,151,300
Shipping	1,775,400	1,248,200	527,200
Weapons	2,173,500	2,119,720	53,800
Machine tools	7,101,600	6,079,400	1,022,200
Other supplies	16,839,400	10,512,500	none
SS Projects	11,298,000	8,651,100	1,883,000
Total	93,794,900	71,318,000	13,396,200

Table 3. Germany's underground factory programme (square feet of floorspace)

Source: National Archives, Kew, London, AIR 10/3873, British Bombing Survey Unit, 'German Experience in the Underground Transfer of War Industries', p 12 (taken from a Speer Ministry report dated 11 Nov 1944).

diversion of enormous resources. In the autumn of 1943, when Hitler made the decision to disperse underground, Speer had brought German industry to the point where rationalisation of factory practice and the concentration of production in large and efficient units were bearing real fruit. The underground programme diverted a great deal of engineering and managerial effort. Half the construction workers in industry and three-quarters of the steel allocated to industry were used to work on 93 million square feet of underground floor space. By the end of the war only 13 million had been completed, and much of this new capacity could not operate because of the bombing (see Table 3). Machine tools were allocated to the underground plants but they sat rusting in the caves or mines whence they were transferred.

Speer resisted the loss of resources to an enterprise which could only obstruct the effort to maximise weapons production in 1944. Hitler turned instead to the head of the SS, Heinrich Himmler, and ordered him to take over the underground project. Using camp labour, working in the most appalling conditions, Himmler used his new responsibility to encroach ever further into the war economy. The SS also produced the V-2 rocket in large underground halls. Because Himmler had Hitler's direct backing, and the support of the most

ruthless and fanatical elements in the Nazi Party, any attempt to run the programmes down in favour of expanding the output of existing weapons was doomed to failure. The bombing of Germany produced a political shift within the wartime apparatus away from effective technocrats like Speer towards less competent Party radicals.[7]

Bombing: The Balance Sheet

The effects of the bombing campaign went far beyond the mere physical destruction of factories and dwelling-houses, although these effects should not be underestimated in a complex and technically sophisticated industrial economy stretched taut by the demands of war. The bombing produced serious social dislocation and a high cost in terms of man-hours (or woman-hours in many cases). Evacuation, rehabilitation and welfare provision were carried out on the largest scale in an economy struggling with serious manpower losses and cuts in civilian production. Bombing also encouraged a strategic response from Hitler which placed a further strain on the war economy by diverting vast resources to projects of little advantage to the German war effort.

The net effect of the many ways in which bombing directly or indirectly impeded economic mobilisation cannot be calculated precisely. But in the absence of physical destruction and dislocation, without expensive programmes for secret weapons and underground production and without the diversion of four-fifths of the fighter force, one-third of all guns and one-fifth of all ammunition to the anti-bombing war the German armed forces could have been supplied with at least 50% more equipment in the last two years of war, perhaps much more. In an environment entirely free of bomb attack the German authorities and German industrial managers would have had the opportunity to exploit Germany's resource-rich empire in Europe to the full. In 1942 the air force had begun to plan the production of 7000 aircraft a month, yet at the peak in 1944 a little over 3000 were produced, of which one-quarter were destroyed before even reaching the front-line.

Bombing took the strategic initiative away from German forces, and compelled Germany to divert an ever-increasing share of its manpower and resources away from production for the battlefield. As it was, German forces proved a formidable barrier to the end of the

war. With more men, more heavily armed, an intact transport system and an uninterrupted flow of industrial resources Germany might well have kept the Allies at bay in 1945. Then the Allies would have faced the agonising decision about whether or not to drop atomic weapons on German cities rather than on Hiroshima and Nagasaki.

Notes:

[1] Imperial War Museum (IWM), London, Speer Collection, Box S368, Report 67, p.14; Report 65, p.18; United States Strategic Bombing Survey (USSBS), Report 109, Oil Division Final Report, (Washington DC August 1945), pp. 17-26.

