CAS’ Reading List 2018
Front cover image:
No 1 (Fighter) Squadron: Clairmarais, northeast of Saint-Omer, France, 1918.
Attribution: Jack Bruce Collection, RAF Museum
As we celebrate the Royal Air Force’s centenary this year, I am delighted to present not only ten titles (including a TV series) that have recently been produced, but also to dust off ten of the great works that have influenced and entertained scholars of strategic affairs and air power over the past one hundred years. Together, the two collections span the entire length and breadth of the Royal Air Force’s history, and this set of recommendations therefore includes several titles that focus on the creation and evolution of the Royal Air Force – including new books such as Richard Overy’s superb *The Birth of the RAF, 1918* and Patrick Bishop’s magnificent *Air Force Blue*.

Each title in the historical list has been selected for its enduring relevance or influence. Marshal of the Royal Air Force Sir John Slessor’s *The Central Blue* is worthy of a special visit to an antique bookshop (even if it is a virtual one!) – nothing else contains quite the range of perspectives from junior pilot to senior leader and strategic philosopher. And John Terraine’s masterly history of the RAF’s contribution to victory in the Second World War, *The Right of the Line*, is, as its reviewer Seb Cox proposes, worthy of being read multiple times.

Of course, I know that the history and practice of air and space power spans a horizon greater than just that of the Royal Air Force, and I am pleased therefore also to include a number of overseas authors in this year’s list. Foremost amongst them is the collection of international perspectives contained in John Andreas Olsen’s *Routledge Handbook of Air Power*, published in co-operation with the Royal Air Force Centre for Air Power Studies, which will soon be distributed across the Service and made available on-line to UK Ministry of Defence staff via the MOD e-library. Of all the titles included in this reading list, this is perhaps the one of greatest value to current air and space power professionals. As Air Vice-Marshal Tony Mason rightly observes in his review, it is a ‘mighty addition to the international air power lexicon’, and its collective objectivity shines a light not just on current air power thinking, but illuminates features of the future too.

I sincerely hope you enjoy reading a selection of the books I have recommended, but to give your eyes a different form of exercise, I thoroughly recommend watching Ken Burns’ and Lynn Novick’s acclaimed TV series, *The Vietnam War* – there is little about Vietnam specifically, or war more generally, that isn’t brought to life in this hauntingly effective documentary.

The Royal Air Force and its people today benefit from the lessons that were learned by our predecessors, often the hard way. Reading, study and debate form a fundamental component of developing our collective intellectual capital. For those readers serving in the Royal Air Force’s Whole Force, you and the Service will be better prepared for the future by studying the lessons of the past and examining contemporary thinking on the practice and theory of air and space power. In this centenary year, I wholeheartedly recommend that you spare some time to think and reflect – this reading list is an excellent place from which to start.
A portrait of Marshal of the Royal Air Force Sir Hugh Trenchard, the first RAF Chief of the Air Staff.
Attribution: UK Crown Copyright / MOD. Courtesy of Air Historical Branch (Royal Air Force).
Message from the Director of Defence Studies (RAF)

For those of you serving in the RAF and Defence more widely, I should like you to know that many of the titles on this and previous years’ reading lists are available for loan from unit libraries and in e-book format at the MOD online library (https://ebookcentral.proquest.com/auth/lib/mod/requestAccount.action) – opening an account is straightforward (it simply requires your personal MOD email address to register), and provides access to a treasure trove of books, all for free. New titles are made available throughout the year, so if you find any gems that you consider are worthy for CAS’ consideration in next year’s list, please get in touch with me at enquiries.dds@da.mod.uk.

For all serving RAF personnel, if your reading inspires you to take your study of Air Power further, may I encourage you to consider applying for a CAS’ Fellowship, details of which can be found on the RAF Centre for Air Power Studies website at https://www.raf.mod.uk/air-power-studies.

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Recent Publications
The Routledge Handbook of Air Power is a unique, comprehensive compendium of essays which address the evolution and characteristics of air power, the roles and functions of delivering air power, the integration of air power with other military structures, its political, social and economic environment and includes six national case studies.

To achieve his objective of promoting a greater depth of air power knowledge, rather than a compendium of eulogies, John Olsen has assembled an international galaxy of thirty two contributors, several with reputations as air power specialists established over many years, some drawing upon recent operational experience and others bringing a deep understanding of the broader context of international security. The scene is set by an authoritative tour d’horizon by General Dave Deptula in his Foreword, together with a reminder to the readers that air power’s potential could be limited only by their “vision and willingness to advance”.

Australian air power scholars and he most appropriately adapts for contemporary high command, the famous dictum of General Hap Arnold “to keep doctrine ahead of equipment and vision far into the future”. The importance of “thinking” is a theme which ripples through several chapters: of particular relevance to armed forces generally which do not usually set out to recruit lateral thinkers.

Peter Gray’s concise historical survey identifies the increasingly dominant role of air power, providing a cross reference to several other chapters. In tracing the evolution of operations and theories he places the former in political context and the latter in the reality of unrealised expectations. His identification of the fundamental, enduring role of command of the air resonates in the later chapters which take the reader forward into the world of unmanned systems and back into contested airspace. Subsequently, Michael Clarke places recent operations into their political context, offering sober caution to those zealots who emphasise the impact of operational success but fail to identify the debilitating effects of associated strategic and political ambiguity.

From the Second World War onwards, there have been two kinds of air power: the dominant United States’ and the rest of the world. Naturally, this compilation reflects that differential. Richard Hallion for example concentrates in minute detail on the evolution of United States aircraft, engines and weapons.
This however, leaves two large gaps in the examination of “Science and Technology”. First, no contributor analyses the massive impact of Radar in negating the early forecasts of the bomber exponents, nor its subsequent manifestations in all aspects of air power since the Battle of Britain in 1940. The dependence on Radar in the application of air power on “Beyond Visual Range” cannot be exaggerated.

The second technology gap is perhaps even more substantial. The unmanned aircraft, under its various appellations of UAV, RPV, RPAS or Drone has dramatically influenced surveillance, reconnaissance and attack and its unexplored potential is considerable. Several contributors refer to it peripherally but there is no article focusing solely on its antecedents, current operations, deployment potential, ethics, manning problems and implications for traditional aerospace industries.

Phil Meilinger even-handedly surveys the origins and evolution of air power theory, but refrains from critical analysis. The reader may therefore be unaware of the virtual absence of contemporary international awareness of Douhet’s ideas, of the direct influence of Trenchard on Mitchell and later, the modification of John Warden’s ideas in the application of air power in DESERT STORM. In the event, overwhelming western superiority in technology, leadership, quality and numbers suggest that any forecasts based on that campaign should be offered with caution. As Ben Lambeth suggests, potential opponents quickly learned how to muster asymmetric counter measures. Indeed, in Kosovo, the inherent inflexibility of Warden’s ‘Five Rings’ concept was incompatible with NATO’s political cohesion and sensitivity. As Phil Meilinger emphasises, flexible thinking is indispensable to the exploitation of flexible air power. Conversely, he might have added, if theory or doctrine is allowed to harden into dogma, the product will be intellectual thrombosis and failure.

Geoffrey Biller explores the subsequent contemporary legal and ethical constraints of target distinction and discrimination, collateral damage, proportionality and humanitarian factors which inhibit western air forces. In World War One the pilots did not need to be concerned with their ethical or legal position. Indeed the myth of chivalry did not exclude the advantages to be gained from surprise attack from the rear.

Philip Sabin explores the evolution of public perception of such themes, contrasting the image of the heroic fighter pilot of World War One with the current preoccupation of much of the media with human trauma suffered on the ground. He reflects on the expectations of casualty reduction from precision weapons and on media reporting of the comparative invulnerability of contemporary aircrew. His deep historical studies lead him to comment that all these perceptions have flowed from a period of complete western dominance in conflicts where western core interests were not at stake. The factors in the equation of military necessity and ethical constraints could well be re-evaluated in future conflicts.

The contributions to contemporary roles and functions are collectively strong. Dag Henriksen examines the elements of command of the air and cautions against Western neglect of it as a consequence of two decades of lack of opposition. Frans Osinga in his wide ranging survey of “Air Strike” or more accurately “Air Attack”, uniquely observes that the ability to achieve air superiority quickly is not an intrinsic attribute of air power but the result of an aggregate overwhelming superiority. Gjert Lage Dyndal examines airborne intelligence and reconnaissance in one of the most valuable and original contributions in the collection. His comments on the mixed blessing of national equipment programmes for international intelligence co-operation, are particularly thought provoking. Robert Owen brings a lifetime of operations
and study to his succinct explanation of the practical considerations essential for air mobility planning in a challenging and wide ranging environment.

In another standout contribution, Christopher McInness examines perhaps the most contentious subject facing contemporary air power: the implications for command and control of world-wide near instantaneous acquisition and dissemination of information, not to mention the threat of cyber disruption. In his observations on the dangers of the “tactical general” he is careful to emphasise the enduring importance of personal relationships. He cautions against conclusions based on uncontested air operations: a consideration not apparently occurring to some of the other contributors. This article should be the starting point for any operator or scholar who wishes to examine the command and control of air power.

Richard Knighton cogently reminds the reader that the flexibility of air power is only as good as the logistic support which it enjoys. His explanation of underlying principles and the complex needs of today’s “expeditionary” deployments should prompt caution among those commanders responsible for giving strategic advice to their political masters. The analysis is however, based on operations in a benign environment. It would have been more valuable to hear his thoughts on the implications for logistic systems should the West come to face an opponent capable of deploying cyber or kinetic counter measures. Or indeed how provision should be made to replace combat losses.

In its formative years, especially in the UK and USA, the “independent” use of air power complicated cooperation with other Service arms. The third part of this compilation examines the very different relations and operational environment where integration with other military and civilian agencies is essential.

Harvey Smyth reinforces operational experience with scholarly research to examine historical examples of air-land integration, emphasising the need for joint training, doctrine and especially personal relations. His emphasis on the importance of liaison appointments should tweak an occasional personnel management conscience.

Trevor Hallen charts the almost perennial obstacles and constraints on air-sea integration. The inauguration by the UK of the Joint Harrier Force and its legacy of joint F-35 air-sea operations remains to be examined elsewhere.

James Keras concentrates primarily on US experience in integration with special forces, inevitably relying largely on secondary sources. He also emphasises the importance of personal relationships, which would have been reinforced had he included the integration of the British Long Range Desert Group in attacks on airfields in North Africa in World War Two.

Everett Carl Dolman’s contribution on Air-Space Integration will introduce many readers to a very new aspect of air power. He emphasises the integral reliance on communications, and constructs a model handbook entry. What is it? How does it work? What can it do? What are the problems? Where are we going? All the questions are answered clearly and concisely. He also, rather more controversially, argues for a separate space force.

Richard Andres’ study on cyber integration should be read alongside Dolman. He asserts that it is the only domain of warfare which is entirely manufactured and owned by humans. He examines recent instances while acknowledging that much of the relevant information is not in the public domain and reminds the reader that cyber activity permeates many commercial and political activities. Indeed, perhaps the most important contribution of this article is the stimulation it provides for almost
limitless speculation about the implications of cyber interference with all aspects of air power.

James Corum has never been an air power zealot. He brings considerable academic depth to his examination of integration in counter-insurgency and unconventional operations. He traces the evolution in the USA of structured cooperation with other military and civilian agencies to overcome the previous absence of coordinated command and control, doctrine, training and operations. The reader is left in no doubt about the central role of air power in surveillance, reconnaissance, interdiction and seizure in operations well below the conventional threshold of war.

Karl Mueller looks back at the interaction of deterrence by air power and coercive diplomacy, comparing the fear of bombing in Europe in the 1930s with the period of western air power dominance in the 1990s. The link between coercion and deterrence and the objective of avoiding war becomes problematical when opponents do not share western values. The success of deterrence is determined by the value placed on the threatened targets by the opponent, virtually removing deterrence from options against organisations such as Daesh and confining air power to the process of coercion.

In the last resort, air power is determined by how much a government can afford and what access it has to an industrial base. Trevor Taylor examines the costs of equipping and maintaining a modern air force, with a clarity which may not assuage the concerns of those who advocate more resources be allocated to air power, but at least will understand why so often procurement costs are underestimated by governments, airmen and manufacturers. Unfortunately, a study of operational cost effectiveness, an even more complex equation, was beyond the remit of this author.

Keith Hayward describes the evolution of the international aviation industry. He explains the emergence of the US after World War Two ahead of all competitors, a lead which it has sustained from aircraft to space and from systems to sub systems. Reduced volume, reduced frequency and longer development times have increased costs and led to increasing industrial consolidation and globalisation. Robotic warfare is, however, comparatively cheap and provides an opportunity for low cost entry to the defence aerospace industry. Costs of high performance UAVs, however, are likely to remain high and continue to be the preserve of traditional aerospace companies. As the final collection of case studies illustrate, those factors have had a considerable impact on the ability of several countries to apply national air power.

Xiaoming Zhang describes the current rapid growth of Chinese air power and its evolution from concentration on home air defence to a balanced force capable of discharging all major air power roles. The transformation has been accompanied by a move away from dependence on Russian imports to the indigenous development of a fifth generation fighter. The Peoples’ Liberation Army Air Force may soon challenge US air power hegemony in the western Pacific, but the pervasive presence and tight control by the Communist Party as well as the military dominance of the army may inhibit the potential of Chinese air power.

Conversely, in recent years the influence of the political commissar in the Russian air force has markedly declined, allowing military expertise to determine promotions and appointments, with corresponding improvements in pilot skill levels. After describing the current structure and equipment of the forces which apply Russian air power, Igor Sutyagin nonetheless attributes the poor showing by the Russian air force in recent campaigns to inferior technology, delayed procurement programmes and
insufficient training. He identifies however, the danger to the West of Russia using its air force to exert psychological superiority in the face of apparent western diffidence to risk a forceful military reaction. The implications of this particular assertion merits much deeper study.