[2] IWM, Speer Collection, Box S363, interrogation of Albert Speer, 6th session, 30 May 1945, p. 3.

[3] Air Ministry, The Rise and Fall of the German Air Force (1948, reissued London, 1983), p. 274, 298; F. Golucke, *Schweinfurt und der strategische Luftkrieg* (Paderborn, 1980), pp. 153-4.

[4] IWM, Box Sl26, FD 4396/45 'Manuscript notes on Ford Co1ogne' USSBS Report 18, Aero-engine Plant Report No 4, Bayerische Motorenwerke AG (Washington DC, Oct 1945), p. 5 and Exhibit E.

[5] D Busch, *Der Luftkrieg im Raum Mainz wahrend des Zweiten Weltkrieges* (Mainz, 1988), p. 363.

[6] D Holsken, *Die V-Waffen: Entwicklung und Einsatzgrundsatze*, Militargeschichtliche Mitteilungen, 27 (1985), pp. 95-119; USSBS Report 60, V Weapons (Crossbow) Campaign (Washington DC, Sept 1945), p. 8, 33-6.

[7] See the discussion in A. Speer, *The Slave State: Heinrich Himmler's Masterplan for SS Supremacy* (London, 1981).

Sources:

E Beck; *Under the Bombs: the German Home Front 1942-1945* (Lexington KY, 1986)

A Mierzejewski; *The Collapse of the German War Economy 1944-1945* (Chapel Hill NC, 1988)

M Kitchen; *Nazi Germany at War* (London, 1995)

R J Overy; *Why the Allies Won* (London, 1995)

W Murray; *Luftwaffe: Strategy for Defeat* (London, 1985)

O Groehler; *Bombenkrieg gegen Deutschland* (Berlin, 1990)

AFTERNOON DISCUSSION

Peter Barber (Associate Member, Bomber Command Association). I am concerned that the history of Bomber Command has always been so controversial and that this may have implications for the future. I am too young to remember, let alone have participated in, these great events and it worries me that in a not too distant future, when we no longer have the veterans to keep us on track, political correctness may begin to distort the way in which the story is presented.

I am an airline pilot and when I started out my captains were ex-Bomber Command guys. The contrast between my own awareness of what they had done and the relative ignorance of today's new generation of airline pilots on matters to do with the war is quite marked. There is more to this than an individual's age, however. For instance, I watched *The Dambusters* (again) on TV last week. Did anyone else notice that when Guy Gibson called his dog, his mouth moved but no sound was heard, because the dog's name has been edited out. Only a small thing, I know, but it is an indication of the way in which history, indeed all forms of information, can be manipulated and distorted. My point is that we need to get as many *first hand* accounts as possible written down and recorded before it is too late and if any of the veterans who are here today still have not recorded their experiences, perhaps I could urge them to do so. The bigger our archive of original material, the greater is our stock of evidence and it is the truth that this evidence represents that will provide the best protection against revisionism. Does the panel agree? Thank you.

Probert. In a sense I do share your concerns as there is certainly a challenge involved in trying to preserve the story as time goes by. On the other hand, there is a question of perspective, and our perceptions and our interpretations of what *really* happened do change with time. As a case in point many of the historical books that are currently being published deal, not with the conflicts of the 20th Century, but with the Napoleonic Wars, our own Civil War and on back to the Armada. An immense amount of further study is going on in areas such as these and we are seeing these events in an entirely new light, focused by the passage of time. The search is for the truth, but that merely begs the

question ‘what is truth?’ in this context. One thing is sure, you can be confident that nothing that we say today will be the last word on the events of the 20th Century.

There will certainly be new perspectives. All that we can do is to put down our markers. In my own case, I have done this with Harris but my account must involve a bias, simply because I wrote it and I did so as an individual who can remember the war which must inevitably influence the way that I perceive events. I am not sure that we can do much more than, as you say, record the first hand accounts of people who were involved, to ensure that they are as accurate as they can be and to publish them. I do think that the written word, well presented, is probably of more permanent value than film or a television programme, because the latter are trying to attract large audiences which tends to give the makers a particular slant before they even start. I suppose that it is the lot of each generation of historians to do the best that it can in the certain knowledge that, despite its efforts, the study and the controversies will continue. The best that one can hope for is that the markers that we have put down will continue to be regarded as useful in the future.

Cox. All that I would add to that is that historians always go on studying the past, and writing about it – we would be out of a job if we didn’t! Take the historiography of the First World War, for example. Most of the professional historians currently writing about the British Army in WW I are actually producing a much more positive interpretation of its performance than used to be the case, say, thirty years ago. A recent book by Gary Sheffield, for instance, opens with a discussion of Capt Edmund Blackadder to make the point that the popular perception of WW I is still moulded by programmes like *Blackadder*, whereas the professional historians are beginning to tell us a rather different story.

Whether something similar will happen to Bomber Command I could not say. Historians can only write the truth as they see it, and some of what I have said today might be regarded as revisionist when compared to the sorts of things that were being written by Max Hastings, Anthony Verrier and others about twenty years ago. The point is that you cannot really freeze an event in time and say ‘*this* is the correct interpretation’; it simply doesn’t work like that.

Norman Storey (President of the Air Gunners Association). Mr. Cox described the inaccuracy of precision bombing, in effect, that anything within about five miles counted as a hit. I have a particular interest in the winter of 1943-44 when we were attacking Berlin, Leipzig and Stuttgart, for instance. On the Nuremberg raid of 30/31 March we lost nearly 100 aircraft and I understood that the bombing was particularly inaccurate on that occasion. Could you say whether that winter, when we were suffering our heaviest losses, was also the period during which our bombing was at its most inaccurate?

Cox. The short answer has to be 'No'. It would probably be quite difficult to do, but it might be possible to use the Operational Research Section's analyses of different raids as a baseline and then compare the results at different periods of the war. I cannot be sure, of course, but what I *suspect* you would find is that accuracy improved steadily throughout the war. I have two reasons for saying this. First, and most obviously, we introduced new techniques and equipment which made both bombing and navigation more accurate. Secondly, although there may be some people in this room who might disagree, the efficiency of the German defences did decline towards the end of the War. A decrease in defensive efficiency should, in theory at least, permit an increase in offensive efficiency. We know that when the *Flak* and fighters were effective, as they were over Nuremberg, this could have an adverse effect on the raid, more 'creep back' and so on. Nevertheless, I would expect a graph of accuracy against time to be a gentle upward curve. It would certainly have some 'blips' on it, however, for all sorts of reasons. To take just one example, if the loss rate increases the influx of new crews means that the overall experience level must fall and this, in turn, could be expected to have an adverse, but transitory, effect on accuracy. Having said all of that, however, I would hesitate to try to identify a specific period and label it as the worst one.

I think that I ought perhaps to stress, again, that 'precision' is a relative term. Precision bombing, as carried out in WW II, is certainly not what we mean when we say 'precision bombing' today. Do not be mislead by the media. They talk a lot of nonsense about precision. They simply do not understand the realities involved with modern systems and they are even further off the beam when they talk about

WW II.

Maurice Allward (Hawker Aircraft 1940-45). Perhaps I could make a comment, rather than asking a question. The topic is area bombing or the bombing of civilians? I know one Bomber Command veteran who still has nightmares over his participation in the Dresden raid. I was a civilian during WW II because I was in a 'reserved occupation', the authorities having concluded that I could make a better contribution to the war effort by building warplanes than by fighting in one. That still put me in the firing line of course, because industrial plants were bombed, but I have never seen this as a problem. Rather than waiting until somebody has made a gun with which someone else will try to shoot you, it has always seemed to me to be common sense that you should try to kill the gunsmith. As a result, I see nothing immoral in the bombing of civilians. Once a war has started, your object must be to win it and if you can kill the civilians to stop them making the weapons of war, so be it. You really ought to kill all the farmers as well, to stop food production so that the workers will starve.