The examinations of the Indian and Pakistani air forces should be read together. Sanu Kainikara analyses in great depth the problems afflicting the Indian Air Force, while Jamal Hussain gives a consistently upbeat assessment of his own. The former has a proud inheritance but delayed procurement problems, inter-service rivalry, failure to introduce structural reforms, lack of foresight, failure to implement combat lessons, poor intelligence and threatened on two fronts, the Indian Air Force has been choked logistically by political neutrality which has resulted in the deployment of several different types of combat aircraft. This forthright account by a former Indian fighter pilot makes painful reading for one who has always respected the Indian airman. Perhaps there may be better times ahead. India has very significant computer, communications, artificial intelligence and cyber industries. As Keith Hayward observes, there is a “low-level” entry route into the aviation industry where such expertise has considerable potential. Sadly for now, the considerable value of this chapter lies in its lessons on how not to manage air power.

Jamal Hussain’s pride in his air force permeates his chapter and is justified by its performance in recent conflicts. He is, however, fully aware of its dependence on external support, which has been and may again be susceptible to “allied” priorities. Moreover, an uncomplicated foreign policy in the face of a single perceived threat has allowed an air force focus on air defence, ground attack and nuclear deterrence. Not anymore. Pakistan now faces insurgency and non-state actors, which are stimulating interest in industrial expertise in avionics and electronics with potential for the indigenous production of drones.

By contrast, Brazil has a thriving aviation and weapons industry with Embraer an international competitor. As Colonel Rosa explains, the air force has long been aware of the importance of doctrine in the successful application of air power. Much of the air force’s activity is influenced by the huge geographical extent of the country and internal challenges. Unified doctrine, Joint Service structure, close association and frequent exercises with the USAF have ensured that the air force may be comparatively small in number but in every sense is a modern model.

Tomoyuki Ishizu explains the unique circumstances of Japanese air power. Against a background of international air power he traces its evolution from the early pre-World War Two period, when offensive operations were a high priority, to the current position of restriction to defence and close alliance with the US. His article is a timely reflection on the political and military difficulties in preparing for the uncertainties of 21st Century warfare.

Finally, Air Chief Marshal Sir Stephen Hillier, Chief of the Royal Air Force, reflects on the content of the volume. Among several salient points, he reminds the readers that while the asymmetric advantages enjoyed by western air power in recent years may be diminishing, its vital significance to all current and future joint military operations will continue – provided that the culture of vision, direction and investment is nurtured throughout our organisations. He justifiably endorses the “well-honed guidance” offered in the volume to “those with responsibilities for the higher command of air forces”.

John Olsen’s Conclusion, “The Shape of things to Come” defies summary. It should perhaps be read as a stand-alone foreword, encapsulating as it does the major issues and
ideas contained within the thirty chapters. He specifically refers to “robotisation” and it is regrettable that the reader will need to consult an index to discover the fragmentary references to it rather than a single in-depth examination which it merits.

The *Handbook* is nonetheless a mighty addition to the international air power lexicon. Only Gene Emme’s 1959 compilation of original sources in *The Impact of Air Power* can compare in quality, breadth and significance. Indeed it is intrinsically superior to Emme’s masterpiece because of the vast bibliography accessible via the hundreds of references, which simply did not exist sixty years ago.

*The Routledge Handbook of Air Power* is an indispensable purchase for the operator, advocate or scholar. Moreover, it is available for free to all RAF and other Defence personnel online in digital form.
The RAF was created in 1918 after nearly four years of war, which had proven that air power could take the fight to the enemy in ways never before seen. The formation of the RAF was a deeply contentious issue, especially with the traditional Services but also within some government departments. Richard Overy’s latest book is a masterclass in how to make a complex, and potentially dry, subject thoroughly absorbing. What differentiates this work from other histories of the RAF in the First World War is that it does not focus on the Air Force’s operational record; instead, it deals with the conceptual, organisational, industrial and political facets of the RAF’s creation.

Overy makes the point that the RAF came about not purely out of operational necessity, but, rather, as a result of concerns over the defence of the UK. The Germans launched several Zeppelin raids on the UK as early as the autumn of 1914, but two years later, in 1916, the Kaiser called for unlimited aerial warfare against Britain. The second German strategic air offensive began in the spring of 1917, using Gotha bombers, and these attacks were far more damaging and created greater panic than the Zeppelin raids. In all, there were 27 Gotha raids on the UK between May 1917 and May 1918, killing a total of 836 people, but it was an attack on London on 7 July 1917, in particular, which prompted the government to seek a solution to the German ‘air menace’. On 10 July, Parliament met in special session to discuss the raids and, on the following day, PM Lloyd George set up a committee to investigate the issue of Britain’s air defences. The South African General Jan Smuts, who had arrived in the UK to serve on the Imperial War Cabinet, was tasked with presiding over the committee. His appointment raised eyebrows, but it was felt that an outsider would be best placed to make an objective assessment.

Smuts produced two reports, rather than just one, as is most commonly believed. The first concerned the nature of London’s defences. The second, and what is more commonly referred to as the ‘Smuts Report’, laid the foundations for the RAF. After consultations, Smuts concluded that air strategy and policy and operations should be vested in an Air Ministry and that there should be a separate air service. Of particular concern was the fact that the Royal Flying Corps (RFC) and the Royal Naval Air Service (RNAS) had been in competition for scarce resources, and there were enormous inefficiencies in the procurement and maintenance of aircraft. As Overy points out (p.16), the RFC developed or employed over 140 different aircraft models and variants, and there was no coordination between the RFC and the RNAS in their engagement with industry. However, the argument for a new separate air service which most swayed Smuts was that aircraft technology had reached such a level that long-range strategic offensive operations were now feasible. For him, there was ‘absolutely no limit’ on the future use of aircraft in an independent role, and an independent
role called for an independent service. In the period October 1917 to March 1918, Smuts presided over the reorganisation of the RNAS and RFC in preparation for the creation of the new Service, under the watchful eye of Prime Minister Lloyd-George.

Creating a new Service during wartime posed enormous challenges. Pragmatism prevailed, and most of the established practices and personnel from the RFC and the RNAS were co-opted. As Richard Overy points out (p.48), not all of the personnel in the flying arms of the Army and the Navy were prepared to transfer to the new Service, and the preponderance of those who chose to transfer were from the Army. This would have serious consequences for the RAF. In contrast to the Army, the Admiralty put a premium on Operational Research, and a sizeable proportion of the Royal Navy’s research budget was devoted to aerial matters. Some of this research anticipated by 25 years the work done by the Operational Research Sections of RAF Coastal and Bomber Commands, especially in relation to aids to long-range navigation and bomb-aiming. However, as most of the 25,000 officers and 140,000 men comprising the new Service in 1918 had Army backgrounds, the emphasis on research and development waned. Melding two distinct Services raised other issues as well. The question of identity was not to be found in the realm of ‘uniforms and flags’, or more trivial differences between the Services (p.60). Rather, the RAF sought to prove its uniqueness through doctrine. Specifically, it was the ability of air power to defend the UK both over the UK itself and at longer range, by engaging in strategic bombing, which made the new Service different and very distinct from the Army and Navy’s traditional functions.

What is particularly important about Overy’s analysis, though, is that he demonstrates how advocates for strategic bombing were to be found in both the Army and the Navy (p.27). The accepted orthodoxy is that both Services were violently opposed to any use of air power other than in immediate support of land or naval forces. Indeed, the RNAS was the first of the British air services to undertake strategic bombing. On 5 September 1914, while he was First Lord of the Admiralty, Winston Churchill proposed that the greatest defence against the aerial menace was to attack the enemy’s aircraft at the point of their departure, and, less than two weeks later, the RNAS had a wing operating from Dunkirk in order to attack Zeppelin infrastructure and bases in northern Germany.

The use of air power for strategic effect, against both Britain and Germany, transformed the way modern warfare was now being conceived. Civilians were seen as part of the national war effort and were considered legitimate targets. Both sides hoped that the bombing of industrial centres would cause alarm among civilian populations and absenteeism in industry. While in command of the RAF’s so-called ‘Independent Force’, Trenchard believed that bombing of German towns and cities would create ‘sustained anxiety’ (p.64), and advocated hitting as many large industrial centres as it was possible to reach with the aircraft available.

At the time of the Armistice in November 1918, some of the RAF’s senior leadership believed that had the war continued into 1919, the bomber offensive would have brought Germany to her knees by undermining her will and material means of waging war. From this followed the argument that in any future war not only would the aggressor be delivering the ‘knock-out blow’ from the air but that aerial bombardment would be the only means of conducting decisive warfare. However, in reality, there was comparatively little evidence to suggest that bombing would be truly decisive in the next major conflict. A commission sent to Germany by the Air Ministry after the war concluded that the material impact had been far less than expected. This reinforced Trenchard’s view that the
morale effect of bombing was far more important, and this is what he emphasised when he took over as Chief of the Air Staff in 1919 as the RAF became involved with empire policing. The latter role was, in many respects, the saviour of the independent RAF, but so was Churchill.

Peacetime created some very chill breezes for the military. Not only did peace see the rapid disintegration of the military’s authority, but there was also a drastic cut in defence expenditures. Therefore, Trenchard’s first task as the new Chief of the Air Staff was to justify down to the last penny the RAF’s continued existence. Between 1919 and 1921, the financial squeeze prompted the traditional Services to call for the return to their control all the air assets and personnel in the RAF, and Trenchard reflected how the new Service withered away like ‘Jonah’s Gourd’. From a total of 291,206 men and 399 squadrons in November 1918, the RAF’s strength fell to a mere 35,000 men and twelve squadrons by the end of 1919. In 1921, the pressure on the RAF eased, and one of the main reasons is that the RAF was being championed by Churchill, who was by then in the Colonial Office. He urged Trenchard to draw up a plan for air policing in the Middle East, and he convinced Trenchard that this would establish the RAF as a separate service ‘beyond doubt’ (p.102). Churchill was correct.

Starting in 1919, a wave of unrest rocked the empire, and the Army was reluctant to get involved in land campaigns so soon after the First World War. Trenchard proceeded to draw up plans for a strategy of ‘bombing without occupation’, with the aim of interrupting the normal life of rebellious tribes to such an extent that a continuance of hostilities would become impossible. This strategy, applied to the North-West Frontier of India, Somaliland, Iraq and Aden, cost the Treasury less than 5% of that calculated for land operations, with a fraction of the anticipated human cost (both to the indigenous populations and the airmen involved). The empire policing experience reinforced the RAF’s emphasis on the morale effect of air power.

Richard Overy’s book is a most welcome addition to air power scholarship, challenging as it does many accepted orthodoxies and is required reading for anyone with an interest in the origins of the Royal Air Force.
Strategy and the formulation of strategy are subjects that have fascinated me throughout my military career, but especially against the backdrop of my experiences in Iraq and Afghanistan and on the staff of various UK, US and Coalition headquarters. The relevance and value of good strategy, from a UK perspective, has once again come to the fore following the Chilcot Inquiry. Over the last fifteen-plus years, our military output has been driven by operations and the requirements of the operational and tactical levels. This has been at the expense of our strategic appreciation, which has become too near-sighted, a matter which has not gone unnoticed by our state and non-state adversaries. For this reason, Edelstein’s sophisticated and insightful book could not be more pertinent to those interested in strategic-thinking and the formulation of strategy today. The power politics at play with and between the United States and China form the backdrop of his analysis, with emphasis on the relative temporal conditions and the associated risk-benefit calculus of action, inaction, cooperation or accommodation. The book is adroitly constructed around four historical case studies and concludes with a contemporary assessment.

The dynamics explored through the rise of Imperial Germany, the demise of the British Empire and the rise of the US as the Twentieth Century hegemon, along with the rise of inter-war Germany, and the ongoing game of International Relations chess between the US and China, are used by Edelstein to introduce a very engaging and informative account of the complexities that strategic leaders, within such powers, faced when addressing changing power dynamics. His account, therefore, provides a very useful handrail exploring the domains and implications of time and space and how threats could, and should, be managed more effectively. With each case study, he dissects competing demands for short-term responses with longer-term approaches. But the real benefit of this important book is how it relates to other geo-political tensions at play today. His argument centres on the belief that the “time horizons of political leaders are critical to understanding why leaders prefer certain strategies over others”. This is not purely an arbitrary short or long-term perspective or approach: it is an amalgam of horizon, value and interest-based responses to the fluctuations in global conditions and associated competition, and how the changes in power (and perceptions of relative power) influence strategies and relationships. Edelstein believes that leaders with short-time horizons are focused on the immediate future in a general state of affairs that they do not expect to change dramatically. Conversely, he asserts that “leaders with a long-time horizon are more focused on a world that emerges after some predictable, but not necessarily certain, transformation of the underlying structure within which they operate”.

While his book seldom mentions Russia, it invites the reader to question the dynamics and relationships
Currently at play between the West and Russia and whether the Cold War and post-Cold War strategies of containment, accommodation and cooperation have exacerbated today’s problems. When this book is read in tandem with the findings of the Chilcot Inquiry, it highlights the complexities and challenges of designing and implementing grand and positional strategies, recognising the truism that your opponent ‘has a vote’ and will therefore have a value/interest-based temporal perspective too. Edelstein unpicks each case-study and explores the pressures of time and options for action against a vista of uncertainty and unknowable consequences. In chapters 2 through 6, Edelstein eloquently highlights how strategies to address rising and failing power were devised in the US, Britain and Germany and how strategies for China need to be increasingly nuanced and agile and reflective of temporal and spatial changes as well as uncertainty. It does not provide answers – it is not a crystal ball – but it does provide a very insightful and incredibly useful account of the challenges facing the development of enduring strategy and the dichotomies strategic leaders face.

In summary, this book is as exciting as it is evocative. Its analysis is very accessible and well-crafted. The emphasis it places on agility and adaptability provides key tenets within our recent NSCR and the ongoing Modernising Defence Programme work. If we are to learn from the mistakes of Iraq and the years of poor strategy design, strategic leaders – now and for the future – would gain much from reading this book and transposing Edelstein’s hypothesis on current and future strategic conundrums. As a member of the Royal College of Defence Studies, I wished I had read this book prior to commencing my course. My advice is to skim this review and read the book!
In this impressive history of air power in war, from its early foundations through to the conflicts of the early Twenty-First Century, Ledwidge provides his readers with several important interpretative themes to enable them to understand how and why air power has become such an important military and political instrument. These are identified in an initial ‘Foundations’ chapter offering solid intellectual context for the book’s chronological journey, the result being a concise work with a well-judged balance between narrative history and the author’s commentary establishing the significance of the developments and events he describes. One of his themes is to set the rapid evolution of air power technology, theory and practice across a varied spectrum of conflict alongside the enduring continuities that also define the air power experience in war. “The principles of the deployment, the grammar as it were of air power”, he writes, “have changed little over the last one hundred years or so. Only the technology, the vocabulary, has altered” (p.1). The core air power roles, clearly summarised, help to structure the book and these along with its themes provide valuable guiding insights in the chapters that follow to help readers understand the strengths and limitations of air power throughout its history, and the frustrations that have on occasions followed the expectations placed upon it. “An aircraft cannot hold territory nor can it substitute for ‘boots on the ground’” he observes, “although that has not stopped military planners from trying to make them do exactly that” (p.2). The critical argument about whether aircraft can achieve strategic effect runs throughout the book, and from this readers gain an appropriate sense of how it has existed throughout the history of air power in war. The contemporary manifestations of some long standing trends are also highlighted; the increasing interplay between politics and air power being one that is acknowledged both in terms of, as Ledwidge puts it, the “hope that drives contemporary politicians in many countries to see air power as one possible solution to extremely difficult political or security problems” (p.2) and also in terms of the spiralling cost of air power technologies and its implications. As Ledwidge pithily points out, questions about the development, deployment and potential of air power are the concern of everyone, not least because “everyone is paying for it” (p.3).

In what is a short history, the chapters covering air power in the First World War, the interwar years, the Second World War in the West and in the Pacific, and the period of the Cold War and conflicts between 1945 and 1982 are necessarily succinct. Yet they offer informative and insightful summaries of the many and varied air campaigns waged across this broad canvas over land and sea while capturing the distinct characteristics of each and integrating their strategic, operational, tactical and technological aspects. Linking themes emerge from them so that readers can connect the factors that determined the effectiveness or otherwise of air power across its history, two in particular being the evolution of integrated
systems and the centrality of information. “Like the Battle of Britain”, Ledwidge observes in one example, “the 1982 war over Lebanon was as much a victory for the Israeli system comprising new doctrines, technology, and organization, as it was a success of Israeli aircraft and pilots” (p.125). A chapter entitled ‘The Apotheosis of Air Power’ neatly bridges the Twentieth to the Twenty-First Century, the author concluding that the late Twentieth Century “might realistically be argued to be the apogee of air power used ‘alone.’” But he also – and rightly – reminds us that “any idea that air power can be used alone is a fallacy. No war has ever been fought entirely from the air” (p.151). The period 2001 to 2018 is covered in a chapter entitled ‘Aerostats to Algorithms’ in which recent conflict experience and emerging capabilities and their potential are accorded some critical examination. While invariably thought-provoking, in his discussion of RPAS and their ethical and legal issues, of cyber warfare, and of the development of combat systems like the F-35 Ledwidge is careful to retain a measured and balanced judgement – “The history of air power is full of claims of step changes which are rarely justified” (p.167) he tells us – to set these developments for his readers in the context of what is now more than a century of ongoing air power theory and practice. It is, in this reviewer’s opinion, Ledwidge’s ability to allow his readers to look ‘back to the future’ to see the recurring patterns within air power thought – the leading theories from Douhet to Warden are well summarised – and within its employment in war that constitutes the main strength of this book. In his concluding chapter, appropriately taking the RAF’s motto ‘Per Ardua ad Astra’ as its title, he reaches back to Douhet and acknowledges that his belief that “Command of the air means victory. To be beaten in the air means defeat” still resounds, but he also warns that possessing command of the air “carries with it temptations to rely upon air power in trying to solve complex problems. In the absence of a workable overall strategy this will fail” (p.172). For a brief but comprehensive history of air power in war that does full justice to both its achievements and its controversies, and as a stimulant for further research, one need look no further than this readable book by a historian of air power who has his feet firmly on the ground.
The Vietnam War

By Ken Burns and Lynn Novick

Publisher: Public Broadcasting Service (PBS), 2017
Details: 18hrs, 10 DVD Boxset

Reviewed by Group Captain James Beldon

It is uncommon, if not unique, to write a review of a television series within the covers of CAS’ Reading List, but such is the importance of Ken Burns’ and Lynn Novick’s 2017 landmark documentary series, *The Vietnam War*, that it merits inclusion as an important contribution to the understanding of that conflict, and perhaps of war more generally. For history of war scholars, the story of post-1940 Vietnam offers lessons on a multitude of characteristics of war: war of independence; proxy war; war of national survival. The list goes on, and the lessons on each are profound. It is to Burns’ and Novick’s great credit they have managed to distil the strategic and military lessons adeptly in their 10-part series, whilst also – and importantly – examining in pathological detail the effects that the conflict had on American society and, arguably, for the first time, on survivors of both sides of the erstwhile, and ultimately false and corrupt, Vietnam divide.

The story of the Vietnam War was fundamentally a Vietnamese tragedy created by colonial and post-colonial powers whose interest in Vietnam was either malevolent or misguided, and ultimately both: France, Japan, Russia, China and, of course, America, all played a hand in that country’s (and their neighbours’) torture. What comes through most convincingly and heart-breakingly in this documentary series are the voices – both Vietnamese and American – of the men and women who fought, and especially poignantly, those of the family members whose sons died, for apparently little purpose (at least from a US perspective). Burns and Novick chose their subjects well – wistful, poetic yet sharp as a tack in their observations, wounded Marine turned anti-war protestor John Musgrave and writer Tim O’Brien are captivating in their reminiscences and convey the struggle America was having with itself most effectively. African-American Marine and now senior education specialist Roger Harris was a magnificent witness too, bringing into sharp focus the parallel struggles and unfairness through the draft that affected the black and poor communities most particularly. Others, like former helicopter crew chief and door gunner, Ron Ferrizzi, convey a psychedelic horror to proceedings. Most of the US veterans express some sense of guilt and a certain sense of having had their faith in the *idea* of America betrayed. Consequently, this series is, as one might expect, as much a social history of a United States which, having come to believe in the post-war era that it could never be anything other than ‘the good guy’, watched despairingly as its mask slipped lop-sidedly from its face as it lost its way in the jungles of Vietnam. The My Lai massacre, the effects of Agent Orange, antagonism towards servicemen returning from the conflict zone and the disillusionment and loss of faith in American political leadership that followed in the wake of Johnson’s fatigued confusion and Nixon’s flagrant dishonesty all mix together in this documentary, which nevertheless manages to maintain its eye on the ball.
Unimaginative it may have been, but Burns’ and Novick’s choice to address the conflict chronologically was the right one – how else could a task of such magnitude have been addressed? Air power is covered, but only from a very limited perspective, principally through the testimony of General Merrill McPeak, who later served as the USAF’s Chief of Staff during the First Gulf War and was an advisor to the series. Sure, other airmen were included, but played ancillary roles, mostly in connection with the strategically important, although militarily less significant, POW issue. Through his direct involvement in the war and unparalleled service to America and especially to American strategy and defence since then, Senator John McCain would have been an excellent witness, as would Henry Kissinger, of course. Both were conspicuous by their absence, a factor which alights on the greatest criticism of the series: it was made 20 years too late. In those intervening years, so many of the senior politicians (such as former US Defense Secretary Robert McNamara) and military commanders (for example, General William Westmoreland) have departed the stage. Their testimonies, ripened by the passage of time and privy to evidence and facts that had become available by the late 1990s, would have been invaluable. Instead, despite the best endeavours of the programme makers, the series too often revolves around the testimonies of those who saw the war from the dug-out, tunnel or landing zone.

Nevertheless, the telling of the political and strategic story of Vietnam is historically excellent, as is the ambience created by the soundtrack. It is a clever touch – veterans of all conflicts are taken back to moments in conflicts when they hear a piece of music played from their own personal soundtrack, and Vietnam had more classics than any other. Overall, this is a magnificent documentary that makes excellent use of personal testimony and delivers a sophisticated appraisal of the grand strategic chess game that was played out in Vietnam, and its tragedy. More recent wars deserve similarly detailed analysis aimed at the mass market – but it should not be more than 40 years before someone like Burns or Novick picks up the baton of Iraq or Afghanistan.
For those old enough to remember, the future used to be revealed every Thursday evening on BBC’s ‘Tomorrow’s World’. Unfortunately, much of what was going to happen with and because of technology was either too ambitious, too vulnerable to real-world realities, or even too unimaginative. Nothing dates faster than the future, and the futurologist’s lot is one of more misses than hits. As with technology, so with warfare as Sir Lawrence Freedman reminds us in his latest book.

Freedman is exceptionally well qualified to assess almost two centuries’ worth of predictions over the future of warfare: he is the doyen of current British strategists, an advisor to Prime Ministers and a member of the official inquiry in to the Iraq War. He does not profess to forecast how warfare will evolve, but rather seeks to show how difficult it is to predict the future by examining the past. The seeming non sequitur of the title is entirely accurate – Freedman assesses how the predictions of future warfare actually played out and almost always came up short, set against an ever-evolving societal, political and legal framework, technological advances in weaponry, and ways in warfare. It is a rich and engaging study, full of insights and the telling example: it is also a cautionary tale for those who would be bold in their assessments. This reviewer recalls confident predictions by some that the campaign in Afghanistan demonstrated that the future of warfare was counter-insurgency. Yet within five years, we had fought Gadaffi in Libya, were engaged against Daesh in Iraq and Syria and were thinking through our responses to a revanchist Russia. Of these, the challenges posed by Putin were themselves apparent only twenty years after Fukuyama had written The End of History at the end of the Cold War, when the enduring triumph of western liberal democracy was seemingly assured.

All this, and much, much more is analysed by Freedman. The book follows a chronological flow and provides the space and historical context to establish and develop numerous themes and ideas. The search for the decisive knockout blow against a rival state opponent is one such, as Prussia achieved against France in 1870: with Russia and then China growing their nuclear arsenals in the 1950s and 60s, some American theorists and strategists sought a route to the same, even as atomic weapons created another new reality that upset previous notions of conventional warfare and deterrence. It is also noteworthy that the Prussians believed that their swift victory was likely to prove somewhat hollow; they risked being sucked into a lengthy and probably vicious fight to subjugate the whole country. Seventy years later, the enthusiasms of some in Vichy France for their Nazi occupiers, and the bravery of Resistance Fighters, demonstrated the complexity of actual outcomes. Freedman also notes the challenges for those attempting to measure just how violent we had become – or was it that we were actually becoming more peaceful? A fascinating and diverse cast on every page too: Reagan, Clancy, Pinker,
Moltke, HG Wells, Gorbachev, Lincoln, Thatcher, Mattis... all are here, with the well-chosen example consistently illuminating the whole.

The book revolves around the predictions of authors, advisors and academics, military commanders and politicians. They provide the backdrop and thematic touchpoints for Freedman’s analysis. From ‘The Battle of Dorking’, a call for British rearmament from 1871 based on an imaginary surprise invasion by an unnamed Germany, to the varying approaches towards a China-dominated Asian Century, there is no shortage of material. Freedman recounts how nations sought to codify and legislate the application of lethal state-delivered violence, their various motivations, and the primacy then afforded to the sovereignty of the nation state. The framework thus established creaked at times – poison gas in World War One, the obscenity of the Nazis – but stayed largely intact.

The end of the Cold War was the harbinger for a new set of challenges and pressures: intra-state conflict, violent extremism and the Western interventions of the 1990s and early Twenty-First Century (themselves all in part interrelated) revealed the existing framework’s limitations and contradictions. ‘Fakers’ and ‘breakers’ now test the rules-based international system, whilst unmanned systems offer opportunity and, for some, unease. AI, robotics and autonomy will almost certainly maintain this trend, especially in the absence of public discussion and engagement. In an era of fake news, cyber attacks and little green men, we may need to reimagine and reset how we establish the boundaries of unacceptability and acceptability, and how, where and when we respond.

What this book does not attempt to provide is a set of options or prescriptions for dealing with the complexity of the current strategic environment – a flow chart to follow faithfully for positive strategic thinking and outcomes.

It does highlight the need for flexibility in thought, responses and force structures. The particular challenges of the present – an era of permanent competition, events below the threshold of our predictable military responses, and ambiguity in actors and actions – has echoes of past complexity. It is likely to require continued imagination, flexibility and resolve. Renewed emphasis on genuinely strategic thinking as well; as Sir Michael Howard cautioned, our choices must not be so inflexible that they cannot be swiftly revised as circumstances change. For the Royal Air Force, it also emphasises the need to think, act, engage and operate beyond the airman’s comfort zone – the technological and tactical ‘bubble’. This book is an excellent place to start.
Ben Buchanan’s *The Cybersecurity Dilemma* delivers an insightful and accessible discussion which entwines cybersecurity with the established security dilemma theory. A postdoctoral Fellow at Harvard University with a PhD in War Studies from King’s College London, Buchanan’s ground breaking thesis has been praised by some of the most respected international relations scholars including Joseph Nye and Thomas Rid.

Setting the foundation, Buchanan argues that “to assure their own cybersecurity, states will sometimes intrude into the strategically important networks of other states and will threaten – often unintentionally – the security of those other states, risking escalation and undermining stability” (p.7). Highlighting the publicly discussed cyber capabilities of states, an activity thrust into the spotlight by Edward Snowdon in 2013, Buchanan acknowledges that state-on-state cyber activity is now common practice. Where he adds insight, however, is in how this activity is resulting in a global escalation of cyber capabilities. This escalation is attributed to the security dilemma theory. A concept of international relations coined in 1950, Buchanan suggests that in accordance with the theory, states exist in an anarchic system. Responsible for providing their own security, they will seek “power to minimise risks posed by other states” (p.18). Where they see other states increasing their capabilities they will, to assure their security, do the same “beginning a potentially dangerous sequence of events” (p.18). Transposing this to a contemporary setting, Buchanan concludes that “this escalatory dynamic is perhaps more concerning in cybersecurity” (p.29).