Probert. I think that the question that Harris would have asked was, 'How do you define a civilian, in the context of a war of survival?' And let us never forget that WW II was a war of survival. So just where do you draw the line between the man or woman who wears a uniform and carries a gun, and all of the people who are providing all that they need to sustain them in the field but who just happen *not* to wear uniforms. How do you classify the man who works in a power station, for instance? He is two-stages removed from the fighting because he neither handles guns nor makes them, but he does generate the electricity upon which the manufacturer depends so, in the final analysis, I think that he becomes a legitimate target.

You may regard it as simplistic, but Harris took the view that the distinction between the soldier and the civilian in WW II was a false one. He pointed out that the Germans had a choice between remaining at work in their industrial cities to support the war effort, and moving out into the countryside, as a good many of them did. Harris was a bit brutal about that. But he was an honest man and he was simply recognising the reality of the nature of war in the mid-20th Century.

Cox. It is instructive, I think, to go back to WW I. During one of this

morning's presentations we heard about the 'Turnip Winter' which resulted from the economic blockade which we imposed on Germany. More people, most of them civilians, of the Central Powers are believed to have died from starvation in the First World War than were killed by bombing in the Second. But such things become unavoidable in a war of national survival when you are confronting a regime as ruthless and brutal as that of Nazi Germany. It may also help to sharpen the focus if we remember that between June 1941 and May 1945 the Soviets suffered an average of 7000 casualties *every day*. This was not a war that could be won by being polite and chivalrous, by going back to the 18th Century and inviting the other side to fire first!

Personally, I have far more respect for the pure pacifists who said, 'I cannot kill. I will not resist', than I do for those who now sit on the fence by expressing support for the war but arguing that it should have been fought differently. How would it have been possible to avoid civilian casualties and damage to property during the advance across Europe in 1944-45? Consider, just as an example, the destruction that was, that had to be, inflicted on Arnhem and its occupants. Under such circumstances, soldiers may not mean to kill civilians, but civilians will inevitably be killed. Despite attempts by some to paint the issue of civilians in war in black and white, it is another of those studies in grey to which I referred earlier.

Probert. It wasn't black and white in the Twin Towers, was it? They were all civilians.

AVM Jack Furner. Might I offer a comment from the standpoint of a typical member of a Bomber Command crew? I sympathise with the chap who has sleepless nights because of Dresden, but Dresden was just one night in 1400 nights on which Bomber Command operated. I am sure that Hamburg looked even worse than Dresden did. But there were 70,000 of us who survived; 55,000 died in Bomber Command but 70,000 survived. If you were to poll those 70,000, asking the question, 'Do you have sleepless nights about this?', I am sure that the vast majority would say, 'Not on your Nelly!' I mean, damn it, they started it! Guernica, Rotterdam, Belgrade, you name it. No, I have no sleepless nights, about any of it! (*Applause*)

Sir John Curtiss. Thank you, Jack. I think that is a good note on

which to end what has been a fascinating day. When I started to set up this seminar, I had a nagging doubt that there might not be anything fresh to say about the bomber offensive. Clearly, our speakers have shown that there was a great deal more to say. They have given us a very interesting day and on your behalf, I thank them all for their contributions.

ROYAL AIR FORCE HISTORICAL SOCIETY

The Royal Air Force has been in existence for over 80 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 £15 per annum and further details may be obtained from the Membership Secretary, Dr Jack Dunham, Silverhill House, Coombe, Wotton-under-Edge, Gloucestershire. GLI2 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 Squadron Leader P C Emmett PHd MSc BSc CEng MIEE
1997 Wing Commander M P Brzezicki MPhil MIL
1998 Wing Commander P J Daybell MBE MA BA
1999 Squadron Leader S P Harpum MSc BSc MILT
2000 Squadron Leader A W Riches MA
2001 Squadron Leader C H Goss MA
2002 Squadron Leader S I Richards BSc

THE AIR LEAGUE GOLD MEDAL

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

Air Marshal Sir Frederick Sowrey KCB CBE AFC
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