Proceeding to develop his thesis over eight chapters, he examines the issue from differing perspectives. Dissecting a complex topic using easily understandable language, he begins in Chapter 2 with the intruders’ view. Using the examples of Stuxnet and the US NITRO ZEUS operation, a plan to cause further damage to the Iranian nuclear programme if US negotiations had failed, he highlights the importance placed on gaining access to another state’s systems. Summarising a generic intrusion model, the chapter focuses on the assertion that if states “desire the option of future cyber operations…[they] need to take actions in advance to make these operations possible” (p.48). A pillar of the cybersecurity dilemma, this requirement will, he argues, lead states to develop cyber capabilities even before they have been affected by them. Because of this the cybersecurity dilemma, unlike traditional manifestations of the security dilemma, begins to manifest itself far in advance of any potential conflict actually occurring.

Taking next the defenders’ view, in Chapter 3, Buchanan develops his concerns suggesting that defenders, in the knowledge they are being targeted, begin to proactively “push back” (p.51). Using, as an example, US actions to control Chinese attacks, which he alleges include “500 major cases” (p.51), he concludes after a detailed
discussion that in an intelligence effort to understand its adversary states launch, for defensive reasons, “intrusions into the networks of other states” (p.72). A departure from traditional strategic thinking which sees any intrusion across borders as a violation of sovereignty, this tactic is in Buchanan’s assessment a logical progression but one which will appear threatening. Linking this to his next chapter on how network intrusions threaten, he concludes that most or all intrusions into strategically important networks will be seen as menacing. With attribution of attacks difficult, states will “err, sometimes significantly so, on the side of caution” (p.98). This reaction increases the likelihood of capability development to balance the threat further fuelling the cybersecurity dilemma.

Delving into other nuances of the discussion through the intervening chapters, he comes in Chapter 8 to discuss how the cybersecurity dilemma may be mitigated. Within this he comments that it can only be overcome “through a multi-pronged effort that increases short-term stability, starts to build trust, and begins to minimise the risks of misinterpretation” (p.157). This can be achieved, Buchanan argues, through the unilateral deployment of baseline defences, building trust with potential adversaries and unilateral action to show an adversary or the international community that a state seeks stability. Delivered not as “policy prescriptions per se, but rather possible parts of [a] multi-pronged approach” (p.157), Buchanan impresses having not only identified an unexplored issue but taken steps to help the international community solve it.

Additionally, the book relies on information available in the public domain. As Buchanan highlights, although the Snowdon documents released a considerable amount of detail, “a great deal of information on cyber operations remains secret” (p.12). Whilst both are notable limitations, neither on balance detract from the overall impact of Buchanan’s arguments.

In conclusion, the ground breaking linkage of cybersecurity with a traditional concept, combined with its accessibility, make The Cybersecurity Dilemma an outstanding read. With information the lifeblood of the modern world, it is a topic that must not only be of interest to, but essential reading for, those with aspirations of strategic influence. If it is not, and the issue fails to be understood and addressed, states will see, as Buchanan concludes, “the dilemma’s danger – already real – only grow” (p.194).

Though of significant value, the book is not without its limitations, as acknowledged by Buchanan in the introductory chapter. These include the exclusion of non-state actors who, whether truly independent or suspected of being state-sponsored, are becoming an increasingly important feature of the cyber landscape.
Shoot, Don’t Shoot: Minimising Risk of Catastrophic Error Through High Consequence Decision-Making

By Dirk Maclean
Publisher: Air Power Development Centre (Australia), 2017
ISBN: 978-1925062229, 386 pages
Reviewed by Dr Peter Lee

This book has emerged from the development of “interactive, scenario-based training for intelligence officers and airmen entering the Royal Australian Air Force” (p.viii). The author, Dirk Maclean, has sought to capture the breadth of the research that underpins what became a course in high consequence decision-making, incorporating numerous discussions and inputs from students. The aim of the book is to bring those ideas about preventing catastrophic decisions to a wider audience by sharing the expertise that has emerged during the delivery and development of the course.

High Consequence Decision-Making (HCD) is a Royal Australian Air Force programme which promotes improved understanding and performance in organisational decision-making. In this exploration and analysis of major case studies in HCD, the author serves a number of audiences: military participants in the formal HCD programme itself (especially Air Force intelligence officers and intelligence analysts); wider Service users; emergency personnel responsible for incident management; and corporate managers.

The main purpose of HCD is to reduce the risk of catastrophic error in an organisational context (p.128), with life or death consequences, as a result of making ‘bad’ or ‘wrong’ decisions. The author does not attempt to identify a single, easy ‘silver-bullet’ solution to the problem of high consequence decision-making, often by senior leaders or managers but also by much more junior individuals. Instead, a range of interrelated factors are addressed in providing a framework that can be adapted to a range of complex situations: “surrounding organisational culture, management systems, decision-making processes, team and individual performance” (p.4).

The Air Support Operations Cell in Operation ANACONDA (Afghanistan, 2002) is used to illustrate the context and application of high consequence decision-making (p.12ff.). On the one hand, this is an ideal choice. Operation ANACONDA should be studied by anyone interested in the planning and delivery of kinetic air power in congested airspace against difficult-to-identify targets in a highly fluid environment with inadequate intelligence underpinning. Add in a lack of proper preparation, poor liaison between force elements, and minimal experienced and knowledgeable Forward Air Control, and the potential for catastrophe and mission failure was substantial. The author does a good job of assembling the key elements of a complex scenario and showing how the Air Liaison Officer (ALO) faced high consequence decisions in the Air Support Operations Cell. On the other hand, the task for the ALO was quite straightforward: save as many lives of outnumbered and out-gunned friendly forces on the ground as possible using a vast array of air assets with huge firepower. The greatest catastrophe would likely have occurred if such an air power arsenal had not been available. The author notes that:
During an operation, a disaster or an emergency situation, decision-making has to directly confront the situation in its full complexity and carry enough weight to determine the outcome. That is when high consequence decision-making is most concentrated. It is here that all the factors generated by organisational culture, leadership, doctrine, procedures, training, team processes and individual qualities meet and play themselves out (p.18).

This is really the crux of the book: breaking down case studies like the shooting down of the Iran Air Flight 655. The focus of the case studies is on the procedures in place, how they are interpreted, applied, and subsequently reviewed, dissecting key decisions made at crucial points in the development of scenarios with potentially devastating consequences.

The book has two key strengths. The first major strength is the high level of detail and analysis that the book provides around the chosen high consequence decision-making case studies: the shooting down of the Iranian airliner; the experiences of American soldiers in Beirut in 1983; the Black Hawk Friendly-Fire Incident in Northern Iraq, in April 1994; and the airstrike on the Médecins Sans Frontières Trauma Centre, Kunduz, Afghanistan, in October 2015. The subject matter will appeal to the specialist professional or practitioner. The second strength is that, even within professional fields, the author has identified a number of audiences, both military and civilian, who will find this book and HCD to be a useful resource. The main limitations of the book are linked to its strengths: it is very demanding and is unlikely to appeal to a more general readership. Further, civilian audiences might find the military acronyms overwhelming in places.

If I have one criticism of HCD as presented here, it is the limited way the psychological dynamics at work are engaged. The literature review in the book covers key psychological themes and there is acknowledgement of, and some use of, cognitive factors at work. However, there are regular, if unspoken, assumptions that those making decisions are rational actors in times of crisis, especially when lives are at stake through accidents or through deliberate killing in war. The brain does strange things under immense pressure and for many people – perhaps most – rational capacity is reduced at those times. Consequently, for those who would avail themselves of the many positive procedural, institutional, cultural and other insights into high consequence decision-making found here, I would recommend that this book is complemented by delving into the literature around the psychology of decision-making. In fairness to the author, no book can cover every possible subject and theme, even in a focused sub-field of decision-making.

If Maclean has one message to take away from this book it is this: “High consequence decision-making does not take place in the heat of battle – it is set up in advance” (p.256). Further, “HCD has to be understood as a management challenge whose objective is to manage the ‘control’ element within command and control” (p.256). I am still convinced of the enduring relevance of von Moltke’s maxim that no plan survives first contact with the enemy. Maclean provides a useful tool here to support high consequence decision-making when that plan starts to break down.
It is surprising that this book, or one very like it, has not been written before; it is about time. For anyone interested in contemporary conflict, this is essential reading. The central idea, which some readers of this journal will appreciate, is that war is now ‘a clash of narratives’ played out before audiences – the rest of us – whose reactions and views are a vital component in success or failure. David Patrikarakos begins his story in Gaza, with Farah Baker, whose accounts of the Israeli Operation PROTECTIVE EDGE in 2014 set a tone and story which Israeli forces found very difficult to counter. The author moves quickly on to look at the Israeli Defence Forces’ social media operations during that war. Whilst impressive, they appear to have had nothing like the impact of one young woman on the receiving end of Israeli bombing.

By far the most interesting section is that dealing with Russia. Patrikarakos tracks down a former member of a ‘troll farm’ in St Petersburg. The ramshackle and shabby nature of that operation is conveyed very well. By way of contrast, the account of the rise of Bellingcat is almost inspirational. Bellingcat was set up by Elliot Higgins, whose main occupation before his entry to the world of OSINT (Open-Source Intelligence) appears to have been as an accomplished ‘World of Warcraft’ player. In a matter of a few months Higgins, with no significant military, investigational or intelligence background, worked from Leicester with several colleagues in the US and Europe to set up a remarkable organisation. Working remotely, they leveraged excellent internet skills to produce results which, it is fair to say, had highly significant consequences. Their key coup was the investigation of the shooting down of Malaysia Airlines MH17 by separatist forces over Ukraine in July 2014. The story of the way they tracked down the missile and its parent unit stands testament to the potential of open source intelligence. Bellingcat is now, rightly, regarded as a credible and highly skilled authority on matters ranging from war-crimes investigation to controversial military deployments. The book is worth buying for this section alone.

The book ends with a sojourn into the war against IS. Patrikarakos is slightly less assured there, possibly because the ‘virtual caliphate’ has been so heavily written over the last four years or so, that it is truly difficult to find anything new to say.

Some readers may chafe at the regular accounts of the music in coffee shops where interviews take place and other journalistic fripperies. This reader also found the regular quotations from various contemporary authorities on conflict the author met a little tedious. Patrikarakos has more than enough authority himself and has no need to appeal to such people for support.

All that aside there is much to learn here and there is no doubt that this book will change your perspective on
current conflict. Individuals, not states, are the lead actors in the world of social media in war as elsewhere. From the UK perspective, this has great significance. For example, over the last couple of years the rise of 77 Brigade has been touted as the UK’s answer to the threat posed by Russian and other adversaries’ social media organisations. *War in 140 Characters* makes it very clear that the less militarised (in the sense of hierarchical) and constricted such set-ups are the more effective their individual elements are likely to be. Failure to appreciate this will ensure that the UK armed forces remain in the analogue world, whilst private actors will range far more widely and far more effectively. What that may say about the state and war as the forms of conflict shift, only time will tell.
Air Force Blue: The RAF in World War Two

By Patrick Bishop

Publisher: William Collins (2017), ISBN: 978-0007433131, 432 pages

Reviewed by Dr Andrew Conway

With the recent commemoration of the 100th anniversary of the Royal Air Force’s creation, Patrick Bishop’s latest air power volume is particularly timely. The emergence and evolution of the RAF in the Second World War as a defensive shield, force enabler, and offensive rapier across the spectrum of independent and joint operations ultimately provided a key component of Britain’s military arsenal. Yet this volume is not a typical military history by any means. Its core thread seeks to explore the evolving relationship between the RAF and the wider nation, and how that partnership was shaped – at various levels – by the trials, tribulations and eventual successes of the Second World War.

A former foreign correspondent, many of Bishop’s recent works have focused on exploring the personal experience of the air war, notably in Fighter Boys (2003) and Bomber Boys (2008). In some respects, this work reinforces this perspective and does not represent a huge departure, given its emphasis on the memories and experiences of those at the ‘sharp end’ of war. Indeed, the author acknowledges that this volume is the third part of a trilogy with the aforementioned titles, albeit with a much broader focus. The intent behind Air Force Blue is also made overt early on: to emphasise “the spirit of the Air Force, its heart and soul” (p.8). As such it is more a social history of the RAF than a comprehensive service history or operational narrative, and thus should be of interest to both military professionals and a wider audience.

At its very centre are the personal thoughts, reflections, and recollections of contemporaries based on a range of source materials including personal papers, diaries and interviews. What this allows above all else is insights into the physical experiences and emotional responses of service personnel to events in which they were direct participants. It also provides a window into the human realities of service life, ranging from monotony and fatigue to the humour, loyalty and coping mechanisms developed when facing daily risk of injury and death. This promotes a flowing and engaging account, which the author endeavours to weave seamlessly into the ‘big picture’. Naturally, there are limitations here, both in the depth and breadth of contextual analysis that can be attempted. Many personal observations illustrate an inevitable ‘tunnel vision’ and a necessarily narrow, selective focus on day-to-day concerns and issues.

Yet the author does not neglect the wider political and strategic backdrop. It is one of the strengths of this work that broader issues of strategy, policy, doctrine and technology and their operational implications are incorporated in a balanced and judicious manner. Here a range of archival, official and secondary sources are employed throughout to highlight the underlying challenges and transitions facing the British and RAF war effort. Structured in rough chronological order, the pre-war creation and evolution of the RAF is followed by a survey of the major theatres and important campaigns. This is complemented by the periodic exploration of the
influence and impact of various senior luminaries and personalities, including Marshals of the Royal Air Force Sir Hugh Trenchard and Sir Charles Portal, Air Chief Marshals Sir Hugh Dowding, Sir Arthur Tedder and Sir Arthur Harris, amongst others.

Familiar but nonetheless important themes emerge and are also thrown into sharper relief: the institutional transformation required to contribute effectively to waging and sustaining a global war; the steep operational learning curve experienced across multiple theatres; the logistical demands and administrative requirements necessary for projecting modern air power; and how wartime experience and the fruits of burgeoning science and technology influenced military professionalism and competence. What is particularly striking is the extent to which the RAF in the Second World War was as much a product of its pre-war environment as the exigencies of that conflict. The impetus generated before September 1939 exerted long-lasting effects, not only in terms of outlook, doctrinal focus and relative preparedness, but also in the popular perception of the RAF.

Throughout the work, the theme of identity repeatedly surfaces, via a variety of lenses and audiences. Multiple perspectives emerge – how the RAF viewed and promoted itself externally, alongside how the RAF was perceived by its major alliance partner, the United States, and the wider British population. The case is made – convincingly – that over the course of the Second World War, the ties between the RAF and the domestic public progressively strengthened. In part, this reflected both pre-war momentum and deliberate wartime publicity. But it also sprang from the very tangible RAF presence on, and projected from, home soil between 1939 and 1945. The exploits of Fighter Command in the Battle of Britain, the shared dangers of 1940 and the ensuing Blitz, to Bomber Command’s escalating air offensive against Germany signifying Britain’s ability to strike back, all resonated. From an early stage, the RAF projected an aura of “confidence, aggression and efficiency” (p.15), combined with an organisational ambition that ensured prominence as a key element of securing national survival and ultimate victory. In doing so, it not only became a central component of national strategy but also a permanent embodiment of the nation’s commitment, spirit and sacrifice. In terms of sheer visibility, resources, and expenditure post-1940 nothing symbolised the RAF effort more than that of Bomber Command. In a very real sense, it came to define and represent – in the eyes of its exponents as well as its political masters and the general public – the British war effort in Europe. This elevated status remained (and indeed grew) even once the United States deployed to the theatre en masse and the bombing campaign was increasingly aligned with Allied air-ground operations on the European continent.

The theme of identity is also explored at various levels of awareness and experience within the RAF: individual, crew, squadron and service. The relative compositional diversity (multi-national, class, profession) of the expanding RAF is evident. Likewise, the relative lack of established traditions, despite some prevailing doctrinal orthodoxies, stimulated innovation, imagination and improvisation. As Bishop makes clear, this process had begun during the inter-war years, an era where often “self-interest was essential for self-preservation” (p.31). Simultaneously occurring alongside the institutional foundations and organisational framework established by Trenchard, was the evolution of an identity and ethos that whilst emulating other services, sought certain unique qualities. Further distinctiveness was added through the emergence of a service-specific language, with its own terminology and colloquialisms.

The attraction to volunteers and conscripts post-1939 combined perceptions of the RAF as modern, futuristic,
and self-confident, and a growing emphasis on merit and ability where recruitment and subsequent advancement were concerned. In more blunt terms, the popular appeal and glamour of air power created an identification and attachment increasingly vital for sustaining wartime expansion and escalating casualties. Individual and collective identity was also fashioned through adversity in wartime conditions, with accounts emphasising the satisfaction and pride that came from personal and group contributions. For many, “the essential element was a sense of belonging to a worthwhile enterprise” (p.295). Personnel, ground and air, whatever the degree of risk faced, felt a stake in the overall air effort and the pursuit of victory.

The Second World War represented the ultimate test of the relatively new RAF's institutional foundations and organisational resilience and flexibility. It also constituted an extremely rigorous examination of its emerging identity from the perspective of its senior leaders, service personnel and the domestic population. That it emerged unscathed and indeed with its reputation greatly enhanced as an instrument of both national and allied power, is a powerful legacy of those who fought, died and survived in its ranks during this period. Here Bishop's work is especially valuable as it allows today's generation important insights into this process and experience.
Classic Air Power Publications
In August 1915, the Secretary of the War Council, Maurice Hankey, argued that it was important to compile an official series of histories of the war. He felt that the works would serve three important purposes: to inform and educate the wider public; to serve as a reference source for future professional military education; and to act as a counter to unofficial works which were written without access to official sources and which tended to offer inaccurate and unhelpful analysis of events, usually, Hankey lamented, placing all the blame for failures on ‘the ineptitude of the government’.

The Treasury, mindful of how much it had cost to write the official history of the Boer War, initially objected, but Hankey’s forceful arguments as to the overall value of such a work won the day. Clearly, volumes would be needed for the Royal Navy and the British Army, and Sir Julian Corbett and Sir John Fortescue were appointed to write the short works which would appear in the immediate aftermath of the war to whet the public’s appetite. By 1918, there was a further complication – the war had seen the creation of an independent air service – and how was its history to be told? While a case might have been made for accommodating coverage of the work of the Royal Flying Corps (RFC) in the history of the British Army overseen by Brigadier-General Sir James Edmonds (with the generic title of Military Operations) and that of the Royal Naval Air Service (RNAS) in the naval history which was entrusted to Sir Julian Corbett and Henry Newbolt, this did not happen.

Instead, the formation of the Royal Air Force (RAF) meant that it was logical for the Air Ministry to take control of planning for the official account of the air war. It is sometimes assumed that the official history, The War in the Air: Being the Story of the Part Played in the Great War by the Royal Air Force, was commissioned by the first Chief of the Air Staff (CAS), Sir Hugh Trenchard, but this is not the case. Trenchard was not averse to the idea of a history of the air war and was involved in the early discussions, but resigned as Chief of the Air Staff in April 1918. The appointment of the man who would become the Official Historian to the RAF, Sir Walter Raleigh, was finalised in July 1918, three months after Trenchard’s resignation as CAS, and under the auspices of Sir Frederick Sykes. Raleigh had been the Regius Professor of English at Glasgow University prior to moving to a Professorial post at Oxford. He had a considerable reputation as a scholar and an author, and had turned his attention to writing about the war from 1914. He was not an obvious choice to write about the RAF, since he knew next to nothing about aeroplanes, but this could be addressed by the provision of research assistants and advisers, and it was for his literary skills that he was appointed.

When Trenchard returned as Chief of the Air Staff in February 1919, the official history began to take on another purpose. Conscious the existence of the third Service was under threat, it seemed sensible to use the official history as a means of showing what air power had achieved during
the war, and what the potential of an independent air force might be. While Hankey and the Historical Section had been of the view that professional education was one of the key aspects of any official work, Trenchard took the view that telling the story of the air war and giving the public a sense of the ‘spirit’ of the air force was of paramount importance. The RAF had a good story to tell, and in Raleigh, it had a good author. Raleigh noted in the first volume of *The War in the Air* that “the writer of this history has endeavoured to make his narrative intelligible to those who, like himself, are outsiders,” which was exactly what Trenchard wanted – something which would appeal to a wider readership. Raleigh’s deficiencies in knowledge were overcome by support from the new Air Historical Branch, his research assistant HA Jones (a former air force officer) and by sending him on regular visits to RAF stations. This created an entirely unexpected problem. In March 1922, Raleigh visited Egypt as part of his research for the second volume. During the trip, he contracted typhoid fever, and by the time of his return to Britain in mid-April, he was gravely ill. He was despatched to hospital, and died on 13 May, a few weeks before the first volume of *The War in the Air* appeared.

Trenchard now had to find someone to complete the work. He approached TE Lawrence, a personal friend, and who would attempt to avoid public fascination in his work in Arabia by enlisting in the RAF twice. Lawrence demurred, and Brigadier-General PRC Groves was asked if he would take on the task. Given Groves’ later criticisms of Trenchard’s approach to air power, it was perhaps fortunate that he declined. The highly literate Maurice Baring, who had been Trenchard’s military assistant and the first of his ‘English merchants’, putting the great man’s thoughts into articulate prose, was then approached. Perhaps thinking of his experiences during the war and knowing that there would be considerable input from ‘the Chief’, he too excused himself from the task. The choice then settled upon the apparently unlikely choice of DG Hogarth, the director of the Ashmolean Museum at Oxford. Hogarth’s background explained his appointment: he had served in the Arab Bureau during the war and knew TE Lawrence very well indeed; Lawrence regarded him highly, and this was recommendation enough for Trenchard. Unfortunately, Hogarth concluded that the task was not for him and resigned. This series of mis-steps could not continue, and the Air Ministry then turned to HA Jones. Jones was, if nothing else, a ‘safe pair of hands’, and he completed the remaining five volumes of *The War in the Air*. Although he felt that the main purpose of the work was to provide material for the professional education of air force officers, he was dominated by Trenchard, who reviewed all his work, offering ‘helpful’ suggestions where appropriate. The message that the RAF should remain as an independent service because of its unique attributes thus underpinned much of the text. Jones did not have the literary flair of Raleigh, and Trenchard’s first biographer later complained that Jones:

...laboured for a decade to produce five more volumes of painstaking fact dressed in the drabbiest of prose.

This context is important when examining *The War in the Air*, since although it is authoritative, it is a problematic history. One of the major failings is that it is badly organised, adopting a largely – but entirely rigorous – chronological approach which chops and changes between theatres of war. The work is largely narrative in character – although given Trenchard’s interest in the work, even after his departure as CAS (only one of Jones’s volumes appeared before Trenchard’s retirement from the post) the lack of critical analysis is not surprising. The volumes thus progress in a confusing manner. As an example, Volume 3 (1931) begins with a consideration of operations in South West Africa for the entire war, before leaping to cover air raids against Britain between 1914
and 1916 in the next two chapters. It then covers the administration of the air services – mainly that of the RFC – before concluding with a consideration of operations on the Western Front from the end of the Battle of the Somme to the conclusion of the Battle of Arras in 1917. As well as being decidedly choppy in coverage, it is unbalanced, since the work of the RNAS is largely overlooked; theatres other than the Western Front are dealt with in a relatively cursory manner; and mention of the role of Sir Frederick Sykes – one of the major figures in the creation of the RAF, the second Chief of the Air Staff and the man who was in office when the official historian was appointed – is notable by being largely absent unless mentioning him is unavoidable.

In the later volumes, bombing is given considerable attention. Although the difficulties of bombing accurately on the Western Front are admitted in Volume 2, by Volume 6 the coverage of the Independent Force (under Trenchard’s control after his resignation as CAS) is significant. A reader might be led to believe that bombing targets in Germany – a much more difficult proposition than attacking railway stations and dumps in France – was vastly more effective. Jones claims that the bombing weakened German national will, notably reduced productivity and caused the diversion of large numbers of fighters, anti-aircraft guns and personnel from the Western Front. While the latter point had some foundation in that the diversion of effort caused by German raids on Britain was notable and it was fair to make a comparison, the evidence for the first two claims was rather lacking. Perhaps more interestingly, Trenchard’s diary for 11 November 1918 claimed that the Independent Force was largely a waste of effort, something which Jones’s account does not reflect at all. There are occasions when the way in which the RFC was integrated into major offensives is not covered in detail, a point which saw Edmonds lamenting in the fifth of the volumes of *Military Operations* covering 1918 – published ten years after the final volume of *The War in the Air* – that it was very difficult to ascertain what the air force was meant to be doing at certain points. Jones uncritically accepts the notion that air power is solely offensive in nature, a touchstone of Trenchard’s thinking and, for that matter, Sykes’. This presents some problems which are skirted around, with the chapters on the air defence of the United Kingdom avoiding strong suggestions that effective defensive air operations might be possible, even though the success of the defences against first airships and then fixed-wing bombers hinted that this might be the case.

Yet for all these flaws, *The War in the Air* is a vital source. It gives an introduction to the scope and extent of air operations across the world, demonstrating the flexibility and value of aircraft in support of the other two services (albeit rather lightly on occasion) as well as demonstrating the utility of air power in gathering intelligence, conveying the war to the enemy at depth and providing home defence through the evolution of a basic network. It also serves, unwittingly, as a demonstration for modern readers of Trenchard’s ‘worldview’ of air power, giving insights into the way in which the RAF was to develop in the inter-war period. For historians, the content of the volumes is perhaps the best introduction to air power in the First World War, and there is no doubt that the influence of *The War in the Air* remained strong for decades, only starting to be challenged after the release of the relevant documentation began in the 1970s, offering new – and different – insights. As Robin Higham has observed, official histories should probably be seen as the first word on the subjects they cover, rather than the last – and this is perhaps nowhere more apposite than when applied to *The War in the Air*. 
Sagittarius Rising is a visceral account of aviation during the Great War penned by Cecil Lewis who joined the Royal Flying Corps in 1915 at the age of 17 during the embryonic era of ‘Air-Fighting’. As a pilot of a wide variety of wartime aircraft with significant combat experience, Lewis’ account is both compelling and noteworthy for its candour regarding the inadequacy of man to resolve conflict via peaceful means. For those interested in aviation, this book represents the pinnacle of historical record blended with the exuberance for flying as an end in itself.

After flying training and arriving at St Omer in 1915 with 14 hours total flying, Lewis was informed that he couldn’t be deployed to the front due to inexperience and so he commenced further training on a variety of machines at a depot in Northern France with varying degrees of success. His first loop ended in a forced landing due to a misunderstanding between closing the throttle and turning off the engine at the apex and he crash-landed a Bristol Bullet in which he could barely fit due to his 6ft 4in frame. However, upon achieving the necessary experience, he was sent to 3 Squadron to fly the Morane Parasol and, together with his observer, took photographs of troop positions in a machine that could scarcely have been worse-suited to the task. He experienced at first-hand the Battle of the Somme, and his respect for his colleagues subjected to trench warfare is repeatedly referenced as an uncomfortable truth. One senses that he almost felt guilty about indulging in his passion for flying whilst serving his country, “I can never honour enough the plodding men who bore the burden of war” (p.138). However, his exploits are all the more notable for his humility, and he was awarded the Military Cross and mentioned twice in despatches for his service with 3 Squadron, RFC. Shortly thereafter, he returned to the UK to begin a conversion to ‘scouts’ (or ‘fighters’ as we would now know them), and his love affair with the SE5 and subsequently the Sopwith Camel began. He served on 56 Squadron with Albert Ball VC and engaged in mock combat with the French national hero and ace, Georges Guynemer. Rarely has an account of aerial warfare been so filled with characters that would have been well-known to the general public of the time.

Moreover, the text is resplendent with prose that verges on the poetic to describe the wonders of aviation, weather and horrors of war, “Just above us the heavy cloud-banks looked like the bellies of whales huddled together in the dusk” (p.97). There is, however, a darker side to the text as seen through the youthful lens of Lewis. There are constant references to the futility of war, “the fixity with which men pursued immediate trivialities alarmed and disgusted me” (p.94) yet it adds to, rather than detracts from, the chronological account and, even fifty years later when he released a second foreword to the tale, Lewis redacted nothing and stood by his text as an honest picture of extreme youth exposed to the horrors of conflict.
At the age of 98 and President of the Tiger Moth Club, Lewis was unable to attend their annual dinner, so sent them a tape recording of his thoughts. In it, he spoke of flying:

“We who fly do so for the love of flying. We are alive in the air with this miracle that lies in our hands and beneath our feet. The pleasure of just getting up off the ground, getting into the air, getting our machine working, listening to the engine. Whatever it might be, you are master of it. You can take it up, bring it down, roll it, loop it, and all yourself. It’s terrific egoism. You can’t get that feeling in anything else, that feeling of leaving the earth, of going to heaven and really lifting yourself up off this flat dish of earth into the three dimensions of God.”

_Sagittarius Rising_ has been in continuous print for 82 years since it was first published, largely because Lewis’ prose and passion ensure that the book continues to resonate 100 years after his wartime exploits. Lewis’ vivid and personal account of his wartime experiences will appeal to serving personnel who will also be fascinated by the differences between his and their experience of warfare. More than this though, Lewis’ passion for flying leaps from every page, his mastery of language allows him to convey to the reader, expert and layman alike, his almost indescribable experiences so that the reader feels as though they were there fighting alongside Lewis and his comrades-in-arms a century ago. _Sagittarius Rising_ is a classic tale of derring-do, loyalty and duty and is thoroughly recommended to all.
Bomber Harris: His Life and Times

By Henry Probert

Publisher: Greenhill Books, London, 2001
Cover displayed is from the Frontline Books, 2016 Edition

Reviewed by Dr Peter Gray

In his recent work on Churchill as Warlord over his lifetime, Carlo d’Este opened his chapter on the Strategic Air Campaign by stating that it was, and remains, the “most savagely debated military aspect of the Second World War” (p. 732). It is therefore inevitable that Harris’ role as Commander-in-Chief of the British part of the campaign makes him a key figure in this bitter debate. He has been labelled a war criminal on the one hand yet was worshipped by the crews whom he sent into battle night after night. To get a balanced perspective on just who Harris was, and equally importantly, the context in which he lived and commanded this biography by Henry Probert is essential reading for the lay person and especially for members of the Royal Air Force.

As a retired Air Commodore, and former Head of the Air Historical Branch, Probert brings an air of familiarity and undoubted authority to his writing on Harris. The real value, however, is that in no way could this book be considered to be a hagiography; it is scrupulously neutral in its approach with Probert displaying the consummate skill of the professional historian. Probert sets out to describe Harris’ early life before going on to examine the way in which he handled the task of running Bomber Command during wartime. He is at pains to point out that there is more to the tale than just discussing the various controversies and is clear that the interpersonal relations with a myriad of folk from Churchill, through the Air Ministry to the people under command were all vital aspects in the day-to-day struggle. Finally, Probert looks at Harris’ life after the Second World War which had not previously been tackled.

It is inevitable with any biography that there will be a chronological structure to the work. But Probert has divided the years of command during the Second World War on a thematic basis covering such things as the balance between the demands of the Headquarters and home life, ‘The leader and his men’, ‘Tools and Techniques’ and so on. In so doing, Probert is able to tackle the controversies within their context in a measured and balanced way.

In his research for this book, Probert discussed many aspects with Harris’ family who gave him unstinted access to his papers and commented on the text. Probert also heavily relied on the Harris papers in the RAF Museum at Hendon, virtually cataloguing them in the process of his research. He has also used material from The National Archives and the various official histories. Probert has drawn from many of the key authors on the Second World War but has remained focussed on his main subject rather than descending into a scrap on the rights and wrongs of any one particular issue. The level of detail into which Probert goes is certainly sufficient to cater for any interested lay readers and the meticulous referencing provides a detailed tool for more scholarly researchers to delve further into topics of interest.
Probert’s *Bomber Harris* is a ‘must read’ for all those who wear the same uniform as the former Commander-in-Chief. Given the nature and level of the debate that still surrounds the campaign which was official Government (and of course Chiefs of Staff) policy throughout the Second World War, it is imperative that service personnel have the knowledge to be able to take part in those discussions with some level of authority. This book will certainly help them to do so. The language is accessible to readers of all persuasion and the thematic approach allows for ‘selective reading’ either around a controversy, a key turning point in the campaign or a particular aspect of Harris’ personality. After a full reading of the text, it is difficult not to have some sympathy with Harris from a personal perspective and his suffering with a duodenal ulcer through to the frustrations of dealing with a massive command under constant Air Ministry scrutiny. More importantly, the aspects of Harris’ character that have become the stuff of myth and legend are explored thoroughly allowing a far more nuanced and subtle picture of one of the War’s greatest, and most discussed, characters to emerge.
First Light

By Geoffrey Wellum

Publisher: Viking, London, 2002
Cover displayed is from the Original (The Centenary Collection)
Penguin, 2018 Kindle Edition

Reviewed by Air Commodore Jeremy Attridge

‘The Few’ – those square jawed knights of the air who, against overwhelming odds, took on the mighty Luftwaffe day after day and succeeded in preventing its gaining control of the air over our homeland. The name of Douglas Bader epitomizes that image: un-plagued by self-doubt, brave, an exceptional pilot able to meet the enemy on his own terms, despite a significant handicap. But, is this the real image? Were all these men carefree? Did they have no fear? Did it all come easy to them? Geoffrey Wellum answers these questions unequivocally in First Light, his eulogy to those with whom he fought. His words create an image that you and I would recognize not as a superhuman, but as a very fallible, sometimes under-confident, humble human being. And in doing so we are privileged to gain a real insight into the courage that was required to meet the enemy.

Geoffrey Wellum joined the RAF direct from school in August 1939 at the age of 17. He undertook basic training on the Tiger Moth before transitioning to the Harvard, and then on to Spitfires, barely 12 months later. His new unit, 92 Squadron, was called into action at Dunkirk, defended the southwest of England at the beginning of the Battle of Britain and then in September 1940 moved to arguably the most active Fighter Command Station, Biggin Hill. This famous base accounted for 1,400 enemy aircraft, but at the terrible price of 453 RAF aircrew killed. For his gallantry against the enemy during this period of the war he was awarded the Distinguished Flying Cross. Thereafter, he was appointed to 65 Squadron as a Flight Commander and then in August 1942 he led eight Spitfires from the carrier HMS Furious to reinforce the few remaining RAF fighters in Malta.

First Light tells this story, the journey starting with the arrival of a cocky schoolboy through the gates of RAF Desford and ending with the physically and mentally broken man invalided home from Malta. It is a stream of consciousness, recorded by Wellum at the time, but not pieced together until, as a 49 year old, with his personal life at rock bottom, he embarked on the cathartic process of reconstructing that period of his life to try and prove to himself that he was worth something once. The result is a memoir that exposes all of the frailties that must have plagued the majority of pilots at the time, but that other wartime autobiographies skirt around or avoid altogether. It is Wellum’s humility coupled with his description of conquering, or at least temporarily taming, these demons, that makes this book so special.

Initially, he immerses us in a training environment that may not resemble the Hawks and Prefect aircraft that we have today, but resonates with the highs and lows that all flying students feel – concerns over finishing the course, not knowing whether the next trip will be the last, good trips followed by bad trips, for no understandable reason. But he makes it to Spitfires, and in doing so exposes the other thread that runs throughout this book, his love affair
with that most famous of all RAF aircraft. His description of Spitfire ‘K’ for King sets the scene, “it has the air of a thoroughbred horse watching the approach of a new and unknown rider and wondering just how far to try it on”. A few pages later, mid first-flight “this wretched aircraft seems to be laughing at me as if it’s having me on a right old goon chase” but then, “elation! We sweep effortlessly around the sky, upwards between two towering masses of cumulous cloud and through a hole like the mouth of a cave”.

His description of air battles swings from wide-eyed wonder to terror. But it is his ability to bring you into the cockpit and share his memories that separates this book from others. During one combat he is trapped by enemy aircraft over France, exchanging aviation fuel for his life, whilst contemplating the end. Only to finally break free and limp into the first airfield in England he finds. He lands, lies under the wing, “shade, coolness, green grass….Oh, God, thank you”.

The insight he gives us into war fighting is as valuable now as it was then. It is a study in resilience, how some cope and others do not. He conveys in full Technicolor language the anxiety felt by the pilots in the dispersal hut, waiting for the scramble call to come over the telephone. Some, with books open are staring, not turning pages. Others walk nervously about. By the time he is posted to 65 Squadron as a Flight Commander, the light in his eyes has gone, “why should I be here and not the others?”. By the end of that chapter he confesses “I'm in danger of breaking down completely and losing my self-control…you see, I'm finished”.

We are fortunate to have a rich seam of books written by ‘The Few’. I reach for Paul Richie’s ‘Fighter Pilot’ – a dark, brooding, heroic account released anonymously in 1940 to boost public moral. And, for a confident tale of Hurricane derring-do, I open ‘Gun Button to Fire’ by Tom Neil. But, for the complete picture of what it was like to train for and enter in to the cauldron of battle, as a young fighter pilot, there is only one book: First Light. You do not have to be an aviator to recognize the challenges that he describes: it is a book about facing your fears seemingly underequipped to do so, but being left with no choice but to find a way through. Wellum’s memories flow easily and his experiences rest in your mind, with sometimes a profound effect. An example to us all, he teaches us that fear can be held back, if not totally conquered, by courage, application and commitment.
Strategic Air Offensive Against Germany 1939-1945

By Charles Webster and Noble Frankland

Publisher: HMSO, London, 1961, 4 Volumes
Cover displayed is from the Naval & Military Press Ltd, 2006 New Edition

Reviewed by Mr Sebastian Cox

Official histories are often treated with caution by historians, often undeservedly so, although their quality undoubtedly varies. Amongst the very best is the Official History of the Strategic Air Offensive Against Germany written by Sir Charles Webster and Doctor Noble Frankland. Webster was in some ways an unusual choice for the task as he was a professor of international relations at The London School of Economics whose expertise lay in the field of diplomatic and not military history. However, he was teamed up with Frankland who had been employed at the Air Historical Branch where he had been tasked with preparing some of the volumes of the classified AHB narrative history of the bomber offensive and had subsequently written his PhD on the subject. He was himself also an ex-Bomber Command navigator. Webster therefore provided considerable academic credibility and influence and Frankland both first-hand experience and detailed knowledge.

The history itself proved to be as controversial as the subject which it addressed. The book is divided into four volumes, the last of which is an appendix volume consisting of documents and statistical tables. One of the great merits of the work is the clarity which it brings to the often opaque and frequently imprecise language of strategic air power. It points out that the use of the imprecise terms strategic and tactical, or area and precision, suggest hard divisions which in reality often do not exist and that even within a “strategic” offensive using area attack methods there can be competing aims, such as general dislocation, or selective attack of specific target sets. The first volume, entitled Preparation, covers the pre-war and early war periods, including the influence of Trenchard and the bomber on RAF doctrine and organisation. It continues with Bomber Command’s early trials and tribulations over Germany leading to the creation of the Pathfinder Force. The second volume, Endeavour, takes the story forward, looking at bombing policy in the wake of the Casablanca conference and the Pointblank directive, and analysing the Battles of the Ruhr, Hamburg, and finally Berlin, closing with an analysis of the area offensive. The final volume, Victory, takes the story forward into the last year of the war and Bomber Command’s final period of immense operational and strategic effectiveness, concluding with a review of the campaign as a whole.

Volume One opens with a valuable discussion on the nature of a strategic air offensive. This the authors break down into three main factors: first, the determination and selection of the aim and its relation to a war’s grand strategy; second, the execution of the offensive; and third, its appreciation and results. Given the continuing debate to this day over the merit and results of the offensive, the authors’ prescient conclusion was that not “even after the war is over are the results of the strategy and operations employed necessarily crystal clear”. These early chapters establish some of the intellectual underpinnings of the book and in these lie both a great strength and a
fundamental weakness. Dr Frankland later admitted that he had been influenced by the then Head of the Air Historical Branch to read Arthur Thayer Mahan’s *The Influence of Sea Power on History*. Mahan, of course, was concerned with analysing French and British naval strategies in conflicts with each other over centuries and characterised the French as operating a *guerre de course*, an attempt to obtain strategic results without engaging the main strength of the enemy military in battle. Frankland clearly influenced Webster and the work adopts a Mahanian framework in analysing the strategic offensive, seeing Bomber Command’s early failure to penetrate German air defences and its reversion to night attack to continue to operate as a *guerre de course*. This gives the book both structure, and intellectual rigour and analytical depth, and in so doing greatly strengthens the work.

However, by characterising in particular the area offensive in this way, it inexorably drives the authors towards concluding that it was largely a failure – for, of course, if it was not, then it was not a *guerre de course* in Mahan’s terms. This becomes clear in both Volumes Two and Three where the discussion of the Casablanca Conference and the subsequent *Pointblank* Directive includes a forensic analysis and criticism of the outcome – a classic case of a “fudge” to accommodate competing views – but also characterises Harris’ area offensive against German industry as having been “very far from inflicting any crippling or decisive loss on the enemy and [it] had not prevented the great increase in armaments carried out in this period.”

Some more recent analysts, notably Professor Adam Tooze in his monumental work on the German war economy, have reached very different conclusions. Tooze concludes that in the Battle of the Ruhr, “Bomber Command stopped [Albert] Speer’s armaments miracle in its tracks.”

The final volume considers the culmination of the campaign. It analyses the competing visions for using the now indubitably effective weapon strategic force, equipped with superb aircraft, better bombs and equipment, and proven and still evolving and improving techniques. The bombers’ increased effectiveness also increased the competing views on their use, encompassing all out attacks on oil, German railways and, Harris’ preference, cities. The famous dispute between Harris and Portal, the Chief of the Air Staff, over the bombing of oil targets is analysed in some detail. The proposed publication of the correspondence between the two caused controversy and the final decision (to publish) was made by Prime Minister Harold MacMillan. The amount of ink expended by Harris and Portal on the correspondence at the time of the dispute has only been outdone by the dam-burst lake of ink released subsequent to the Official History’s exposure of it. Sadly, too many historians use the bare statistics on the issue related in the final volume, usually as a stick to beat Air Chief Marshal Harris, without considering the very careful conclusions of Webster and Frankland on the subject.

They wrote:

> There is always a difficulty making functional distinctions about the Bomber Command effort. Apart from the fact … that so-called strategic bombing often became confused with so-called tactical bombing especially at this stage of the war, there was also great difficulty in distinguishing between the efforts devoted to various different target systems. For example, in area attacks upon towns in the Ruhr, which were recorded under the heading of industrial areas, substantial damage was sometimes done to benzol plants which, of course, belonged to the oil plan…. Even more so [emphasis added] 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 to railways… it would therefore be
entirely misleading [note the “entirely”] to judge the bomber effort against communications by the statistics recorded under that heading.

Would that more recent historians had considered these words more carefully before writing some of the nonsense they have about Harris and Portal.

Webster and Frankland’s final judgement, also sometimes lost in the “noise”, was that the offensive “made a contribution to victory which was decisive” and they also concluded that, for all his faults, Sir Arthur Harris was a great commander-in-chief. The book is sometimes referred to as the official history of Bomber Command; it is not. It is very specifically the Official History of The Strategic Air Offensive Against Germany. This means that, through no fault of the authors, it does not consider in detail many of Bomber Command’s other notable achievements, as for example, in the Transportation Plan aimed at supporting Operation OVERLORD, which is only considered in relation to its impact on the bombing of Germany. These aspects were supposed to be covered by the Official Histories of those campaigns, but the coverage in those works is often superficial and the works themselves of notably lesser quality.

Notwithstanding the criticisms above, it should be clearly understood that this monumental study is not only one of the very best Official Histories ever written, but remains a key work on the history of Bomber Command and strategic air power in general. It is also beautifully written, which could not be said of all Official Histories. The time and effort required to read these volumes would more than be repaid by the knowledge and wisdom gained.
Readers of Marshal of the Royal Air Force Lord Tedder’s memoirs will be rewarded with finding four books in one, each worth the price of the cover.

In the first instance this is, as the title suggests, a history book written from the personal perspective of one of the RAF’s most outstanding wartime commanders and Chiefs of Air Staff. As such it is invaluable reading for those with a general interest in the Second World War, and particularly in the campaigns in North Africa, Italy and in Western Europe from D-Day until Tedder put his signature to the German instrument of surrender in Berlin in May 1945. The memoirs provide useful colour and context for the period concerned, even if the scope of the events described by Tedder limits some of the detail presented. As such this book should be considered as a useful supplement to more specialist dealings of, for example, the invasion of Italy or the battles for Tobruk.

In its second guise this book provides an insight into Tedder as a man. The Times obituary said of Tedder that he was “the most unstuffy of great commanders, who could be found sitting cross-legged, jacketless, pipe smoldering, answering questions on a desert airstrip”, an image not difficult to imagine reading his memoirs. Here is a man equally at ease navigating the military-strategic level inhabited by people such Churchill, Smuts and Prince Farouk as he is joining in a sing-song with a group of airmen at a desert camp. Through these memoirs Tedder shows himself to be focussed and professional, diplomatic and intelligent, and unerringly human. Despite the pressure he was under he remained measured and calm, even taking time out regularly to relax over afternoon tea while watching cricket at his club, despite taking some criticism for this apparently laissez-faire attitude from some quarters. One cannot help but admire Tedder’s resilience throughout this difficult time, most evident when his wife was tragically killed in an air crash shortly after she joined Tedder in Egypt, a crash which some believed he witnessed. Although he mentions that the loss caused a temporary hiatus in his journal writing, it does not appear to have adversely affected his effective command of air operations. Some readers may find that at times Tedder sounds a little self-confident and superior, but this in part merely reflects the manner and style of the language of the time. Given that the memoirs were written some years after the war he may also have felt, justifiably, that such self-belief was vindicated.

The third story in this book is a study in leadership and command at the operational level of war. Tedder exhibits all those characteristics we associate with successful Air Force leadership. He was clearly a courageous warfighter not averse to taking personal risk. He had mastered his own profession and was exceptionally technically competent. Politically astute, Tedder had the emotional intelligence necessary to build productive and trusting relationships at all levels. Strong enough to remove those
he considered not up to their task like Air Commodore Raymond Collishaw, he was a good enough judge of character to bring in those like Arthur Coningham, who he correctly assessed could do what was needed. US General E Quesada once recalled that Tedder “tried to influence people’s minds and have them think straight rather than order their actions”. This style of leadership allowed Tedder to fully embrace the mission command philosophy. As a commander he had an ability to grasp the fundamentals of a problem, whether that be the provision of air power for widely dispersed land and maritime forces or deciding the best balance of weight of effort between strategic and tactical bombing, and to choose the optimal course of action. His memoirs show that his sound judgement was invariably backed by a good understanding of the facts, and that he had the ability to marry an artist’s intuitive feel for the employment of air power with a progressive, scientific attitude towards the use of data analytics for decision support. Even if the campaigns covered by these memoirs do not interest you, the book is worth reading as a lesson on command and leadership alone.

This is a good history book and insight into Tedder as a man, and an even better exposé of command and leadership, but where it truly excels is in bringing air power doctrine to life. Tedder’s reflections on the over-centralised command structure that was in place when he arrived in Africa, the challenges of having a maritime commander operating at a remote location, and the need for a joint commander to make decisions about resource allocations, go a long way to explaining how modern command and control constructs came about. He battled with Admiral Cunningham and General Wavell to avoid limited air resources being shared out between the Royal Navy and the Army, explaining to Lord Mountbatten that “we could not conceivably afford the luxury of dividing our available forces” (p. 108). In doing so, he shows the need for centralised control to bring massed, concentrated air power to bear where and when it is needed. Read of Tedder’s gradual refinement of the C2 structures in the Western desert and one cannot help but gain a better understanding of the merits of decentralised execution, and of the challenges of effective Air-Land integration. Tedder reflects on the logistic challenges of resupply via the extremely long and austere Tokaradi route through Africa, and of the need to protect his operating bases in a Middle East campaign he referred to as “a battle of aerodromes”. In the European Theatre he makes apportionment and allocation decisions, balancing air operations for strategic effect with air interdiction and close air support requirements, and applies a rigorous planning, targeting and analysis process, all of which would not be out of place in a modern Combat Air Operations Centre. In fact, it is all here; C2, air defence, attack, ISR, transport, force protection, logistics, joint effects, concept development, operational analysis, and so it goes on. Tedder clearly understood all aspects of air operations deeply, and anyone that reads this book with an interest in the employment of air power cannot help but learn from him, as I have done.
John Terraine established himself as one of the leading military historians of the late twentieth century largely on the basis of his studies of the First World War. Relatively late in his career he broadened his area of study to encompass the later conflict. His monumental 841 page study of the Royal Air Force in the Second World War in the Western hemisphere appeared in 1985 and made an immediate impact. There had been previous histories of the RAF in the Second World War, including the three volume popular official history by Richards and Saunders, but no scholar of Terraine’s standing had previously attempted such a wide-ranging and comprehensive history. The result was judged so impressive that it became required pre-course reading for RAF officers attending the RAF Staff College, which, for a Service not noted for its attachment to the study of its own history, was some compliment. Whether or not they all read the entire 800 pages who can say?!

Terraine drew heavily on the series of Air Historical Branch narratives on RAF campaigns produced in the aftermath of the War and was the first scholar outside the Official Historians to draw on these as heavily as he did. This reviewer may be a trifle biased, but it seems doubtful whether Terraine could have produced a work of such breadth and depth without the firm foundation provided by the AHB narratives. Terraine’s book covers every campaign fought by the RAF from the early war through France, the Battle of Britain, North Africa and the Mediterranean to North West Europe – not forgetting such oddities as the East African campaign and the manifest success of some less glamorous essentials such as the Empire Air Training Scheme and the Takoradi route taking reinforcement aircraft across the breadth of Africa. The Battle of the Atlantic and the part played by Coastal Command, and Bomber Command’s strategic offensive both feature prominently.

It is impossible in a review of this length to do full justice to this mighty and magisterial tome. The author starts with the legacy of Lord Trenchard, pointing to his seminal influence and characterising the RAF of the War years as “the air force Trenchard had made…. It was he who ministered to the RAF’s very survival in its cradle days, he who found it its first roles and guided its first expansion, he who established its structure, governed its composition and breathed into it a great gust of his own fiery spirit.” Terraine rightly identifies Halton, Cranwell, the Auxiliaries and Short Service Commissions as major achievements. He is not averse to pointing out some “curiosities”, such as the fact that by and large the “airmen” do not fly or that “Marshal” was traditionally a word reserved for the very highest military rank but that in the RAF even an air marshal is out-ranked by two grades above him.

Nor does he shrink from criticism. Stating for example that the “RAF … could be said to have fought the Battle of France looking over both shoulders at once – an awkward
posture for a man, tending to blur his vision.” He points out that the Chief of the Air Staff and the Cs-in-C of both Fighter and Bomber Command thought this was the wrong place to fight, but that “it was precisely in France that the course of the war and the future of the world were being decided” but that false doctrine and government parsimony had made the RAF irrelevant to this decisive battle. He is critical too of Portal for espousing the unreal policy of building a 4,000-strong bomber force and for rejecting the case for long-range fighters. It is a *leitmotif* of the book that “the war” itself, and in that sense, of course, the enemy, had a nasty habit of impinging on the senior airmen’s view of how it should be fought and imposing its own requirements. This is indubitably true, but he is perhaps a little inclined in this regard to forget that when men such as Dowding or Harris complained about the leaching of their forces for other’s battles that the pre-war concentration of production on Bomber and Fighter Commands made this inevitable until well into the War and that the fault for this lay as much with successive governments’ reluctance to countenance large-scale deployment of armies as any doctrinal resistance to supporting the latter. Until early 1939 there was going to be no large-scale build up in the Army; it came very late in the day and too late to change aircraft production programmes instantly.

His assessments of the RAF’s senior leadership are generally fair and balanced. He considers Portal “a brilliant staff officer, and a brilliant Chief of Staff.” Dowding is the one airman “with an indisputable victory in a recognizable battle of decisive importance to his name”. Whilst very far from uncritical, he also states that it “is not possible to list truthfully the great British commanders of the Second World War without including the name of Air Chief Marshal Sir Arthur Harris.” He reserves special praise for Coningham, whom he characterises as “flamboyant…, outspoken, often a difficult colleague with a sharply critical mind and tongue …[but] one of the makers of victory.” He reserves his greatest praise for Lord Tedder. “Broad vision, long sight, complete professionalism – such were the ingredients of Tedder’s undoubted greatness”. He keeps the final word for the “erks” whom he considers “splendid” and the aircrew of whom he says: “My title shows what I think of them: there is no prouder place, none deserving more honour, than the right of the line.”

The book was published more than thirty years ago, yet in the interim no volume has appeared which matches its comprehensive coverage with its acuity and understanding. Terraine makes clear that he feels the RAF bore much of the burden of the British war effort throughout the War and that, despite some significant turbulence on the journey, it was not found wanting. This is still a volume which any student with a serious interest in RAF history should read, and despite its length, read more than once.
There can be little doubt that the memoirs of Sir John Slessor, spanning the whole period from 1914 to 1945, constitute the single most important record of the emergence of British air power to be written by one of the key participants. Slessor was at or near the heart of almost everything the RAF did from the late 1920s, from colonial air policing through to his eventual appointment as Chief of the Air Staff in 1950. He was Director of Plans in the late 1930s when the RAF was rearming, a special emissary to the United States early in the war, commander of 5 Group Bomber Command in 1941-2, Commander-in-Chief of Coastal Command in 1943 at the height of the Battle of the Atlantic, and finally Deputy Commander-in-Chief of Allied Air Forces in the Mediterranean theatre in 1944-5.

Slessor’s intention in writing his memoirs was to blend together a broader history with his own personal story. The great strength of what he wrote lies in the fact that he was close to the making of that history, not merely an intelligent observer watching from the wings. He was at pains to point out that he was too close to the events he described to be able to see this history “clearly and to write it objectively” (p.144), though much of what he wrote reflected a deep intelligence and a good deal of critical analysis, not only of his own failures or misjudgments, but those of the force that he served and of its political masters. Moreover the value for future historians in Slessor’s account is precisely to be able to understand what he and others he worked with thought at the time. Slessor rather diffidently assumed that historians would later set things right, but this is to downplay the value of his own insights and judgment about the history he was involved in.

There is certainly more in Slessor’s account of the history than of the personal memoir. The book leaves Slessor the man still an elusive figure. There are sharp judgments about other people, either positive or diplomatically negative, but since he is the subject of these memoirs the reader is left with some sense of frustration that Slessor’s personal motives, ambitions, anxieties and prejudices feature so little. The one prejudice that is on display is a deep hostility to Communism, more difficult to express during the war, though from his command position in the Mediterranean Slessor deplored Soviet policy in Poland, and Soviet support for the Greek communists, but easier to display in the context of the Cold War. Slessor also had, as many in the RAF did, a distrust of politicians and political interference in defence matters (“both war and peace are too serious to be left to the politicians” (p.21)), a sentiment that would be understood in very similar terms in the present century.

It is difficult to do justice to the sheer range of Slessor’s subject-matter. The central theme of his account is that air power came to matter increasingly in the conduct of modern war and by the close of the Second World War was poised to supplant the Royal Navy and the Army as the principal means to project British power. A second theme
is the indivisibility of air power, a position that Trenchard insisted on in the 1920s. Slessor is hostile to Navy claims that only seamen really understand what they need aircraft for at sea; he also discusses at length the failure of the British Army leadership to grasp how tactical air power can be organized to support ground operations without parceling aircraft out to every division or army corps. More problematic from the point of view of air power today, is Slessor’s defence of the view that counter-force strategy was not an effective use of air resources. This was a view held by a great many airmen in the 1930s and on into the war, on the assumption that the RAF could do more with a striking force of bombers directed at the enemy’s industry and working-class population. It took the United States Army Air Forces to show in the battles over France and Germany in 1944 that counter-force is the first charge on air resources before turning to the many other roles that air forces can perform.

Whatever reservations historians might now have about Slessor’s arguments or his interpretation of the history going on around him, *The Central Blue* remains an indispensable historical source and a monument to the first decades of the RAF’s development. Slessor also writes with admirable clarity and directness, a quality that helps to explain why at the Casablanca Conference in January 1943, it was Slessor who went away to the quiet of his hotel roof garden to draft for the Combined Chiefs of Staff what became the agreed strategic document of the conference, after hours of often inarticulate and fractious argument between the two sides. This is only one of numerous examples of episodes presented by Slessor with a disarming modesty, a shrewd eye for detail, and not a little literary flair.
The Impact of Air Power: National Security and World Politics

By Eugene M Emme (Editor)

Publisher: Van Nostrand Co., 1959
Cover displayed is from the Literary Licensing, LLC, 2011 Edition

Reviewed by Air Vice-Marshal Tony Mason (Retired)

Gene Emme was Professor of International Politics at the USAF Air University, before becoming Chief Historian at NASA. The Impact of Air Power was justifiably hailed at the time as “In many ways a pioneering work comparable to Admiral Mahan's classic study of sea power”. The enduring, unique value of the massive anthology lies in the availability in one location of so many historic, international readings from original documents, theories, doctrines, political statements, operations, analysis and forecasts on the development of air power and its effects on warfare and international politics. It was the first comprehensive study of air power and remains the biggest single collection. It is available in print and online.

The contents are presented in three Parts: the Nature of Air Power, The Revolution in Warfare, and Aerospace Policy in National Security and World Politics. Each Part includes several chapters, each with an introductory essay which provides continuity of thought and a note on sources and contributors. The extensive bibliography is supplemented by individual references in each chapter.

In 2018, the study of air power has a place in any military college or academic security and/or international studies syllabus. Not so in 1959, when the subject lacked academic respectability, was subordinated by academic preoccupation with nuclear theory, diminished by residual inter-Service controversies and largely the preserve of Air Commanders’ autobiographies. Now, however, contemporary scholarship seeks to examine air power “in context”, which is exactly what Emme explicitly sought to do.

He drew upon scientists and social scientists, politicians, historians, engineers and physicists as well as airmen to examine the effects on, and problems created for, national security, by the innovations associated with the science of flight.

Emme lays out his structure in his introduction to Part One: a succinct summary of the evolution of air power in just two generations: from prophetic opinions before World War One to the apocalyptic shadow of nuclear war and the imminent possibility of space flight in the 1950s. Well known items, such as the Second Smuts report of August 1917, are accompanied by extracts illustrating Churchill's sustained understanding of air power, from his Aerial Defence Memoranda of 1914, through his arguments for an air offensive and an independent air force in November 1917, to his assertion in Boston in 1949 that “air mastery today is the supreme expression of military power”.

In Part Two, contemporary thinking in Italy and the USA, Germany and the USSR is represented by extracts from senior officers and historians. Somewhat ironically, they confirm that Douhet heavily influenced German General Wever, whose air force after his death in 1936 became virtually a tactical arm of the German army. Conversely,
well before Douhet’s ideas were first translated into English, British and American air power was well founded on the ideas of Trenchard, Groves and Mitchell. Many years later, Marshals of the Royal Air Force Sir Arthur Harris and Sir John Slessor individually denied to this reviewer any knowledge of Douhet when still serving officers.

In his chapter on World War Two, Emme tackles the enormous task of selecting from the hundreds of volumes of official and unofficial histories, memoirs, private papers and special studies. His objective is to give the reader “a relatively undistorted view of the impact of air forces upon the course of decisive military operations”. Extracts from British, US and German sources cover all theatres except the Russian one: a weakness reflecting Western lack of access to Russian contemporary sources during the Cold War. Of particular lasting value is the testimony to combined service operations by US Army General Omar Bradley. The rueful catalogue of Luftwaffe problems recounted by Generalleutenant Adolf Galland is a timeless blue-print of how not to plan, prepare, man and operate an air force, with en passant the dangers of applying a doctrine (Douhet) in irrelevant circumstances.

Conversely, among the selections of Lessons of World War Two are the memorable and sombre words of US Army Air Force General ‘Hap’ Arnold in his report to The Secretary of War in November 1945. Albeit composed in the shadow of nuclear war, it looks with considerable foresight to the future, which would include unmanned aircraft, missiles and exploiting space. He summarised his views in a statement which could have originated in the RAF in 2018:

“National safety would be endangered by an air force whose doctrines and techniques are tied solely to the equipment and processes of the moment. Present equipment is but a step in progress, and any air force which does not keep its doctrines ahead of its equipment and its vision far into the future can only delude the nation into a false sense of security.”

The Chapter on Small Wars and Limited Military Operations includes studies of air power in irregular warfare in Spain, Eastern Europe, Indo-China and excerpts from a paper given to the Royal Services Institute in 1937 by the then Air Commodore Charles Portal on “British Air Control in Underdeveloped Areas”. Its political environment is far removed from 2018, but it contains two enduring lessons: that the use of air power can be operationally cost-effective in irregular operations, but only in harmony with clearly defined acceptable political objectives. The study of the Berlin Airlift is disappointing: it is a rare example in the book of a contributor concentrating on the minutiae of an operation to the exclusion of any reference to the enormous political impact of air power on the evolution of the Cold War. Conversely, the two studies of Korea remain significant first-hand accounts by two Commanders of a traditional war fought in the shadows of nuclear escalation.

The later chapters examine the implications of the strategic and political challenge presented to the United States and her allies by the USSR. After a generation of Western superiority, heavily based on air power, President Putin is manifestly seeking to recover political and strategic influence. It is easy to overlook the fact that cyber war, asymmetric war, insurgencies and counter-terrorism have added to the complications of nuclear confrontation, not replaced them.

Finally, Bernard Brodie asserts that political oversight of military decisions demands both specialist talent and professional competence. That addresses a source of unease about political leadership in several countries in 2018.
It supports a strong recommendation that awareness of the *Impact of Air Power* should extend well beyond practitioners and students.
The Air Campaign: Planning For Combat

By John A. Warden III

Publisher: National Defense University Press, Washington, DC, 1988
Cover displayed is from the www.MilitaryBookshop.co.uk, 2011 Edition

Reviewed by John Andreas Olsen

The Air Campaign: Planning for Combat (1988) is one of the most important books on aerial warfare since Alexander de-Seversky's Victory through Air Power (1942). The author, Colonel John A. Warden III, was one of the most controversial officers in the United States Air Force (USAF), drawing both praise and condemnation to almost the same extent as Brigadier General Billy Mitchell. Warden is also one of the most influential airmen of our times, as his ‘Instant Thunder’ became the conceptual underpinning for the air portion of Operation DESERT STORM – by many regarded as the most successful air campaign in modern history. His offensive and daring scheme for victory stood in stark contrast to prevailing ground-centric doctrine, newly updated contingency plans for the region and standard USAF practice at the time. The ideas in the The Air Campaign served as a baseline for Warden’s ‘5 Rings Model’ and the plan of campaign that convinced Generals Norman Schwarzkopf and Colin Powell that air power should take the lead in liberating Kuwait from Iraqi occupation. The Air Campaign has since been adopted as a standard text by air force academies and staff colleges worldwide and Warden is now widely acknowledged as the foremost air power theorist since the Second World War.

The greatest significance of The Air Campaign lies in its enduring effect on military thinking: it stimulated widespread discussion, controversy and ultimately fresh perspectives at a time when the USAF seemed content to grant the Army pre-eminence in warfighting, as articulated in AirLand Battle Doctrine, FM 100-5, published in 1982 and refined in 1986. That doctrine dealt with air power at the tactical level only, and the overarching concept was that air power should support the ground commander on the battlefield. Warden countered this narrow interpretation of air power’s utility by articulating a design for a coherent and unified air campaign founded on a systematic linkage of ends (political objectives), ways (strategies to attain those ends) and means (specific targets to prosecute in order to execute the chosen strategy).

The Air Campaign begins with a generic framework, defining the four levels of war – grand strategic, strategic, operational and tactical – and noting the lack of a coherent doctrine for the penultimate category. The book then examines three types of combat missions: air superiority, interdiction and close air support, linking modern air power to operational art. Underlying The Air Campaign is “the idea that air superiority is crucial, that a campaign will be lost if the enemy has it, that in many circumstances it alone can win a war, and that its possession is needed before other action on the ground or in the air can be undertaken” (p.141). Warden discusses various aspects of air superiority at length – including five separate scenarios – before reflecting on the other two missions, emphasising that interdiction is the more important of the two because it delivers effects closer to the source of power.
At its heart, *The Air Campaign* suggests that the art of air warfare consisted of far more than picking targets and matching them with the right aircraft and munitions. Warden’s approach to the analysis of air power seems to have been highly appreciated by his target audience: combat officers dealing with real-world operational issues. The book began a process of ‘air-mindedness’ that led these officers to think in terms of system-of-systems effects and centres of gravity rather than mere tactics and destruction, a precursor of today’s ‘effects-based operations’ model. Warden’s examination of air power at the operational level of war, and of the way an air commander should plan, orchestrate and structure an air campaign, gave them a conceptual framework for thinking about the practice of air warfare beyond the Cold War paradigm.

*The Air Campaign* is an air power manifesto, promoting the idea of air power as the leading element of a military campaign. When he wrote the book Warden was on a quest and made no attempt to produce an objective study: he supported his case by juxtaposing theory, operational principles and historical illustrations to create an accessible framework for analysing the most effective uses of air power. In terms of methodology, Warden unquestionably belonged to the school of thought that adhered to general formulation, models and identifiable linkages between cause and effect. Thus, Warden’s approach bears a strong resemblance to that of Antoine-Henri Jomini. Both theorists relied on simplification and prescription: they sought to produce practical guides to the conduct of warfare rather than abstract philosophy on the nature of warfare, and to reduce the complexity of warfare to a manageable number of crucial factors, rules and principles.

The basic strengths of Warden’s work outweigh any criticism. The book’s top-down approach and lack of jargon demystified a topic that had previously been examined only in tactical and technological terms, and Warden succeeded in making his core arguments credible and vivid. The book is focused, engaging and logically structured, and avoids excessive detail, while giving readers an overall understanding of air power as a reliable basis for action. For all these reasons the book attracted a far wider audience than doctrinal manuals ever had.

Over time Warden refined his views, placing greater emphasis on strategic attack against the enemy leadership, but the approach that he developed for Operation DESERT STORM was at the very least implied in his book before such a war was contemplated. By revitalising the idea that conventional air power can serve as the core of offensive operations and as a war-winning instrument of policy, *The Air Campaign* became the starting point of the renaissance in aerospace thinking that began in the 1990s and continues to this day.
Contents of CAS’ Reading List 2017

The Fix: How Nations Survive and Thrive in a World in Decline
By Jonathan Tepperman
Publisher: Bloomsbury Publishing, London

Defense of the West: NATO, the European Union and the Transatlantic Bargain
By Stanley R Sloan
Publisher: Manchester University Press

All the Kremlin’s Men: Inside the Court of Vladimir Putin
By Mikhail Zygar
Publisher: Public Affairs

ISIS: A History
By Fawaz A Gerges
Publisher: Princeton University Press

Understanding Modern Warfare
By David Jordan, James D Kiras, David J Lonsdale, Ian Speller, Christopher Tuck and C Dale Walton
Publisher: Cambridge University Press

Airpower Applied: U.S., NATO, and Israeli Combat Experience
By John Andreas Olsen (Editor)
Publisher: Naval Institute Press

Precision and Purpose: Airpower in the Libyan Civil War
By Karl Mueller (Editor)
Publisher: RAND Corporation

The Air Force Way of War: U.S. Tactics and Training after Vietnam
By Brian D Laslie
Publisher: University Press of Kentuck

Space Warfare in the 21st Century: Arming the Heavens
By Joan Johnson-Freese
Publisher: Routledge

Team of Teams: New Rules of Engagement for a Complex World
By Stanley McChrystal, David Silverman, Tantum Collins, Chris Fussell
Publisher: Portfolio Penguin
Contents of CAS’ Reading List 2016

**Red Team: How to Succeed by Thinking like the Enemy**  
By Micah Zenko  
Publisher: The Perseus Book Group

**Black Box Thinking: Marginal Gains and the Secrets of High Performance**  
By Matthew Syed  
Publisher: John Murray Publishers Ltd

**The New Tsar: The Rise and Reign of Vladimir Putin**  
By Steve Lee Myers  
Publisher: Simon & Schuster

**Air Warfare: History, Theory and Practice**  
By Air Commodore (Retd) Dr Peter Gray  
Publisher: Bloomsbury Publishing plc

**The Mediterranean Air War – Airpower and Allied Victory in World War II**  
By Robert S Ehlers  
Publisher: University Press of Kansas

**Jail Busters: The Secret Story of MI6, the French Resistance and Operation Jericho**  
By Robert Lyman  
Publisher: Quercus Publishing

**The Direction of War: Contemporary Strategy in Historical Perspective**  
By Sir Hew Strachan  
Publisher: Cambridge University Press

**Blood Year: Islamic State and the Failures of the War on Terror**  
By David Kilcullen  
Publisher: C Hurst & Co

**Binary Bullets: The Ethics of Cyberwarfare**  
By Fritz Allhoff, Adam Henschke & Bradley Jay Stawser  
Publisher: Oxford University Press

**Ghost Fleet**  
By P W Singer & August Cole  
Publisher: Houghton Mifflin Harcourt
The views expressed by the reviewers in this list are theirs and theirs alone. Inclusion of a particular book within the reading list should not be taken to mean that the Royal Air Force or the Ministry of Defence endorses the contents. Manuscripts with challenging and even contrarian views will be included in order to stimulate thinking, discussion and debate.